
NATIONAL CENTER FOR EDUCATION STATISTICS

THE CONDITION OF EDUCATION 1995

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The purpose of the Center is to collect and report "...statistics and information showing the condition and progress of education in the United States and other nations in order to promote and accelerate the improvement of American education."—Section 402(b) of the National Education Statistics Act of 1994 (20 U.S.C. 9001).

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The National Center for Education Statistics (NCES) gathers and publishes information on the status and progress of education in the United States. The Congressional authorization for these activities (with antecedents to 1867) states that the purpose of the Center is to collect and report "...statistics and information showing the condition and progress of education in the United States and other nations in order to promote and accelerate the improvement of American education."—Section 402(b) of the National Education Statistics Act of 1994 (20 U.S.C. 9001). This law also mandates an annual statistical report on the subject from the Commissioner of Education Statistics. This 1995 edition of *The Condition of Education* responds to the requirements of that law.

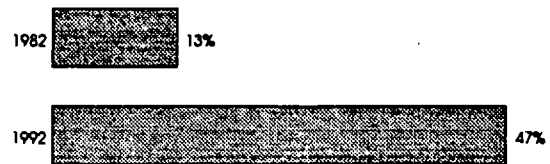
This report contains 60 indicators that shed light on the condition of education in the United States. These indicators represent a consensus of professional thinking on the most significant national measures of the condition and progress of education to date, but tempered by the availability of current, valid information. In the text that follows, I will summarize some of the positive developments in American education and point out areas that continue to raise concern. In addition, I will discuss what we know about school quality and describe how the conditions facing the schools have changed.

For some issues of public concern, however, there are no data available that can provide a satisfactory national picture of recent educational developments. One such area where additional work remains is in developing measures of learner outcomes that go beyond the core content areas. These might include measures of integrative reasoning and of attitudes such as tolerance, self-direction, and responsibility. A second area where work remains is in developing better measures of school quality and student learning opportunities.¹

What are high school students studying and how are they performing?

In the 12 years since *A Nation At Risk* advocated tougher course requirements for high school graduation, states and students have responded dramatically. **High school graduates are taking more courses overall, particularly academic**

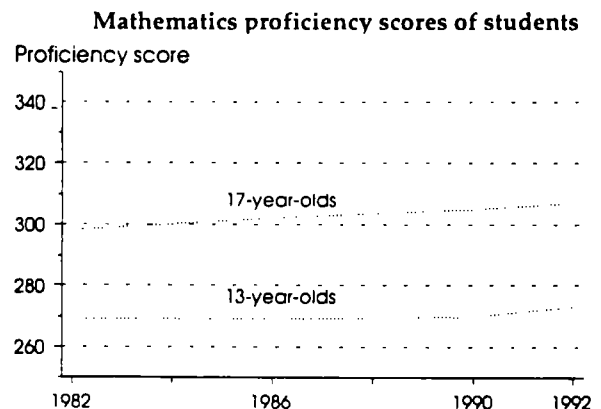
Percentage of high school graduates earning the recommended credits in *A Nation At Risk*



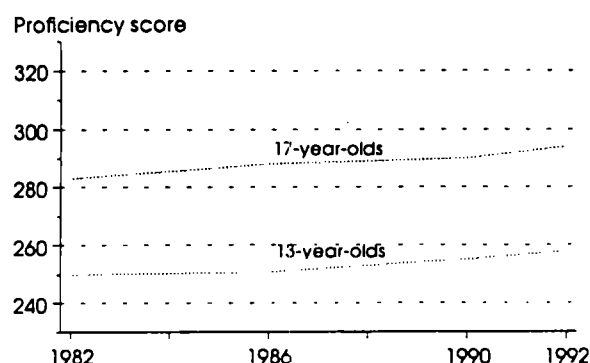
courses.² The proportion of students completing the recommended core courses in English, math, science, and social studies has increased (*Indicator 25*), and a greater percentage is taking Advanced Placement (AP) courses.

In addition, more students are taking algebra, geometry, trigonometry, and calculus as well as advanced science courses, including chemistry and physics (*Indicator 26*). Both college-bound and non-college-bound students are taking more foreign language courses than their counterparts did a decade before. Furthermore, as of 1990, 42 of the 50 states had raised course requirements for high school graduation since the publication of *A Nation At Risk*, and 47 states had mandated student testing standards.³ Of course, these increases can only be considered good news if the content of these courses is at least as rigorous as it was when the National Commission on Excellence in Education made their recommendations. There is some evidence that it is, but we have no national data on the content of courses.⁴

It is also encouraging to see these improvements in high school course taking reflected in **gains in mathematics and science achievement**. Between 1982 and 1992, the mathematics and science proficiency scores of 17-year-olds on the National



Science proficiency scores of students



Assessment of Educational Progress (NAEP) increased (9 points on each assessment). One way to get a sense of how much improvement these gains represent is to compare them to variations in proficiencies between different-aged high school students. Using this comparison, we find that the improvement for 17-year-olds from 1982 to 1992 was roughly equivalent to an additional year or two of learning in high school (*Indicators 15 and 16*). These gains in NAEP proficiency scores are one indication that 17-year-olds in 1992 have made substantial progress in mathematics and science relative to their peers in 1982.

Although proficiency scores in reading and writing have not shown similar increases (*Indicators 13 and 14*), U.S. students compared favorably to those in other countries in an international assessment of basic reading literacy in 1991-92 (*Indicator 17*).

Low-performing students have also progressed academically since the publication of *A Nation At Risk*. For example, dropout rates have declined (*Indicator 6*); fewer high school students are taking remedial mathematics courses before graduating (*Indicator 26*); and the mathematics and science proficiencies of the lowest performing 17-year-olds have increased (tables 15-3 and 16-3). However, between 1984 and 1992, the reading and writing proficiencies of the lowest performing students remained relatively stable (tables 13-3 and 14-3).

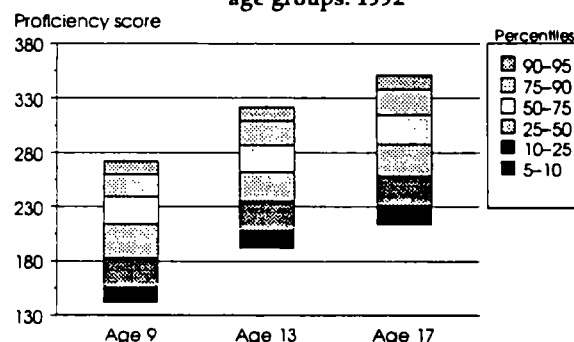
Not only are more students are taking AP examinations, but the science proficiency scores of the highest performing 17-year-olds have increased (table 16-3). In addition, since the early 1980s, the reading and mathematics proficiency

scores of the highest performing 17-year-olds have remained relatively stable (tables 13-3 and 15-3).

It is significant that even though the number of Scholastic Assessment Test (SAT) test-takers as a percentage of high school graduates has increased 8 percentage points since 1983, the average mathematics score has increased and the average verbal score has remained stable (*Indicator 20*). These findings are considered by many to be positive because increasing participation tends to push down scores.

When examining differences in averages across NAEP scores, we should keep in mind that the performance among students of the same age or in the same grade varies considerably. For example, in reading, mathematics, and science, many students score no higher at age 17 than many of their peers did at age 9, despite the fact that they differ by 8 years of schooling.⁵ Schools must cope with this variation while trying to help each student learn as much as possible. It is not surprising, then, that there is also a large degree of variation across schools in the type of curriculum offered to students with different abilities and interests.⁶

Distribution of reading proficiency within age groups: 1992



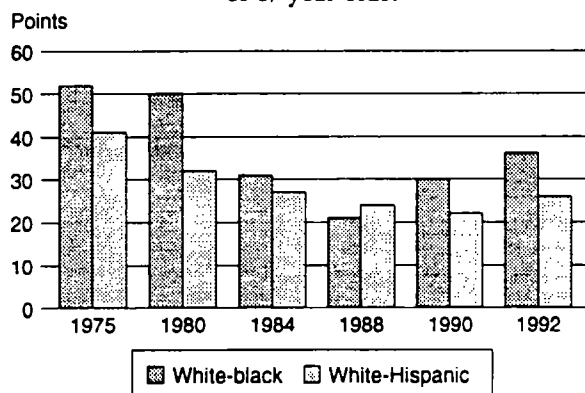
As a nation, we put great value on mathematics and science. Recently, this is evident in Goal 5 of the National Education Goals: "U.S. students will be first in the world in science and mathematics achievement." Although, as noted above, the mathematics and science scores of U.S. students have increased since the early 1980s, they remain low compared to their counterparts in many other countries (*Indicators 18 and 19*). Moreover, considerable variation exists across states. On the one hand, 8th grade students in some states perform as well as 13-year-old

students from the best performing nations in an international comparison of mathematics achievement. On the other hand, students in other states are performing at levels similar to students in developing countries.⁷

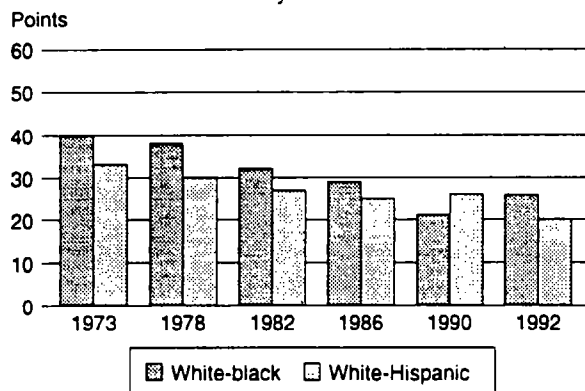
Another area of continuing concern is the academic achievement of minority students in elementary and secondary school. For example, in 1992, the average reading proficiency scores of black 17-year-olds were 36 points below white 17-year-olds and were similar to the average proficiency scores of white 13-year-olds. The white-Hispanic reading gap at age 17 was a little narrower. White-black and white-Hispanic proficiency score differences were of similar magnitudes in science, although they were smaller in mathematics (*Indicators 13, 15, and 16*).

It is also worrisome that despite a narrowing in the white-minority gap in achievement during the 1980s, particularly in mathematics, recent data raise the possibility that the gap is no longer closing. For instance, the most recent (1994) NAEP results in reading suggest that

White-minority difference in reading achievement of 17-year-olds:



White-minority difference in math achievement of 17-year-olds:



minority groups lost some of the earlier gains they had made relative to whites.⁸

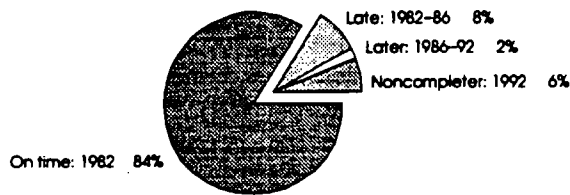
In addition to a narrowing in the white-minority achievement gap, there are other positive developments with regard to the achievement and attainment of black and Hispanic students. The indicators in this volume contain far more information on different subpopulations than has been reviewed here. For example, an essay reviewing the educational progress of Hispanic students begins on page 6 and an essay reviewing the educational progress of black students is contained in the 1994 edition. A review of the considerable educational advances made by women over the past several decades can be found starting on page 13.

Social scientists attribute much of the white-minority differences in achievement to the higher incidence of poverty in the families of minority children and the lower average educational levels of their parents. It is difficult for schools to compensate for such disadvantages. However, there is evidence that extraordinary schools and teachers make a difference in how all students perform. For example, research on early intervention and on one-to-one tutoring demonstrates that at-risk students can achieve at far higher levels than they have in the past.⁹ There is also some evidence, particularly in math and science, that taking more challenging courses is related to higher performance and achievement.¹⁰

Are more young people finishing high school?

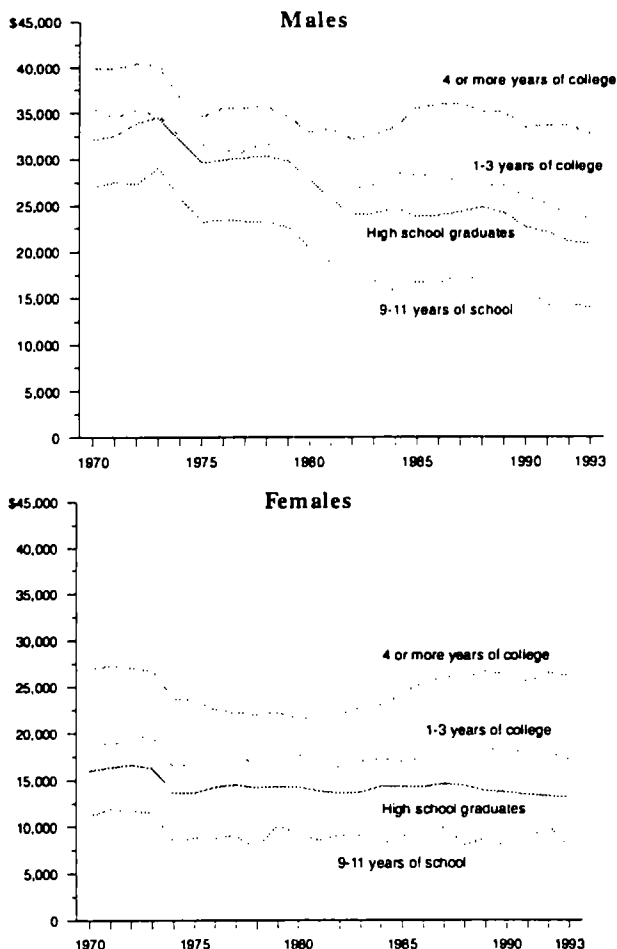
Despite curricular changes that may have made school more difficult, students are persisting in their studies. Overall, the percentage of high school students who leave before graduating has gradually declined and differences between dropout rates for blacks and whites have also narrowed, although most of these changes occurred before the mid-1980s (*Indicator 6*). This is encouraging because schools provide young people with the opportunity to explore their interests and develop their talents. It is also encouraging because staying in school is an important indication that a young person is learning to be a productive member of U.S. society and is less likely to suffer from poverty and unemployment (*Indicators 28 through 32*).

Time of high school completion for 1980 10th-graders



High school completion rates have gradually risen, and for some subgroups are near or over the 90 percent National Education Goal (*Indicator 22*). The rise is, in part, a result of greater student persistence in high school (discussed above), but may also be a result of more dropouts earning a GED credential. The rise is a positive development, but we must also be cautious because in today's economy a high school diploma or a GED credential may not be sufficient to avoid low earnings, unemployment, and, possibly, poverty. Since the early 1970s, the

Median earnings of wage and salary workers 25 to 34 years old (1994 constant dollars)



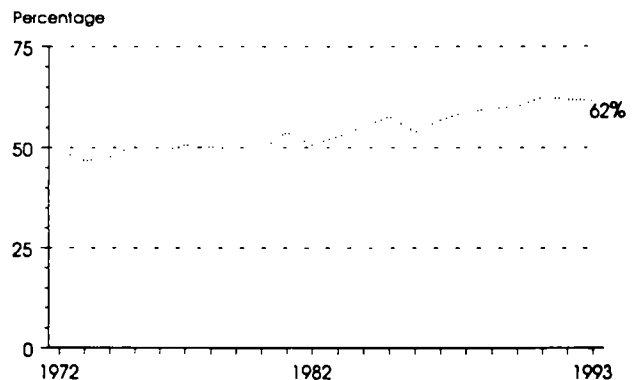
real wages of young adults with only a high school diploma or GED have declined (table 30-3), and the proportion of this group receiving AFDC or public assistance has increased (*Indicator 32*). The labor market opportunities for high school graduates are still better than those who complete 9-11 years of education, however.

Are more young people going to college?

In 1992, the rates of attainment in higher education for U.S. men and women were among the highest in the world (*Indicator 23*).¹¹ This is an indication that higher education is broadly accessible in the United States in comparison to other countries. It is also an indication of the rewards to college attendance. Even though college graduates have faced a difficult labor market over the past few years, their job opportunities and earnings are much better than those of high school graduates. The earnings advantage has grown stronger throughout the 1980s, particularly for males (*Indicator 34*).

It is not surprising that despite a rapid rise in tuition levels (*Indicator 7*) more high school graduates are choosing to go immediately to college after high school graduation (*Indicator 9*). It should be noted, however, that enrollments do not always translate into completions.

High school graduates enrolling in college the October following graduation



Although, more students are going on to college after high school, the data show that it is very common for college students to enroll, leave, possibly return, and not finish within the expected period of time.¹² For example, in 1990, only one-quarter of first-year community college students were enrolled in some form of higher education the next year. And, about one-fifth of

second-year community college students transferred to 4-year colleges or universities (*Indicator 10*).

Noncompletion is not necessarily an indication of failure or a waste of resources. Often students, particularly in the 2-year sector, enter and withdraw from college because of economic opportunities, or they may have begun a program with limited objectives that they were able to achieve. Also, many students attend part time, which can extend the time it takes them to complete a program. Nevertheless, the high rates of noncompletion and interrupted attendance may indicate that students do not have enough information about the actual skills in demand in the labor market before making decisions regarding their education. Moreover, they may have unrealistic views as to how much time, effort, and money will be needed to complete postsecondary education programs and acquire these skills.

High levels of participation in higher education are made possible by generally low tuition levels at public institutions and a financial aid system that is primarily based, particularly the federal component, on need. Average tuition and fees are also much lower at public institutions, where four out of five students are enrolled, than they are at private institutions (*Indicators 8 and 36*).

But to attend postsecondary education on a full-time basis requires that the student not only pay the direct costs of education but also finance living expenses. For example, the *total cost* a student had to finance, including both educational and living expenses, was about \$9,200 for dependent full-time students attending public 4-year institutions in 1992–93. Total aid, including grants, loans, and work-study, reduced the amount that needed to be financed to \$7,300. In addition, most financial aid is sensitive to family income, so this *net cost* was lowest (\$5,070) for students from low income families and highest (\$8,879) for those from high income families.

Although net cost varies a great deal with family income, the question remains whether it varies enough to make higher education equally affordable to all students. One way to answer this question is to estimate *unmet need* as net cost

Costs incurred by dependent full-time undergraduates: 1992–93

	Tuition and fees	Total cost	Net cost
Public 2-year	\$1,072	\$6,410	\$5,717
Public 4-year	2,947	9,187	7,326
Private 4-year	11,004	17,301	11,552

less “expected family contribution;” this is generally considered a reasonable and affordable amount for the family and student to contribute toward the cost of higher education, and it is also used by the student financial aid system. For dependent undergraduates attending 4-year colleges, unmet need is greater, especially when compared to family income, for students from low income families than for those from high income families. It appears that by this test, at least, **higher education is still more difficult for students from low and lower middle income families to afford than for those from upper middle and high income families.**

Net cost incurred by and unmet need of dependent full-time undergraduates, by family income: 1992–93

Family income	Net cost		Unmet need	
	Public 4-year	Private 4-year	Public 4-year	Private 4-year
All	\$7,326	\$11,552	\$1,952	\$4,171
Less than \$27,000	5,070	5,872	3,132	4,425
27,000–44,999	6,426	8,590	2,429	4,980
45,000–59,999	7,598	10,407	1,784	4,204
60,000 or more	8,879	15,752	836	3,633

Clearly, the increasing enrollment rates and rising tuition costs are profoundly affecting the nature of higher education. First, colleges are providing much remedial instruction to students who arrive with weak academic skills.¹³ This may indicate that more students who once would not have considered continuing on to higher education are now enrolling, even though they must take remedial courses. Second, the percentage of full-time college students who report working more than 20 hours a week has increased since the early 1980s (*Indicator 51*). Although working during the school year leaves less time for students to concentrate on their studies or to participate in extracurricular activities, some of the experience that students gain from working may benefit them after graduation. There is

evidence, however, that working long hours while in college may reduce a student's likelihood of completing college or lengthen the time it takes for those who do complete it. Third, there is some evidence that college students are feeling increasingly stressed by the demands placed on them.¹⁴

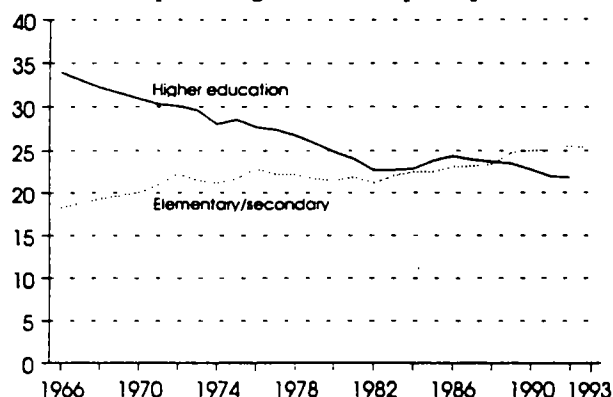
What do we know about the quality of schools?

The information presented so far has been about students and what they are or are not achieving. Because of the impact of family income and support on student performance, academic achievement is only a partial indicator of the quality of the schools that U.S. students attend. But what can be said directly about the quality of schools? Are schools providing a safe and supportive environment so that student energies can be devoted to learning? Are schools attracting people with enthusiasm, creativity, and commitment to teaching and supporting them with competitive salaries and sustained professional development? These are also important aspects of school quality.¹⁵ Without question, much work remains to be done to produce reliable statistical measures of school quality.

Expenditures per student are often used as a proxy measure of the quality of education. But, this can only be considered a crude measure, because the results of hundreds of studies that examine the relationship between spending and outcomes such as achievement test scores, dropout rates, and so forth are mixed.¹⁶ Neither a strong nor consistent relationship is found. However, no one can deny the importance of money to build schools, hire teachers, buy textbooks, and otherwise acquire the resources needed to create a safe, supportive learning environment. Among these resources are the intangible qualities of dedicated teachers, principals, and parents who create the learning environment.

At the elementary and secondary levels, **revenues per student have increased substantially** since the early 1980s, a sign that even with the strains of slower economic growth, our nation is willing to continue supporting its schools (*Indicator 52*). Yet, **revenues per student vary widely across states**: state governments, not the federal

Revenues per student from public sources
as a percentage of income per capita



government, have responsibility for funding education, and they vary in their capacity and willingness to do so. In addition, there is considerable variation within states because states delegate authority for operating and funding schools to local school districts. For instance, one estimate is that **the wealthiest districts have about 16 percent more cost-of-living adjusted revenue per student than the poorest districts**. However, other factors such as the educational needs of the students require consideration before disparities in the allocation of education resources can be adequately measured. Districts with a large percentage of school age children in poverty, however, do receive a much larger share of their revenue from federal and state sources than from local governments (*Indicator 53*).

An advantage of state and local funding of schools is that parents and citizens have more say in deciding how much education their children get and with what emphasis. A disadvantage is that wealth varies across school districts, leading to imbalances in the resources available to schools even when citizens are equally willing to fund them. This has resulted in complicated state formulas to assist poor school districts and many court challenges to state education financing systems as insufficiently compensatory. The supreme courts of several states have declared the state education financing system unconstitutional because of funding inequities, and more than half the states have cases pending. For example, as a result of a court challenge to its funding arrangements, Kentucky has completely overhauled its educational system from teacher certification requirements to governance

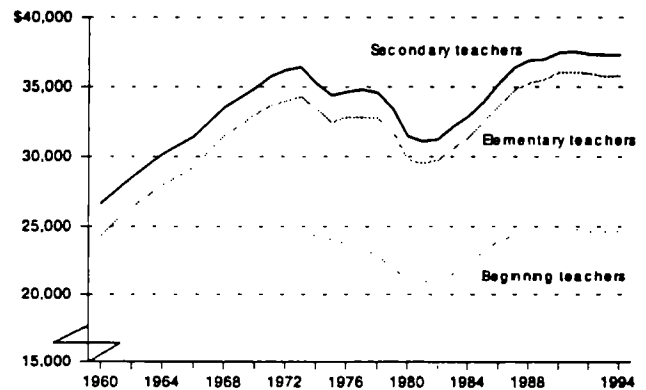
structures. And Michigan recently decided to stop using the property tax to finance its schools, and instead to use a combination of income and sales taxes. Since poor school districts receive most of their revenue from the state, another disadvantage of state and local funding is that economic conditions may cause the state to change its support level at the very moment poor school districts need the funds the most.

Although the level and distribution of education resources is very important, it is equally important that the resources be used effectively. Teacher salaries are a major portion of the elementary and secondary budget, and good teachers are central to a high quality education system. Most of what we consider formal childhood education takes place in classrooms through interactions between teachers and students. Teachers are one conduit through which education and societal values are passed.

The pupil-teacher ratio has declined steadily since the mid 1950s.¹⁷ Average teacher salaries in public schools were also higher in 1994 than in 1960 although most of the gain since 1981 only recouped losses incurred during the 1970s (*Indicator 57*). As most elementary and secondary teachers are women and the labor market opportunities of women have improved over the last two decades, larger increases in salaries may have been necessary for teachers, relative to those in other occupations, to keep teachers in teaching and to induce college students to choose teaching as a career. Nevertheless, using a variety of measures it appears that **teacher earnings are relatively low compared to those of many other professions that college students could pursue.**¹⁸ Policymakers have expressed some concern over whether this discourages the best and the brightest students from choosing teaching as a profession. Evidence of this is mixed. Some research indicates that those accepting teaching positions were more likely to have lower scores on the SAT and NTE (National Teacher Examination) than non-teaching college graduates and that those leaving teaching were more likely to have higher SAT and NTE scores than those remaining.¹⁹ Evidence from the 1992 National Adult Literacy Survey (NALS) points in the opposite direction, however. In NALS, the prose literacy scores of teachers are similar to the scores of many of their colleagues in other

professions, including private sector executives and managers, engineers, physicians, writers and artists, social workers, sales representatives, education administrators, and registered nurses. With respect to at least prose literacy, there is little evidence that low salaries are attracting only the least able college graduates into teaching (*Indicator 59*).

Average annual salaries of public school teachers
(in 1994 dollars)

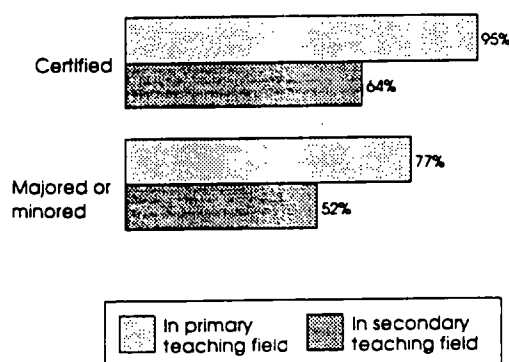


Although many of the characteristics that determine the quality of a teacher are not easily measured, some teacher qualifications can be measured. Many analysts argue that one of the most important characteristics is training and preparation in the subject or field in which the teacher is teaching. Research has shown moderate but consistent support for the reasonable proposition that subject knowledge (knowing what you teach) and teaching skills (knowing how to teach) are important predictors of both teaching quality and student learning.²⁰ Knowledge of subject matter and of pedagogical methods does not, of course, guarantee quality teaching, but it is a necessary prerequisite.

Almost all teachers are certified to teach in their primary assignment field, and a large majority have majored or minored in this field. In fact, most teachers have a graduate degree. About one-quarter of teachers has a secondary assignment field and lower proportions are certified or have majored or minored in this field (*Indicator 58*). **There is considerable variation in teacher qualifications across states, however.** For example, the percentage of high school mathematics teachers who majored in mathematics or mathematics education ranged from 44 percent in California to about 90 percent

in Alabama and Minnesota.²¹ Although teacher qualifications and credentials may be an indication of minimal competency, these may be poor measures of subject matter and instructional competence.

Certification and educational background of teachers in 1990-91



Considerable policy discussion has addressed the ability of schools to keep qualified teachers, both in general and in specific subject areas such as mathematics and science. **Overall, teacher attrition in public elementary and secondary schools seems to be low.** Only 1 in 20 full-time public school teachers left the teaching profession in a recent year. Furthermore, keeping mathematics and science teachers in the profession does not seem to be as big a problem as was once suggested. The percentage of full-time teachers in public secondary schools in 1990-91 who left teaching in the next year was no higher in mathematics and science than in other teaching fields (*Indicator 60*).

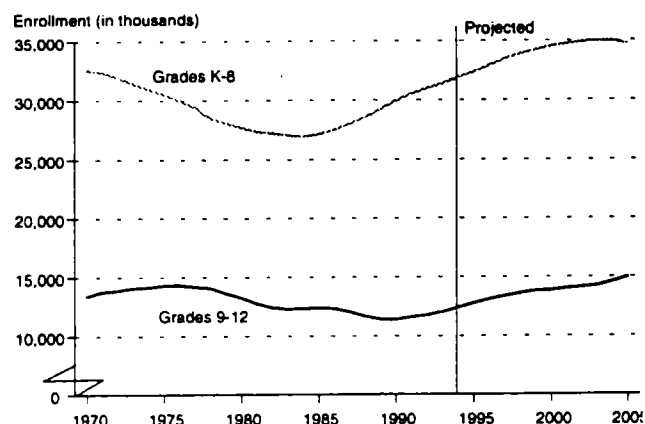
A high level of education and associated professional commitment among teachers benefits both students and the education system. These benefits come at a cost, however, because teachers must be paid enough to justify the investment they have made in their education. Nevertheless, education policymakers must address the more difficult issue of how to make best use of available resources under changing conditions.

How have conditions facing the schools changed?

Changing conditions that schools must confront are putting additional strains on revenues, even though revenues have increased.

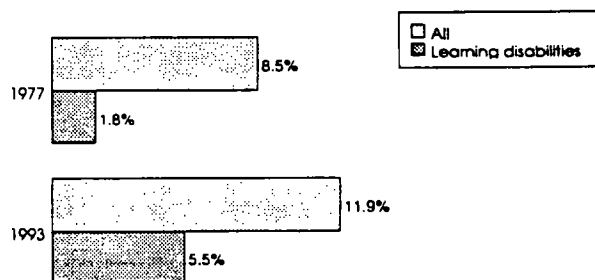
First, schools are facing a period of rising enrollments after a long period of decline (*Indicator 35*). It is important to monitor these increases because they will affect school budgets as well as policies of teacher recruitment and retention.

Public school enrollment



Second, many more disabled students, particularly those with learning disabilities, are receiving special services (*Indicator 42*). This has major financial implications for school districts. There is some evidence that the average cost of serving a special education student is as much as 2.3 times the cost of serving regular students (ranging from 1.9 times for students in resource programs to 10.6 times for students in residential programs).²²

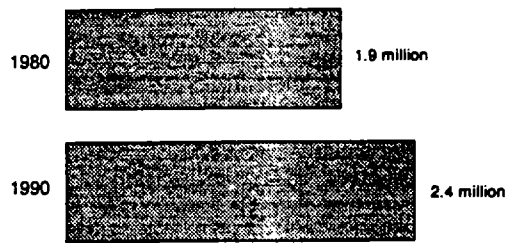
Children served in federally supported programs for students with disabilities



Third, many more students speak a language other than English at home and have difficulty speaking English, a likely indication that even more students may have difficulty reading and writing English.²³

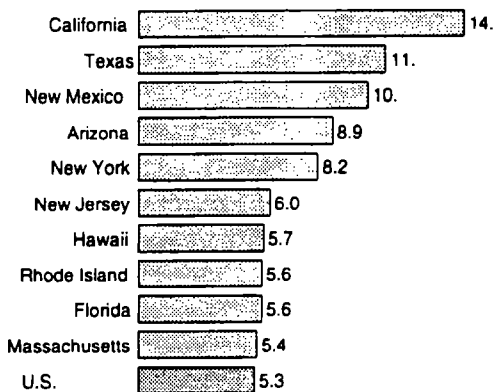
By law, school systems nationwide must provide services for children from non-English-language

Children who have difficulty speaking English



backgrounds. Because these students are disproportionately concentrated in a few states (California, Texas, New Mexico, Arizona, and New York), the education systems in these states are under particular strain to respond to the special needs of these children.

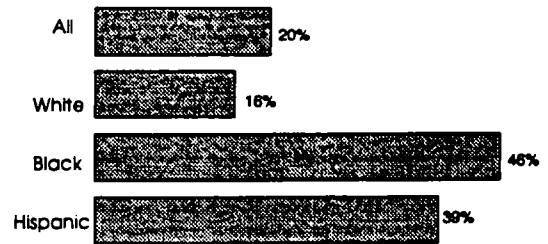
Percentage of children who have speaking English



Fourth, many children live in poverty (22 percent or 14.6 million), and these children typically live in neighborhoods and attend school together. Thus, the schools in these neighborhoods are also facing heavy demands.

Fifth, crime in the schools remains a problem. Violence in and around schools directly affects educators and students by reducing school effectiveness and inhibiting students' learning. In 1993, more than one in five high school seniors were threatened at school. However, between 1976 and 1993, there was little change in victimization rates in schools, except for a slight increase in the percentage of students who reported being threatened, both with and without a weapon. And although generally few differences were seen in school victimization rates among black and white high school seniors, black seniors were more likely than their white

Percentage of children living in poverty in 1992



counterparts to have been threatened with a weapon at school (24 versus 14 percent, *Indicator 47*).

As this discussion indicates, there is not one answer to the complex question of whether the condition of education is improving. Some conditions are improving, while others are not. In a number of areas, research has not been able to disentangle the influences of several factors, so we cannot be certain whether conditions are actually improving or not. However, this volume can help Americans interested in education policy to pose more sophisticated questions. In doing so, we can make progress toward understanding what produces high quality educational institutions, an educated citizenry, and a skilled work force.

Emerson J. Elliott

Emerson J. Elliott
Commissioner of Education Statistics

NOTES:

¹ Special Study Panel on Education Indicators. *Education Counts: An Indicator System to Monitor the Nation's Educational Health*. Washington, D.C.: National Center for Education Statistics. September 1991.

² See *Indicator 23* in *The Condition of Education 1994*.

³ R. Coley and M. E. Goetz. *Educational Standards in the Fifty States: 1990*. Princeton, N.J.: Educational Testing Service; and Elliott A. Medrich, Robin R. Henke, and Cynthia L. Brown. *Overview and Inventory of State Requirements for School Coursework and Attendance* (NCES 92-663). Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 1992.

⁴ Andrew C. Porter, Michael W. Kirst, Eric J. Osthoff, John L. Smithson, and Steven A. Schneider. *Reform Up Close: An Analysis*

of *High School Mathematics and Science Classrooms*. Final report to the National Science Foundation on grant #SPA-8953-446 to the Consortium for Policy Research in Education. October 1993.

³ John Ralph, Dana Keller, and James Crouse. "How Effective Are American Schools?" *Phi Delta Kappan*. October 1994.

⁴ Jennifer S. Manlove and David P. Baker. "Local Constraints on Opportunity to Learn Mathematics in High School." In M. Hallinan (ed.). *Making Schools Work: Promising Practices and Policies*. Plenum, 1995; and U.S. Department of Education, National Center for Education Statistics, *Curricular Differentiation in Public High Schools* (NCES 95-360). Washington, D.C.: December 1994.

⁷ U.S. Department of Education, National Center for Education Statistics. *Education in States and Nations: Indicators Comparing U.S. States with the OECD Countries in 1988* (NCES 93-237). Washington, D.C.: October 1993, Indicator 16.

⁸ U.S. Department of Education, National Center for Education Statistics. 1994 NAEP Reading: *A First Look* (NCES 95-748). Washington, D.C.: May 1995.

⁹ Robert E. Slavin, Nancy L. Karweit, and Barbara A. Wasik. "Preventing Early School Failure: What Works." *Educational Leadership* (December 1992/January 1993): 10-18; idem, eds., *Preventing Early School Failure*. Boston: Allyn and Bacon, 1994; and Barbara A. Wasik and Robert E. Slavin. "Preventing Early Reading Failure with One-to-One Tutoring: A Review of Five Programs." *Educational Research Quarterly* (28) (1993): 178-200.

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¹¹ For cross-country comparisons of net enrollment rates in higher education, see Organization for Economic Cooperation and Development, Center for Educational Research and Innovation. *Education at a Glance: OECD Indicators*, 1995, table PO6.

¹² *The Condition of Education 1994*, Indicator 10.

¹³ U.S. Department of Education, National Center for Education Statistics. *College-Level Remedial Education in the Fall of 1989* (NCES 91-191). Washington, D.C.: May 1991.

¹⁴ Alexander W. Astin, William S. Korn, Linda J. Sax, and Kathryn M. Mahoney. *The American Freshman: National Norms for 1994*. Cooperative Institutional Research Program, American Council on Education, and the University of California, Los Angeles, 1994.

¹⁶ Eric Hanushek. "The Economics of School: Production and Efficiency in Public Schools." *Journal of Economic Literature* (March 1986); and Larry V. Hedges, Richard D. Laine, and Rob Greenwald. "Does Money Matter? A Meta-Analysis of Studies of the Effects of Differential School Inputs on Student Outcomes (An Exchange: Part I)." *Educational Researcher*, April 1994.

¹⁷ U.S. Department of Education, National Center for Education Statistics. *The Digest of Education Statistics*, 1994, table 64.

¹⁸ Mary Rollefson. *Issue Brief: Teacher Salaries—Are They Competitive* (NCES 93-450). U.S. Department of Education, National Center for Education Statistics. Washington, D.C.: 1993, table 2; and F. H. Nelson and T. O'Brien. *How U.S. Teachers Measure Up Internationally: A Comparative Study of Teacher Pay, Training, and Conditions of Service*. American Federation of Teachers, Washington, D.C.: 1993, table II-1.

¹⁹ Richard J. Murnane, Judith D. Singer, James J. Kemple, Randall J. Olson, and John B. Willet. *Who Will Teach?* Harvard University Press, Cambridge, 1991; and V.S. Vance and P.C. Schlechty. "The Distribution of Academic Ability in the Teaching Force: Policy Implications." *Phi Delta Kappan*, vol. 64: 22-27.

²⁰ R. Shavelson, L. McDonnell, and J. Oakes. *Indicators for Monitoring Mathematics and Science Education*. Santa Monica, CA: Rand Corporation; 1989; L. Darling-Hammond and L. Hudson. "Pre-college Science and Mathematics Teachers: Supply, Demand, and Quality." *Review of Research in Education*. Washington, D.C.: AERA 1990; and R. Murnane and S. Raizen, eds. *Improving Indicators of the Quality of Science and Mathematics Education in Grades K-12*. Washington, D.C.: National Academy Press, 1989.

²¹ Rolf Blank, Michael Matti, Iris Weiss, Stephen Broughman, and Mary Rollefson. *SASS by State*. (NCES 94-343). Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, June 1994.

²² See M.T. Moore, E.W. Strang, M. Schwartz, and M. Braddock. *Patterns in Special Education Service Delivery and Cost*. Contract Number 300-84-0257. Washington, D.C.: Decision Research Corporation, 1988; and S. Chaikind, L.C. Danielson, and M.L. Brauen. "What Do We Know about the Costs of Special Education: A Selected Review." *Journal of Special Education*, 26(4) (1993): 344-370.

²³ *The Condition of Education 1994*, Indicator 46.

¹⁵ *Education Counts*, 1991.

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Overview

"Why do we seek to know the condition of education? In the answer to this question will be found the reasons for the elaborate statistical record which forms a feature of all official school reports. We take an account of education so that we may know whether it is sufficient in amount and good in quality."

Henry Barnard
First Commissioner of Education

Introduction

During the 1980s, the country became increasingly aware of a range of critical national issues facing education. These issues included concerns about all children having an equal opportunity to receive a high quality education, general low academic performance, drug use and violence in the schools, unacceptably high dropout rates, the high cost of a college education, and the skills of workers lagging behind technological changes in the workplace. The 1990s have continued the emphasis expressed in the 1980s, with renewed concern over academic standards and school finance reform. These concerns continue to have serious implications, not only for schools and colleges but also for the future of individual citizens, U.S. economic competitiveness, and ultimately the structure and cohesiveness of American society and culture.

The Condition of Education provides a means to report where progress is being made in education and where it is not, to draw attention to emerging issues, and to inform the ongoing policy debate.

The structure of *The Condition of Education*

A quick tour of the volume may help readers make the best use of it. The core of the volume consists of 60 indicators. Each indicator is presented on two pages, with findings summarized in accompanying text, tables, and graphics. Also included in the back of the volume are supplemental tables providing additional details, and sometimes an explanatory note on a technical or data-related issue.

The 60 indicators are organized into six sections:

- Access, Participation, and Progress;
- Achievement, Attainment, and Curriculum;
- Economic and Other Outcomes of Education;
- Size, Growth, and Output of Educational Institutions;
- Climate, Classrooms, and Diversity in Educational Institutions; and
- Human and Financial Resources of Educational Institutions.

Instead of separating the indicators on elementary and secondary education from those on postsecondary education, the volume integrates issues ranging from early childhood education to postsecondary education into each of the six sections.

One can find information on an issue either by turning to the table of contents, which lists the 60 indicators, or by using the index, which references not only the indicators but also the supplemental tables. When an updated indicator is not available in this volume, the index lists the indicator number and edition of *The Condition of Education* that last published an indicator on that topic.

Preceding each section of indicators is a two-page overview that interprets and summarizes some of the findings in that section as they relate to an important issue. In addition, this overview summarizes results drawn from throughout the volume as they relate to particular issues that cut across the six sections.

At the bottom of each indicator page, readers can locate the source of the data for the indicator. The indicators presented in this report have been developed using data from studies carried out by NCES as well as from surveys conducted elsewhere, both within and outside of the federal government. A description of each source is provided starting on page 455. Sometimes more knowledge about the type of survey used to gather the data can help readers interpret the indicator. Because some of the terms used may not be familiar to all readers, a glossary is provided starting on page 485.

In the remainder of this section, we pull together evidence from both the 60 indicators and other sources on four important education issues:

- Access to preschool education;
- Trends in the achievement and attainment of Hispanic students relative to whites;
- Progress in the achievement and attainment of women; and
- The cost of higher education.

These issues were selected, first because of their importance to current policy discussions, and second because a substantial amount of new information on these issues has been included in this volume and other recent NCES publications. In the 1994 edition of the *Condition*, essays were included on high school students 10 years after *A Nation At Risk*; teachers as an educational resource; the educational progress of black students; and sub-baccalaureate postsecondary education.

References to indicators and tables contained in this volume appear in parentheses. The tables cited are in the supplemental tables section, which start on page 169. Occasionally, there are references to indicators found in a previous edition of *The Condition of Education*; these can be recognized by the year following the reference. References to sources other than *The Condition of Education* are footnoted.

Access to preschool education

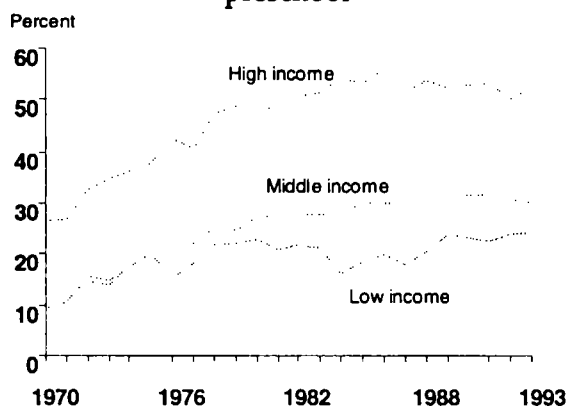
Today, many parents enroll their children in some form of preschool, which means that kindergarten is no longer the child's first experience with group educational programs. Many early childhood experts believe that children who have been involved in high quality group care or nursery school are better prepared for formal schooling. There is substantial evidence of the short-term effects (e.g., achievement test gains) of attending a high quality early childhood program, and there is some evidence of long-term effects (e.g., an increased likelihood of completing high school).¹ The National Education Goals stress the importance of access to quality early childhood programs. Goal 1 states, "By the year 2000, all children will start school ready to learn." This

goal underscores the role that children's early experience plays in preparing them for successful schooling. Thus, the first objective associated with this goal states that all disadvantaged and disabled children will have access to high quality and developmentally appropriate preschool programs that help prepare them for school. Differences in enrollment rates in early childhood education across family income and race/ethnicity may indicate differential access to this important educational resource. Differences in the knowledge and behaviors of students in these subgroups may be associated with variability in the quantity and quality of early childhood care and instruction.

Do enrollment rates in preschool differ by family income?

Children from lower income families have lower participation rates in preschool. In 1973, the enrollment rates in preschool for 3- to 4-year-olds from low income families was about 20 percentage points lower than those of their counterparts from high income families (15 versus 35 percent). By 1993, enrollment rates for children from both income groups had increased, and the gap between those from low and high income families widened to 28 percentage points (24 versus 52 percent) (*Indicator 2*). The Head Start program has substantially increased the proportion of low income children enrolled in preschool; however, in the early 1990s, it still served fewer than one-half (40 percent) of eligible 4-year-olds, and fewer than 20 percent of eligible 3-year-olds.²

Percentage of 3- to 4-year-olds enrolled in preschool

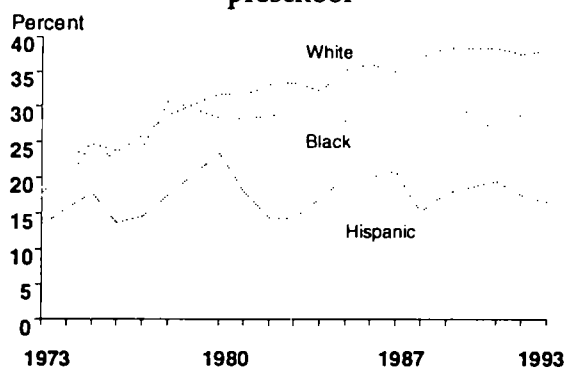


SOURCE: *Indicator 2*.

Do enrollment rates in preschool differ by race/ethnicity?

During the mid-1970s, preschool enrollment rates among white and black 3- to 4-year-olds were similar. However, due mostly to increases in preschool enrollment of white 3- to 4-year-olds in the 1980s, average enrollment rates for white preschoolers were nearly 8 percentage points higher than those of blacks and 22 percentage points higher than those of Hispanics by 1993. It should be noted, however, that although white 3- to 4-year-olds were more likely than blacks and Hispanics to be enrolled in preschool, blacks and Hispanics were more likely than whites to be enrolled in kindergarten at that age. As a result, a similar percentage of blacks and whites were enrolled in some type of school program at age 3-4 in 1993. Hispanic school enrollment rates were still substantially lower that year (table 2-1).

Percentage of 3- to 4-year-olds enrolled in preschool

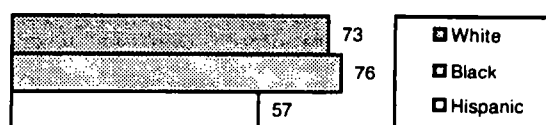


SOURCE: Indicator 2.

How do these enrollment rates change under a broader definition of early childhood education?

Early childhood experts argue that children learn in a variety of settings, and the distinction between "nursery school" (or preschool) and "child care centers" based upon their presumed differential emphasis on educational activities is not meaningful.³ Participation rates of white and black students become indistinguishable when the definition of early childhood education is broadened to include all center-based programs, including day care. For example, in 1993, 73 percent of white first-graders and 76 percent of black first-graders had attended center-based programs before entering kindergarten.⁴ A smaller proportion of Hispanic first-graders (57

Percentage of first-graders who participated in center-based early childhood programs before kindergarten: 1993



SOURCE: Indicator 3.

percent) had participated in these programs, however (Indicator 3).

As with preschool enrollment, students from families with high incomes were more likely to participate in center-based early childhood programs than were students from families of more moderate means. For example, first-graders whose families had incomes greater than \$35,000 were more likely to have attended a center-based early childhood program before kindergarten than first-graders whose families had incomes of \$35,000 or less. Among those who attended such programs, students from families with higher incomes were more likely to attend them for at least 2 years than were students from families with lower incomes (Indicator 3).

How do the enrollment rates in preprimary education in the United States compare to rates in other countries?

The number of years in which children typically participate in school before first grade varies greatly across countries. The average duration of preprimary enrollment, which includes enrollment in both preschool and kindergarten in the United States, ranges from .5 years in the United Kingdom to 3.4 years in France. The

Enrollment rates in public and private preprimary education: 1992

Country	Age			Average duration of preprimary education (in years)
	3	4	5	
	(percent)			
Canada	—	46	69	1.2
United States	29	53	83	1.8
Japan	23	58	66	1.5
France	99	101	100	3.4
United Kingdom	37	13	0	0.5
Former West Germany	31	69	79	2.6

—Not available.

SOURCE: OECD, *Education at a Glance*, 1995, table P02.

average duration of preprimary enrollment in the United States is 1.8 years. The average duration of preprimary enrollment is affected by the supply of and demand for preprimary education in each country as well as the normal starting age of primary education (first grade in the United States). For example, in the United Kingdom, where preprimary enrollment rates are relatively low at ages 4 and 5, the enrollment rates in primary education are relatively high (78 percent at age 4 and 99 percent at age 5). Canada also has a significant proportion of 5-year-olds enrolled in primary education (30 percent).⁵

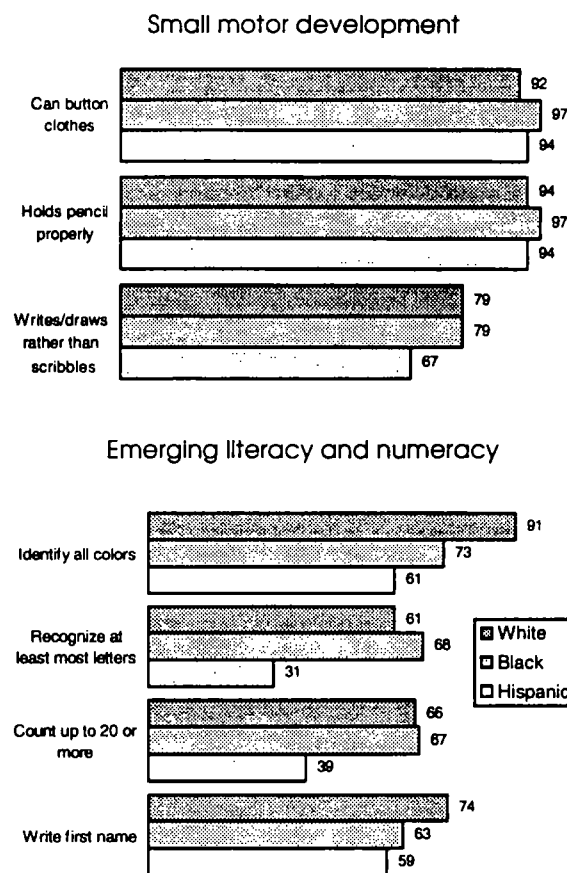
How do the skills and behaviors of children vary before kindergarten?

There are varying opinions about what skills children should possess upon entering kindergarten. Some believe that children should simply be physically and mentally healthy, while others feel it is important for students to have rudimentary skills with such things as numbers, letters, and colors.⁶ Children arrive at kindergarten with a wide variety of skills and experiences, and schools must develop programs that are sensitive to these differences. Understanding the wide range of developmental skills in kindergarten classes is an important first step to providing a quality education to the entire range of students.

A majority of parents indicate that their 4-year-olds were able to identify all colors (84 percent), recognize most letters (57 percent), count to at least 20 (62 percent), write their first name (70 percent), button their clothes (93 percent), hold a pencil properly (94 percent), and write or draw rather than scribble (table 4-1).

At age 4, a greater percentage of whites were able to identify all colors than were blacks or Hispanics. However, blacks were more likely than whites to demonstrate the ability to hold a pencil properly and button their clothes. Both black and white 4-year-olds were more likely than their Hispanic counterparts to recognize most letters of the alphabet, count up to at least 20, and write or draw rather than scribble. The parents of Hispanic 4-year-olds were also more likely than the parents of white and black 4-year-olds to indicate that their child fidgets a lot, has a short attention span, and often has tantrums (table 4-1).

Percentage of 4-year-olds not in kindergarten with selected skills: 1993



SOURCE: Indicator 4.

Furthermore, many of the skills of 4-year-olds are strongly associated with level of family income. For example, students from families with incomes above \$35,000 were more likely to be able to identify all colors and to recognize most letters of the alphabet than were students from families with incomes less than or equal to \$35,000. Differences in social and emotional development and in speech development were also associated with family income (table 4-2).

In summary, preschool attendance rates differ by race/ethnicity and level of family income, although some of these differences attenuate when the definition of early childhood education is expanded to include all center-based care. Moreover, the average duration of preprimary enrollment varies across countries. The average duration of preprimary enrollment in the United States is shorter than among students in France, but longer than among students in the United

Kingdom. The skills that children bring to kindergarten also vary by both race/ethnicity and family income, although opinions about how well-prepared children should be upon entering school vary widely.

Progress in the achievement and attainment of Hispanic students

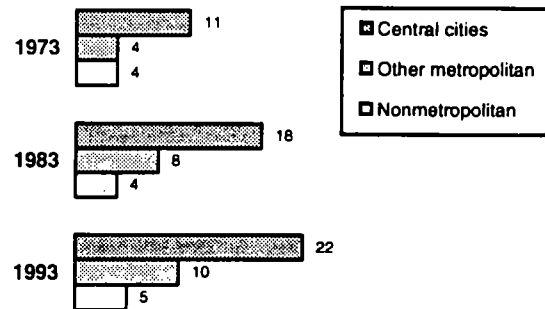
Education has always been seen as one means of upward mobility, especially for those who are socially and economically disadvantaged. Hispanic children are likely to be at an educational disadvantage relative to whites for several reasons, including lower average levels of parental education and a greater likelihood of living in poverty. A larger percentage of Hispanic students attend disadvantaged schools where the overall academic and supporting environments are less conducive to learning.⁷ In addition, a much higher proportion of Hispanics than non-Hispanics are foreign born. As a result, Hispanic children are less likely to hear or speak English at home and are more likely to have limited English proficiency. Furthermore, Hispanic children are much more likely to experience poverty than white children. In 1992, 39 percent of Hispanic children compared to 16 percent of white children lived in families with an income level below the poverty line (*Indicator 47, Condition 1994*).

Although limited data availability often leads researchers to treat Hispanics as if they were a homogeneous group, the U.S. Hispanic population is diverse. The three largest Hispanic subgroups are Mexican Americans, Puerto Ricans, and Cubans. Recent immigrants from Central and South America constitute a fourth group. These subgroups are concentrated in different parts of the United States, their economic circumstances vary, and the timing of their immigration differs. In this overview, the additional breakouts for the largest Hispanic subpopulations will be made when possible.

Hispanics are the fastest growing ethnic group in the United States, increasing from 6 percent of public school enrollment in 1972 to 12 percent in 1993. In 1993, 2 out of 10 students attending public schools in central cities of metropolitan areas were Hispanic, up from 1 out of 10 students in 1972. In public schools located in other parts

of metropolitan areas, 10 percent of the student body was Hispanic in 1993; in private schools, 7 percent was Hispanic (*Indicator 40*). Furthermore, the ethnic isolation of Hispanic students rose between 1968 and 1992. For example, between 1968 and 1992, the percentage of Hispanic students attending schools that were 90 to 100 percent minority increased from 23 to 34 percent.⁸

Percentage of public school students who are Hispanic



SOURCE: *Indicator 40*.

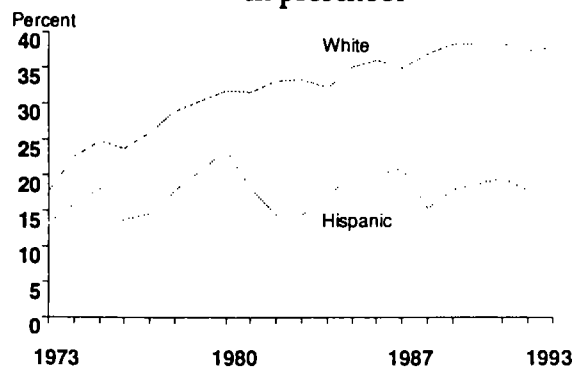
In many regards, Hispanics trail their white counterparts with respect to educational access, achievement, and attainment, although some of these differences have narrowed over time. Outlined below are some examples of the educational differences between Hispanics and whites with respect to preschool attendance, academic achievement, dropout rates, parental involvement, school climate, course-taking patterns, educational aspirations, college attendance and completion, labor market outcomes, and adult literacy levels.

Do Hispanic children start elementary school with less preschool experience than white children?

Hispanic and white children differ greatly in their extent of participation in education before kindergarten. Several federal programs, such as Head Start, a popular program for disadvantaged preschoolers, were launched to give children from low income families an early start in education. Yet, despite these programs, fewer Hispanic children are enrolled in preschool than white children, and the gap has widened over time. In 1993, 17 percent of Hispanic 3- and 4-year-olds were in preschool programs compared to 35 percent of white children. Since the mid-1970s, white enrollment rates in

preschool have increased more than 10 percentage points, while Hispanic enrollment rates have fluctuated, with the rate in 1993 approximating that in 1973 (table 2-1).

Enrollment rates of 3- to 4-year-olds in preschool



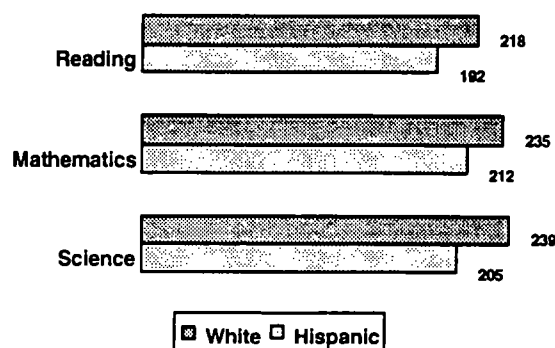
SOURCE: Indicator 2.

One possible explanation for the Hispanic-white difference in preschool participation is that the provision of preschool education is not mandatory; it is usually not offered in public schools, whereas kindergarten typically is. Limited financial resources may make it difficult for many Hispanic families to afford private preschool tuition. In 1991, a far lower proportion of Hispanic preschool students (27 percent) were enrolled in private preschools than were white preschool students (68 percent) (table 3-2, *Condition 1994*). Hispanic 3- and 4-year-olds were, however, twice as likely as their white counterparts to be enrolled in kindergarten, 10 and 5 percent, respectively, in 1993 (table 2-1).

Does the academic performance of white and Hispanic students differ in the early grades?

As early as age 9, differences can be seen in the academic performance of Hispanic and white students. Academic proficiency in reading, mathematics, and science, as measured at age 9 by the National Assessment of Educational Progress (NAEP), is lower for Hispanic children than for white children (*Indicators 13, 15, and 16*). Although scores for Hispanic 9-year-olds have increased in mathematics and science over the past 15 to 20 years, there has been little change in the gap between the scores of white and Hispanic 9-year-olds over this time period.

NAEP scores of 9-year-olds in 1992



SOURCE: Indicators 13, 15, and 16.

At age 13, the achievement gap between Hispanic and white students persists for reading, mathematics, and science, even though the gap in mathematics and science has narrowed over the past 15 years or so. In reading, the gap in scores for Hispanic and white 13-year-olds was about 30 scale points in 1975 and 1992 (*Indicator 13*). The achievement gap in mathematics narrowed between the mid-1970s and early 1980s, but has remained stable since then (*Indicator 15*). Finally, the science achievement gap narrowed considerably between 1977 and 1992 as the scores of Hispanic students showed sizable gains (*Indicator 16*).

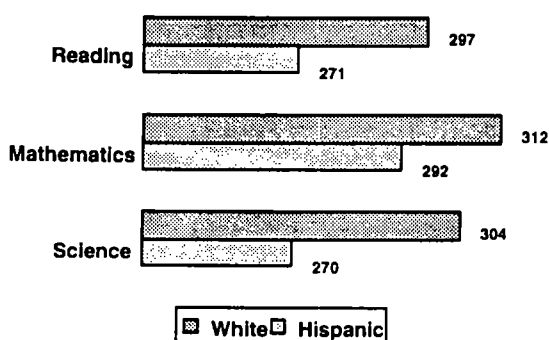
Despite the gains Hispanic 13-year-old students have made, the Hispanic-white mathematics, reading, and science achievement gaps remain large. For example, in 1992, the average mathematics proficiency scores of Hispanic 13-year-olds (259) fell about midway between the average proficiency scores of white 9- and 13-year-olds (235 and 279, respectively). This gap suggests that on average Hispanic children's level of math skills may be as much as 2 years behind that of their white peers by age 13—a deficiency that they will carry with them into high school. The size of the gap was similar in reading and was even worse in science, with Hispanic 13-year-olds scoring at about the same level (238) as white 9-year-olds (239).

Does the gap in achievement that we see between whites and Hispanics at age 13 persist in high school?

When students were tested again near the end of high school, their NAEP scores indicate a large gap in reading, writing, science, and mathematics achievement between whites and Hispanics. The Hispanic-white gap in reading

and mathematics, however, has narrowed over time. For example, in 1975, average reading proficiency among Hispanics at age 17 was well below (40 scale points) that of 17-year-old whites and also below (10 scale points) that of 13-year-old whites; in 1992, the proficiency gap was less (26 scale points) between Hispanic and white 17-year-olds, and the reading level of 17-year-old Hispanics was about the same as that of 13-year-old whites (*Indicator 13*). Most of these gains in reading were made by 1984, however.

NAEP scores of 17-year-olds in 1992



SOURCE: *Indicators 13, 15, and 16.*

The gap between the mathematics proficiency of Hispanic and white high school students has also narrowed over time, although the difference remains large. In 1973, average mathematics proficiency among 17-year-old Hispanics was 33 scale points behind that of their white counterparts, and about the same as that of 13-year-old whites; in 1992, it was 20 scale points behind that of 17-year-old whites, and 13 scale points above that of 13-year-old whites (*Indicator 15*).

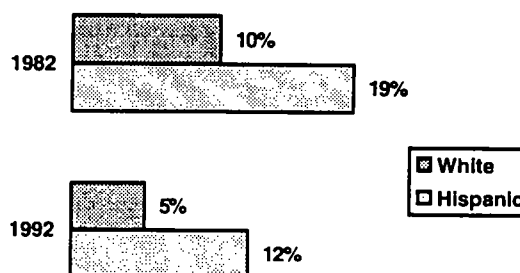
There is strong evidence that the Hispanic-white achievement gap seen at age 17 in reading, mathematics, and science begins as early as age 9. For example, the Hispanic-white differences in reading at ages 9 in 1984, 13 in 1988, and 17 in 1992 are 30, 21, and 26 scale points, respectively. In other words, the large achievement gap observed for this cohort was present at age 9, and it remained with age.

Are fewer Hispanic students dropping out of high school now than previously?

Fewer Hispanic teenagers are dropping out of high school before graduating. Although the dropout rate is still considered high by many

educators, the 10th- to 12th-grade dropout rate among Hispanics (12 percent) was substantially lower in 1992 than it was a decade earlier (19 percent).⁹ The reasons that both Hispanics and whites gave for leaving school were more often school-related than job- or family-related concerns. Three out of 10 Hispanic female dropouts reported leaving school because they were pregnant, about the same proportion as white females.¹⁰

Tenth- to 12th-grade dropout rates



SOURCE: NCES, High School and Beyond study and the National Education Longitudinal Study of 1988.

With a lower proportion of Hispanic high school students dropping out, one might expect the percentage of 16- to 24-year-old Hispanics who have *not* completed high school or earned a GED (the status dropout rate) to have declined. However, there was no measurable decline in the status dropout rate for Hispanics between 1972 and 1992.¹¹ This may be due, in part, to high dropout rates for Hispanics before 10th grade,¹² and high immigration rates for less educated Hispanic young adults who may never enter U.S. schools.

Are Hispanic dropout rates related to migration?

The length of time a Hispanic family has lived in the United States is strongly related to dropout rates for students in that family. In 1989, 43 percent of Hispanic 16- to 24-year-olds born outside the 50 states and the District of Columbia had not completed high school or a GED. The status dropout rates for first and at least second generation Hispanic Americans were considerably lower (17 and 24 percent, respectively). It should be noted, however, that Hispanic dropout rates are still double

those of non-Hispanics when the length of residency in the United States is taken into account. In other words, high status dropout rates among Hispanics are not just a problem associated with recent immigration.¹³

Status dropout rates among 16- to 24-year-olds: November 1989

Recency of migration	Non-Hispanic		
	Total	Hispanic	Hispanic (percent)
Total	13	31	10
Born outside 50 states and D.C.	29	43	8
First generation	10	17	6
Second generation or more	11	24	11

SOURCE: Current Population Survey, 1989.

How do dropout rates vary among Hispanic subpopulations?

Compared to the status dropout rate for all 16- to 24-year-old Hispanics in 1989 (31 percent), the dropout rates for Mexican Americans (36 percent) and Puerto Ricans (32 percent) were similar. However, the dropout rates for "other Hispanics" (19 percent) and Cubans (9 percent) were much lower.¹⁴

Mexican Americans made up about 64 percent of the Hispanic population in 1989, and about 74 percent of all Hispanic dropouts in this age group. Among Mexican Americans born elsewhere, the dropout rate was 55 percent; this subgroup accounted for about 48 percent of all Hispanic dropouts.

How does the learning environment of Hispanic and white students differ?

Research indicates that a safe and orderly school environment is key to effective learning. A student's achievement can be affected by the degree to which the school maintains such an environment. In 1992, Hispanic seniors were more likely than white seniors to report that disruptions by other students interfered with their learning, that fights often occurred between different racial/ethnic groups, and that they did not feel safe at their school.¹⁵ Furthermore, Hispanics were almost three times as likely as whites to report that there were many gangs in their school. Hispanics were no less likely than whites, however, to report that in their school "discipline is fair,"

the "teaching is good," and that "teachers are interested in students."

Twelfth-graders' attitudes about school climate: 1992

Statements about school climate	Percent who strongly agree or agree		
	Total	Hispanic	White
Discipline is fair	68	75	68
Teaching is good	85	89	85
Teachers are interested in students	82	84	82
I don't feel safe at this school	10	15	9
Disruptions by other students interfere with my learning	33	40	31
Fights often occur between different racial/ethnic groups	23	32	21
There are many gangs in school	16	36	13

SOURCE: NCES, National Education Longitudinal Study of 1988.

Are the parents of Hispanic students more or less likely than those of white students to be involved in their children's education?

The degree to which parents are involved in their children's education is also crucial to effective schooling. Although the vast majority of eighth-grade students reported in 1988 that they talk to their parents about school, Hispanic eighth-graders were slightly less likely than their white peers to talk with their parents about school activities, class studies, or selecting courses. Similar percentages of Hispanic and white students had parents who checked their homework and limited their going out with friends. Hispanic eighth-graders, however, were more likely than their white counterparts to report that their parents had limited their television viewing and that their parents had visited their classes (*Indicator 43, Condition 1994*).

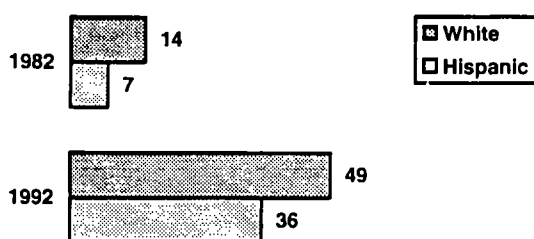
Parents of both Hispanic and white 12th-grade students reported in 1992 that they were more likely to be contacted by school personnel regarding the academic performance of their child than about their child's behavior. In general, parents of both Hispanic and white 12th-graders were contacted by school personnel for similar reasons; however, parents of Hispanic children were less likely to be asked to volunteer at school (table 44-1).

Are the course-taking patterns of white high school graduates different from those of Hispanic graduates?

The racial/ethnic background of students does not appear to affect the total number of courses

that they take and the type of curriculum that they follow. In 1992, Hispanic and white high school graduates had, on average, earned a similar number of total course units (24 each) and academic units (17 and 18, respectively) (*Indicator 23, Condition 1994*). Hispanic graduates were, however, less likely than their white counterparts to have taken the core curriculum (4 units of English and 3 units each of science, social science, and mathematics) recommended in *A Nation At Risk* (*Indicator 25*).¹⁶

Percentage of high school graduates earning the recommended credits in core courses in *A Nation At Risk*



SOURCE: *Indicator 26*.

In addition, Hispanic graduates were less likely than their white counterparts to take higher level mathematics, science, and foreign language courses. In 1992, Hispanic graduates were more likely than white graduates to have taken remedial mathematics and were less likely to have taken algebra II, geometry, or trigonometry than were white graduates (table 25-2). Although similar percentages of Hispanic and white graduates took biology, Hispanics were less likely

Percentage of high school graduates taking selected mathematics and science courses

Mathematics and science courses	1982		1992	
	White	Hispanic	White	Hispanic
Mathematics				
Remedial mathematics	27.0	48.5	14.6	24.2
Geometry	53.9	29.0	72.6	62.9
Algebra II	40.5	22.5	59.2	46.9
Trigonometry	13.8	6.8	22.5	15.2
Calculus	5.0	1.6	10.7	4.7
Science				
Biology	80.1	73.2	93.5	91.2
Chemistry	34.7	16.7	58.0	42.6
Physics	15.3	5.5	25.9	15.7
Biology, chemistry, and physics	11.2	3.7	22.6	12.8

SOURCE: Table 26-2.

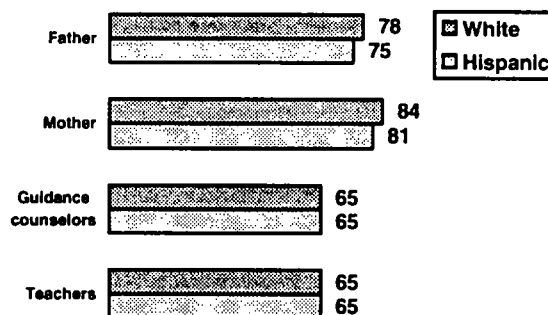
to have taken chemistry, physics, or a combination of biology, chemistry, and physics (table 25-2). However, Hispanic college-bound graduates were just as likely as their white peers to have taken at least 2 years of a foreign language in high school (*Indicator 26, Condition 1994*).

Do the educational aspirations of white and Hispanic students differ?

On average, Hispanic students have lower educational aspirations than white students. In 1990, 14 percent of Hispanic sophomores aspired to a high school diploma or less, compared to 9 percent of white sophomores. Forty-seven percent of Hispanic sophomores aspired to a bachelor's degree or higher, compared to 61 percent of whites.¹⁷

In 1990, Hispanic sophomores, however, were just as likely as whites to have teachers recommend college attendance, and to receive advice on college attendance from guidance counselors. Hispanic sophomores were also about as likely to have their parents advise them to attend college as their white counterparts (*Indicator 7, Condition 1994*).

Percentage of 1990 high school sophomores for whom college was recommended



SOURCE: NCES, National Education Longitudinal Study of 1988.

How different are college enrollment rates for Hispanic and white high school graduates?

Although Hispanic high school sophomores had lower educational aspirations than their white counterparts, college transition rates among Hispanic and white high school graduates did not differ measurably. The percentage of Hispanics enrolling in college in October following high school graduation was 58 percent in 1992, a difference that is

statistically indistinguishable from the college transition rate for white high school graduates (*Indicator 9*). Hispanics, however, were more likely to attend 2-year public colleges in 1992, where they represented 10 percent of total enrollment, than 4-year colleges and universities, where they represented 5 percent of total enrollment (*Indicator 49*).

Do Hispanic and white students study different subjects in college?

Hispanic and white degree recipients concentrated in different fields of study at both the associate's and bachelor's degree levels. In 1991, at the associate's degree level, Hispanic men were slightly less likely than white men to major in other technical/professional fields, but were more likely to major in arts and sciences. On the other hand, Hispanic women were more likely than white women to earn associate's degrees in the arts and sciences and business, but were less likely to earn degrees in health-related fields. Differences in the fields studied by Hispanics and whites at the associate's degree level narrowed for men and widened for women (*Indicator 29, Condition 1994*).

At the bachelor's degree level, in 1991, Hispanics were more likely than whites to major in social

and behavioral sciences and were less likely to major in technical/professional fields. Overall, Hispanic-white differences in the fields studied narrowed between 1977 and 1991, although almost all of the decrease occurred between 1977 and 1981 (*Indicator 30, Condition 1994*).

Do Hispanics and whites have different postsecondary persistence rates?

The persistence rates of Hispanic and white postsecondary students vary greatly by degree objective. Among beginning students whose goal in 1989–90 was a vocational certificate, a lower percentage of Hispanic students had completed one by early 1992 than had white students (32 versus 53 percent). Among beginning students who sought an associate's degree, however, Hispanic students were far more likely to have been continuously enrolled or to have reenrolled after an interruption in 1992 than their white counterparts (72 versus 53 percent). The persistence rates of Hispanic and white students pursuing bachelor's degrees were similar over this period, although whites were more likely than Hispanics to have been continuously enrolled (*Indicator 10, Condition 1994*).

Among a recent cohort of full-time students pursuing associate's and bachelor's degrees, Hispanics and whites displayed similar persistence rates. Nevertheless, young adult Hispanics in general have much lower college attainment rates than do young adult whites. In 1994, 52 percent of Hispanic high school graduates 25 to 29 years old had completed at least some college, compared to 63 percent of their white counterparts. In addition, 13 percent of Hispanic high school graduates in this age group had earned a bachelor's degree or more, compared to 30 percent of whites. These gaps in educational attainment rates between Hispanics and whites have not closed between 1971 and 1994 (*Indicator 22*).

Hispanics who do complete college take longer, on average, than whites. Of 1990 college graduates, 60 percent of Hispanic students completed in 5 or fewer years, compared to 72 percent of white students. Taking longer to graduate may result from changing schools or majors, stopping out, or

Percentage distribution of bachelor's degrees conferred

Field of study	1977		1991	
	Hispanic	White	Hispanic	White
Total degrees	100.0	100.0	100.0	100.0
Humanities and social/behavioral sciences	41.6	33.7	36.7	33.3
Humanities	19.0	16.2	17.4	16.3
Social/behavioral sciences	22.6	17.5	19.3	17.0
Natural sciences	8.2	10.0	6.2	6.2
Life sciences	5.3	5.9	4.1	3.4
Physical sciences	1.8	2.5	1.1	1.5
Mathematics	1.2	1.6	1.0	1.3
Computer sciences and engineering	5.3	5.8	9.7	8.6
Computer sciences	0.5	0.7	2.5	2.0
Engineering	4.8	5.1	7.2	6.6
Technical/professional	44.9	50.5	47.4	51.8
Education	16.3	15.5	9.6	11.1
Business and management	13.9	16.5	21.4	22.9
Health sciences	4.6	6.4	4.7	5.5
Other technical/professional	10.1	12.1	11.7	12.3

SOURCE: Table 30-2, *Condition 1994*.

taking a reduced course load for financial, academic, or personal reasons. The additional time in college can be costly to the individual, as it delays entrance into the full-time labor market (*Indicator 6, Condition 1993*).

Are there gender differences in degree attainment for Hispanics?

Hispanic women earn substantially more bachelor's degrees than Hispanic men, although both groups have made substantial gains in degree attainment since the early 1980s. The number of degrees earned by Hispanic men increased by 50 percent between 1981 and 1991, while the number earned by Hispanic women increased by 86 percent (*Indicator 31, Condition 1994*).

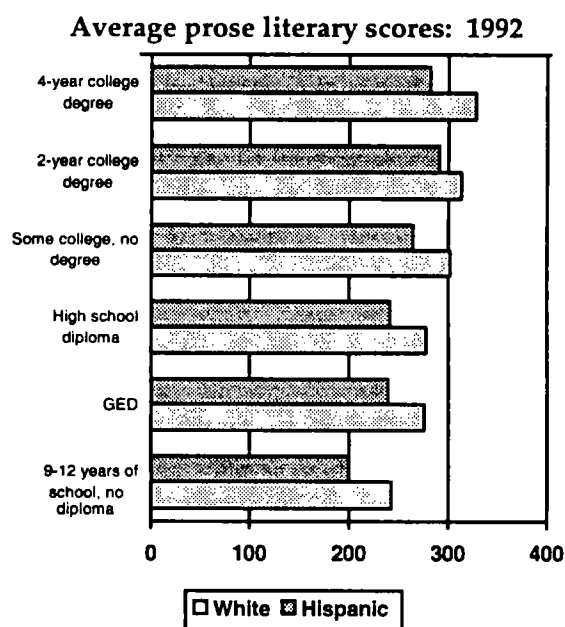
Does the relationship between education and labor market outcomes differ for Hispanics and whites?

Among both Hispanics and whites, those with more education have better employment and earnings outcomes. In 1992, 54 percent of Hispanic recent high school graduates not enrolled in college were employed, compared to 29 percent of Hispanic recent dropouts. Yet white graduates not enrolled in college were still far more likely than Hispanic graduates to be employed (*Indicator 28*).

Earnings among 25- to 34-year-old Hispanics, particularly Hispanic females, show that the incentive to pursue additional education is sizable. For example, in 1993, Hispanic males with 9–11 years of schooling earned 27 percent less than male Hispanic high school graduates; those with a bachelor's degree earned 60 percent more. Hispanic females with 9–11 years of schooling earned 30 percent less than their counterparts with a high school diploma; those with a bachelor's degree earned 82 percent more. Between 1981 and 1993, the earnings advantage of completing college increased for Hispanic males and females, as well as for white males and females (tables 30-1–3). However, Hispanic-white differentials in earnings exist at each level of educational attainment. For example, white male college graduates 25 to 34 years old earned 23 percent more in 1993 than did Hispanic male college graduates of the same age (table 30-1).

How do the literacy levels of Hispanics and whites differ?

Large gaps between the literacy skills of Hispanics and whites exist both within and across levels of education. On the National Adult Literacy Survey, Hispanics scored at levels that were similar to whites with less education. For example, Hispanics with a 4-year college degree have literacy levels resembling those of whites with a high school diploma. The difference in prose literacy between Hispanic and white college graduates is 46 points, similar to the difference between the scores of white high school and college graduates (52 points). However, the gap in literacy between Hispanics and whites is less for 16- to 24-year-olds than for 25- to 64-year-olds (*Indicator 20, Condition 1994*). The differences in the labor market opportunities of Hispanics and whites noted above may be related to the differences in the literacy levels of both groups at similar levels of educational attainment.



SOURCE: NCES, National Adult Literacy Study.

In summary, Hispanic children are less likely to be enrolled in preprimary education. Gaps in reading, mathematics, and science achievement appear at age 9, and do not narrow with age. Hispanic students are no less likely than white students to have their parents involved in their schooling, although Hispanic students are in some cases more likely to face a disorderly school

environment than their white peers. Hispanic graduates are less likely to have taken advanced science and mathematics courses than their white counterparts in high school, but are just as likely to have taken foreign languages. Even though they have lower educational aspirations than whites, Hispanic students are about as likely as whites to make the immediate transition from high school to college. However, educational attainment levels are lower among Hispanic than white young adults. For Hispanics, educational attainment is positively associated with employment and earnings, although earnings and employment rates are lower for Hispanics than for whites with the same amount of education. Hispanics have lower literacy levels than whites, both in general and at similar levels of educational attainment.

Educational progress of women

Over the past two decades, women have made important advances in their educational attainment. The large gaps between the education levels of women and men that were evident in the early 1970s have essentially disappeared for the younger generation. Despite their gains in educational attainment, however, young women still earn less than young men with similar levels of education. In 1993, the average earnings of female high school graduates aged 25 to 34 years old were 37 percent lower than those of male graduates of the same age. Female college graduates earn, on average, 20 percent less than their male counterparts (tables 30-1, -2, -3). Furthermore, these large gender differences in earnings persist after taking educational attainment and prose, document, and quantitative literacy skills into account (*Indicator 31*).

Differences in progression rates, types of courses taken, level of effort, academic achievement, and field of study may all affect the labor market opportunities of women relative to men. Below, we summarize these educational differences, focusing on those that research has shown to be related to labor market outcomes.

Do females and males progress at similar rates through school?

Generally, females start school at an earlier age than males and are less likely to fall behind.¹⁸ For example, 22 percent of 8-year-old females were below the modal (most common) grade for their age in October 1989, compared to 28 percent of their male peers. At age 13 the disparity was larger: 26 percent of females compared to 36 percent of males were below modal grade for their age (*Indicator 3, Condition 1992*).

Females are less likely to have repeated a grade than males. Nine percent of 16- to 24-year-old females had been retained in one or more grades, compared to 14 percent of their male counterparts in 1992 (table 4-1, *Condition 1994*).

Are females more or less likely than males to be placed in special education programs?

Females are far less likely than males to be enrolled in special education programs. In 1990, only one-third of special education students were female (table 42-4).

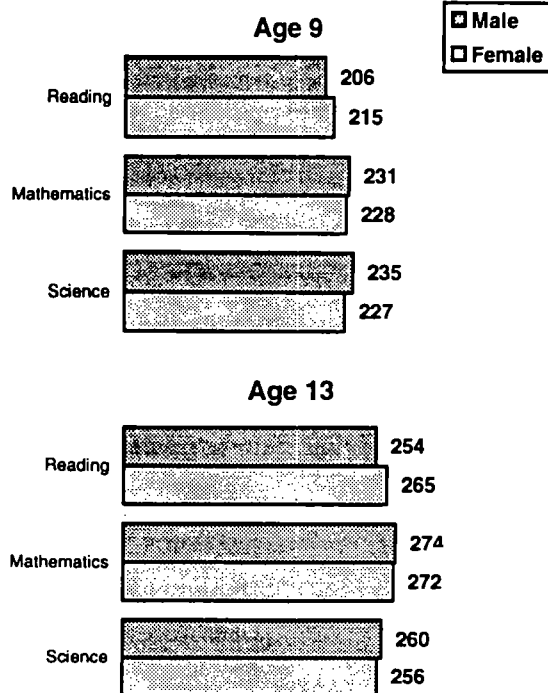
Do the achievement levels of females and males differ in the early grades?

At both ages 9 and 13, the achievement levels of females are higher in reading, similar in mathematics, and lower in science than those of males (*Indicators 13, 15, and 16*).

Do the differences that we see in the achievement of females and males at age 13 persist into high school?

When retested near the end of high school, male and female 17-year-olds varied at least as much in their achievement as they did at younger ages. For example, in 1992, average reading proficiency for females was 12 scale points higher than for males. To understand the magnitude of this difference, it is helpful to look at the difference in proficiency scores across ages in 1992. A 12-scale point difference on the NAEP reading assessment corresponds to about 40 percent of the difference between the average scores of 13- and 17-year-olds in 1992. In other words, the gap in reading proficiency between males and females is roughly equivalent to about one and a half years of schooling (*Indicator 13*). This

NAEP scores in 1992

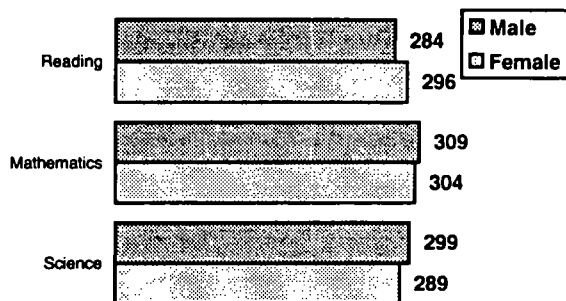


SOURCE: Indicators 13, 15, and 16.

performance difference favoring 17-year-old females in 1992 was as large as that in 1971 and as the proficiency gaps that existed at ages 9 and 13.

In mathematics and science, 17-year-old females score lower on average than males. In 1992, females scored 4 scale points lower than males on the NAEP mathematics assessment (roughly equivalent to about half a year of schooling), and 10 scale points lower on the science assessment (about a year's worth of science). Although both females and males have made gains in mathematics and science achievement since 1982, the gender gap for these subjects has not narrowed measurably.

NAEP scores of 17-year-olds in 1992



SOURCE: Indicators 13, 15, and 16.

Are females more or less likely than males to come to class unprepared?

Sophomore females were less likely than males to report coming to school without basic supplies in 1992. In particular, males were more likely than females to report that they usually or often come to school without books, paper and pencil, and completed homework (*Indicator 44, Condition 1994*).

Are the parents of females more or less likely than males to be involved in their child's education?

In 1988, eighth-grade females were more likely than males to report talking to their parents about selecting courses, about their school activities, and about their class studies. However, males and females were equally likely to have their parents review their homework, limit their television watching, and limit their going out with friends. However, females were less likely than males to have had their parents speak with their teacher or guidance counselor (*Indicator 43, Condition 1994*).

Do females and males take different courses in high school?

Among 1992 public high school graduates, females took more credits in academic subjects than males (18 versus 17 credits), whereas in the class of 1969, males and females took about the same number of credits (15 each) (*Indicator 23, Condition 1994*). Between 1982 and 1992, the percentage of both female and male graduates who took advanced mathematics and science courses in high school increased, although for many subjects gender parity had been attained by 1982. In the class of 1992, females were less likely than males to take remedial mathematics in high school, more likely to take algebra II, and just as likely to take calculus. With respect to science, females were more likely than males to take biology and just as likely to take chemistry. Females were less likely, however, to take physics (table 26-1).

In 1992, college-bound female high school graduates were more likely than male graduates to study a foreign language for at least 2 years in high school (78 versus 67 percent). In addition, females were more than twice as likely as males to take 4 years of a foreign language (19 versus 9 percent, *Indicator 26, Condition 1994*).

Percentage of high school graduates taking selected mathematics and science courses

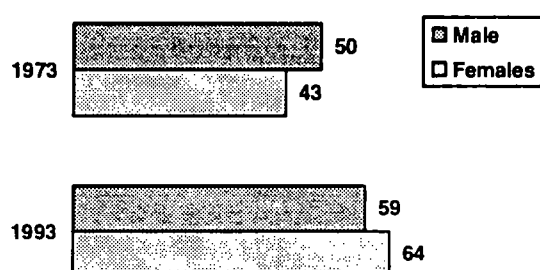
Mathematics and science courses	1982		1992	
	Female	Male	Female	Male
Mathematics				
Remedial mathematics	30	36	15	20
Geometry	49	48	72	69
Algebra II	36	38	58	54
Trigonometry	11	13	21	21
Calculus	4	5	10	10
Science				
Biology	81	77	94	92
Chemistry	31	32	57	54
Physics	9	18	21	28
Biology, chemistry, and physics	7	13	19	24

SOURCE: Table 26-1.

Do men and women differ with respect to attending college right after graduation?

Between 1976 and 1987, women and men were equally likely to enroll in college in the fall following high school graduation; but since the late 1980s, women have been slightly more likely than men to do so (*Indicator 9*). Furthermore, women are more likely than men to enroll in a 4-year college after graduation from high school. In 1993, the enrollment rate for women at 4-year institutions was 42 percent, compared to 36 percent for men. Women were just as likely as men, however, to enroll in 2-year institutions after high school graduation (table 9-1).

Percentage of high school graduates enrolling in college the October following graduation



SOURCE: *Indicator 9*.

In 1992, the majority of students enrolled in undergraduate and graduate programs were women, although more men were enrolled in first-professional programs, such as medicine, law, or dentistry.¹⁹

Have increasing college enrollment rates raised the aggregate educational attainment levels of women?

Over the past 20 years, college attainment rates among young women have increased dramatically, while rates for men remain basically unchanged. In the early 1970s, among high school graduates, about 40 percent of women aged 25–29 had completed 1 or more years of college, compared to 50 percent of similarly aged men. By 1994, a higher percentage of women than men in this age group had attended at least some college (62 versus 59 percent, table 22-2). A similar trend has occurred for female college graduates. In the early 1970s, among high school graduates, about 20 percent of women compared to 27 percent of men aged 25–29 had completed 4 or more years of college. By 1994, a similar percentage of men and women in this age group had earned a bachelor's degree or more (table 22-3).

How have women progressed with respect to the number of degrees earned?

Data on the number of degrees conferred demonstrate even more clearly the educational progress of women relative to men. In 1992, more associate's, bachelor's, and master's degrees were awarded to women than to men, whereas in 1977 the reverse was true. Though fewer doctoral and first-professional degrees were awarded to women than to white men in 1992, the gap has narrowed considerably.²⁰

How do the college course-taking patterns of women and men differ at the undergraduate level?

Similarities in the mathematics and science course taking (except for physics) of women and men in high school disappear when examining college transcripts. Among 1985–86 bachelor's degree recipients, women were much less likely than men to have taken courses in the physical sciences, mathematics, computer science, and engineering, but were more likely to have taken courses in the life sciences (*Indicator 28, Condition 1994*).

In the social and behavioral sciences, women were more likely than men to have taken psychology and sociology, and were less likely to have taken political science and economics. Many of these differences, however, are linked to differences in choice of college major.

Women and men tend to study different fields in college, despite a narrowing of differences for undergraduates and in some fields for graduates. At the bachelor's level, women were about three times as likely as men to graduate with degrees in education in 1991–92, but this represented a decline from 1971. Women are also far more likely than men to major in English, foreign languages, communications, psychology, and the health professions and related fields. Although the differences between men and women with respect to field of study are decreasing in the biological/life sciences and business, women are still less likely than men to major in these fields. Moreover, women continue to be much less likely than men to major in mathematics, engineering, the physical sciences, and computer sciences.²¹

Ratio of the proportion of bachelor's degrees earned by women in a specific field relative to the proportion earned by men

Field of study	1972	1982	1992
Biological/life sciences	0.54	0.82	0.90
Business	0.14	0.64	0.76
Communications	0.71	1.28	1.32
Computer science	0.20	0.53	0.34
Education	3.71	3.10	3.18
Engineering	0.01	0.13	0.14
English	2.36	1.90	1.66
Modern foreign languages	3.99	3.16	2.24
Health sciences	3.99	5.23	4.28
Mathematics	0.82	0.74	0.74
Physical sciences	0.23	0.34	0.41
Psychology	1.11	1.99	2.31
Social sciences	0.73	0.80	0.71

SOURCE: NCES, IPEDS/HEGIS surveys of degrees conferred.

At the graduate level, the tendency of women and men to choose different fields of study has declined in many major fields. For example, differences in the proportions of women and men earning master's degrees in the life sciences, physical sciences, computer science, and engineering have narrowed over time. Differences in the proportions of men and women earning master's degrees in business management decreased between the early 1970s and the mid-1980s when the trend leveled off. Moreover, differences in the proportions of men and women earning master's degrees in the social sciences have disappeared. However, in some fields of study, large gaps do remain. For instance, at the master's degree level, women

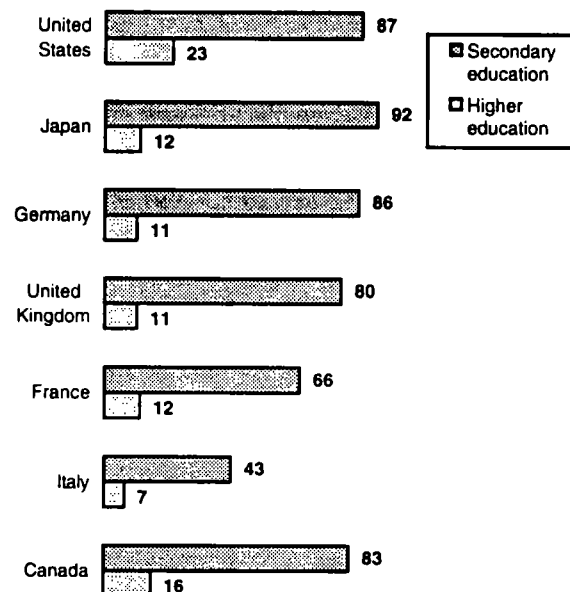
were almost three times as likely as men to earn graduate degrees in education and health professions, but only one-seventh as likely to earn degrees in engineering (*Indicator 27*).

How do the educational attainment levels of women in the United States compare to those of women in other countries?

Women in the United States generally have higher educational attainment than their counterparts in other countries. For example, in 1992 among U.S. women 25–64 years old, 84 percent had completed high school—far more than their counterparts in Japan, Germany, the United Kingdom, France, Canada, and Italy. Also, 21 percent had received a bachelor's degree or more, again far more than their counterparts in other countries (table 23-1).

In several countries, the educational attainment of younger generations of women has improved rapidly. This is evident in the fact that the attainment of women 25–34 years old was substantially higher than that for all women. As a result, the gap is closing between the educational attainment of women in these countries and the United States. For example, in Japan 92 percent of women 25–34 years old had

Educational attainment of 25- to 34-year-old females in 1992



SOURCE: *Indicator 23*.

finished secondary education, and in Germany 86 percent had done so, compared to 87 percent in the United States. Nevertheless, women 25–34 years old in the United States were still much more likely to complete higher education than their counterparts in Japan and Germany (*Indicator 23*).

In addition, in 1987, the percentage of women awarded university degrees in science and engineering fields was much higher in the United States than in other highly industrialized countries, including Japan or West Germany (*Indicator 2:8, Condition 1991*).

How have the labor market outcomes of women changed over time?

The employment rates of young women rose steadily throughout the 1970s and 1980s for those with a high school education or better (*Indicator 30, Condition 1992*). Furthermore, the gap between the employment rates for women and men narrow with increasing levels of educational attainment. For example, in 1994, the difference between the employment rates of 25- to 29-year-old males and females was 20 percentage points for high school graduates and 7 percentage points for college graduates (*Indicator 29*).

Female college graduates shared in the growth in earnings of all college graduates in the 1980s. Although, as noted above, female college graduates earn less on average than male college graduates, the earnings advantage that female college graduates enjoy over female high school graduates is greater than that enjoyed by males (*Indicator 30*).

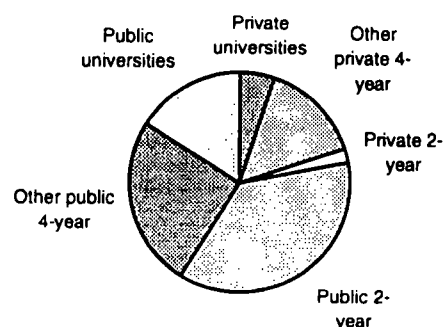
In summary, women have made important advances in education over the last few decades, closing the gender gap in educational attainment among younger women that existed 20 years ago. In high school, females read and write better than males, although they perform worse in mathematics and science. The mathematics and sciences courses that females and males take in high school are similar, with the exception that females are less likely than males to study physics. Moreover, females are more likely than males to go to college immediately after high school and are just as likely to earn degrees. Although females tend to major in different subjects than males in college, many of these differences have narrowed over time. But despite

large gains in educational attainment and labor force participation, significant differences in earnings persist between females and males, even at similar levels of education.

The cost of higher education

The answers to many important questions about higher education are determined in part by its cost. Is higher education a good investment for students? Is higher education affordable to students from middle income families? Is higher education accessible to students from low income families? Is higher education a good value? How are the costs of higher education shared between students, their families, and government?

Distribution of enrollment in higher education, by type and control of institution: 1993



SOURCE: Integrated Postsecondary Education Data System, Fall Enrollment, 1993.

These questions are interrelated with some highly publicized issues. For instance, reports of tuition charges of \$20,000 or more have raised fears that college has become unaffordable. Some believe that federal financial aid policy should help more people finance their education. Others argue that too much federal financial aid is provided in the form of loans as opposed to grants. Further, public postsecondary institutions have had to cope with smaller appropriations as governments face increased pressure on their budgets and are relying more on tuition as a source of revenue. Finally, average faculty salaries have recently been rising faster than inflation, but only after much of their purchasing power was eroded during the high inflation years of the 1970s.

Some of the statistical evidence concerning these questions and issues that is available from this and earlier editions of *The Condition of Education* (as well as other NCES publications) is summarized below.

How much have tuition charges increased?

Access to postsecondary education is partially determined by its cost to students, so any changes in this cost are understandably of great concern to students, parents, and education policymakers. When considering the possible effects of rising tuition charges on student access to higher education, it is important to keep in mind which types of institutions most students attend. In the fall of 1993, four out of five students in higher education were attending public institutions, which have much lower tuition charges than private institutions. Also, only one in four of the students attending private institutions were attending universities where tuition charges are higher than those at other private 4-year institutions.²²

Between 1980 and 1990, tuition charges increased at all types of higher education institutions, and since 1990 the rate of increase at public institutions has been greater than that at other institutions or than previously. For example, at public universities, tuition and fees grew at a rate of 4.0 percent per year (above the rate of inflation) between 1980 and 1990, but at a rate of 4.8 percent per year between 1990 and 1994. On the other hand, median family income did not keep pace with inflation. It fell in constant dollars from \$42,500 in 1980 to \$40,500 in 1993 (*Indicator 7*).

Average annual rate of increase in tuition and fees (above the rate of inflation)

	1980-90	1990-94	1980-94
	(percent)		
Public			
Universities	4.0	4.8	4.2
Other 4-year	4.0	6.3	4.7
2-year	2.7	6.3	3.7
Private			
Universities	5.2	3.8	4.8
Other 4-year	4.6	3.2	4.2
2-year	4.4	1.5	3.6

SOURCE: Table 7-2.

What have been the effects of rising costs on students?

Despite rising tuition charges, college-going rates have continued to rise, and there is no evidence

that students are switching to lower cost 2-year colleges. In 1980, 30 percent of that year's high school graduates were enrolled in 4-year colleges in October compared to 38-40 percent in the early 1990s. Between 1980 and 1993, the percentage who enrolled in 2-year colleges did not change appreciably: it rose only from 19 percent in 1980 to 20 percent in 1990 and to 22 percent in 1993. Even among low income families who may be more affected by rising college tuition, college-going rates increased significantly from 33 percent in 1980 (at both 4-year and 2-year colleges) to 47 percent in 1990 and 50 percent in 1993 (*Indicator 9*).

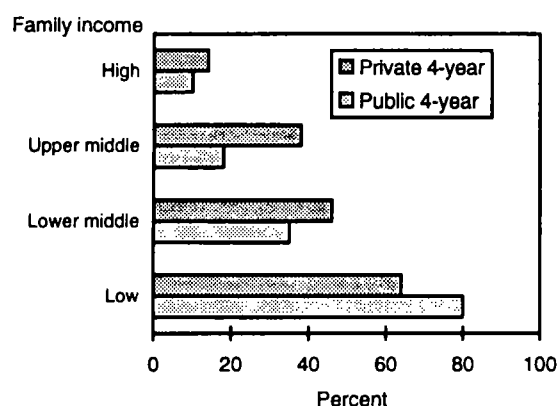
Perhaps a reason for the continuing increase in college enrollment rates in the face of rising tuition is the relative advantage that college graduates have over high school graduates in the labor market. For example, in 1994 among 25- to 29-year-old males, college graduates were much less likely to be unemployed than high school graduates (3 versus 9 percent); and their female counterparts followed a similar pattern (table 29-1). Among 25- to 34-year-old workers, males who had graduated from college earned 57 percent more and females 99 percent more than their counterparts who had graduated from high school (*Indicator 30*).

Furthermore, while tuition charges were rising between 1980 and 1993, the earnings premium for graduating college was also rising, and may have outweighed any negative effect of rising tuition on enrollment rates. For male workers, the premium increased from 19 to 57 percent; for female workers, it increased from 52 to 99 percent. However, these increases were largely due to a decrease in the average earnings of high school graduates, rather than an increase in the average earnings of college graduates. For example, for males the average earnings of college graduates were about \$33,000 in both 1980 and 1993; however, the average earnings of male high school graduates fell from about \$28,000 to \$21,000 over the same period (tables 30-1 and 30-3). Thus, young people today may need to acquire postsecondary education as protection from a deteriorating labor market for workers who have only a high school education.

Student financial aid, particularly from federal sources, is designed to defray some of the cost to students of attending college, particularly for

those from low income families. During the 1992–93 academic year, the average amount of grant aid allocated to dependent full-time students attending public 4-year colleges was 29 percent of the average tuition charged them (*Indicator 8*). In effect, students received, on average, a 29 percent discount on tuition charges. Because the amount of grant aid is larger for students from low income families, this percentage was higher for students from such families (80 percent) than for students from high income families (10 percent). For those attending private 4-year colleges and universities, the patterns were similar; however, for students from low income families attending private 4-year institutions, the average amount of grant aid received was a smaller percentage of their average tuition charges than for their counterparts attending public 4-year institutions (64 versus 80 percent).

Average grant aid as a percentage of average tuition charged for dependent full-time undergraduates: 1992–93



SOURCE: National Postsecondary Student Aid Study: 1992–93.

Private higher education institutions have substantially increased the amounts they are spending on scholarships and fellowships. This may allow these institutions to help those students who are most likely to need a reduction in tuition if they are to attend. At private universities, expenditures per full-time-equivalent (FTE) student for scholarships and fellowships increased from \$1,800 in 1980 to \$3,000 in 1990 and to \$3,600 in 1992 (in constant 1994 dollars). At other private 4-year colleges, the amounts were smaller, but the gains equally important—from \$1,100 in 1980 to \$2,000 and

\$2,400 in 1990 and 1992, respectively. The increases at public institutions were not as great. At public universities, scholarship and fellowship support rose from \$500 to \$900 between 1980 and 1992, and at other public 4-year colleges from \$400 to \$500 (table 55-1).

Have costs to higher education institutions risen as quickly as costs to students, i.e., tuition?

In general, expenditures per FTE student increased only moderately over the same period. At public universities, they increased about 16 percent in constant dollars from about \$15,000 to about \$17,000 between 1980 and 1992; at public 2-year colleges, they rose and fell during the 1980s, but were at a similar level in 1992 to that in 1980—\$5,700 (*Indicator 55*). They rose the most (about 43 percent) at private universities where total (education and general) expenditures per FTE student rose from about \$23,000 to \$32,000.

Expenditures in higher education, by type and control of institution: 1992

Type and control of institution	Total (1994 dollars)	Percent change since 1980	Share for instruction (percent)	Change in share since per instructor 1980
Public universities	\$17,246	16	36	-3
Private universities	32,242	43	38	0
Other public 4-year	11,654	6	43	-2
Other private 4-year	15,029	34	33	-4
Public 2-year	5,686	-1	50	0

SOURCE: Tables 55-1 and 55-2.

Instruction is the largest category of expenditure for higher education institutions, but only at 2-year colleges does it reach half of all expenditures. At 4-year institutions, the share of expenditure for instruction varied from 33 percent at private colleges to 43 percent at public colleges in 1992. Other large categories include administration, research, and operation/maintenance of plant (table 55-1). Expenditures for instruction per FTE student rose more slowly than total (education and general) expenditures at most types of institutions. For example, instruction's share of the total fell by 2 percentage points at public colleges and by 4 percentage points at private colleges. The exception was private universities where

instruction was a similar share of total expenditures in both 1980 and 1992 (table 55-2).

What factors are behind the rising expenditures per student in many sectors of higher education?

One possibility would be that enrollment fell as the large baby boom cohorts finished college, while employment of faculty and other staff remained stable. This pattern is not apparent in most sectors of higher education. The size of high school graduating classes did fall from 3.2 million in 1977 to 2.5 million in the early 1990s. However, while the graduating classes were getting smaller, enrollments at higher education institutions only leveled off during the first half of the 1980s and then continued increasing (table 36-1). Universities were the exception where enrollment grew very little between 1980 and 1992.²³ Finally, the number of staff employed in higher education increased over this period. The result of the two trends was that the number of FTE staff per 100 FTE students increased from 18.1 to 20.3 between 1983 and 1987 and was stable before (1977 to 1983) and after (1987 to 1989).²⁴

Before considering another possibility, consider the distribution of types of staff employed in higher education and the effect they may have on the quality of education. In 1991, there were approximately six FTE faculty, both instructional and research, six other professional staff, and eight other non-professional staff for every 100 FTE students in higher education.²⁵ In public elementary and secondary schools, there were six classroom teachers and another five staff for every 100 students.²⁶ Despite the similar number of faculty per 100 FTE students in higher education and elementary/secondary schools, many of the classes at colleges and universities are quite large. For example, 33 percent of the classes at research universities have 50 or more students. At liberal arts institutions, however, only 5 percent of such classes are this large (table 50-1). Between 1988 and 1993, there was little change in the percentage of classes with more than 50 students.

Another possible factor that may be contributing to rising expenditures in some sectors of higher education could be rising prices of resources utilized by institutions of higher education. If resource prices rose faster than inflation and institutions did not change the quantity of

resources employed per FTE staff, then expenditures per FTE student would rise. For example, if average faculty salaries rose faster than inflation but institutions maintained a stable number of faculty per 100 students, then expenditures per FTE student would rise—barring a reduction in the price or utilization of some other resource such as equipment, buildings, or staff benefits. It is worthwhile to focus some attention on faculty salaries, because it is likely that most expenditures at higher education institutions are for staff, as opposed to building and equipment, and one in three staff are faculty.²⁷

Although average faculty salaries fell in constant dollar terms during the high inflation period of the 1970s, the trend reversed and average faculty salaries rose significantly during the 1980s. For example, the average salary of full professors at public institutions fell from \$64,000 in 1972 to \$49,000 in 1981 (in constant 1993 dollars). It then rose during the 1980s and was \$58,000 in 1992.²⁸ At private institutions the patterns were similar. However, as was noted above, expenditures for instruction, which include expenditures for all faculty time except the part paid for by research grants and contracts, rose more slowly than total expenditures. This suggests that increased utilization or prices of other resources, including non-faculty staff, had a larger effect on expenditures than increased faculty salaries.

Finally, a possible reason for the rise in the cost of higher education over the long term is a lack of increase in productivity in higher education. Whereas, many sectors of the U.S. economy, particularly manufacturing and agriculture, have used technology and innovation to either increase the quantity or quality of goods provided with no corresponding increases in resources used, higher education is still provided in largely the same way it was when the nation was born. When productivity growth in a particular sector of the economy lags that in the rest of the economy, the cost of providing that good or service will increase.²⁹

Has tuition as a source of revenue increased in importance?

In general, the trends in revenue per FTE student followed patterns similar to those for expenditures in each sector of higher education.

With the exception of public 2-year colleges, revenue per FTE student (in constant dollars) increased at all types of higher education institutions between 1980 and 1992. At private institutions, the increase was particularly dramatic. At private universities, revenue per FTE student increased from \$22,900 to \$30,500, and at private 4-year colleges, it increased from \$11,000 to \$14,200 over this period. However, while revenue per FTE student increased, government appropriations fell (in constant dollars and as a percentage of total revenue) at all types of institutions. For public institutions, which rely heavily on government appropriations, the fall was particularly large between 1990 and 1992; even with significant increases in tuition revenue per FTE student, total revenue fell or remained steady over this period (*Indicator 56*).

The result of increasing tuition charges and declining government appropriations is that between 1980 and 1992 the share of revenue from tuition and fees increased at all types of institutions. Although public institutions rely less on tuition than do private institutions, the share of their revenue from tuition and fees increased 6 to 7 percentage points for all types of public institutions. On the other hand, these institutions rely much more heavily on government appropriations, and the share of their revenue from these sources fell 8 to 12 percentage points in all sectors. At private institutions, which rely heavily on tuition revenue, the share of revenue from this source increased 5 to 8 percentage points (table 56-2).

Is higher education still a good value?

Despite the large increase in average tuition charges, these charges remain well below total education and general expenditures per FTE student. At public institutions, average tuition charges are lower than expenditures for instruction per FTE student, i.e., excluding expenditures for administration, operation/maintenance of plant, libraries, and student services. At private universities, average tuition charges are similar to instructional expenditures per FTE student (\$13,800 versus \$12,300); however, at other private 4-year institutions, average tuition charges are higher than instructional expenditures per FTE student (\$10,200 versus \$5,000), but less than total

expenditures per FTE student (\$11,700). In most sectors of higher education, students are charged less on average than institutions spend for instruction, and some research suggests that students prefer to attend high spending institutions, particularly those where the difference between expenditures and tuition is the greatest.³⁰

The cost of college to students includes more than the expenditures for tuition; it also includes foregone earnings. It is difficult for a person with a good job or the prospect of getting one to give up that income source to enroll in higher education. The earnings and experience given up to continue education are significant, possibly greater than the tuition that must be paid.³¹ Even if the earnings of high school graduates between the ages of 18 and 23 are relatively low, they are nevertheless high when compared to average tuition charges, particularly those at public institutions. Thus, falling labor market opportunities for high school graduates may have reduced the cost of enrolling in higher education as much as rising tuition has increased it.

On the benefit side, large economic benefits appear to accrue to those who participate in higher education. Unemployment rates are lower, earnings are higher, working conditions are better, and fringe benefits are more generous for college graduates than for high school graduates. In addition, at least one of these benefits, the earnings benefit, not only has been increasing in recent years but also appears to grow larger with age.

In short, higher education still appears to be a good investment for students.

Conclusion

The Condition of Education presents data and analyses on a wide variety of issues in education. The preceding discussion has highlighted only a few of the issues presented in the 60 indicators in this volume. The reader is encouraged to read the overviews to each section for discussion of other issues, to peruse the indicators of interest, and to use the tables for additional details.

NOTES:

¹ Steven W. Barnett. "Benefits of Compensatory Preschool Education." *Journal of Human Resources* 27 (1992): 279-312.

² A. Stewart. *Head Start: A Fact Sheet*. Washington, D.C.: Congressional Research Service, 1993.

³ S. Bredekamp, ed. *Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth through Age 8*. Washington, DC: National Association for the Education of Young Children, 1987; and D. Phillips, ed. *Quality in Child Care: What Does Research Tell Us?* Washington, D.C.: National Association for the Education of Young Children, 1987.

⁴ Black students were more likely than white students in 1991 to have been enrolled in a day care center and not to have been attending nursery school, 21 versus 13 percent.

⁵ Organization for Economic Co-operation and Development, Center for Educational Research and Innovation. *Education at a Glance*. Paris: 1995, table PO2(B).

⁶ U.S. Department of Education, National Center for Education Statistics. *Public School Kindergarten Teacher's Views on Children's Readiness for School* (NCES 93-410). Washington, D.C.: 1993.

⁷ Samuel S. Peng, Deeann Wright, and Susan T. Hill. *Understanding Racial-Ethnic Differences in Secondary School Science and Mathematics Achievement* (NCES 95-710). U.S. Department of Education, National Center for Education Statistics. Washington, D.C.: February 1995.

⁸ U.S. Department of Education, National Center for Education Statistics, Common Core of Data, 1992; and U.S. Department of Education, Office of Civil Rights, Elementary and Secondary School Civil Rights Survey, 1968.

⁹ U.S. Department of Education, National Center for Education Statistics. *Dropout Rates in the United States: 1993*. Washington, D.C.: 1994, table 20.

¹⁰ *Ibid.*, table 19.

¹¹ *Dropout Rates in the United States: 1993*, figure 4.

¹² Hispanics in the 8th-grade class of 1988 were almost twice as likely as their white counterparts to drop out between 8th and 10th grade: 9.6 and 5.2 percent, respectively. See *Dropout Rates in the United States: 1993*, table 18.

¹³ Mary Frase. *Are Hispanic Dropout Rates Related to Migration?* U.S. Department of Education, National Center for Education Statistics. Washington, D.C.: 1994, table 1.

¹⁴ *Ibid.*

¹⁵ U.S. Department of Education, National Center for Education Statistics. *Digest of Education Statistics, 1994*. Washington, D.C.: 1994, table 141.

¹⁶ The panel's recommendation of 0.5 units in computer science is not included in this description; however, it is included in supplemental tables 25-1 and 25-2.

¹⁷ U.S. Department of Education, National Center for Education Statistics. *America's High School Sophomores: A Ten-Year Comparison*. Washington, D.C.: 1994, table 6.1.

¹⁸ In 1991, a higher percentage of boys than girls in first grade were age 7 or older (24 versus 18 percent). See Indicator 3 in *The Condition of Education 1993*.

¹⁹ *Digest of Education Statistics, 1994*, table 174.

²⁰ *Digest of Education Statistics, 1994*, table 234. For first-professional degrees by type of program, see tables 249, 263, and 264.

²¹ *Digest of Education Statistics, 1994*, tables 268-285.

²² *Digest of Education Statistics, 1994*, table 170.

²³ *Digest of Education Statistics, 1994*, table 170.

²⁴ *The Condition of Education 1992*, tables 54-2 and 54-3, and *Fall Staff in Postsecondary Institutions, 1991*.

²⁵ *Digest of Education Statistics, 1994*, tables 216 and 196.

²⁶ *Digest of Education Statistics, 1994*, table 82, or *The Condition of Education 1992*, Indicator 53.

²⁷ *Digest of Education Statistics, 1994*, table 216.

²⁸ *The Condition of Education 1994*, table 57-1.

²⁹ This phenomenon is widely known in the economics profession as "Baumol's disease." See Baumol, William J. "Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis," *American Economic Review*, 57 (June 1967) and Baumol, W. J. and W. G. Bowen, *Performing Arts: The Economic Dilemma*, 1967. The "disease" is the inevitable rise as the economy grows and incomes rise in the cost of some goods or services which meet three criteria: 1) slower productivity growth than in the rest of the economy, 2) increasing (relative) demand as incomes grow, and 3) lack of good alternatives to the good or service. (Higher education may be in this category, but there are plausible arguments for why it may not be, also.) If these three criteria hold for higher education, then over time its cost is likely to increase without a commensurate increase in quality or quantity.

³⁰ Ralph M. Bradburn, Duncan P. Mann, Michael S. McPherson, and Morton Owen Shapiro. "Understanding the 'Quality' Issue in U.S. Higher Education." Washington, D.C.: Pelavin Associates, Inc. (prepared for Office of Planning, Budget, and Evaluation, U.S. Department of Education), October 1991.

³¹ Most analysis of the rate of return to education by economists builds on this fact. See, for example, Jacob Mincer. *Schooling, Experience, and Earnings*. National Bureau for Economic Research, 1974.

Access, Participation, and Progress

Participation

School enrollment rates among children 6 to 14 years old are essentially 100 percent, while enrollment rates among children 3 to 5 years old and young people 16 to 23 years old have increased substantially since 1970. In 1993, the percentage of 3- and 4-year-olds enrolled in school was 27 and 54 percent, respectively, up from 13 and 29 percent in 1970. The percentage of 5-year-olds enrolled was 92 percent, up from 81 percent in 1970 (*Indicator 1*). Virtually all children now attend kindergarten before starting first grade.

When one includes all center-based programs such as Head Start, nursery school, and day care, participation rates in early childhood programs are higher. Seventy-two percent of children who were in first grade in 1993 had attended some form of center-based program before kindergarten. While blacks and whites had similar participation rates (73 and 76 percent, respectively), Hispanics had much lower rates of participation (57 percent). Of those attending center-based programs, students from families with incomes over \$50,000 were more likely than students whose family income was \$50,000 or under to attend these programs for 2 years or more (*Indicator 3*).

Enrollment rates (in schools and colleges) among 16- to 24-year-olds have also increased over the past two decades. For example, the enrollment rate of 22-year-olds was 31 percent in 1993, up from 20 percent in 1970 (*Indicator 1*). These increases may indicate that a higher proportion of high school graduates are going on to college before the age of 25, or that students are remaining in college for a longer period of time. While the *number* of 25- to 34-year-old students in colleges and universities increased between 1970 and 1993,* *enrollment rates* in general did not increase among this age group (table 1-1). The rise in the number of older students enrolled (those, aged 25 to 34) is due to an increasing number of older people in the population (the aging of those born during the post-World War II baby boom), not to an increasing *percentage* of the older population enrolling in college.

Participation in education among older adults is extensive. Among 25- to 34-year-olds in October 1993, the enrollment rate in 2- and 4-year colleges

and universities varied from 15 percent for 25-year-olds to 5 percent for 34-year-olds (*Indicator 1*). Furthermore, one out of three full-time workers and one out of six part-time workers participated in training to improve their current job skills in 1991 (*Indicator 12*).

The enrollment trends outlined above varied across racial/ethnic groups. While preschool enrollment rates among 3- and 4-year-olds increased between 1971 and 1993 for all racial/ethnic groups, the increase was larger for whites than for blacks and Hispanics. Throughout the 1980s, the percentage of white 3- and 4-year-olds enrolled in preschool increased, while the rates for blacks and Hispanics were generally stable (table 2-1). On the other hand, more black and Hispanic 3- and 4-year-olds were enrolled in kindergarten than whites of the same age. And, among 5-year-olds, there is no difference in the percentage of whites and blacks enrolled in kindergarten (table 2-2).

Access

Access to preschool may be affected by family income because nursery schools are primarily private—accounting for 62 percent of preschool enrollment in 1992 (*Indicator 37, Condition of Education 1994*)—and charge tuition. In 1993, 52 percent of 3- and 4-year-olds from high income families were enrolled in preschool compared to 24 percent of those from low income families (*Indicator 2*). This difference was larger than it was in the early 1970s. However, in 1993, over 60 percent of first graders whose family income was under \$20,000 had attended some form of center-based program before kindergarten (*Indicator 3*).

Increased access to early childhood programs should contribute to children being better prepared when entering kindergarten. Of the population of 4-year-olds not yet enrolled in kindergarten in 1993, parents reported that a majority were able to identify all colors, recognize most letters, count to at least 20, write their first name, and hold a pencil properly. Moreover, less than one-third of the parents reported that their 4-year-old had temper tantrums often, a short attention span, or fidgeted a lot. Four-year-olds from high income families, who were more likely to attend an early childhood program, displayed more skills than students from low income families. According to reports from parents in 1993, 4-year-old children from high income families (\$50,000 or

more) were more likely than those from low income families (less than \$20,000) to be able to recognize all letters and to count to 50. In addition, children from low income families were more likely to fidget and to have short attention spans than children from high income families (*Indicator 4*).

As society enters the information age, computer literacy has become more and more important. In 1993, almost 70 percent of students in grades 1 through 12 used a computer either at home or in school. The percentage of students who use computers has doubled since 1984, at which time it was 35 percent. Although as a whole a greater proportion of students use computers today, some groups of students do so less than others. In 1993, about one-half of students from high income families used a computer at home, compared to about 5 percent of students from low income families (*Indicator 5*). In addition, white students were more likely than black or Hispanic students to use a computer both at home and at school.

Access to postsecondary education is influenced by the cost of college to students and their families. Since 1980, the cost of college attendance has increased much faster than family income. Tuition and room and board at public and private institutions increased 42 and 68 percent, respectively, between 1980 and 1992. During this same period, median family income decreased by 5 percent (*Indicator 7*). Student financial aid helps reduce the cost of attending college. Among dependent, full-time undergraduates attending public 4-year institutions, the average grant aid received was 29 percent of the average tuition and fees charged during the 1992–93 academic year. This ratio varied from 80 percent for students from low income families to 10 percent for those from high income families (*Indicator 8*).

Despite the increasing cost of college attendance, the percentage of high school graduates who enrolled in college following graduation increased from 49 percent in 1980 to 62 percent in 1993 (*Indicator 9*). However, high school graduates from low income families were less likely than graduates from high income families to enroll in college (50 versus 79 percent in 1993).

Persistence

Overall, the persistence rate in high school was 96 percent in 1993; that is, 96 percent of students in grades 10 to 12 in the fall of 1992 were enrolled

again in the fall of 1993 (or had graduated during the year). The other 4 percent dropped out of school during the year or failed to return in the fall. Persistence in high school is strongly associated with family income. For students from high income families, the persistence rate was 99 percent, while the rate for students from low income families was 88 percent. A hopeful sign is that the persistence rate has gradually increased over the past two decades for students from low income families—from below 83 percent in 1973 to 91 percent in 1990, although there has been a slight drop since then, down to 88 percent in 1993. Persistence rates have improved across all racial/ethnic groups between 1972 and 1993. The persistence rates for white, black, and Hispanic students increased by 1.4, 3.7, and 4.5 percentage points, respectively (*Indicator 6*).

Although, as noted previously, more students are going on to college after high school, the data show that it is very common for college students to enroll, leave, possibly return, and not finish within the expected period of time. (*Indicator 10, Condition of Education 1994*). For example, in 1990 only one-quarter of first-year community college students were enrolled in some form of higher education the next year. And, about one-fifth of second-year community college students transferred to 4-year colleges or universities (*Indicator 10*).

For the students who reach graduate school, earning a doctorate is taking longer. The number of years in graduate school that it took students to complete their doctoral degrees increased by 1.7 years, on average, between 1970 and 1993. Among new doctorate recipients in 1993, registered time-to-degree was about 8 years for students majoring in education, the humanities, the social and behavioral sciences, and other technical/professional areas. Students who earned a Ph.D. in the natural or computer sciences or in engineering took about 6 years to finish their doctorate (table 11-1).

NOTE:

*U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1994*, table 171.

School enrollment rates, by age

- ◆ Since 1970, practically all children between the ages of 6 and 15 have been enrolled in school.
- ◆ Enrollment rates for 3- to 5-year-olds were substantially higher in 1993 than in 1970. However, most of the increase had occurred by 1980.
- ◆ Enrollment rates among 16- to 25-year-olds were higher in 1993 than in 1970. For 17- to 20-year-olds, rates decreased between 1970 and 1974 before beginning to increase. For 21- and 22-year-olds, most of the increase occurred after 1982, and for 23- and 24-year-olds most of the increase occurred after 1984. Enrollment rates among those over age 25 generally did not increase over the period (see supplemental table 1-1).

Learning occurs throughout a person's life, even though participation in formal education is generally only mandatory for those between 6 and 16. Enrollment rates of younger and older persons are an indication of the importance of formal education in the United States.

Percentage of the population enrolled in school, by age: Selected Octobers 1970-93

	Age																
October	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1970	13.2	28.7	80.6	98.9	99.7	99.8	99.9	100.0	99.9	99.9	99.7	99.0	98.1	94.1	87.2	57.8	
1980	27.6	47.2	93.2	99.4	99.5	99.5	99.7	99.6	99.7	99.8	99.7	98.7	98.5	93.9	85.2	54.6	
1992	27.7	52.1	92.4	98.6	99.3	99.3	99.5	99.3	99.3	99.5	99.4	99.4	98.9	96.3	91.9	68.1	
1993	27.1	53.9	91.8	99.0	99.4	99.5	99.5	99.4	99.7	99.8	99.4	99.4	98.3	96.3	91.6	68.9	

	Age																
October	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	
1970	45.8	39.1	30.7	20.2	16.3	14.7	12.6	10.8	9.6	7.7	7.6	6.4	7.0	5.4	5.2	5.4	
1980	43.0	33.9	30.6	22.3	16.7	13.5	12.0	11.2	10.0	8.8	7.9	8.0	8.2	6.5	6.8	6.3	
1992	54.6	46.6	41.5	29.0	21.9	17.6	13.3	10.2	10.6	7.9	7.4	7.0	7.4	5.6	4.7	5.7	
1993	54.4	45.1	40.6	30.7	22.0	18.5	15.1	10.8	8.6	8.9	8.1	7.1	6.4	5.2	5.4	5.4	

Percentage of the population enrolled in school for selected ages: Selected Octobers 1970-93

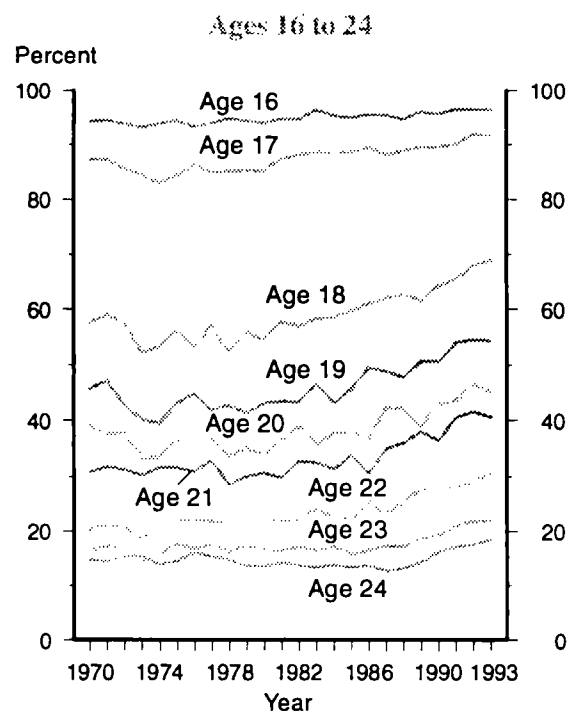
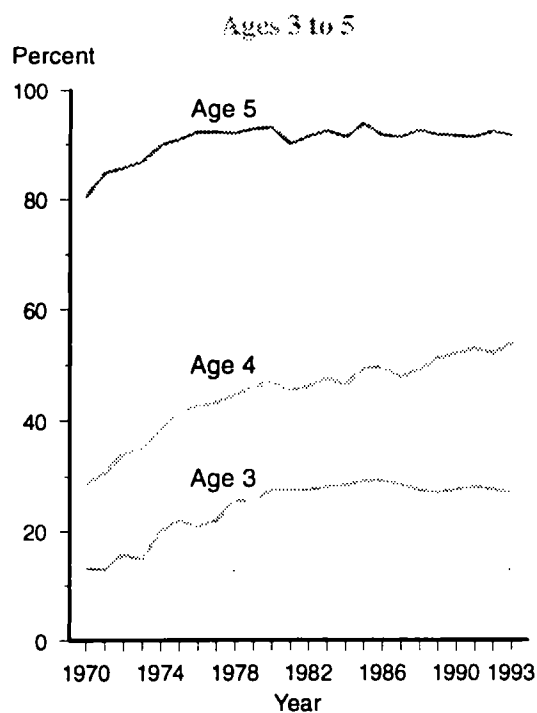
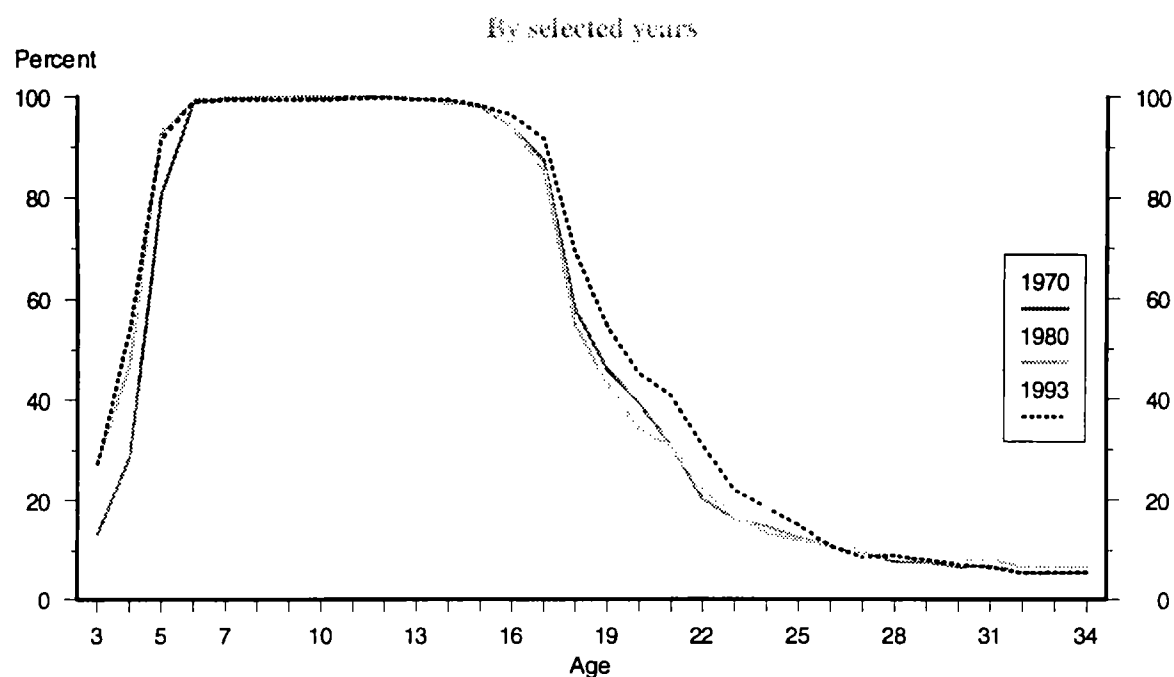
October	Age											
	3	4	5	16	17	18	19	20	21	22	23	24
1970	13.2	28.7	80.6	94.1	87.2	57.8	45.8	39.1	30.7	20.2	16.3	14.7
1972	15.8	34.0	85.7	93.8	85.6	57.5	42.7	37.8	31.2	20.5	16.9	15.2
1974	20.0	38.3	89.9	93.7	82.9	53.2	39.4	33.4	31.6	20.1	15.9	13.8
1976	20.8	42.7	92.3	93.3	86.2	53.0	44.8	37.1	30.9	22.3	16.7	16.1
1980	27.6	47.2	93.2	93.9	85.2	54.6	43.0	33.9	30.6	22.3	16.7	13.5
1984	28.5	46.5	91.4	95.3	88.5	58.6	43.1	37.7	31.4	22.5	17.2	13.8
1988	27.6	49.2	92.6	94.6	88.8	62.8	47.8	42.1	36.0	25.4	17.1	13.2
1990	(*)	(*)	93.2	95.6	89.5	64.4	50.6	42.9	36.4	28.1	19.2	16.2
1991	28.2	53.0	91.4	96.5	90.0	65.5	54.0	43.6	40.5	28.2	20.9	17.0
1992	27.7	52.1	92.4	96.3	91.9	68.1	54.6	46.6	41.5	29.0	21.9	17.6
1993	27.1	53.9	91.8	96.3	91.6	68.9	54.4	45.1	40.6	30.7	22.0	18.5

* Comparable data not available due to a change in survey procedures.

NOTE: School includes kindergartens and nursery schools but excludes day care centers, and includes 2- and 4-year colleges and universities but excludes schools with programs of strictly less than 2 years.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Percentage of the population enrolled in school, by age: Selected Octobers 1970-93



NOTE: For 1990, comparable data were not available for children ages 3 and 4 due to a change in survey procedures.
SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Enrollment rates in preprimary education

- ◆ In 1993, 34 percent of all 3- to 4-year-olds were enrolled in preschool.
- ◆ In 1973, the enrollment rate in preschool for 3- to 4-year-olds from low income families was about 20 percentage points lower than the rate for those from high income families. By 1993, enrollment rates for 3- to 4-year-olds from both income groups had increased, and the gap had widened to 28 points.
- ◆ During the 1970s, white and black preschool enrollment rates were similar. However, due to increases in white enrollment between 1978 and the late 1980s, white enrollment rates were 8 percentage points higher than those of blacks and 21 percentage points higher than those of Hispanics in 1993 (see supplemental table 2-1).
- ◆ At ages 3–4, whites were more likely than blacks to be enrolled in preschool, while blacks were more likely than whites to be enrolled in kindergarten. As a result, in 1993, a similar percentage of blacks and whites (40 and 43 percent, respectively) were enrolled in some type of school program at ages 3–4 (see supplemental table 2-1).

Within most population groups, an increasing percentage of children receive preschool instruction. This instruction contributes to the preparation of children to participate in elementary school. Many policymakers and educators believe that it is important to help children from disadvantaged backgrounds start elementary school on an equal footing with other children by involving them and their parents in preschool programs.

Percentage of 3- to 4-year-olds enrolled in preschool and kindergarten, by family income: October 1970–93

October	Enrolled in preschool				Enrolled in kindergarten			
	Total	Family income			Total	Family income		
		Low	Middle	High		Low	Middle	High
1970	14.1	9.1	11.5	26.5	6.4	5.6	6.7	6.0
1971	14.2	10.6	11.6	26.7	6.9	7.4	6.4	8.6
1972	17.9	15.6	14.4	32.7	6.5	5.4	6.4	7.6
1973	17.7	15.0	13.7	34.7	6.4	8.4	5.9	7.2
1974	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)
1975	24.4	20.2	21.4	37.7	7.1	6.5	6.8	8.4
1976	22.9	15.1	19.5	42.4	8.4	10.8	7.7	8.6
1977	24.9	18.2	22.0	40.7	7.1	7.2	6.4	9.3
1978	28.4	21.9	24.9	47.1	5.9	6.8	5.3	7.3
1979	28.7	22.1	24.6	48.7	6.4	8.0	5.9	7.0
1980	30.4	22.6	26.9	50.0	6.3	7.4	5.8	7.2
1981	30.0	20.7	27.5	46.8	6.0	4.9	5.6	8.2
1982	30.8	21.7	27.6	50.6	5.6	6.0	5.2	6.8
1983	30.9	21.1	27.7	51.5	6.6	6.2	6.0	9.2
1984	30.4	16.1	28.1	54.0	5.8	6.8	5.6	5.5
1985	32.1	18.4	30.1	53.1	6.8	9.9	6.3	5.5
1986	33.1	19.9	30.1	55.8	5.8	6.6	5.6	5.7
1987	31.8	17.9	29.7	51.4	6.4	9.5	5.4	6.4
1988	32.5	20.5	28.6	53.7	5.7	5.0	6.1	5.2
1989	34.6	23.8	31.4	52.4	4.4	4.7	4.2	4.6
1990	(²)	(²)	(²)	(²)	(²)	(²)	(²)	(²)
1991	34.1	22.4	31.5	53.2	6.4	7.3	5.7	7.6
1992	33.6	23.9	30.5	50.0	6.1	6.9	5.9	5.5
1993	33.7	24.2	30.1	52.3	6.7	8.7	6.0	6.5

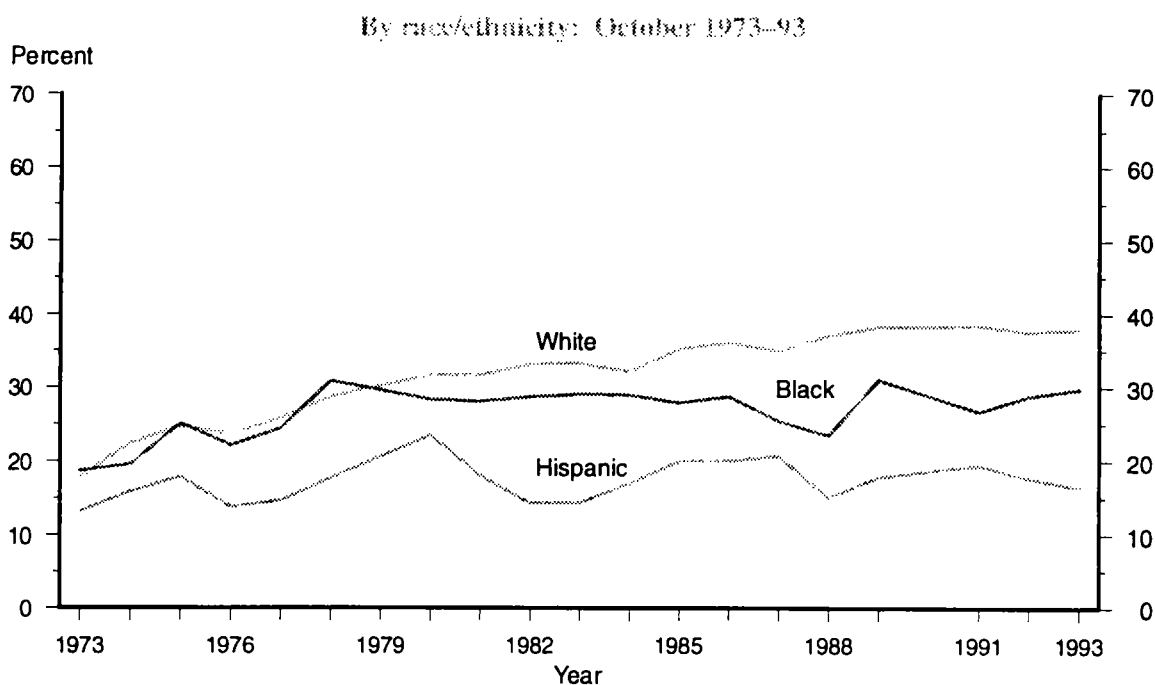
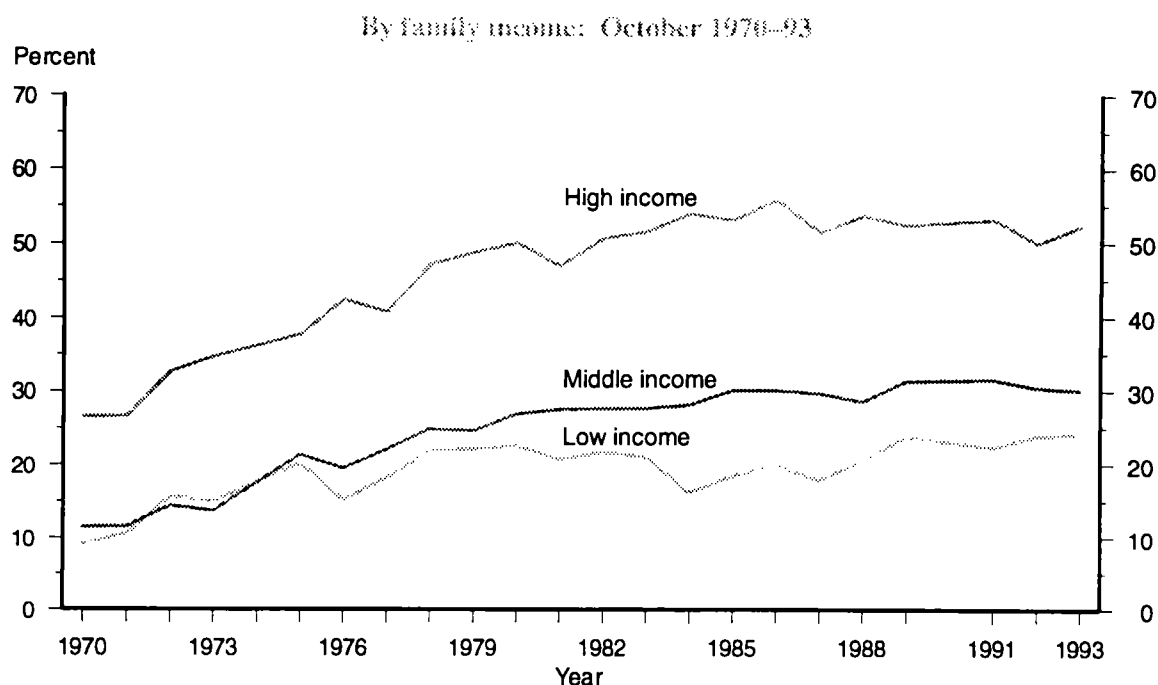
¹ Not available.

² Comparable data not available due to a change in survey procedures.

NOTE: Low income is the bottom 20 percent of all family incomes; high income is the top 20 percent of all family incomes; and middle income is the 60 percent in-between. See note to supplemental table 2-1 for information on the definition of preschool.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Percentage of children 3 to 4 years old enrolled in preschool



NOTE: Low income is the bottom 20 percent of all family incomes; high income is the top 20 percent of all family incomes; and middle income is the 60 percent in-between. For 1990, comparable data were not available due to a change in survey procedures.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Participation in center-based early childhood programs before kindergarten

- ◆ While 72 percent of all first-graders had previously attended center-based early childhood programs, a smaller proportion of Hispanic first-graders (57 percent) had participated in these programs than their white (73 percent) or black (76 percent) counterparts.
- ◆ Of those first-graders who had ever attended a center-based program, blacks were more likely than Hispanics to have attended when they were less than 3 years old. In addition, blacks were more likely (85 percent) than Hispanics (73 percent) to have attended center-based programs for at least 1 year.
- ◆ Students from higher income brackets were more likely to participate in center-based early childhood programs than students of more moderate income brackets. Of those first-graders who had ever attended a center-based program, students from families with incomes over \$50,000 were more likely than students whose family income was \$50,000 or less to have attended these programs for 2 years or more.
- ◆ First-graders in single-parent homes who had attended center-based programs were more likely to enter a center-based program at age 2 or younger than were first-graders living with two biological or adoptive parents; however, there were basically no differences in overall participation rates in center-based care across family structure (see supplemental table 3-3).

For many young children, enrollment in kindergarten is no longer their first experience with group educational programs. Moreover, many early education experts believe that children are better prepared for first grade if they have participated in some high quality group care or nursery school. Center-based programs, which include Head Start, nursery school, preschool, prekindergarten, and day care, act as a bridge between the home environment and the classroom.

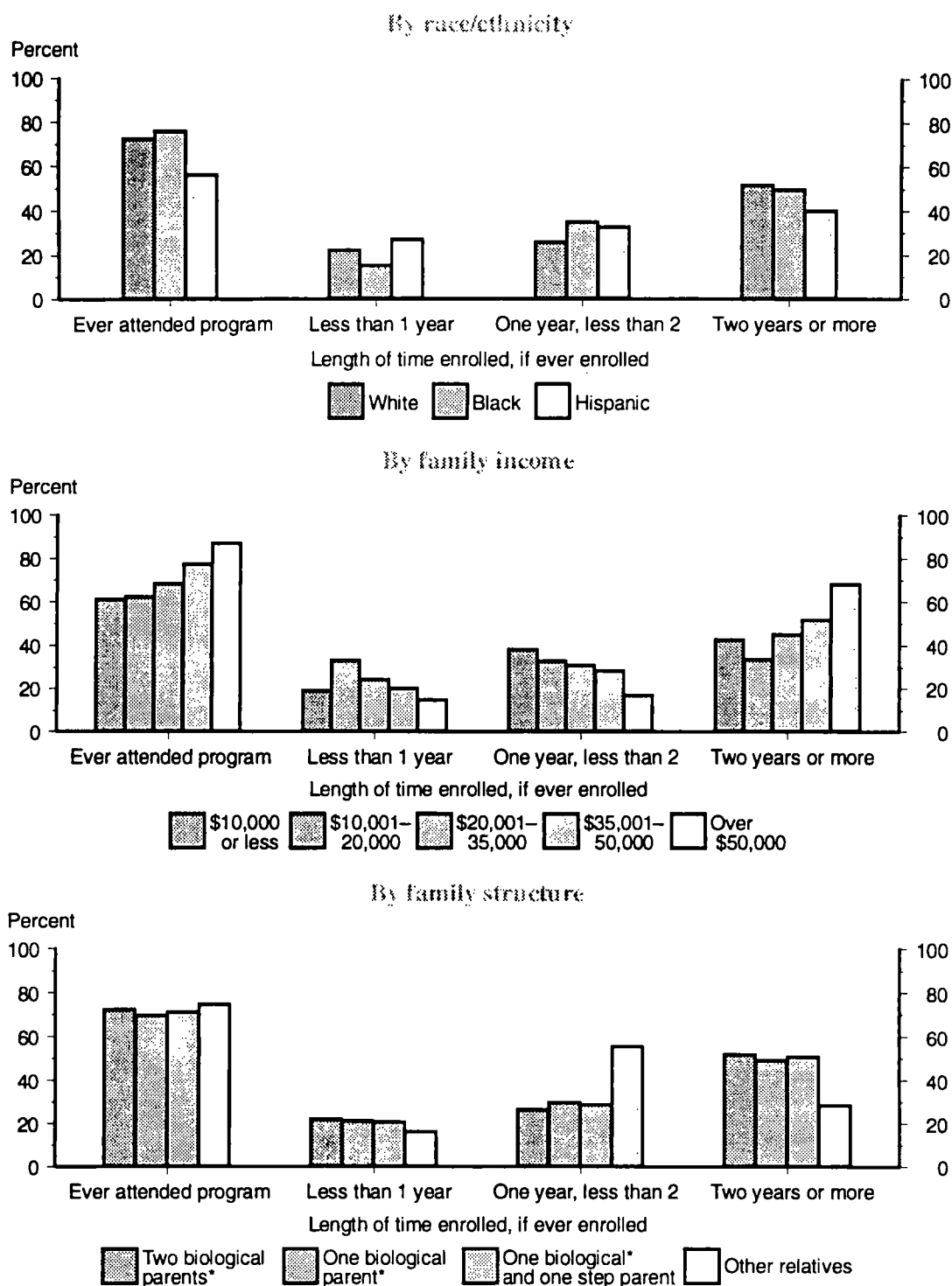
Percentage of first-graders who participated in center-based early childhood programs before kindergarten, the length of time they attended kindergarten, and selected characteristics of those who attended center-based programs, by race/ethnicity and family income: 1993

Selected characteristics	Total	Race/ethnicity			Family income				
		White	Black	Hispanic	\$10,000 or less	\$10,001–20,000	\$20,001–35,000	\$35,001–50,000	\$50,001 or more
Percentage of first-graders who ever attended a center-based program	71.5	72.6	76.2	56.6	61.3	62.5	68.5	77.4	87.2
Age at which first-graders started a center-based program (for those who ever attended)									
Less than 3 years old	26.4	25.5	33.5	19.5	24.3	23.5	24.5	25.0	32.7
3 years old	34.0	35.1	30.8	32.8	29.8	25.1	32.0	36.2	42.6
4 years old	33.2	33.1	29.0	40.1	37.9	43.7	34.9	33.1	22.1
5 years old	6.3	6.4	6.7	7.7	8.0	7.8	8.6	5.8	2.6
Length of time first-graders enrolled in a center-based program (for those who ever attended)									
Less than 1 year	21.6	22.4	15.2	27.2	19.0	33.3	24.1	19.9	14.9
One year, less than 2 years	28.4	25.9	35.1	32.6	38.2	32.9	30.9	28.3	16.9
Two years or more	50.0	51.7	49.7	40.2	42.8	33.8	45.0	51.8	68.2
Length of time first-graders attended kindergarten*									
One year	93.8	93.9	91.8	95.8	90.7	93.2	95.4	94.2	95.2
Two years or more	6.2	6.1	8.2	4.2	9.3	6.8	4.6	5.8	4.8

* Only includes those students who attended kindergarten. Less than 1 percent of the surveyed population did not attend kindergarten. Estimates based on parent reports.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), 1993.

Percentage of first-graders who participated in center-based programs before kindergarten and length of time enrolled, by race/ethnicity, family income, and family structure: 1993



* Adoptive parents are included in the category "biological parents."

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), 1993.

Skills and behaviors of 4-year-olds prior to entering kindergarten

- ◆ A majority of parents indicated that their 4-year-olds were able to identify the primary colors (84 percent), recognize most letters (57 percent), count to at least 20 (62 percent), write their first name (70 percent), and hold a pencil properly (94 percent) (see supplemental table 4-1).
- ◆ In 1993, a greater percentage of 4-year-old whites were able to identify primary colors and write their first name than were black and Hispanic counterparts. However, blacks were more likely than whites to have mastered the small motor development skills of being able to hold a pencil properly and button their clothes (see supplemental table 4-1). Blacks and whites were more likely than Hispanics to recognize all letters of the alphabet, to count up to 50 or more, and to identify primary colors.
- ◆ About a quarter of 4-year-olds often have tantrums, fidget a lot, and have short attention spans. Hispanic 4-year-olds were more likely than white and black 4-year-olds to fidget a lot and to have short attention spans. In addition, children who lived with two biological or adoptive parents were less likely to have tantrums, fidget a lot, and have short attention spans than those who lived with single parents.
- ◆ Students from families with incomes above \$35,000 were more likely to be able to identify primary colors and to recognize all letters of the alphabet than were students from lower income families (see supplemental table 4-2).

Prior to entering the school system, children receive training at home and possibly at preschool or day care centers. Children therefore arrive at kindergarten with a wide variety of skills and experiences, which must be integrated into the teaching environment. Examining the extent to which students possess certain behavioral and school-related skills provides educators with a picture of the skill levels of the students who will be entering their classes.

Skills and behaviors of 4-year-olds not enrolled in kindergarten, by race/ethnicity and family structure: 1993

Skills and behaviors	Total	Race/ethnicity			Family structure			
		White	Black	Hispanic	Two	One	One	Other
					biological'	biological'	biological'	
					parents	parent	and one step parent	relatives
Emerging literacy and numeracy					Percentage of children who can:			
Identify all colors ²	84.2	91.0	73.0	61.4	88.1	75.6	83.0	71.1
Recognize all letters of the alphabet	27.5	31.2	23.4	11.9	29.9	23.2	26.6	7.4
Count up to 50 or more	20.7	22.1	22.6	10.7	21.9	18.5	18.0	16.0
Write first name	70.3	73.7	62.9	58.8	72.4	66.6	67.3	63.9
Social and emotional skills and behaviors								
Often has tantrums	23.1	20.0	24.2	37.1	19.3	30.9	23.5	47.8
Afraid to speak to strangers	42.6	44.4	30.0	44.0	43.3	41.2	43.1	34.8
Fidgets a lot	28.8	25.1	30.9	45.4	25.5	34.1	39.2	42.5
Has short attention span	23.1	19.8	23.9	40.6	19.5	30.3	31.6	26.1
Can be left with babysitter without fuss	90.6	94.6	86.9	75.4	80.5	69.7	68.4	73.9

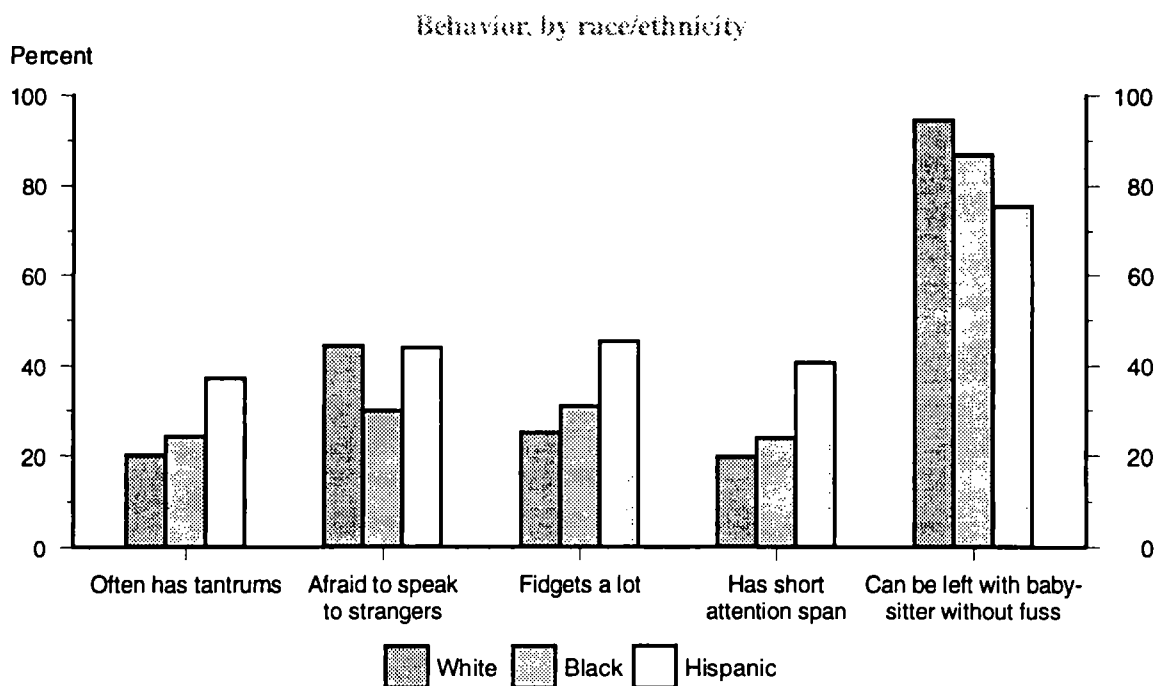
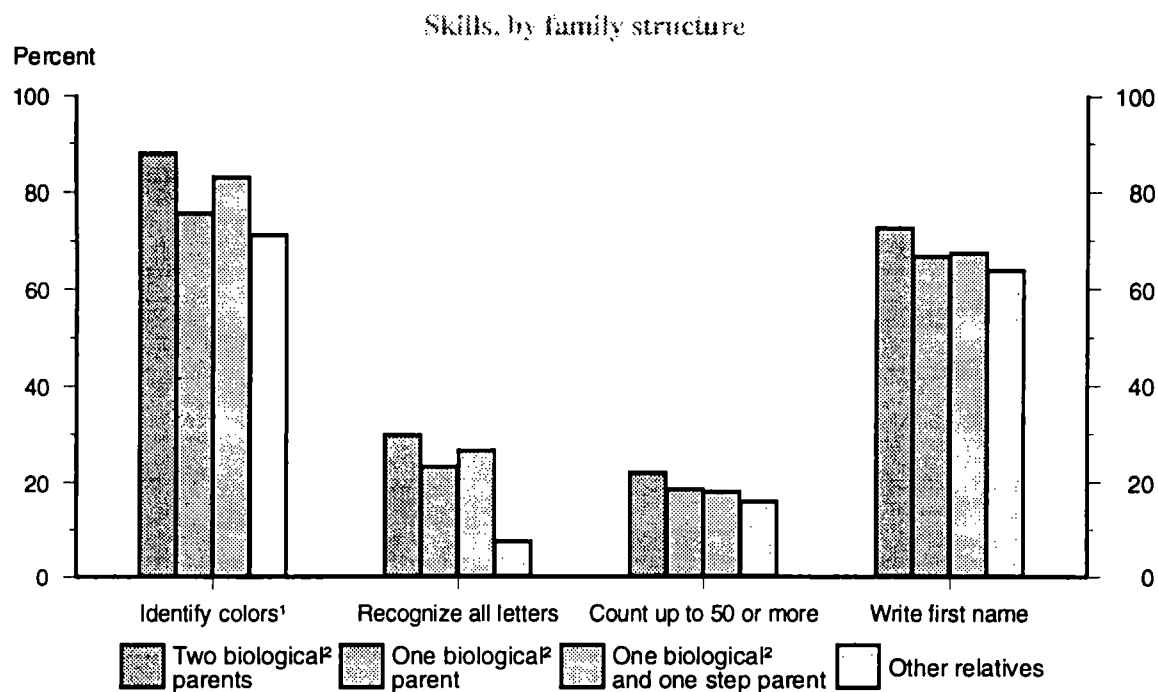
¹ Adoptive parents are included in the category "biological parents."

² Identify the colors red, blue, yellow, and green by name.

NOTE: Estimates based on parent reports, not on direct assessment or observations of children. Additional measures of behavior and skills are included in supplemental tables 4-1 through 4-4.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), 1993.

Skills and behaviors of 4-year-olds not enrolled in kindergarten, by race/ethnicity and family structure: 1993



¹ Identify the colors red, blue, yellow, and green by name.

² Adoptive parents are included in the category "biological parents."

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), 1993.

Student use of computers

- ◆ In 1993, more than two-thirds of all students in grades 1–12 used a computer either at home or at school, with a majority, 59 percent, using a computer at school.
- ◆ The percentage of students using a computer at school more than doubled between 1984 and 1993, increasing from 29 to 59 percent. Twenty-eight percent of students used a computer at home in 1993, up from 12 percent in 1984.
- ◆ Whites were more likely than blacks or Hispanics to use a computer either at home or at school, both in grades 1–6 and in grades 1–12. In 1993, approximately 40 percent of blacks and Hispanics in grades 1–6 did not use computers at all compared to 20 percent of their white counterparts.
- ◆ Between 1984 and 1993, the proportions of students in grades 7–12 who used a computer either at home or at school increased at similar levels across family income. On one hand, the gain for low income students can be explained primarily by their increased use of computers at school, which rose 32 percentage points; on the other, the gain for high income students can be explained by their increased use of computers at school, which rose 30 percentage points, and at home, which rose 29 percentage points.

In our increasingly technological society, computers are an essential tool. Exposure to computers in school may help young people gain the computer literacy they will need to function effectively in society. Many students have access to computers at home, but the amount of access is directly related to socioeconomic factors. Examining the extent to which students have access to computers either at home or in school may help predict how prepared students will be to enter an automated work force.

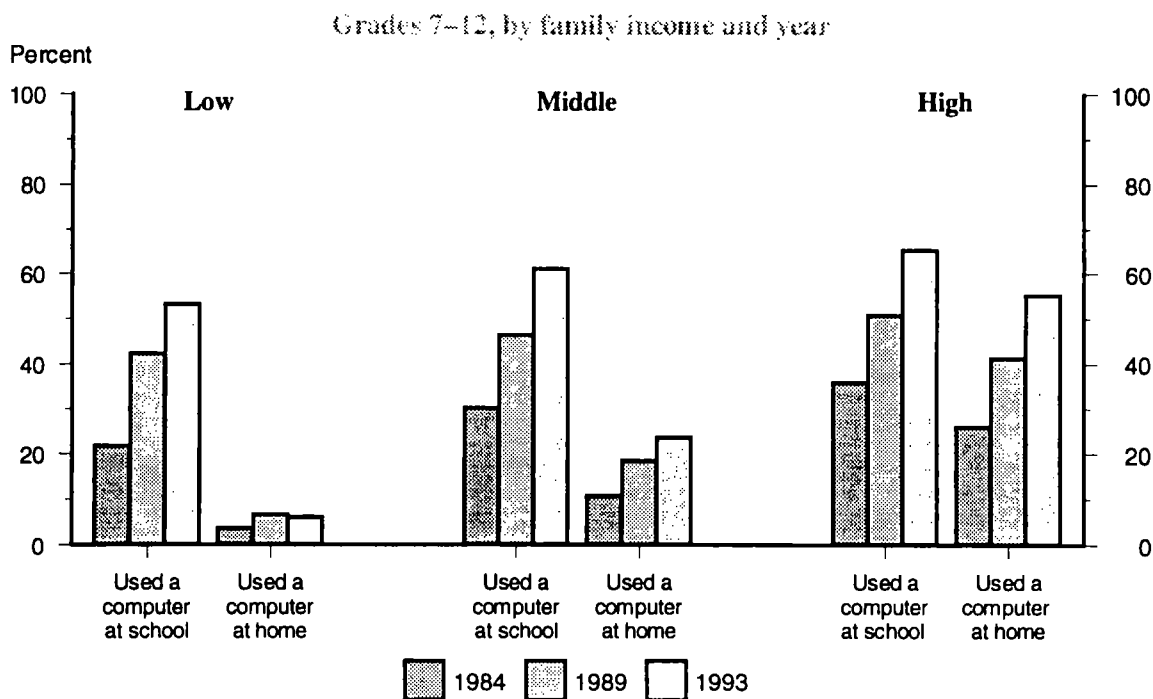
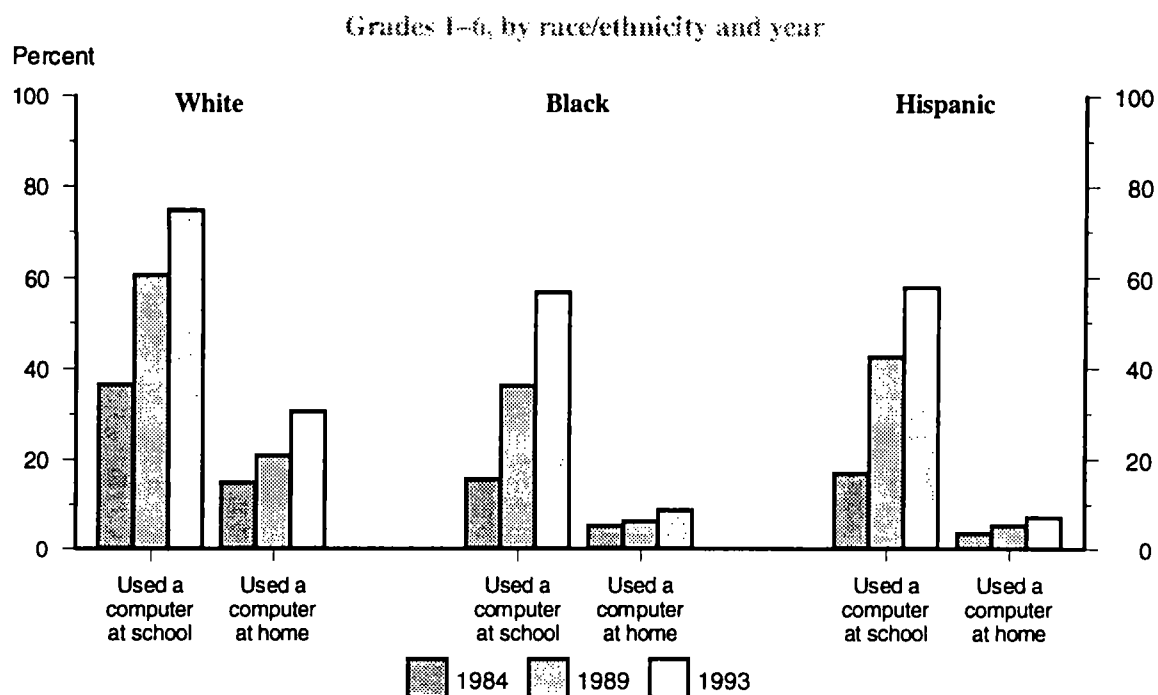
Percentage of students who used a computer at school or at home, by selected characteristics: October 1984, 1989, and 1993

Current education level, race/ethnicity, and family income level*	1984			1989			1993		
	Used a computer at school	Used a computer at home	Used a computer at school or home	Used a computer at school	Used a computer at home	Used a computer at school or home	Used a computer at school	Used a computer at home	Used a computer at school or home
Total (Grades 1–12)	28.5	12.0	35.0	45.6	19.8	53.7	59.0	27.8	68.1
Grades 1–6									
Total	31.3	12.1	37.2	54.1	16.6	58.8	69.7	24.1	74.0
White	36.4	14.8	43.4	60.6	20.9	66.3	74.9	30.5	80.1
Black	15.5	5.3	18.8	36.0	6.2	37.9	56.6	8.7	59.1
Hispanic	16.9	3.6	19.1	42.5	5.2	43.7	57.8	7.1	59.5
Low income	19.1	2.5	20.6	40.9	3.3	42.0	59.8	4.0	60.5
Middle income	30.2	10.0	35.4	54.0	13.5	58.1	69.1	18.8	72.6
High income	43.4	25.0	54.5	64.4	34.6	73.0	78.4	51.4	87.3
Grades 7–12									
Total	30.7	14.3	38.5	47.0	23.0	57.0	61.2	29.7	70.4
White	33.6	17.1	43.0	49.0	27.6	61.0	63.5	37.0	74.8
Black	20.0	5.4	22.6	41.8	9.7	45.4	55.1	11.1	58.3
Hispanic	22.9	3.9	25.1	38.9	10.2	43.3	56.7	10.2	60.5
Low income	21.8	3.6	24.3	42.3	6.6	44.9	53.3	6.1	54.8
Middle income	30.2	10.8	35.7	46.3	18.4	54.3	61.2	23.7	68.4
High income	35.8	26.1	50.4	50.9	41.3	68.9	65.5	55.3	83.0

* Low income is the bottom 20 percent of all family incomes; high income is the top 20 percent of all family incomes; and middle income is the 60 percent in-between.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Percentage of students who used a computer at school or at home, by selected characteristics: 1984, 1989, and 1993



* Low income is the bottom 20 percent of all family incomes; high income is the top 20 percent of all family incomes; and middle income is the 60 percent in-between.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Persistence in high school

- ◆ **Ninety-six percent of 15- to 24-year-olds who were enrolled in grades 10–12 in 1992 were enrolled again in 1993 or had graduated. Four percent were not enrolled in school in 1993, even though they had not completed high school. Some of these dropouts may re-enroll during a subsequent school year.**
- ◆ **The high school persistence rate for students from high income families was 11 percentage points higher than the rate for students from low income families. The difference in persistence rates between students from high and middle income families was only 3 percentage points.**
- ◆ **In 1993, for the average of the first 3 years of college (grades 13–15), blacks were less likely than whites to continue their enrollment, but those blacks who did remain in college were equally as likely as whites to advance to the next level (see supplemental table 6-2).**

Persistent attendance, measured by the proportion of students who maintain their enrollment from one school year to the next, is strongly associated with completing high school. Students who do not complete high school face a decreased opportunity for assuming a successful and fully functional place in the American work place and society at large.

Percentage of high school students in grades 10–12, aged 15–24, enrolled the previous October who were enrolled again the following October¹, by sex, race/ethnicity, and family income: October 1972–93

October	Total	Sex		Race/ethnicity ²			Family income ³		
		Male	Female	White	Black	Hispanic	Low	Middle	High
1972	93.9	94.1	93.7	94.7	90.5	88.8	86.2	93.3	97.5
1973	93.7	93.2	94.3	94.5	90.1	90.0	82.9	93.2	98.2
1974	93.3	92.6	94.0	94.2	88.4	90.1	—	—	—
1975	94.2	94.6	93.9	95.0	91.3	89.1	84.7	94.1	97.4
1976	94.1	93.5	94.8	94.4	92.6	92.7	85.0	93.3	97.9
1977	93.5	93.1	93.9	93.9	91.4	92.2	84.9	92.5	97.8
1978	93.3	92.5	94.1	94.2	89.8	87.7	82.9	92.8	97.0
1979	93.3	93.2	93.3	94.0	90.1	90.2	83.3	93.2	96.4
1980	93.9	93.3	94.5	94.8	91.8	88.3	84.5	93.7	97.6
1981	94.1	94.0	94.2	95.2	90.3	89.3	86.0	94.0	97.2
1982	94.5	94.2	94.9	95.3	92.2	90.8	85.3	94.6	98.2
1983	94.8	94.2	95.3	95.6	93.0	89.9	89.9	94.1	97.8
1984	94.9	94.6	95.2	95.6	94.3	88.9	86.8	95.0	98.2
1985	94.8	94.6	95.0	95.7	92.2	90.2	86.3	94.9	97.9
1986	95.3	95.3	95.3	96.3	94.6	88.1	89.5	95.0	98.4
1987	95.9	95.7	96.2	96.5	93.6	94.6	90.1	95.5	99.1
1988	95.2	94.9	95.6	95.8	94.1	89.6	86.6	95.3	98.9
1989	95.5	95.5	95.5	96.5	92.2	92.2	90.0	95.0	98.9
1990	96.0	96.0	96.1	96.7	95.0	92.1	90.7	95.8	98.9
1991	96.0	96.2	95.8	96.8	94.0	92.7	89.4	96.0	99.0
1992 ⁴	95.6	96.1	95.1	96.3	95.0	91.8	89.1	95.6	98.7
1993 ⁴	95.5	95.4	95.7	96.1	94.2	93.3	87.7	95.7	98.7

— Not available.

¹ Or who had completed high school.

² Not shown separately but included in the total are non-Hispanics who are neither black nor white.

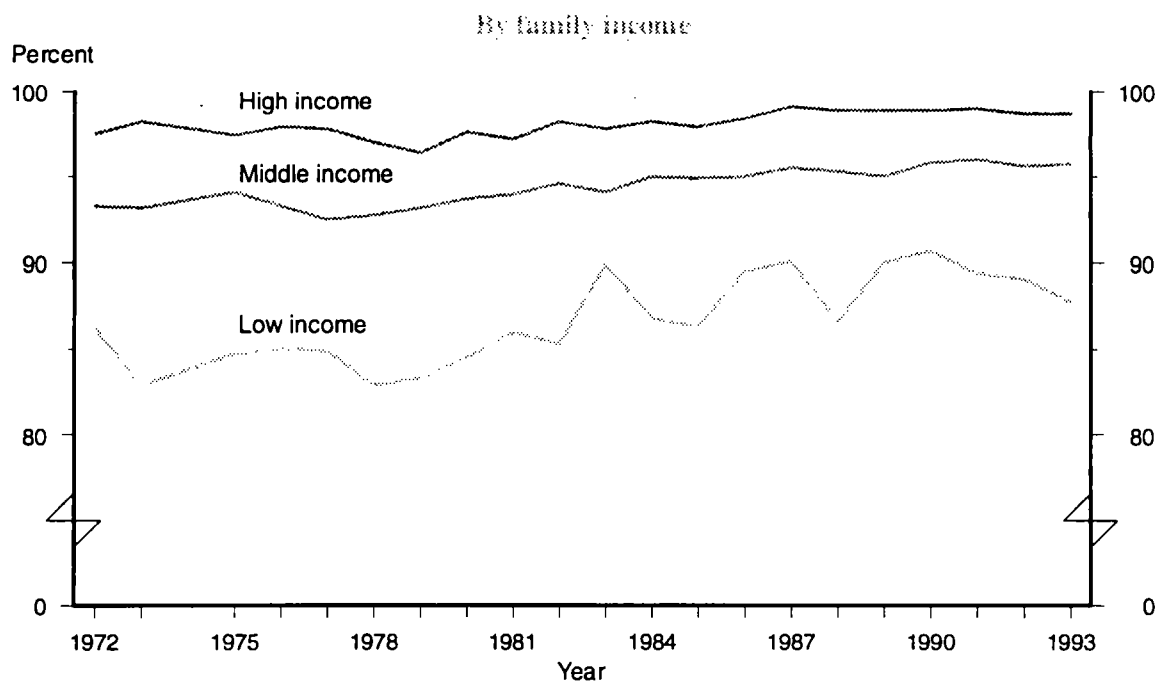
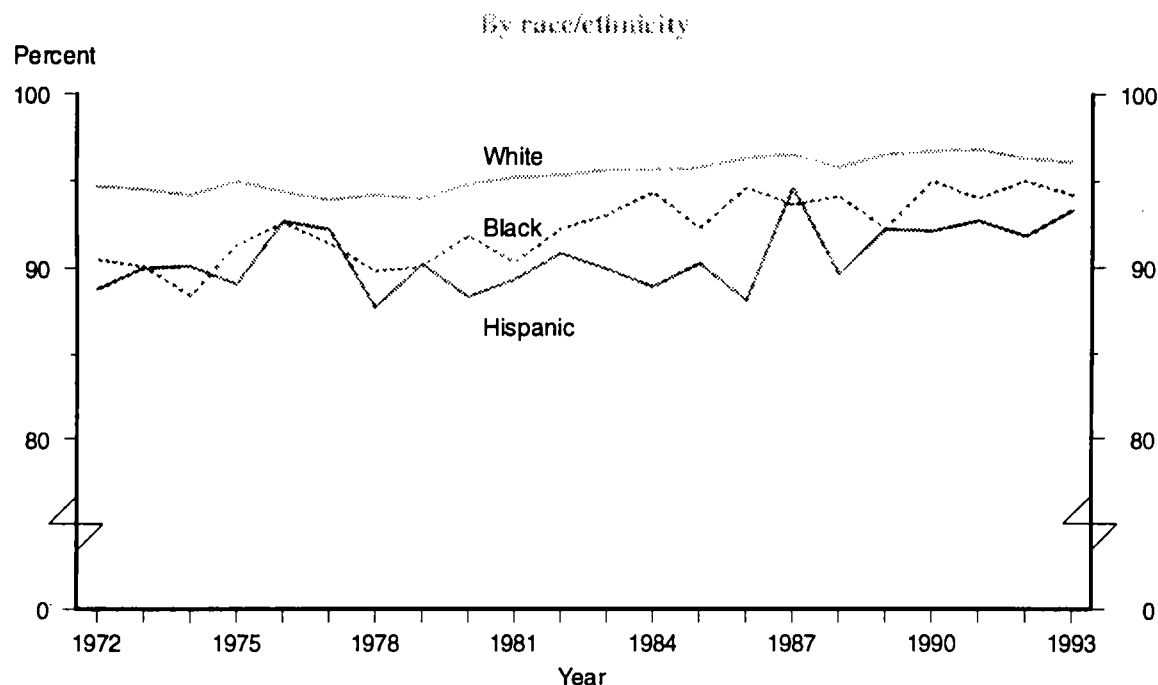
³ Low income is the bottom 20 percent of all family incomes; high income is the top 20 percent of all family incomes; and middle income is the 60 percent in-between.

⁴ Beginning in 1992, the Current Population Survey changed the questions used to obtain the educational attainment of respondents. See the supplemental note to this indicator and Indicator 22 for further discussion.

NOTE: See the supplemental note to this indicator for details on how the persistence rates in this table were calculated.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys. U.S. Department of Education, National Center for Education Statistics, *Dropout Rates in the United States: 1993*.

Percentage of high school students in grades 10–12, aged 15–24, enrolled the previous October who were enrolled again in the following October*: 1972–93



* Or who had completed high school.

NOTE: Low income is the bottom 20 percent of all family incomes; high income is the top 20 percent of all family incomes; and middle income is the 60 percent in-between.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys. U.S. Department of Education, National Center for Education Statistics, *Dropout Rates in the United States: 1993*.

College costs and family income

- ◆ Between 1980 and 1993, college costs have risen rapidly in both public and private institutions, with tuition, room, and board increasing more at private colleges than at public colleges (68 versus 42 percent in 1994 constant dollars).
- ◆ Between 1980 and 1993, tuition, room, and board at public institutions increased from 10 percent to 14 percent of median family income (for families with children 6 to 17 years old). This increase was larger for low income families than for high income families—it increased from 16 to 23 percent for families at the 25th percentile of family income compared to an increase from 7 to 10 percent for those at the 75th percentile.
- ◆ After periods of decline in the 1960s and 1970s, the tuition, room, and board at public institutions rose to a high of 15 percent of median family income (for all families) in 1993. At private institutions, tuition, room, and board as a percentage of median family income rose every year between 1979 and 1993, rising from 23 to 41 percent (see supplemental table 7-1).

A family's ability to afford college for its children depends on many factors, including tuition levels, availability of financial aid, family income and assets, and family size. Tuition, room, and board are a measure of the gross price of college. The average cost for tuition, room, and board as a percentage of family income is an indicator of the affordability of a college education.

Average tuition, room, and board (in 1994 constant dollars) and as a percent of income of families with children 6 to 17* years old at selected percentiles: 1975–93

Year	Public institutions						Private institutions					
	Constant dollars	Family income percentile					Constant dollars	Family income percentile				
		10th	25th	50th	75th	90th		10th	25th	50th	75th	90th
1975	\$4,458	31.1	16.4	10.2	7.3	5.4	\$9,802	68.4	36.1	22.5	16.0	11.8
1976	4,523	30.9	16.3	10.0	7.1	5.3	9,876	67.4	35.6	21.8	15.6	11.5
1977	4,473	30.8	16.3	9.8	7.0	5.2	9,852	67.7	35.8	21.6	15.4	11.4
1978	4,320	30.2	15.6	9.4	6.8	5.0	9,779	68.4	35.2	21.3	15.4	11.3
1979	4,139	28.0	15.1	9.1	6.3	4.6	9,390	63.6	34.3	20.7	14.4	10.5
1980	4,065	32.3	16.3	9.6	6.6	4.8	9,371	74.6	37.6	22.1	15.1	11.1
1981	4,199	34.7	17.7	10.2	7.0	5.1	9,723	80.3	41.0	23.6	16.1	11.8
1982	4,453	41.5	19.5	11.0	7.4	5.4	10,463	97.5	45.8	25.9	17.5	12.6
1983	4,601	42.4	20.4	11.5	7.5	5.4	10,947	100.9	48.4	27.3	17.9	13.0
1984	4,782	43.7	20.5	11.7	7.7	5.5	11,508	105.2	49.3	28.1	18.5	13.2
1985	4,870	43.1	20.3	11.5	7.7	5.5	12,117	107.3	50.5	28.6	19.1	13.8
1986	5,076	46.4	21.3	11.9	7.8	5.6	12,909	118.0	54.1	30.2	19.8	14.2
1987	5,188	47.7	21.7	11.8	7.8	5.6	13,466	123.8	56.2	30.8	20.2	14.6
1988	5,234	45.7	21.5	12.0	7.9	5.7	13,701	119.5	56.2	31.3	20.6	14.8
1989	5,264	43.6	21.4	12.0	7.9	5.6	14,046	116.3	57.1	32.1	21.2	15.0
1990	5,271	46.3	22.2	12.6	8.2	5.7	14,306	125.7	60.2	34.2	22.2	15.6
1991	5,514	52.3	23.9	13.2	8.7	6.2	14,933	141.7	64.8	35.8	23.6	16.8
1992	5,601	51.5	24.8	13.6	8.8	6.2	15,237	140.1	67.5	37.0	24.0	17.0
1993	5,781	58.0	22.7	14.3	10.0	6.3	15,766	158.1	61.9	38.9	27.2	17.1

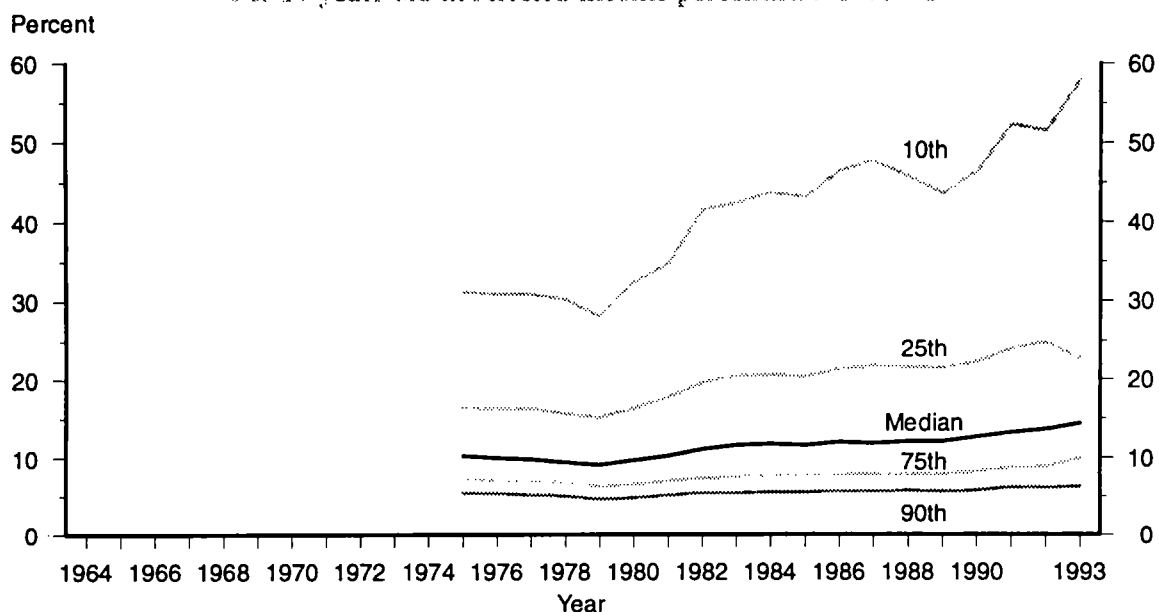
* These families may have children age 18 and older; however, they have at least one child between 6 and 17 years old, and none under 6. All families, not just married-couple families, are included. Supplemental table 7-1 provides data for a longer series of years but is based on the incomes of all families.

NOTE: Tuition, room, and board includes those for 2-year colleges, 4-year colleges, and universities. In-state tuition and fees are used for public institutions.

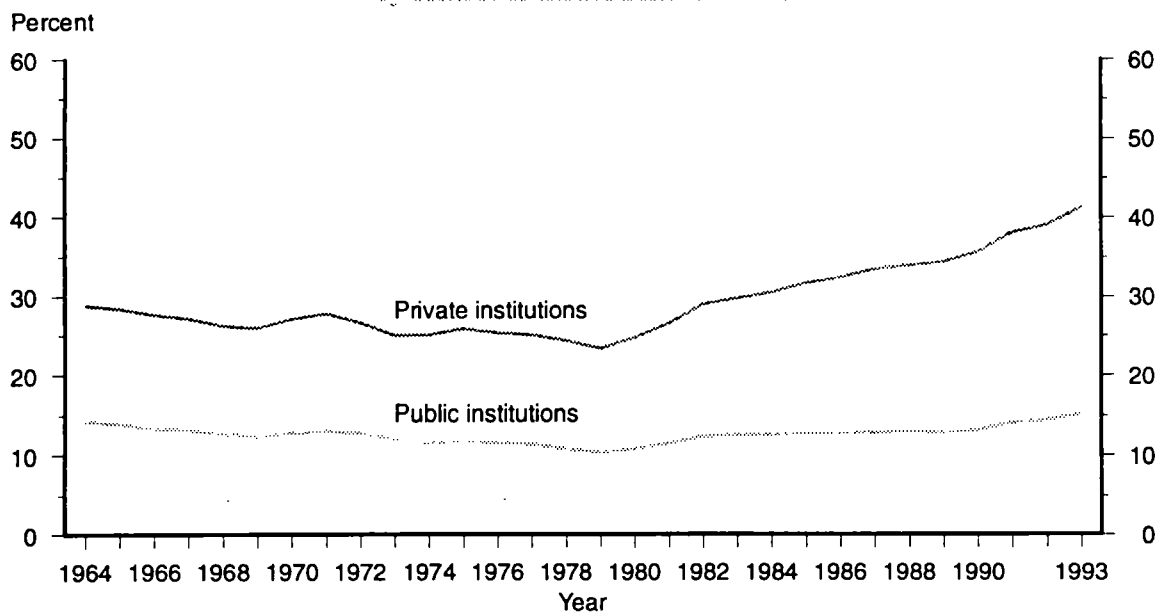
SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics*, 1994, table 304. U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, series P-60 (based on the March supplement to the Current Population Survey).

Undergraduate tuition, room, and board as a percentage of family income

For public institutions, as a percentage of income of families with children
6 to 17 years old at selected income percentiles: 1975-93



As a percentage of median income of all families,
by control of institution: 1964-93



NOTE: In-state tuition and fees are used for public institutions.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics*, 1994, table 304. U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-60 (based on the March supplement to the Current Population Survey).

Net cost of attending postsecondary education

- ◆ Among all dependent, full-time undergraduate students attending public 4-year institutions, average grant aid received was 29 percent of the average tuition and fees charged during the 1992–93 academic year. This ratio varied from 80 percent for students from low income families to 10 percent for those from high income families. This ratio also varied from 16 percent for dependent full-time students at private for-profit institutions (calculated from supplemental table 8-1) to 37 percent for those at public 2-year institutions.
- ◆ The average net cost (total cost minus total aid) was 80 percent of the average total cost (\$7,326 versus \$9,187) for dependent, full-time undergraduates attending public 4-year colleges. This ratio varied from 57 percent for students from low income families to 91 percent for those from high income families. This ratio also varied from 89 percent for students attending public 2-year colleges to 67 percent for students attending private, not-for-profit, 4-year institutions.
- ◆ Among independent, full-time students at private, for-profit institutions, the average grant aid received (\$1,346) was 28 percent of the average tuition and fees charged (\$4,748). This ratio varied from 37 to 18 percent for students with low to high household income (calculated from supplemental table 8-1).

Cost may affect a student's access to a college education. The net cost of college attendance is total cost minus total aid—that is, tuition, fees, and living expenses minus grants, loans, and work study. Net cost as a percentage of total cost is a measure of the fraction of cost that remains to be financed by students and their families after student financial aid is used. However, living expenses arguably must be incurred whether or not a student attends college, loans must be repaid, and work study is payment for work. A second measure, grant aid as a percentage of tuition and fees paid, provides an indication of the discount received on educational expenses.

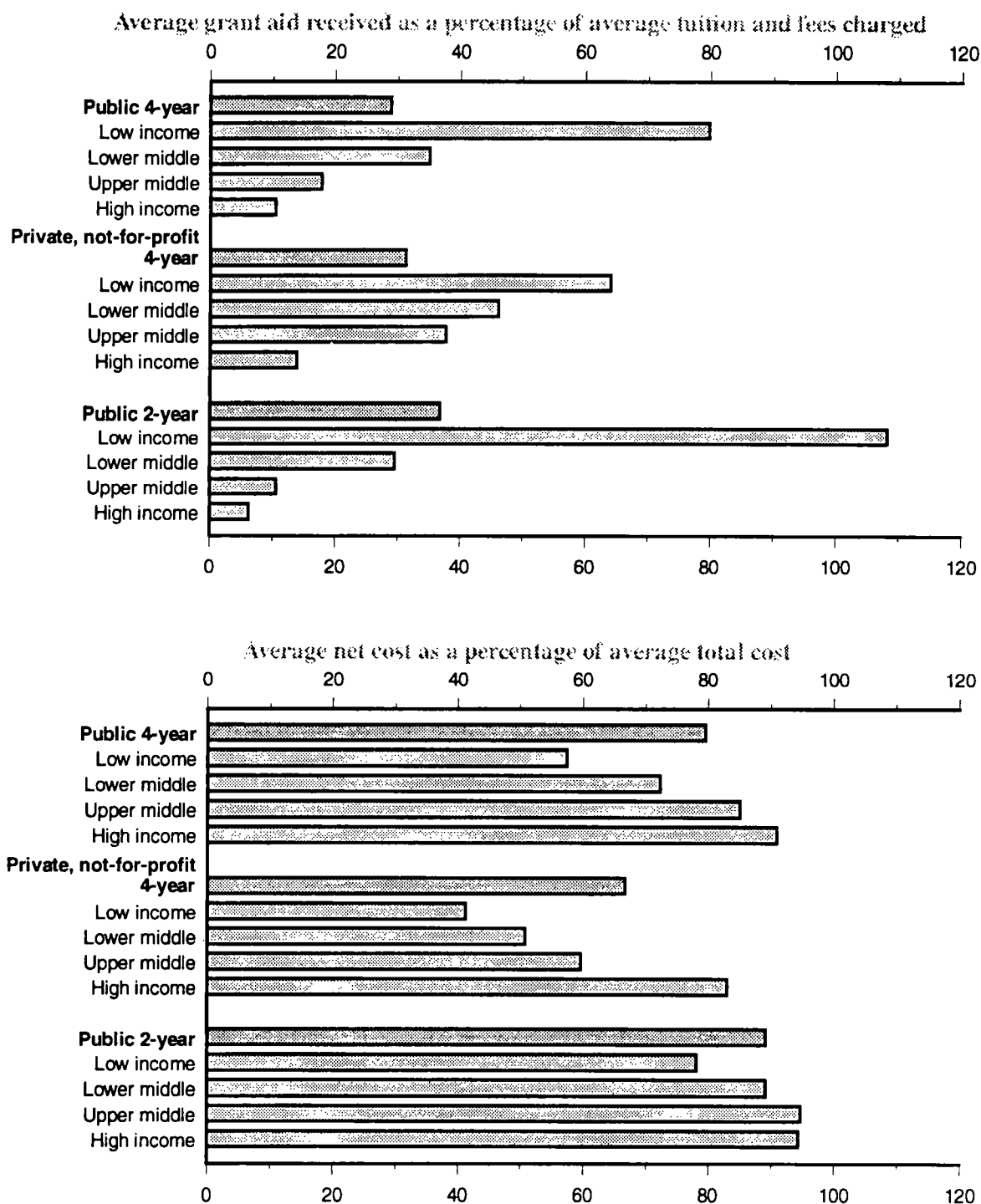
Cost of college attendance and student financial aid for dependent, full-time undergraduate students, by family income and type and control of institution: Academic year 1992–93

Type and control of institution and family income of dependent students	Tuition and fees	Total cost	Grants	Total aid	Net cost	Ratios	
						Grants to tuition and fees	Net cost to total cost
Public 4-year institutions							
Dependent, full-time students	\$2,947	\$9,187	\$855	\$1,864	\$7,326	29	80
Low income	2,559	8,820	2,041	3,746	5,070	80	57
Lower middle	2,728	8,878	961	2,422	6,426	35	72
Upper middle	2,846	8,924	509	1,331	7,598	18	85
High income	3,382	9,758	354	890	8,879	10	91
Private, not-for-profit, 4-year							
Dependent, full-time students	11,004	17,301	3,455	5,697	11,552	31	67
Low income	8,444	14,232	5,417	8,350	5,872	64	41
Lower middle	10,560	16,905	4,890	8,270	8,590	46	51
Upper middle	11,195	17,422	4,240	6,934	10,407	38	60
High income	12,399	18,958	1,736	3,150	15,752	14	83
Public 2-year							
Dependent, full-time students	1,072	6,410	395	600	5,717	37	89
Low income	948	6,199	1,027	1,322	4,848	108	78
Lower middle	1,052	5,995	312	588	5,348	30	89
Upper middle	1,134	7,060	122	247	6,686	11	95
High income	1,311	6,745	83	167	6,367	6	94

NOTE: Total cost includes budget allowances for student living expenses; total aid includes grants, loans, and work study; net cost is total cost minus total aid. See supplemental note to this indicator for more detailed definitions of concepts.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Postsecondary Student Aid Study: 1993.

College cost and student financial aid for dependent, full-time undergraduates, by type and control of institution and family income: Academic year 1992-93



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Postsecondary Student Aid Study: 1993.

Immediate transition from high school to college

- ◆ Sixty-two percent of 1993 high school graduates were enrolled in college the October following graduation—22 percent in 2-year colleges and 39 percent in 4-year colleges.
- ◆ Between 1973 and 1993, the proportion of high school graduates going directly to college increased from 47 to 62 percent. Historically, more students enroll in 4-year colleges, but the proportion of students choosing 2-year colleges was higher in 1993 than in 1973.
- ◆ High school graduates from low income families were twice as likely to go directly to college in 1993 than in 1973. Yet, only 50 percent of high school graduates from low income families went directly to college as compared to 79 percent of those from high income families.

Most college students enroll in college immediately after finishing high school. The percentage of high school graduates enrolled in college the October following graduation is a leading indicator of the total proportion of that year's graduates who will ever enroll in college. The percentage enrolling is a reflection not only of the accessibility of higher education to high school graduates but also of their assessment of the value of attending college compared to working, entering the military, traveling, and other possible pursuits.

Percentage of high school graduates who were enrolled in college the October following graduation, by type of college, family income, and race/ethnicity: 1972–93

October	Type of college			Family income ¹			Race/ethnicity		
	Total	2-year	4-year	Low	Middle	High	White	Black	Hispanic
1972	49.2	—	—	26.1	45.2	63.8	49.7	44.6	(²)
1973	46.6	14.9	31.7	20.3	40.9	64.4	47.8	32.5	48.8
1974	47.6	15.2	32.4	—	—	—	47.2	47.2	(²)
1975	50.7	18.2	32.6	31.2	46.2	64.5	51.1	41.7	(²)
1976	48.8	15.6	33.3	39.1	40.5	63.0	48.8	44.4	(²)
1977	50.6	17.5	33.1	27.7	44.2	66.3	50.8	49.5	48.8
1978	50.1	17.0	33.1	31.4	44.3	64.0	50.5	46.4	(²)
1979	49.3	17.5	31.8	30.5	43.2	63.2	49.9	46.7	(²)
1980	49.3	19.4	29.9	32.5	42.5	65.2	49.8	42.7	49.6
1981	53.9	20.5	33.5	33.6	49.2	67.6	54.9	42.7	(²)
1982	50.6	19.1	31.5	32.8	41.7	70.9	52.7	35.8	(²)
1983	52.7	19.2	33.5	34.6	45.2	70.3	55.0	38.2	46.7
1984	55.2	19.4	35.8	34.5	48.4	74.0	59.0	39.8	(²)
1985	57.7	19.6	38.1	40.2	50.6	74.6	60.1	42.2	(²)
1986	53.8	19.3	34.5	33.9	48.5	71.0	56.8	36.9	42.3
1987	56.8	18.9	37.9	36.9	50.0	73.8	58.6	52.2	(²)
1988	58.9	21.9	37.1	42.5	54.7	72.8	61.1	44.4	(²)
1989	59.6	20.7	38.9	48.1	55.4	70.7	60.7	53.4	52.7
1990	60.1	20.1	40.0	46.7	54.4	76.6	63.0	46.8	(²)
1991	62.5	24.9	37.7	39.5	58.4	78.2	65.4	46.4	(²)
1992	61.9	23.0	38.9	40.9	57.0	79.0	64.3	48.2	58.2
1993	61.5	22.4	39.1	50.4	56.9	79.3	62.9	55.6	(²)

— Not available.

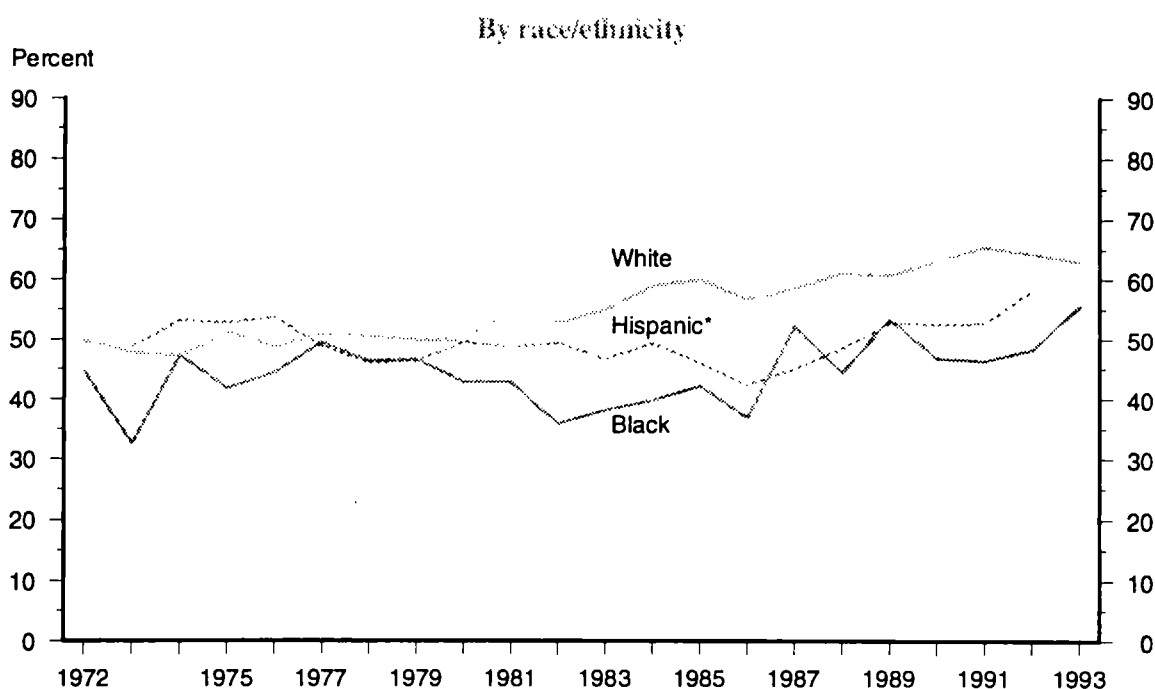
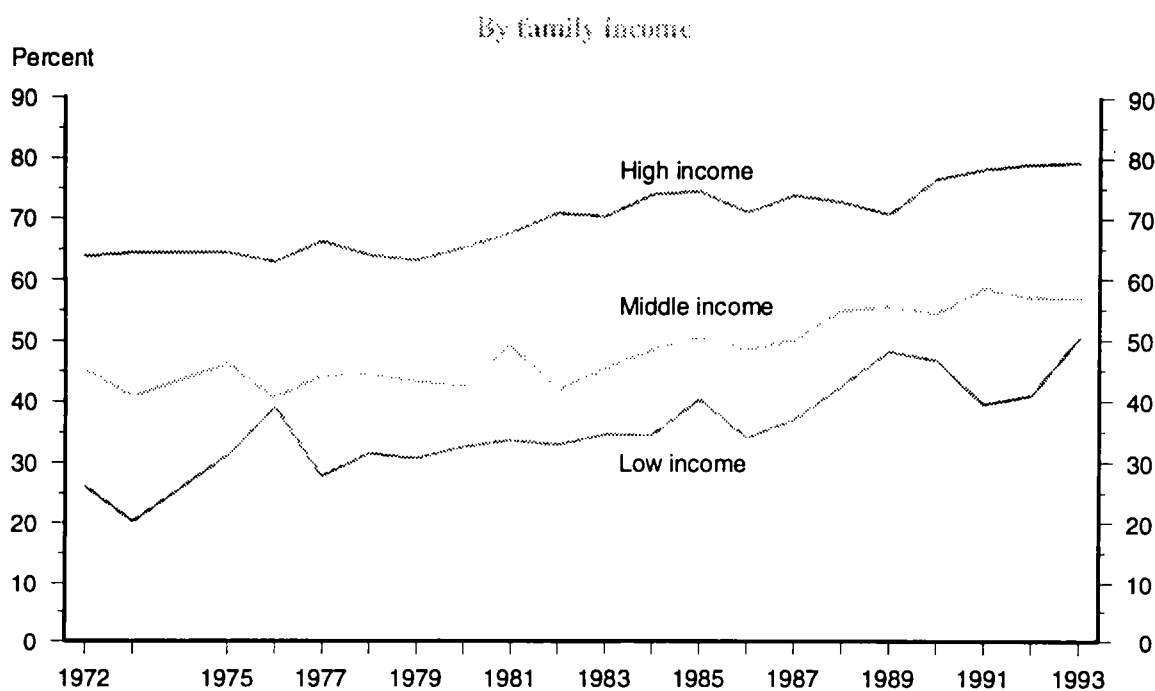
¹ Revised from previously published figures.

² Due to the small sample size for the Hispanic category, 3-year averages were calculated. The 3-year average for 1992 is the average percentage of graduates enrolled in college in 1991, 1992, and 1993.

NOTE: Low income is the bottom 20 percent of all family incomes; high income is the top 20 percent of all family incomes; and middle income is the 60 percent in-between.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Percentage of high school graduates enrolled in college the October following graduation: October 1972-93



* Due to the small sample size for the Hispanic category, 3-year overlapping averages were calculated. The 3-year average for 1992 is the average percentage of graduates enrolled in college in 1991, 1992, and 1993.

NOTE: Low income is the bottom 20 percent of all family incomes; high income is the top 20 percent of all family incomes; and middle income is the 60 percent in-between.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Activities of 1990 2-year college students 1 year later

- ♦ Of all 2-year college students in October 1990, 23 percent were enrolled in some type of postsecondary institution 1 year later. This rate was about the same for black, Hispanic, and white students. However, the rate did vary by age and sex; older students and females were less likely to be enrolled a year later than younger students and males, respectively.
- ♦ Among 2-year college students in October 1990 who indicated they had completed 1 year of college by October 1991, 17 percent were still enrolled in a 2-year college at that time. Among those who indicated they had completed 2 years of college by October 1991, 22 percent had enrolled in a 4-year college and were pursuing a bachelor's degree.
- ♦ Among 2-year college students in October 1990, 77 percent were not students a year later; 63 percent were not students but were working. The unemployment rate was 10 percent among these nonstudents.

Two-year colleges have many roles in American higher education. They are usually located near students' homes, are inexpensive, and offer students an opportunity to begin a 4-year program and later transfer to a 4-year school. Moreover, 2-year colleges offer occupationally specific programs that help students acquire skills that make it easier for them to find work. At 2-year colleges, students who work full time can attend part time and take a few specific courses, or they can pursue a 2-year program over a longer period of time. Following the next-year activities of 2-year college students provides an indication of how students are using 2-year colleges to further their educational goals.

Activities of 2-year college students in October 1990 1 year later, by selected characteristics: October 1991

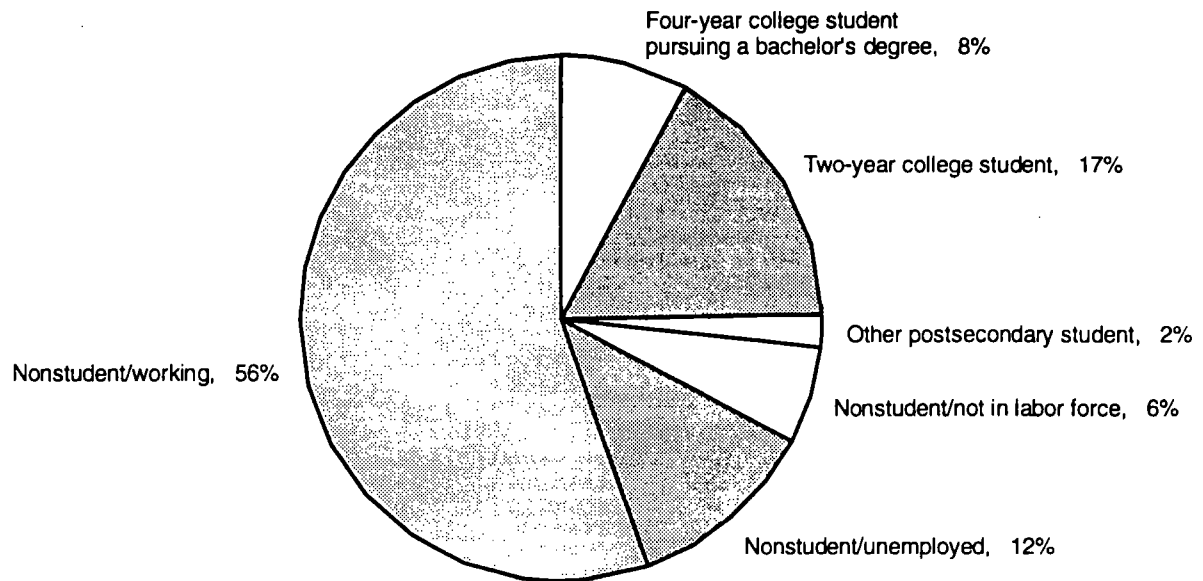
Student characteristics	Percentage in each activity category							Unemployment rate of nonstudents
	Students			Nonstudents				
	Total*	2-year school	4-year school pursuing a bachelor's degree	Total	Working	Unemployed	Not in the labor force	
All	22.9	9.1	11.0	77.1	62.8	7.1	7.2	10.2
Age in 1991								
15-20	36.9	16.1	18.4	63.1	50.7	6.7	5.7	11.7
21-24	30.1	9.0	19.1	69.9	55.9	8.6	5.3	13.3
25-29	14.4	5.9	6.1	85.6	69.6	8.0	8.0	10.3
30-35	19.0	10.3	2.2	81.0	70.0	6.2	4.8	8.1
36 and over	9.2	3.8	3.9	90.8	73.0	5.9	12.0	7.4
Race/ethnicity								
White	22.5	9.4	10.6	77.5	64.3	6.3	6.8	8.9
Black	23.5	10.2	11.7	76.5	60.1	9.9	6.4	14.1
Hispanic	20.3	4.9	11.6	79.7	60.6	6.5	12.5	9.7
Years of education completed by October 1991								
Less than a full year of college	10.8	6.7	3.6	89.2	70.5	8.0	10.6	10.2
1 year of college	26.7	17.1	7.7	73.3	56.0	11.6	5.7	17.1
2 years of college	30.4	5.9	21.5	69.6	60.0	5.4	4.3	8.2
3 years of college or more	20.0	5.1	7.5	80.0	68.4	0.9	10.7	1.3
Sex								
Male	27.5	10.1	14.0	72.5	60.6	8.3	3.6	12.1
Female	19.5	8.4	8.8	80.5	64.4	6.3	9.9	8.9

* Included in the total but not shown separately are students attending other types of schools (such as trade or technical schools) and students at 4-year schools who were not pursuing a bachelor's degree. Additional detail may be found in supplemental table 10-1.

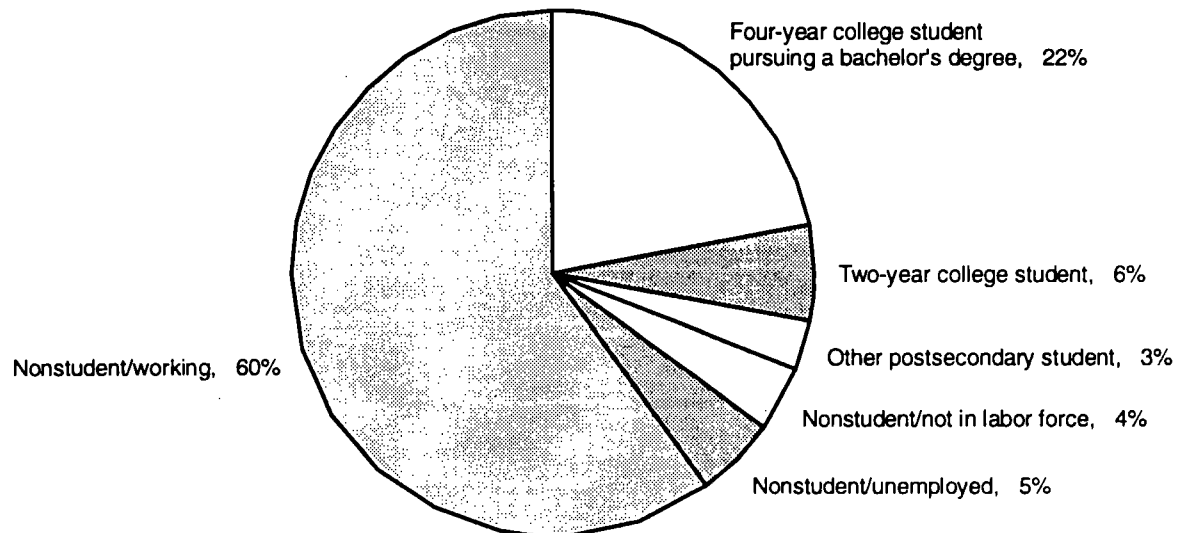
SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey, October 1991.

Activities of 2-year college students in October 1990 1 year later, by years of college completed in October 1991

Completed 1 year of college: (October 1991)



Completed 2 years of college: (October 1991)



SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey, October 1991.

Time to complete a doctorate degree, by field of study

- ◆ Between 1970 and 1993, total time-to-degree among doctoral students increased for all fields of study, with the largest increase in years occurring in the education and other technical/professional fields.
- ◆ Time-to-degree varied by field of study throughout the 1970–93 time period. Students who majored in the natural sciences or in computer sciences and engineering took less time on average to complete their doctorates, whereas students who majored in education or other technical/professional fields generally took longer.
- ◆ Registered time-to-degree increased slightly between 1970 and 1993, and showed less variability across fields of study and between males and females than total time-to-degree (see supplemental tables 11-2 and 11-3).
- ◆ While overall females tend to take longer to complete their doctorates, within the same fields of study, male and female total time-to-degree is similar except in the education and other technical/professional fields (see supplemental tables 11-2 and 11-3).
- ◆ Total time-to-degree differs for students with various types of primary sources of financial support in graduate school. Students whose primary source of support was personal resources had the longest time between completing their bachelor's and doctor's degrees, whereas students with federal research assistantships had the shortest. Types of primary financial support were less related to registered time-to-degree (see supplemental table 11-4).

Trends in the number of years doctoral students take to complete their degrees suggest changes in the time needed to produce doctorate-level personnel. These trends also may provide clues to other important changes, such as in students' financial resources and amount of part-time study. Total time-to-degree (TTD) measures the number of years between completion of the baccalaureate and doctorate degrees, including nonenrolled as well as enrolled time. Registered time-to-degree (RTD), however, only measures the number of years enrolled, full time or part time, in graduate school.

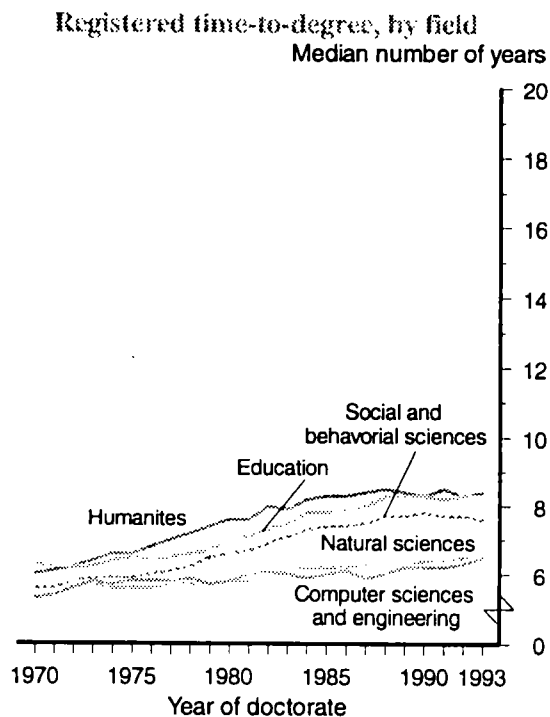
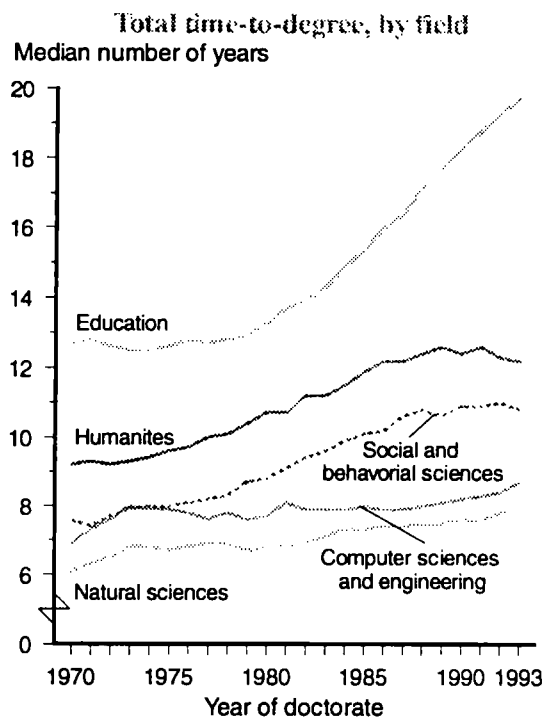
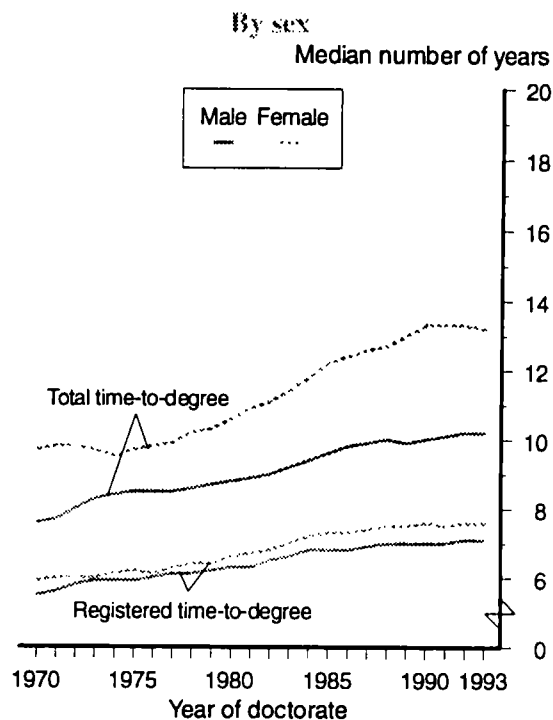
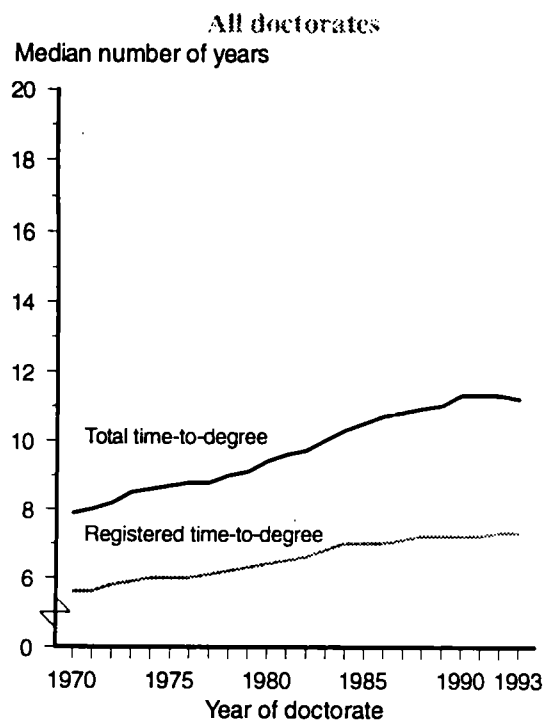
Median total time-to-degree for doctorate degrees among U.S. citizens and permanent U.S. residents, by sex and field of study: Selected years of doctorate 1970–93

Year of doctorate	Sex			Field of study					
	Total	Male	Female	Humanities	Social and behavioral sciences	Natural sciences	Computer sciences and engineering	Education	Other technical/professional*
Total time-to-degree (TTD, in median years)									
1970	7.9	7.6	9.7	9.2	7.6	6.1	6.9	12.7	8.5
1972	8.2	8.0	9.8	9.2	7.7	6.5	7.6	12.6	8.6
1974	8.6	8.4	9.5	9.4	8.0	6.8	7.9	12.5	8.9
1976	8.8	8.5	9.8	9.7	8.1	6.8	7.8	12.8	9.5
1978	9.0	8.6	10.2	10.1	8.3	6.9	7.8	12.8	9.6
1980	9.4	8.8	10.6	10.7	8.8	6.8	7.7	13.3	9.8
1982	9.7	9.0	11.1	11.2	9.4	6.9	7.9	13.9	10.2
1984	10.3	9.4	11.8	11.5	9.9	7.3	7.9	14.9	10.9
1986	10.7	9.8	12.4	12.2	10.2	7.4	7.9	16.0	11.8
1988	10.9	10.0	12.7	12.4	10.8	7.5	8.0	17.2	12.4
1990	11.3	10.0	13.3	12.4	10.9	7.6	8.2	18.3	12.9
1991	11.3	10.1	13.3	12.6	10.9	7.6	8.3	18.8	13.6
1992	11.3	10.2	13.3	12.3	11.0	7.8	8.4	19.3	13.8
1993	11.2	10.2	13.2	12.2	10.8	7.8	8.7	19.7	14.0

* Principally composed of agricultural sciences, business and management, communications, health sciences, and other occupationally oriented fields.

SOURCE: National Research Council, Survey of Earned Doctorates, Doctorate Records File, various years.

Median total time-to-degree and registered time-to-degree for doctorate degrees
among U.S. citizens and permanent U.S. residents, by field of study:
Years of doctorate 1970-93



SOURCE: National Research Council, Survey of Earned Doctorates, Doctorate Records File, various years.

Skill improvement training among current, employed workers

- ◆ In 1991, one out of three full-time workers and one out of six part-time workers received training to improve their current job skills in the last 12 months.
- ◆ In both 1983 and 1991, women were as likely as men to have received training while on their current job.
- ◆ The proportion of workers who had ever received skill improvement training on their current job increased between 1983 and 1991.
- ◆ The likelihood of workers receiving skill improvement training is related to their education, occupation, and age. In 1991, college graduates, workers in executive, professional and technical occupations, and those aged 35–44 were more likely to have received training on their current job than other workers.

In the face of changing technologies, work methods, and markets, firms and workers may benefit from education or training that upgrades or reorients worker skills. The proportion of workers receiving skill improvement training on their current job is an indication of the extent to which firms invest in the re-education of the employed workforce. Differences in the proportions among types of workers who receive training are an indication of those for whom employers find it valuable to invest in training.

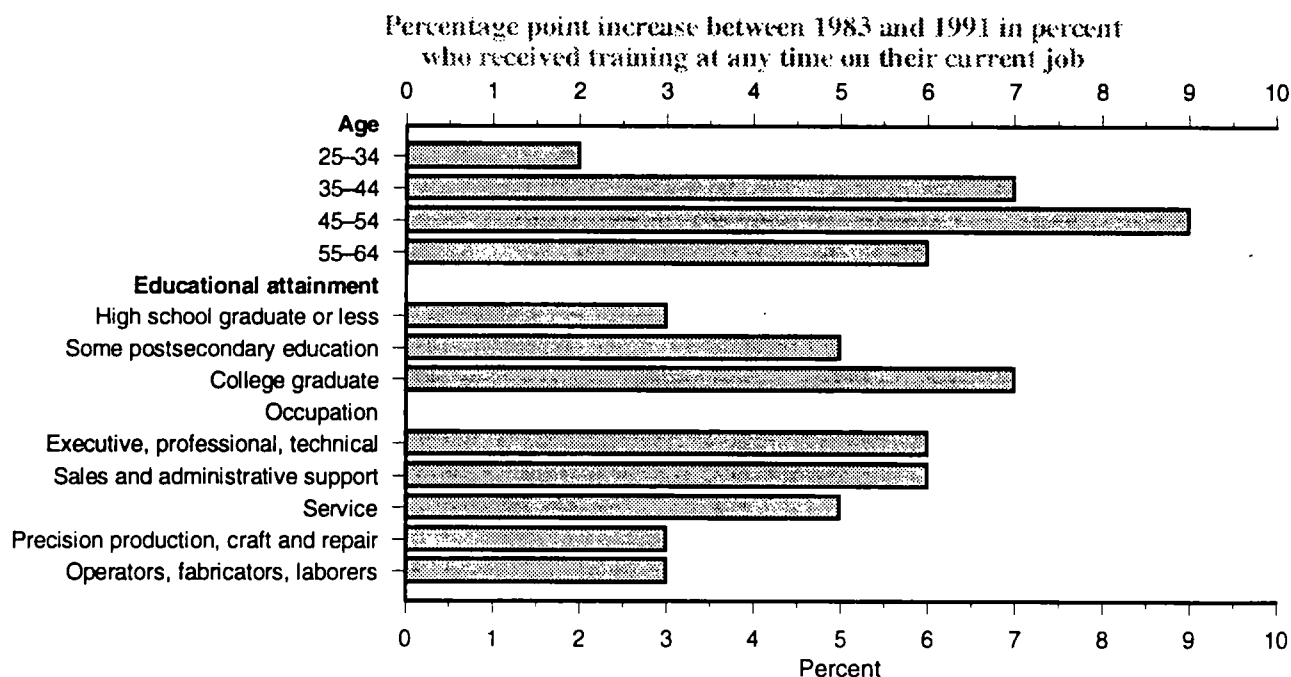
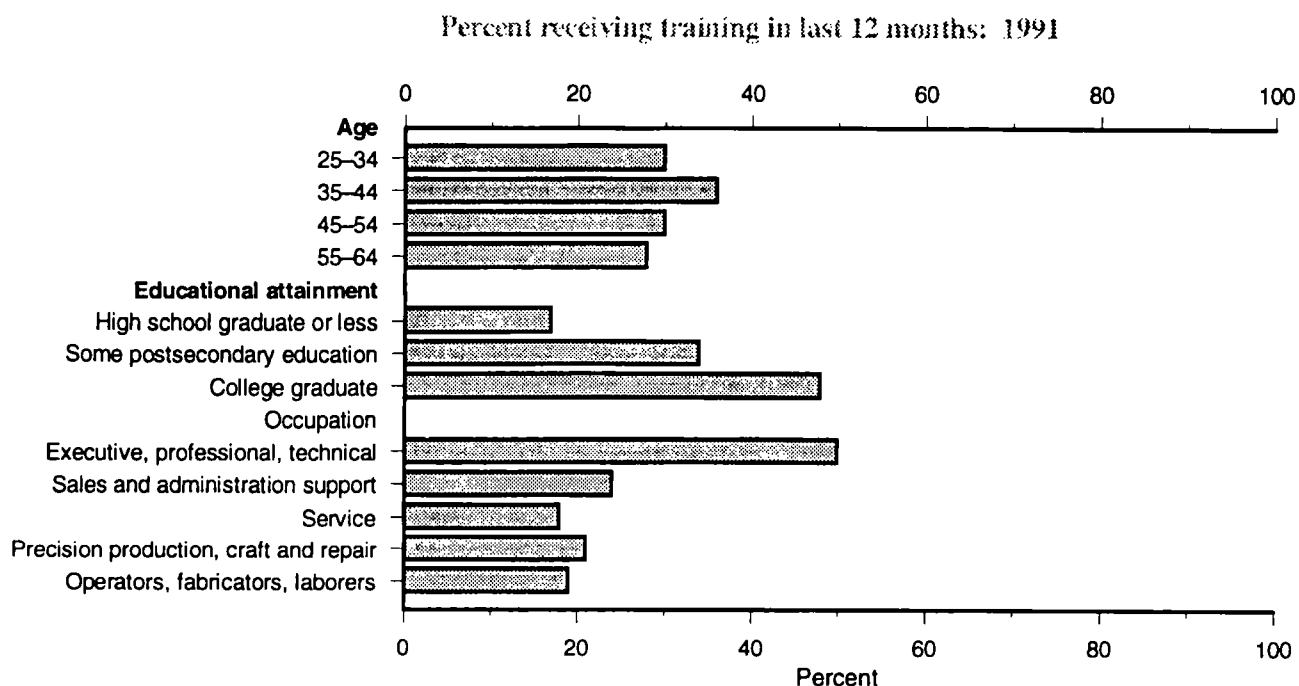
Percentage of workers aged 16 and over who received skill improvement training while on their current job, by worker characteristics: 1983 and 1991

Characteristic	In the last 12 months	At any time while on current job	
	1991	1983	1991
Total	30	35	41
Sex			
Male	29	35	40
Female	30	34	41
Work status			
Full-time	33	—	—
Part-time	16	—	—
Age			
20–24	20	28	31
25–34	30	39	41
35–44	36	41	48
45–54	30	37	46
55–64	28	31	37
65 and over	19	19	25
Educational attainment			
High school graduate or less	17	26	29
Some postsecondary education	34	41	46
College graduate	48	54	61
Occupation			
Executive, professional, technical	50	54	60
Sales and administrative support	24	32	38
Service	18	23	28
Farming, forestry, fishing	7	16	21
Precision production, craft and repair	21	35	38
Operators, fabricators, laborers	19	19	22

— Not available.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *How Workers Get Their Training: A 1991 Update*, Bulletin 2407, August 1992. U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), 1991.

Workers who received skill improvement training while on their current job, by worker characteristics



SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *How Workers Get Their Training: A 1991 Update*, Bulletin 2407, August 1992. U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), 1991.

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Achievement, Attainment, and Curriculum

Indicators of what students have learned in school are perhaps the most important measures of the outcomes of education. Performance on examinations is one measure of what has been learned. However, examinations do not measure the wide array of skills and experiences that formal education provides. Educational attainment (e.g., finishing high school or college) is an indirect measure of how much subject matter students may have learned, as well as how much students potentially have gained in learning civic responsibilities, social skills, work ethics, and life skills. Furthermore, information about courses taken in high school and fields of study in college is an additional indirect indicator of the content of students' knowledge.

Achievement

The National Assessment of Educational Progress (NAEP) has assessed students' knowledge in reading, writing, science, mathematics, and other subjects for more than 20 years. Average reading proficiency among 9-year-olds was about the same in 1992 as in 1971; among 13- and 17-year-olds, it was slightly higher in 1992. Average science proficiency among 9-year-olds was higher in 1992 than in 1970; among 13-year-olds, it was the same in 1992 as in 1970; and among 17-year-olds, it was lower. Average writing proficiency of 11th-graders was about the same in 1992 as in 1984; however, 4th- and 8th-graders showed marked progress between 1990 and 1992 (*Indicators 13, 14, and 16*).

Mathematics achievement is assessed through NAEP for 9-, 13-, and 17-year-olds, through the SAT for college-bound high school seniors, and through the GRE for college graduates intending to continue their education. NAEP shows that average mathematics proficiency among 9- and 13-year-olds was slightly higher in 1992 than in 1973 and that among 17-year-olds, it was about the same (*Indicator 15*). Average scores on the mathematics section of the SAT showed similar patterns of change. For example, SAT scores fell somewhat during the 1970s, but rose during the early 1980 and early 1990s. Unlike NAEP, not all of the decline in SAT mathematics scores during the 1970s has been recouped. However, participation in the SAT exam has increased significantly; in 1993, 41 percent of high school seniors took the SAT, up from 32 percent in 1976

(table 20-1). The percentage of minority test-takers has doubled during this same time period—rising from 15 to 30 percent. GRE test-takers as a percentage of college graduates have also increased from 29 percent in 1980 to 35 percent in 1993. GRE quantitative scores have increased 45 points since 1973, mainly due to a sharp rise in scores during the 1980s (*Indicator 21*).

Although overall scores have not changed much over the last two decades, NAEP shows that the large gap in achievement between whites and minorities has narrowed somewhat. Blacks have improved relative to whites in reading, mathematics, and science. For example, in 1971, average reading proficiency among 17-year-old blacks was well below that of both 17-year-old and 13-year-old whites (52 and 22 scale points, respectively); although the gap was still large in 1992, the reading proficiency of 17-year-old blacks was closer (36 points) to that of 17-year-old whites, and about the same as that of 13-year-old whites (*Indicator 13*). In general, improvement in average reading proficiency among Hispanics relative to whites was not as widespread as it was among blacks. The same trend is evident in SAT scores between 1976 and 1994. As the verbal scores of whites decreased 8 points, those of blacks increased by 20 points, and those of Hispanics remained relatively stable.

International comparisons. Recent international comparisons of student achievement are available in basic reading literacy, mathematics, and science. Generally, U.S. students compare favorably to their counterparts in other large industrialized countries in reading, but unfavorably in mathematics and science (*Indicators 17, 18, and 19*). However, differences among countries do not seem so large when they are compared to the variation within countries. Although the United States is a culturally diverse country with respect to language, it is less diverse than some of the other large industrialized countries. A smaller percentage of 9-year-old students in the United States speak a language at home that is different from the one spoken at school than their counterparts in the former West Germany, France, Italy, or Canada (*Indicator 17*).

Adult Literacy. In 1992, the literacy of adults aged 16 and older was assessed in three areas: prose,

document, and quantitative. Approximately 20 percent of the adults in the United States performed at the lowest proficiency level. Scores of whites averaged 67 to 75 points higher than those of Hispanics and 49 to 63 points higher than those of blacks in each of the three areas. In addition, older Americans had lower literacy scores than younger ones, and adults with more education had higher literacy scores than adults with less education (*Indicator 20* and tables 20-1 and 20-3, *Condition of Education 1994*).

Attainment

High school completion. In 1994, 86 percent of all 25- to 29-year-olds had a high school diploma or an equivalency certificate, up from 78 percent in 1971. However, the completion rate varied among racial/ethnic groups. In 1994, 91 percent of whites had a high school diploma or the equivalent, compared to 84 percent of blacks and 60 percent of Hispanics. Blacks showed the most improvement, as the percentage of blacks earning a high school diploma or equivalency certificate rose 25 percentage points between 1971 and 1994, compared to 9 and 12 percentage points for whites and Hispanics, respectively (*Indicator 22*). In terms of high school attainment, the United States compares favorably to other large industrialized countries. A similar or higher percentage of 25- to 64-year-olds in the United States have completed high school than 25- to 64-year-olds in many other countries. With respect to young adults, however, several other nations approach or surpass U.S. secondary education completion rates (*Indicator 23*).

College attainment. After high school, many people stop (or delay) further formal education. In 1994, of 25- to 29-year-olds who had completed high school, 61 percent had completed at least some college, and 27 percent had earned a bachelor's degree or more (*Indicator 22*). In the United States, a larger portion of young adults have earned college degrees compared to their counterparts in most other industrialized countries (*Indicator 23*).

Curriculum

The courses students take in high school and college are an indirect indication of the content of students' knowledge. In order to graduate, students in public high schools in 1990-91 were required, on average, to take almost 4 years of

English, 2.5 years of math, and 2 years of science. As district spending increased, students were more likely to be required to complete 13 or more years of coursework in English, math, science, and social studies (except in the highest spending districts). Students in districts with very low median household incomes were more likely to be required to meet or exceed the core requirements in English, mathematics and science recommended in 1983 by the commission that issued *A Nation At Risk* than students in districts with moderate or high median household incomes (*Indicator 24*). A greater percentage of 1992 than 1982 high school graduates earned the number of units in the core courses—4 units in English and 3 each in science, social studies, and mathematics—recommended in *A Nation at Risk* (*Indicator 25*). In 1992, 47 percent of high school graduates had earned at least this number of credits compared to 13 percent in 1982. A higher percentage of 1992 high school graduates took mathematics and science courses (both overall and in specific subject areas) than 1982 graduates, particularly in geometry, algebra I, biology, and chemistry (*Indicator 26*). Members of the high school class of 1992 also took more foreign language courses than their counterparts who graduated in 1982 (*Indicator 26*, *Condition of Education 1994*).

Business is the most popular major in college—24 percent of all bachelor's degree recipients in 1990 majored in business (*Indicator 27*, *Condition of Education 1994*). However, the percentage of students receiving an associate's degree in business decreased between 1987 and 1990, while the percentage earning an associate's degree in arts and sciences increased (*Indicator 29*, *Condition of Education 1994*). At the graduate level, males were still twice as likely as females to earn degrees in business, although the gap has declined significantly since the early 1970s (*Indicator 27*). Regardless of the degree earned, at least 60 percent of undergraduate students take courses in the arts, English literature, psychology, sociology/anthropology, history, physical science, and mathematics, reflecting a wide diversity of studies in college (*Indicator 28*, *Condition of Education 1994*).

Trends in the reading proficiency of 9-, 13-, and 17-year-olds

- ◆ Overall, reading proficiency for 9-year-olds improved between 1971 and 1980, then declined between 1980 and 1992, essentially returning to the 1971 level. At age 13, little change occurred from year to year, but average performance was higher in 1992 than in 1971. Scores for 17-year-olds increased between 1971 and 1984, then remained stable through 1992.
- ◆ Females continue to outscore males in all age groups.
- ◆ Although black students have made no progress since 1988, the average reading proficiency of black students was higher in 1992 than in 1971. Scores for Hispanic students increased between 1975 and 1992 for 17-year-olds. The gap between white students and their black and Hispanic counterparts decreased for blacks at all three age levels and for Hispanic 17-year-olds.
- ◆ There is evidence that reading proficiency increases more between ages 9 and 13 than between ages 13 and 17. For example, in 1992, there was an average proficiency difference of 50 scale points between 9- and 13-year-olds, and 30 scale points between 13- and 17-year-olds. This pattern holds for both genders and all racial/ethnic groups.

A student's ability to read is essential to the educational process. If students fall behind in reading proficiency, they may find it difficult to benefit from other aspects of the curriculum. In the future, poor readers may also find it difficult to participate effectively in an economy requiring increasingly sophisticated job skills.

Average reading proficiency (scale score), by sex and age: Selected years 1971–92

Year	Total			Male			Female		
	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17
1971	208	¹ 255	¹ 285	¹ 201	250	¹ 279	214	¹ 261	291
1975	210	¹ 256	¹ 286	204	250	280	216	262	¹ 291
1980	¹² 215	258	¹ 286	² 210	² 254	282	¹² 220	263	¹ 289
1984	² 211	257	² 289	² 208	² 253	² 284	214	262	294
1988	² 212	258	² 290	² 208	252	² 286	216	263	294
1990	209	257	² 290	204	250	284	214	263	² 296
1992	210	² 260	² 290	² 206	254	² 284	215	² 265	296

Average reading proficiency (scale score), by race/ethnicity and age: Selected years 1971–92

Year	White			Black			Hispanic		
	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17
1971	¹ 214	¹ 261	¹ 291	¹ 170	¹ 222	¹ 239	—	—	—
1975	217	¹ 262	¹ 293	² 181	¹ 226	¹ 241	183	232	¹ 252
1980	¹² 221	² 264	¹ 293	² 188	² 233	¹ 243	190	237	261
1984	² 218	¹ 263	² 295	² 186	² 236	² 264	187	240	² 268
1988	218	¹ 261	295	² 189	² 243	¹² 274	² 194	240	² 271
1990	217	¹ 262	² 297	² 182	² 242	² 267	189	238	² 275
1992	² 218	² 266	² 297	² 184	² 238	² 261	192	239	² 271

— Not available.

¹ Statistically significant difference from 1992.

² Statistically significant difference from 1971 for all except Hispanics. Statistically significant difference from 1975 for Hispanics.

NOTE: The reading proficiency scale has a range from 0 to 500. (See supplemental table 13-1 for further explanations of levels.)

Level 150: Simple, discrete reading tasks

Level 300: Understands complicated information

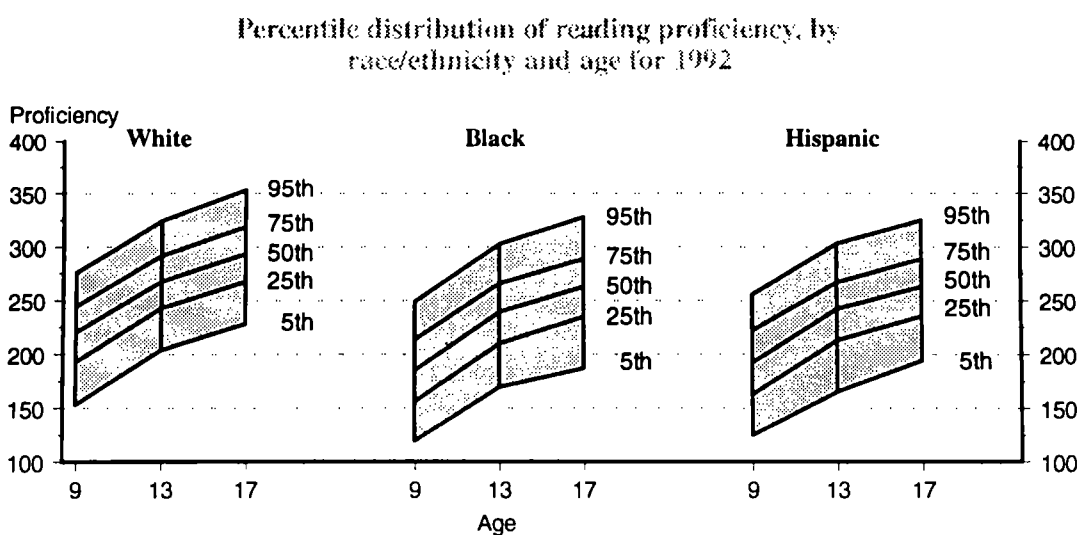
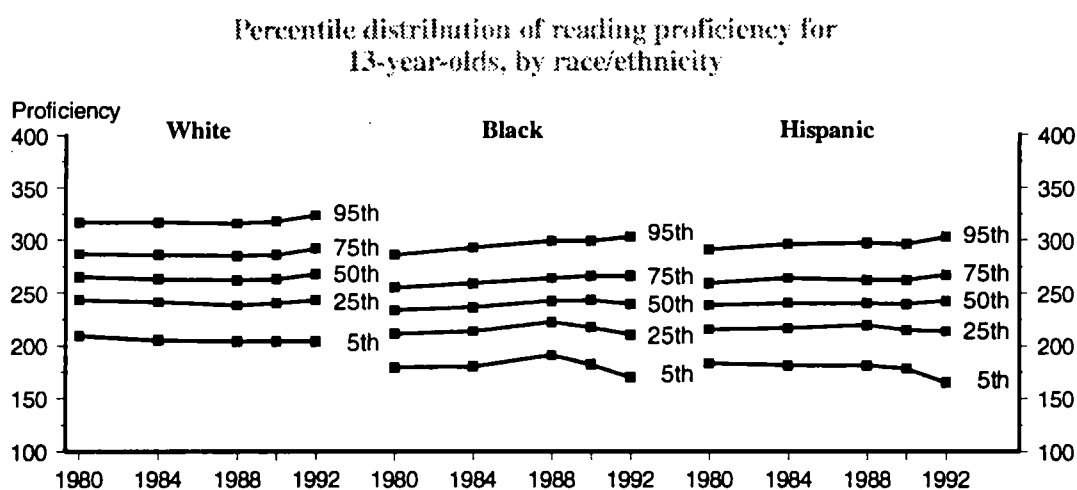
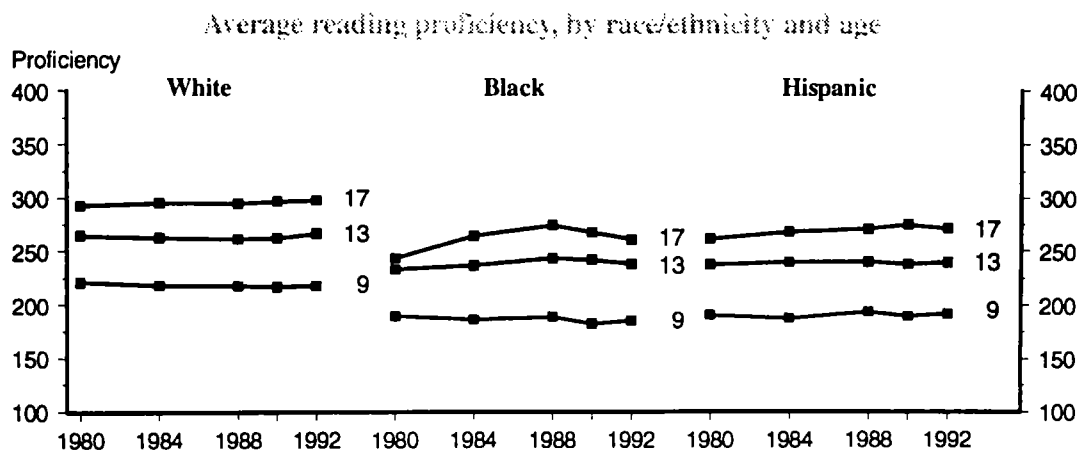
Level 200: Partial skills and understanding

Level 350: Learns from specialized reading materials

Level 250: Interrelates ideas and makes generalizations

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Average reading proficiency (scale score): 1980-92



NOTE: The reading proficiency scale has a range from 0 to 500.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; and Writing, 1984 to 1992, 1994.*

Trends in writing proficiency in grades 4, 8, and 11

- ◆ Average writing proficiency remained relatively stable for fourth-grade students between 1984 and 1990, then rose between 1990 and 1992. Eighth-grade writing scale scores increased 17 scale points in 1992 after a decline between 1984 and 1990. Eleventh-grade scores have remained relatively unchanged since 1984.
- ◆ Females have outscored males at all levels since 1984.
- ◆ Scores for white eighth-grade students decreased between 1984 and 1990, and then rose dramatically in 1992. Hispanic and black eighth-grade students also showed strong improvements between 1990 and 1992.
- ◆ In 1992, 87 percent of 11th-graders could write focused, clear responses (Level 250); 36 percent were generally able to write more complete responses (Level 300); and only 2 percent provided effective, coherent responses (Level 350) (see supplemental table 14-2).
- ◆ Scores at the 5th percentile rose between 1990 and 1992 for all age groups, while scores at the 95th percentile decreased for 11th-graders and remained the same for 4th-graders. This shift caused a decrease in the variability of scores for 4th- and 11th-graders. Eighth-grade scores increased at the upper percentile levels, causing the entire distribution to shift upward (see supplemental table 14-3).

Effective writing skills are important in all stages of life from early education to future employment. In the business world, as well as in school, students often must convey complex ideas and information in a clear, succinct manner. Inadequate writing skills, therefore, could inhibit achievement across the curriculum and in future careers.

Average writing proficiency (scale score), by grade and sex: Selected years 1984–92

Year	Total			Male			Female		
	Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11
1984	204	¹ 267	290	200	258	281	¹ 208	¹ 276	299
1988	206	¹ 264	291	199	¹ 254	282	213	¹ 274	299
1990	¹ 202	¹² 257	287	195	¹² 246	276	¹ 209	¹² 268	298
1992	207	² 274	287	198	264	279	² 216	² 285	296

Average writing proficiency (scale score), by grade and race/ethnicity: Selected years 1984–92

Year	White			Black			Hispanic		
	Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11
1984	211	¹ 272	297	182	247	270	188	¹ 247	259
1988	215	¹ 269	296	173	246	¹ 275	190	¹ 250	274
1990	211	¹² 262	293	171	¹ 239	268	184	¹ 246	² 277
1992	217	² 279	294	175	258	263	189	² 265	274

¹ Statistically significant difference from 1992.

² Statistically significant difference from 1984.

NOTE: The writing proficiency scale has a range from 0 to 500. (See supplemental table 14-1 for detailed explanations of levels.)

Level 150: Disjointed, unclear writing

Level 300: Complete, sufficient writing

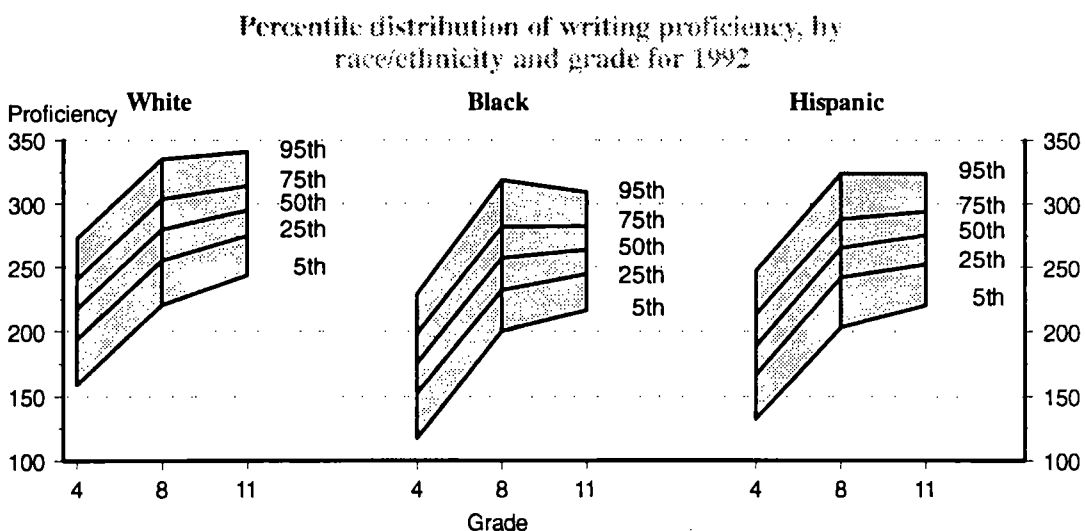
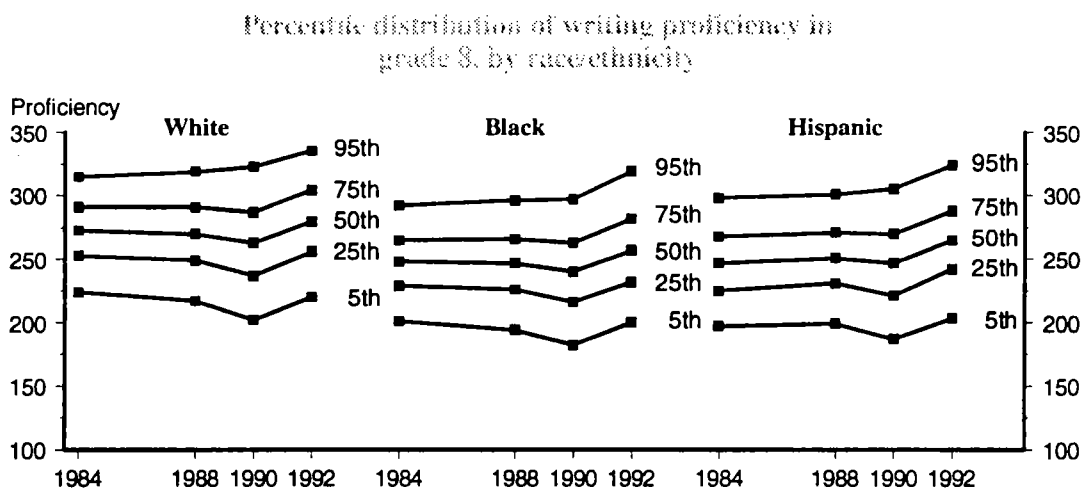
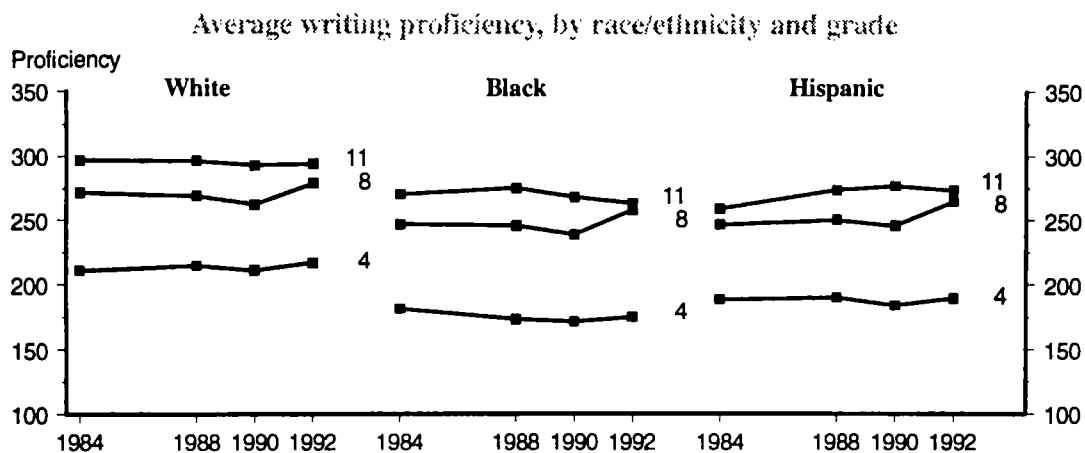
Level 200: Incomplete, vague writing

Level 350: Effective, coherent writing

Level 250: Beginning, focused, clear writing

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Average writing proficiency (scale score): 1984-92



NOTE: The writing proficiency scale has a range from 0 to 500.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; and Writing, 1984 to 1992, 1994.*

Trends in the mathematics proficiency of 9-, 13-, and 17-year-olds

- ◆ Average mathematics proficiency improved between 1978 and 1992 for all age groups, with the largest improvements occurring among 9- and 13-year-olds.
- ◆ White, black, and Hispanic 9-year-olds showed large improvements in average mathematics proficiency between 1982 and 1992, after a rather flat trend occurred between 1973 and 1982.
- ◆ Although a large gap in mathematics proficiency exists for all age groups between whites and their black and Hispanic peers, at ages 13 and 17, white scores increased at a slower rate than black and Hispanic scores causing this gap to decrease over the last 20 years.
- ◆ Increases in performance between 1978 and 1992 varied across proficiency levels. The percentage of 17-year-olds scoring at or above Level 250 increased from 92 to 97 percent; those scoring at or above Level 300 increased from 52 to 59 percent; but those scoring at or above Level 350 stayed at 7 percent (see supplemental table 15-2).
- ◆ There is much variation in the mathematics proficiency scores of students. For example, in 1992, scores for 9-year-old whites varied by more than 100 scale points between the 5th percentile and the 95th percentile. In addition, whites had higher scores at the 95th percentile at age 9 than at the 50th percentile at age 13 (see supplemental table 15-3).

Proficiency in mathematics is an important outcome of education. In an increasingly technological world, the mathematics skills of the nation's workers may be a crucial component of economic competitiveness. In addition, knowledge of mathematics is critical for success in science, computing, and a number of other related fields of study.

Average mathematics proficiency (scale score), by sex and age: Selected years 1973–92

Year	Total			Male			Female		
	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17
1973	¹ 219	¹ 266	304	¹ 218	¹ 265	309	¹ 220	¹ 267	301
1978	¹ 219	¹ 264	¹ 300	¹ 217	¹ 264	¹² 304	¹ 221	¹ 265	¹ 297
1982	¹ 219	¹ 269	¹² 298	¹ 217	¹ 269	¹² 302	¹ 222	¹ 268	¹² 296
1986	¹ 222	¹ 269	¹ 302	¹² 222	¹² 270	¹² 305	¹ 222	268	¹ 299
1990	² 230	² 270	305	² 229	² 271	306	² 230	270	303
1992	² 230	² 273	307	² 231	² 274	309	² 228	² 272	304

Average mathematics proficiency (scale score), by race/ethnicity and age: Selected years 1973–92

Year	White			Black			Hispanic		
	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17
1973	¹ 225	¹ 274	310	¹ 190	¹ 228	¹ 270	¹ 202	¹ 239	¹ 277
1978	¹ 224	¹ 272	¹² 306	¹ 192	¹ 230	¹ 268	¹ 203	¹ 238	¹ 276
1982	¹ 224	¹ 274	¹² 304	¹ 195	¹² 240	¹ 272	¹ 204	¹² 252	¹ 277
1986	¹ 227	¹ 274	¹ 308	² 202	² 249	² 279	205	² 254	283
1990	² 235	276	310	² 208	² 249	² 288	² 214	² 255	284
1992	² 235	² 279	312	² 208	² 250	² 286	² 212	² 259	² 292

¹ Statistically significant difference from 1992.

² Statistically significant difference from 1973.

NOTE: The mathematics proficiency scale has a range of 0 to 500. (See supplemental table 15-1 for detailed explanations of levels.)

Level 150: Simple arithmetic facts

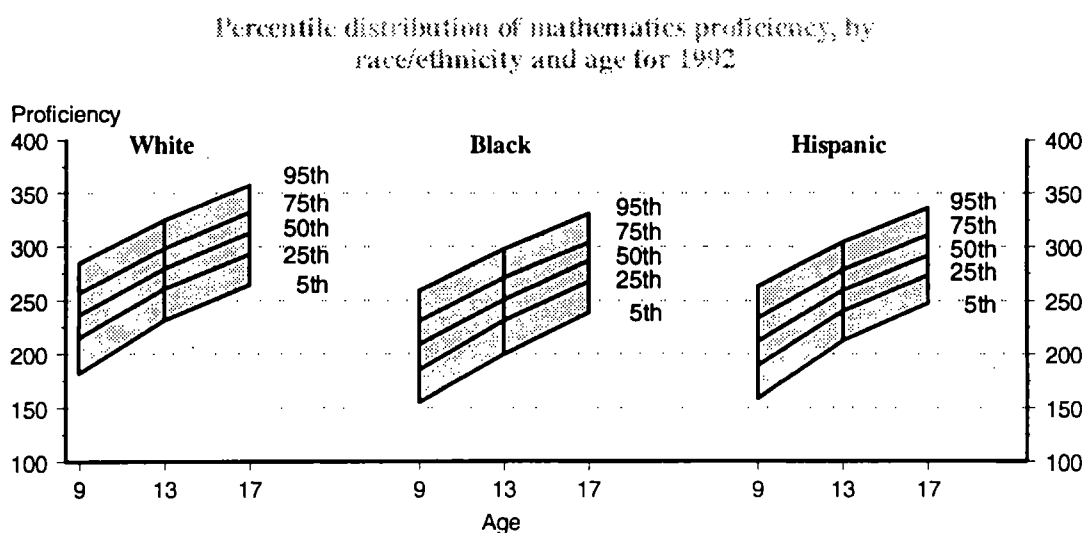
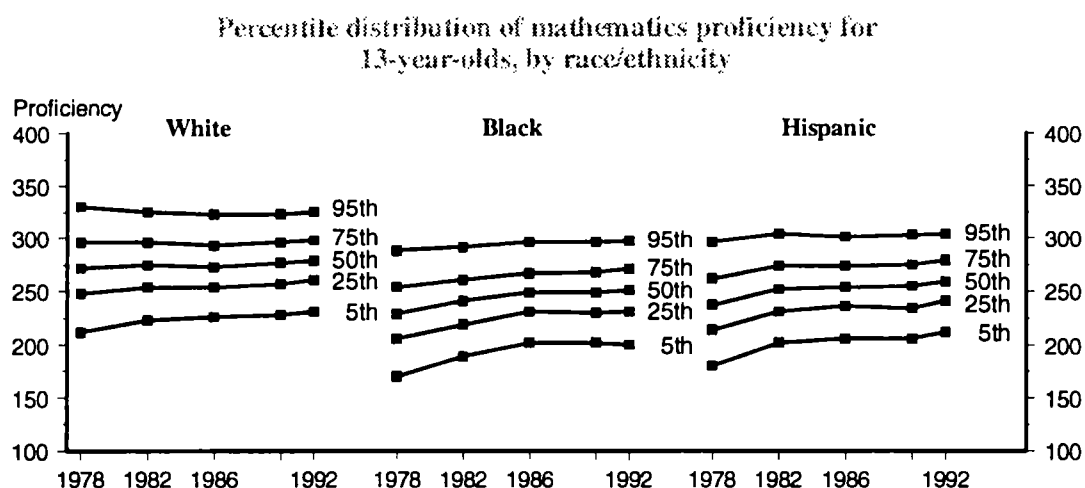
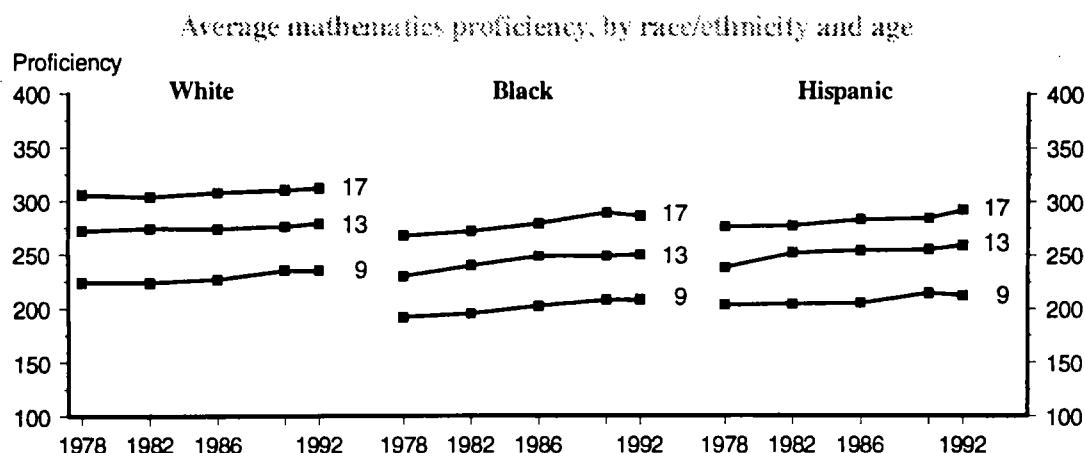
Level 300: Moderately complex procedures and reasoning

Level 200: Beginning skills and understandings

Level 350: Multi-step problem solving and algebra

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; and Writing, 1984 to 1992, 1994.*

Average mathematics proficiency (scale score): 1978-92



NOTE: The mathematics proficiency scale has a range from 0 to 500.

SOURCE: U.S. Department of Education, National Center For Education Statistics, National Assessment of Educational Progress, *Trends In Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992, Mathematics; 1973 to 1992; Reading, 1971 to 1992; and Writing, 1984 to 1992, 1994.*

Trends in the science proficiency of 9-, 13-, and 17-year-olds

- ◆ In 1992, average science achievement was higher at all three age levels than in 1982, the year before *A Nation at Risk* was published. In addition, the gap between male and female scores at ages 13 and 17 has decreased.
- ◆ In 1992, the average science proficiency of blacks and Hispanics remained well below that of whites. However, between 1977 and 1992, the proficiency gap decreased between whites and blacks at age 9 and between whites and Hispanics at age 13.
- ◆ A higher percentage of 9-, 13-, and 17-year-olds demonstrated general science skills by reaching Levels 200 and 250 in 1992 than in 1982. In addition, more 17-year-olds reached Levels 300 and 350 in 1992, exhibiting detailed knowledge and analytical understanding of scientific principles and the ability to integrate specialized scientific information (see supplemental table 16-2).
- ◆ There is a great deal of variation in science proficiency scores within an age group. For example, the proficiency of white 9-year-olds varies by 120 scale points from the 5th percentile to the 95th percentile. By comparison, the difference in the proficiency of median white 9- and 17-year-olds is 66 scale points (see supplemental table 16-3).

Competence in science is an important outcome of education. The ability to apply scientific information, interpret data, and make inferences about scientific findings is required in a world that relies heavily on technological and scientific advances.

Average science proficiency (scale score), by sex and age: Selected years 1970–92

Year	Total			Male			Female		
	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17
1970	¹ 225	255	¹ 305	¹ 228	257	¹ 314	223	253	¹ 297
1973	¹² 220	¹² 250	¹ 296	¹² 223	¹² 252	² 304	¹ 218	¹² 247	² 288
1977	¹² 220	¹² 247	¹² 290	¹² 222	¹² 251	² 297	¹² 218	¹² 244	¹² 282
1982	¹ 221	¹² 250	¹² 283	¹² 221	256	¹² 292	¹ 221	¹² 245	¹² 275
1986	¹ 224	¹ 251	¹² 288	¹ 227	256	² 295	¹ 221	¹² 247	¹² 282
1990	229	255	² 290	¹ 230	258	² 296	227	¹ 252	² 285
1992	² 231	258	² 294	² 235	260	² 299	227	256	² 289

Average science proficiency (scale score), by race/ethnicity and age: Selected years 1970–92

Year	White			Black			Hispanic		
	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17	Age 9	Age 13	Age 17
1970	236	¹ 263	¹ 312	¹ 179	215	258	—	—	—
1973	¹² 231	¹² 259	² 304	¹ 177	¹² 205	² 250	—	—	—
1977	¹² 230	¹² 256	¹² 298	¹ 175	¹ 208	¹² 240	¹ 192	¹ 213	262
1982	¹² 229	¹² 257	¹² 293	¹ 187	217	¹² 235	¹ 189	¹² 226	¹² 249
1986	¹² 232	¹ 259	¹² 298	² 196	222	253	199	¹² 226	259
1990	238	264	² 301	² 196	² 226	253	² 206	² 232	262
1992	239	² 267	² 304	² 200	224	256	² 205	² 238	270

— Not available.

¹ Statistically significant difference from 1992.

² Statistically significant difference from 1970 for all except Hispanics. Statistically significant difference from 1977 for Hispanics.

NOTE: The science proficiency scale has a range from 0 to 500. (See supplemental table 16-1 for detailed explanations of levels.)

Level 150: Knows everyday science facts

Level 300: Analyzes scientific procedures and data

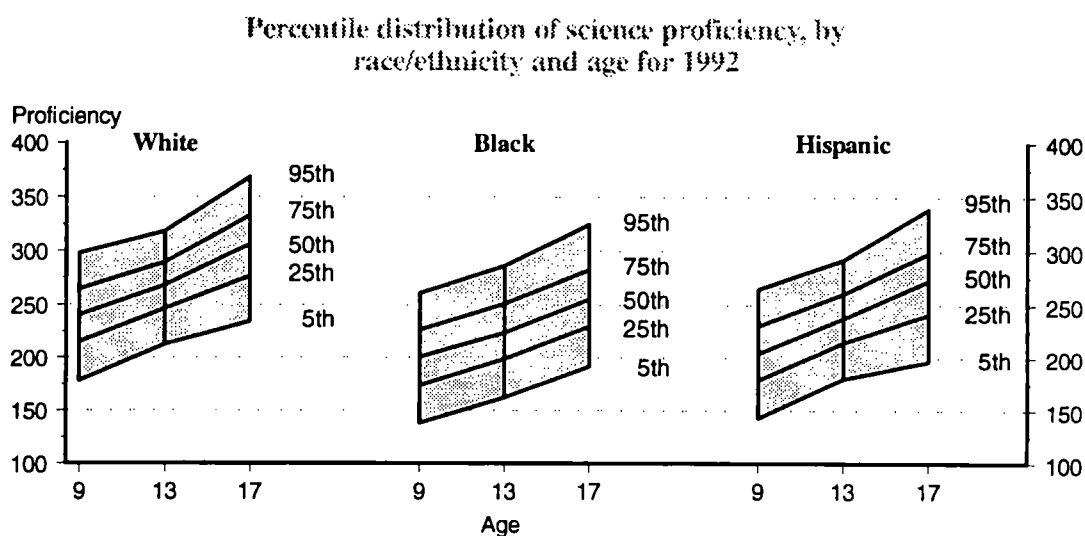
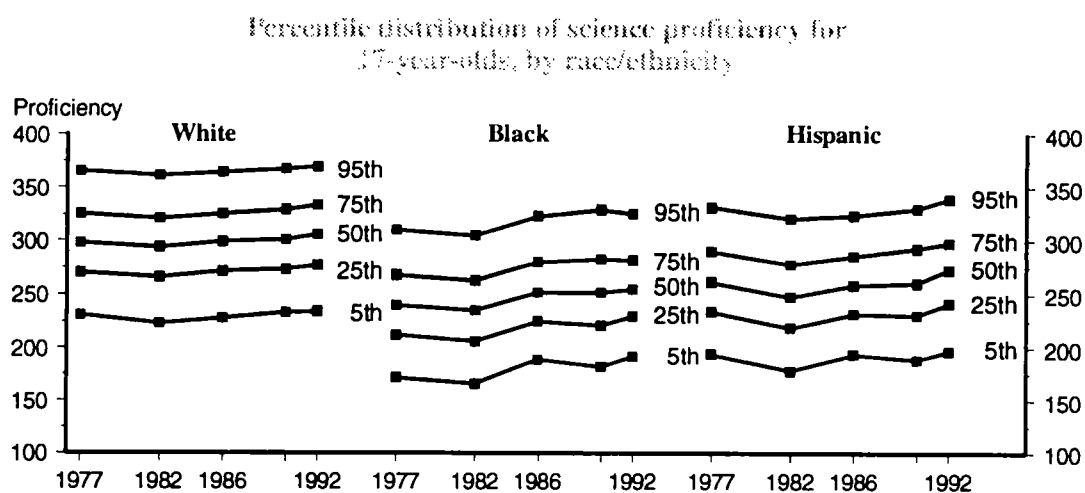
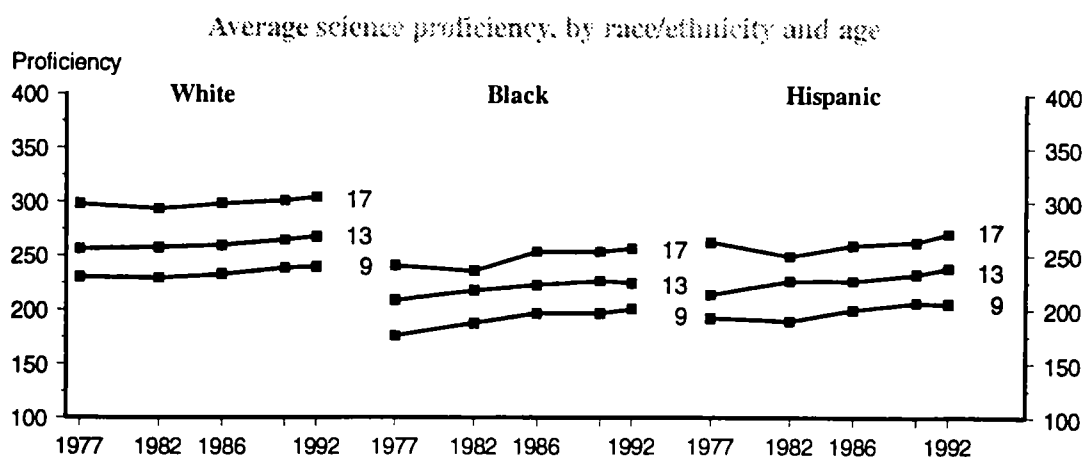
Level 200: Understands simple scientific principles

Level 350: Integrates specialized scientific information

Level 250: Applies general scientific information

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; and Writing, 1984 to 1992, 1994.*

Average science proficiency (scale score): 1977-92



NOTE: The science proficiency scale has a range from 0 to 500.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; and Writing, 1984 to 1992, 1994.*

International comparisons of reading literacy

- ◆ In an international assessment of basic reading literacy, 9-year-olds from the United States performed better on average on the narrative domain than students from other large countries.
- ◆ At age 14, students in the United States scored higher on the expository domain on average than students of similar ages in West Germany and Spain.
- ◆ There is far greater variation in the basic reading literacy of students within each country than there are differences in averages among countries. For example, among 9-year-olds, the difference between the 10th and the 90th percentile on the narrative domain was 235 scale points in the United States, compared to a difference of 62 scale points between the United States and West Germany (see supplemental table 17-2).
- ◆ Children whose home language is different from the one spoken at school showed lower literacy levels in most countries, including the United States, at both ages 9 and 14.

The ability to read is a minimum requirement to participate productively in a global economy and to fulfill basic civic responsibilities. Comprehending and effectively using written language are crucial for both future learning and the development of basic job skills.

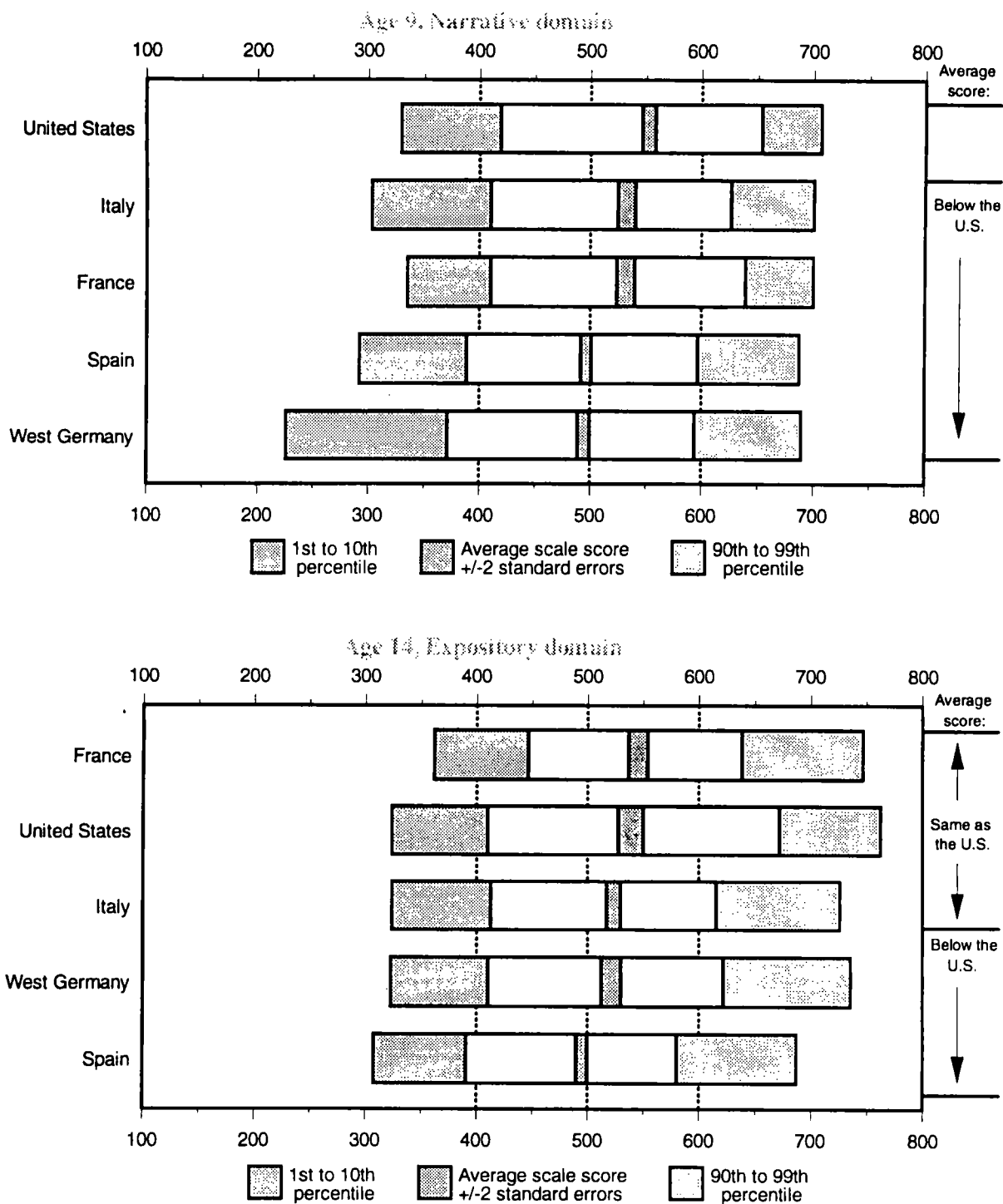
Average reading literacy scale scores, by age and country: School year 1991-92

	Average overall score			Average domain scale score			Non-school language spoken at home		School language spoken at home	
	Total	Male	Female	Narrative	Expository	Documents	Percentage of students	Average score	Percentage of students	Average score
Larger countries										
Age 9										
United States	547	543	552	553	538	550	4	520	96	549
France	531	530	533	532	533	527	9	491	91	536
Italy	529	525	537	533	538	517	27	513	73	537
Spain	504	500	508	497	505	509	13	499	87	505
West Germany	503	501	508	491	497	520	11	461	92	509
Age 14										
France	549	553	549	556	546	544	4	516	96	552
United States	535	530	543	539	539	528	4	478	96	539
West Germany	522	522	526	514	521	532	8	455	92	530
Italy	515	511	520	520	524	501	26	488	74	525
Spain	490	488	492	500	495	475	11	481	89	491

NOTE: In the Study of Reading Literacy, 32 countries assessed the reading achievement of students in the grades where most 9- and 14-year-olds were enrolled. The countries above are the larger countries. The above scores were scaled using the Rasch procedure. The domain scores for each age group were scaled to a mean of 500 and a standard deviation of 100. The average overall score is the mean of the domain scale scores. Some student groups were excluded by the participating countries, such as those in private schools, schools serving disabled children, or schools where the language of instruction is different from the primary national language. See supplemental tables 17-1 through 17-4 for details on excluded populations and performance information on other countries.

SOURCE: International Association for the Evaluation of Educational Achievement, Study of Reading Literacy, *How in the World Do Students Read?*, 1992.

Distribution of scale scores on reading literacy assessment, by country:
School year 1991-92



NOTE: The vertical lines at ability score 500 mark the average score for each age group for all participating countries. The standard deviation is 100.

SOURCE: International Association for the Evaluation of Educational Achievement, Study of Reading Literacy, *How in the World Do Students Read?*, 1992.

International comparisons of mathematics performance

- ◆ In the second International Assessment of Educational Progress (IAEP), 9-year-old students from the United States scored lower on average in mathematics performance than 9-year-olds from all other large countries.
- ◆ Thirteen-year-olds from the United States scored lower on average than students of the same age in other large countries, except Spain.
- ◆ Average mathematics proficiency among 13-year-old students in the United States was 48 scale points below their South Korean counterparts. This is more than half of the difference between 9- and 13-year-olds in the United States, suggesting that United States students at age 13 may be performing at levels similar to Korean 9-year-olds rather than to their Korean age mates.
- ◆ There is far greater variation in the mathematics proficiency of students within each country than there are differences in averages among countries. For example, among 13-year-olds the difference between the 10th and 90th percentile was 124 scale points in the United States, compared to a difference in average proficiency between the United States and Taiwan of 51 scale points.

The technical skills of a nation's workers are a crucial component of its economic competitiveness. The youth of today will be tomorrow's workers and will be competing in the global marketplace. They will depend on the mathematics learned in this decade to succeed in the complex business and technological environments of the future.

Proficiency scores on mathematics assessment, by age and country: 1991

Larger countries ¹	Average proficiency score			Percentile scores						
	Total	Male	Female	1st	5th	10th	Median	90th	95th	99th
Age 9										
South Korea	473	480	465	334	383	407	475	534	550	586
Taiwan	454	455	453	304	360	384	457	521	539	571
Soviet Union ²	447	448	446	310	349	374	450	514	532	579
Spain ³	432	432	432	287	330	353	437	499	518	551
Canada ⁴	430	430	431	296	337	363	435	490	506	537
United States	420	422	419	278	305	333	427	492	513	549
Age 13										
Taiwan	545	546	544	368	424	454	550	631	659	694
South Korea	542	546	537	390	445	470	545	609	629	665
Soviet Union ²	533	533	532	413	458	477	536	584	596	629
France	519	523	515	404	442	460	521	574	588	616
Canada ⁵	513	515	512	400	443	462	515	564	580	608
Spain ³	495	498	492	390	429	446	496	542	556	577
United States	494	494	494	366	407	430	495	554	574	616

¹ In the second International Assessment of Educational Progress (IAEP), 14 countries assessed the mathematics achievement of 9-year-olds, and 20 countries assessed the mathematics achievement of 13-year-olds. The countries above are the larger countries that assessed virtually all age-eligible children, except as noted. See supplemental tables 18-1 through 18-4 for performance information on other countries.

² Fourteen out of 15 republics in the former Soviet Union; Russian-speaking schools.

³ Regions except Cataluña; Spanish-speaking schools.

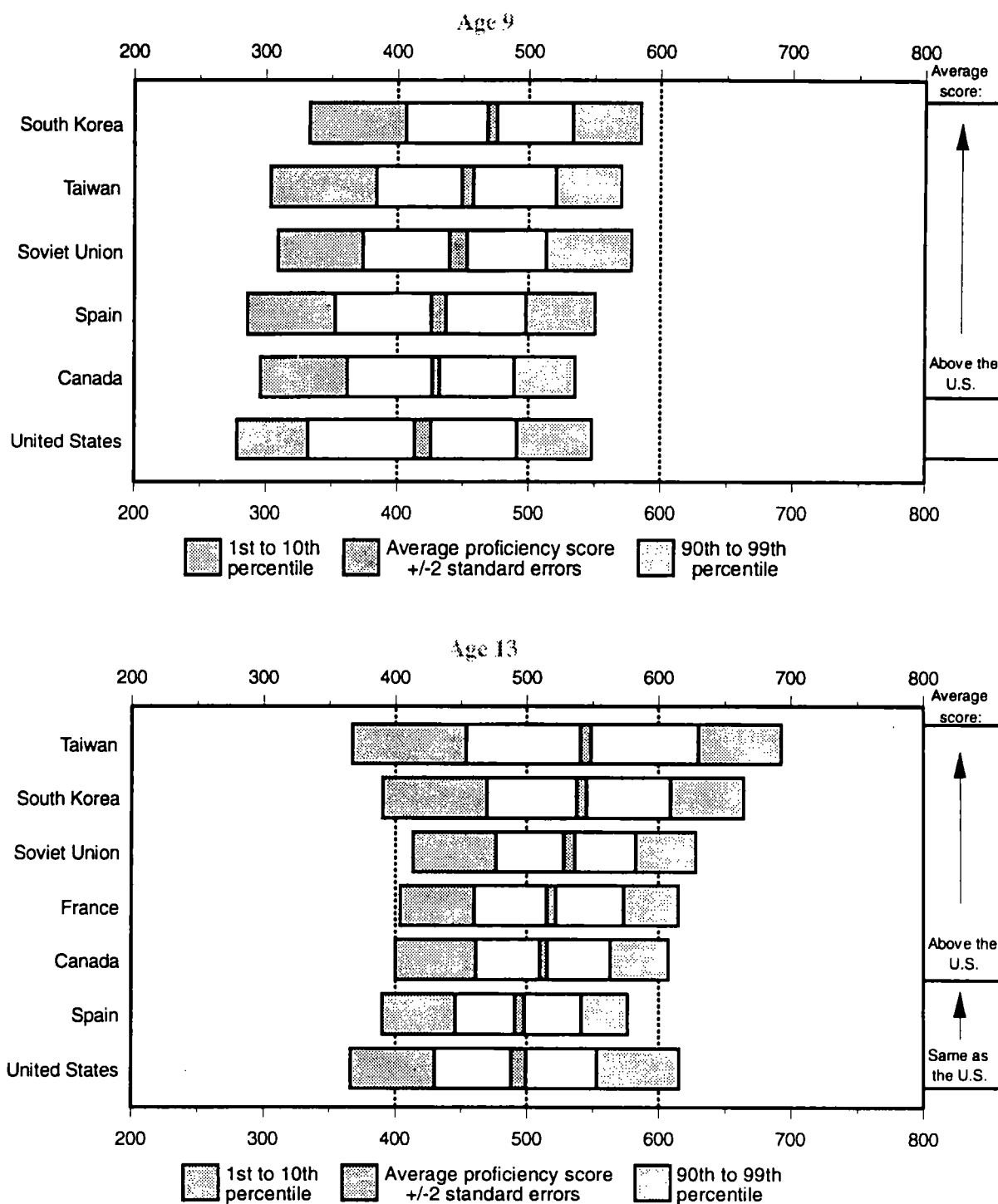
⁴ Four out of 10 provinces; see supplemental table 18-1 for the scores of 9-year-olds in individual Canadian provinces.

⁵ Nine out of 10 provinces; see supplemental table 18-2 for the scores of 13-year-olds in individual Canadian provinces.

NOTE: Proficiency scores range from 0 to 1,000. The mean proficiency score for all participating populations, 9- and 13-year-olds together, is 500. The standard deviation is 100. See the supplemental note to *Indicator 18* for a discussion of proficiency scaling.

SOURCE: Educational Testing Service, International Assessment of Educational Progress, 1992.

Distribution of proficiency scores on mathematics assessment, by age and country: 1991



NOTE: The scale for proficiency scores ranges from 0 to 1,000. The mean proficiency score for all participating populations, 9- and 13-year-olds together, is 500. The standard deviation is 100.

SOURCE: Educational Testing Service, International Assessment of Educational Progress, 1992.

International comparisons of science performance

- ◆ In the second International Assessment of Educational Progress (IAEP), 9-year-old students from South Korea scored higher on average in science performance than 9-year-olds from the United States. Students of the same age from Spain scored lower on average.
- ◆ Thirteen-year-olds from South Korea, Taiwan, the former Soviet Union, and Canada scored higher on average than U.S. students of the same age.
- ◆ The difference in science proficiency between 9- and 13-year-olds in the United States (75 scale points) was less than the proficiency difference in other large countries (ranging from 95 to 110 scale points).
- ◆ Among 9-year-olds, boys performed better than girls in South Korea, Taiwan, and Spain. At age 13, this gender difference held across all large participating countries except Taiwan.

The scientific and technological skills of a nation's workers are a crucial component of its economic competitiveness. The youth of today will be tomorrow's workers and will be competing in the global marketplace. They will depend on the science learned in this decade to succeed in the complex business and technological environments of the future.

Proficiency scores on science assessment, by age and country: 1991

Larger countries ¹	Average proficiency score			Percentile scores						
	Total	Male	Female	1st	5th	10th	Median	90th	95th	99th
Age 9										
South Korea	460	474	446	303	357	383	460	541	563	609
Taiwan	456	466	445	254	321	359	458	553	576	627
United States	446	451	441	235	292	328	453	543	567	605
Canada ²	437	439	434	257	316	346	443	517	538	582
Soviet Union ³	434	441	428	284	328	356	433	515	547	588
Spain ⁴	430	439	421	250	305	334	435	522	541	567
Age 13										
South Korea	571	580	559	395	457	490	575	649	670	710
Taiwan	563	567	560	339	420	463	572	655	673	715
Soviet Union ³	541	546	535	383	438	465	545	612	629	661
Canada ⁵	533	539	527	384	434	460	534	606	628	670
France	532	540	524	370	417	442	534	611	639	677
Spain ⁴	525	531	519	380	428	453	524	596	617	663
United States	521	530	513	334	410	436	523	601	627	665

¹ In the second International Assessment of Educational Progress (IAEP), 14 countries assessed the science achievement of 9-year-olds, and 20 countries assessed the science achievement of 13-year-olds. The countries above are the larger countries that assessed virtually all age-eligible children, except as noted. See supplemental tables 19-1 through 19-4 for performance information on other countries.

² Four out of 10 provinces; see supplemental table 19-1 for the scores of 9-year-olds in individual Canadian provinces.

³ Fourteen out of 15 republics in the former Soviet Union; Russian-speaking schools.

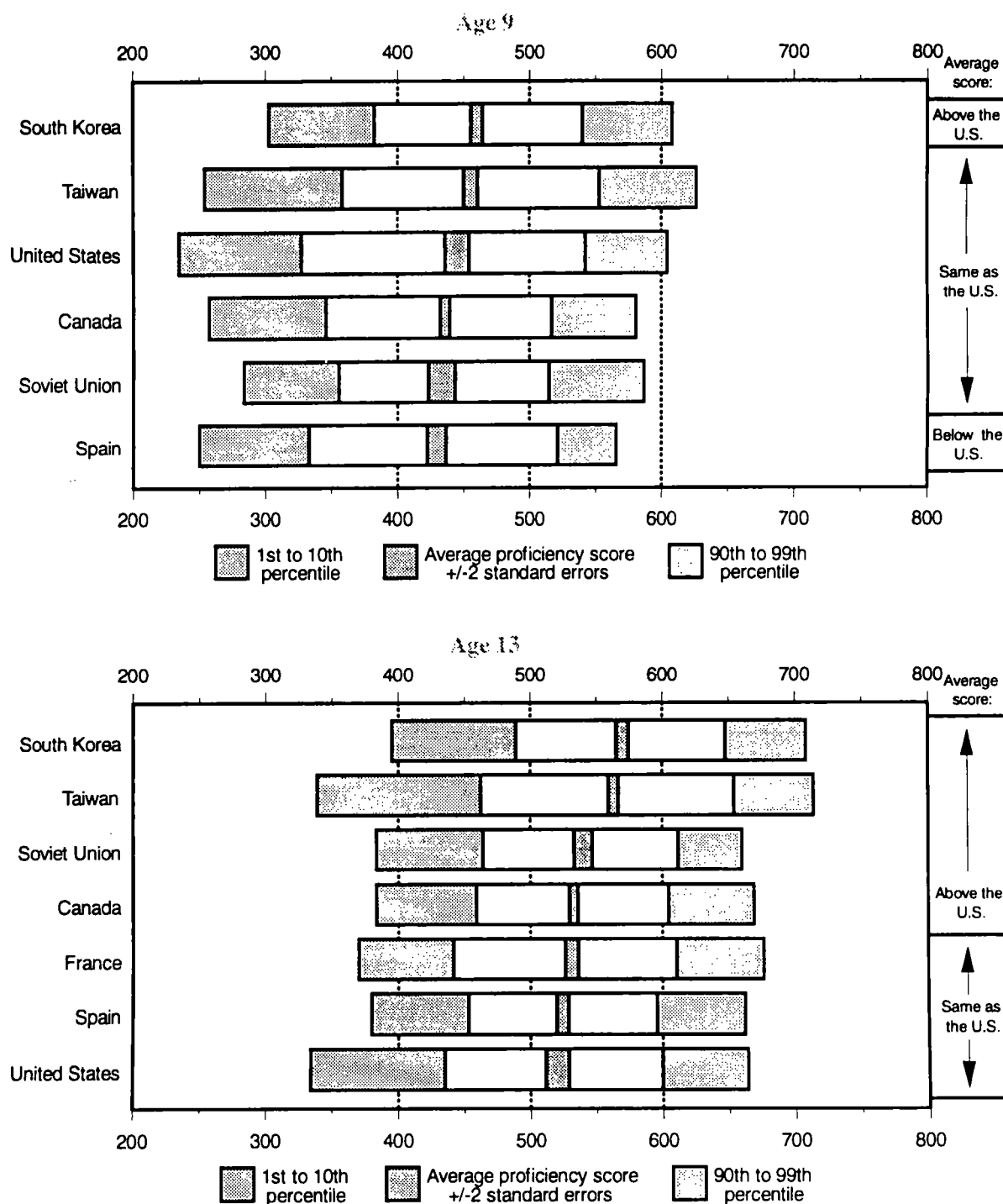
⁴ Regions except Cataluña; Spanish-speaking schools.

⁵ Nine out of 10 provinces; see supplemental table 19-2 for the scores of 13-year-olds in individual Canadian provinces.

NOTE: Proficiency scores range from 0 to 1,000. The mean proficiency score for all participating populations, 9- and 13-year-olds together, is 500. The standard deviation is 100. See the supplemental note to *Indicator 18* for a discussion of proficiency scaling.

SOURCE: Educational Testing Service, International Assessment of Educational Progress, 1992.

Distribution of proficiency scores on science assessment, by age and country: 1991



NOTE: The scale for proficiency scores ranges from 0 to 1,000. The mean proficiency score for all participating populations, 9- and 13-year-olds together, is 500. The standard deviation is 100.

SOURCE: Educational Testing Service, International Assessment of Educational Progress, 1992.

Scholastic Aptitude Test (SAT) scores

- ◆ Average total SAT scores remained relatively unchanged between 1993 and 1994. However, the performance of male test-takers dropped by 3 points in verbal and 1 point in mathematics, while the scores of female test-takers rose by 1 point in verbal and 3 points in mathematics, slightly narrowing the gap between the sexes.
- ◆ The number of SAT test-takers as a percentage of high school graduates remained at about 42 percent during the 1992–94 period, up from 35 percent in 1984. The proportion of minority SAT test-takers more than doubled between 1976 and 1994, rising from 15 to 31 percent (see supplemental table 20-1).
- ◆ Since 1976, the mean scores of black test-takers have risen 20 points on the verbal section and 34 points on the mathematics section, while the mean scores of whites have fallen 8 points on the verbal section and have risen 2 points on the mathematics section (see supplemental table 20-2).
- ◆ In 1994, students from families with the lowest parental education and income levels received the lowest scores overall, and scores increased with higher levels of parental education and income (see supplemental table 20-4).

The Scholastic Aptitude Test (SAT) is the test taken most frequently by college-bound students. It is designed to predict success in the freshman year of college, and to track the performance of groups of students who intend to enter college across time. When interpreting these scores the reader should be aware that the proportion of high school graduates who take the exam changes over time.

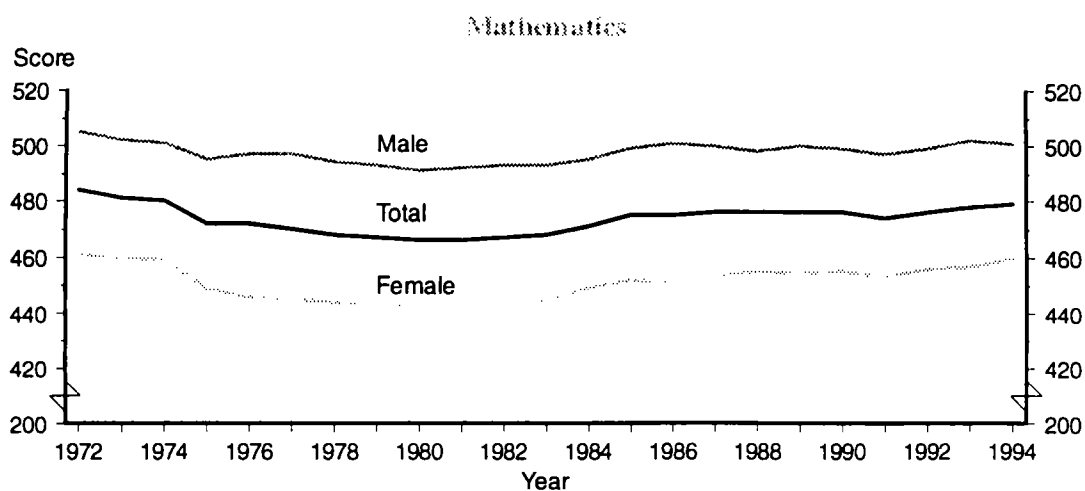
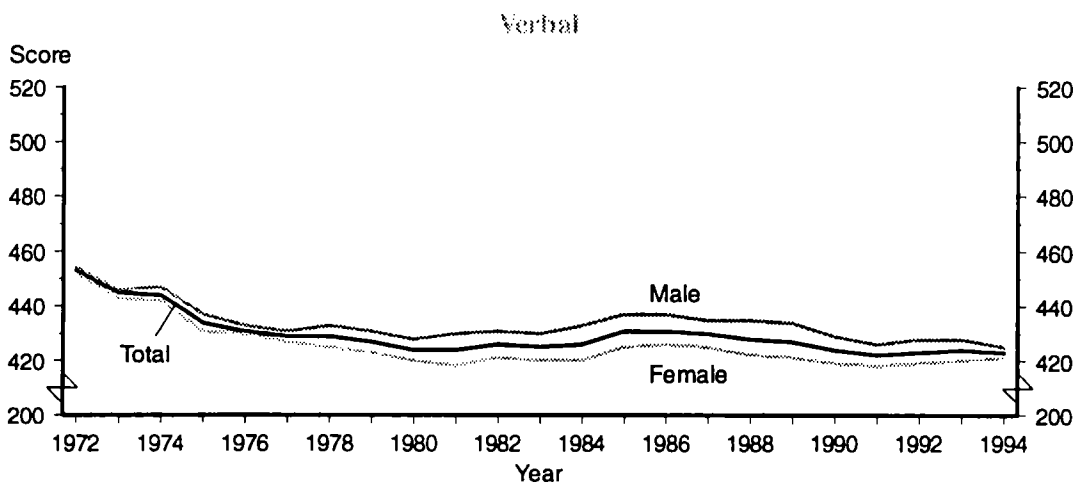
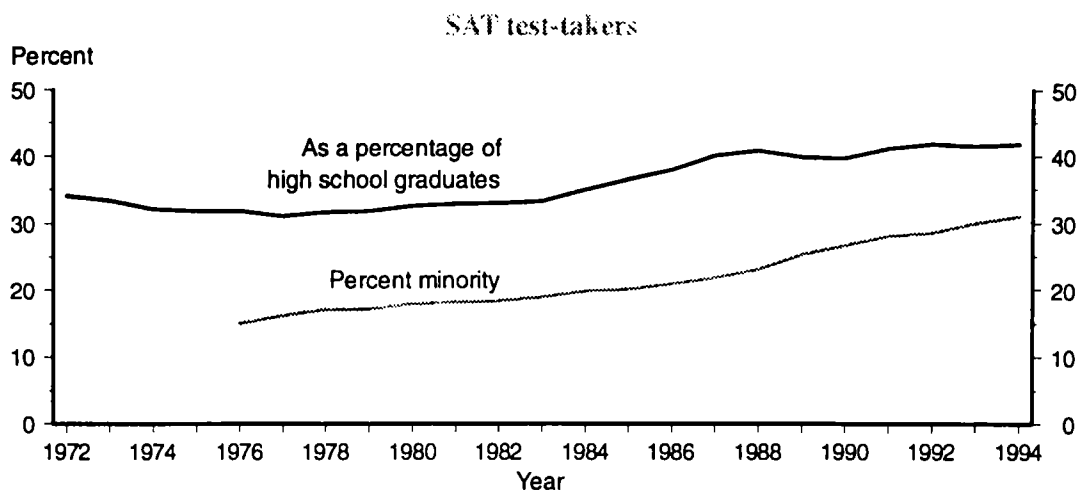
Mean SAT scores of college-bound seniors, by sex: 1972–94

Year	Verbal			Mathematics			Combined		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
1972	453	454	452	484	505	461	937	959	913
1973	445	446	443	481	502	460	926	948	903
1974	444	447	442	480	501	459	924	948	901
1975	434	437	431	472	495	449	906	932	880
1976	431	433	430	472	497	446	903	930	876
1977	429	431	427	470	497	445	899	928	872
1978	429	433	425	468	494	444	897	927	869
1979	427	431	423	467	493	443	894	924	866
1980	424	428	420	466	491	443	890	919	863
1981	424	430	418	466	492	443	890	922	861
1982	426	431	421	467	493	443	893	924	864
1983	425	430	420	468	493	445	893	923	865
1984	426	433	420	471	495	449	897	928	869
1985	431	437	425	475	499	452	906	936	877
1986	431	437	426	475	501	451	906	938	877
1987	430	435	425	476	500	453	906	935	878
1988	428	435	422	476	498	455	904	933	877
1989	427	434	421	476	500	454	903	934	875
1990	424	429	419	476	499	455	900	928	874
1991	422	426	418	474	497	453	896	923	871
1992	423	428	419	476	499	456	899	927	875
1993	424	428	420	478	502	457	902	930	877
1994	423	425	421	479	501	460	902	926	881

NOTE: The term "college-bound seniors" refers to those students from each high school graduating class who participate in the College Board Admission Testing Program. This population does not include all high school seniors, nor all first-year college students, as approximately one-third of high school graduates participate in the American College Testing Program. See the supplemental note to Indicator 20 for information on interpreting SAT scores and for a discussion of the new version of the SAT.

SOURCE: College Entrance Examination Board, *National Report: College Bound Seniors, 1972–1994* (Copyright ©1994 by College Entrance Examination Board. All rights reserved).

SAT test-takers as a percentage of high school graduates and average SAT scores of college-bound seniors, by section and sex: 1972-94



SOURCE: College Entrance Examination Board, *National Report: College Bound Seniors, 1972-1994* (Copyright © 1994 by College Entrance Examination Board. All rights reserved).

Graduate Record Examination (GRE) scores

- ◆ The average total score on the GRE fell 70 points between 1965 and 1979, then increased 55 points between 1979 and 1990. Between 1990 and 1993, the scores decreased 10 points, reaching the lowest level since 1987.
- ◆ The average GRE verbal score has not yet recovered from the decline experienced throughout the 1960s, 70s, and early 80s; in 1993, it was 49 points below the average score in 1965. However, the quantitative score rose 45 points between 1973 and 1993 and was 24 points higher in 1993 than in 1965.

The Graduate Record Examination (GRE), which is taken by less than one-third of college graduates, is a measure of the general learned abilities of prospective graduate students. Because there currently is no method to assess learning at the college level, the GRE, by default, is the best measure of general learned abilities of college graduates. However, the reader should be aware of the limitations of average GRE scores, including (1) the proportion of college graduates taking the exam changes over time; (2) an increasing proportion of foreign students are taking the exam; and (3) the average scores include some students who take the exam more than once.

- ◆ The percentage of test-takers who are not U.S. citizens increased between 1979 and 1988. Non-U.S. citizens performed better on the quantitative component but worse on the verbal component than U.S. citizens (see supplemental table 21-3).

Graduate Record Examination (GRE) scores and the number of test-takers, by percentage of bachelor's degrees awarded and citizenship: Selected academic years ending 1965-93

Academic year ending	GRE test-takers			GRE scores		
	Number	As percent of bachelor's degrees ¹	Percent who are U.S. citizens	Total ²	Verbal	Quantitative
1965	93,792	18.7	—	1,063	530	533
1967	151,134	27.0	—	1,047	519	528
1969	206,113	28.3	—	1,039	515	524
1971	293,600	35.0	—	1,009	497	512
1973	290,104	31.5	—	1,009	497	512
1975	298,335	32.3	—	1,001	493	508
1976	299,292	32.3	92.5	1,002	492	510
1977	287,715	31.3	91.3	1,004	490	514
1978	286,383	31.1	89.1	1,002	484	518
1979	282,482	30.7	90.0	993	476	517
1980	272,281	29.3	89.3	996	474	522
1981	262,855	28.1	86.8	996	473	523
1982	256,381	26.9	86.7	1,002	469	533
1983	263,674	27.2	86.1	1,014	473	541
1984	265,221	27.2	85.9	1,016	475	541
1985	271,972	27.8	84.9	1,019	474	545
1986	279,428	28.3	84.5	1,027	475	552
1987	293,560	29.6	84.2	1,027	477	550
1988	303,703	30.5	79.5	1,040	483	557
1989	326,096	32.0	—	1,044	484	560
1990	344,572	³ 32.8	—	1,048	486	562
1991	379,882	³ 34.7	—	1,047	485	562
1992	411,528	³ 36.2	—	1,044	483	561
1993	400,246	⁴ 35.0	—	1,038	481	557

— Not available.

¹ Ratio of the number of GRE test-takers in a year to the number of bachelor's degrees awarded in that year expressed as a percentage.

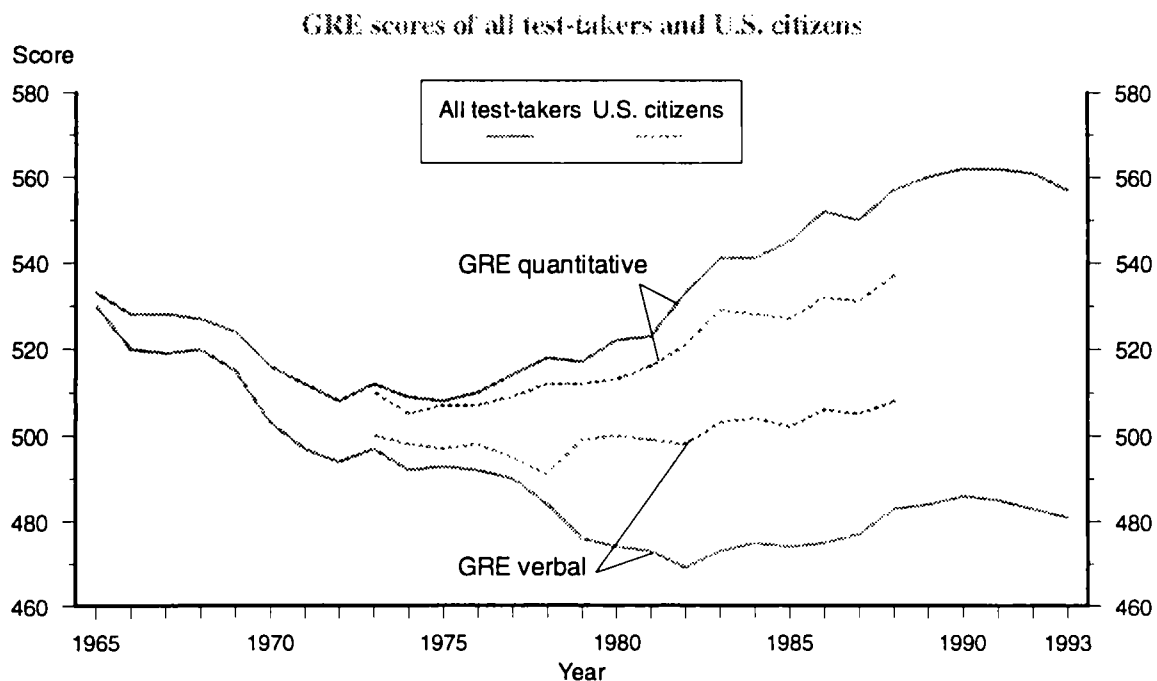
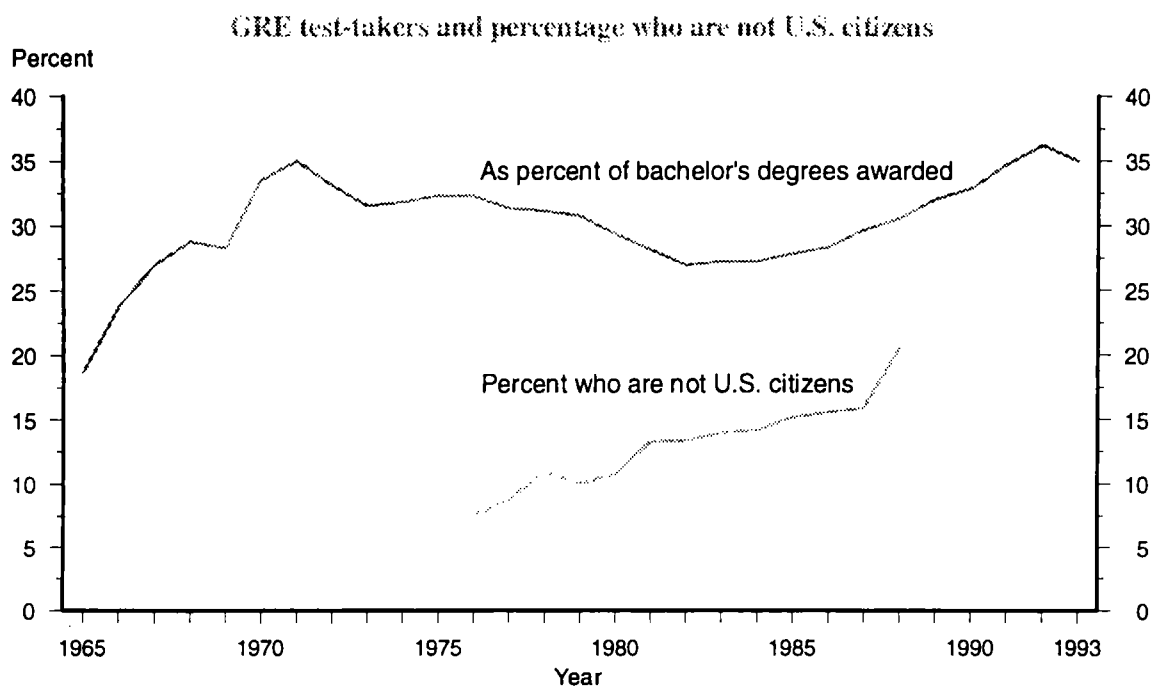
² Scores for the analytical section of the GRE are not included.

³ Revised from previously published data.

⁴ Estimated.

SOURCE: Educational Testing Service and U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Graduate Record Examination (GRE) scores and number of test-takers as a percentage of bachelor's degrees awarded and citizenship: Academic years ending 1965-93



NOTE: GRE verbal and quantitative scores each range from 200 to 800. Total GRE scores range from 400 to 1,600.

SOURCE: Educational Testing Service and U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Educational attainment

- ♦ Educational attainment rates of 25- to 29-year-olds increased between 1971 and 1994. The percentage of students completing high school rose 8 percentage points; the percentage of high school graduates completing at least some college rose 17 percentage points; and the percentage of high school graduates completing 4 or more years of college rose 5 percentage points.
- ♦ Between 1971 and 1994, the percentage of 25- to 29-year-old high school graduates completing 4 or more years of college rose 9 percentage points for females and 1 percentage point for males, eliminating the differences between males and females (see supplemental table 22-3).
- ♦ While fewer black 25- to 29-year-olds had completed high school than their white counterparts in 1994, the gap between the percentages of blacks and whites completing high school closed between 1971 and 1994 (decreasing from 23 to 7 percentage points). Also, 50 percent of black graduates had completed at least some college compared to 63 percent of white high school graduates, and a smaller percentage of black than white (16 compared to 30 percent, respectively) graduates had completed a bachelor's or higher degree.
- ♦ In 1994, fewer Hispanic 25- to 29-year-olds had completed high school than their white counterparts. Fifty-two percent of Hispanic graduates completed at least some college, and 13 percent completed a bachelor's or higher degree, compared to 63 and 30 percent, respectively, of their white counterparts. These gaps in educational attainment rates between Hispanics and whites have not closed between 1971 and 1994.

Completing 4 years of college is an important educational accomplishment that will yield many benefits to those who achieve it. It represents the end result of both starting college and persistent enrollment. Some students stop out, and others drop out, but the vast majority of those who will ever complete 4 years of college do so by their late 20s.

Percentage of 25- to 29-year-olds who have completed high school and percentage of high school graduates who have completed 1 or more and 4 or more years of college, by race/ethnicity: Selected years March 1971-94

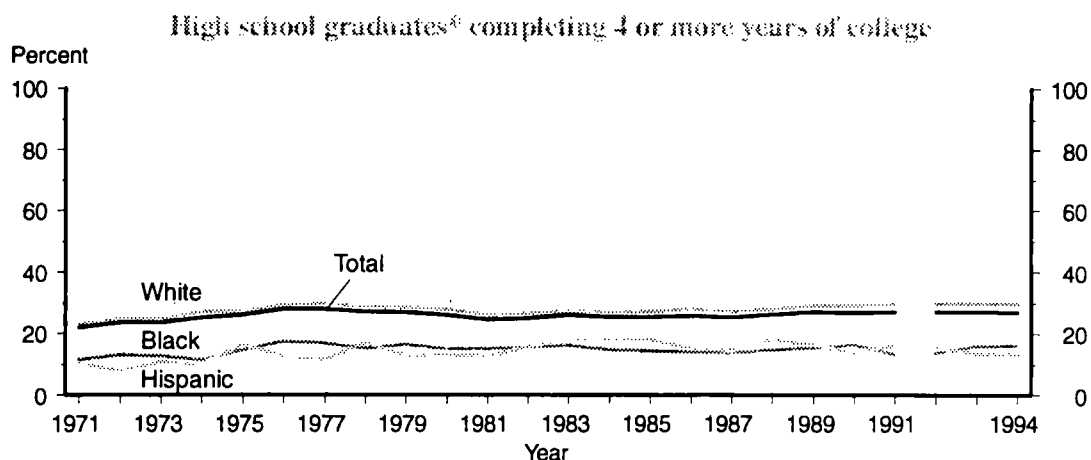
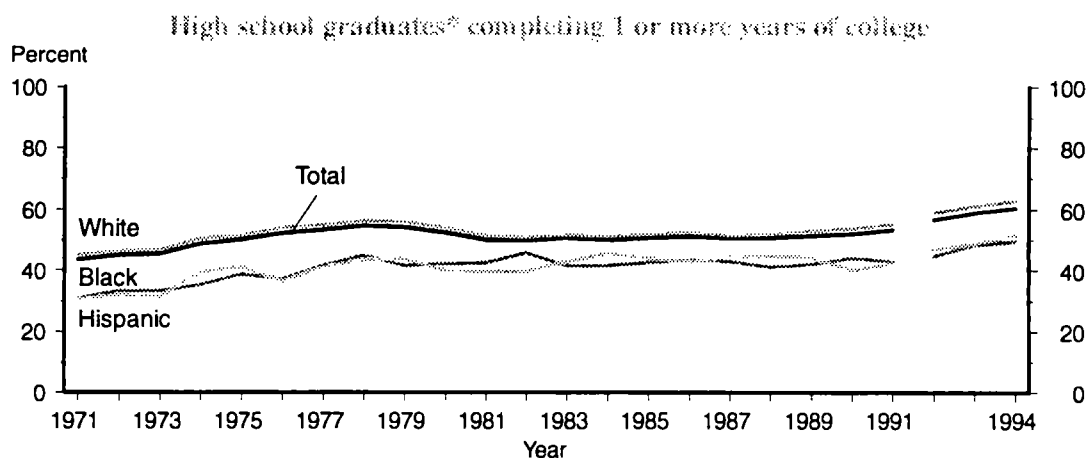
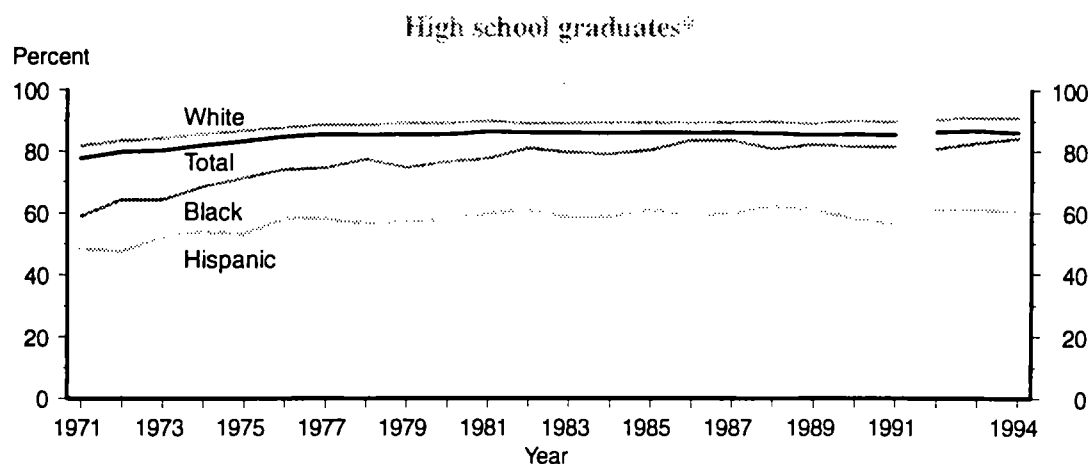
March	High school graduates*				High school graduates* completing:							
	Total	White	Black	Hispanic	1 or more years of college				4 or more years of college			
					Total	White	Black	Hispanic	Total	White	Black	Hispanic
1971	77.7	81.7	58.8	48.3	43.6	44.9	30.9	30.6	22.0	23.1	11.5	10.5
1973	80.2	84.0	64.1	52.3	45.3	46.6	33.5	31.6	23.6	24.8	12.7	10.8
1975	83.1	86.6	71.1	53.1	50.1	51.2	38.7	41.1	26.3	27.5	14.7	16.6
1977	85.4	88.6	74.5	58.0	53.2	54.8	41.7	41.1	28.1	29.8	16.9	11.5
1979	85.6	89.2	74.7	57.1	54.1	55.7	41.7	44.0	27.0	28.6	16.6	12.9
1981	86.3	89.8	77.6	59.8	50.1	51.2	42.5	39.6	24.7	26.3	14.9	12.5
1983	86.0	89.3	79.5	58.4	50.6	51.6	41.6	42.9	26.2	27.4	16.2	17.8
1985	86.2	89.5	80.5	61.0	50.8	51.8	42.7	44.2	25.7	27.3	14.4	18.2
1987	86.0	89.4	83.5	59.8	50.7	51.4	43.0	44.6	25.6	27.6	13.8	14.5
1989	85.5	89.3	82.3	61.0	51.3	52.8	42.1	44.3	27.3	29.5	15.4	16.5
1991	85.4	89.8	81.8	56.7	53.1	54.9	43.2	42.2	27.2	29.7	13.4	16.3
	Diploma or equivalency certificate				Some college or more				Bachelor's degree or more			
1992	86.3	90.6	80.9	60.9	56.7	58.8	44.7	46.8	27.3	30.0	13.7	15.6
1993	86.7	91.2	82.7	60.9	58.9	61.0	48.4	48.8	27.3	29.8	16.1	13.6
1994	86.1	91.1	84.1	60.3	60.5	62.7	49.6	51.5	27.0	29.7	16.2	13.3

* 12 years of schooling completed for 1971-91.

NOTE: Beginning in 1992, the Current Population Survey changed the questions it used to obtain the educational attainment of respondents. See the supplemental note to this indicator for further discussion.

SOURCE: U.S. Department of Commerce, Bureau of the Census, March Current Population Surveys.

Percentage of 25- to 29-year-olds completing high school and percentage of high school graduates who have completed 1 or more and 4 or more years of college, by race/ethnicity: March 1971-94



* 12 years of schooling completed for 1971-91.

NOTE: Beginning in 1992, the Current Population Survey changed the questions it used to obtain the educational attainment of respondents. See the supplemental note to Indicator 22 for further discussion.

SOURCE: U.S. Department of Commerce, Bureau of the Census, March Current Population Surveys.

International comparisons of educational attainment, by age

- ♦ The educational attainment of the U.S. population is high compared to other large industrialized countries. A similar or higher percentage of 25- to 64-year-olds in the United States have completed secondary school and college than their counterparts in Japan, Germany, the United Kingdom, France, Italy, or Canada.
- ♦ In Japan, Germany, the United Kingdom, and Canada, 25- to 34-year-olds have completed secondary education at rates similar to their counterparts in the United States.
- ♦ Young men aged 25–34 in Japan were much more likely to have completed higher education than men of the same age group in the other large highly industrialized countries. Young men in the United States ranked second.
- ♦ Young women aged 25–34 in the United States were much more likely to have completed higher education than women or men of the same age in other large industrialized countries (with the exception of men in Japan).

The percentage of the population completing secondary and higher education in the United States and other highly industrialized countries provides an indication of the skill level of the U.S. work force as compared to its economic competitors. Furthermore, contrasting the educational attainment of the general population to the attainment of younger age cohorts provides a means of comparing past and recent progress in the rate at which individuals complete high school or college.

Percentage of the population in large industrialized countries who have completed secondary and higher education, by age, sex, and country: 1992

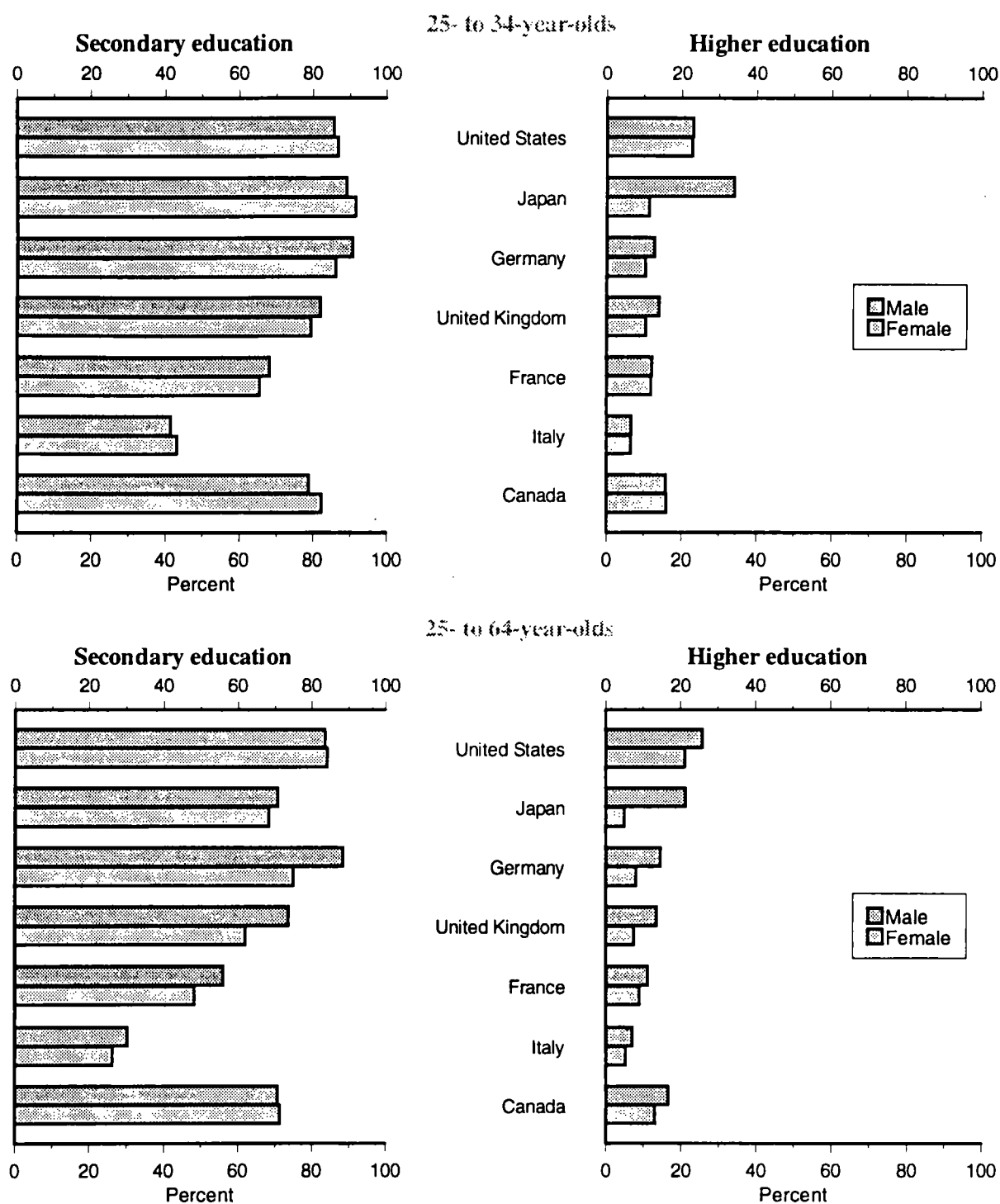
Country	25–64 years old		25–34 years old					
	Both sexes		Both sexes		Male		Female	
	Secondary education	Higher education	Secondary education	Higher education	Secondary education	Higher education	Secondary education	Higher education
United States	84.0	23.6	86.5	23.2	85.9	23.3	87.0	23.1
Japan*	69.7	13.3	90.6	22.9	89.3	34.2	91.8	11.5
Germany	81.9	11.6	88.6	11.8	90.9	13.0	86.3	10.5
United Kingdom	68.1	10.7	80.9	12.5	82.2	14.3	79.6	10.7
France	52.2	10.2	67.1	12.3	68.4	12.4	65.7	12.1
Italy	28.4	6.4	42.4	6.8	41.5	6.8	43.3	6.7
Canada	71.3	15.0	80.8	16.1	79.0	16.0	82.5	16.2

* 1989 data.

NOTE: In the United States, completing secondary education is defined as graduating from high school or earning a GED; completing higher education is defined as earning a bachelor's degree or more.

SOURCE: Organization for Economic Co-operation and Development, Indicators of Education's Systems, *Digest of International Education Statistics*, forthcoming.

Percentage of the population in large industrialized countries completing secondary and higher education, by age, sex, and country: 1992



NOTE: In the United States, completing secondary education is defined as graduating high school or earning a GED; completing higher education is defined as earning a bachelor's degree or more.

SOURCE: Organization for Economic Co-operation and Development, *Indicators of Education's Systems, Digest of International Education Statistics*, forthcoming.

High school graduation requirements

- ◆ As district spending increased, students were more likely to be required to complete 13 or more years of coursework in English, mathematics, science, and social studies except for school districts spending the most per pupil.
- ◆ Students in districts with low median household income were more likely to be required to meet or exceed the NCEE recommendations in English, math, and science than students in districts with middle or high median household income.
- ◆ The median district requirements in the four core subjects ranged from 10 to 12 years of coursework in all but four states (see supplemental table 24-7).

One of the national education goals states that students leaving grade 12 will have demonstrated competency in English, mathematics, science, history, and geography. The extent to which district high school graduation requirements include substantial coursework in these core subjects provides one indicator of the support educators are giving this goal. The 1983 recommendations by the National Commission on Excellence in Education (NCEE)—4 years of English, and 3 years each of mathematics, science, and social studies—provide a useful standard for comparison among districts.

Average years of study required in core subjects for public high school graduation and percentage of students in districts with graduation requirements at or above the NCEE's recommendations, by subject and selected district characteristics: 1990-91

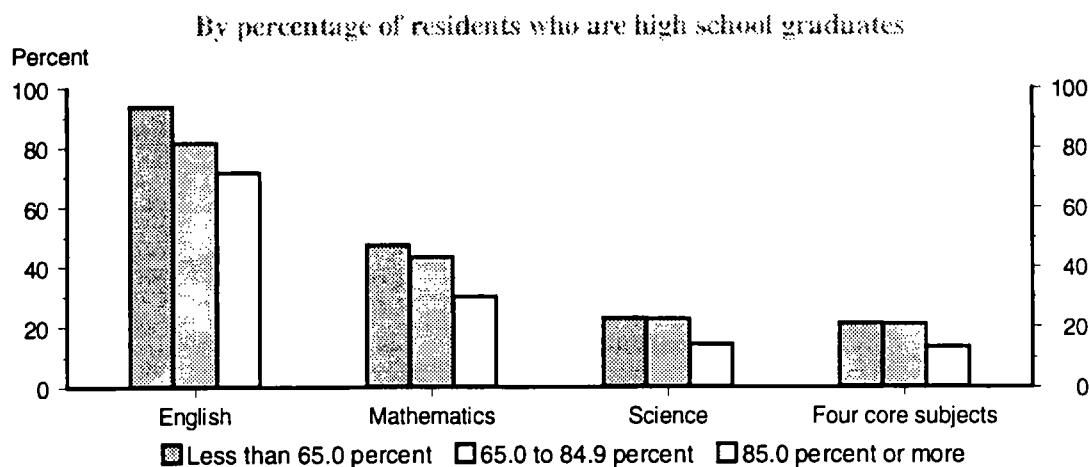
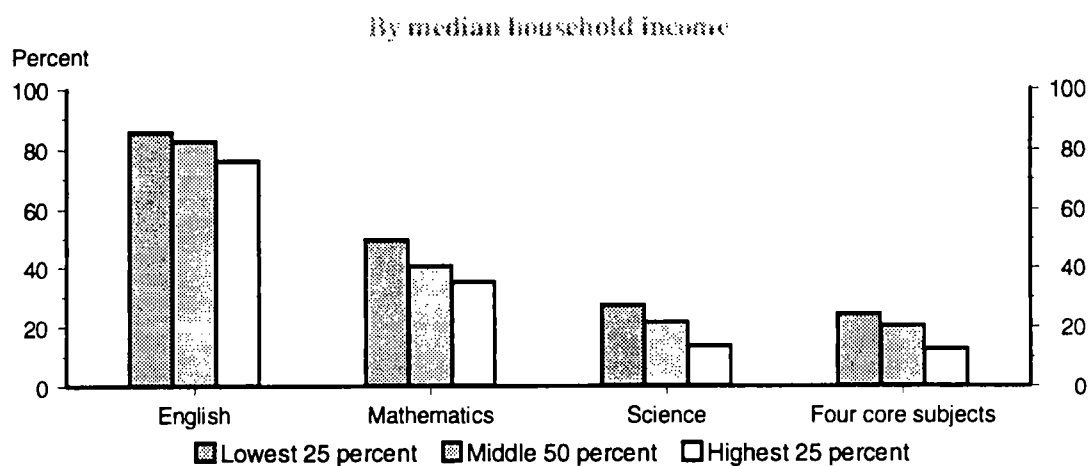
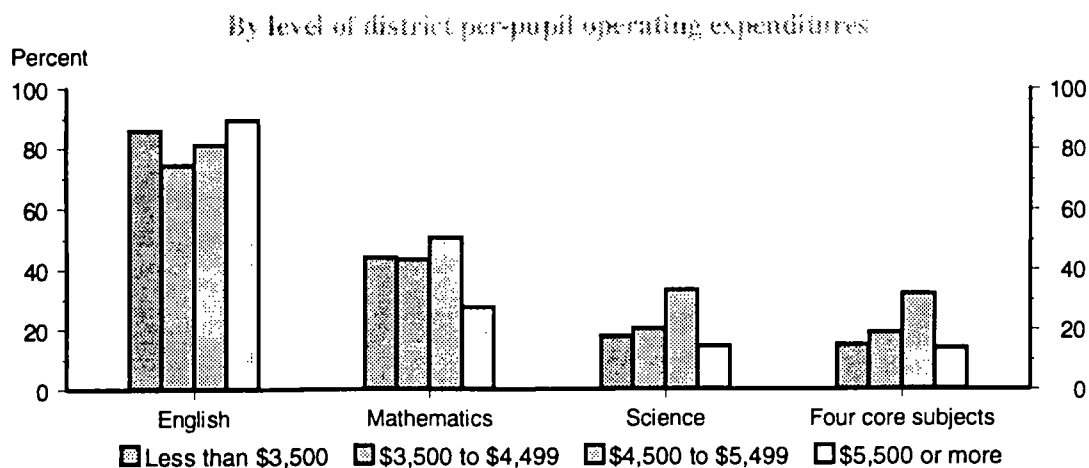
District characteristic	English		Mathematics		Science		Four core subjects*	
	Percent with Years	4 or more	Percent with Years	3 or more	Percent with Years	3 or more	Percent with Years	13 or more
Total	3.8	81.5	2.5	41.6	2.1	21.1	11.3	19.8
Spending per pupil in school district								
Less than \$3,500	3.8	86.2	2.5	44.0	2.1	17.7	11.1	14.9
\$3,500 to \$4,499	3.8	74.7	2.5	43.2	2.1	20.2	11.2	19.0
\$4,500 to \$5,499	3.9	81.4	2.6	50.5	2.2	33.2	11.7	32.0
\$5,500 or more	3.9	89.6	2.3	27.5	2.1	14.4	11.5	13.8
Residents' median household income								
Lowest 25 percent	3.8	85.7	2.5	49.7	2.2	27.4	11.4	24.5
Middle 50 percent	3.9	82.8	2.4	40.7	2.1	21.7	11.3	20.3
Highest 25 percent	3.8	76.0	2.4	35.2	2.1	13.7	11.3	12.7
Residents who are high school graduates								
Less than 65.0 percent	3.9	93.8	2.5	47.3	2.2	22.8	11.3	21.0
65.0 to 84.9 percent	3.8	81.7	2.5	43.3	2.1	22.6	11.4	20.8
85.0 percent or more	3.8	71.6	2.3	30.2	2.1	14.3	11.1	13.3
Residents who are minority								
Less than 5.0 percent	3.8	73.3	2.4	31.5	2.1	20.4	11.2	18.0
5.0 to 19.9 percent	3.8	79.7	2.4	39.1	2.1	17.9	11.2	16.8
20.0 to 49.9 percent	3.9	84.7	2.6	54.6	2.2	28.5	11.6	25.8
50.0 percent or more	3.9	95.3	2.4	40.6	2.0	15.5	11.5	15.8
Households receiving public assistance								
Less than 5.0 percent	3.9	81.0	2.5	41.9	2.1	21.9	11.4	19.8
5.0 to 9.9 percent	3.8	79.3	2.5	43.5	2.2	21.1	11.3	19.4
10.0 percent or more	3.9	87.0	2.4	38.0	2.1	20.1	11.3	19.1
Urbanicity of district								
Central city	3.9	84.0	2.4	40.9	2.1	18.8	11.5	18.4
Suburban/other urban	3.8	79.6	2.5	41.6	2.1	21.8	11.3	20.5
Rural/small town	3.8	82.3	2.5	42.2	2.2	22.0	11.3	19.8

*The fourth core subject is social studies.

NOTE: Students' actual course-taking (see Indicator 25) may exceed their districts' requirements for graduation (this indicator).

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990-91 (Teacher Demand and Shortage Questionnaire); Common Core of Data, 1989-90; and 1990 Census School District Special Tabulation.

Percentage of students in school districts that met or exceeded the NCEE's recommendations,* by subject and district characteristics: 1990-91



* The NCEE recommendations included 4 years of English and 3 years each of mathematics, science, and social studies.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990-91 (Teacher Demand and Shortage Questionnaire); Common Core of Data, 1989-90; and 1990 Census School District Special Tabulation.

High school course taking in the core subject areas

- ◆ Between 1982 and 1992, the percentage of high school graduates earning the recommended units in core courses* increased sharply, from 13 to 47 percent. This increase was broadly based, occurring for both sexes and all racial/ethnic groups.
- ◆ For private school graduates, the percentage earning the recommended units increased from 17 to 66 percent (49 percentage points), compared to an increase from 12 to 45 percent (33 percentage points) for public school graduates.
- ◆ Over the same period, the percentage of graduates completing the recommended credits in core courses increased more for students whose parents had only completed high school (about 36 percentage points) than for students whose parents had completed college (29 percentage points), effectively closing the gap between the two groups.

In 1983, A Nation at Risk claimed that our society had "lost sight of the basic purposes of schooling, and of the high expectations and disciplined effort needed to attain them." As a remedial step, the report recommended that all students seeking a diploma be required to enroll in the "New Basics," a core curriculum composed of 4 units of English; 3 units each of science, social studies, and mathematics; and 0.5 units of computer science.

Percentage of high school graduates who earned the recommended units in core courses,* by selected student characteristics: 1982, 1987, 1990, and 1992

Characteristic	1982	1987	1990	1992	Percentage point change			
					1982-87	1987-90	1990-92	1982-92
Total	12.7	28.6	39.9	46.8	15.9	11.3	6.9	34.1
Sex								
Male	13.7	30.1	40.6	46.5	16.5	10.5	5.9	32.8
Female	11.8	27.2	39.2	47.2	15.4	12.0	8.0	35.4
Race/ethnicity								
White	13.8	29.7	40.6	48.5	15.9	10.9	7.9	34.7
Black	10.8	24.4	41.3	43.7	13.6	16.9	2.4	32.9
Hispanic	6.7	17.9	32.7	36.0	11.2	14.8	3.3	29.3
Asian/Pacific Islander	19.8	48.3	51.2	50.7	28.5	2.9	-0.5	30.9
American Indian/Alaskan Native	6.0	28.9	26.0	30.6	22.9	-2.9	4.6	24.6
Urbanicity								
Urban	12.9	—	—	50.8	—	—	—	37.9
Suburban	13.2	—	—	47.6	—	—	—	34.4
Rural	11.7	—	—	42.5	—	—	—	30.8
Control of school								
Public	11.5	27.1	38.2	44.8	15.6	11.1	6.6	33.3
Private	17.1	42.4	56.6	65.7	25.3	14.2	9.1	48.6
Parents' highest education level								
Didn't finish high school	10.0	—	—	45.3	—	—	—	35.3
High school graduate	10.7	—	—	47.2	—	—	—	36.5
Some college	14.8	—	—	45.7	—	—	—	30.9
College graduate	19.5	—	—	48.5	—	—	—	29.0

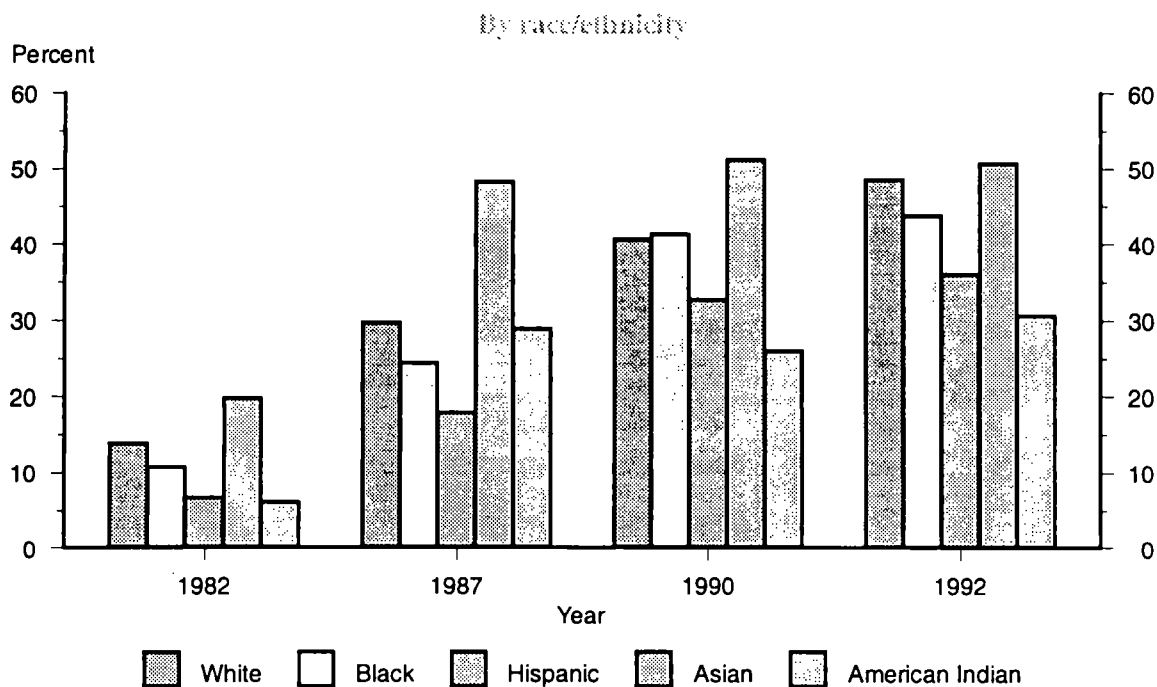
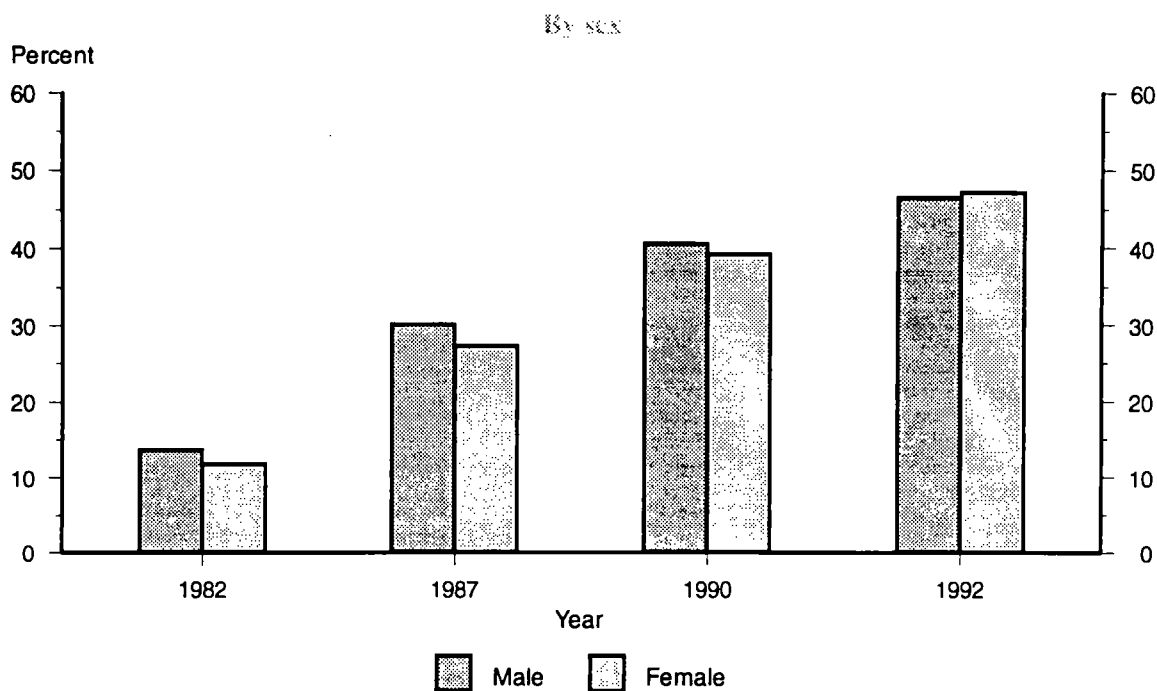
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* The panel's recommendation of 0.5 units of computer science was not included here; however, it is included in supplemental tables 25-1 and 25-2.

NOTE: For a description of the sampling procedures and related issues for the High School and Beyond Transcript Study and the later transcript studies, see the supplemental note to this indicator. Urbanicity breakdowns used in the 1987 and 1990 NAEP Transcript Studies are shown in supplemental tables 25-1 and 25-2. Because urbanicity categories are not comparable across data sources, percentage point changes could not be calculated for all years.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Transcript Study; 1987 and 1990 NAEP High School Transcript Studies; and National Education Longitudinal Study Transcripts, 1992.

Percentage of high school graduates who earned the recommended units in core courses*: 1982, 1987, 1990, and 1992



* The graph shows the recommended 4 units of English and 3 units each of science, social studies, and mathematics, but does not include the recommended 0.5 units of computer science.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Transcript Study, 1987; 1990 NAEP High School Transcript Studies; National Education Longitudinal Study Transcripts, 1992.

High school mathematics and science course taking patterns

- ◆ High school graduates in 1992 were more likely to take mathematics courses at the level of algebra I or higher and science courses at the level of biology or higher than their counterparts in 1982.
- ◆ The proportion of high school graduates who took algebra II and geometry and the proportion who took biology and chemistry each increased 6 percentage points between 1990 and 1992 (to 50 and 54 percent, respectively).
- ◆ The percentage of high school graduates who had taken remedial mathematics declined from 33 percent in 1982 to 17 percent in 1992.
- ◆ A larger percentage of 1992 graduates, both male and female, earned credit in biology, chemistry, and physics than their 1982 counterparts. Similar percentages of males and females earned credit in chemistry in both years. Females were more likely to earn credit in biology, while males were consistently more likely to earn credit in physics (see supplemental table 25-1).

Courses in mathematics and science can teach students to use higher level thinking skills to solve complex problems. These skills are considered valuable both in educational and marketplace settings. Analysis of course-taking patterns of high school graduates can indicate levels of exposure in these fields for individuals who are about to advance to higher education or enter the work force.

Percentage of high school graduates taking selected mathematics and science courses in high school: 1982, 1987, 1990, and 1992

Mathematics and science courses ¹	1982	1987	1990	1992	Percentage point change			
					1982-1987	1987-1990	1990-1992	1982-1992
Mathematics								
Remedial/below grade level math	32.5	24.9	23.6	17.4	-7.6	-1.3	-6.2	-15.1
Algebra I	² 80.2	—	—	² 93.2	—	—	—	13.0
Algebra II	36.9	47.1	49.2	56.1	10.3	2.1	6.9	19.2
Geometry	48.4	61.5	64.7	70.4	13.1	3.2	5.7	22.0
Trigonometry	12.2	19.0	18.4	21.1	6.8	-0.7	2.7	8.9
Analysis/precalculus	5.8	12.8	13.5	17.2	7.0	0.7	3.7	11.4
Calculus	4.3	6.2	6.6	10.1	1.8	0.4	3.5	5.8
Algebra II and geometry	29.1	42.4	44.0	50.1	13.4	1.6	6.1	21.0
Algebra II, geometry, trigonometry, and calculus	0.8	2.4	2.2	2.7	1.6	-0.2	0.5	1.9
Science								
Biology	78.7	88.3	91.6	93.0	9.7	3.3	1.3	14.3
Chemistry	31.6	44.8	49.6	55.5	13.1	4.9	5.9	23.9
Physics	13.5	19.5	21.5	24.7	6.1	2.0	3.2	11.2
Biology and chemistry	28.6	43.0	48.2	53.9	14.4	5.2	5.7	25.3
Biology, chemistry, and physics	9.8	16.8	18.9	21.6	7.0	2.1	2.7	11.8

— Not available.

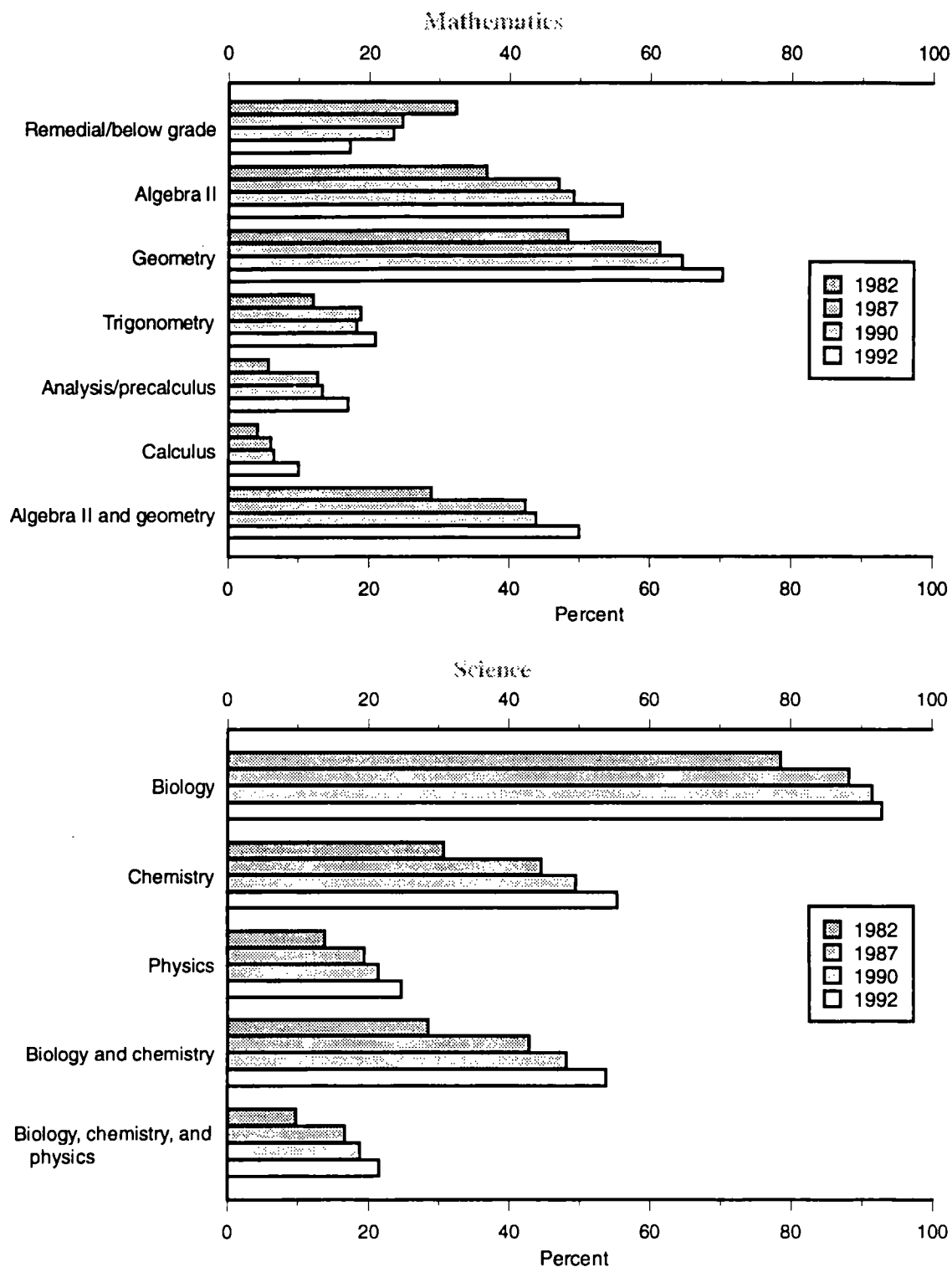
¹ The minimum number of units used for inclusion in this indicator was 1.00 for individual courses except for algebra II, trigonometry, and analysis/precalculus where 0.5 was set as the minimum number of credits.

² Algebra I was revised from previously published figures to include those students who had taken algebra I, or its equivalent, before entering high school.

NOTE: Percentages reflect only those courses taken in high school except for algebra I. Because some students take these other courses in the eighth grade, these percentages could underestimate the number of individuals who have ever taken these subjects in school. See supplemental note to *Indicator 25* for further explanation.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Transcript Study; 1987 and 1990 NAEP High School Transcript Studies; and National Education Longitudinal Study Transcripts, 1992.

Percentage of high school graduates taking selected mathematics and science courses: 1982, 1987, 1990, and 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, High School and Beyond Transcript Study; 1987 and 1990 NAEP High School Transcript Studies; and National Education Longitudinal Study Transcripts, 1992.

Graduate field of study, by sex

- ◆ Overall, in 1992, relatively more women than men earned graduate degrees in the humanities, social/behavioral sciences, education, and health professions. A higher proportion of men than women earned graduate degrees in natural sciences, computer sciences and engineering, and business management.
- ◆ Between the early 1970s and early 1980s, the concentration ratio for humanities at the master's degree level decreased dramatically; since the mid-1980s, the ratio has remained fairly steady, with a slightly higher proportion of women than men earning master's degrees in humanities.
- ◆ Differences in the proportions of men and women earning master's degrees in business management narrowed between 1971 and the mid-1980s when the trend leveled off. The differences in the proportion earning a doctor's degree in this field narrowed between 1971 and 1989, then dropped slightly. Nevertheless, in 1992, men were almost twice as likely as women to earn graduate degrees in business management.
- ◆ From 1971 until 1983, a higher percentage of men than women earned master's degrees in the social and behavioral sciences. From 1984 to the present, a higher percentage of women than men earned master's degrees in this field. At the doctorate level, women have been consistently more likely to earn a degree in the social and behavioral sciences since 1971.

The female field concentration ratio shows how much the fields studied by women differ from those studied by men. Ratios above 1.0 indicate that women are more likely than men to major in a field, and ratios below 1.0 indicate the opposite pattern. Changes in the ratio show whether differences in the field preferences of men and women are narrowing or widening. Thus they point to possible future changes in the occupations and earnings potential of women compared to men.

Female field concentration ratio: Selected academic years ending 1971–92¹

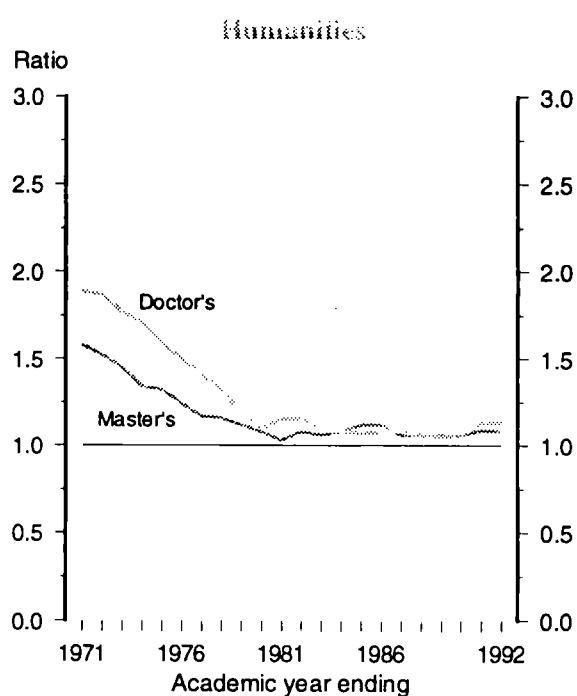
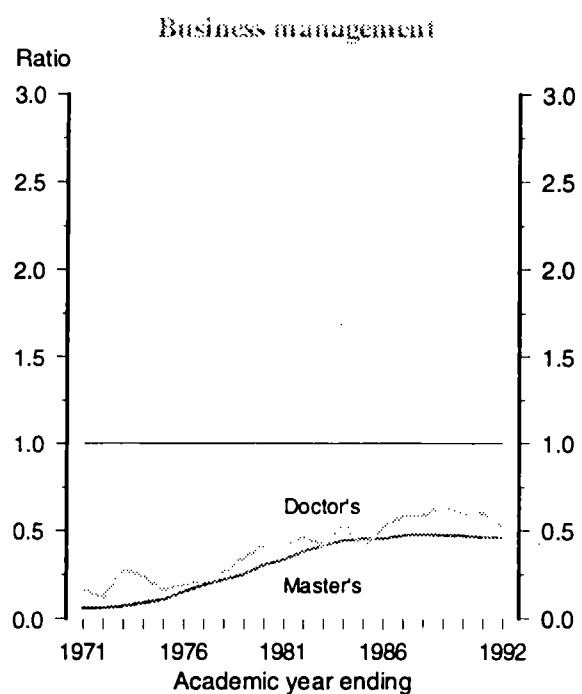
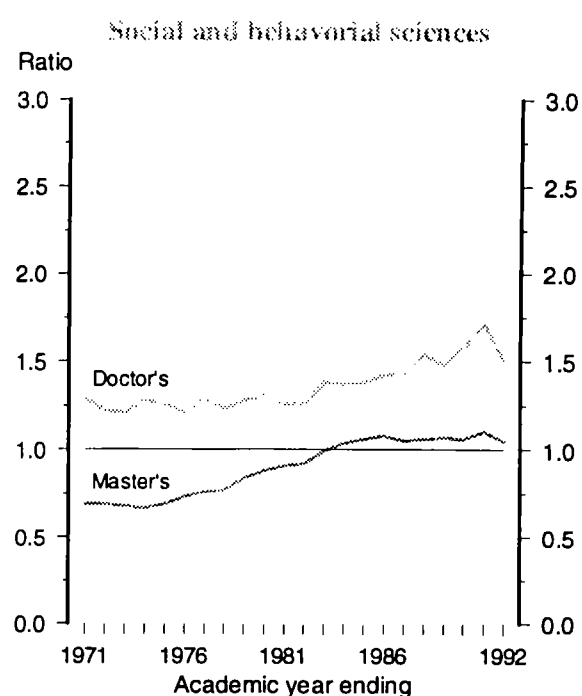
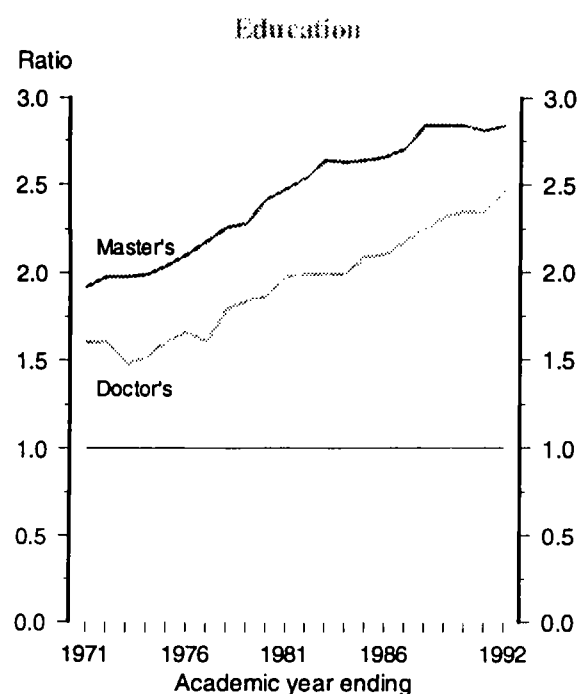
Field of study and graduate degree	1971	1974	1977	1980	1983	1986	1989	1992
Master's degrees								
Humanities	1.58	1.34	1.17	1.08	1.06	1.12	1.06	1.08
Social/behavioral sciences	0.69	0.67	0.76	0.88	0.99	1.08	1.07	1.05
Natural sciences	0.48	0.43	0.44	0.43	0.48	0.53	0.56	0.54
Computer sciences and engineering	0.03	0.05	0.07	0.11	0.15	0.20	0.19	0.19
Education	1.92	1.99	2.18	2.42	2.64	2.66	2.84	2.84
Business management	0.06	0.09	0.19	0.30	0.41	0.45	0.47	0.46
Health professions	1.85	2.00	2.37	2.66	3.01	3.16	3.29	3.30
Other technical/professional ²	1.56	1.24	1.04	1.10	1.22	1.27	1.30	1.33
Doctor's degrees								
Humanities	1.89	1.71	1.41	1.10	1.09	1.08	1.05	1.13
Social/behavioral sciences	1.29	1.28	1.29	1.30	1.38	1.42	1.48	1.50
Natural sciences	0.67	0.63	0.56	0.56	0.59	0.58	0.64	0.69
Computer sciences and engineering	0.04	0.08	0.11	0.11	0.11	0.15	0.18	0.19
Education	1.60	1.52	1.61	1.86	1.99	2.10	2.32	2.47
Business management	0.17	0.24	0.21	0.41	0.41	0.52	0.65	0.51
Health professions	1.19	1.24	1.46	1.91	1.57	1.94	2.35	2.33
Other technical/professional ²	0.76	0.70	0.88	0.87	0.83	1.00	0.98	1.01

¹ Because of the reclassification of Instructional Programs in 1991–92, the figures for earlier years (1971–91) have been reclassified when necessary to conform to the new taxonomy. Therefore, most numbers shown are revised from previously published figures.

² Principally composed of public administration at the master's degree level and of agriculture and natural resources at the doctor's degree level. See Glossary for full definition of "other technical/professional" fields.

NOTE: The female field concentration ratio is calculated as the percentage of women earning degrees who majored in a specific field divided by the percentage of men earning degrees who majored in the same field. Includes degrees conferred to U.S. and non-U.S. citizens. SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1994*, tables 239 and 240 (based on IPEDS/HEGIS surveys of degrees conferred).

Female field concentration ratio of graduate degrees conferred, by field of study and degree level: Academic years ending 1971-92



NOTE: The female field concentration ratio is calculated as the percentage of women earning degrees who majored in a specific field divided by the percentage of men earning degrees who majored in the same field.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1994*, tables 239 and 240 (based on IPEDS/HEGIS surveys of degrees conferred).

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Economic and Other Outcomes of Education

Education is an investment in human skills. Like all investments, it involves both a cost and a return. The cost to the student of finishing high school is quite low, because it consists mainly of the relatively low wages earned by a 16- to 19-year-old dropout. The cost to the student of attending college is higher, and principally includes tuition, books, fees, and the earnings given up by not working or by working part time in college. In contrast, the returns come in many forms. Some are monetary, while others are personal, social, cultural, and more broadly economic. Some are directly related to the labor market, others are not. Some accrue to the individual, others to society and the nation in general. Among the returns related to the labor market are better employment opportunities, jobs that are less sensitive to general economic conditions, better opportunities to participate in employer-provided training, and higher earnings. Other returns that are not related to the labor market and are often attributed to education include greater interest and participation in civic affairs such as rates of volunteerism (*Indicator 33*) or voting (*Indicator 35, Condition 1994*), and lower rates of welfare dependency (*Indicator 32*) or greater knowledge of healthy behavior (*Indicator 36, Condition 1994*).

The costs and returns of investing in postsecondary education have changed over time,* which affects the incentive for individuals to participate. Measures presented in this section illuminate changes in the rewards of finishing high school (or conversely, the penalties of not finishing) and changes in the rewards of investing in postsecondary education.

Penalties of Not Graduating From High School

These indicators suggest some general conclusions regarding the labor market penalties of not finishing high school. The immediate difficulty of making the transition from full-time school attendance to full-time work appears much greater for those who leave school before finishing high school. Without prior job experience or specialized training, school leavers may find it difficult to find jobs that they are willing to take. In October 1993, of young people 16 to 24 years old who had left school *during the previous year* without finishing high school, only 47 percent were employed (up from 36 percent

the previous year). In contrast, of those who had graduated from high school in 1993 and did not enroll in college, 64 percent were employed (about the same as the previous year) (*Indicator 28*).

As young people enter their 20s, some of the problems of making the transition from school to the work force are solved. For example, among males in October 1993, the employment rate was 62 percent among recent high school dropouts (table 28-1) compared to 66 and 71 percent among male dropouts aged 20–24 and 25–29, respectively, in March 1994 (*Indicator 29*). Nevertheless, high school dropouts have lower employment rates than graduates at all ages.

Rewards of College Attendance and Graduation

The ratio of the median annual earnings of those who attend and graduate from college to the median annual earnings of high school graduates provides an indication of the financial returns of attending and graduating from college. In 1993, for males 25–34 years old, the earnings premium for attending college and earning a bachelor's degree was 57 percent, and the earnings premium for attending college without attaining a bachelor's degree was 12 percent. For females of the same age group, the 1993 premium for attending and earning a bachelor's degree was even larger—99 percent, while the premium for attending without attaining a bachelor's degree was 31 percent (*Indicator 30*).

Welfare Reciprocity

The benefits of education to the individual include a higher income and a greater likelihood of employment. To the nation, these benefits correspond to a larger, more productive work force. Among those 25 to 34 years old who went beyond eighth grade, higher education levels also correspond to lower rates of welfare reciprocity. For instance, in 1992, 17 percent of that age group with 9 to 11 years of schooling received income from AFDC or public assistance, while 6 percent of those with 12 years of schooling received welfare income. Among black 25- to 34-year-olds, the contrast is even more striking—36 percent of those with 9 to 11 years of schooling received welfare income in 1992, compared to 13 percent of those with 12 years of schooling (*Indicator 32*).

Completing high school appears to lead to better employment prospects and, thus, less reliance on welfare. Higher education levels correspond to better employment prospects (*Indicators 28, 29, and 30*). Those with a high school education or more have lower rates of welfare reciprocity (*Indicator 32*).

Volunteerism

Education plays a vital role in preparing individuals for active participation in the political, economic, and social lives of their communities. Volunteerism rates for those with postsecondary education are one indication of the relationship between educational attainment and civic responsibility.

There is a strong positive relationship between volunteerism and participation in postsecondary education. Those with some postsecondary education were more likely to volunteer and make charitable contributions. For example, 68 percent of individuals over the age of 25 with some postsecondary education volunteered at least some time in 1992, while 37 percent of the individuals over 25 years old with no postsecondary education volunteered in 1992. Among the same age groups, 87 percent of those with some postsecondary education and 63 percent of those without postsecondary education made charitable contributions in 1992 (*Indicator 33*).

Many factors may influence this relationship. Those with more education may feel a greater responsibility to perform volunteer community service than those with less education. The higher incomes of those with postsecondary education may influence volunteering and charitable giving behavior. In 1992, those with higher incomes were more likely to volunteer and give, regardless of postsecondary education participation. However, within the same income group, individuals with postsecondary education were more likely to volunteer or give than those without postsecondary education (*Indicator 33*).

Literacy

One of the most basic functions of education is to improve literacy. The economic outcomes of literacy are similar to the outcomes of education—higher levels of literacy are associated with better labor market outcomes for the individual. For instance, in 1991, the least

literate male and female workers had annual earnings that were about half of the average earnings for all male and all female workers, respectively. This occurs in part because those with lower literacy levels have less education. However, among those who ended their formal education with a high school diploma, the least literate had earnings that were still lower than the average for all those with that level of educational attainment—about one-fourth less than the average for both men and women (*Indicator 31*).

Doctoral Programs

Doctoral programs constitute the highest level of the education system. The first job taken by new doctoral recipients is indicative of the focus of doctoral programs. The proportion of new doctoral recipients with definite job plans in the United States who have taken jobs in higher education has fallen from 68 percent in 1970 to 52 percent in 1993. However, plans of doctoral recipients vary greatly depending on their field of study. For example, 86 percent of new humanities doctoral recipients with definite job plans in the United States took jobs in higher education, whereas less than one-fourth of new physical sciences or engineering doctoral recipients took higher education jobs. The varied job outcomes of graduates of doctoral programs reflect the different job opportunities for graduates of these programs across disciplines.

NOTES:

*See Murphy, Kevin and Finis Welch. "Wage Premiums for College Graduates: Recent Growth and Possible Explanations," *Educational Researcher*, May 1989 for a more detailed presentation of changes between 1964 and 1986 in the relative earnings of workers with different levels of education and experience by sex and race.

Transition from high school to work

- ◆ In 1993, 64 percent of recent high school graduates not enrolled in college were employed compared to 47 percent of recent dropouts. During the period of economic recession between 1989 and 1992, the percentage employed in both groups fell about 10 percentage points. However, in 1993, the employment rate for dropouts increased markedly, rising more than 10 percentage points.
- ◆ Nearly every year between 1973 and 1993, white dropouts were more likely to be employed than black high school graduates not enrolled in college.
- ◆ Among recent high school graduates in the labor force, males were equally as likely to be unemployed as females. However, males continue to be more likely than females to be in the labor force and to be employed. While the percentage of females in the labor force dropped by more than 5 percentage points between 1991 and 1992, it rebounded by more than 13 percentage points in 1993 (see supplemental table 28-1).

The transition from high school to work can be difficult. Without prior job experience or specialized training, school leavers may find it difficult to find jobs they are willing to take. The employment rate among school leavers, both those who have not finished high school and those who have finished but have not gone on to college, is an indication of the ease of making the transition.

Employment rates for recent high school graduates not enrolled in college and for dropouts, by graduation status and race/ethnicity: October 1973–93

October	Recent high school graduates not enrolled in college				Recent school dropouts			
	Total	White	Black	Hispanic	Total	White	Black	Hispanic
1973	70.7	74.9	49.8	(*)	51.5	55.1	43.9	(*)
1974	69.1	72.9	45.9	(*)	48.1	53.9	35.9	(*)
1975	65.1	68.9	36.9	(*)	41.4	46.2	22.0	46.8
1976	68.9	73.2	38.5	(*)	43.5	49.7	20.8	(*)
1977	71.9	76.1	43.3	65.8	50.2	56.6	34.5	(*)
1978	74.0	79.1	45.9	69.2	49.7	54.2	41.1	50.7
1979	72.4	76.4	44.1	69.4	48.8	54.2	27.6	(*)
1980	68.9	74.6	35.0	(*)	43.7	51.2	20.8	47.7
1981	65.9	73.0	31.5	(*)	40.5	51.2	11.5	50.0
1982	60.4	68.5	29.4	43.9	36.8	44.5	16.4	(*)
1983	62.9	69.8	34.9	(*)	43.2	49.4	26.5	(*)
1984	64.0	70.7	44.8	49.0	42.9	51.3	23.8	35.7
1985	62.0	71.0	34.4	(*)	43.5	50.0	29.3	37.6
1986	65.2	71.5	41.0	64.9	46.1	50.5	31.6	46.4
1987	68.9	75.3	46.9	53.8	41.2	48.1	26.1	(*)
1988	71.9	78.2	55.5	57.1	43.5	47.6	17.3	55.4
1989	71.9	77.6	53.5	49.3	47.1	57.6	26.3	(*)
1990	67.5	75.1	44.9	(*)	46.7	56.2	30.5	(*)
1991	59.6	67.1	32.5	(*)	36.9	38.4	24.7	(*)
1992	62.7	71.9	37.2	53.9	36.1	43.2	(*)	28.8
1993	64.2	71.9	42.2	43.4	46.9	52.8	26.9	(*)

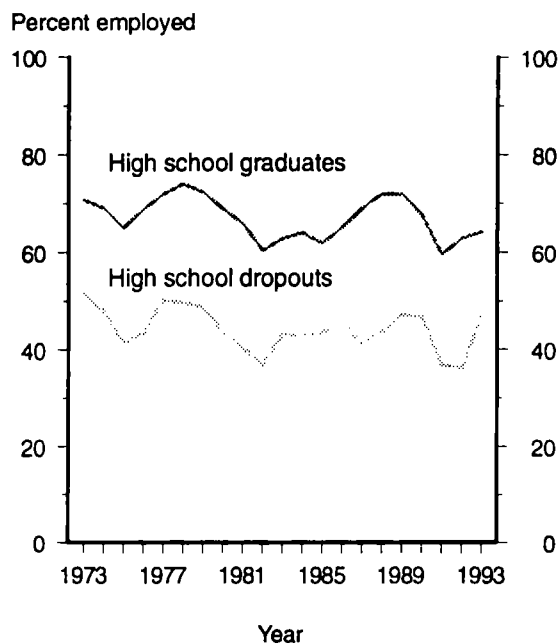
* Too few sample observations for a reliable estimate.

NOTE: Recent high school graduates are individuals aged 16–24 who graduated during the survey year. Recent school dropouts are individuals aged 16–24 who were not high school graduates and who were in school 12 months earlier, but who were not enrolled during the survey month.

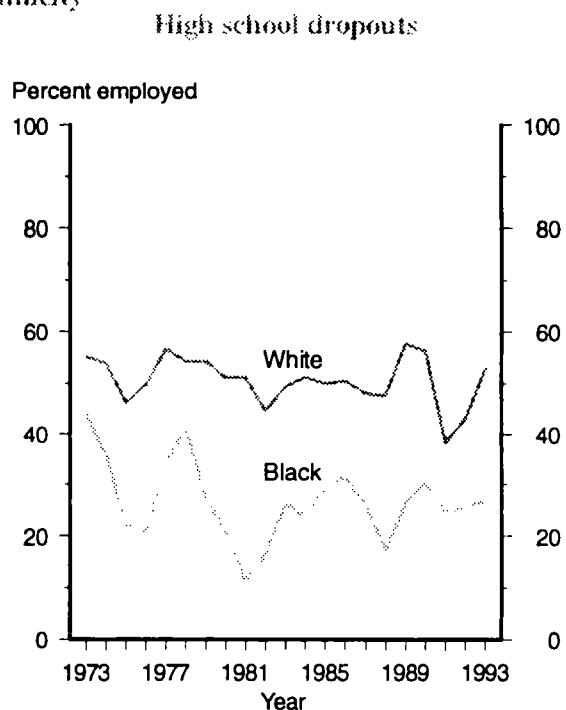
SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Employment rates of high school students, by graduation status and race/ethnicity: October 1973-93

By graduation status



By race/ethnicity



SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Employment of young adults

- ◆ Among males 25- to 29-years-old, employment rates were somewhat lower for high school graduates than for college graduates. For those who had not completed high school, the employment rates were substantially lower than for those with higher levels of attainment.
- ◆ Among females 25- to 29-years-old, employment rates increased markedly with each higher level of educational attainment. The difference between those who had not finished high school and those who had done so was particularly large (35 percent versus 65 percent).
- ◆ Among females aged 30 to 64, those who had not finished high school were also much less likely to be employed than those with higher levels of attainment.
- ◆ Among males aged 30 to 59, employment rates for those with a bachelor's degree were somewhat higher than for those with only some college.

The percentage of a population group employed is influenced by a variety of factors. Some factors influence the willingness of employers to offer jobs to individuals with different levels of education at the going wage rate, and others influence the willingness of these individuals to take jobs at that rate. The higher the proportion employed, the better are their labor market opportunities relative to other things they could do, and vice versa. To a certain extent, employment rates for older groups are an indication of what younger groups may experience when they become older. However, labor market opportunities were different when these older groups were beginning their work lives than they are for today's young adults.

Percentage of the population* who were employed, by sex, educational attainment, and age: March 1994

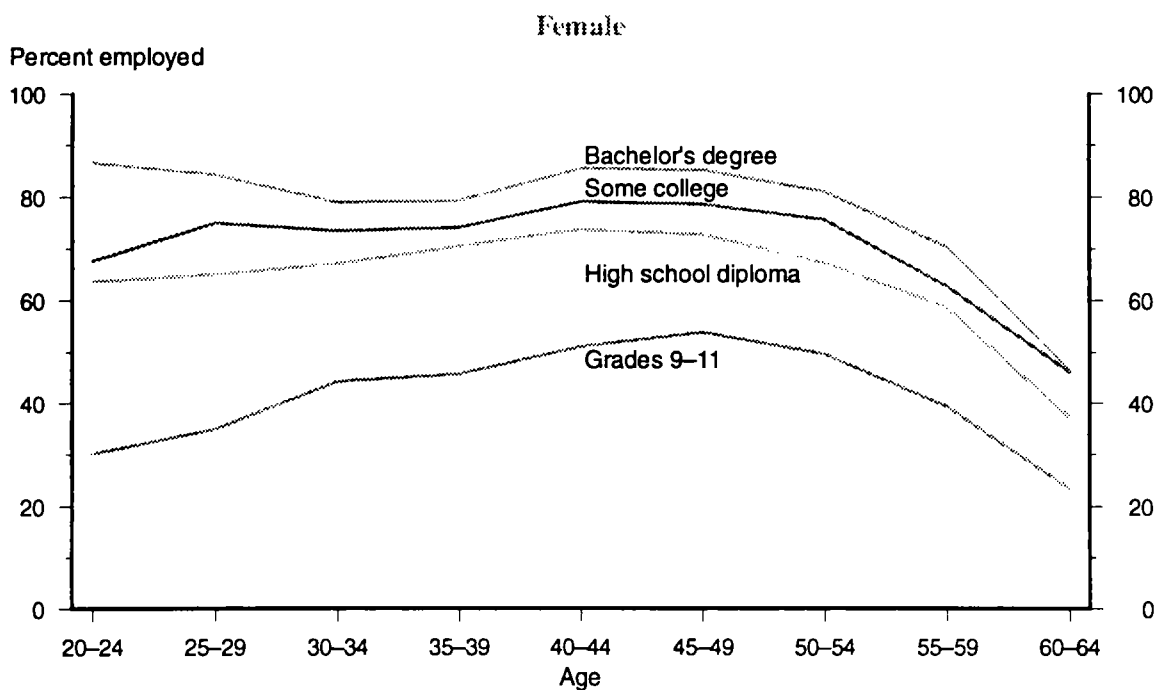
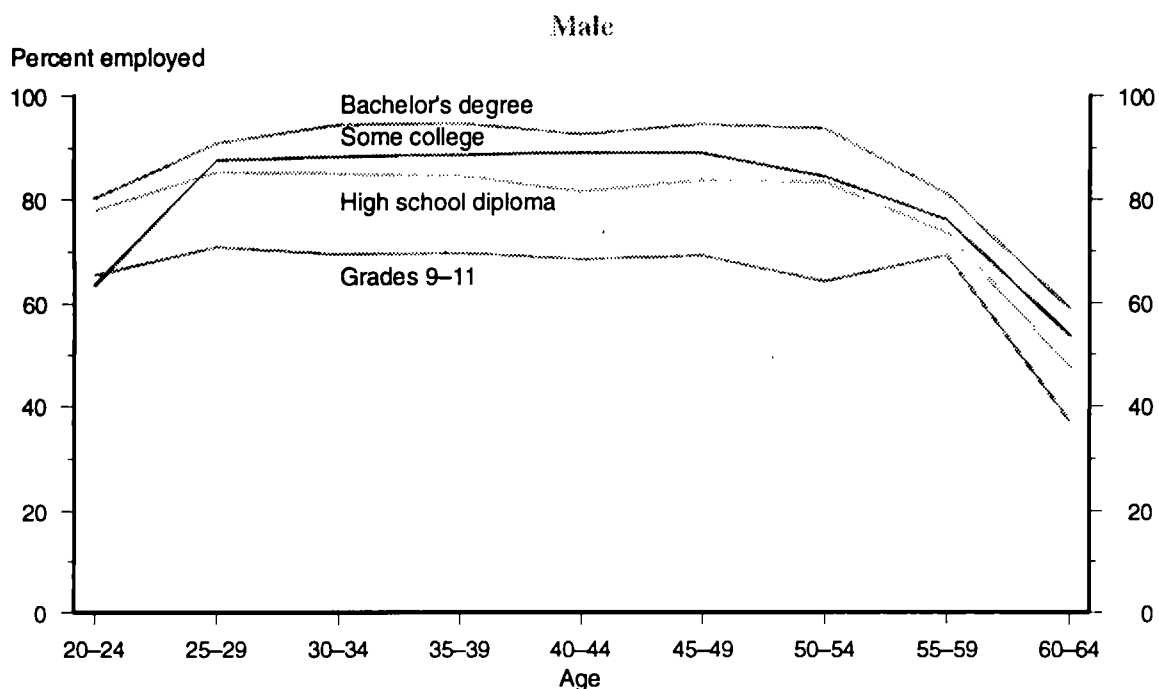
Age	Males					Females				
	Total	Grades 9 to 11	High school diploma	Some college	Bachelor's degree	Total	Grades 9 to 11	High school diploma	Some college	Bachelor's degree
20-24	70.7	65.5	77.9	63.6	80.3	63.3	30.2	63.6	67.6	86.7
25-29	84.9	70.8	85.4	87.6	90.9	68.9	35.1	65.0	75.0	84.4
30-34	85.7	69.3	85.0	88.2	94.4	68.6	44.3	67.1	73.6	79.0
35-39	86.3	69.6	84.6	88.6	94.8	70.4	45.8	70.5	74.2	79.4
40-44	85.9	68.4	81.5	89.0	92.5	75.8	51.1	73.8	79.1	85.6
45-49	85.5	69.0	83.6	88.9	94.5	74.4	53.9	72.7	78.6	85.3
50-54	83.2	64.0	83.3	84.4	93.6	68.0	49.7	67.3	75.7	81.2
55-59	72.6	69.1	73.4	76.0	81.0	56.9	39.4	58.7	62.8	70.4
60-64	47.5	37.2	47.4	53.6	58.8	36.1	23.4	37.3	46.2	46.7

* Noninstitutionalized civilians. Some individuals in the population are not in the labor force, that is, they are not looking for a job. They may want to attend school or work in the home, for example. Many young persons aged 20-24 years old were enrolled in school or college and are not in the labor force. Women, especially older women, are also less likely to be in the labor force than their male counterparts. An alternative measure of labor market opportunities, the unemployment rate, is presented in supplemental table 29-1. Also, see the supplemental note to *Indicator 28* for a comparison of labor force statistics.

NOTE: Included in the total but not shown separately are those who have attained eight or fewer years of schooling. The category "grades 9 to 11" includes those who have attended 12th grade but have not received a diploma; "high school diploma" includes those who have received an equivalency certificate; "some college" includes those who have received an associate's degree; "bachelor's degree" includes those who have received advanced degrees.

SOURCE: U.S. Department of Commerce, Bureau of the Census, March Current Population Survey, 1994.

Percentage of the population* who were employed, by sex, educational attainment, and age: March 1994



* Noninstitutionalized civilians.

SOURCE: U.S. Department of Commerce, Bureau of the Census, March Current Population Survey, 1994.

Annual earnings of young adults

- ◆ In 1993, the median annual earnings of males aged 25–34 who had not completed high school (9–11 years of school completed) were about 67 percent of the earnings of their counterparts who had completed high school. The ratio of earnings of female dropouts to graduates was about 59 percent.
- ◆ Since 1970, the earnings advantage for 25- to 34-year-olds with some college (13–15 years of school) and college degrees (16 or more years of school) was generally greater for females than for males; that is, the percentage difference between the earnings of females with some college or a college degree and the earnings of female high school graduates was greater than the corresponding percentage difference for males.
- ◆ The earnings advantage of completing college increased between 1970 and 1993 for both males and females.
- ◆ In 1993, the median annual earnings of workers with a bachelor's degree were much higher than the earnings of those who attended only some college. For example, among female workers 25 to 34 years old, the median annual earnings of college graduates were approximately \$26,000, while those of females with some college were approximately \$17,000 (see supplemental table 30-2).

Wages and salaries are influenced by many factors, including the employer's perception of the productivity and availability of workers with different levels of education. They are also affected by economic conditions in the industries that typically employ workers with different levels of education. Annual earnings are influenced by the number of weeks worked in a year and the usual hours worked each week. The ratio of annual earnings of high school dropouts or college graduates to those of high school graduates is affected by all these factors. It is a measure of the earnings disadvantage of not finishing high school and the earnings advantage of completing college.

Ratio of median annual earnings of wage and salary workers 25 to 34 years old with 9–11, 13–15, and 16 or more years of school to those with 12 years of school, by sex: Selected years 1970–93

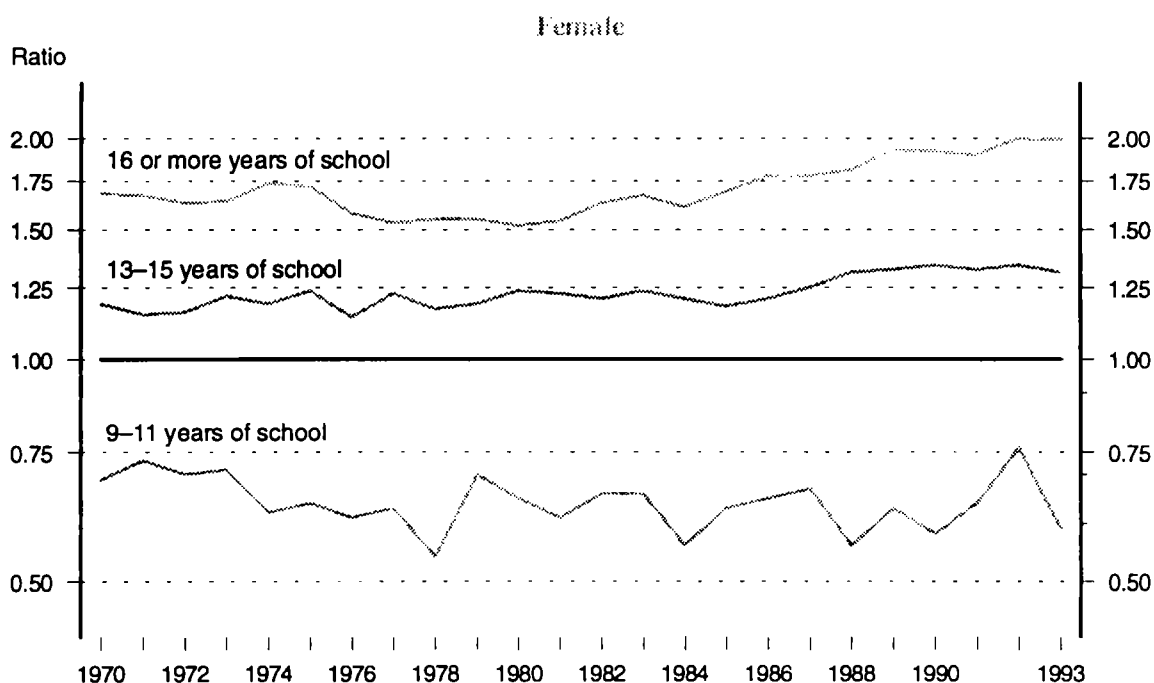
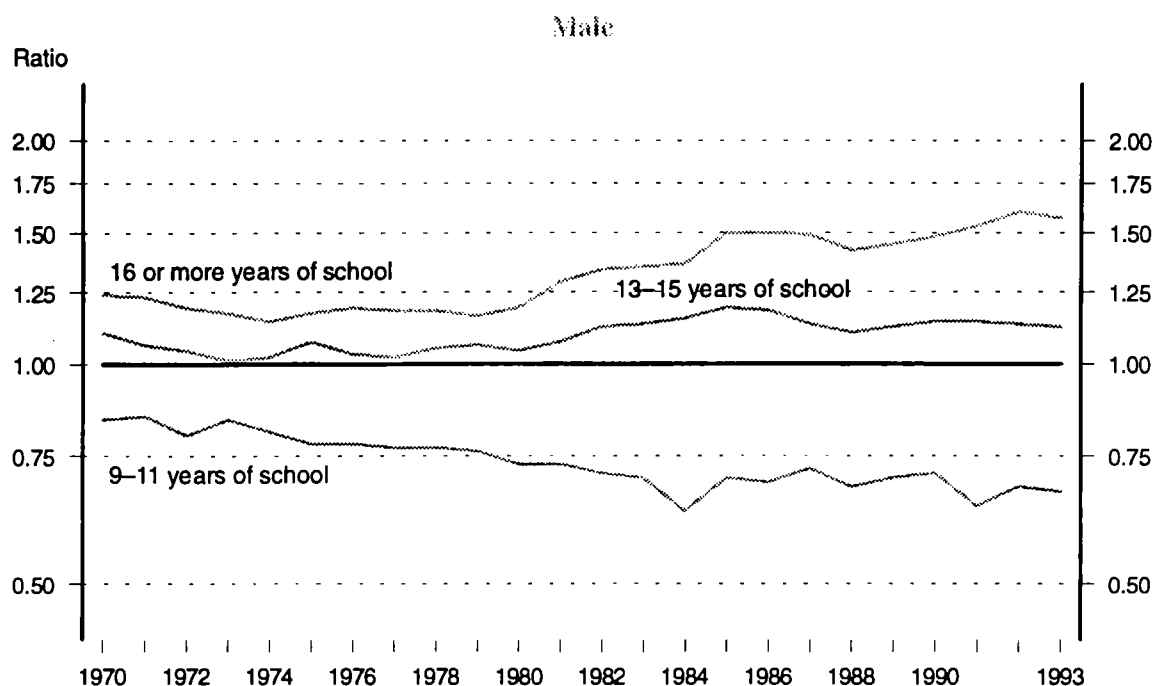
Year	9–11 years of school		13–15 years of school		16 or more years of school	
	Male	Female	Male	Female	Male	Female
1970	0.84	0.69	1.10	1.19	1.24	1.68
1972	0.80	0.70	1.04	1.16	1.19	1.63
1974	0.81	0.62	1.02	1.19	1.14	1.74
1976	0.78	0.61	1.03	1.14	1.19	1.58
1978	0.77	0.54	1.05	1.17	1.18	1.55
1980	0.73	0.65	1.04	1.24	1.19	1.52
1982	0.71	0.66	1.12	1.21	1.34	1.63
1984	0.63	0.56	1.15	1.21	1.36	1.61
1986	0.69	0.65	1.18	1.21	1.50	1.78
1988	0.68	0.56	1.10	1.31	1.42	1.81
1990	0.71	0.58	1.14	1.34	1.48	1.92
1991*	0.64	0.64	1.14	1.32	1.53	1.90
1992*	0.68	0.76	1.13	1.34	1.60	2.00
1993*	0.67	0.59	1.12	1.31	1.57	1.99

* Beginning with the March 1992 survey, which collected earnings for calendar year 1991, new questions were used to obtain the educational attainment of respondents. See the supplemental note to Indicator 22 for further discussion.

NOTE: This ratio is most usefully compared to 1.0. For example, the ratio of 1.57 in 1993 for males with 16 or more years of school means that they earned 57 percent more than males with 12 years of school. The ratio of .67 in 1993 for males with 9–11 years of school means that they earned 33 percent less than males with 12 years of school.

SOURCE: U.S. Department of Commerce, Bureau of the Census, March Current Population Surveys.

Ratio of median annual earnings of wage and salary workers 25 to 34 years old with
9–11, 13–15, and 16 or more years of school to those with 12 years of school, by sex:
1970–93



NOTE: One (1.0) on the scale represents earnings equal to those with 12 years of school; 2.0 represents double their earnings; 0.5 represents half their earnings. The scale on the graph makes the distance between 1.0 and 2.0, or doubling, the same as that between 1.0 and 0.5, or halving.

SOURCE: U.S. Department of Commerce, Bureau of the Census, March Current Population Surveys.

Labor market outcomes of literacy and education

- ♦ Educational attainment and literacy level are both positively associated with higher annual earnings and lower unemployment rates. Furthermore, literacy is positively associated with earning higher wages and a reduced likelihood of being unemployed within different levels of educational attainment.
- ♦ In 1992, of males whose highest education level was a high school diploma, those at prose proficiency level 4 (scores between 326 and 375) had 29 percent higher annual earnings than those at proficiency level 2 (scores between 226 and 275). The difference in earnings between those females at proficiency level 4 and those females at proficiency level 2 was not statistically significant, however.
- ♦ Of females whose highest education level was a high school diploma, those at prose proficiency level 4 were far less likely to be unemployed than those at proficiency level 2 (unemployment rates of 5 versus 12 percent). The unemployment rates for those females with a bachelor's degree were similar at proficiency levels 2, 3, and 4, however.

As our society becomes more technologically advanced, many have argued that there is a greater need for all individuals to become more literate and for a larger proportion to develop advanced skills. Some argue that a growing number of workers are being expected to comprehend information presented in lengthy and sometimes complex formats, to compare and contrast information, to generate ideas based on what they read, and to apply arithmetic operations sequentially to solve a problem. Furthermore, strong literacy skills are a prerequisite for fully taking advantage of formal education and job-related training. The degree of variability in labor market outcomes by literacy within educational attainment levels is an indicator of the direct and indirect (i.e., through education) effects of literacy on success in the workplace.

Labor market outcomes of 25- to 64-year-olds, by sex, prose proficiency level, and highest education level attained: 1992

Highest education level ¹	Male						Female					
	Average annual earnings of employed persons in the previous year											
	Total	Prose proficiency level					Total	Prose proficiency level				
		1	2	3	4	5		1	2	3	4	5
Total	\$29,175	\$15,755	\$22,046	\$29,610	\$39,941	\$48,965	\$17,090	\$9,650	\$13,260	\$16,759	\$21,882	\$28,707
Grade 9-11	18,194	16,299	17,763	21,402	—	—	11,145	8,979	11,141	14,304	—	—
High school diploma	22,494	16,417	20,866	24,997	26,825	—	13,554	10,510	12,579	14,565	14,686	—
Some postsecondary ²	27,279	19,306	24,402	26,654	32,544	—	16,449	11,756	14,540	16,266	18,245	23,038
Associate's degree	31,855	—	29,161	31,615	34,729	—	19,547	—	15,103	20,053	20,603	—
Bachelor's degree	38,115	—	30,105	37,393	38,793	44,140	23,592	—	22,907	20,546	24,447	28,939
Unemployment rate												
	Total	Prose proficiency level					Total	Prose proficiency level				
		1	2	3	4	5		1	2	3	4	5
Total	8.3	14.9	11.5	6.4	4.1	2.3	8.5	17.3	12.7	6.7	4.0	2.3
Grade 9-11	12.4	14.0	12.2	11.3	—	—	17.8	22.6	16.4	14.4	—	—
High school diploma	8.2	11.3	10.7	5.7	5.1	—	9.3	18.6	12.2	6.1	4.5	—
Some postsecondary ²	7.4	12.8	10.2	7.0	4.8	—	7.8	17.6	13.5	6.5	4.3	—
Associate's degree	5.5	—	2.5	4.1	7.1	—	5.3	—	7.1	6.2	3.8	—
Bachelor's degree	4.8	—	5.7	4.8	4.8	3.2	4.8	—	5.5	5.1	4.4	3.6

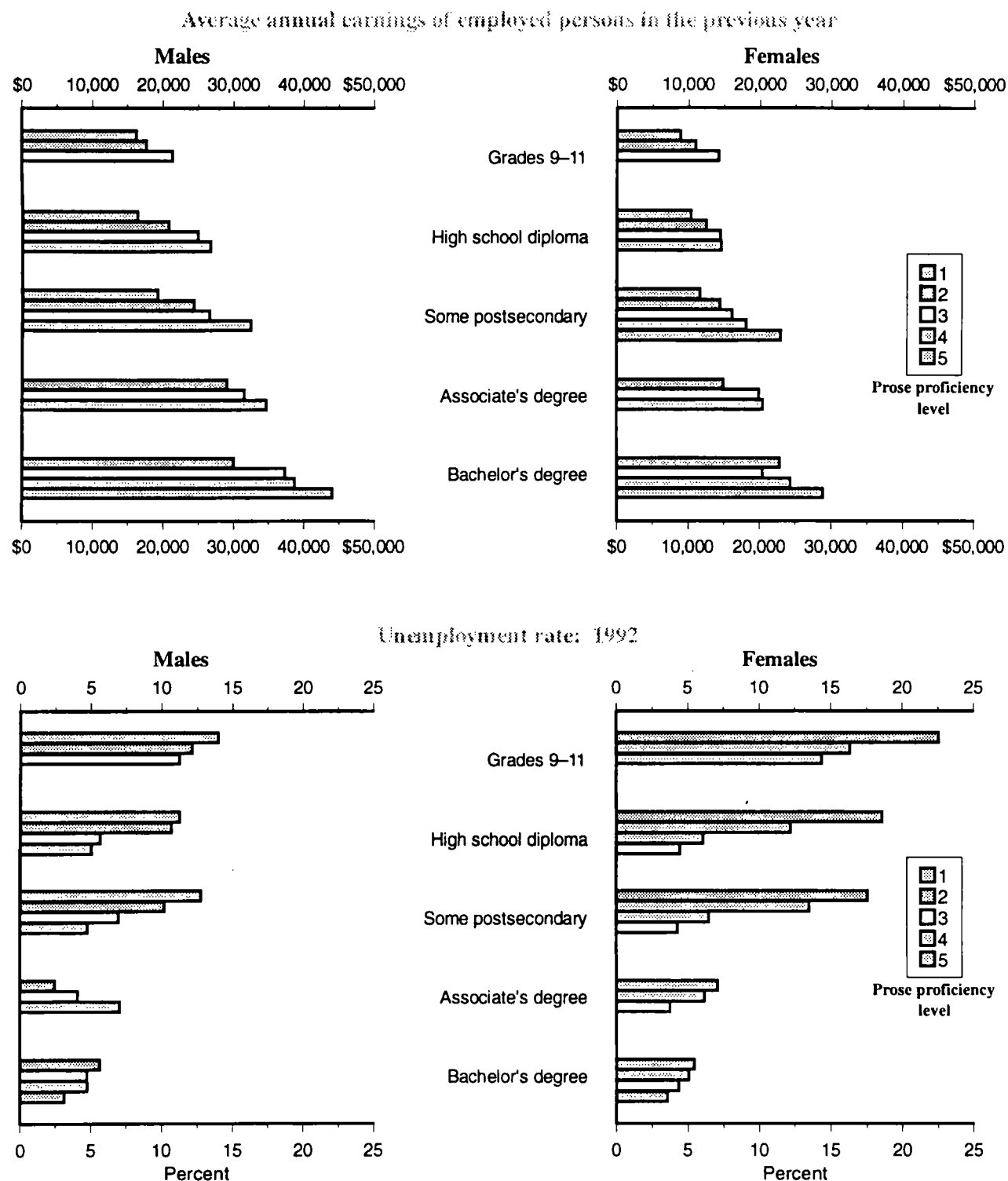
— Too few cases for a reliable estimate.

¹ Adults with a highest level of education of grades 1-8, a GED or equivalent, or a graduate degree are included in the total but not shown separately (and are broken out separately in tables 31-1 and 31-2). See supplemental tables 31-1 through 31-5 for additional labor market outcomes and additional literacy domains. See the supplemental note to this indicator for a description of literacy domains and proficiency levels.

² Includes vocational schools, less than 2 years of college, and more than 2 years of college without a degree.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Labor market outcomes of 25- to 64-year-olds, by sex, prose literacy level, and highest educational level attained: 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Welfare reciprocity, by educational attainment

- ◆ In 1992, high school dropouts were three times more likely to receive income from AFDC or public assistance than high school graduates who did not go on to college (17 percent versus 6 percent).
- ◆ Between 1972 and 1992, both high school dropouts and graduates who did not go on to college became more likely to receive AFDC or public assistance income. During this period, the increase in the likelihood of receiving welfare income was greater for high school dropouts than for graduates who did not go on to college. Therefore, the difference between the two groups in the percentage receiving such income rose (from 7 percent to 12 percent).

Public investment in education has many potential benefits for the nation. One possible benefit of the availability of free or low cost education is reduced reliance on welfare and public assistance programs among those who attain higher levels of education. The extent to which people with more education rely less on welfare and public assistance is an indication of this benefit. However, not all people who attain higher levels of education do so because of the availability of low cost education. Therefore, the indicator may overstate this benefit from public investment in education.

Percentage of persons aged 25–34 who received income from AFDC or public assistance, by years of schooling completed: 1972–92

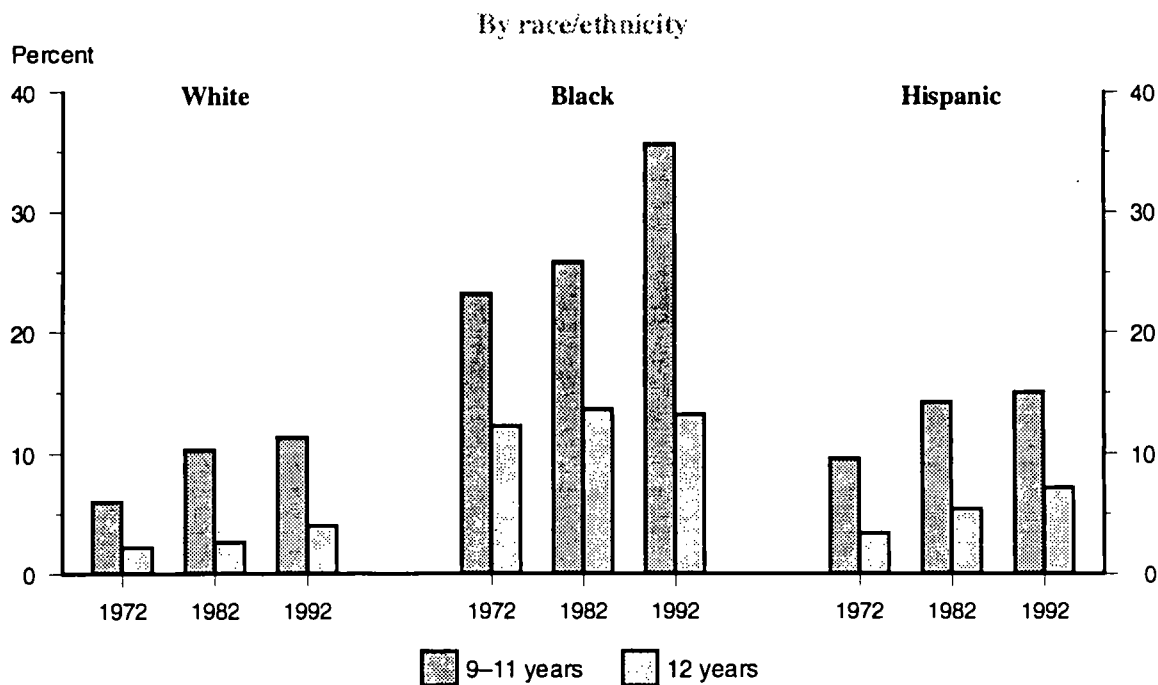
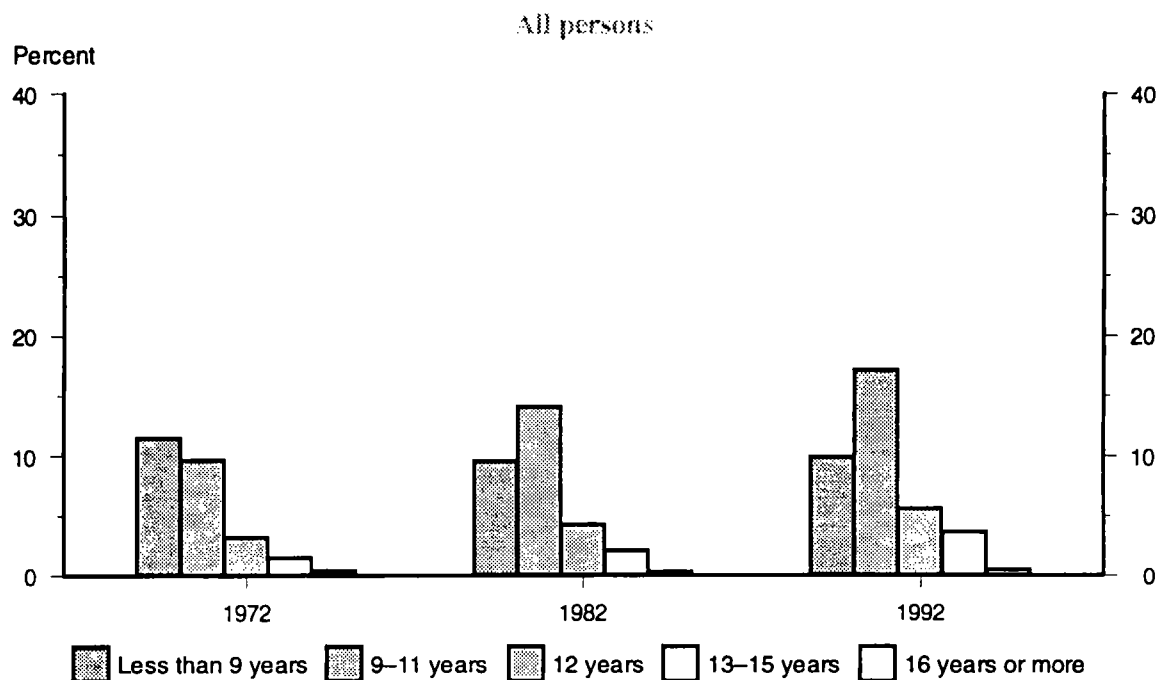
Year	Years of schooling completed											
	All persons						White		Black		Hispanic	
	All levels	Less than 9 years	9–11 years	12 years	13–15 years	16 years or more	9–11 years	12 years	9–11 years	12 years	9–11 years	12 years
1972	4.0	11.5	9.7	3.2	1.5	0.4	6.0	2.2	23.2	12.2	9.6	3.4
1973	3.9	11.7	10.3	3.3	1.7	0.6	5.6	2.1	25.9	12.1	16.2	5.5
1974	4.3	15.0	11.7	3.3	2.0	0.8	8.0	2.4	25.0	10.7	14.2	3.8
1975	3.6	11.3	11.0	3.3	1.5	0.3	7.0	2.4	27.8	10.0	10.6	3.4
1976	3.8	10.9	12.2	3.5	2.1	0.4	7.5	2.3	27.0	11.4	15.0	4.7
1977	3.9	11.7	12.0	3.9	2.1	0.3	8.0	2.6	26.4	12.4	13.1	6.6
1978	3.9	10.8	12.7	3.6	2.5	0.4	7.7	2.3	28.1	12.4	13.7	6.9
1979	3.9	12.4	12.8	3.8	2.1	0.6	7.9	2.5	26.8	12.0	15.1	5.4
1980	4.2	11.8	12.7	4.4	2.5	0.4	8.5	3.2	25.3	12.9	14.2	4.5
1981	4.4	11.5	13.6	4.6	2.7	0.5	9.5	2.9	29.1	14.9	13.3	5.0
1982	4.0	9.6	14.1	4.3	2.1	0.3	10.3	2.6	25.8	13.6	14.2	5.4
1983	4.2	11.4	14.7	4.3	2.5	0.3	10.7	2.6	26.8	13.4	15.5	5.2
1984	4.3	13.2	14.9	4.2	2.4	0.8	10.6	2.7	30.3	12.6	10.6	5.7
1985	4.2	11.8	14.0	4.4	2.6	0.4	9.5	3.1	30.7	11.7	13.2	5.2
1986	4.2	11.8	14.1	4.5	2.4	0.3	11.2	2.9	25.7	11.8	10.6	6.8
1987	4.2	13.2	12.5	4.5	2.5	0.3	7.8	2.9	28.5	12.4	10.7	5.9
1988	4.0	11.5	13.8	4.2	2.1	0.2	9.2	2.8	28.9	11.6	14.0	4.8
1989	3.9	8.8	13.4	4.1	2.4	0.4	8.5	2.9	30.3	10.9	12.0	4.4
1990	4.4	8.9	15.1	4.7	2.5	0.5	10.6	3.2	30.9	13.0	13.2	5.3
1991	5.0	11.4	16.0	5.5	3.1	0.5	11.9	4.0	28.6	13.1	15.1	6.0
1992	5.1	9.9	17.1	5.6	3.7	0.5	11.3	4.0	35.6	13.2	15.0	7.2

Table reads: In 1992, among persons aged 25–34 with 9–11 years of schooling, 17.1 percent received income from AFDC or public assistance. Among persons with 12 years of schooling, 5.6 received such income.

NOTE: Beginning in 1992, the Current Population Survey changed the questions used to obtain the educational attainment of respondents. See the supplemental note to Indicator 22 for further discussion.

SOURCE: U.S. Department of Commerce, Bureau of the Census, March Current Population Surveys.

Percentage of persons 25–34 who received income from AFDC or public assistance,
by years of schooling completed: 1972–92



SOURCE: U.S. Department of Commerce, Bureau of the Census, March Current Population Surveys.

Community service and volunteerism

- ◆ Having some postsecondary education was clearly associated with increased levels of volunteering and giving. Adults aged 25 years and older with some postsecondary education were twice as likely as those with less education to report both volunteering their time and making charitable contributions in the last 12 months (63 and 32 percent, respectively).
- ◆ Among respondents with some postsecondary education, about one-fourth (22 percent) were identified as being generous volunteers (volunteered at least 4 hours per week in the last 12 months), compared with 12 percent with no postsecondary education.
- ◆ Within income levels, adults with some postsecondary education were much more likely to report volunteering than were those with no postsecondary education. This was especially apparent for low income groups (less than \$20,000) where adults with some postsecondary education were nearly twice as likely to report volunteering (54 percent) than were those with no postsecondary education (27 percent).

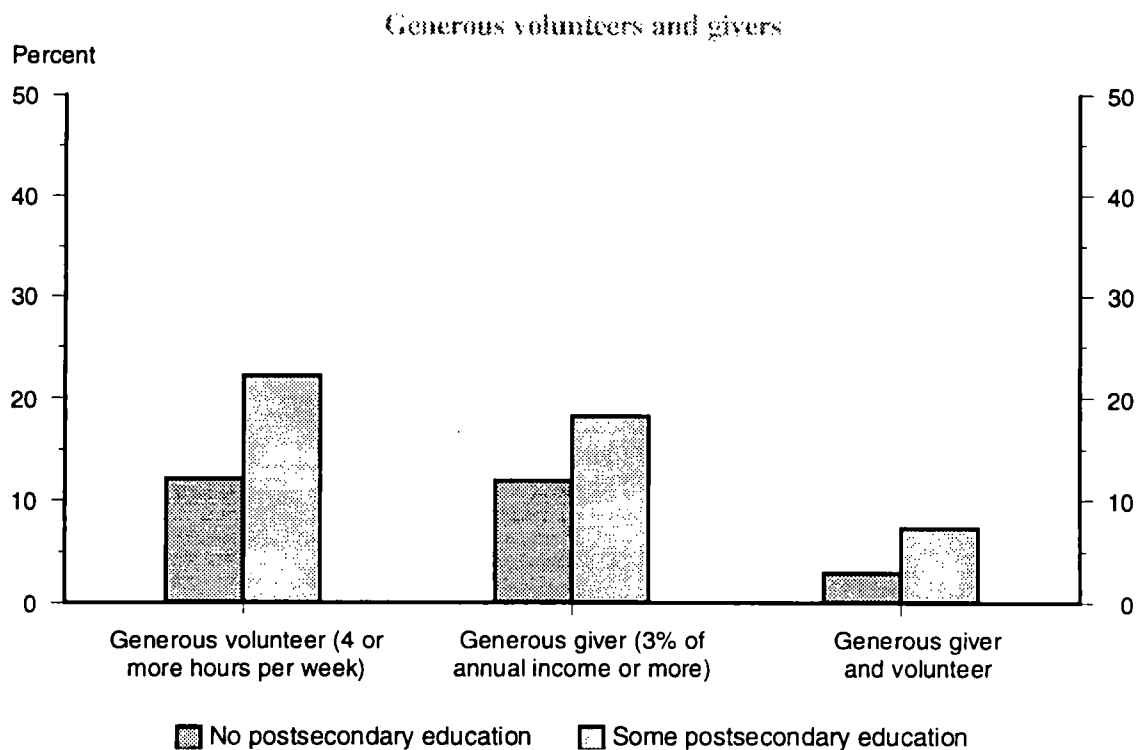
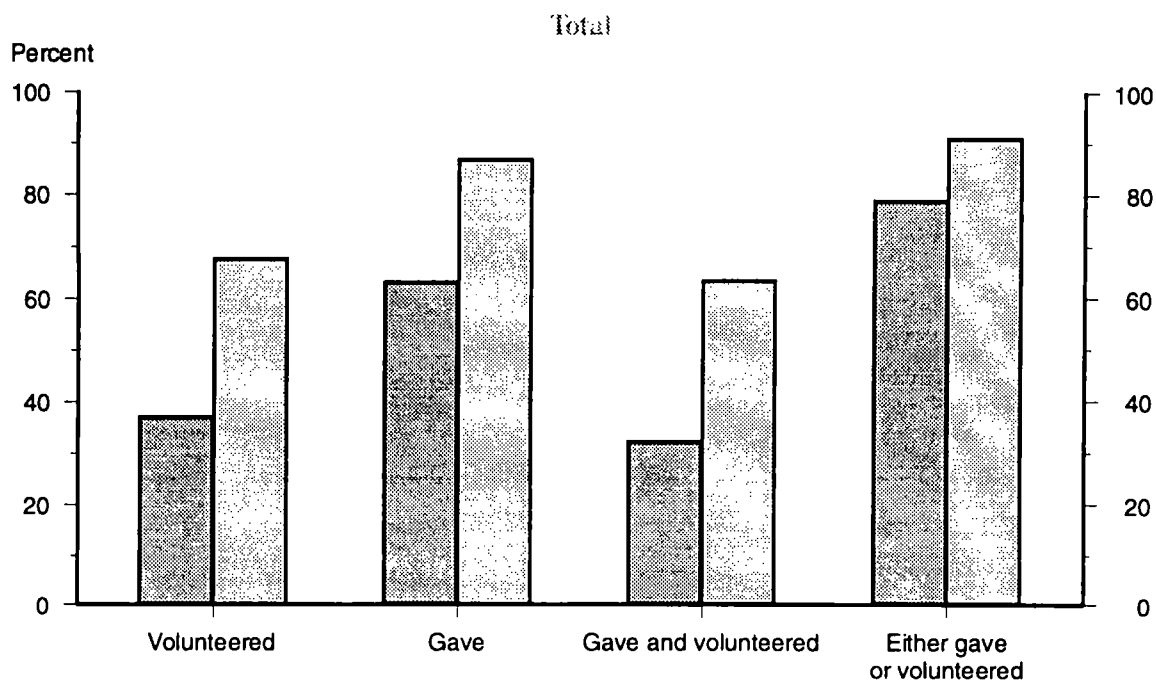
Giving of one's time or money is a measure of the degree to which citizens share responsibility for the welfare of their community. Higher education may increase a person's sense of responsibility to give back to their community in the form of community service and charitable contributions.

Population 25 years and older who reported volunteering and giving charitable contributions in the last 12 months, by education level and selected characteristics: 1992

Characteristics	Percent who gave and volunteered	Percent who volunteered	Average hours/week	Percent who were generous volunteers*	Percent who gave	Percent of income contributed	Percent who were generous givers*	Percent who were generous givers and volunteers	Percent who either gave or volunteered
Total	46.6	51.4	4.3	16.9	74.2	2.3	14.8	5.0	78.9
No postsecondary education									
Total	32.1	37.1	4.3	12.1	63.1	2.2	11.9	3.0	68.1
Sex									
Male	25.9	31.1	2.8	6.5	59.1	2.1	11.1	1.8	64.2
Female	36.8	41.8	5.2	16.4	66.2	2.2	12.5	4.0	71.1
Employment status									
Full-time	36.8	43.4	3.1	10.4	63.7	1.5	7.0	1.9	70.3
Part-time	41.7	45.9	7.7	28.4	62.8	2.3	12.7	5.8	67.0
Not employed or retired	26.8	30.9	4.7	10.5	62.5	3.0	14.8	3.0	66.5
Annual income									
Less than \$20,000	21.2	26.9	4.6	9.4	51.8	3.3	12.5	2.1	57.5
\$20,000-\$49,999	39.6	45.0	4.6	16.2	70.5	2.1	12.8	4.7	75.9
\$50,000 or more	49.7	51.5	3.2	10.6	82.5	1.8	7.5	1.7	84.4
Some postsecondary education									
Total	63.3	67.6	4.3	22.2	86.8	2.4	18.2	7.3	91.1
Sex									
Male	62.7	67.4	3.8	21.0	86.2	2.8	22.1	7.7	91.0
Female	64.0	67.8	4.8	23.4	87.4	2.0	14.2	6.8	91.2
Employment status									
Full-time	66.4	70.8	4.1	22.1	86.6	2.3	15.2	6.3	91.0
Part-time	69.5	72.7	4.8	29.7	90.9	2.7	20.3	13.3	94.2
Not employed or retired	54.4	58.6	4.5	20.1	85.7	2.6	24.6	7.6	89.9
Annual income									
Less than \$20,000	42.2	53.5	3.6	16.2	71.2	4.9	24.7	6.5	82.4
\$20,000-\$49,999	64.3	68.8	4.1	20.9	85.5	2.4	14.9	5.9	89.9
\$50,000 or more	69.8	71.5	4.7	25.6	93.6	2.3	19.1	8.8	95.3

*A "generous volunteer" volunteers 4 or more hours per week; a "generous giver" donates 3 percent or more of his or her annual income.
SOURCE: Biennial Gallup Survey on Giving and Volunteering (1992), sponsored by the Independent Sector.

Percentage of population 25 years and older who reported various levels of volunteering or giving, by education level: 1992



SOURCE: Biennial Gallup Survey on Giving and Volunteering (1992), sponsored by the Independent Sector.

New doctoral recipients taking jobs in higher education, by field of study

- ◆ The proportion of new doctoral recipients with definite employment commitments* who took jobs in higher education declined substantially between the early 1970s and the early 1980s. Since then, the proportion has remained relatively stable.
- ◆ While all fields of study showed an overall decline in the proportion of new doctorates taking jobs in higher education between 1970 and 1993, the largest decline occurred in the fields of social and behavioral sciences (27 percentage points), life sciences (26 percentage points), and education (26 percentage points).
- ◆ Between 1970 and 1993, a larger proportion of those with new doctorates in the humanities had job commitments in higher education than those with doctorates in other fields; new mathematics doctoral recipients ranked second. During the same period, new doctoral recipients with the lowest proportion of job commitments in higher education included those in engineering and physical sciences.
- ◆ Between 1979 and 1986, approximately 50 percent of new doctorates in the field of computer sciences had job commitments in higher education. However, between 1987 and 1993, that percentage fluctuated from a high of 69 percent in 1987 to a low of 42 percent in 1992 (see supplemental table 34-1).

New doctoral recipients have several career options, including positions in higher education; nonprofit agencies; and federal, state, and local governments, as well as positions in the private sector. Changes in the proportion of new doctoral recipients who take jobs in colleges and universities reflect both the availability of academic jobs in any given year as well as the availability of attractive positions outside of academe.

Percentage of new doctoral recipients with definite employment plans in the United States who had job commitments in higher education, by field of study: Selected years of doctorate 1970-93

Year of doctorate	All fields	Humanities	Social/ behavioral sciences	Life sciences	Physical sciences	Mathematics	Computer sciences	Engineering	Education
1970	68.1	96.1	80.3	70.9	38.2	80.3	—	28.6	70.9
1972	67.7	94.0	76.6	68.8	45.5	78.7	—	27.0	63.5
1974	62.6	91.0	71.2	66.0	32.3	77.1	—	21.1	58.5
1976	60.5	90.0	66.0	61.7	31.6	77.8	—	27.0	54.7
1978	56.9	85.3	61.3	61.4	24.9	71.4	60.6	25.6	52.5
1980	52.6	80.7	54.6	53.8	20.1	72.1	47.4	26.5	50.0
1981	51.4	82.3	52.8	55.0	16.8	70.3	52.7	28.0	48.2
1982	50.3	82.7	52.5	50.3	19.2	74.6	50.4	26.2	45.9
1983	51.7	84.4	52.5	49.9	23.1	77.2	53.6	34.4	45.0
1984	50.7	81.9	50.2	45.1	22.5	79.4	50.3	31.7	43.9
1985	50.6	81.9	51.1	50.3	23.4	76.4	54.2	30.6	42.8
1986	50.3	80.4	48.9	45.8	20.6	76.5	51.3	32.6	45.0
1987	51.9	84.8	49.2	44.7	24.4	75.4	68.5	32.1	45.0
1988	51.9	82.7	50.9	49.8	23.3	81.5	58.9	32.8	44.4
1989	52.7	83.1	53.2	49.2	21.6	82.5	64.9	30.6	46.0
1990	51.9	84.9	52.8	47.1	20.8	81.1	57.1	26.0	46.8
1991	52.2	84.9	53.8	48.2	20.8	79.1	49.6	25.8	46.7
1992	51.8	85.3	52.6	45.2	22.0	77.4	42.1	23.5	46.9
1993	51.9	86.0	53.4	45.4	22.3	73.6	47.2	23.5	44.8

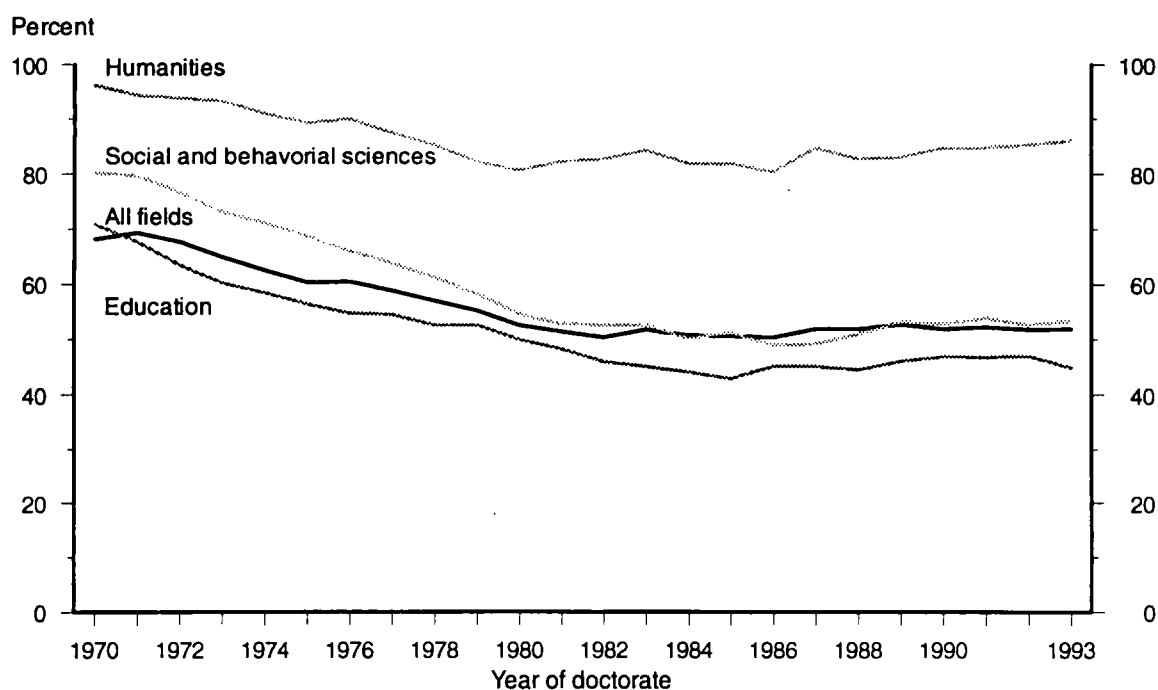
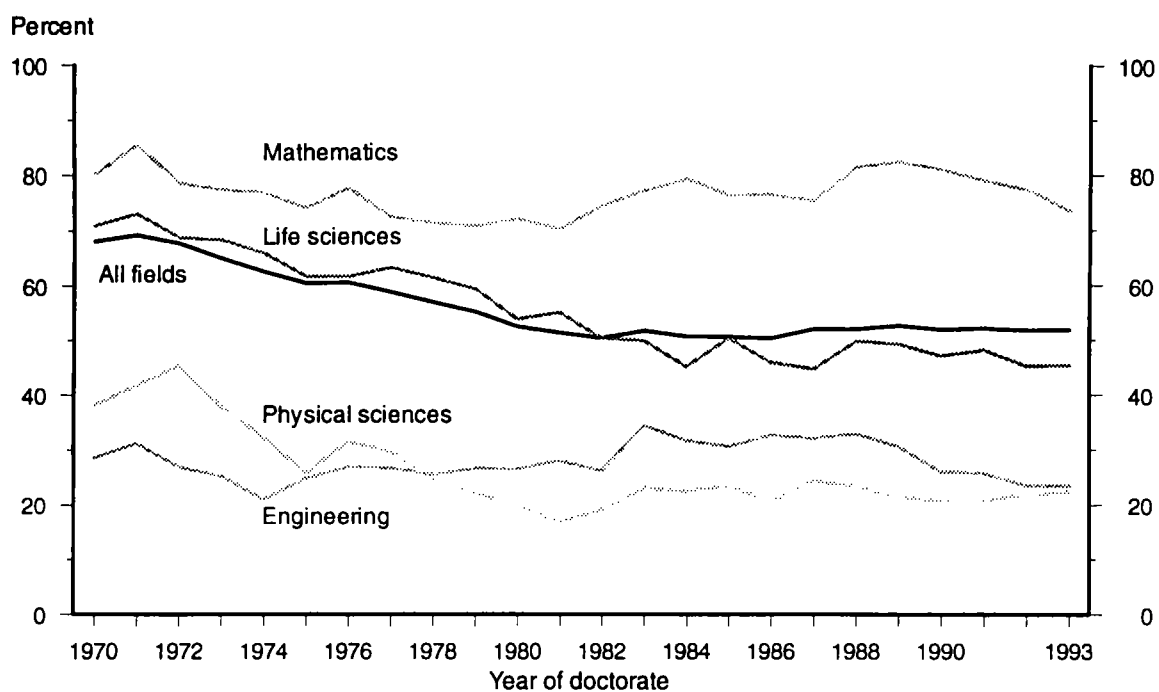
— Data not collected as a separate field of study.

* This indicator pertains only to definite employment commitments in the United States. A "definite commitment" is defined as a signed contract, acceptance of a formal offer, etc. Employment in higher education includes positions in 4-year colleges or universities, medical schools, and junior or community colleges, with the exception of postdoctoral fellowships.

NOTE: Respondents who reported definite employment plans in higher education could be referring to teaching, research and development, administration, or other professional services.

SOURCE: National Research Council, Survey of Earned Doctorates, Doctorate Records File, various years.

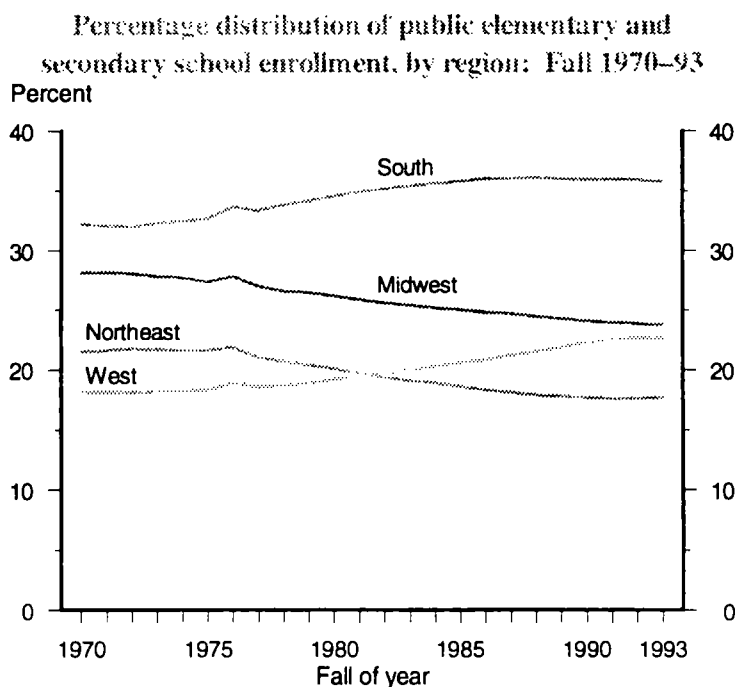
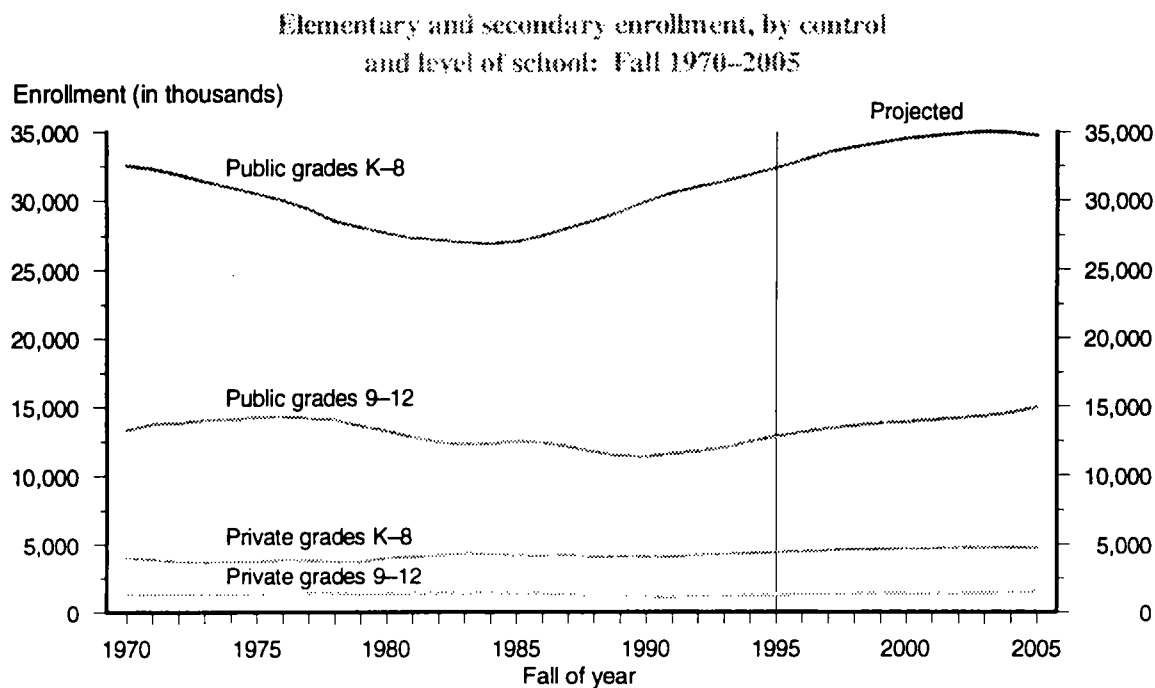
Percentage of new doctoral recipients with definite employment plans in the United States who had job commitments in higher education, by field of study:
Years of doctorate 1970-93



SOURCE: National Research Council, Survey of Earned Doctorates, Doctorate Records File, various years.

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Elementary and secondary school enrollment, by control and level of school and region



SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1994*, (based on Common Core of Data) *Projections of Education Statistics to 2005*, 1995.

College and university enrollment, by type and control of institution

- ◆ **Total enrollment in public 4-year institutions increased 13 percent between 1981 and 1993. Over the same period, total enrollment in private 4-year institutions increased 16 percent.**
- ◆ **Enrollment in public 2-year institutions fell between 1982 and 1985. However, between 1985 and 1992, it increased annually, with the largest growth occurring between 1990 and 1991. Enrollment fell slightly again between 1992 and 1993.**
- ◆ **The distribution of total enrollment between public and private institutions has changed little over the last two decades. Public institutions continue to enroll nearly 8 out of every 10 students.**
- ◆ **Within the public sector, enrollment in 2-year institutions grew faster than it did in 4-year institutions during the late 1980s and early 1990s. As a result, 2-year public institutions increased their share of enrollment from 35 to 37 percent between 1985 and 1993.**

Colleges and universities offering 2- and 4-year programs under public and private control address somewhat different student needs. Fluctuations in enrollments may indicate, among other things, changes in student interest in the various kinds of services offered, changes in the cost of attendance, and changes in the availability of student financial aid.

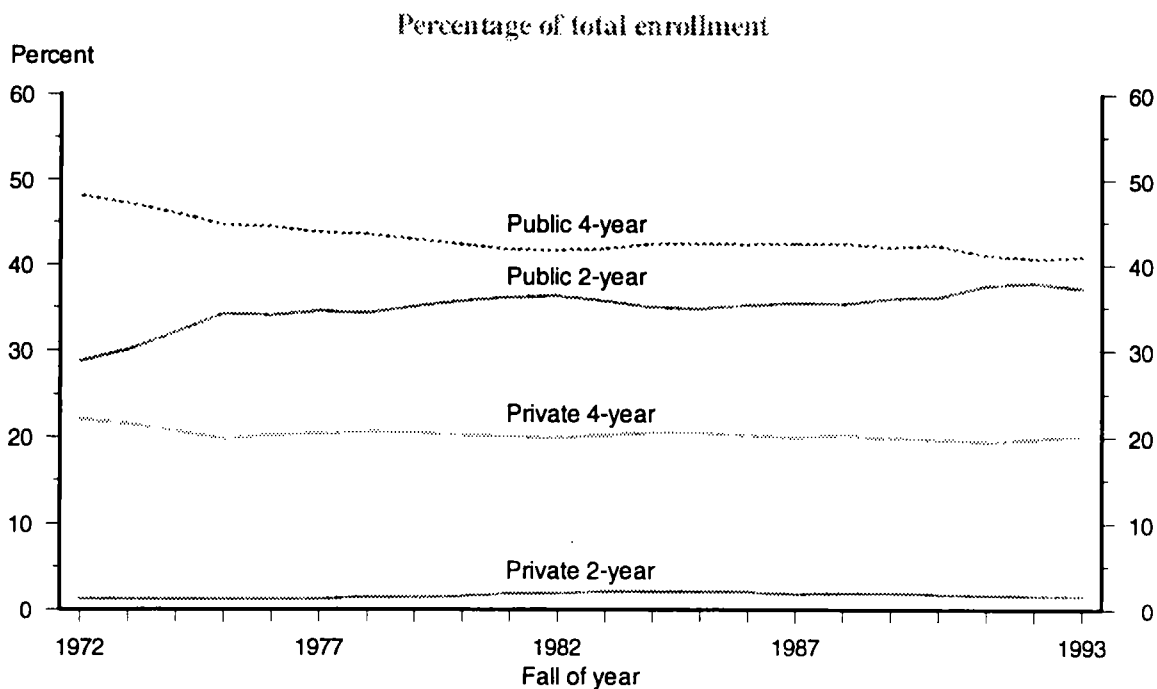
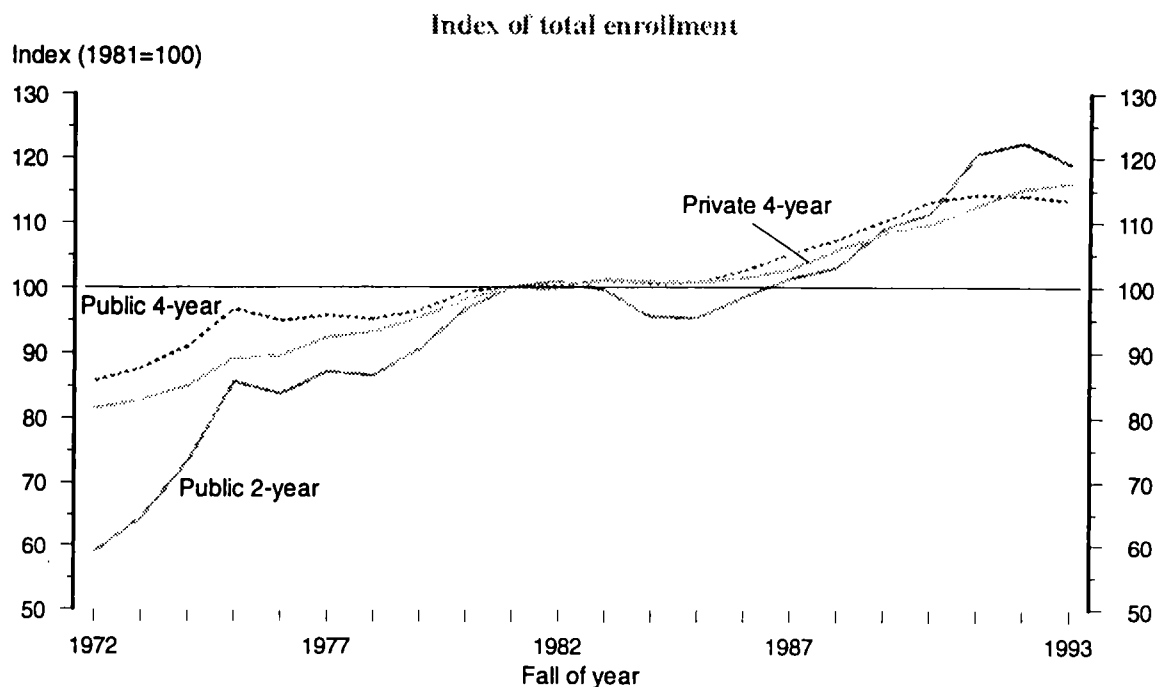
Index of total enrollment in higher education, by type and control of institution: Fall 1972-93

Fall of year	Index of enrollment (1981=100)				Percentage of enrollment		
	All institutions	Public 4-year	Public 2-year	Private 4-year	Public 4-year	Public 2-year	Private 4-year
1972	74.5	85.7	58.9	81.5	48.1	28.7	22.0
1973	77.6	87.7	64.5	82.8	47.2	30.1	21.5
1974	82.6	91.0	73.3	85.0	46.0	32.1	20.7
1975	90.4	96.7	85.6	89.1	44.7	34.3	19.8
1976	89.0	94.9	83.7	89.5	44.5	34.1	20.2
1977	91.2	95.7	87.1	92.3	43.8	34.6	20.4
1978	91.0	95.1	86.5	93.2	43.6	34.4	20.6
1979	93.5	96.4	90.5	95.3	43.0	35.1	20.5
1980	97.8	99.3	96.6	98.1	42.4	35.8	20.2
1981	100.0	100.0	100.0	100.0	41.8	36.2	20.1
1982	100.4	100.2	100.9	99.5	41.7	36.4	19.9
1983	100.8	101.1	99.5	101.2	41.9	35.8	20.2
1984	99.0	100.6	95.5	101.0	42.5	35.0	20.5
1985	99.0	100.8	95.3	100.7	42.5	34.9	20.5
1986	101.1	102.6	98.5	101.4	42.4	35.3	20.2
1987	103.2	105.1	101.3	102.8	42.5	35.6	20.0
1988	105.5	107.3	103.0	105.8	42.5	35.4	20.2
1989	109.4	110.2	109.0	108.2	42.1	36.1	19.9
1990	111.7	113.2	111.5	109.7	42.3	36.2	19.8
1991	116.1	114.3	120.6	112.6	41.1	37.6	19.5
1992	117.1	114.2	122.4	115.1	40.7	37.9	19.8
1993	115.6	113.3	119.1	116.0	40.9	37.3	20.2

NOTE: Data for 2-year private institutions are not shown separately, but are included in the total.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1994*, tables 170 and 196 (based on IPEDS/HEGIS surveys of fall enrollment).

Index of total enrollment in higher education, by type and control of institution:
Fall 1972-93



SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1994*, tables 170 and 196 (based on IPEDS/HEGIS surveys of fall enrollment).

Degrees conferred, by level

- ◆ In 1992, the number of associate's, bachelor's, master's, and doctor's degrees awarded all reached their highest levels to date despite a decline in the number of high school diplomas and GED credentials awarded during most of the period since 1979.
- ◆ Following years of decline or little growth, the number of doctor's degrees conferred rose 23 percent between 1985 and 1992.
- ◆ The number of master's degrees conferred fell between 1977 and 1984 but increased each year after that, rising 24 percent between 1984 and 1992.
- ◆ After some period of decline in the mid-1980s, the number of both associate's and first-professional degrees grew between 1988 and 1992, 16 and 5 percent, respectively.

Trends in the number of degrees conferred, by degree levels, provide clues to changes in the productivity of the nation's higher education system, the allocation of resources within the system, and the level of trained individuals within society. Viewed in relation to the eligible population—for example, the number of high school graduates—the data show whether degrees conferred have lagged behind or exceeded growth in that population.

Index of the number of degrees conferred, by degree level and the number of high school completions (1981=100): Academic years ending 1971–92

Academic year ending	Associate's degrees	Bachelor's degrees	Master's degrees	Doctor's degrees	First-professional degrees ¹	High school diplomas and GED recipients ²
1971	60.7	89.8	77.9	97.4	52.7	—
1972	70.2	94.9	85.1	101.2	60.3	—
1973	75.9	98.6	89.1	105.5	69.5	—
1974	82.6	101.1	93.7	102.6	74.8	96.0
1975	86.5	98.7	98.9	103.4	77.7	99.0
1976	94.0	99.0	105.4	103.4	87.1	99.2
1977	97.6	98.3	107.2	100.8	89.4	99.4
1978	99.0	98.5	105.4	97.5	92.5	100.0
1979	96.7	98.5	101.8	99.3	95.7	101.0
1980	96.3	99.4	100.8	99.0	97.5	100.4
1981	100.0	100.0	100.0	100.0	100.0	100.0
1982	104.4	101.9	99.9	99.2	100.1	99.2
1983	109.6	103.7	98.0	99.4	101.6	95.6
1984	108.7	104.2	96.1	100.8	103.4	91.0
1985	109.2	104.7	96.8	100.0	104.3	88.1
1986	107.1	105.6	97.6	102.1	102.7	87.5
1987	³ 104.8	106.0	³ 97.8	³ 103.3	³ 99.5	89.4
1988	104.5	106.4	101.2	105.8	98.3	³ 90.7
1989	104.9	108.9	105.0	108.4	98.5	³ 87.9
1990	109.3	112.4	109.7	116.4	98.7	³ 85.4
1991	115.7	117.0	114.0	119.2	100.0	³ 84.5
1992	121.1	121.5	119.3	123.4	103.0	83.4

— Not available.

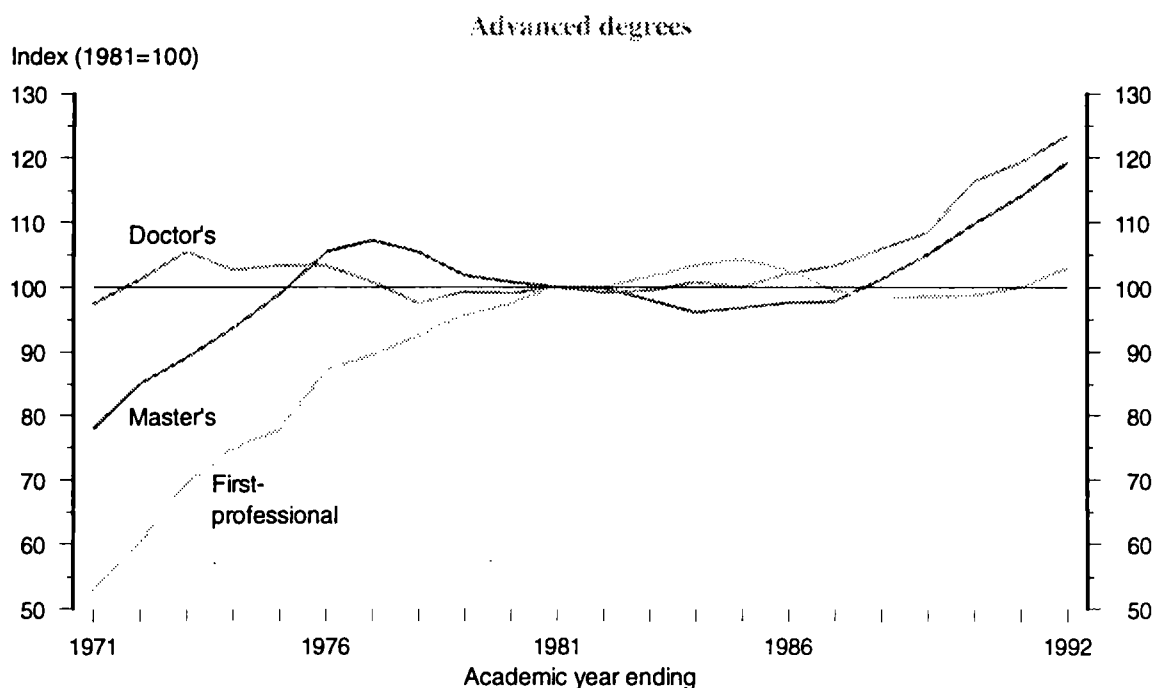
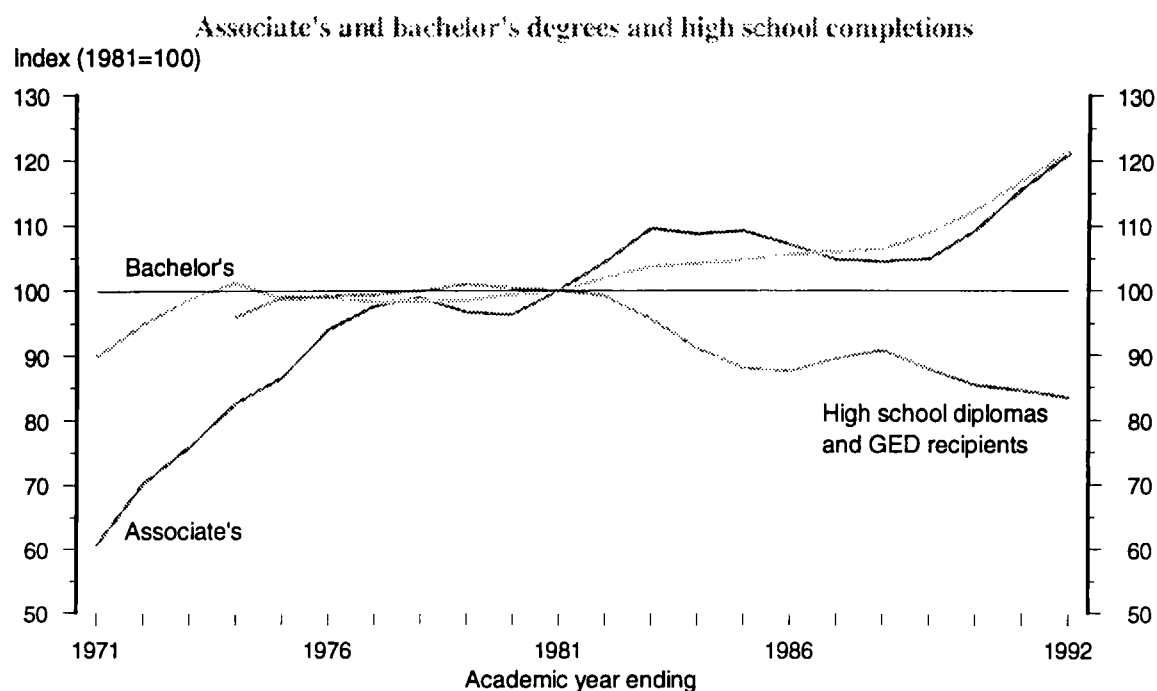
¹ Includes degrees in law, medicine, dentistry, and theology. See Glossary for a full definition.

² "High school diplomas and GED recipients" are the graduates of regular public and private day school programs and the recipients of GED credentials. Data for GED recipients are not available before 1974.

³ Revised from previously published figures.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics*, 1994, tables 99, 101, and 234 (based on IPEDS/HEGIS surveys of degrees conferred and Common Core of Data; American Council on Education, annual GED surveys).

Index of number of degrees conferred, by degree level and number of high school completions (1981=100). Academic years ending 1971-92



NOTE: High school completers are the graduates of regular public and private day school programs and the recipients of GED credentials. Data for GED recipients are not available before 1974.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1994*, tables 99, 101, and 234 (based on IPEDS/HGIS surveys of degrees conferred and Common Core of Data; American Council on Education, annual GED surveys).

Science and engineering degrees conferred

- ◆ The number of bachelor's degrees earned in the science and engineering fields peaked in the mid-1980s, representing 22 percent of the total number of bachelor's degrees conferred in 1986. Since then, the number of science and engineering degrees conferred has fallen, reaching 16 percent of total bachelor's degrees conferred in 1992 (see supplemental table 38-2).
- ◆ The number of science and engineering master's and doctor's degrees conferred grew faster than the total number of master's and doctor's degrees between 1981 and 1992. However, in 1992, science and engineering master's and doctor's degrees made up approximately the same percentage of total degrees as they did in 1971 (see supplemental table 38-2).
- ◆ The percentage of master's degrees conferred in the natural sciences and engineering to foreign students rose sharply from 16 percent in 1977 to 30 percent in 1992. The percentage of doctor's degrees conferred in the same fields rose from 19 percent in 1977 to 43 percent in 1992 (see supplemental table 38-4).

Concerns about the nation's economic competitiveness have focused attention on the study of science and engineering in our educational institutions. Trends in science and engineering degrees are one indicator of the changing opportunities in the job market as well as the increasingly technical marketplace.

Index of the number of degrees conferred and the percentage of total degrees conferred in the natural sciences and in computer sciences and engineering, by degree level and field of study: Selected academic years ending 1971-92*

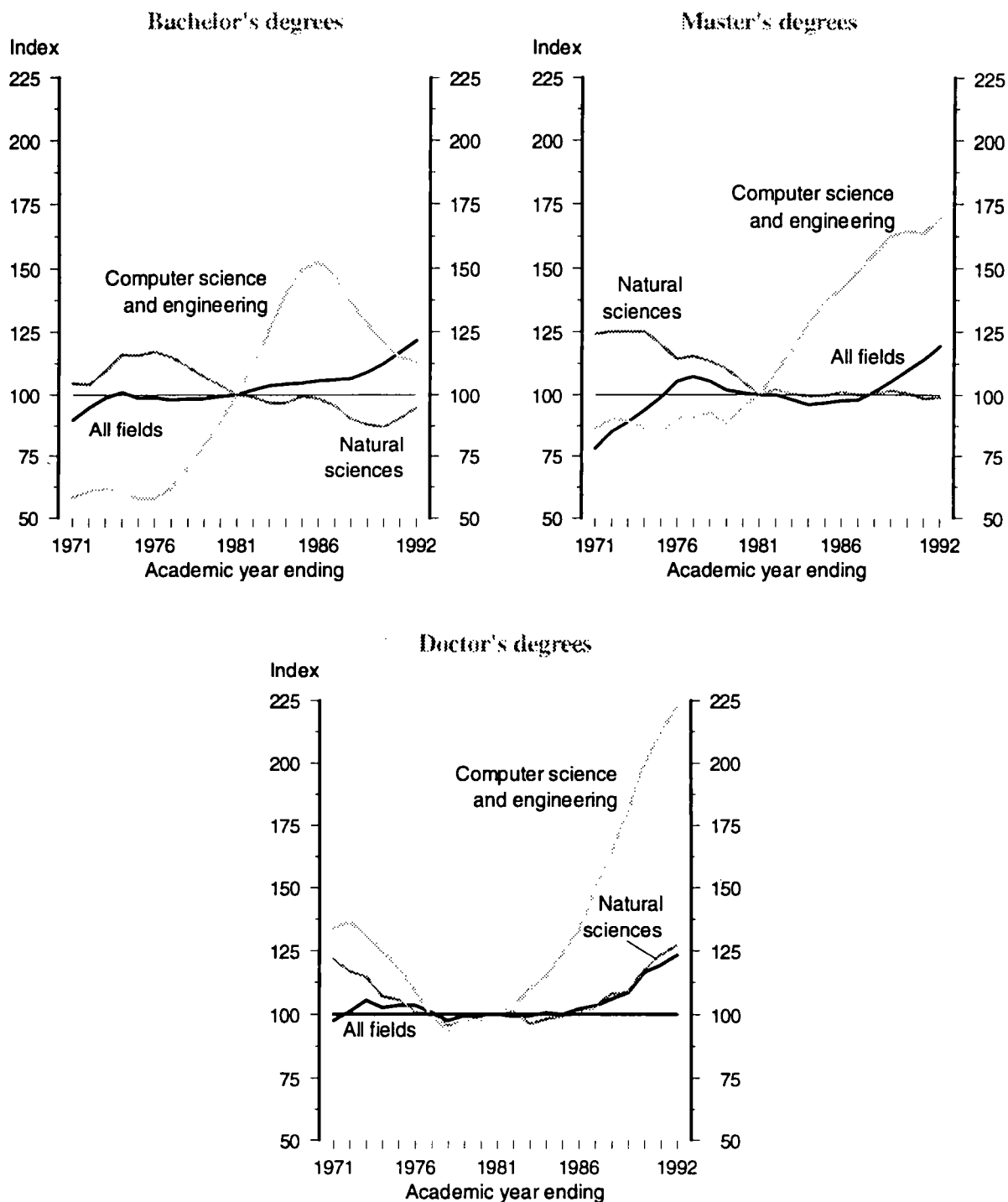
Field of study	1971	1976	1981	1986	1991	1992
Index of number of degrees (1981=100)						
Bachelor's degrees						
All fields	89.8	99.0	100.0	105.6	117.0	121.5
Total science and engineering	79.7	85.4	100.0	127.4	103.7	104.8
Natural sciences	104.4	117.1	100.0	98.5	90.6	95.0
Computer sciences and engineering	58.2	57.7	100.0	152.6	115.1	113.3
Master's degrees						
All fields	77.9	105.4	100.0	97.6	114.0	119.3
Total science and engineering	101.6	100.1	100.0	125.5	137.2	140.9
Natural sciences	124.1	114.1	100.0	101.3	98.5	98.8
Computer sciences and engineering	86.2	90.5	100.0	142.1	163.8	169.7
Doctor's degrees						
All fields	97.4	103.4	100.0	102.1	119.2	123.4
Total science and engineering	124.9	103.4	100.0	109.5	147.1	153.0
Natural sciences	121.6	101.3	100.0	100.7	123.4	127.3
Computer sciences and engineering	133.9	109.0	100.0	133.5	211.4	222.9
Percentage of total degrees						
Bachelor's degrees						
All fields	100.0	100.0	100.0	100.0	100.0	100.0
Total science and engineering	16.0	15.6	18.0	21.8	16.0	15.6
Natural sciences	9.8	9.9	8.4	7.8	6.5	6.6
Computer sciences and engineering	6.2	5.6	9.6	13.9	9.5	9.0
Master's degrees						
All fields	100.0	100.0	100.0	100.0	100.0	100.0
Total science and engineering	15.5	11.3	11.9	15.3	14.4	14.1
Natural sciences	7.7	5.2	4.8	5.0	4.2	4.0
Computer sciences and engineering	7.8	6.1	7.1	10.8	10.2	10.1
Doctor's degrees						
All fields	100.0	100.0	100.0	100.0	100.0	100.0
Total science and engineering	40.6	31.7	31.7	34.0	39.1	39.3
Natural sciences	28.9	22.7	23.2	22.8	24.0	23.9
Computer sciences and engineering	11.7	9.0	8.5	11.2	15.1	15.4

* Because of the reclassification of Instructional Programs in 1991-92, the figures for earlier years (1971-91) have been reclassified when necessary to conform to the new taxonomy. Therefore, most figures shown are revised from previously published figures.

NOTE: Includes degrees conferred to U.S. and non-U.S. citizens.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics*, 1994, tables 241, 242, and 243 (based on IPEDS/HEGIS surveys of degrees conferred).

Index of the number of degrees conferred in the natural sciences and in computer sciences and engineering (1981=100), by degree level and field of study:
Academic years ending 1971-92



SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1994*, tables 241, 242, and 243 (based on IPEDS/HEGIS surveys of degrees conferred).

Bachelor's degrees conferred, by field of study

- ◆ After declining for several years, the number of degrees conferred in the humanities and the social and behavioral sciences has grown since the mid-1980s. Combined with business degrees, these three types of degrees have constituted half or more of all degrees conferred since 1971.
- ◆ The number of degrees earned in engineering declined 20 percent between 1986 and 1992, while the number of degrees earned in computer sciences also declined during this period by 41 percent.
- ◆ The percentage of natural science degrees dropped from about 10 percent in 1971 to less than 7 percent in 1992. A major factor in this decrease was the sharp decline in mathematics degrees between 1971 and 1981, when the number of degrees earned in mathematics decreased by more than 50 percent (see supplemental table 39-3).
- ◆ Business degrees grew as a percentage of all bachelor's degrees between 1971 and 1988, when they reached a peak of 24 percent. Since then, their share of total degrees has slowly fallen (see supplemental table 39-3).

Changing opportunities within the job market affect the fields in which students choose to major. In turn, student choices of major affect the demand for courses and faculty, as well as the supply of new graduates in different fields. Trends in the number and proportion of bachelor's degrees conferred in different fields help to identify these changing conditions.

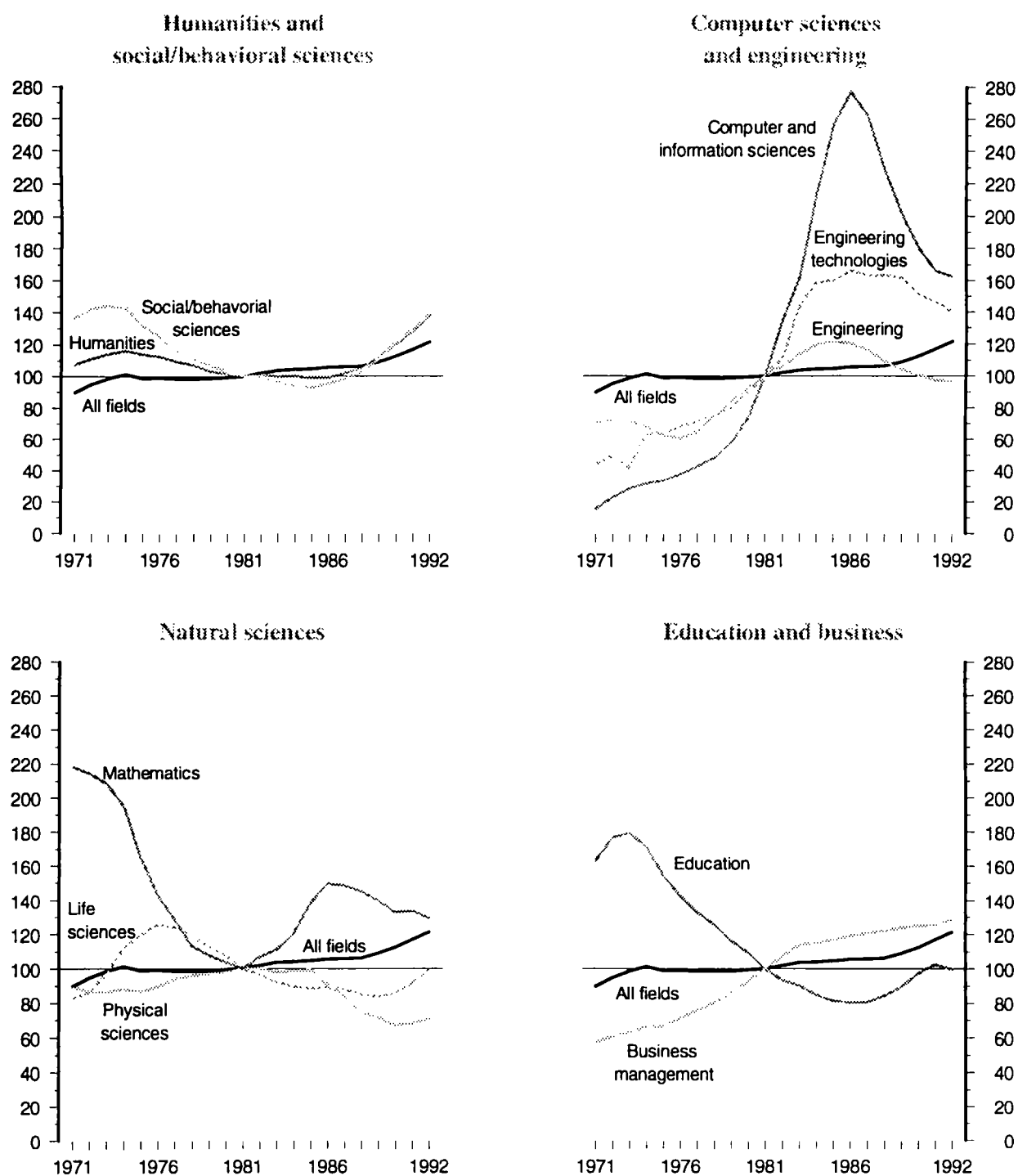
Index of the number of bachelors' degrees conferred and the percentage of total bachelor's degrees conferred, by field of study: Selected academic years ending 1971-92

Field of study	1971	1976	1981	1986	1991	1992
Index of the number of degrees (1981=100)						
All fields	89.8	99.0	100.0	105.6	117.0	121.5
Humanities	107.1	112.4	100.0	99.0	128.6	138.7
Social/behavioral sciences	136.7	124.8	100.0	95.0	129.8	139.5
Life sciences	82.7	125.6	100.0	89.1	91.5	99.4
Physical sciences	89.4	89.6	100.0	90.7	68.2	70.8
Mathematics	218.1	142.8	100.0	150.0	133.9	129.3
Computer and information sciences	15.8	37.4	100.0	277.0	165.9	162.4
Engineering	70.9	60.7	100.0	120.4	97.2	96.7
Engineering technologies	44.0	67.8	100.0	165.9	146.2	139.5
Education	163.1	142.9	100.0	80.6	102.5	99.9
Business management	57.7	71.4	100.0	119.3	125.3	129.0
Health sciences	39.6	84.8	100.0	101.2	92.8	97.0
Other technical/professional	43.2	86.6	100.0	97.3	109.2	119.4
Percentage of total degrees						
All fields	100.0	100.0	100.0	100.0	100.0	100.0
Humanities	17.1	16.3	14.3	13.4	15.7	16.3
Social/behavioral sciences	23.0	19.1	15.1	13.6	16.8	17.4
Life sciences	4.3	5.9	4.6	3.9	3.6	3.8
Physical sciences	2.5	2.3	2.6	2.2	1.5	1.5
Mathematics	3.0	1.8	1.2	1.7	1.4	1.3
Computer and information sciences	0.3	0.6	1.6	4.2	2.3	2.2
Engineering	5.3	4.1	6.8	7.7	5.6	5.4
Engineering technologies	0.6	0.9	1.3	2.0	1.6	1.4
Education	21.0	16.7	11.6	8.8	10.1	9.5
Business management	13.7	15.3	21.3	24.0	22.8	22.6
Health sciences	3.0	5.9	6.8	6.5	5.4	5.4
Other technical/professional	6.2	11.2	12.8	11.8	12.0	12.6

NOTE: Because of the reclassification of Instructional Programs in 1991-92, the figures for earlier years (1971-91) have been reclassified when necessary to conform to the new taxonomy. Therefore, most numbers shown are revised from previously published figures.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1994*, table 241 (based on IPEDS/HEGIS surveys of degrees conferred).

Index of the number of bachelor's degrees conferred (1981=100), by selected field of study: Academic years ending 1971-92



SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1994*, table 241 (based on IPEDS/HEGIS surveys of degrees conferred).

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*Climate, Classrooms, and Diversity in
Educational Institutions*

The quality of a student's education is reflected not only in the subject areas taught in school, but also in the learning environment schools provide and in the importance attached to education outside of school. A school's learning environment may be enhanced by features such as high achievement standards, opportunities to learn, programs for special populations, a safe environment, and involved parents. However, these features are too numerous to be adequately covered by a few indicators, and national data on many aspects of interest are lacking. Therefore, the indicators in this section must be viewed as only a small sampling of the indicators necessary to fully describe the learning environment of students.

Diversity of Students

Racial and ethnic diversity can bring both cultural variation and special needs to the schools. In 1993, Hispanic children ranged from 5 percent of children in public schools in nonmetropolitan areas to 22 percent of children in public schools in central cities. Black children ranged from 10 percent of students in private schools to 33 percent of children in public schools in central cities. Even though little change has occurred since 1970 in the of students in central city public schools who are black, the proportion of students who are Hispanic has been increasing in all schools (*Indicator 40*). Together, black and Hispanic students make up the majority of public school students in central cities.

Higher education institutions are less diverse than public elementary and secondary schools for two reasons: minorities make up a smaller percentage of the total population at the higher ages; and minorities, with the exception of Asians, are less likely than whites to enroll in higher education. However, the diversity of students on college campuses has been growing. For instance, the percentage of college students who are minority increased from 15 percent in 1976 to 22 percent in 1992 (*Indicator 49*). Blacks accounted for nearly 10 percent of the enrollment at colleges and universities in 1992, Hispanics 7 percent, Asians 5 percent, and American Indians 1 percent. Minorities make up a smaller percentage of the total enrollment in 4-year than in 2-year higher education institutions.

Classrooms

Programs and services offered by schools are a function not only of the needs of the students but

also of the resources available to that school. A higher percentage of fourth-grade students in public compared to private schools were in schools that offered specialized programs targeted toward children with unique needs. For example, 52 percent of fourth-grade public school students were in schools that offered English as a second language compared to 14 percent of private school students. Similarly, 92 percent of public school fourth-graders were in schools that offered handicapped programs compared to 25 percent of private school students. Higher percentages of students in public versus private schools were in schools that offered gifted programs, medical care, and remedial classes, regardless of age (*Indicator 41*).

One aspect of the quality of a student's higher education is the experience and expertise of the faculty with whom a student has contact. Courses in colleges and universities are taught by faculty ranging from instructors to full professors who are likely to have a wide range of experience and expertise. For these reasons, it is useful to consider what percentage of a student's classroom exposure is to senior faculty (full and associate professors). At research institutions, about two-thirds of a student's classroom exposure to faculty is with senior faculty, and it is closer to one-half at doctoral, comprehensive, and liberal arts institutions (*Indicator 50*). However, it is also important to consider the size of the classes in which this exposure takes place. Only 5 percent of lower division classes at liberal arts institutions have more than 50 students compared to 33 percent at research institutions (table 50-1).

Climate

The learning climate both reflects and influences the behavior of students and is affected by events within and outside of the school. Students must be physically present at school in order to learn, so tardiness, absenteeism, and mobility can detract from learning. Violence and crime in schools, as well as exposure to drugs and alcohol, can also negatively affect the learning environment. Additionally, the extent to which parents are involved in their children's education can influence the likelihood that their children will be successful in school. Extracurricular activities and outside employment can also affect a student's education, both positively and negatively.

The amount of time students spend in school is important for learning. Not all students, however,

make it to school every day. For example, students in public high schools were more likely than students in public elementary or middle schools to be absent from school. (Average daily school absentee rates were 8 percent for high schools, 5 percent for elementary schools, and 7 percent for middle schools.) Public high schools with a large percentage of students eligible for free lunch had higher absenteeism rates, and, in general, absenteeism was a greater problem in public central city schools (*Indicator 45*).

High mobility can also be detrimental to learning. Students who change schools are often at a higher risk of being retained in grade. Thirty-one percent of the eighth-graders in 1988 were affected by two or more school changes for reasons other than grade promotion between first grade and the middle of eighth grade (*Indicator 46*). Students from low income and non-two parent families were more likely than students from other families to change schools frequently. Violence in and around schools directly affects educators and students and can reduce school effectiveness and inhibit students' learning. The most common form of victimization at school, theft, was reported by 41 percent of 1993 seniors. The rate of violence does not seem to be increasing, as little change occurred in the student victimization rates for seniors between 1976 and 1993. Rates did not vary for blacks and whites, except that a higher percentage of black than white seniors reported being threatened or injured with a weapon at school (*Indicator 47*).

Drugs and alcohol affect the climate of the school by interfering with the learning process. In-school drug and alcohol use has fallen dramatically over the past decade. For example, in 1980, 21 percent of seniors reported having used marijuana at school during the previous year, compared to 6 percent in 1993 (table 48-3). Alcohol was reported to have been used during the previous year by 76 percent of seniors in 1993, down from 85 percent in 1976. Students were more likely to encounter someone trying to sell them drugs at school in public schools and in public urban and suburban schools than in private schools or public rural schools (*Indicator 48*).

Teachers, education researchers, and policymakers advocate strong parent involvement in the education of their children. One method that schools use to build family-school partnerships is to contact the parents. Parents of 12th-grade students reported that they were more likely to be contacted by school personnel regarding the academic performance of

their child than about their child's behavior (*Indicator 44*). Parents who had bachelor's degrees or higher, whose child attended private school, or whose child's achievement test scores were in the highest quartile were more likely than other parents to be contacted by school personnel about volunteering in school. Parents of students attending low poverty schools were generally more likely than other parents to be contacted concerning their child's academic performance and academic program.

In addition to developing the academic skills of students, schools promote students' social and emotional development through various means including extracurricular activities. Seventy-eight percent of high school seniors in 1992 participated in at least one type of extracurricular activity (*Indicator 43*). A large percentage of students were active in varsity sports (41 percent); fewer were in school plays, musicals, service clubs, or government (14 to 15 percent). Seniors from families in the highest socioeconomic quartile were more likely than those from lower quartiles to participate in all types of extracurricular activities, with the exception of school vocational clubs. Whites were more likely than blacks to be involved in a school play or musical, the yearbook or newspaper, or in academic clubs. In addition, white seniors were more likely than Hispanic seniors to participate in at least one extracurricular activity (84 versus 78 percent).

Students spend more time outside of school than in school, so their use of time outside of school has important consequences for their learning. In addition to participating in extracurricular activities, many students hold jobs. In 1992, about 30 percent of high school students were employed, and 11 percent reported working 20 or more hours per week (*Indicator 49*, Condition of Education 1994). An even greater percentage of students held a job while in college. In 1993, almost half of all full-time college students and 85 percent of part-time students were employed (*Indicator 51* and table 51-3). Employment among full-time college students has increased from 34 percent in 1970 to 46 percent in 1993. Full-time college students from high income families are less likely to be employed or to work as many hours as their lower income classmates. While a job or related activity could take time away from a student's studies, it may also provide the student with an education that cannot be obtained inside a classroom.

Racial and ethnic distribution of elementary and secondary students

- ◆ Since 1970, approximately one out of every three students in central city public schools has been black. In 1993, 10 percent of the students in metropolitan-area public schools outside of central cities were black, up from 6 percent in 1970.
- ◆ In 1993, 2 out of every 10 students in central city public schools were Hispanic, up from 1 in 10 in 1972.
- ◆ Since 1981, black and Hispanic students have made up the majority of public school students in central cities (see supplemental table 40-1).
- ◆ In 1993, 10 percent of students in private schools were black and 7 percent were Hispanic, up from 5 percent in 1972 in each case.

Changes in the racial/ethnic composition of students may contribute to a greater degree of heterogeneity of language and culture in our nation's schools. While a variety of backgrounds and interests of students can enhance the learning environment, it can also create new or increased challenges for the schools. Many minority students come from poor or non-English language backgrounds and may be at greater risk of not succeeding in school than other children.

Percentage of students in grades 1–12 who are black and Hispanic, by control of school and metropolitan status: 1970–93

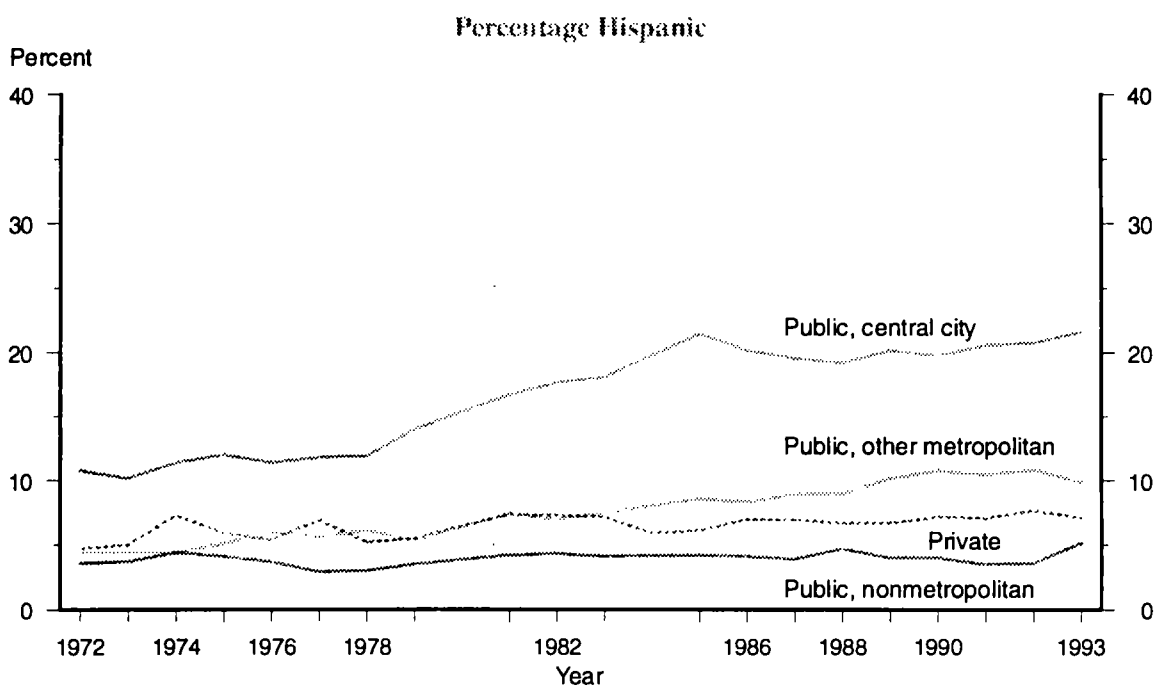
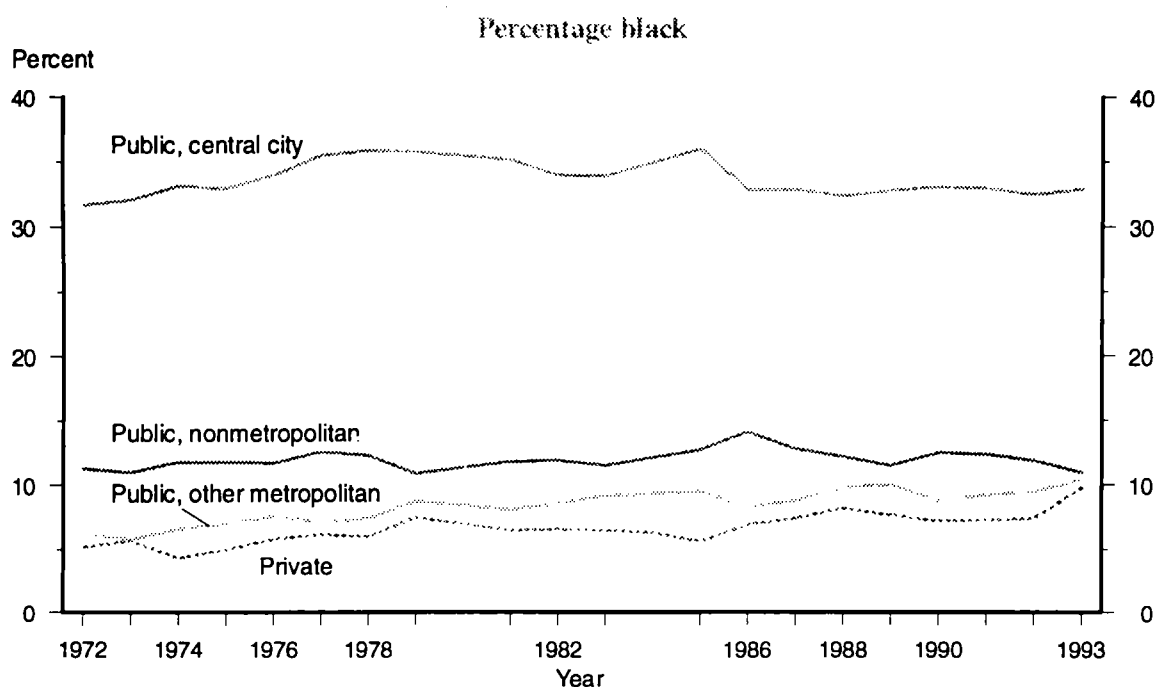
Year	Black					Hispanic				
	Public schools					Public schools				
	Total	Central cities	Other metropolitan	Non-metropolitan	Private schools	Total	Central cities	Other metropolitan	Non-metropolitan	Private schools
1970	14.8	32.5	6.2	12.0	4.7	—	—	—	—	—
1971	15.2	34.4	6.5	11.6	4.6	—	—	—	—	—
1972	14.9	31.7	6.3	11.3	5.2	5.8	10.8	4.4	3.6	4.7
1973	14.8	32.1	5.8	11.0	5.7	5.7	10.2	4.4	3.7	5.0
1974	15.4	33.2	6.6	11.8	4.3	6.2	11.4	4.4	4.4	7.3
1975	15.6	33.0	7.0	11.8	5.0	6.6	12.0	5.1	4.1	5.9
1976	16.0	34.0	7.6	11.7	5.8	6.6	11.4	5.9	3.7	5.4
1977	15.9	35.5	7.1	12.6	6.2	6.2	11.8	5.6	2.9	6.9
1978	16.1	35.9	7.4	12.3	6.0	6.4	11.9	6.1	3.0	5.2
1979	16.1	35.8	8.8	10.9	7.5	6.8	14.0	5.3	3.5	5.5
1980	—	—	—	—	—	—	—	—	—	—
1981	16.2	35.2	8.1	11.8	6.5	8.6	16.7	7.4	4.2	7.4
1982	16.2	34.0	8.6	11.9	6.6	8.7	17.7	7.0	4.3	7.3
1983	16.3	33.9	9.1	11.5	6.5	9.1	18.1	7.5	4.1	7.2
1984	16.1	—	—	—	6.3	8.5	—	—	—	5.9
1985	17.0	36.0	9.5	12.7	5.6	10.1	21.5	8.6	4.2	6.1
1986	16.7	32.9	8.3	14.1	6.9	10.6	20.2	8.3	4.1	7.0
1987	16.7	32.9	8.8	12.8	7.4	10.7	19.6	9.0	3.9	7.0
1988	16.8	32.4	9.8	12.2	8.2	10.8	19.2	9.0	4.7	6.7
1989	16.7	32.8	10.0	11.5	7.7	11.4	20.2	10.2	4.0	6.7
1990	16.5	33.1	8.8	12.5	7.2	11.6	19.8	10.8	4.0	7.2
1991	16.7	33.0	9.2	12.4	7.3	11.7	20.6	10.5	3.5	7.1
1992	16.7	32.5	9.5	11.9	7.4	11.9	20.8	10.9	3.6	7.7
1993	16.7	32.9	10.4	10.9	9.8	11.9	21.6	9.9	5.1	7.1

— Not available.

NOTE: Control of school was not available in 1980. Residence of students was not available in 1984. The definition of metropolitan areas in the United States was changed in 1985. A small number of black students (less than 1 percent) are also Hispanic.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment....," various years and October Current Population Surveys.

Race and ethnicity of students in grades 1-12, by control of school and metropolitan status: 1972-93



SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment...," various years, October Current Population Surveys.

Programs and services offered by schools

- ◆ During school year 1993–94, public school students were more likely than private school students to have available to them certain programs for students with special needs—bilingual education, English as a second language, programs for the handicapped or the gifted and talented, and diagnostic and prescriptive services.
- ◆ Fourth-graders in public schools with a low poverty level (5 percent or less receiving free or reduced-price lunch) were more likely to have programs for the gifted and talented, diagnostic and prescriptive services, and extended day programs in their schools than fourth-graders in public schools with a high level of student poverty (more than 40 percent receiving free or reduced-price lunch).
- ◆ Public school fourth-graders in rural areas were more likely to have remedial math and reading programs in their schools, but were less likely to have an extended day program available than their counterparts in central cities or the urban fringe/large town (see supplemental table 41-1).
- ◆ The percentage of public school students who have various programs and services available to them varies widely by state. For example, less than 25 percent of students in Michigan and Tennessee attend schools offering medical health care services, compared to more than 80 percent of students in Delaware, New Hampshire, and New Jersey (see supplemental table 41-4).

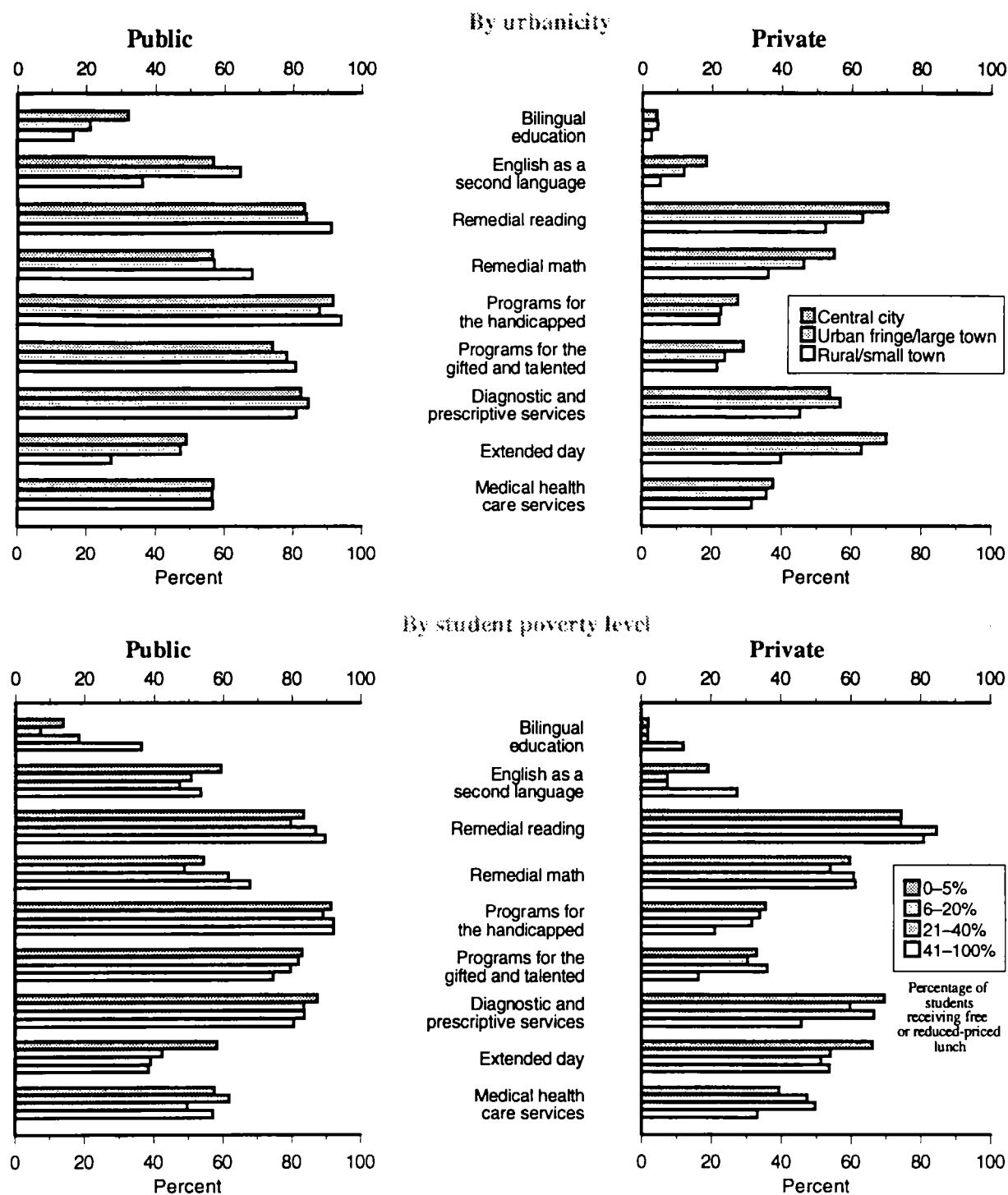
As schools undertake to serve increasingly diverse student bodies, both the content of the curriculum and the scope of noncurricular activities have changed. The programs and services that a particular school offers today are a function of not only the needs of the students, but also the resources available to that school. Differences in offerings across schools provide information as to how educational resources are being employed.

Percentage of fourth-grade students in schools offering various programs and services, by selected school characteristics: School year 1993–94

School characteristics	Bilingual education	English as a second language	Remedial reading	Remedial math	Programs for the handicapped	Programs for the gifted and talented	Diagnostic and prescriptive services	Extended day	Medical health care services
Public schools									
All fourth-grade students	23.2	51.9	86.4	61.0	91.5	77.9	82.7	40.8	56.9
Central city	32.3	57.0	83.4	56.7	91.9	74.2	82.5	49.2	57.0
Urban fringe/large town	21.3	64.8	84.0	57.2	87.9	78.4	84.6	47.4	56.7
Rural/small town	16.4	36.3	91.3	68.3	94.2	81.0	81.2	27.4	56.8
Percentage of students receiving free or reduced-price lunch									
0–5	14.0	59.6	83.5	54.6	91.6	83.3	87.6	58.5	57.8
6–20	7.5	51.1	79.9	49.0	89.3	82.2	83.7	42.6	62.1
21–40	18.6	47.7	87.1	61.7	92.3	79.9	83.9	39.3	49.9
41–100	36.6	53.8	89.8	68.0	92.4	74.8	80.9	38.7	57.4
Private schools									
All fourth grade-students	4.1	14.2	64.4	48.9	25.1	26.0	53.2	62.2	36.1
Central city	4.3	18.3	69.4	54.7	27.6	29.0	53.9	70.1	37.8
Urban fringe/large town	4.5	13.1	63.2	46.9	22.5	23.7	56.5	63.0	36.3
Rural/small town	2.6	5.2	52.7	36.6	22.9	21.6	45.5	39.0	31.0
Percentage of students receiving free or reduced-price lunch									
0–5	2.6	19.8	74.3	59.8	35.9	33.0	70.0	65.9	39.7
6–20	2.1	7.8	74.6	54.4	34.4	30.5	60.1	54.1	47.7
21–40	2.1	7.8	83.4	59.9	31.4	35.5	65.7	52.2	49.0
41–100	12.6	27.5	81.4	62.5	21.5	16.2	46.7	53.5	33.5

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1993–94.

Percentage of fourth-grade students in schools offering various programs and services:
School year 1993-94



SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1993-94.

Education of students with disabilities

- ◆ The number of students participating in federal programs for children with disabilities increased each year between 1977 and 1993, despite a decrease in elementary and secondary enrollment during the late 1970s and mid-1980s (see supplemental table 42-1).
- ◆ In 1993, students with disabilities receiving services in federal programs equaled nearly 12 percent of all students enrolled in grades K-12.
- ◆ The percentage of disabled students identified as having learning disabilities rose 24 percentage points (from 22 to 46 percent) between 1977 and 1993, while the proportion identified as mentally retarded or with speech or language impairments each fell 16 percentage points (from 26 to 10 percent and from 35 to 19 percent of the total, respectively).
- ◆ During the 1991-92 school year, 95 percent of students with disabilities were taught in regular school buildings. Of these students, 95 percent of those with speech or language impairments were taught in regular classrooms and/or resource rooms compared to 12 percent of deaf-blind students. Fifty-nine percent of mentally retarded students were taught in separate classrooms in regular school buildings compared to 4 percent of students with speech or language impairments (see supplemental table 42-6).

The Individuals with Disabilities Education Act (IDEA) mandates that all children have available to them a free and appropriate education designed to meet their unique needs. Changes in the number and distribution of students with disabilities affect the level of effort required of educators and policymakers to comply with the current law and help them to forecast the need for future resources.

Children from birth to age 21 served in federally supported programs for students with disabilities, by type of disability: Selected school years ending 1977-93

Type of disability	1977	1979	1981	1983	1985	1987	1989	1991	1993
Percentage distribution									
All disabilities	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Specific learning disabilities	21.6	29.1	35.3	40.9	42.5	43.8	43.7	44.7	45.8
Speech or language impairments	35.3	31.2	28.2	26.6	26.1	26.0	21.5	20.7	19.3
Mental retardation	26.0	23.2	20.0	17.8	16.1	14.7	12.4	11.2	10.3
Serious emotional disturbance	7.7	7.7	8.4	8.3	8.6	8.8	8.3	8.2	7.8
Preschool disabled*	(*)	(*)	(*)	(*)	(*)	(*)	8.7	9.3	10.4
As a percentage of total public K-12 enrollment									
All disabilities	8.5	9.3	10.3	10.8	10.9	10.9	11.2	11.3	11.9
Specific learning disabilities	1.8	2.7	3.7	4.4	4.6	4.8	4.9	5.1	5.5
Speech or language impairments	3.0	2.9	2.9	2.9	2.9	2.8	2.4	2.3	2.3
Mental retardation	2.2	2.2	2.1	1.9	1.8	1.6	1.4	1.3	1.2
Serious emotional disturbance	0.6	0.7	0.9	0.9	0.9	1.0	0.9	0.9	0.9
Preschool disabled*	(*)	(*)	(*)	(*)	(*)	(*)	1.0	1.1	1.2

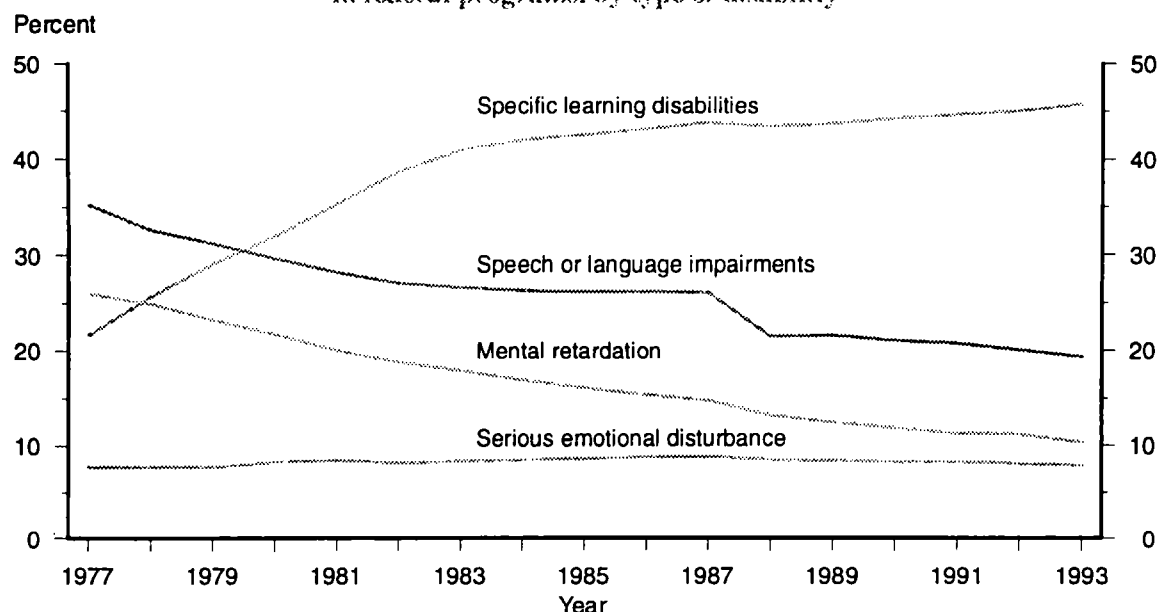
* Prior to the 1987-88 school year, these students were included in the counts by disabling condition. Beginning in the 1987-88 school year, states are no longer required to report preschool students (0-5 years) with disabilities by disabling condition.

NOTE: Includes students served under Chapter 1 of the Education Consolidation and Improvement Act (ECIA) and Part B of IDEA. Refer to supplemental tables 42-2 and 42-3 for additional disability categories.

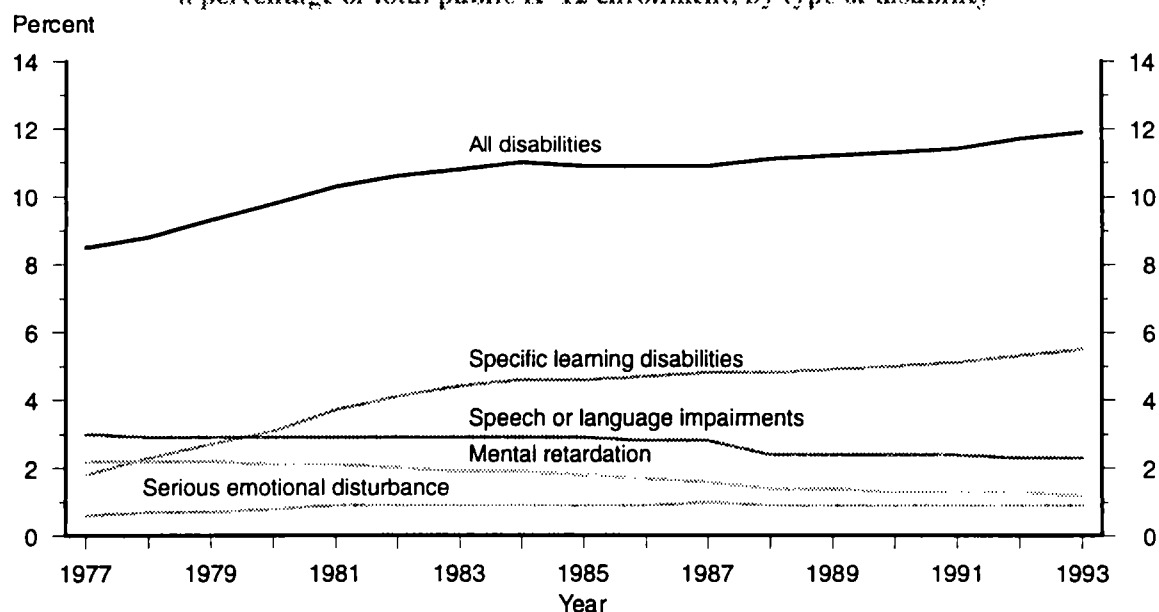
SOURCE: U.S. Department of Education, Office of Special Education and Rehabilitative Services, *Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act*, various years.

Children from birth to age 21 served in federally supported programs for students with disabilities: School years ending 1977-93

Percentage distribution of children with disabilities served in federal programs, by type of disability



Number of children with disabilities served in federal programs as a percentage of total public K-12 enrollment, by type of disability



NOTE: Includes students served under Chapter 1 of ECIA and Part B of IDEA. Prior to school year 1987-88, preschool students were included in the counts by disabling condition. Beginning in the 1987-88 school year, states are no longer required to report preschool students (0-5 years) with disabilities by disabling condition.

SOURCE: U.S. Department of Education, Office of Special Education and Rehabilitative Services, *Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act*, various years.

Extracurricular activities

- ◆ Almost 83 percent of high school seniors in 1992 participated in at least one extracurricular activity. The most popular activity was varsity sports, with 36 percent of students participating.
- ◆ Females were more likely than males to participate in all extracurricular activities with the exception of sports.
- ◆ Participation in any extracurricular activity was relatively similar across racial/ethnic groups. However, blacks were more likely to be involved in school vocational clubs than whites, Hispanics, and Asians, while Asians were more likely than both blacks and Hispanics to be involved in academic clubs.
- ◆ Seniors in the highest socioeconomic quartile were more likely than students from the lower quartiles to participate in most extracurricular activities with the exception of school vocational clubs—students from the lowest quartile were more likely to belong to these organizations.
- ◆ Seniors' participation in extracurricular activities is about the same regardless of the poverty level or minority enrollment of the schools they attend (see supplemental table 43-1).

Students spend a majority of their time outside of the classroom. How this time is spent may be an indication of the students' growth and opportunities available to them. Participation in extracurricular activities, for example, may affect academic performance, attachment to school, and social development. Almost every high school in the U.S. offers some type of extracurricular activity, such as music, academic clubs, and sports. These activities provide opportunities for students to learn the values of teamwork, a channel for reinforcing skills, and the opportunity to apply academic skills in other arenas as a part of a well-rounded education.

Percentage of high school seniors participating in extracurricular activities, by activity and selected characteristics: 1992

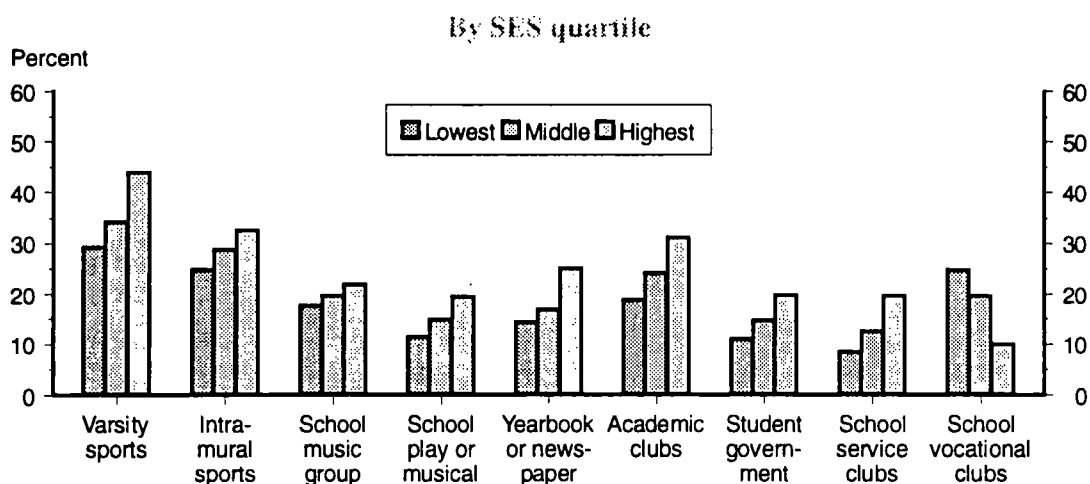
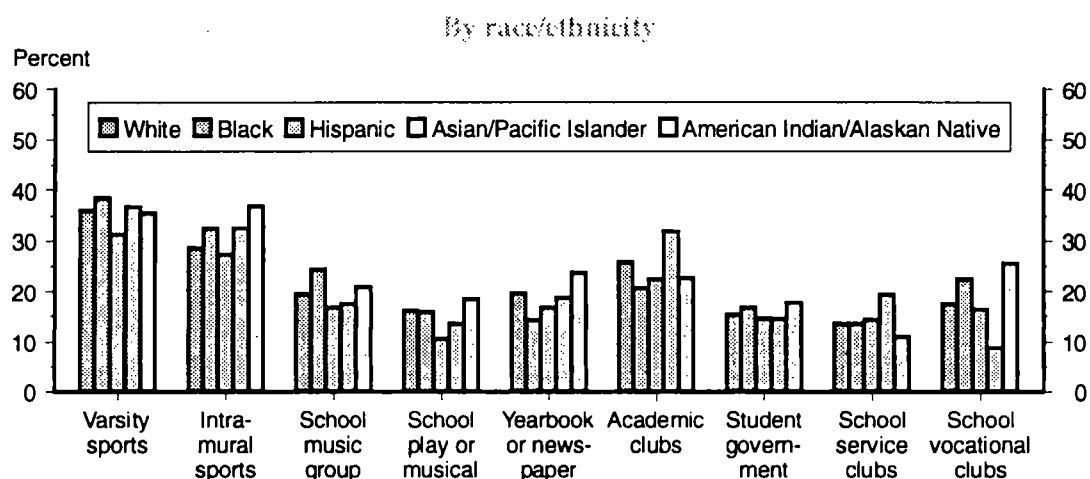
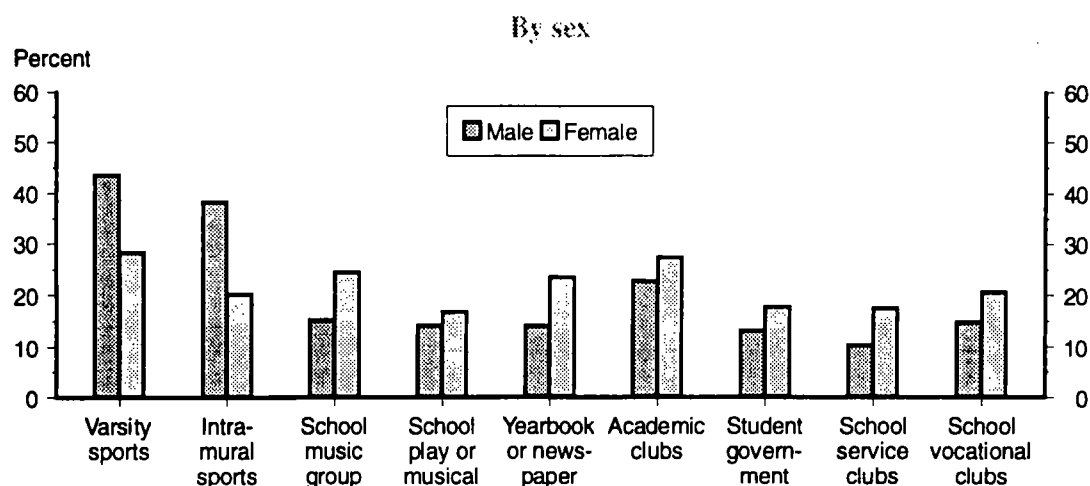
Characteristic	Extracurricular activity									
	Any activity ¹	Varsity sports	Intramural sports	School music group	School play or musical	Yearbook or newspaper	Academic clubs	Student government	School service clubs	School vocational clubs
Total	82.8	35.8	29.2	19.8	15.4	18.8	25.1	15.4	13.9	17.7
Sex										
Male	81.3	43.7	38.3	15.1	14.1	14.0	22.8	13.1	10.3	14.7
Female	84.4	28.3	20.2	24.5	16.7	23.5	27.3	17.7	17.4	20.6
Race/ethnicity										
White	84.2	36.0	28.6	19.6	16.1	19.7	25.8	15.4	13.6	17.5
Black	80.1	38.5	32.5	24.4	15.9	14.3	20.7	16.7	13.6	22.5
Hispanic	77.6	31.3	27.3	16.8	10.6	16.7	22.5	14.6	14.3	16.4
Asian/ Pacific Islander	80.7	36.7	32.5	17.5	13.6	18.8	31.9	14.4	19.4	8.9
American Indian/ Alaskan Native	83.0	35.5	36.9	20.9	18.5	23.7	22.7	17.8	11.0	25.5
SES quartile²										
Lowest	76.3	29.2	24.8	17.6	11.4	14.3	18.7	11.0	8.4	24.8
Middle	81.9	34.2	28.8	19.6	14.8	16.9	24.1	14.7	12.5	19.6
Highest	89.3	43.9	32.5	22.0	19.4	25.1	31.1	19.8	19.6	9.9

¹ Any activity is a measure of the percentage of students who reported that they had participated in at least one of the above listed activities during the school year.

² SES quartiles provide a relative measure of the socioeconomic status of families. The middle two quartiles were collapsed, creating a three-level SES scale with the values "lowest" (lowest quartile), "middle" (the two middle quartiles), and "highest" (highest quartile). See Glossary for further explanation.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up, Student Survey, 1992.

Percentage of high school seniors participating in extracurricular activities, by activity and selected characteristics: 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up, Student Survey, 1992.

Types of contact between parents and school personnel

- ◆ Parents of 12th-grade students reported that they were more likely to be contacted by school personnel regarding the academic performance of their child than about their child's behavior.
- ◆ Parents of seniors in private schools were more likely than their counterparts in public schools to be called to request volunteer services or to discuss their child's post-high school plans, while parents of public high school seniors were more likely to be contacted about their child's attendance.
- ◆ Parents of white seniors were more likely than those of black, Hispanic, or Asian seniors to be asked to volunteer at school. Black parents were more likely than white or Hispanic parents to be contacted by school personnel to inform them about helping their child with school work (see supplemental table 44-1).
- ◆ Parents of seniors in schools with 41 percent or more of students receiving free or reduced-price lunch were more likely than parents of seniors in schools with less than 5 percent of students receiving free or reduced-price lunch to be contacted regarding their child's academic performance or academic program. Parents in rural schools were the least likely to be contacted about their child's attendance, and parents in urban schools were the least likely to be contacted by school personnel requesting parent volunteers (see supplemental table 44-3).
- ◆ Parents who had a bachelor's degree or higher or whose child's achievement test scores were in the highest quartile were more likely to be called by school personnel regarding their child's post-high school plans and to be asked to volunteer at school than were other parents (see supplemental tables 44-2 and 44-4).

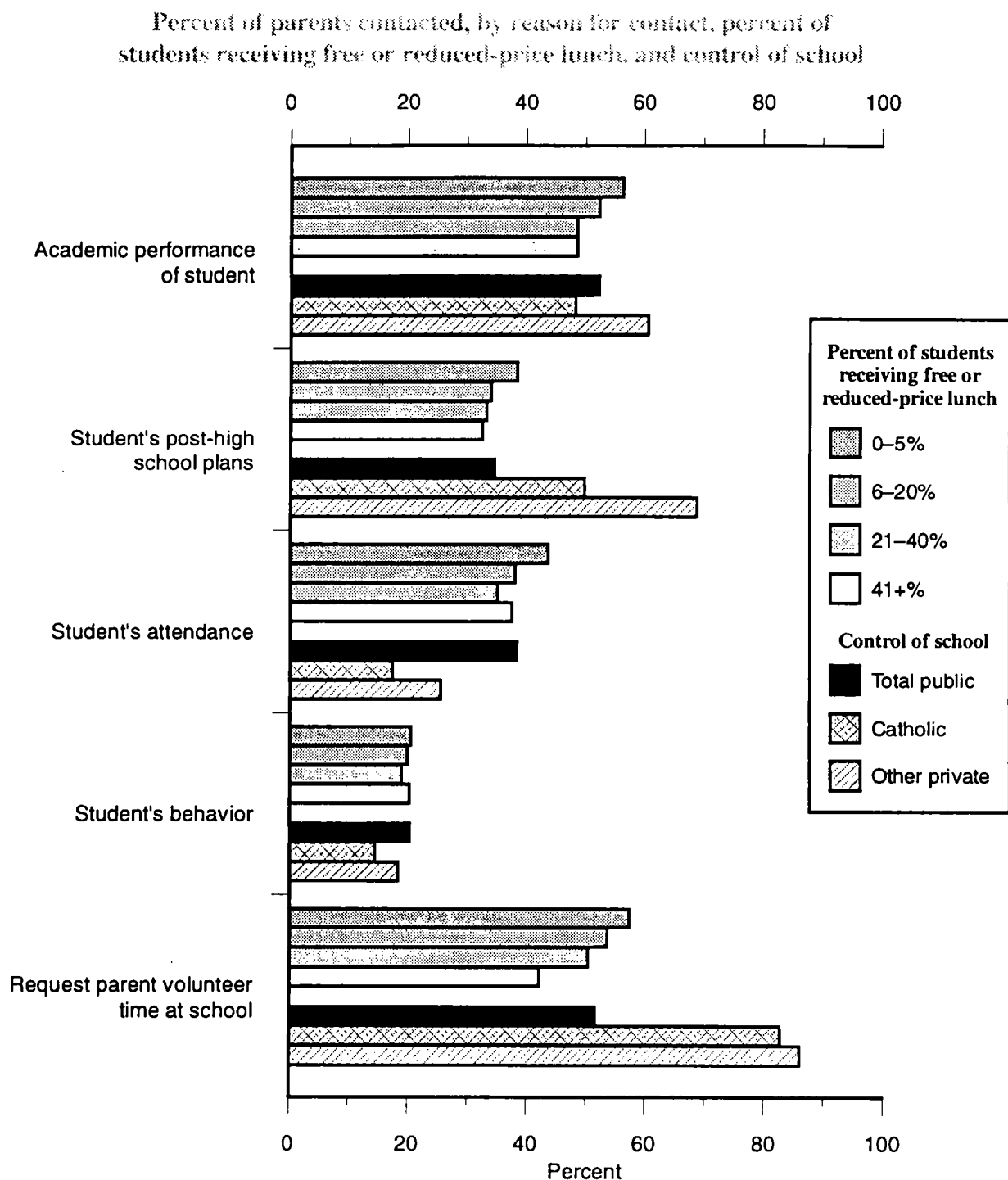
When school personnel and parents communicate, they establish a stronger learning environment for the student both at home and at school. Schools contact parents for many reasons, including when their child is experiencing academic or behavioral difficulties, when the teacher wishes to discuss future plans for the child, or when the school is looking for parent volunteers. It is important to determine whether parents are being contacted only when there is a problem at school, or if school personnel are striving to develop a strong line of communication with the parents.

Percentage of 12th-grade students whose parents reported that school personnel contacted them at least once during the current school year, by percent of students receiving free or reduced-price lunch in public schools, control of school, and reason for contact: 1992

Reason school personnel contacted parents	Total	Percent of students receiving free or reduced-price lunch in public schools				Control of school		
		Low	Low-middle	Middle-high	High	Public	Catholic	Other private
Discuss:								
Student's academic performance	52.7	56.5	52.5	48.8	48.8	52.5	48.5	60.8
Student's academic program	43.8	46.6	43.2	38.8	38.7	42.9	46.1	59.0
Student's post-high school plans	37.1	38.7	34.3	33.5	32.8	34.9	50.0	69.1
Student's attendance	37.0	43.9	38.3	35.3	37.8	38.7	17.5	25.7
Student's behavior	20.1	20.7	20.1	19.1	20.4	20.5	14.6	18.5
Request parent volunteer time at school	55.0	57.8	54.0	50.7	42.4	51.9	82.9	86.2
Inform parents how to help student with school work	22.3	24.2	20.7	20.0	18.6	21.5	29.3	31.8

SOURCE: U. S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up, (1992) Parent Survey.

Percentage of 12th-grade students whose parents reported that school personnel contacted them at least once during the current school year for various reasons: 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Second Follow-up, Parent Survey, 1992.

Student absenteeism and tardiness

- ◆ In 1991, the student absentee rate increased with school level and was generally greater in public central city schools.
- ◆ An average of 8 percent of the students in public high schools were absent on a typical day (12 percent in central cities). Forty-four percent of central city public high school teachers reported that student absenteeism was a serious problem in their schools.
- ◆ Public high schools with more than 40 percent of their students eligible for free or reduced lunches had a higher absentee rate (10 percent) than those with lower percentages of eligible students, which had absentee rates of 7 to 8 percent.
- ◆ In central city public high schools with more than 40 percent of the students eligible for free or reduced lunches, 55 percent of the teachers thought that absenteeism was a serious problem in their school, and 49 percent thought that tardiness was a serious problem. Thirty-six percent considered cutting class a serious problem (see supplemental table 45-2).

An important aspect of students' access to education is the amount of time actually spent in the classroom. When students are absent from school, arrive late, or cut class, they forgo opportunities to learn. Furthermore, when students disrupt classes by being late or frequently absent, they interfere with other students' opportunities to learn. And, maybe most importantly, the habits of consistent and on-time attendance are habits that will serve young people well in their future work lives.

Average percentage of students absent, by selected school characteristics: 1990-91

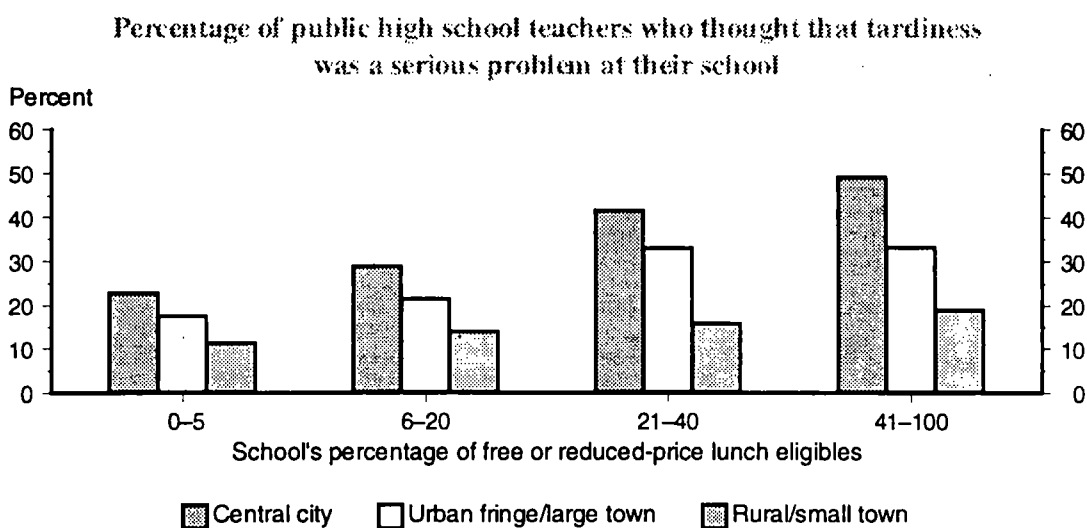
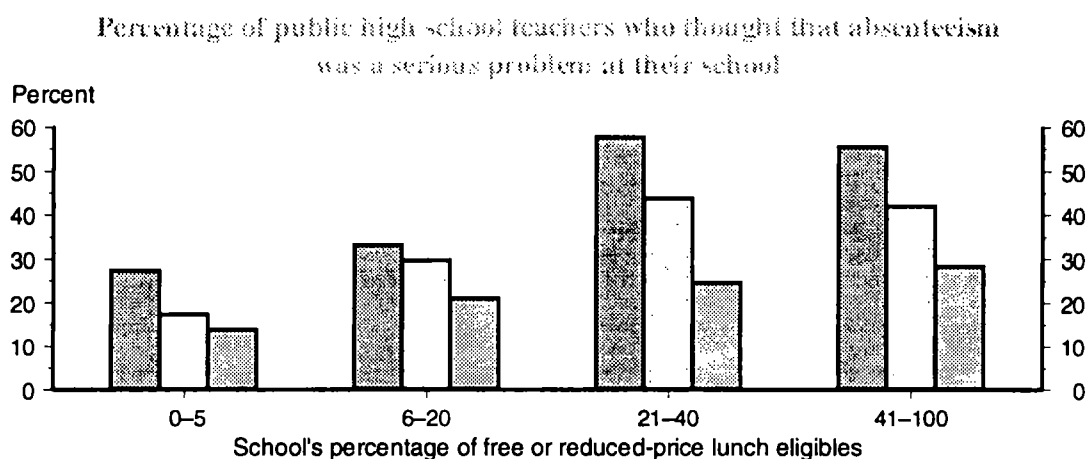
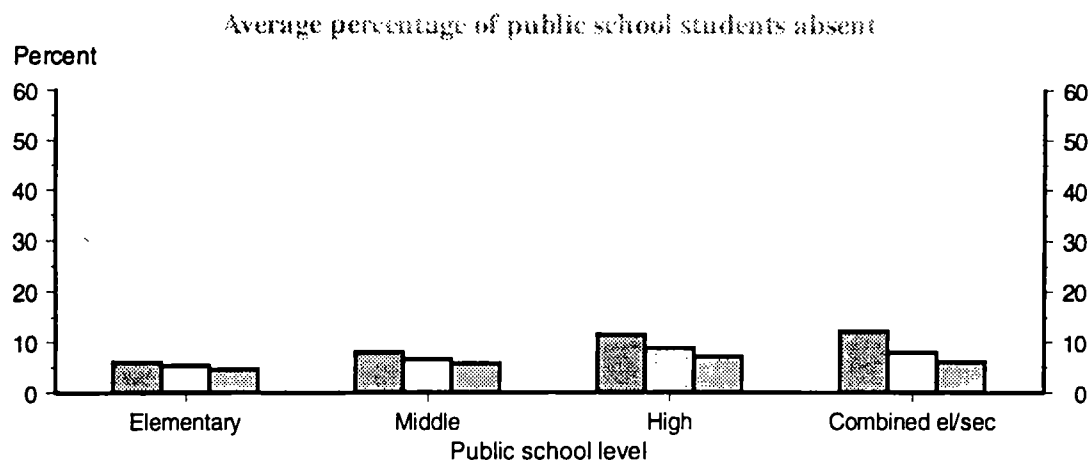
Urbanicity	Total	Control of school		Public school level				Public high school % of students eligible for free or reduced-price lunch			
		Public	Private	Elementary	Middle	High	Combined el/sec	0-5	6-20	21-40	41-100
Total	5.9	6.1	4.9	5.3	6.6	8.2	7.5	7.0	7.4	7.8	9.6
Central city	6.6	7.3	5.1	6.0	8.0	11.5	12.2	10.7	8.7	12.8	14.4
Urban fringe/ large town	6.0	6.2	5.4	5.4	6.6	8.8	7.9	7.4	9.2	8.3	10.6
Rural/small town	5.3	5.5	4.2	4.7	5.8	7.1	6.1	5.8	6.4	6.6	7.4

Percentage of teachers who reported that absenteeism and tardiness were serious problems in their schools, by selected school characteristics: 1990-91

Urbanicity	Total	Control of school		Public school level				Public high school % of students eligible for free or reduced-price lunch			
		Public	Private	Elementary	Combined		0-5	6-20	21-40	41-100	
					Middle	High					
Absenteeism											
Total	12.7	14.1	2.6	6.1	12.7	28.8	13.3	17.2	26.3	38.1	40.1
Central city	17.5	20.7	2.9	10.5	19.1	44.4	20.9	27.4	33.2	57.6	55.4
Urban fringe/ large town	11.6	13.0	2.3	4.9	11.1	27.5	12.8	17.4	29.7	43.8	42.0
Rural/small town	10.1	10.6	2.8	3.7	8.9	21.9	11.4	13.8	21.0	24.6	28.4
Tardiness											
Total	10.2	11.2	3.4	4.6	12.2	21.7	10.6	15.8	19.3	26.8	32.0
Central city	15.5	18.1	3.7	8.9	21.8	35.7	14.6	22.7	28.9	41.6	49.2
Urban fringe/ large town	9.5	10.5	2.6	4.2	8.9	21.6	13.6	17.4	21.4	33.1	33.2
Rural/small town	6.9	7.1	3.3	2.0	7.3	14.7	8.5	11.3	13.9	15.8	19.0

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990-91 (Teacher and School Questionnaires).

Student absenteeism and tardiness, by selected school characteristics: 1990-91



SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990-91 (Teacher and School Questionnaires).

Student mobility*

- ◆ Thirty-one percent of the eighth-grade class of 1988 changed schools two or more times after entering first grade and before the middle of eighth grade, and 10 percent changed schools two or more times between the middle of eighth grade and spring 1992.
- ◆ White students were less likely to move two or more times after entering first grade and before the middle of eighth grade than were Asians. Between the middle of eighth grade and spring 1992, white students changed schools less frequently than did either Hispanics or blacks.
- ◆ Students who lived with their mother and father during the eighth grade were less likely to have changed schools two or more times either between first grade and the middle of eighth grade or between the middle of eighth grade and spring 1992 than were students living in other types of families.
- ◆ Students in low income families (under \$10,000) were more likely to change schools two or more times after entering first grade and before the middle of eighth grade than were students whose annual family income equaled or exceeded \$20,000.

Students change schools for academic, personal, and family-related reasons. Those who make frequent school changes can experience inappropriate placement in a new school, lack of continuity of lesson content, disruptions in social ties, and feelings of alienation. Teachers may also find it difficult to identify and meet the academic and social needs of the highly mobile student.

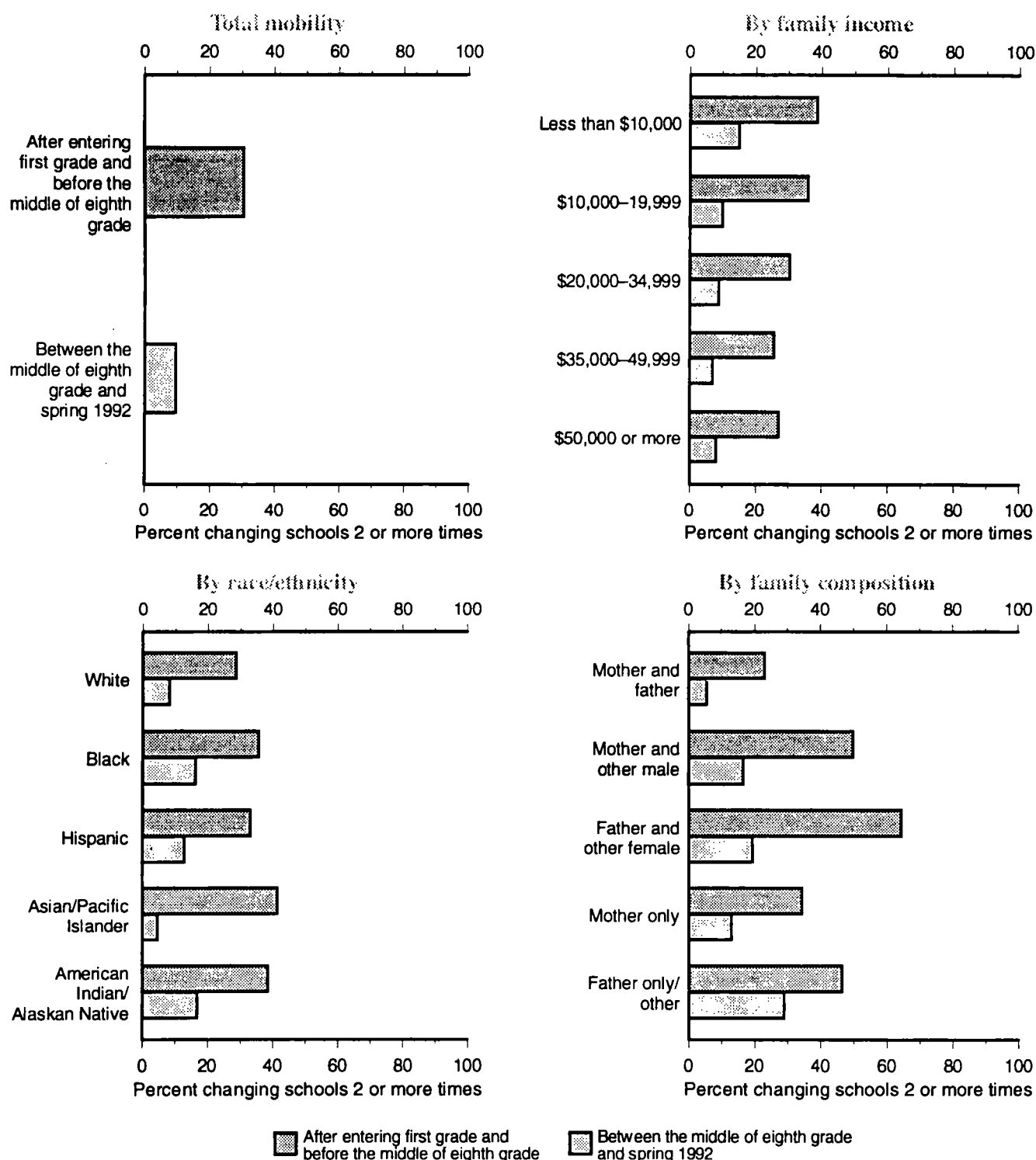
Percentage of the eighth-grade class of 1988 who changed schools between entering first grade and the middle of eighth grade and between the middle of eighth grade and spring 1992, by selected background characteristics

Background characteristics in 1988	Number of school changes after entering first grade and before the middle of eighth grade		Number of school changes between the middle of eighth grade and Spring 1992	
	Less than 2	2 or more	Less than 2	2 or more
	(Percent)			
Total	69.4	30.6	90.2	9.8
Race/ethnicity				
White	71.2	28.8	91.6	8.4
Black	64.3	35.7	83.6	16.4
Hispanic	66.7	33.3	87.0	13.0
Asian/Pacific Islander	58.5	41.5	95.1	4.9
American Indian/Alaskan Native	61.3	38.7	83.1	16.9
Family composition				
Mother and father	76.7	23.3	94.4	5.6
Mother only	65.6	34.4	87.0	13.0
Mother and other male	50.0	50.0	83.3	16.7
Father only/Other	53.4	46.6	71.0	29.0
Father and other female	35.4	64.6	80.5	19.5
Annual family income				
Less than \$10,000	61.2	38.8	85.0	15.0
\$10,000-19,999	64.0	36.0	89.9	10.1
\$20,000-34,999	69.5	30.5	91.1	8.9
\$35,000-49,999	74.2	25.8	92.8	7.2
\$50,000 or more	72.7	27.3	91.8	8.2

*Mobility measures the number of times a student changed schools, excluding changes due to single grade or level promotions.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Base Year (1988) and Second Follow-up (1992) Surveys.

Percentage of eighth-graders in 1988 who changed schools between entering first grade and the middle of eighth grade and between the middle of eighth grade and spring 1992, by selected background characteristics



NOTE: Mobility measures the number of times a student changed schools, excluding changes due to single grade or level promotions.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Base Year (1988) and Second Follow-up (1992) Surveys.

Crime in the schools

- ♦ Victimization rates of high school seniors changed little between 1976 and 1993, with the exception of a slight increase in the percentage of students who reported being threatened both with and without a weapon. The most common type of victimization reported by high school seniors in 1993 was having something stolen (41 percent) (see supplemental table 47-1).

Violence in and around schools directly affects educators and students by reducing school effectiveness and inhibiting students' learning. Additionally, unsafe school environments may place students who are already at risk of school failure for other reasons in further jeopardy. In recent years, educators and policymakers have voiced growing concern about possible increases in the incidences of school-related criminal behavior. Studying trends in victimization rates provides a picture of the safety of today's schools.

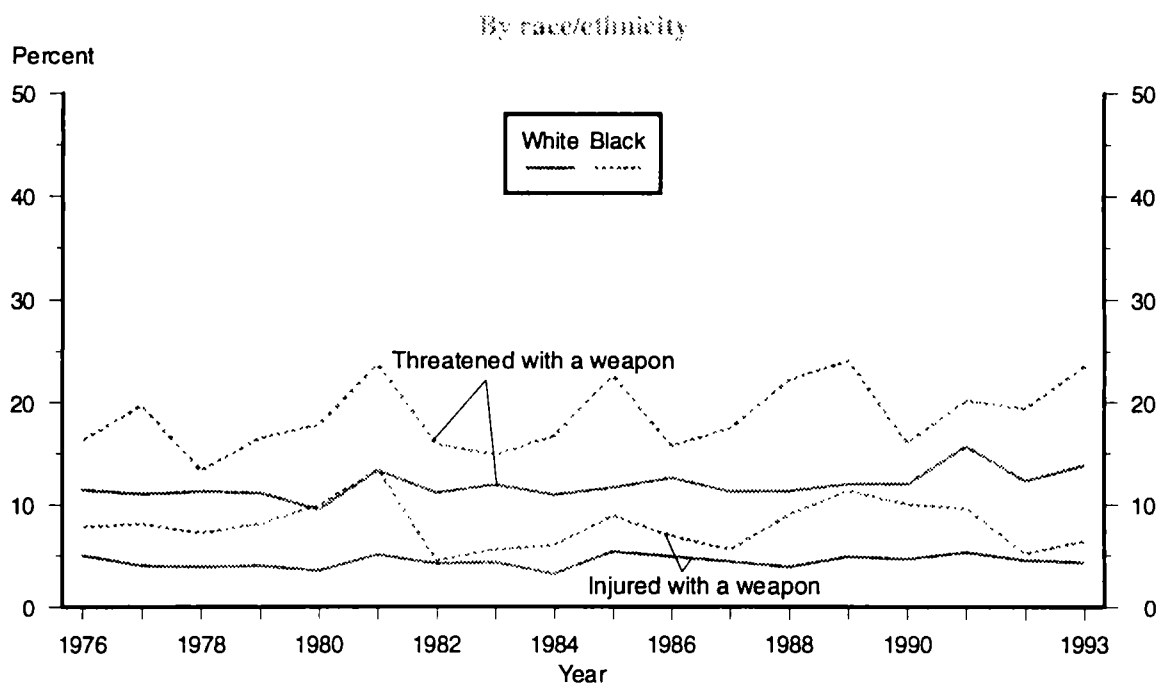
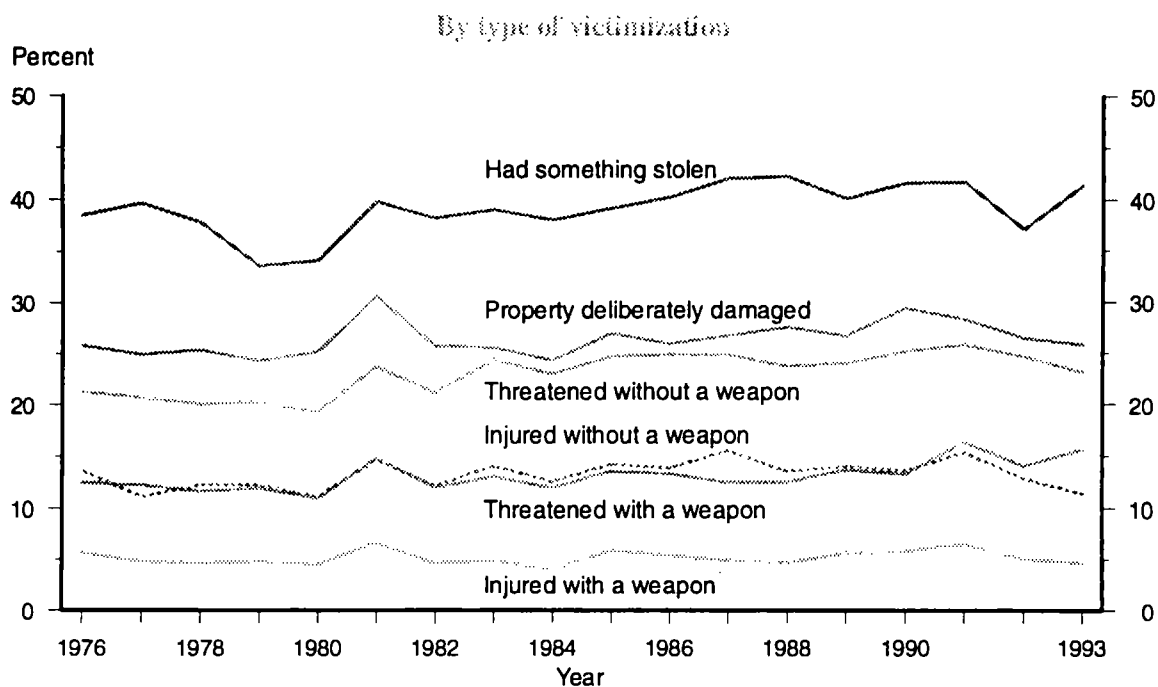
- ♦ Black and white high school seniors were about equally likely to report being victimized at school, except that blacks were more likely than whites to have been threatened or injured with a weapon. Twenty-four percent of black high school seniors reported being threatened with a weapon in 1993 compared to 14 percent of white seniors.
- ♦ Twelfth-grade males were more likely than 12th-grade females to report that they were threatened at school and that they got into a physical fight either at school or when going to or from school (see supplemental table 47-3).
- ♦ Only about 5 percent of students attended schools equipped with metal detectors. Students attending a public school, a high school, a school located in an urban area, or a school with an enrollment above 1,000 were more likely to have metal detectors or security guards in their schools than were students attending other types of schools (see supplemental table 47-4).

Percentage of high school seniors who reported being victimized at school, by type of victimization and race/ethnicity: 1976-93

Year	Had something stolen		Property deliberately damaged		Injured with a weapon		Threatened with a weapon		Injured without a weapon		Threatened without a weapon	
	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black
1976	38.9	35.9	25.1	30.1	5.0	7.8	11.4	16.3	13.2	14.3	21.2	24.2
1977	40.4	32.8	24.3	21.0	4.0	8.1	11.0	19.7	10.6	11.4	20.2	24.2
1978	38.8	32.4	25.7	21.2	3.9	7.2	11.2	13.3	11.5	14.4	20.4	17.5
1979	34.6	27.2	24.5	20.8	4.0	8.1	11.1	16.5	11.7	9.8	20.3	17.9
1980	34.3	33.1	25.3	21.9	3.5	9.9	9.5	17.8	10.3	14.9	19.0	20.0
1981	40.1	39.2	30.4	29.8	5.1	13.4	13.4	23.7	13.8	19.1	23.6	25.0
1982	37.9	42.0	25.6	25.4	4.2	4.5	11.1	15.9	11.8	11.7	21.3	19.5
1983	39.4	39.2	25.0	23.1	4.3	5.6	11.9	14.8	13.4	13.2	23.9	24.5
1984	38.4	35.3	24.3	21.8	3.2	6.0	10.9	16.7	12.1	13.3	23.0	24.4
1985	39.3	35.2	26.6	28.0	5.4	8.9	11.6	22.6	13.6	18.2	24.5	25.2
1986	41.1	36.3	25.7	24.5	4.9	6.9	12.6	15.7	14.5	12.8	25.7	22.7
1987	42.1	39.4	27.0	25.0	4.4	5.6	11.2	17.5	15.4	15.4	25.4	20.2
1988	41.4	46.6	27.4	25.8	3.9	9.0	11.3	22.2	13.5	16.6	24.3	27.7
1989	39.4	46.4	26.0	28.9	4.9	11.3	12.0	24.1	13.7	17.8	24.5	21.0
1990	41.6	42.2	28.9	26.1	4.6	10.0	12.0	16.0	13.6	10.0	26.1	21.7
1991	41.4	44.3	28.4	24.6	5.3	9.6	15.7	20.2	15.4	17.1	26.5	27.5
1992	36.2	44.2	25.7	28.3	4.5	5.2	12.3	19.4	12.7	13.6	25.5	20.5
1993	41.6	46.0	25.8	26.3	4.3	6.4	13.8	23.5	11.0	11.5	23.8	22.3

SOURCE: University of Michigan, Survey Research Center, Institute for Social Research, *Monitoring the Future Study*.

Percentage of high school seniors who reported being victimized at school, by type of victimization and race/ethnicity: 1976-93



SOURCE: University of Michigan, Survey Research Center, Institute for Social Research, *Monitoring the Future Study*.

Student drug and alcohol use

- ♦ Drug use by high school seniors fell dramatically throughout the 1980s and early 1990s. For example, in 1994, 4 percent of seniors who report using cocaine during the previous year, down from 12 percent in 1981. Marijuana use dropped from 46 percent in 1981 to 26 percent in 1993; however, it climbed back to 31 percent in 1994.

Drugs and alcohol interfere with thinking and can reduce academic achievement. Crimes of violence may accompany or result from substance abuse. Educators and administrators need to be able to determine the scope of the drug and alcohol problem for students. The percentage of students reporting that they have been approached at school to buy drugs is an indicator of the extent to which the school environment is directly affected by the drug problem.

- ♦ While the percentage of high school seniors reporting alcohol use at any time during the previous year has decreased since 1979, it remains high. In 1993, 76 percent of high school seniors reported using alcohol in the previous year (see supplemental table 48-1).
- ♦ In 1993, 8 percent of 12th-graders and 6 percent of 8th-graders reported that they were under the influence of alcohol while at school at least 1 day in the previous month. Similar percentages (9 and 5 percent, respectively) responded that they were under the influence of marijuana or some other illicit drug while at school at least once in the past month (see supplemental table 48-2).
- ♦ Students in 8th grade in 1988 and 10th grade in 1990 who attended public schools were more likely to have had someone offer to sell them drugs at school than students in all three types of private schools. Such differences between schools became less pronounced in 1992.

Percentage of high school seniors who reported using drugs or alcohol at any time during the previous year, by type of drug: Selected school years ending 1975–94

Type of drug	1975	1978	1981	1984	1987	1990	1993	1994
Alcohol	84.8	87.7	87.0	86.0	85.7	80.6	76.0	—
Marijuana	40.0	50.2	46.1	40.0	36.3	27.0	26.0	30.7
Any illicit drug other than marijuana	26.2	27.1	34.0	28.0	24.1	17.9	17.1	18.0
Stimulants	16.2	17.1	26.0	17.7	12.2	9.1	8.4	9.4
Inhalants	—	4.1	4.1	5.1	6.9	6.9	7.0	7.7
LSD	7.2	6.3	6.5	4.7	5.2	5.4	6.8	6.9
Cocaine	5.6	9.0	12.4	11.6	10.3	5.3	3.3	3.6
Sedatives	11.7	9.9	10.5	6.6	4.1	3.6	3.4	4.2
Tranquilizers	10.6	9.9	8.0	6.1	5.5	3.5	3.5	3.7

— Not available. 1994 data are not available for this trend series as the wording of the question was different in this year than in previous years.

NOTE: Only drug use that was not under a doctor's orders is included here.

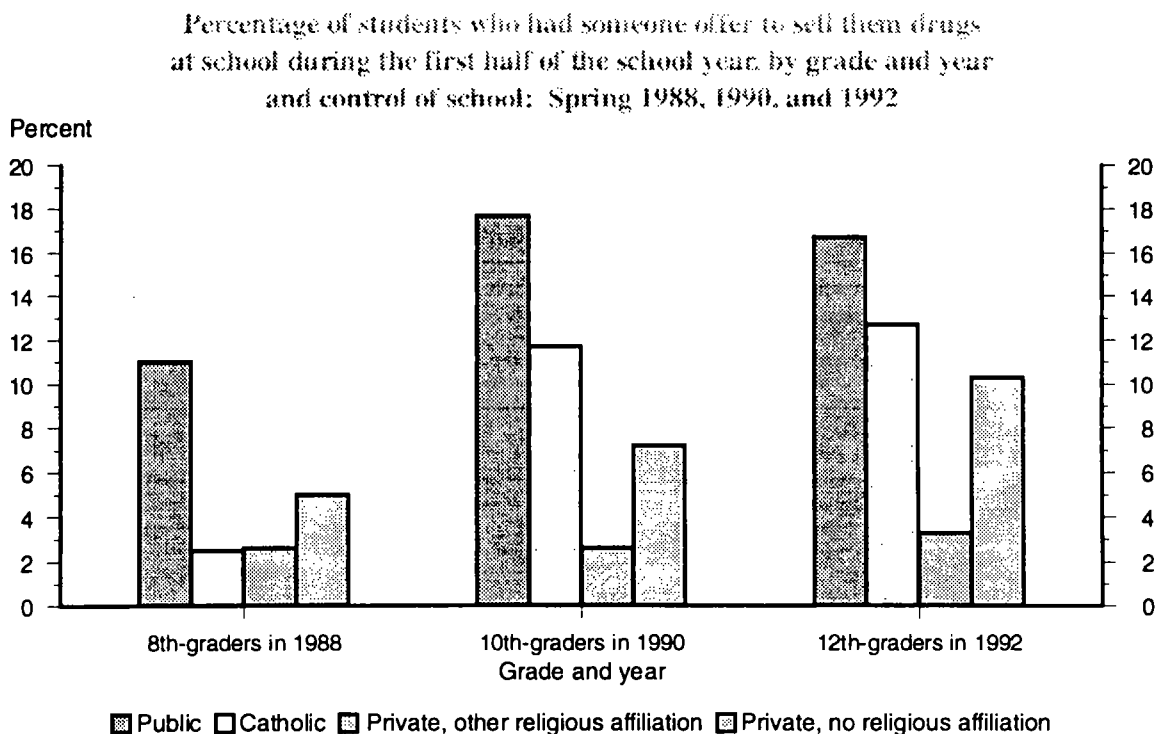
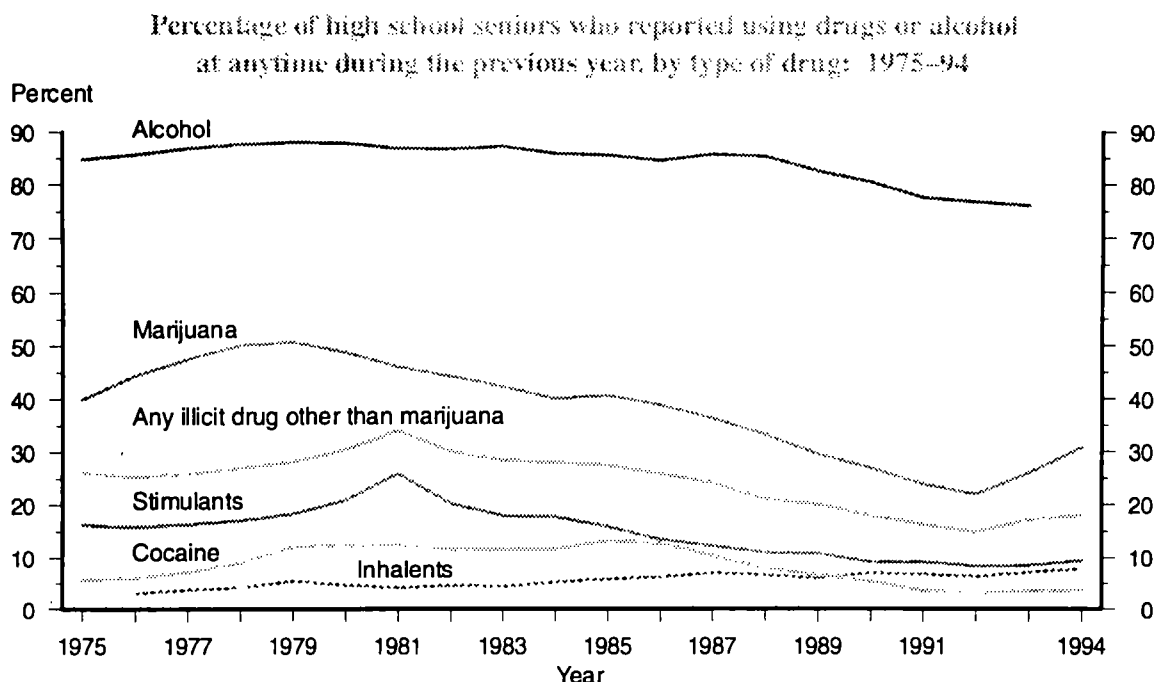
SOURCE: University of Michigan, Survey Research Center, Institute for Social Research, *Monitoring the Future Study*.

Percentage of students who had someone offer to sell them drugs at school during the first half of the school year, by grade and year, number of offers, and control of school: Spring 1988, 1990, and 1992

	8th-graders in 1988			10th-graders in 1990			12th-graders in 1992		
	Ever	Once or twice	More than twice	Ever	Once or twice	More than twice	Ever	Once or twice	More than twice
Control of schools									
All students	10.0	6.9	3.1	17.0	10.1	6.9	16.0	9.5	6.5
Public	11.0	7.6	3.4	17.7	10.5	7.2	16.7	9.8	6.9
Catholic	2.5	1.6	0.9	11.7	9.0	2.7	12.7	8.7	4.0
Private, other religious affiliation	2.6	1.7	0.9	2.6	1.2	1.4	3.3	2.6	0.7
Private, no religious affiliation	5.0	3.2	1.8	7.2	4.5	2.7	10.3	4.5	5.8

SOURCE: U. S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Base Year (1988), First Follow-up (1990), and Second Follow-up (1992) Student Surveys.

Student drug and alcohol use



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988, Base Year (1988), First Follow-up (1990), and Second Follow-up (1992) Student Surveys.

Racial and ethnic distribution of college students

- ◆ The student body at the nation's colleges and universities has become increasingly heterogeneous since the mid-1970s. Minority students increased from 15 percent of all students in 1976 to nearly 22 percent in 1992.
- ◆ Hispanics and Asians increased as a percentage of all college students throughout the period from 1976 to 1992.
- ◆ Following a period of decline, the black share of enrollment has risen since 1988 to a slightly higher level than in the mid-1970s.
- ◆ Black students accounted for nearly 10 percent of the total enrollment at colleges and universities in 1992. Hispanics made up 7 percent, Asians 5 percent, and American Indians 1 percent of enrolled students.
- ◆ At 2-year public colleges, about equal proportions of the black and Hispanic students were enrolled. At 4-year colleges, however, there were about twice as many blacks as Hispanics.

Colleges and universities seek diversity in their student bodies; variety in the backgrounds and interests of students enhances the learning environment. The racial/ethnic mix of college students is one aspect of student diversity. Variations in the racial/ethnic composition of college enrollment suggest differences in the needs, interests, and backgrounds of the student body.

Percentage of total enrollment in higher education institutions, by race/ethnicity and control and type of institution: Fall, selected years 1976–92

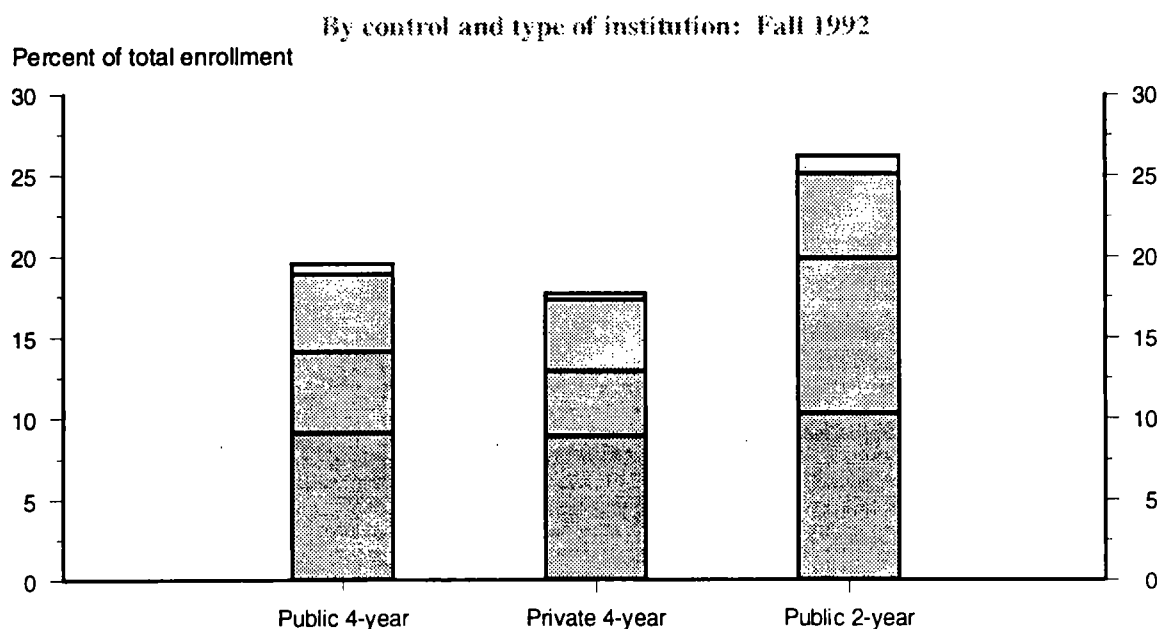
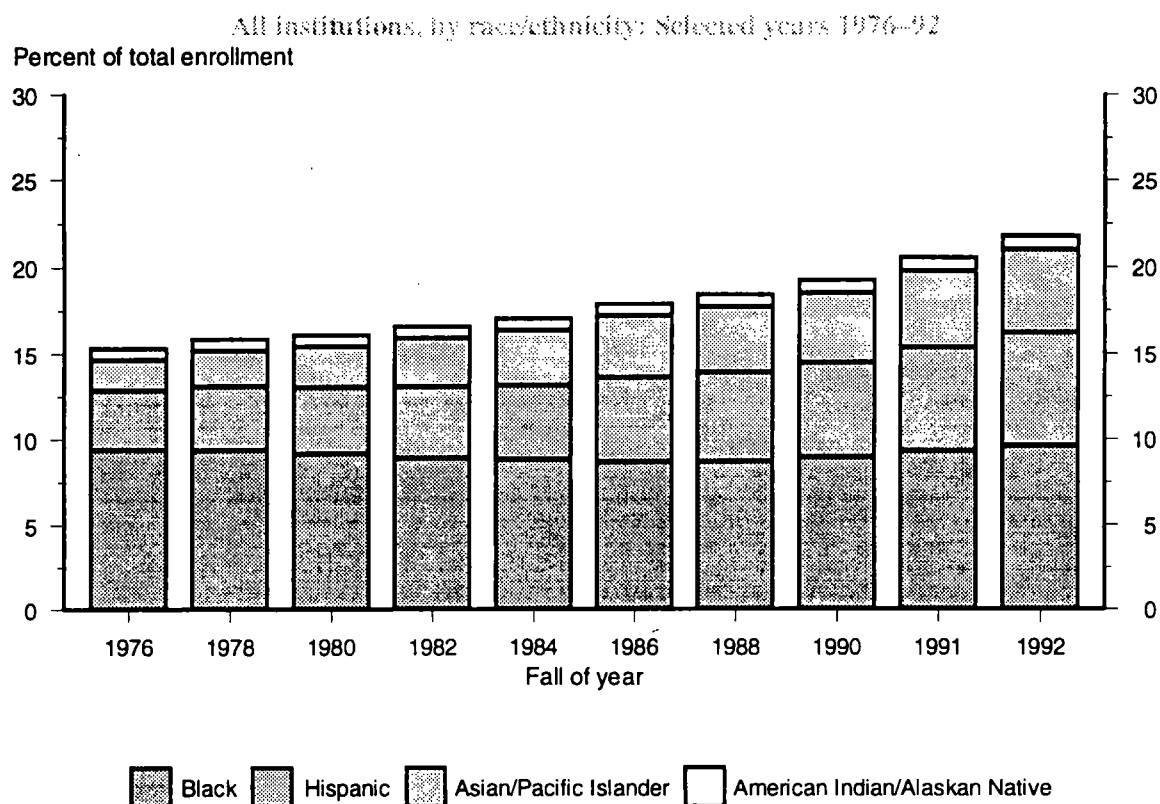
Fall of year and control and type of institution	White	Minority					Nonresident alien
		Total minority	Black	Hispanic	Asian/ Pacific Islander	American Indian/ Alaskan Native	
All institutions, by fall of year							
1976	82.6	15.4	9.4	3.5	1.8	0.7	2.0
1978	81.9	15.9	9.4	3.7	2.1	0.7	2.2
1980	81.4	16.1	9.2	3.9	2.4	0.7	2.5
1982	80.7	16.6	8.9	4.2	2.8	0.7	2.7
1984	80.2	17.0	8.8	4.4	3.2	0.7	2.7
1986	79.3	17.9	8.7	4.9	3.6	0.7	2.8
1988	78.8	18.4	8.7	5.2	3.8	0.7	2.8
1990	77.9	19.2	8.9	5.5	4.0	0.7	2.9
1991	76.5	20.6	9.3	6.0	4.4	0.8	2.9
1992	75.0	21.8	9.6	6.6	4.8	0.8	3.2
By control and type of institution: Fall 1992							
Public	74.5	22.8	9.7	7.2	5.0	0.9	2.7
Private	76.8	18.4	9.4	4.3	4.3	0.5	4.8
4-year	77.0	19.0	9.0	4.7	4.7	0.6	4.1
Public	76.8	19.6	9.1	5.0	4.8	0.7	3.6
Private	77.2	17.7	8.9	4.0	4.4	0.4	5.1
2-year public*	72.1	26.2	10.3	9.6	5.2	1.1	1.8

* Ninety-seven percent of 2-year students are enrolled in public institutions.

NOTE: Details may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of Fall Enrollment, various years.

Percentage of total enrollment in higher education institutions



SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of Fall Enrollment, various years.

Student exposure to faculty at institutions of higher education

- ◆ At research, doctoral, and comprehensive institutions in both 1987 and 1992, the majority of classroom exposure to faculty for students in undergraduate upper division courses and graduate courses was with senior faculty—full professors and associate professors.
- ◆ At comprehensive institutions in 1992, undergraduate students in lower division courses had less classroom exposure to senior faculty than did students in upper division courses.
- ◆ Students in undergraduate courses at research institutions had about the same classroom exposure to senior-level faculty as did students in undergraduate courses at comprehensive and liberal arts institutions. However, for undergraduate students in classes taught by senior-level faculty, those at research institutions were more likely to be in classes of more than 50 students than those at comprehensive and liberal arts institutions (see supplemental table 50-1).

An institution's most experienced faculty are its senior faculty. They have more teaching, research, and administrative experience. More contact with these faculty may enhance the quality of the learning environment for students at colleges and universities. One measure of a student's contact with senior faculty is the percentage of a student's classroom time spent with full or associate professors.

Percentage of classroom hours 4-year college and university students are exposed to faculty of different ranks, by type of institution, level of classes, and course division: Fall 1987 and fall 1992

Faculty rank	Fall 1987					Fall 1992				
	Type of institution and course division					Type of institution and course division				
	Total	Re- search	Doctoral	Compre- hensive	Liberal arts	Total	Re- search	Doctoral	Compre- hensive	Liberal arts
Undergraduate, lower division courses						Undergraduate, lower division courses				
Full professor	30.4	33.6	¹ 28.5	30.1	27.3	27.1	29.2	24.7	27.0	26.7
Associate professor	26.3	34.5	28.6	22.4	20.6	23.6	34.3	22.5	20.4	20.8
Assistant professor	20.5	16.7	19.7	20.6	29.0	22.7	13.2	27.0	24.9	23.7
Instructor	12.8	¹ 4.1	17.0	16.6	12.8	17.1	12.1	17.0	18.9	18.0
Lecturer	8.1	10.6	4.9	8.7	4.5	7.4	11.1	7.4	6.9	3.8
Other	1.9	0.5	1.3	1.7	5.8	2.2	0.2	1.4	2.0	7.0
Undergraduate, upper division courses						Undergraduate, upper division courses				
Full professor	31.1	36.2	31.4	29.4	24.6	32.7	35.6	30.0	33.1	28.6
Associate professor	25.5	30.6	¹ 27.7	22.9	19.7	25.9	28.3	25.2	25.6	23.3
Assistant professor	25.7	18.9	24.5	27.5	38.8	23.4	21.8	25.1	23.1	25.5
Instructor	8.8	7.0	9.3	9.0	12.6	10.3	5.0	11.9	11.2	14.7
Lecturer	7.4	6.1	6.6	9.9	¹ 0.6	5.7	8.9	5.1	4.6	4.7
Other	¹ 1.4	1.3	0.6	¹ 1.3	3.7	2.0	0.4	2.7	2.3	3.2
Graduate courses						Graduate courses				
Full professor	¹ 41.8	44.0	39.2	38.3	(²)	40.3	46.3	46.9	32.8	(²)
Associate professor	¹ 28.5	27.2	35.7	26.6	(²)	24.4	25.9	15.9	28.3	(²)
Assistant professor	¹ 19.3	19.9	20.7	17.5	(²)	18.7	12.1	29.1	19.5	(²)
Instructor	4.3	1.7	3.2	10.1	(²)	10.3	8.7	4.5	13.1	(²)
Lecturer	3.8	3.2	¹ 0.8	7.2	(²)	3.9	4.1	2.3	4.2	(²)
Other	¹ 2.4	4.0	0.3	0.3	(²)	2.4	3.0	1.2	2.1	(²)

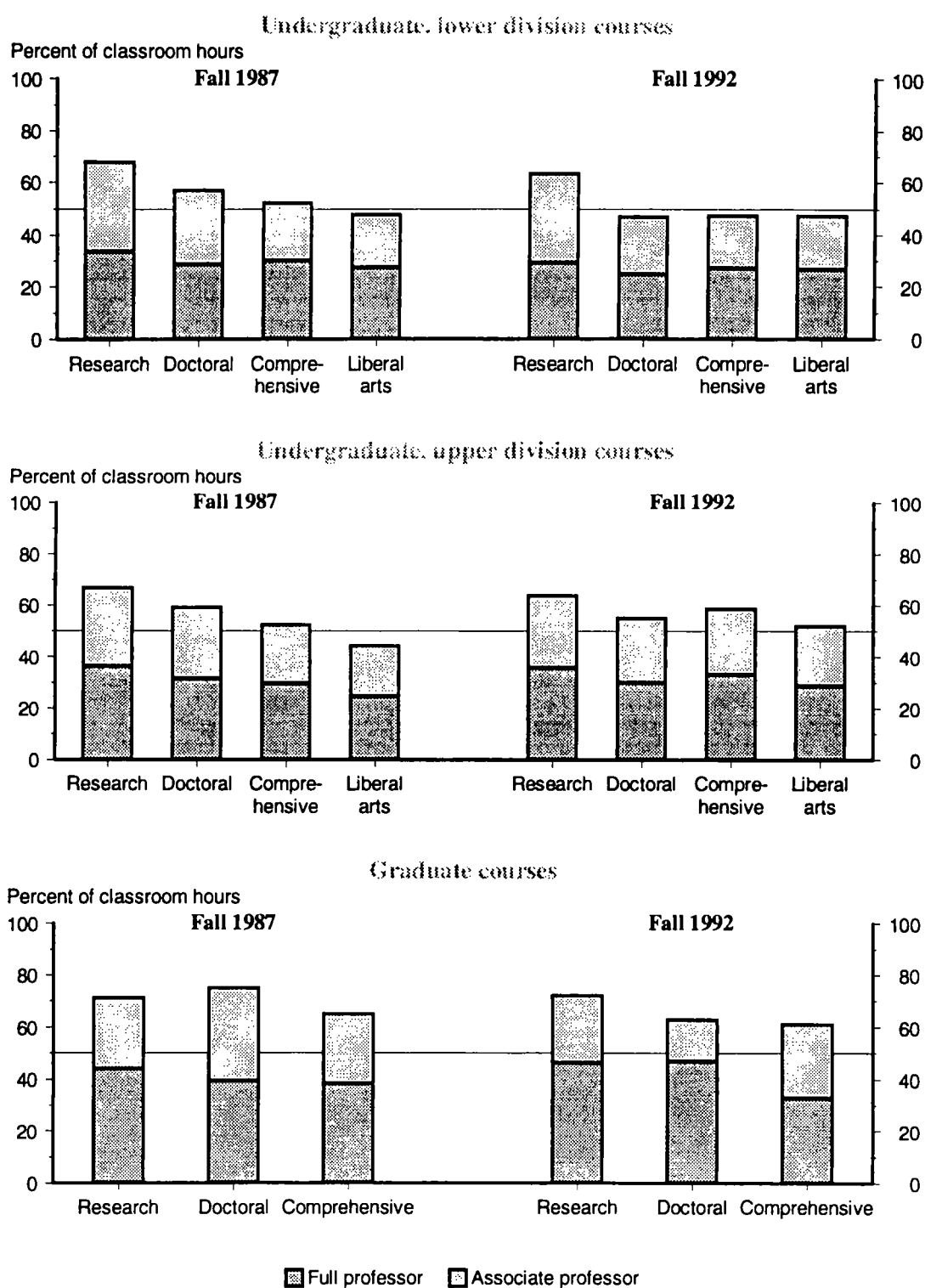
¹ Revised from previously published figures.

² Too few responses for a reliable estimate.

NOTE: Total student classroom hours are calculated as the number of classroom hours per week times the number of students in each course summed over all classes, as reported by faculty members. The percentages are calculated as the sum of the classroom hours spent with faculty of a particular rank divided by total student classroom hours. See supplemental note for definitions of faculty, institutions, and course divisions used in this indicator.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Survey of Postsecondary Faculty, 1988 and 1993.

Percentage of classroom hours 4-year college and university students are exposed to senior faculty, by type of institution and course division: Fall 1987 and fall 1992



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Survey of Postsecondary Faculty, 1988 and 1993.

Working while in college

- ◆ Almost half (46 percent) of all 16-to-24-year-old full-time college students were employed in October 1993, and about one-fourth worked at least 20 hours per week. In addition, approximately 85 percent of 16-to-24-year-old part-time college students were employed, with 75 percent working at least 20 hours per week (see supplemental table 51-3).
- ◆ The percentage of 16-to-24-year-old full-time college students who were employed rose from 34 percent in 1970 to 47 percent in 1988, and since has remained fairly stable.
- ◆ White 16-to-24-year-old full-time college students are more likely to be employed than their black counterparts.
- ◆ Full-time college students, aged 16 to 24, from high income families were less likely to be employed than full-time college students from low or middle income families, and were also less likely to work at least 20 hours per week (see supplemental table 51-2).

Working while enrolled in college can be both beneficial and detrimental to a student's academic and labor market success. Although working during the school year leaves less time for students to concentrate on their studies or to participate in extracurricular activities, students may learn things from work experience that are not taught in the classroom. While some studies show that working long hours while in college may reduce a student's likelihood of completing college or lengthen the time it takes for those who do complete it, some employment may increase expected postgraduation wages.

Percentage of 16- to 24-year-old full-time college students who are employed in October, by race/ethnicity and hours worked per week: 1970-93

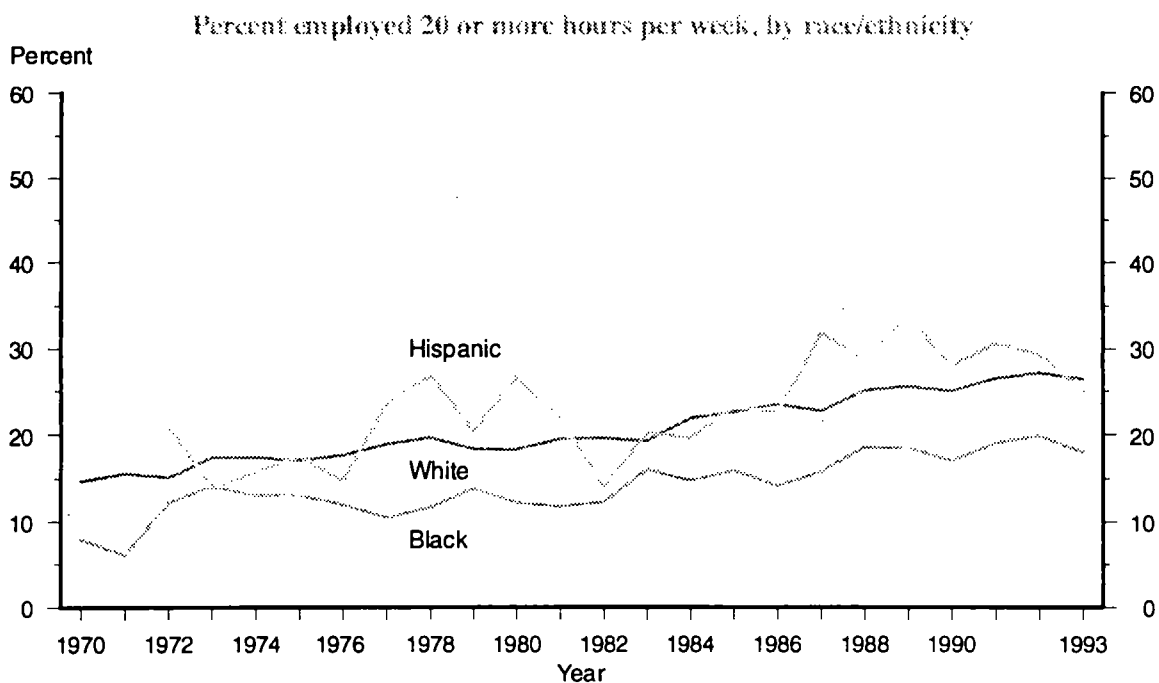
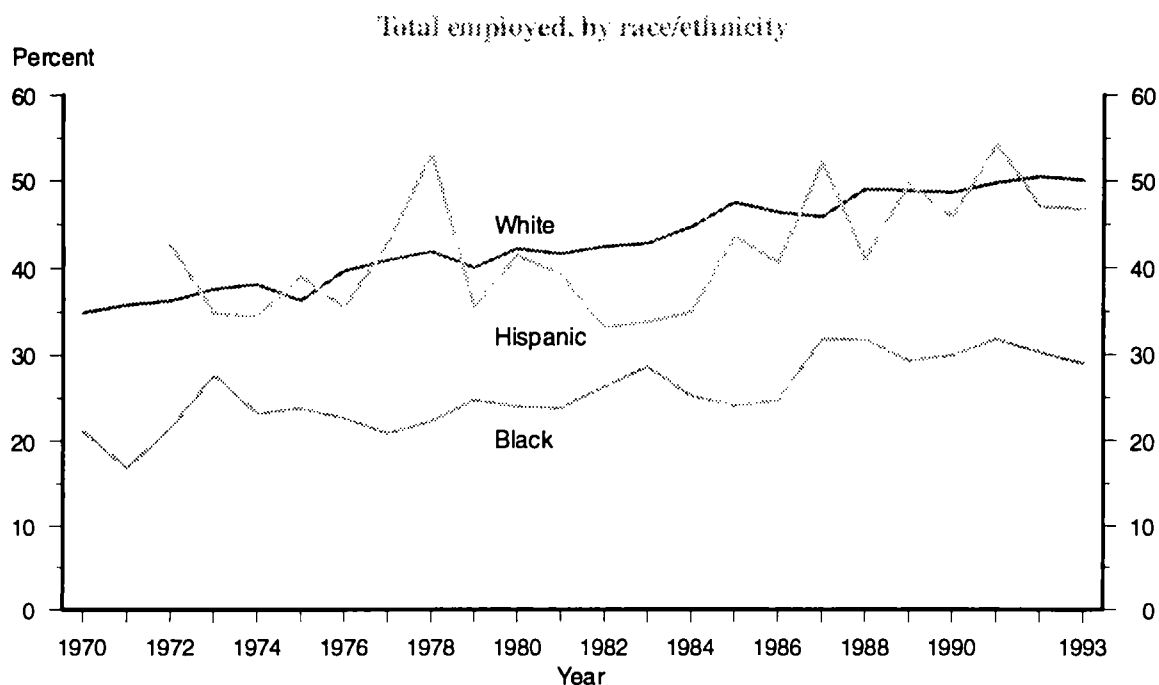
October	All students			White			Black			Hispanic		
	Total*	20 or more hours	35 or more hours	Total*	20 or more hours	35 or more hours	Total*	20 or more hours	35 or more hours	Total*	20 or more hours	35 or more hours
1970	33.8	14.1	3.7	34.9	14.7	3.9	21.2	8.0	1.8	—	—	—
1971	34.1	14.8	3.7	35.8	15.6	3.8	16.9	6.1	2.5	—	—	—
1972	35.1	15.0	3.4	36.3	15.2	3.2	21.5	12.2	5.8	42.7	21.0	2.5
1973	36.4	16.8	4.4	37.6	17.4	4.3	27.7	14.2	5.8	34.8	13.8	3.3
1974	36.6	17.0	4.7	38.2	17.4	4.7	23.2	13.0	5.0	34.4	15.8	6.8
1975	35.2	16.6	4.6	36.3	17.0	4.6	23.8	13.0	4.7	39.0	17.5	4.5
1976	37.5	16.9	4.0	39.6	17.7	3.9	22.7	11.9	4.7	35.4	14.8	3.1
1977	38.8	18.1	4.2	40.9	18.9	4.0	20.8	10.5	5.3	42.9	23.5	4.6
1978	39.9	19.0	4.7	41.8	19.7	4.7	22.2	11.7	4.7	53.2	26.8	7.4
1979	38.1	18.0	4.0	40.0	18.4	3.9	24.8	13.9	5.4	35.6	20.4	5.2
1980	40.0	17.9	3.8	42.1	18.3	3.8	24.0	12.2	5.1	41.4	26.6	4.5
1981	39.3	18.7	4.2	41.6	19.5	4.1	23.8	11.7	3.8	39.2	21.9	5.9
1982	39.9	18.5	3.1	42.4	19.6	3.0	26.2	12.2	4.3	33.1	14.1	1.6
1983	40.4	18.8	3.8	42.7	19.3	4.0	28.5	16.0	2.2	33.7	20.2	5.6
1984	42.1	21.0	4.2	44.7	22.0	4.3	25.2	14.8	3.2	34.8	19.7	4.1
1985	44.2	21.5	4.3	47.4	22.6	4.4	24.1	16.0	4.9	43.5	23.2	3.5
1986	43.0	21.9	4.3	46.3	23.5	4.7	24.7	14.2	3.9	40.5	22.6	2.1
1987	44.2	22.3	4.3	45.7	22.8	4.0	31.7	15.8	4.3	52.1	31.8	7.6
1988	46.5	24.5	4.7	48.9	25.1	5.0	31.8	18.6	3.3	40.9	28.7	6.7
1989	46.5	25.2	5.4	48.8	25.6	5.6	29.3	18.5	4.3	49.6	33.8	6.0
1990	45.7	24.1	4.8	48.6	25.1	5.2	29.8	17.1	2.8	45.7	28.0	6.7
1991	47.2	25.4	5.6	49.6	26.5	6.0	31.7	19.1	3.4	54.2	30.6	4.3
1992	47.2	25.8	5.5	50.5	27.2	5.9	30.2	19.9	4.4	47.0	29.4	4.7
1993	46.3	24.6	5.1	50.1	26.5	5.5	28.9	18.0	3.8	46.7	25.1	6.3

— Not available.

* Includes those with a job but not at work during the survey week.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Percentage of 16- to 24-year-old full-time college students who were employed
in October: 1970-93



SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

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*Human and Financial Resources of
Educational Institutions*

The 1980s and early 1990s have presented many fiscal challenges to schools, colleges, and universities. More than half of the states face challenges to the constitutionality of their systems of financing public elementary and secondary education. The percentage of limited-English-proficient and handicapped students is on the rise. And in postsecondary education, institutions have confronted both a declining number of new high school graduates and reduced support from state appropriations. Furthermore, calls to raise the quality of education have grown as Americans increasingly feel the competitive pressure of the global marketplace and the decline in their economic prosperity.

Financial Resources

The United States invests a substantial amount in education. One measure of this investment is revenues from public sources for a particular level of education (whether or not the institution that eventually receives the revenue is publicly controlled), divided by the number of students enrolled at that level (whether or not the institution in which they are enrolled is publicly controlled).

Per student. In 1993, revenues from public sources to support elementary and secondary education were \$5,379 per student. Public revenues for higher education in 1992 were about \$4,556 per student (*Indicator 52*).

Over time. During the post-World War II era, revenues from public sources for students in elementary and secondary schools have increased substantially every decade. These revenues increased almost fivefold between 1950 and 1993, rising from \$1,200 to \$5,400 per student (adjusted for inflation) (*Indicator 52*). This trend is likely to have been driven by many factors. For example, the education system has assumed greater responsibility in many areas, such as education of disabled students. In addition, public policy has increased spending on children from poor families and has sought to increase the quality of education of minorities to a level comparable to that of the majority. Furthermore, women are participating in more traditionally male occupations, driving up the cost of education by forcing teacher salaries to be more competitive

with other professions as women find alternative careers.

The ability of taxpayers to finance a larger education budget also increased over the decades, although it did not rise up at the same rate as public revenue per student. Between 1950 and 1993, personal income per capita increased about 250 percent, whereas public revenues per student rose almost 450 percent. It could be said that U.S. taxpayers are making more of an effort to finance elementary and secondary public education. This is reflected in the increase in the national effort index (per student revenues for elementary and secondary education from public sources as a percentage of personal income per capita) over the last four decades. Revenues per student were 14 percent of personal income per capita in 1950, and 25 percent in 1993 (*Indicator 52*). This is near the top for the G-7 industrialized democracies (*Indicator 54*).

Between districts. Some school districts receive more revenue per student than others. For instance, the wealthiest districts in terms of median household income have 15 percent more cost-of-living adjusted revenue per student than the poorest districts (*Indicator 53*).

Human Resources

The most important resource used in education is personnel. In 1991, in elementary and secondary education, there were 11 full-time-equivalent (FTE) staff per 100 students. Of these, six were classroom teachers and three were support staff, such as secretaries and bus drivers. The remaining two were principals, assistant principals, school district administrators, librarians, guidance counselors, and teacher aides (*Indicator 57, Condition of Education 1993*).

The cost of staff resources is determined not only by the number of staff employed but also by their salaries. In 1994, the average annual salary of public elementary school teachers was about \$35,800; for secondary school teachers, it was \$37,300. Teacher salaries in public schools rose between 1960 and 1972; then they fell until 1980, rose until 1992, and have been fluctuating ever since. Average beginning teacher salaries did not rise as rapidly as average teacher salaries during the 1980s, and they were \$24,700 in 1994, about the same level as two decades earlier (*Indicator 57*).

Teacher salaries are relatively low when compared to those of alternative professions that college students could pursue. There is some concern among policymakers whether this discourages the best and brightest from choosing teaching as a profession. In 1991, elementary and secondary school teachers had prose literacy skills similar to physicians, engineers, postsecondary teachers, social workers, writers and artists, financial managers, registered nurses, and sales representatives in the business and financial fields. However, their earnings were often substantially less than professionals in these other occupations (*Indicator 59*). There may be some nonpecuniary benefits of teaching that compensate teachers for the low pay.

Although it is very difficult to assess the quality of a teacher based on easily measured characteristics, many analysts argue that the education and certification of teachers are very important. How well do teachers' education's match what they are assigned to teach? Less than 5 percent of full-time teachers in public secondary schools were not certified to teach in their main assignment field in 1990–91, and one out of four did not major or minor in a subject area similar to the one they spend most of their time teaching. However, of those teachers who had an additional assignment field in 1990–91 (22 percent), about one-third were not certified to teach in that field and 55 percent had neither majored nor minored in that subject area. It would appear then that there is a mismatch between the background and teaching assignments for a significant number of teachers, especially for those who have an additional assignment field (*Indicator 58* and table 58-1).

In the last two decades, as fewer college graduates entered the teaching profession and enrollments increased in elementary and secondary schools, policymakers have become concerned about the supply of teachers. Replacing teachers who leave is the largest single factor determining the demand for additional teachers. Between the school years of 1990–91 and 1991–92, about 1 in 10 teachers left teaching. About one-third of public school teachers left for retirement, while about one-eighth of the private school teachers left for this reason. Relatively few teachers reported dissatisfaction with teaching as a career as their main reason for leaving teaching, although about twice as many secondary teachers

reported this reason as did elementary teachers, for both public and private schools (*Indicator 60*).

Higher Education Budgets

Between 1980 to 1992, average revenue per student rose at public 4-year colleges and universities. While revenue from tuition and fees rose, revenue from government sources fell. Expenditures per student at these institutions rose somewhat more than revenue per student over the same period. Expenditures for administration and student services rose more than expenditures for instruction. Although a small part of the total, expenditures for scholarships and fellowships also rose a great deal over the period at these institutions (*Indicators 55* and *56*).

At private 4-year colleges and universities, both revenue per student and expenditures per student rose more than at public institutions between 1980 and 1992. Not surprisingly, over this period, revenue from tuition and fees increased dramatically at private institutions.

At public 2-year colleges, neither revenue per student nor expenditure per student was higher in 1992 than in 1980. However, revenues from tuition and fees rose while revenue from government sources fell.

National index of public effort to fund education

- ◆ The national index of public effort to fund elementary and secondary education was 25.3 in 1993, down slightly after a 4-point increase between 1982 and 1992. Public education revenue per elementary and secondary student (in 1994 constant dollars) has risen from \$639 in 1930 to \$5,379 in 1993.
- ◆ The national index of public effort to fund higher education was 21.8 in 1992, the lowest level since 1930. However, higher education public revenues per student (in 1994 constant dollars) have been relatively stable since 1970, with the exception of a drop in the early 1980s.
- ◆ After remaining relatively stable during the 1980s, elementary and secondary public education revenue as a percentage of gross domestic product (GDP) rose between 1988 and 1993, but has not rebounded to the level of the early to mid-1970s. Higher education revenue as a percentage of GDP has remained about 1 percent since the mid-1960s.

The national index of public effort to fund education reflects monies raised to educate the average student relative to the taxpayer's ability to pay. The index can be interpreted as the number of dollars of revenue raised for each student from each 100 dollars of income received by each member of the population.

National index of public effort to fund education (public revenues per student in relation to per capita personal income), by level: Selected school years ending 1930–93

School year ending	National effort index		Public education revenue				Per capita personal income ¹
	Elementary/ secondary	Higher education ²	per student ¹		as a percentage of GDP		
			Elementary/ secondary	Higher education	Elementary/ secondary	Higher education	
1930	10.6	22.5	\$639	\$1,352	2.0	0.2	\$6,017
1940	14.6	26.0	856	1,524	2.5	0.2	5,871
1950	13.9	32.0	1,196	2,762	2.1	0.4	8,623
1960	16.2	31.6	1,823	3,557	3.0	0.5	11,238
1966	18.2	33.9	2,433	4,545	3.6	0.8	13,402
1970	20.0	30.9	3,095	4,765	4.2	1.0	15,443
1972	22.3	30.1	3,516	4,744	4.6	1.1	15,769
1974	21.2	28.0	3,675	4,847	4.3	1.1	17,329
1976	22.9	27.7	3,827	4,615	4.5	1.2	16,691
1978	22.2	26.7	3,961	4,745	4.1	1.1	17,802
1980	21.5	24.8	3,970	4,583	3.9	1.1	18,472
1982	21.2	22.7	3,817	4,092	3.6	1.1	17,989
1986	23.1	24.4	² 4,522	4,780	3.7	1.1	19,553
1988	² 23.4	23.7	² 4,775	4,856	3.7	1.1	20,451
1990	25.0	22.8	² 5,290	² 4,835	4.0	1.1	² 21,200
1992	25.5	21.8	² 5,329	² 4,556	4.1	1.1	² 20,918
1993	25.3	—	5,379	—	4.1	—	21,302

— Not available.

¹ In constant 1994 dollars, using the Consumer Price Index (CPI) adjusted to a school year basis.

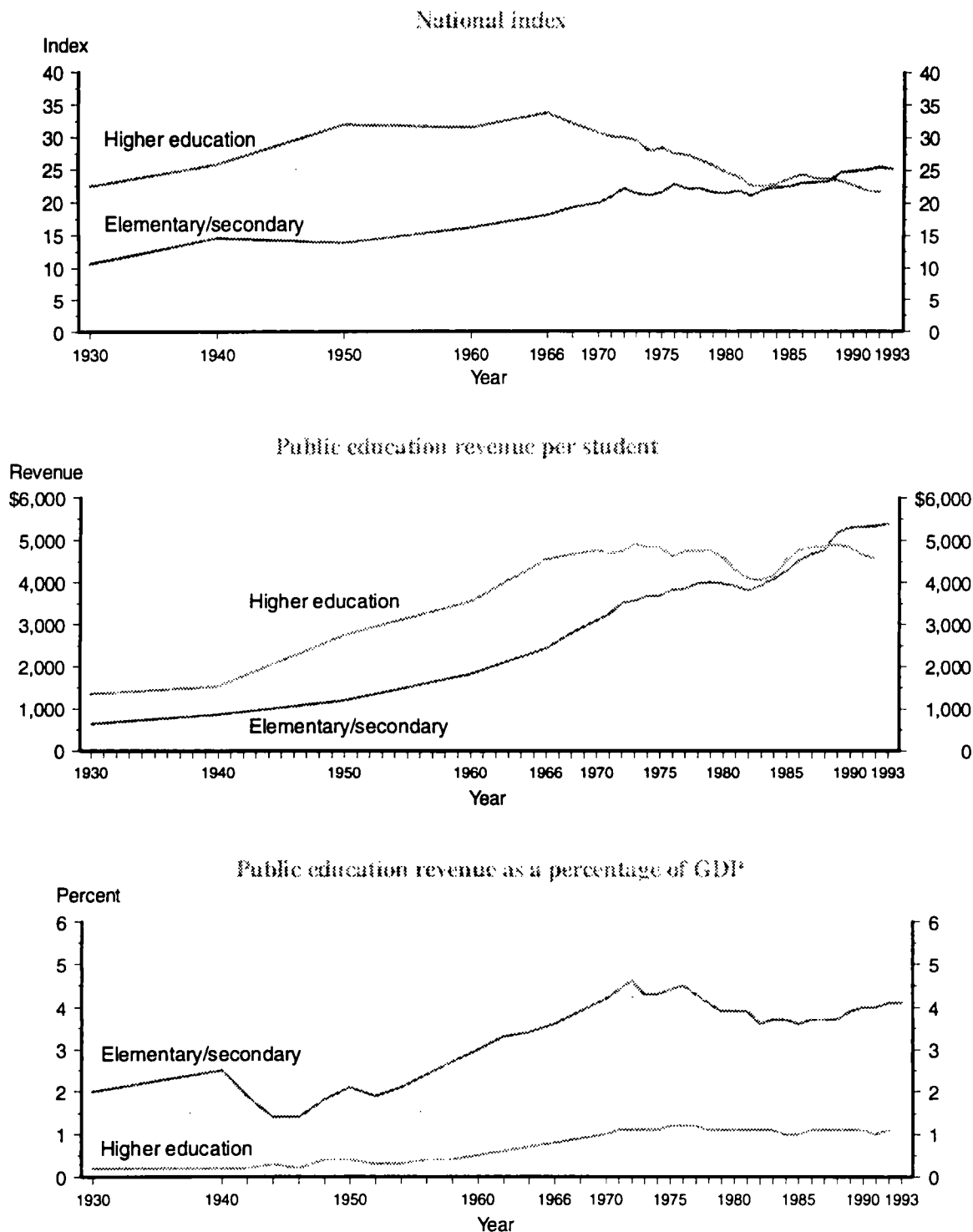
² The higher education revenues differ from previously published figures as they are now being adjusted by the school year CPI.

³ Revised from previously published figures.

NOTE: Public funds for education may be used at many types of institutions, both publicly and privately controlled. For comparability across levels of education, enrollment in both publicly and privately controlled institutions is used. For further information about the calculation of this indicator, see the supplemental note and the notes to the supplemental tables.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1994* (based on Common Core of Data and IPEDS/HEGIS surveys of fall enrollment). U.S. Department of Commerce, Bureau of Economic Analysis, *Economic Report to the President*, February 1994.

National index of public effort to fund education (revenues per student in relation to per capita personal income), by level: Selected school years ending 1930–93



SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1994* (based on Common Core of Data and IPEDS/HEGIS surveys of fall enrollment). U.S. Department of Commerce, Bureau of Economic Analysis, *Economic Report to the President, February 1994*, table B-114.

Public school district funding differences

- ◆ The wealthiest districts in terms of household income have more revenue per student than the poorest districts. However, the difference is reduced from about 36 percent to about 16 percent when adjustment is made for cost-of-living.
- ◆ School districts with less than 5 percent of children living in poverty have more revenue per student than those with more than 25 percent. However, the difference is reduced from 27 percent to 20 percent when adjustment is made for cost-of-living. The low poverty districts receive much less of their revenue from state and federal sources than do high poverty districts (35 versus 73 percent).
- ◆ Districts with less than 3 percent of students receiving special education services received 7 percent *less* revenue per student before adjusting for cost of living but 4 percent *more* after adjusting, than districts with 10 percent or more special education students.

Differences in the revenue public school districts receive have led to legal challenges of the equity of school finance in many states. Achieving equity in the allocation of resources for education requires consideration of factors such as the cost-of-living and the educational needs of children in addition to the wealth of the school district. Districts in high cost-of-living regions may have to raise more revenue to provide their employees with compensation comparable to those in low cost regions. Districts with high percentages of disabled, limited-English-proficient, and poor children may have to raise more revenue to provide education comparable to those in districts with lower percentages of these children. This indicator addresses only the effect of the first factor on measures of resource inequality.

Total revenue per student in actual dollars and dollars adjusted for cost-of-living, and revenue shares from local, state, and federal sources, by district characteristics: 1989–90

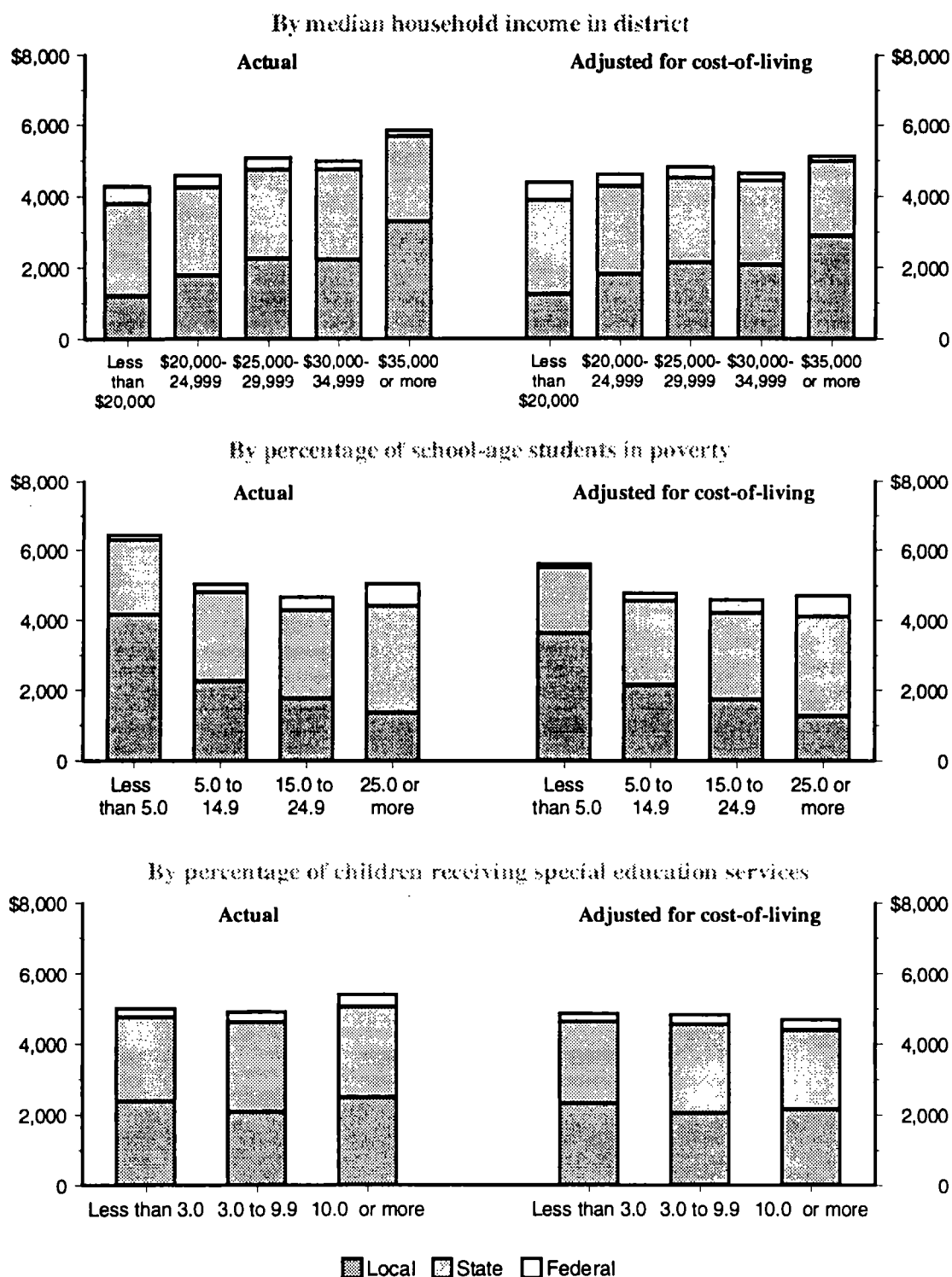
District characteristics	Percentage of enrollment	Unadjusted		Adjusted for cost of living		Revenue share		
		Dollars	Percentage difference*	Dollars	Percentage difference*	Percent local	Percent state	Percent federal
Median household income								
Less than \$20,000	10.1	\$4,297	0	\$4,411	0	28.2	60.1	11.7
\$20,000–24,999	21.3	4,622	8	4,638	5	38.7	53.7	7.6
\$25,000–29,999	25.4	5,107	19	4,839	10	44.0	49.6	6.4
\$30,000–34,999	15.9	5,015	17	4,677	6	44.1	50.9	4.9
\$35,000 or more	27.2	5,862	36	5,137	16	56.3	40.9	2.8
Percentage of students receiving special education services								
10.0 or more	9.3	5,389	0	4,691	0	46.0	47.7	6.3
3.0 to 9.9	69.0	4,914	-9	4,835	3	42.3	51.6	6.0
Less than 3.0	21.6	5,003	-7	4,878	4	47.4	47.4	5.1
Percentage of children with limited English proficiency								
5.0 or more	21.6	5,433	0	4,691	0	38.0	54.3	7.7
0.1 to 4.9	69.0	5,038	-7	4,835	3	46.6	47.9	5.5
0.0	9.3	4,913	-10	4,878	4	45.2	49.0	5.8
Percentage of school-age children in poverty								
25.0 or more	26.4	5,064	0	4,702	0	27.1	60.1	12.8
15.0 to 24.9	26.3	4,681	-8	4,592	-2	37.8	53.9	8.3
5.0 to 14.9	36.0	5,048	0	4,788	2	44.9	50.3	4.8
Less than 5.0	11.3	6,432	27	5,624	20	64.7	33.2	2.1

* Percentage difference from the first category for each district characteristic.

NOTE: See supplemental note to this indicator for further discussion of issues in the measurement of educational resource disparity and the supplemental table for revenue per student adjusted for both cost-of-living and the educational needs of children. Details of percentage of enrollment and revenue shares may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Disparities in Public School District Spending: 1989–90*, tables A1.1, A1.2, A2.1, and A2.2.

Total revenue per student in actual dollars and dollars adjusted for cost-of-living, by source of revenue and selected school district characteristics: 1989-90



SOURCE: U.S. Department of Education, National Center for Education Statistics, *Disparities in Public School District Spending 1989-90*, tables A1.1, A1.2, A2.1, and A2.2.

International comparisons of public expenditures for education

- ◆ Generally, among the G-7 countries, only Canada showed a higher level of public education expenditures than the United States.
- ◆ Public expenditures for the 1991–92 school year in the United States were 0.2 percent of Gross Domestic Product (GDP) for preprimary education, 3.5 percent for grades 1–12, and 1.2 percent for higher education. France and Italy spent a larger fraction for preprimary education, while the former West Germany spent the same fraction as the United States. Only Canada and the United Kingdom expended a larger fraction than the United States for 1st–12th grade education and only Canada expended more for higher education.
- ◆ In grades 1–12, public expenditures per student in the G-7 countries ranged from \$2,707 in Japan to \$4,935 in Canada and \$4,909 in the United States. In higher education, public expenditures ranged from \$2,358 in Japan to \$9,829 in Canada and \$6,984 in the United States.

Public education expenditures are an indication of public investment in education. In the United States and other countries, there are additional private expenditures for education. Three alternative measures allow examination of the magnitude of public investment in education. The first provides a measure of the fraction of a country's resources that are allocated to public education. The second provides a measure of the public investment in each child in the education system. The third provides a measure of public educational investment in each child compared to available resources per person in the country.

Current public expenditures for education, by level of education and country: School year 1991–92

	Per student ¹								
	As a percent of GDP ²			Constant 1991–92 U.S. dollars ³			As a percentage of GDP per capita		
	Pre- primary	1st– 12th	Higher education	Pre- primary	1st– 12th	Higher education	Pre- primary	1st– 12th	Higher education
G-7 countries									
Canada ⁴	—	4.3	2.4	—	\$4,935	\$9,829	—	24.8	49.3
France	0.6	3.4	0.8	\$2,337	3,630	4,676	12.6	19.6	25.3
Former West Germany ⁵	0.2	2.4	0.8	1,619	3,616	5,749	8.0	17.8	28.3
Italy	0.4	3.3	0.6	2,259	4,036	3,888	13.0	23.2	22.4
Japan	0.1	2.3	0.3	800	2,707	2,358	4.0	13.7	11.9
United Kingdom ⁶	0.1	3.8	1.0	1,819	3,365	9,154	11.2	20.6	56.2
United States	0.2	3.5	1.2	2,234	4,909	6,984	9.5	20.9	29.8

— Not available.

¹ Enrollment is in all institutions, public and private, and is based on headcount estimates for preprimary through 12th grade. For higher education, it is full-time-equivalent enrollment.

² Gross Domestic Product (GDP) is Gross National Product (GNP) less net property income from abroad.

³ Purchasing Power Parity (PPP) indices were used to convert other currencies to U.S. dollars. Because the fiscal year has a different starting date in different countries, within-country Consumer Price Indices (CPIs) were used to adjust the PPP indices to account for inflation.

⁴ Preprimary expenditures for Canada are grouped with elementary and secondary data.

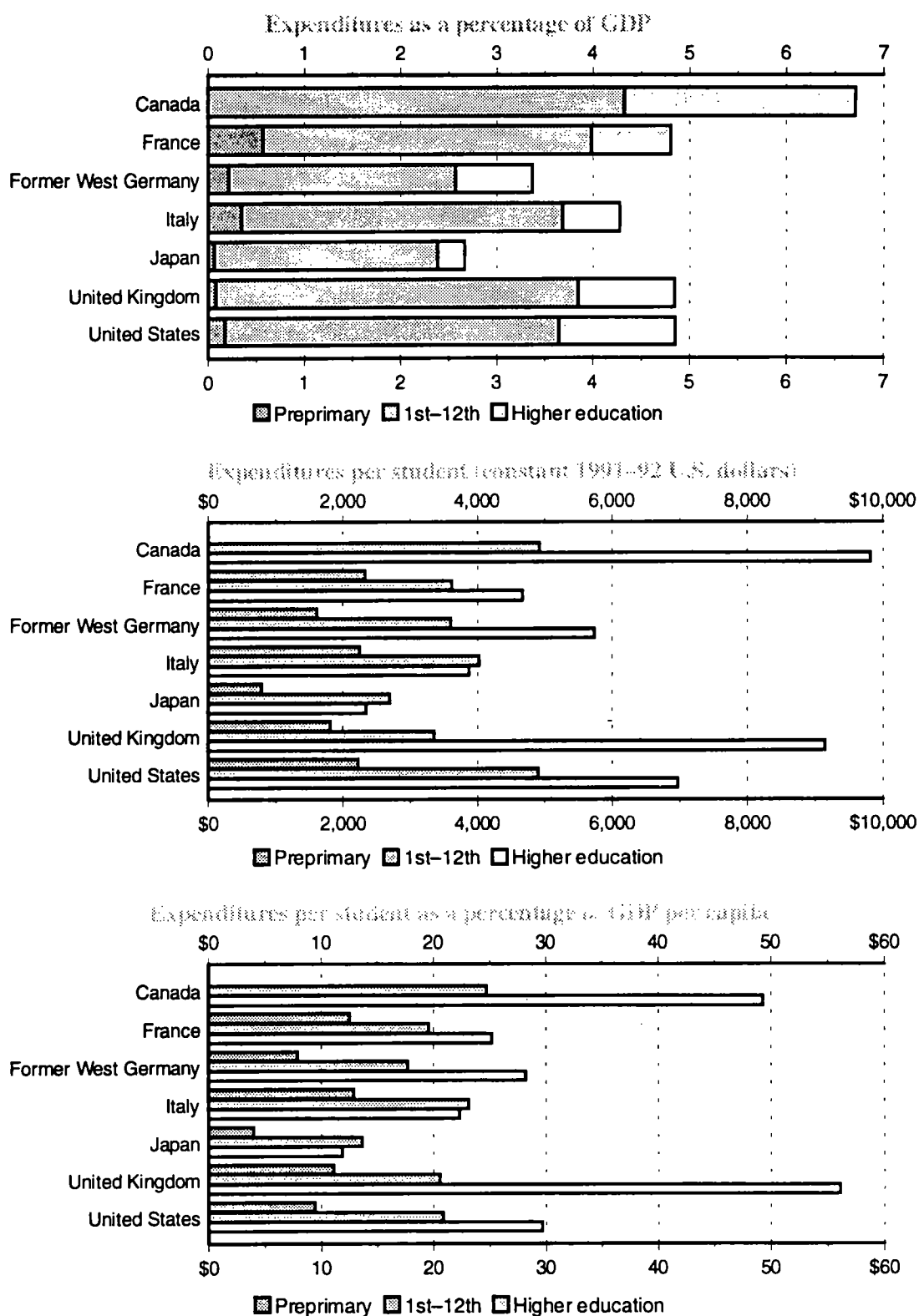
⁵ Includes contributions to the pension funds of teachers who are civil servants. Expenditure data for publicly-supported private schools include capital expenditures.

⁶ Excludes expenditures on nursing and paramedical education.

NOTE: The fiscal year begins in different months in the above countries. See supplemental note to *Indicator 54* for an explanation of how expenditures were adjusted. See supplemental tables 54-1 through 54-5 for additional expenditure data and the supplemental note to this indicator for a discussion of these data.

SOURCE: Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1995.

International comparisons of public expenditures for education: School year 1991-92



NOTE: Preprimary expenditures for Canada are grouped with elementary and secondary data.

SOURCE: Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1995.

Higher education expenditures per student

- ◆ Expenditures per student for instruction vary widely across types of higher education institutions. In 1992, they varied from \$2,859 at public 2-year colleges to \$12,304 at private universities.
- ◆ In 1992, expenditures for instruction varied from 33 percent of the total at private 4-year colleges to 50 percent of the total at public 2-year colleges (see supplemental table 55-2).
- ◆ Over the past 15 years, expenditures per student have increased at most types of higher education institutions, but the percentage they have increased varies widely by type of institution. For example, between 1977 and 1992, they increased by only 1 percent at public 2-year colleges, but they rose by 46 percent at private universities (see supplemental table 55-1).
- ◆ There have also been shifts in the distribution of expenditures across categories. For example, at private universities between 1977 and 1992, the share of expenditures for instruction was the same (38 percent), but it increased for administration (from 13 to 15 percent) and for scholarships and fellowships (from 8 to 11 percent), while declining for research (from 21 to 17 percent).

A majority of higher education institutional expenses are generated by faculty and staff salaries, administrative services, and institutionally-supported research. Understanding trends and variations in the mix of expenditures can provide an indication of the evolving organizational priorities of different institutional types and sectors.

Educational and general expenditures per full-time-equivalent (FTE) student (in 1994 constant dollars) of institutions of higher education, by selected expenditure categories and type of institution: Academic years ending 1977-92

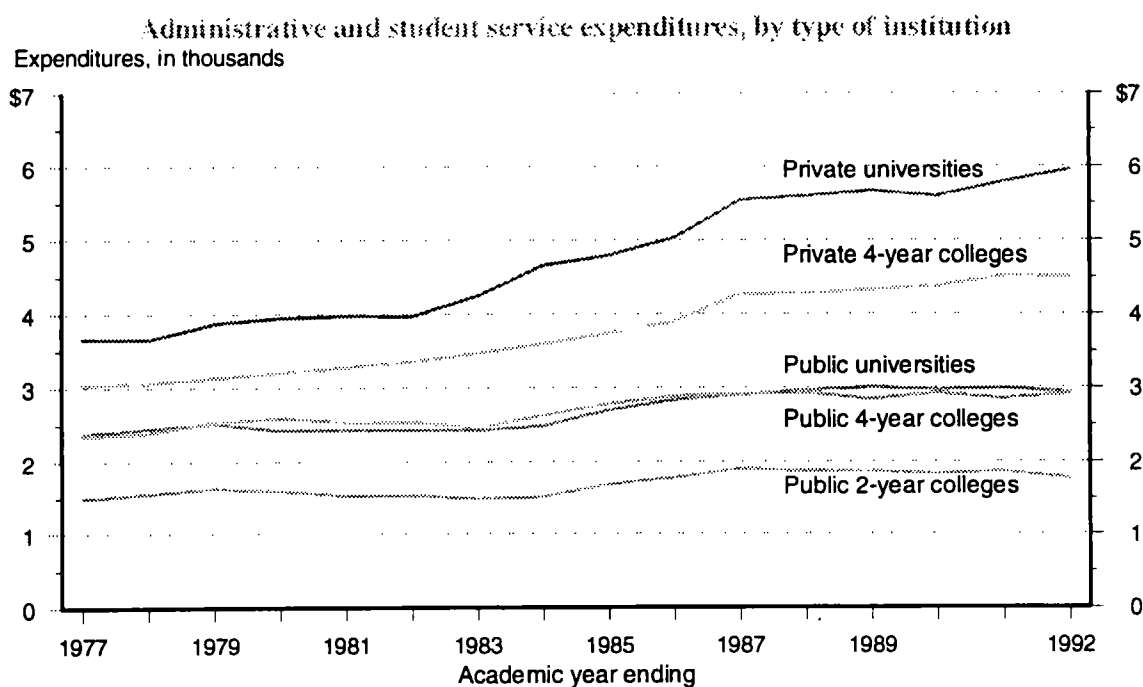
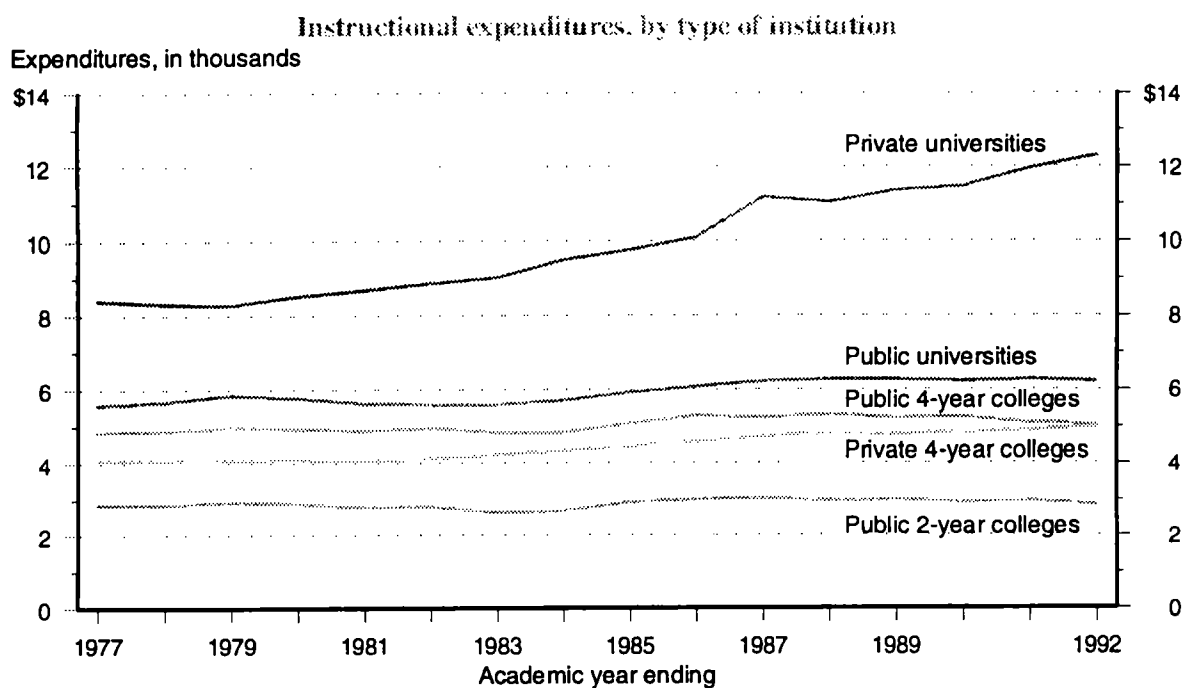
Academic year ending	Universities						Colleges					
	Private			Public			Private 4-year		Public 4-year		Public 2-year	
	Instruc- tion	Adminis- tration*	Re- search	Instruc- tion	Adminis- tration*	Re- search	Instruc- tion	Adminis- tration*	Instruc- tion	Adminis- tration*	Instruc- tion	Adminis- tration*
1977	\$8,410	\$3,666	\$4,658	\$5,572	\$2,382	\$2,623	\$4,073	\$3,032	\$4,833	\$2,336	\$2,868	\$1,488
1978	8,310	3,662	4,550	5,666	2,449	2,680	4,078	3,064	4,866	2,387	2,862	1,560
1979	8,287	3,876	4,594	5,847	2,517	2,833	4,093	3,132	4,958	2,537	2,935	1,634
1980	8,530	3,952	4,625	5,748	2,420	2,891	4,111	3,200	4,936	2,587	2,896	1,593
1981	8,683	3,974	4,513	5,617	2,427	2,867	4,058	3,270	4,877	2,538	2,791	1,532
1982	8,862	3,965	4,296	5,581	2,423	2,768	4,114	3,353	4,942	2,535	2,802	1,532
1983	9,016	4,244	4,091	5,576	2,421	2,755	4,220	3,480	4,829	2,466	2,653	1,485
1984	9,487	4,654	4,362	5,678	2,484	2,815	4,334	3,599	4,827	2,623	2,690	1,515
1985	9,748	4,795	4,653	5,911	2,688	2,999	4,454	3,747	5,066	2,784	2,922	1,684
1986	10,086	5,033	4,937	6,067	2,831	3,167	4,553	3,896	5,280	2,888	2,997	1,782
1987	11,175	5,543	5,366	6,212	2,901	3,266	4,713	4,276	5,229	2,906	3,023	1,900
1988	11,041	5,588	5,506	6,257	2,953	3,452	4,784	4,281	5,311	2,934	2,952	1,870
1989	11,361	5,655	5,512	6,259	3,001	3,562	4,771	4,326	5,208	2,843	2,993	1,871
1990	11,466	5,593	5,648	6,215	2,963	3,630	4,824	4,379	5,241	2,918	2,931	1,834
1991	11,960	5,785	5,553	6,269	2,995	3,757	4,884	4,522	5,088	2,848	2,966	1,872
1992	12,304	5,951	5,619	6,214	2,929	3,790	4,973	4,513	5,035	2,911	2,859	1,773

*Administrative expenditures and student services. In supplemental tables 55-1 and 55-2, these categories are reported separately.

NOTE: The Higher Education Price Index (HEPI) was used to calculate constant dollars. Data for academic years 1976-77 through 1985-86 include only institutions that provided both enrollment and finance data.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Financial Statistics of Institutions of Higher Education Survey and Integrated Postsecondary Education Data System (IPEDS), Finance Survey.

Educational and general expenditures per full-time-equivalent student (in 1994 constant dollars) of institutions of higher education: Academic years ending 1977-92



SOURCE: U.S. Department of Education, National Center for Education Statistics, Financial Statistics of Institutions of Higher Education Survey and Integrated Postsecondary Education Data System (IPEDS), Finance Survey.

Higher education revenues per student

- ◆ **Revenue per full-time-equivalent (FTE) student varies substantially across types of higher education institutions.** In 1992, revenue per FTE student varied from \$5,743 at public 2-year colleges to \$30,459 at private universities. Public 4-year colleges received \$11,785 and private 4-year colleges received \$14,230 per FTE student (see supplemental table 56-1).

The primary sources of revenue for institutions of higher education are tuition charged students and government appropriations. As costs rise so must revenue. If institutions of higher education ask for higher tuition or greater appropriations, they are likely to face increasing pressure from students and governments to provide higher quality education.

- ◆ **With the exception of public 2-year colleges, revenue per FTE student (in 1994 constant dollars) increased at all types of higher education institutions between 1977 and 1992.** At private institutions the increase over this period was particularly dramatic—from \$21,538 to \$30,459 at universities and from \$10,645 to \$14,230 at 4-year colleges (see supplemental table 56-1).
- ◆ **While revenue per FTE student increased, government appropriations per FTE fell at all types of institutions between 1977 and 1992.** At public institutions the decrease in appropriations was particularly large between 1990 and 1992, and even with significant increases in tuition revenue per FTE student, total revenue fell or remained steady during that period (see supplemental table 56-1).

Current fund revenues per full-time-equivalent student (in 1994 constant dollars) of institutions of higher education, by selected revenue sources and type of institution: Academic years ending 1977–92

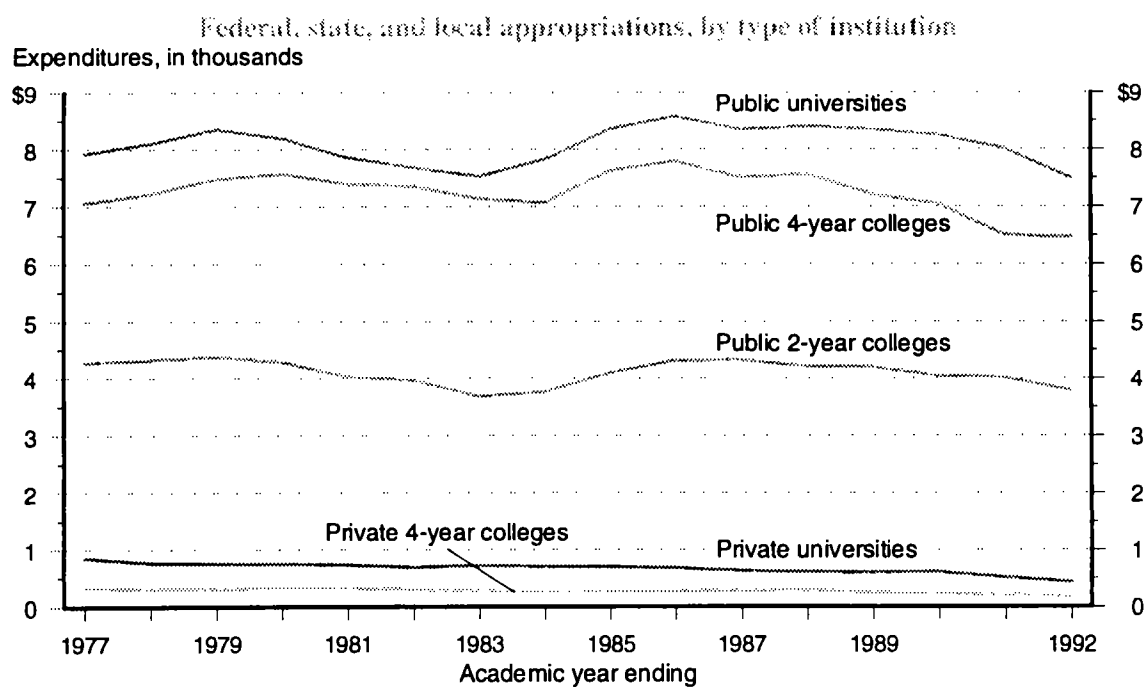
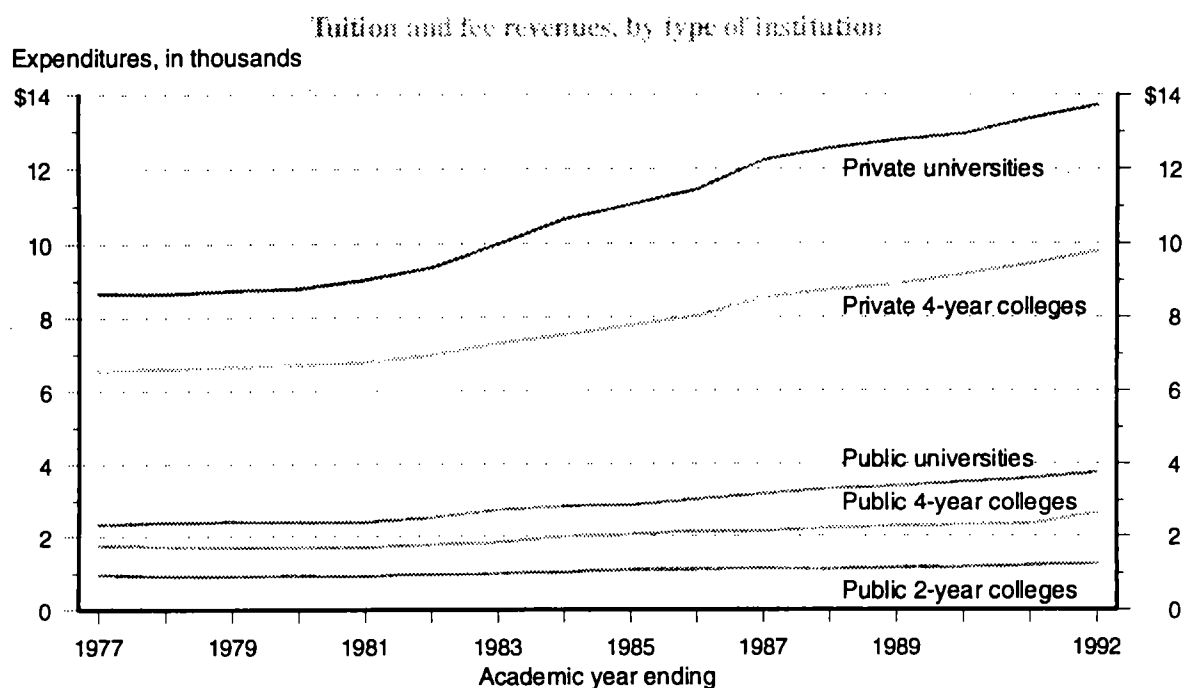
Academic year ending	Universities				Colleges					
	Private		Public		Private 4-year		Public 4-year		Public 2-year	
	Tuition and fees*	Government appropriations	Tuition and fees*	Government appropriations	Tuition and fees*	Government appropriations	Tuition and fees*	Government appropriations	Tuition and fees*	Government appropriations
1977	\$8,672	\$852	\$2,351	\$7,929	\$6,567	\$322	\$1,763	\$7,060	\$962	\$4,267
1978	8,658	764	2,382	8,106	6,609	313	1,741	7,218	925	4,314
1979	8,745	752	2,421	8,363	6,651	310	1,710	7,481	928	4,376
1980	8,791	738	2,395	8,201	6,723	319	1,694	7,566	933	4,279
1981	9,013	731	2,409	7,865	6,763	325	1,713	7,386	928	4,025
1982	9,348	690	2,520	7,685	6,968	286	1,793	7,352	980	3,970
1983	9,995	717	2,729	7,527	7,278	264	1,843	7,141	985	3,691
1984	10,652	696	2,845	7,824	7,518	258	1,997	7,077	1,023	3,770
1985	11,035	692	2,865	8,350	7,771	255	2,056	7,623	1,091	4,098
1986	11,452	669	3,041	8,570	8,018	256	2,140	7,796	1,111	4,305
1987	12,238	631	3,172	8,343	8,522	284	2,139	7,497	1,121	4,314
1988	12,549	602	3,320	8,406	8,741	291	2,221	7,561	1,105	4,206
1989	12,779	597	3,392	8,349	8,881	239	2,273	7,208	1,155	4,199
1990	12,927	601	3,481	8,252	9,166	222	2,317	7,054	1,157	4,036
1991	13,357	517	3,597	8,018	9,450	209	2,330	6,499	1,206	4,012
1992	13,729	436	3,758	7,489	9,799	170	2,637	6,463	1,269	3,791

* Federally supported student aid received through students (e.g., Pell Grants) is included under tuition and auxiliary enterprises.

NOTE: Using the Higher Education Price Index to convert to constant dollars.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Financial Statistics of Institutions of Higher Education Survey and Integrated Postsecondary Education Data System (IPEDS), Finance Survey.

Current fund revenues per full-time-equivalent student (in 1994 constant dollars) of institutions of higher education: Academic years ending 1977-92



SOURCE: U.S. Department of Education, National Center for Education Statistics, Financial Statistics of Institutions of Higher Education Survey and Integrated Postsecondary Education Data System (IPEDS), Finance Survey.

Salaries of teachers

- ◆ Between 1980 and 1994, average overall public school teachers' salaries, adjusted for inflation, increased by 21 percent, rising from \$30,528 to \$36,495. In 1994, the average salary of public school elementary teachers was \$35,748, and the average salary of public school secondary teachers was \$37,314.
- ◆ Following a period of decline in the 1970s, public school teachers' salaries increased continuously throughout the 1980s and into the early 1990s, reaching a peak of \$36,668 in 1991. Since then, salaries have fluctuated slightly (see supplemental table 57-1).
- ◆ The average beginning salary for public school teachers increased 17 percent between 1980 and 1994, rising from \$21,028 to \$24,661.
- ◆ Percentage increases in public school teacher salaries between 1981 and 1994 ranged from a high of 54 percent in New England to a low of 10 percent in the Rocky Mountain states.

There has been much discussion about increasing the supply and quality of teachers. Education officials are experimenting with teacher salary structures, creating new career steps, career ladders, merit pay schemes, and new positions with greater authority and responsibility in order to attract and retain better teachers. In the past, such experiments have been associated with increases in teachers' salaries.

Average annual salary (in 1994 constant dollars) for public elementary and secondary school teachers: Selected school years ending 1960–94

School year ending	All teachers	Elementary teachers	Secondary teachers	Beginning teachers*
1960	\$25,227	\$24,319	\$26,647	—
1964	28,845	27,932	30,150	—
1968	32,391	31,454	33,566	—
1972	34,999	33,986	36,175	\$24,745
1976	33,716	32,860	34,618	23,694
1980	30,528	29,761	31,463	21,028
1984	31,981	31,328	32,884	22,113
1988	35,913	35,254	36,892	24,551
1992	36,597	35,950	37,362	24,615
1993	36,470	35,768	37,323	24,555
1994	36,495	35,784	37,314	24,661

— Not available.

* Salary for beginning teachers is for the calendar year.

Average annual salaries of public school teachers, percentage difference in salaries between 1981 and 1994, and per capita personal income for 1993 (in 1994 constant dollars), by region

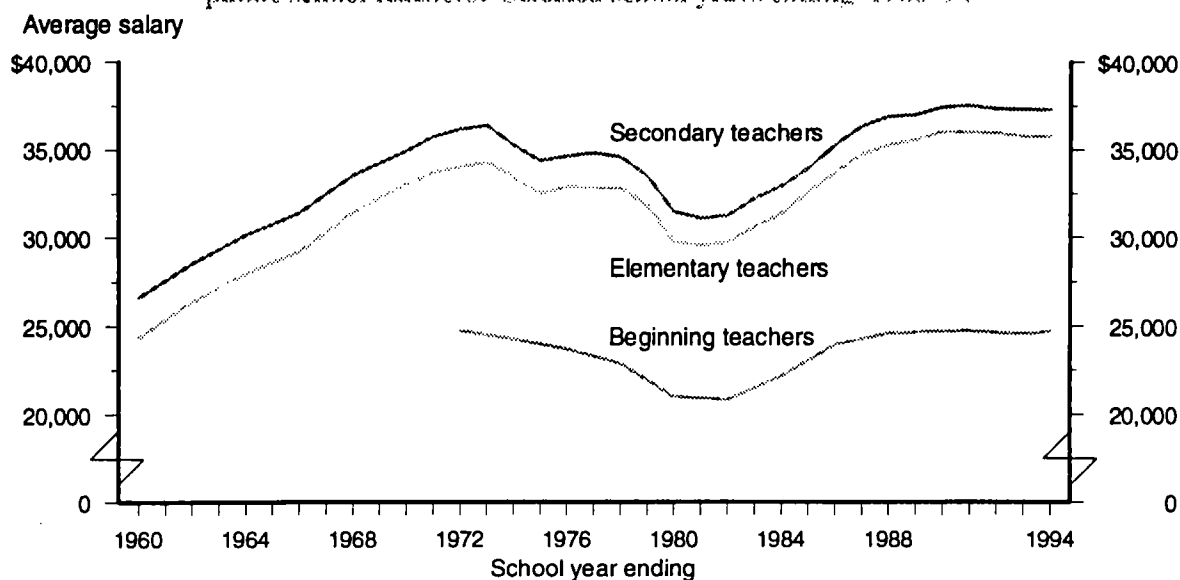
Region	All teachers 1980–81	All teachers 1993–94	Percentage difference 1981–94	Per capita personal income (1993)
50 States and D.C.	\$30,226	\$36,495	20.7	\$21,042
New England	27,502	41,169	49.7	24,883
Mideast	33,562	45,523	35.6	24,704
Southeast	25,763	30,817	19.6	19,231
Great Lakes	31,660	39,324	24.2	21,121
Plains	26,186	32,291	23.3	20,167
Southwest	27,510	30,484	10.8	18,929
Rocky Mountains	28,973	31,007	7.0	20,165
Far West	36,529	39,679	8.6	22,303

NOTE: Regions are identified in supplemental table 57-2.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Digest of Education Statistics, 1994, table 77. National Education Association, Estimates of State School Statistics, 1993–94 (Copyright © 1994 by NEA. All rights reserved.). American Federation of Teachers, Survey and Analysis of Salary Trends 1994, September 1994, table III-2. U.S. Department of Commerce, Bureau of the Census, Statistics Abstract of the United States: 1994, tables 26, 698, and 699.

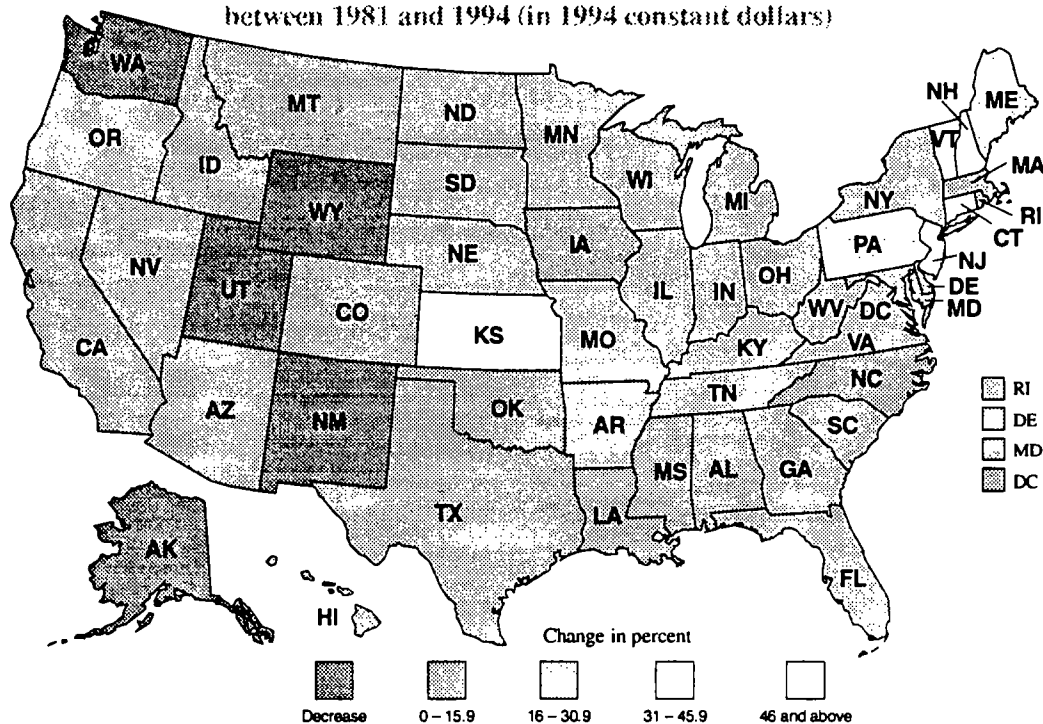
Average salaries of public school teachers

Average annual and beginning salaries (in 1994 constant dollars) for public school teachers: Selected school years ending 1960–94*



* Plotted points for average annual salary for teachers are even years 1960–68 and all years 1970–94. Plotted points for average beginning salary for teachers are even years 1972–88 and all years 1990–94.

Percentage change in public school teacher salaries between 1981 and 1994 (in 1994 constant dollars)



SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics*, 1994, table 77. National Education Association, *Estimates of State School Statistics, 1993–94* (Copyright © 1994 by NEA). American Federation of Teachers, *Survey and Analysis of Salary Trends 1994*, September 1994, table III-2. U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States*, 1994, tables 26, 689, and 699.

Literacy of teachers

- ◆ In 1992, teachers had literacy skills similar to private-sector executives and managers, engineers, physicians, writers and artists, social workers, sales representatives, education administrators, and registered nurses. Scientists were the only professionals who had measurably higher prose literacy skills than teachers.
- ◆ Although teachers had literacy skills similar to college graduates in many other occupations, their earnings were often substantially less. However, the average number of weeks worked in 1991 was lower for teachers than for college graduates in many other occupations.

An important issue in the education reform debate is the effect of comparatively low salaries on teacher quality. Prose literacy scores are one of the best available measures of verbal ability, a factor identified by research as being associated with teacher quality. If teachers have lower prose literacy scores relative to college graduates in other occupations, this could indicate that relatively low salaries may not be attracting (or keeping) the most skilled college graduates to (in) the teaching profession. If, however, the literacy levels of teachers are no lower than those of their counterparts in other occupations, other benefits (e.g., job security, a shorter work year, the opportunity to work with children, good retirement benefits, etc.) may be more important for attracting quality teachers than salary alone.

Prose literacy scores, labor market outcomes, and other characteristics of full-time employed bachelor's degree recipients, by occupation: 1992

Occupation	Average prose literacy scores	Average annual earnings in 1991	Average weekly wage last week	Average weeks worked in 1991	Average age	Percentage with graduate degrees	Percentage female
All bachelor's degree recipients	334	\$38,530	\$805	49	40	35	38
Scientists	354	39,320	805	49	36	43	21
Lawyers and judges	352	71,223	1,871	49	41	94	17
Accountants and auditors	344	38,463	832	50	37	28	38
Private-sector executives and managers	341	56,044	1,052	51	41	33	26
Postsecondary teachers	340	47,867	924	48	45	90	29
Engineers	339	48,408	952	50	41	32	8
Physicians	335	121,120	2,454	49	44	100	16
Teachers²	333	25,983	568	45	42	48	71
Writers and artists	332	29,507	589	46	39	33	47
Social workers	332	26,739	551	50	40	38	60
Sales representatives	328	39,872	900	49	42	10	23
Education administrators	326	44,130	888	50	49	79	57
Registered nurses	326	33,981	741	49	38	16	88
Sales supervisors and proprietors	316	32,720	669	51	41	21	20

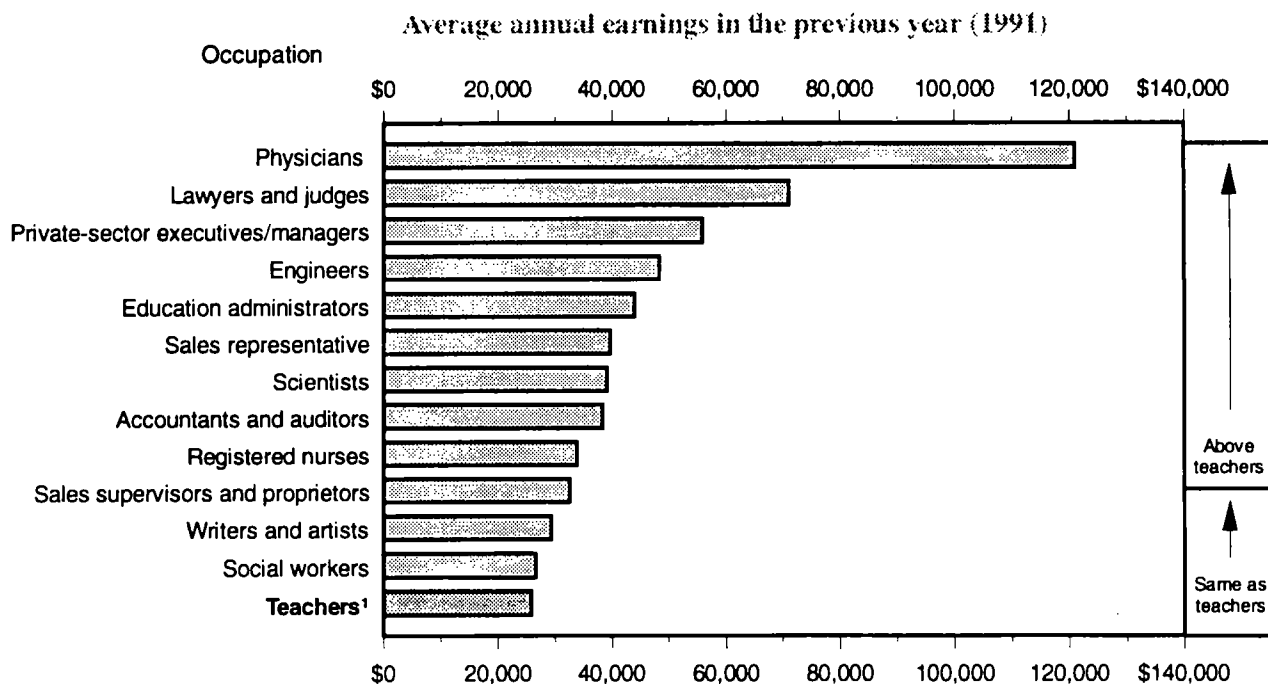
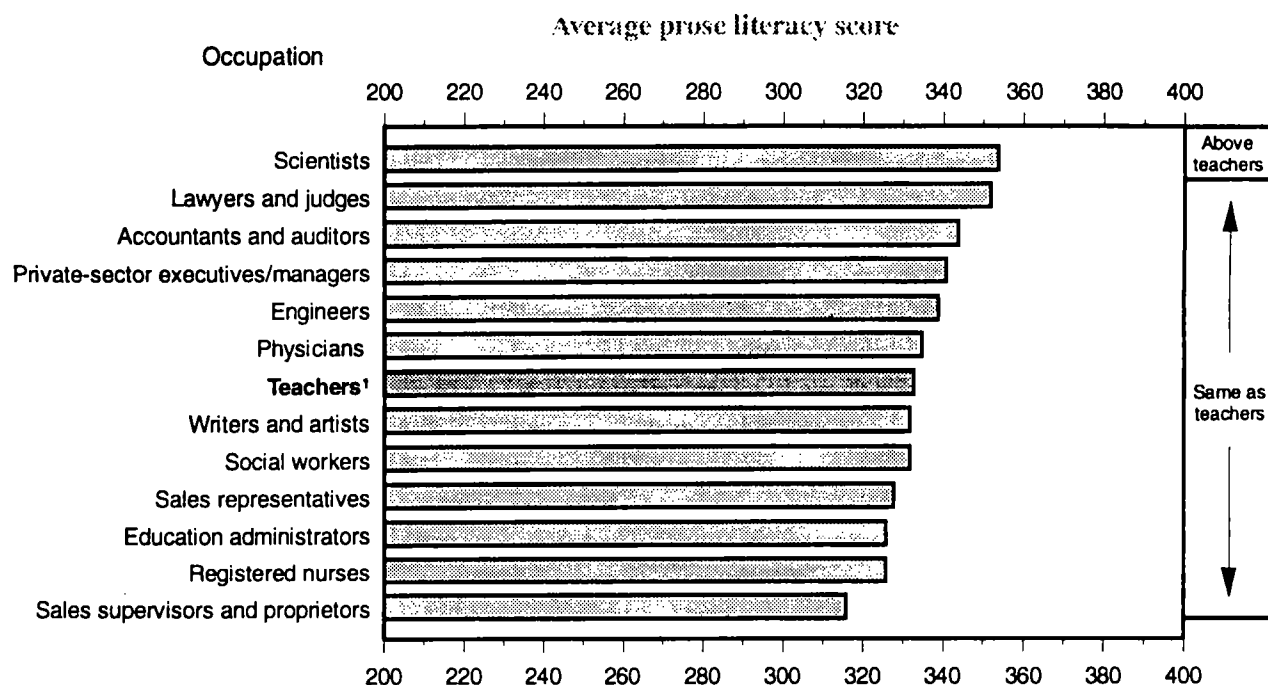
¹ Statistically significant difference from teachers.

² Includes prekindergarten and kindergarten teachers, elementary and secondary school teachers, teachers in special education, and teachers not elsewhere categorized.

NOTE: Individuals scoring between 326 and 375 were able to integrate or synthesize information from complex or lengthy passages. For example, at proficiency level 328, test-takers were able to state in writing an argument made in a lengthy newspaper article. See the supplemental note to Indicator 31 for a further description of literacy levels.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Prose literacy scores, labor market outcomes, and other characteristics of full-time employed bachelor's degree recipients, by occupation: 1992



¹ Includes prekindergarten and kindergarten teachers, elementary and secondary school teachers, teachers in special education, and teachers not elsewhere categorized.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Adult Literacy Survey, 1992.

Certification and education of full-time public secondary school teachers

- ◆ In 1991, more than 9 out of 10 full-time teachers in public secondary schools were certified to teach in their main assignment field. Seventy-seven percent of these teachers either majored or minored in this field, and 52 percent held a graduate degree in some field.

Concern about the quality of education in America has included an interest in the qualifications of teachers, especially in mathematics and science. Certification status and educational background are indirect measures of teacher qualifications. Whether a teacher is certified to teach in their field and either majored or minored in their field may indicate the breadth of knowledge in the subject matter they bring to the classroom.

- ◆ In 1991, the percentage of teachers who majored or minored in their main assignment field varied across fields, from 62 percent for science teachers to 89 percent for social science teachers.
- ◆ Of those teachers with another assignment field in 1991, 64 percent were certified to teach in this field. This percentage was lower for those whose other teaching assignment was English and humanities (62 percent) than for those whose other assignment was mathematics and science (69 percent).
- ◆ Between 1988 and 1991, there was no change in the percentage of mathematics and science teachers who had majored or minored in their field, a slight increase in the percentage of English teachers who had done so, and a slight decrease in the percentage of arts and foreign language teachers who had majored or minored in their field.
- ◆ Teachers who taught in schools with less than 20 percent of minority students were more likely to have majored in their main assignment field and to be certified in their other assignment field than were teachers who taught in schools with minority student levels of 20 percent or higher (see supplemental table 59-1).

Percentage of full-time public secondary school teachers with selected professional characteristics: School years ending 1988 and 1991

Assignment field	Certified in main assignment field		Certified in other assignment field ¹		Majored or minored in main assignment field		Graduate degree in any field	
	1987-88	1990-91	1987-88	1990-91	1987-88	1990-91	1987-88	1990-91
All teachers	93.3	95.2	66.7	64.2	79.0	76.8	51.5	52.1
English and humanities	94.2	95.6	68.0	61.5	83.4	83.0	51.6	49.4
English	93.7	96.0	69.3	64.0	76.8	81.0	51.3	50.1
Arts and foreign languages	94.8	95.1	66.1	58.4	92.5	85.6	51.9	48.5
Social science	95.0	95.9	67.7	60.7	86.8	88.8	54.7	56.0
Mathematics and science	91.8	94.6	71.4	68.8	69.5	68.7	52.7	54.1
Mathematics	92.1	94.2	74.7	71.0	75.4	74.9	50.6	51.5
Science	91.6	95.0	70.3	68.1	62.9	62.0	55.0	56.8
Education specialties ²	93.2	95.0	58.3	59.7	79.8	73.4	49.6	51.5

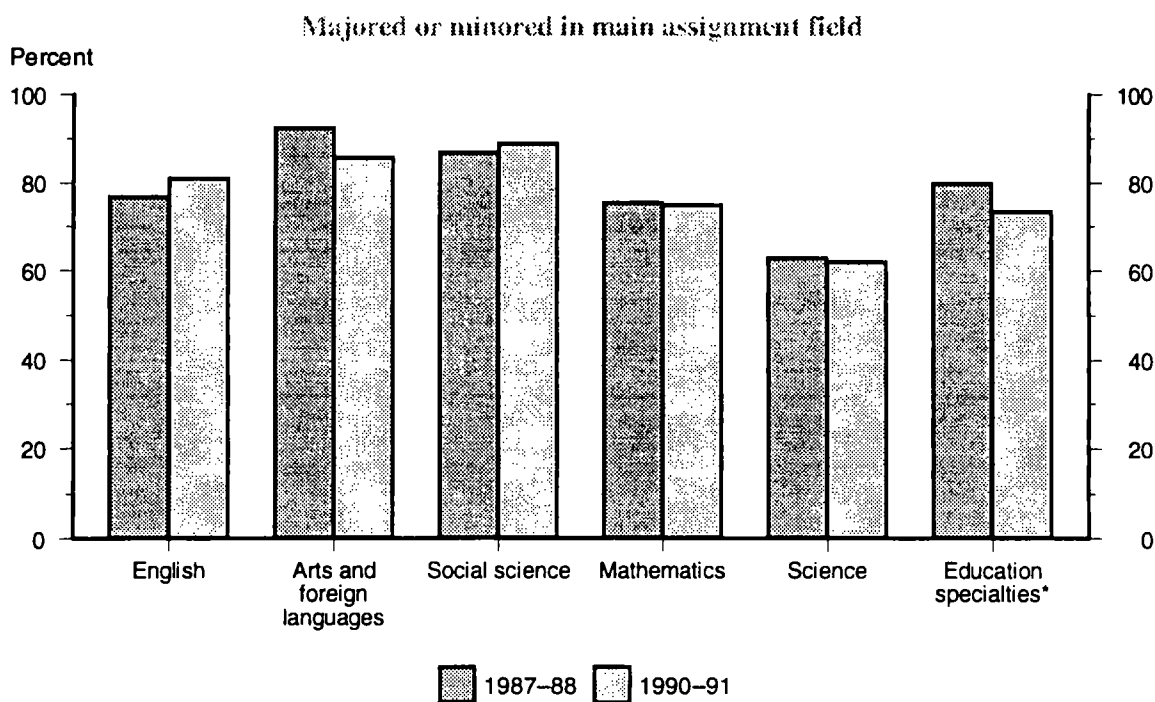
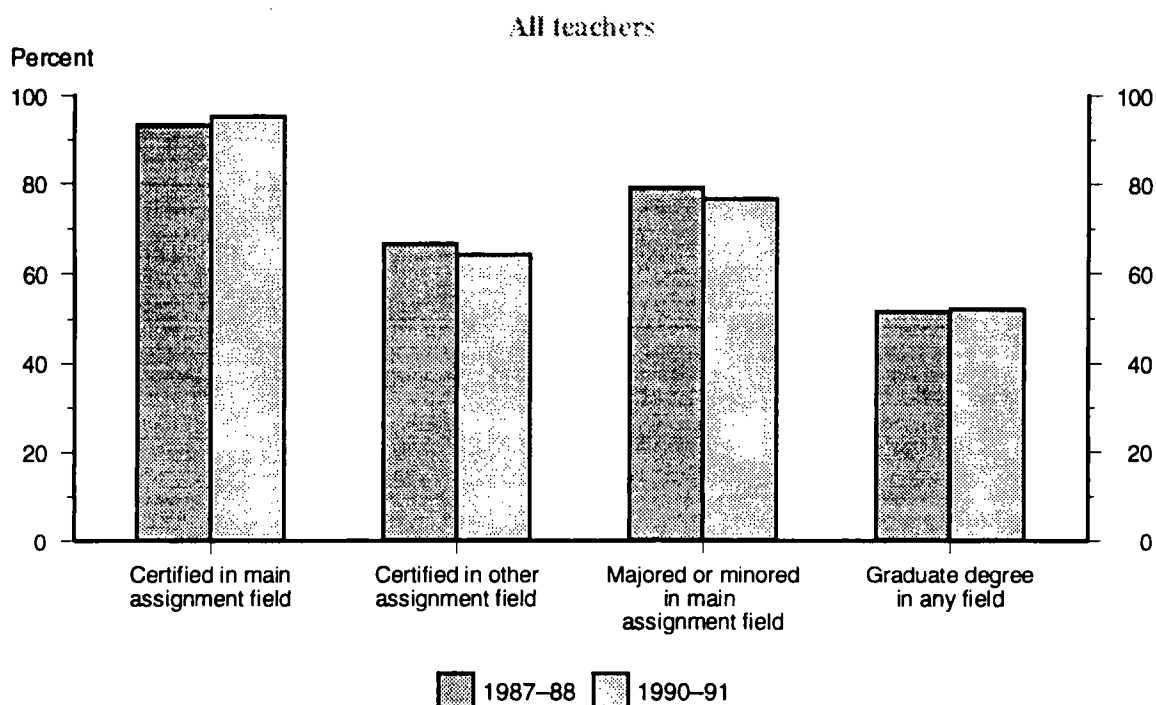
¹ Calculated only for those teachers who have another assignment field. Twenty-six percent of teachers reported having another assignment field in 1987-88, and 22 percent reported having another assignment field in 1990-91.

² Education specialties are elementary, home economics, physical, vocational, and special education.

NOTE: There are many ways to match major/minor field of study with teaching assignment fields. See the supplemental note for this indicator for definitions of certification and major/minor in assignment field used in this table and in supplemental tables 59-1 through 59-4. Also, see supplemental table 59-5 and the supplemental note for a stricter definition of majoring or minoring in teaching assignment field.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1987-88 and 1990-91 (Teacher Questionnaire).

Percentage of full-time public secondary school teachers with selected professional characteristics: School years ending 1988 and 1991



* Education specialties are elementary, home economics, physical, vocational, and special education.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1987-88 and 1990-91 (Teacher Questionnaire).

Attrition among full-time public and private school teachers

- ◆ More than 90 percent of public full-time teachers who taught during the 1990–91 school year returned to teach in the 1991–92 school year. The rate of private school attrition was almost double public schools', although private school attrition was still less than 10 percent of the full-time private school teacher work force.
- ◆ Full-time public school teachers were more likely to give retirement as their main reason for leaving the teaching profession than their private school counterparts; retirement accounted for one-third of the attrition from the public school work force, but less than 9 percent of the attrition from the private school work force.
- ◆ In 1991, approximately one out of every five full-time teachers left the teaching profession to pursue a career outside the field of education. Full-time secondary teachers were more likely than full-time elementary teachers to move to jobs outside of education, and full-time private school teachers were more likely than their public school counterparts to move to jobs outside of education (see supplemental table 60-1).
- ◆ Attrition was highest among full-time teachers age 60 and older and among those under 30, and was lowest among those in their 40s. Attrition of younger full-time teachers was more common in private schools than in public schools (see supplemental table 60-2).

Teacher attrition is the largest single factor determining demand for additional teachers each year in the nation's schools. Patterns of attrition vary considerably by age, reason for leaving, and other teacher characteristics. While the rate of teacher attrition is not as high today as it was in the 1960s and 1970s, it is still important to study these patterns as indicators of future demand for teachers.

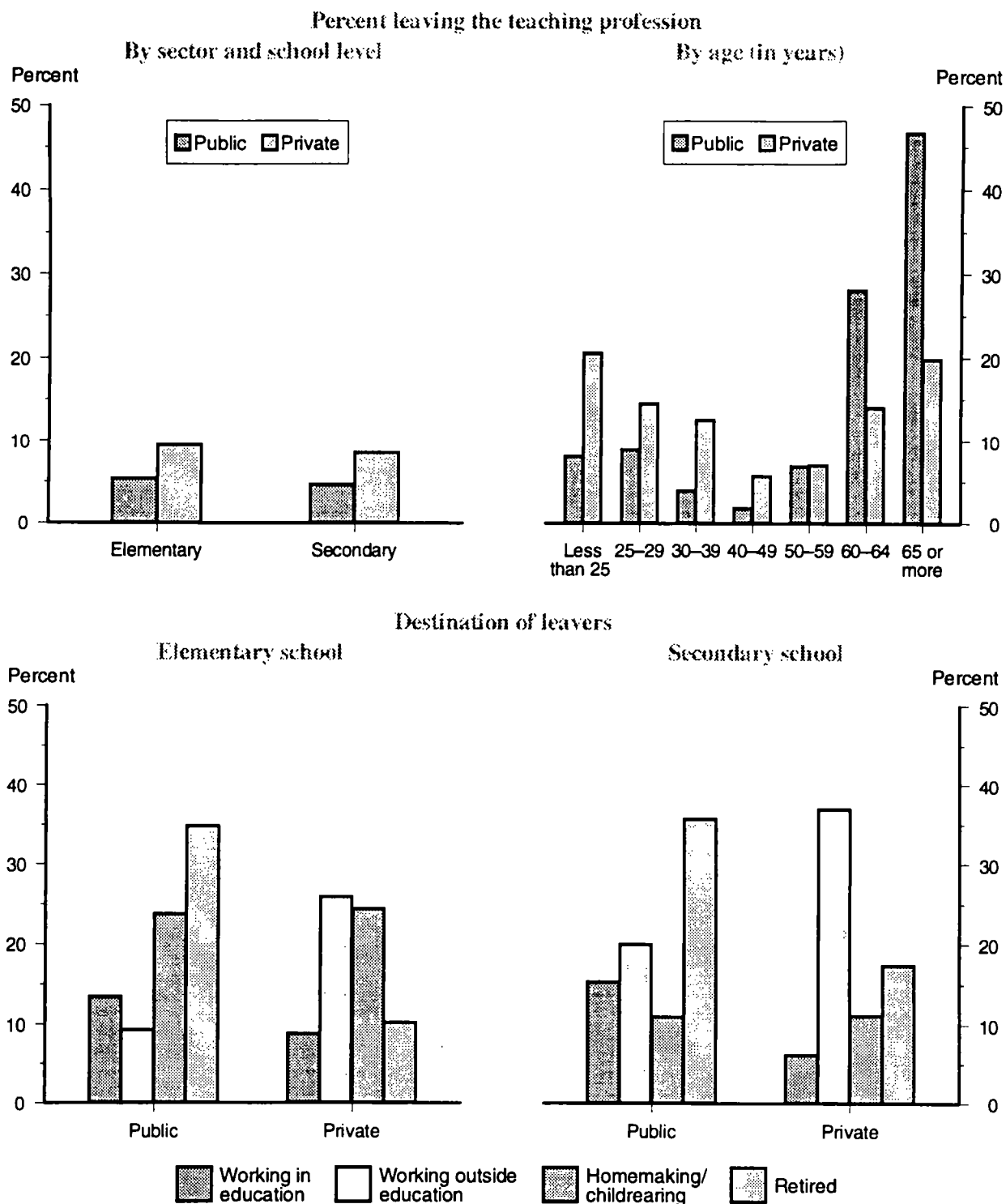
Change in teaching status of full-time teachers between the 1990–91 and 1991–92 school years, destination of leavers, and reason for leaving, by control and school level

Teaching status, destination, and reason for leaving	Public				Private			
	Total*	Full-time teachers			Total*	Full-time teachers		
		Total	Elementary	Secondary		Total	Elementary	Secondary
Teaching status in 1991–92 compared to 1990–91								
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Teaching at same school	87.6	88.3	87.3	90.2	81.1	83.1	83.0	87.1
Moved to another school	7.3	6.7	7.3	5.3	6.6	6.8	7.5	4.4
Left teaching	5.1	5.0	5.4	4.6	12.3	10.1	9.5	8.5
Destination of leavers								
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Working in education	15.1	14.1	13.4	15.3	6.2	6.8	8.8	7.5
Working outside education	13.5	13.4	9.3	20.0	35.8	34.8	25.9	31.6
Attending college	6.7	6.7	7.1	6.3	11.0	12.1	8.0	13.4
Homemaking/childrearing	18.6	18.7	23.7	11.0	19.3	19.7	24.4	17.9
Retired	33.3	34.8	34.8	35.8	8.4	8.3	10.2	27.3
Other	11.8	11.3	10.6	11.2	18.8	18.0	22.4	2.6
Reason for leaving								
Retirement	30.4	31.8	30.9	34.6	8.1	8.8	13.1	14.8
Family or personal move	10.0	9.9	11.6	6.1	15.8	15.8	15.5	23.6
To pursue another career	7.8	6.6	4.7	8.3	15.9	16.3	11.5	18.6
Pregnancy/child rearing	10.9	10.4	12.8	6.8	11.4	12.0	13.5	9.1
Dissatisfied with teaching as a career	8.3	8.9	7.5	12.9	4.9	5.4	3.9	7.5

* Total teachers includes both full- and part-time teachers at both elementary and secondary schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990–91 and Teacher Followup Survey, 1991–92.

Change in teaching status of full-time teachers between the 1990-91 and 1991-92 school years and destination of leavers, by sector and school level



SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990-91 and Teacher Followup Survey, 1991-92.

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Supplemental Tables and Notes

Table 1-1 Percentage of the population enrolled in school, by age: October 1970-93

October	Age																
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1970	13.2	28.7	80.6	98.9	99.7	99.8	99.9	100.0	99.9	99.9	99.7	99.0	98.1	94.1	87.2	57.8	
1971	13.0	30.6	84.8	98.9	99.6	99.8	99.8	99.9	99.9	99.9	99.8	99.1	98.6	94.5	87.1	59.1	
1972	15.8	34.0	85.7	98.5	99.6	99.9	99.8	100.0	99.8	99.9	99.8	98.6	97.7	93.8	85.6	57.5	
1973	14.8	35.1	86.8	98.9	99.7	99.7	99.8	99.7	99.9	99.8	99.7	98.6	97.1	93.2	84.5	52.2	
1974	20.0	38.3	89.9	99.1	99.7	99.8	99.8	99.8	100.0	100.0	99.9	98.8	97.6	93.7	82.9	53.2	
1975	22.1	41.5	90.9	99.4	99.9	99.8	100.0	99.9	99.8	99.8	99.6	98.9	98.1	94.3	84.3	56.2	
1976	20.8	42.7	92.3	99.5	99.8	99.8	99.9	99.9	99.8	99.8	99.9	98.8	98.2	93.3	86.2	53.0	
1977	22.0	43.2	92.4	99.5	99.9	99.9	99.9	99.9	99.8	99.7	99.0	100.0	98.3	93.9	84.9	56.9	
1978	25.7	44.7	92.1	99.1	99.6	99.8	99.9	99.4	99.6	99.6	99.6	99.3	98.4	94.7	85.0	52.4	
1979	25.4	46.1	93.0	99.2	99.4	99.6	99.9	99.8	99.8	99.5	99.9	99.1	98.0	94.4	85.3	55.9	
1980	27.6	47.2	93.2	99.4	99.5	99.5	99.7	99.6	99.7	99.8	99.7	98.7	98.5	93.9	85.2	54.6	
1981	27.6	45.4	90.2	98.9	99.6	99.7	99.7	99.9	99.7	99.6	99.9	99.0	97.7	94.6	87.3	57.9	
1982	27.6	46.1	91.5	99.4	99.8	99.6	99.8	99.9	99.8	99.9	99.5	98.8	98.9	94.6	88.1	57.1	
1983	28.2	47.6	92.6	99.0	99.5	99.7	99.6	99.8	99.7	99.9	99.7	99.0	98.5	96.3	88.6	58.4	
1984	28.5	46.5	91.4	99.1	99.6	99.2	99.4	99.7	99.7	99.6	99.7	98.3	97.8	95.3	88.5	58.6	
1985	29.2	49.5	93.9	99.1	99.6	99.8	99.7	99.7	99.8	99.9	99.7	98.4	98.5	94.9	88.6	59.7	
1986	29.3	49.5	91.8	99.4	99.8	99.8	99.8	99.8	99.5	99.7	99.8	98.2	97.9	95.5	89.6	61.0	
1987	28.6	47.9	91.3	99.0	99.5	99.7	99.6	99.4	99.5	99.7	99.3	98.9	98.2	95.4	88.1	62.2	
1988	27.6	49.2	92.6	99.3	99.7	99.6	99.6	99.9	99.6	99.6	99.7	99.3	98.5	94.6	88.8	62.8	
1989	27.1	51.2	91.8	98.4	98.9	99.4	99.4	99.4	99.5	99.2	99.6	99.5	98.2	96.0	89.6	61.6	
1990	(*)	(*)	93.2	99.8	99.5	99.9	99.6	99.6	99.6	99.7	99.6	99.6	98.4	95.6	89.5	64.4	
1991	28.2	53.0	91.4	99.4	99.3	99.7	99.8	99.8	99.7	99.7	99.6	99.5	98.0	96.5	90.0	65.5	
1992	27.7	52.1	92.4	98.6	99.3	99.3	99.5	99.3	99.3	99.5	99.4	99.4	98.9	96.3	91.9	68.1	
1993	27.1	53.9	91.8	99.0	99.4	99.5	99.5	99.4	99.7	99.8	99.4	99.4	98.3	96.3	91.6	68.9	

October	Age																
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	
1970	45.8	39.1	30.7	20.2	16.3	14.7	12.6	10.8	9.6	7.7	7.6	6.4	7.0	5.4	5.2	5.4	
1971	47.2	37.7	31.9	21.3	17.2	14.4	15.3	10.4	9.7	6.9	6.0	7.6	5.7	5.9	6.5	5.3	
1972	42.7	37.8	31.2	20.5	16.9	15.2	13.8	11.9	9.9	8.4	9.1	7.1	6.8	6.7	5.9	5.6	
1973	40.2	33.4	30.2	19.0	14.4	15.5	12.6	11.1	9.5	9.9	6.1	6.5	5.3	5.6	4.7	4.7	
1974	39.4	33.4	31.6	20.1	15.9	13.8	14.0	11.5	10.6	11.0	7.7	7.7	7.0	7.0	7.4	6.5	
1975	42.9	36.5	31.6	21.9	17.8	14.5	14.2	12.2	10.8	11.4	9.4	9.6	7.5	7.9	7.9	6.7	
1976	44.8	37.1	30.9	22.3	16.7	16.1	13.4	12.4	11.5	10.2	9.7	8.1	8.2	7.7	6.7	5.4	
1977	41.8	37.1	32.9	21.8	17.6	15.4	15.2	12.9	10.7	11.7	10.9	9.7	9.0	8.1	6.5	6.7	
1978	42.7	33.7	28.6	21.9	16.2	14.7	11.8	11.0	10.0	9.4	8.6	8.9	7.9	7.1	5.7	4.2	
1979	41.3	35.1	30.0	21.1	17.3	13.7	13.5	12.4	9.8	10.3	9.0	9.0	7.0	8.1	7.2	5.6	
1980	43.0	33.9	30.6	22.3	16.7	13.5	12.0	11.2	10.0	8.8	7.9	8.0	8.2	6.5	6.8	6.3	
1981	43.4	36.5	29.7	21.9	16.4	14.2	11.6	10.7	9.2	9.3	8.1	8.7	8.3	8.0	6.7	6.2	
1982	43.4	38.9	32.7	22.2	17.2	13.8	12.6	11.4	9.4	9.2	9.5	7.4	8.1	7.0	6.3	6.1	
1983	46.6	35.8	32.5	24.1	16.4	13.4	13.0	11.1	9.9	8.6	9.1	8.6	7.7	7.7	6.9	5.8	
1984	43.1	37.7	31.4	22.5	17.2	13.8	11.4	9.9	10.4	8.8	7.8	6.9	8.0	7.1	5.8	6.0	
1985	45.7	38.3	33.8	22.4	15.7	13.4	12.0	10.3	9.6	9.7	9.1	7.9	7.2	6.3	6.7	6.4	
1986	49.6	36.8	30.6	25.4	16.4	13.8	11.3	10.4	10.2	9.3	7.8	7.6	7.6	6.8	6.3	5.5	
1987	48.8	42.3	34.9	23.2	17.2	12.7	12.7	9.7	8.6	7.3	7.1	6.6	5.5	6.2	5.6	5.3	
1988	47.8	42.1	36.0	25.4	17.1	13.2	10.1	9.4	7.9	7.5	6.8	6.4	6.0	6.0	6.2	5.1	
1989	50.6	39.0	38.0	27.9	18.5	14.2	12.6	10.2	9.3	7.9	6.9	6.7	6.3	4.9	5.2	5.4	
1990	50.6	42.9	36.4	28.1	19.2	16.2	11.8	11.7	9.7	8.7	6.9	6.5	7.6	5.5	4.2	5.4	
1991	54.0	43.6	40.5	28.2	20.9	17.0	12.4	11.4	10.7	9.1	7.7	7.0	7.4	6.6	5.4	4.6	
1992	54.6	46.6	41.5	29.0	21.9	17.6	13.3	10.2	10.6	7.9	7.4	7.0	7.4	5.6	4.7	5.7	
1993	54.4	45.1	40.6	30.7	22.0	18.5	15.1	10.8	8.6	8.9	8.1	7.1	6.4	5.2	5.4	5.4	

* Comparable data not available due to a change in survey procedures.

NOTE: School includes nursery school but excludes day care centers, and includes 2- and 4-year colleges and universities but excludes schools with programs of strictly less than 2 years.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Table 2-1 Percentage of 3- to 4-year-olds enrolled in preschool and kindergarten, by race/ethnicity: October 1971-93

October	Enrolled in preschool				Enrolled in kindergarten			
	Total	White	Black	Hispanic	Total	White	Black	Hispanic
1971	15.4	(1)	(1)	(1)	6.6	(1)	(1)	(1)
1972	16.6	(1)	(1)	(1)	6.6	(1)	(1)	(1)
1973	17.7	17.8	18.7	13.2	6.4	5.8	10.0	5.6
1974	21.8	22.5	19.6	15.9	7.0	6.5	9.2	9.5
1975	24.4	24.8	25.1	17.9	7.1	6.2	9.3	9.4
1976	22.9	23.6	22.1	13.7	8.4	7.5	12.3	8.4
1977	24.9	25.8	24.4	14.6	7.1	6.4	10.8	4.8
1978	28.4	28.8	31.0	17.7	5.9	5.1	9.7	4.8
1979	28.7	(1)	(1)	(1)	6.4	(1)	(1)	(1)
1980	30.4	31.8	28.3	23.5	6.3	5.6	9.9	5.0
1981	30.0	31.7	28.2	18.1	6.0	5.4	8.8	6.4
1982	30.8	33.2	28.7	14.3	5.7	4.4	9.8	7.5
1983	30.9	33.3	29.1	14.4	6.6	6.1	7.1	9.1
1984	30.4	32.3	29.0	17.0	5.8	5.0	9.5	7.2
1985	32.1	35.2	27.9	20.0	6.8	5.1	14.8	6.9
1986	33.1	36.2	28.8	20.1	5.8	4.5	9.8	8.6
1987	31.8	35.0	25.5	20.8	6.4	4.5	11.4	9.3
1988	32.5	37.1	23.6	15.2	5.7	4.1	9.8	9.3
1989	34.6	38.3	31.1	17.9	4.4	3.8	7.5	4.0
1990	(2)	(2)	(2)	(2)	3.6	3.0	5.0	5.0
1991	34.1	38.5	26.7	19.5	6.4	4.9	10.2	10.6
1992	33.6	37.6	28.8	17.8	6.1	4.7	8.9	10.1
1993	33.7	35.4	29.8	16.6	6.7	5.1	10.3	10.3

¹ Not available.

² Comparable data not available due to a change in survey procedures.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Table 2-2 Percentage of 5-year-olds enrolled in preschool, kindergarten, and grades 1 or 2, by race/ethnicity: October 1971-93

October	Enrolled in preschool				Enrolled in kindergarten				Enrolled in grades 1 or 2			
	Total	White	Black	Hispanic	Total	White	Black	Hispanic	Total	White	Black	Hispanic
1971	2.1	(1)	(1)	(1)	71.1	(1)	(1)	(1)	10.3	(1)	(1)	(1)
1972	2.0	(1)	(1)	(1)	73.5	(1)	(1)	(1)	10.1	(1)	(1)	(1)
1973	2.3	2.1	3.6	2.9	73.7	74.8	68.3	68.8	10.4	10.6	8.8	11.1
1974	2.6	2.2	4.2	3.4	76.0	78.2	68.8	69.3	11.0	9.9	13.9	14.5
1975	3.3	3.1	4.9	2.7	78.0	80.1	70.3	70.4	9.2	7.8	14.3	11.3
1976	2.4	2.6	2.1	1.3	79.0	79.7	75.0	82.3	10.6	10.2	13.8	6.5
1977	3.3	2.9	4.3	3.7	79.0	80.1	76.1	75.3	9.8	9.1	12.2	9.7
1978	3.4	3.6	4.3	0.0	78.6	79.9	72.6	78.0	9.5	8.9	12.7	8.0
1979	3.8	(1)	(1)	(1)	79.7	(1)	(1)	(1)	9.0	(1)	(1)	(1)
1980	3.0	2.9	3.8	1.6	81.6	83.6	76.3	77.0	7.8	6.3	11.5	11.8
1981	3.5	3.8	2.3	2.9	78.7	80.9	75.0	70.0	7.5	5.5	14.7	9.8
1982	3.2	3.7	3.3	0.4	80.2	81.3	76.9	75.7	7.7	6.8	11.3	9.1
1983	5.7	6.2	3.4	4.9	78.8	80.3	73.4	78.0	7.6	6.1	13.9	9.9
1984	4.3	4.7	2.9	2.3	79.6	80.5	77.5	76.0	6.7	5.6	9.2	11.9
1985	4.7	5.0	4.3	2.7	81.8	83.5	78.4	76.8	7.0	5.9	10.5	10.1
1986	4.1	4.5	1.9	4.0	82.5	83.6	82.0	79.4	4.8	3.5	7.9	6.3
1987	7.4	8.8	1.2	7.0	78.7	77.8	85.5	72.5	5.2	4.3	7.1	8.6
1988	6.6	7.5	4.3	5.0	80.0	81.7	74.0	80.4	6.0	3.8	14.1	6.2
1989	7.2	8.0	4.7	5.6	79.2	80.8	77.6	74.6	5.4	3.6	9.6	8.7
1990	(2)	(2)	(2)	(2)	79.5	79.7	81.0	78.3	4.5	3.2	5.6	8.0
1991	9.3	10.7	6.5	5.0	79.6	80.2	78.7	76.0	5.4	4.6	8.4	7.5
1992	6.8	7.6	5.7	5.1	80.3	80.5	81.0	80.7	5.3	3.8	5.9	8.5
1993	6.5	7.7	3.4	3.6	79.2	80.0	77.4	77.8	6.1	4.8	8.1	7.9

¹ Not available.² Comparable data not available due to a change in survey procedures.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Table 2-3 Percentage of 5-year-olds enrolled in preschool, kindergarten, and grades 1 or 2, by family income: October 1970–93

October	Enrolled in preschool				Enrolled in kindergarten				Enrolled in grades 1 or 2			
	Total	Low	Middle	High	Total	Low	Middle	High	Total	Low	Middle	High
1970	2.4	3.1	2.2	2.5	66.9	46.4	67.4	75.5	10.8	10.5	10.3	12.7
1971	1.9	1.0	2.0	2.0	72.0	62.7	70.5	80.9	10.7	8.1	11.2	10.5
1972	1.9	0.8	1.9	2.4	74.2	65.0	72.4	85.2	9.3	8.4	10.0	7.3
1973	2.3	1.5	2.1	3.4	73.7	67.0	73.8	76.9	10.3	8.2	10.0	12.9
1974	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
1975	3.3	3.6	3.3	3.0	78.0	68.6	78.9	80.2	9.2	7.7	8.7	11.4
1976	2.4	1.6	2.3	3.4	79.0	72.4	79.7	80.8	10.6	10.1	10.2	12.3
1977	3.3	5.7	2.7	3.6	79.0	72.7	79.3	82.5	9.8	9.8	9.5	11.1
1978	3.4	2.1	3.0	5.6	78.7	73.9	79.3	79.5	9.5	10.2	9.4	9.4
1979	3.8	3.7	3.8	3.6	79.7	78.7	77.7	88.2	9.0	6.6	10.4	5.6
1980	3.0	2.5	2.8	4.2	81.6	78.1	81.4	84.9	7.8	7.6	7.8	8.0
1981	3.4	5.1	3.2	3.0	78.7	72.4	79.0	82.7	7.4	7.3	7.1	8.9
1982	3.2	2.7	3.3	3.5	80.2	78.3	79.4	84.3	7.7	8.8	7.3	7.8
1983	5.7	3.8	5.5	8.2	78.8	75.7	79.3	80.0	7.6	9.6	6.9	8.2
1984	4.3	3.2	3.6	8.0	79.6	78.5	80.2	78.3	6.7	6.3	6.7	7.5
1985	4.7	2.6	4.6	6.9	81.8	81.8	80.7	85.6	7.0	7.1	7.6	5.0
1986	4.1	2.8	4.0	6.1	82.5	82.2	81.9	85.0	4.8	4.1	5.2	4.1
1987	7.4	3.8	7.7	9.9	78.7	77.0	78.1	81.5	5.2	5.8	5.7	3.3
1988	6.6	4.8	6.7	7.9	80.1	79.6	79.8	81.2	6.0	5.1	5.9	7.0
1989	7.2	4.2	7.6	8.6	79.2	78.7	78.3	81.8	5.4	5.9	5.6	4.6
1990	(2)	(2)	(2)	(2)	79.5	77.6	78.8	83.5	4.5	4.9	4.8	2.8
1991	6.4	4.7	6.0	8.9	79.7	77.9	78.8	83.7	5.4	5.4	5.3	5.5
1992	6.8	5.1	7.3	7.2	80.3	81.3	79.6	81.1	5.3	4.5	5.3	6.1
1993	6.5	5.5	6.1	8.6	79.2	80.9	78.4	79.7	6.1	5.2	6.1	6.8

¹ Not available.

² Comparable data not available due to a change in survey procedures.

NOTE: Low income is the bottom 20 percent of all family incomes; high income is the top 20 percent of all family incomes; and middle income is the 60 percent in-between.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Table 3-1 Participation in center-based early childhood programs before kindergarten and selected characteristics of first-graders, by race/ethnicity: 1993

Selected characteristics	Total	Race/ethnicity		
		White	Black	Hispanic
Percentage of first-graders who ever attended a center-based program ¹	71.5	72.6	76.2	56.6
Age at which first-graders started a center-based program ¹ (for those who ever attended)				
Less than 3 years old	26.4	25.5	33.5	19.5
3 years old	34.0	35.1	30.8	32.8
4 years old	33.2	33.1	29.0	40.1
5 years old	6.3	6.4	6.7	7.7
Length of time first-graders enrolled in a center-based program ¹ (for those who ever attended)				
Less than 1 year	21.6	22.4	15.2	27.2
One year, less than 2 years	28.4	25.9	35.1	32.6
Two years or more	50.0	51.7	49.7	40.2
Age first-graders started kindergarten ²				
3 years old	0.5	0.3	1.1	0.3
4 years old	10.2	7.9	14.8	13.6
5 years old	80.7	82.2	76.8	78.9
6 years old	8.7	9.7	7.3	7.2
Length of time first-graders attended kindergarten ²				
One year	93.8	93.9	91.8	95.8
Two years or more	6.2	6.1	8.2	4.2
Age started first grade				
5 years old	7.9	6.0	15.3	7.2
6 years old	78.2	78.1	73.3	83.5
7 years old and older	13.8	15.8	11.4	9.3

¹ Center-based programs include Head Start, nursery school, prekindergarten, preschool, and day care.

² Only includes those students who attended kindergarten. Less than 1 percent of the surveyed population did not attend kindergarten.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), 1993.

Table 3-2 Participation in center-based early childhood programs before kindergarten and selected characteristics of first-graders, by family income: 1993

Selected characteristics	Total	Family income				
		\$10,000 or less	\$10,001–20,000	\$20,001–35,000	\$35,001–50,000	\$50,001 or more
Percentage of first-graders who ever attended a center-based program ¹	71.5	61.3	62.5	68.5	77.4	87.2
Age at which first-graders started a center-based program ¹ (for those who ever attended)						
Less than 3 years old	26.4	24.3	23.5	24.5	25.0	32.7
3 years old	34.0	29.8	25.1	32.0	36.2	42.6
4 years old	33.2	37.9	43.7	34.9	33.1	22.1
5 years old	6.3	8.0	7.8	8.6	5.8	2.6
Length of time first-graders enrolled in a center-based program ¹ (for those who ever attended)						
Less than 1 year	21.6	19.0	33.3	24.1	19.9	14.9
One year, less than 2 years	28.4	38.2	32.9	30.9	28.3	16.9
Two years or more	50.0	42.8	33.8	45.0	51.8	68.2
Age first-graders started kindergarten ²						
3 years old	0.5	0.7	0.0	0.4	0.7	0.5
4 years old	10.2	10.9	12.5	9.2	9.5	9.2
5 years old	80.7	79.7	80.5	80.1	79.7	83.1
6 years old	8.7	8.7	7.0	10.2	10.0	7.2
Length of time first-graders attended kindergarten ²						
One year	93.8	90.7	93.2	95.4	94.2	95.2
Two years or more	6.2	9.3	6.8	4.6	5.8	4.8
Age started first grade						
5 years old	7.9	8.7	11.1	7.3	5.7	6.8
6 years old	78.2	77.9	74.1	77.4	80.8	81.0
7 years old and older	13.8	13.5	14.8	15.3	13.4	11.9

¹ Center-based programs include Head Start, nursery school, prekindergarten, preschool, and day care.

² Only includes those students who attended kindergarten. Less than 1 percent of the surveyed population did not attend kindergarten.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), 1993.

Table 3-3 Participation in center-based early childhood programs before kindergarten and selected characteristics of first-graders, by family structure: 1993

Selected characteristics	Total ¹	Family structure			
		Two biological or adopted parents	One biological or adopted parent	One biological and one step parent	Other relatives
Percentage of first-graders who ever attended a center-based program ²	71.5	72.2	69.5	71.1	74.4
Age at which first-graders started a center-based program ¹ (for those who ever attended)					
Less than 3 years old	26.4	24.0	32.2	32.0	11.1
3 years old	34.0	36.5	27.0	31.3	51.9
4 years old	33.2	33.6	33.5	30.3	30.5
5 years old	6.3	5.9	7.3	6.4	6.4
Length of time first-graders enrolled in a center-based program ¹ (for those who ever attended)					
Less than 1 year	21.6	22.0	21.1	20.7	16.4
One year, less than 2 years	28.4	26.4	29.8	28.6	55.3
Two years or more	50.0	51.6	49.1	50.6	28.4
Age first-graders started kindergarten ³					
3 years old	0.5	0.5	0.3	0.5	1.9
4 years old	10.2	9.6	12.9	5.5	8.8
5 years old	80.7	80.7	80.1	83.4	76.7
6 years old	8.7	9.1	6.7	10.7	12.6
Length of time first-graders attended kindergarten ³					
One year	93.8	94.5	93.4	92.4	88.7
Two years or more	6.2	5.5	6.6	7.6	11.3
Age started first grade					
5 years old	7.9	6.4	10.1	4.8	21.1
6 years old	78.2	79.2	76.8	85.5	56.5
7 years old and older	13.8	14.3	13.1	9.7	22.4

¹ Children living with only one step parent or with foster parents are included in the total but are not shown separately.

² Center-based programs include Head Start, nursery school, prekindergarten, preschool, and day care.

³ Only includes those students who attended kindergarten. Less than 1 percent of the surveyed population did not attend kindergarten.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), 1993.

Table 3-4 Participation in center-based early childhood programs before kindergarten and selected characteristics of first-graders, by parents' highest education level: 1993

Selected characteristics	Parents' highest education level				
	Total	Less than high school	High school graduate or equivalent	Some college ¹	College graduate ²
Percentage of first-graders who ever attended a center-based program ³	71.5	53.8	63.8	74.6	84.6
Age at which first-graders started a center-based program ³ (for those who ever attended)					
Less than 3 years old	26.4	19.2	20.3	30.8	29.7
3 years old	34.0	30.0	31.8	32.2	39.2
4 years old	33.2	39.5	37.8	32.7	27.7
5 years old	6.3	11.4	10.2	4.3	3.4
Length of time first-graders enrolled in a center-based program ³ (for those who ever attended)					
Less than 1 year	21.6	34.4	27.9	18.6	15.6
One year, less than 2 years	28.4	34.4	31.0	30.9	21.5
Two years or more	50.0	31.2	41.1	50.6	62.9
Age first-graders started kindergarten ⁴					
3 years old	0.5	0.0	0.1	0.8	0.7
4 years old	10.2	11.5	10.9	9.7	9.3
5 years old	80.7	79.2	80.2	82.0	80.2
6 years old	8.7	9.3	8.8	7.5	9.8
Length of time first-graders attended kindergarten ⁴					
One year	93.8	88.9	92.6	95.3	95.4
Two years or more	6.2	11.1	7.4	4.7	4.6
Age started first grade					
5 years old	7.9	8.9	8.9	8.0	5.9
6 years old	78.2	76.0	76.3	79.7	79.8
7 years old and older	13.8	15.1	14.8	12.2	14.1

¹ Includes vocational/technical education after high school or some college.

² Includes college graduates, or 1 year or more of graduate or professional school.

³ Center-based programs include Head Start, nursery school, prekindergarten, preschool, and day care.

⁴ Only includes those students who attended kindergarten. Less than 1 percent of the surveyed population did not attend kindergarten.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), 1993.

Note on duration of time spent in center-based programs

In the National Household Education Survey (NHES), the duration of time spent in center-based preprimary programs is reported as the amount of time a child spends in center-based programs such as Head Start, preschool, nursery school, prekindergarten, or day care. The purpose of this measure is to show the length of time children are in center-based programs before entering kindergarten.

On the NHES questionnaire, parents are asked how long their first-graders participated in each of the following types of programs: Head Start or any nursery school, prekindergarten, preschool, or day care. On the questionnaire, Head Start is separated from the other types of center-based programs that are grouped together. Therefore, if a child was enrolled in nursery school program for 1 year and was simultaneously enrolled in day care, the parent would respond that the child was enrolled in the group of programs for 1 year.

However, if a child was enrolled in Head Start for 1 year and simultaneously enrolled in day care, the parent would respond that the child was enrolled in each program for 1 year; this, when summed together, would indicate that the child was enrolled in a center-based program for 2 years.

To eliminate the problem of inconsistent reporting of time spent in center-based preprimary programs, a decision was made to use the longest period of time a child spent in either Head Start or any of the other programs.

Therefore, if a parent reported that a child was enrolled in Head Start for 1 year and was enrolled in any other program for 2 years, this child would be assigned a duration value of 2 years.

While this solution might tend to bias the duration data downwards, there is another anomaly in the data that could counteract this downward bias by biasing the data upward. The NHES sample is composed entirely of parents of first-graders who reported the center-based programs in which their children participated before first grade. This indicator, however, focuses on center-based care as an activity that occurs before kindergarten. Because day care is grouped with other forms of center-based care,

parents could be reporting the time spent in day care while the student was also enrolled in kindergarten. For example if a student attended a half-day kindergarten program and attended day care for the remainder of the day, because of the design of the questionnaire, the parent might report that the child spent an additional year in day care. Thus, while the duration data are interpreted to mean the amount of time spent in center-based care programs before entering kindergarten, there might be some overlap in the actual duration reported because of the way in which the questionnaire was designed. This problem may tend to overinflate the duration numbers.

In summary, there are two difficulties with the NHES duration data: one that would bias the numbers downward, and one that would bias the numbers upward. The hope is that neither bias is large enough to significantly distort the data.

Table 4-1 Skills and behaviors of 4-year-olds not enrolled in kindergarten, by race/ethnicity: 1993

Skills and behaviors	Total	Race/ethnicity		
		White	Black	Hispanic
Percentage of children who can:				
Emerging literacy and numeracy ¹	11.4	12.4	11.1	6.0
Identify colors ²				
All of them	84.2	91.0	73.0	61.4
Some of them	13.7	7.9	22.8	33.1
None of them	2.1	1.1	4.2	5.5
Recognize letters				
All of the letters of the alphabet	27.5	31.2	23.4	11.9
Most of them	29.7	30.2	34.3	19.1
Some of them	35.3	33.8	34.5	46.6
None of them	7.5	4.9	7.8	22.4
Count				
Up to 100 or more	9.5	11.1	6.9	4.6
Up to 50	11.2	11.0	15.7	6.1
Up to 20	41.5	43.8	44.3	28.2
Up to 10	30.1	29.5	22.3	42.1
Up to 5 ³	7.7	4.7	10.9	19.0
Write first name	70.3	73.7	62.9	58.8
Small motor development ⁴	71.6	71.9	76.6	61.3
Can button clothes	93.3	92.4	97.3	93.7
Hold pencil properly	93.9	93.5	96.5	93.6
Writes/draws rather than scribbles	77.9	79.2	79.2	66.9
Social and emotional development ⁵	28.8	31.3	30.4	17.8
Often has tantrums	23.1	20.0	24.2	37.1
Afraid to speak to strangers	42.6	44.4	30.0	44.0
Fidgets a lot	28.8	25.1	30.9	45.4
Has short attention span	23.1	19.8	23.9	40.6
Can be left with babysitter without fuss	90.6	94.6	86.9	75.4
Speech development ⁶	76.8	79.4	71.3	73.8
Speech understandable to strangers	92.4	93.8	88.7	91.6
Started speaking late	15.1	14.4	12.7	16.9
Stutters or stammers	7.3	5.3	11.0	13.3

¹ Percentages for emerging literacy and numeracy are based on children who can identify all colors, recognize all letters of the alphabet, count to 50 or more, and write their own name.

² Identify the colors red, yellow, blue, and green by name.

³ Includes children who cannot count at all.

⁴ Percentages for small motor development are based on children who can button clothes, hold a pencil properly, and write or draw rather than scribble.

⁵ Percentages for social and emotional development are based on children who do not have tantrums often, who are not afraid to speak to strangers, who do not fidget a lot, who do not have a short attention span, and who can be left with babysitters without a fuss.

⁶ Percentages for speech development are based on children whose speech is understandable to strangers, who did not start speaking late, and who do not stutter or stammer.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), 1993.

Table 4-2 Skills and behaviors of 4-year-olds not enrolled in kindergarten, by family income: 1993

Skills and behaviors	Total	Family income				
		\$10,000 or less	\$10,001–20,000	\$20,001–35,000	\$35,001–50,000	\$50,001 or more
Emerging literacy and numeracy ¹	11.4	3.8	9.8	10.2	13.4	20.0
Identify colors ²			Percentage of children who can:			
All of them	84.2	65.4	78.5	86.5	93.0	97.0
Some of them	13.7	30.3	18.9	11.1	5.9	2.9
None of them	2.1	4.3	2.6	2.4	1.1	0.1
Recognize letters						
All of the letters of the alphabet	27.5	14.2	22.7	24.3	35.1	42.3
Most of them	29.7	32.2	26.3	30.0	30.6	29.6
Some of them	35.3	39.5	38.0	40.3	31.1	26.3
None of them	7.5	14.1	13.0	5.4	3.2	1.8
Count						
Up to 100 or more	9.5	4.3	7.0	9.2	10.8	16.2
Up to 50	11.2	7.5	8.8	11.9	14.3	13.5
Up to 20	41.5	39.0	35.6	39.5	47.1	47.7
Up to 10	30.1	33.8	38.5	31.6	25.6	20.1
Up to 5 ³	7.7	15.5	10.1	7.9	2.3	2.5
Write first name	70.3	54.7	63.6	69.9	80.3	83.7
Small motor development ⁴	71.6	67.6	69.2	71.5	75.9	73.9
Can button clothes	93.3	95.1	94.6	93.0	92.4	91.3
Hold pencil properly	93.9	94.4	93.1	91.8	96.1	94.9
Writes/draws rather than scribbles	77.9	72.4	74.4	78.9	81.8	82.2
Social and emotional development ⁵	28.8	21.5	24.1	27.3	32.7	39.0
Often has tantrums	23.1	28.1	27.9	24.7	15.4	18.1
Afraid to speak to strangers	42.6	40.7	45.4	44.3	44.1	38.4
Fidgets a lot	28.8	36.6	34.3	30.0	23.1	19.5
Has short attention span	23.1	33.2	25.6	25.0	18.4	13.3
Can be left with babysitter without fuss	90.6	77.0	87.8	95.7	94.6	96.5
Speech development ⁶	76.8	68.6	76.1	78.8	79.6	80.4
Speech understandable to strangers	92.4	87.4	90.6	92.4	94.0	97.6
Started speaking late	15.1	18.1	14.8	14.1	14.2	14.8
Stutters or stammers	7.3	11.6	7.8	6.0	6.6	5.0

¹ Percentages for emerging literacy and numeracy are based on children who can identify all colors, recognize all letters of the alphabet, count to 50 or more, and write their own name.

² Identify the colors red, yellow, blue, and green by name.

³ Includes children who cannot count at all.

⁴ Percentages for small motor development are based on children who can button clothes, hold a pencil properly, and write or draw rather than scribble.

⁵ Percentages for social and emotional development are based on children who do not have tantrums often, who are not afraid to speak to strangers, who do not fidget a lot, who do not have a short attention span, and who can be left with baby-sitters without a fuss.

⁶ Percentages for speech development are based on children whose speech is understandable to strangers, who did not start speaking late, and who do not stutter or stammer.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), 1993.

Table 4-3 Skills and behaviors of 4-year-olds not enrolled in kindergarten, by family structure: 1993

Skills and behaviors	Total ¹	Family structure			Other relatives
		Two biological or adopted parents	One biological or adopted parent	One biological and one step parent	
Percentage of children who can:					
Emerging literacy and numeracy ²	11.4	12.7	9.1	9.3	5.0
Identify colors ³					
All of them	84.2	88.1	75.6	83.0	71.1
Some of them	13.7	10.4	20.8	16.3	22.7
None of them	2.1	1.5	3.5	0.6	6.2
Recognize letters					
All of the letters of the alphabet	27.5	29.9	23.2	26.6	7.4
Most of them	29.7	29.1	31.0	30.8	31.4
Some of them	35.3	34.2	36.0	38.1	55.0
None of them	7.5	6.9	9.7	4.5	6.2
Count					
Up to 100 or more	9.5	10.2	8.8	4.1	9.9
Up to 50	11.2	11.7	9.8	13.9	6.1
Up to 20	41.5	41.7	41.5	43.4	33.7
Up to 10	30.1	29.5	30.6	34.5	33.4
Up to 5 ⁴	7.7	7.0	9.4	4.2	16.9
Write first name	70.3	72.4	66.6	67.3	63.9
Small motor development ⁵	71.6	72.1	69.8	74.6	70.0
Can button clothes	93.3	92.6	94.1	96.7	100.0
Hold pencil properly	93.9	94.3	92.4	96.0	93.8
Writes/draws rather than scribbles	77.9	78.6	75.9	81.2	73.2
Social and emotional development ⁶	28.8	32.2	22.4	23.5	13.8
Often has tantrums	23.1	19.3	30.9	23.5	47.8
Afraid to speak to strangers	42.6	43.3	41.2	43.1	34.8
Fidgets a lot	28.8	25.5	34.1	39.2	42.5
Has short attention span	23.1	19.5	30.3	31.6	26.1
Can be left with babysitter without fuss	90.6	80.5	69.7	68.4	73.9
Speech development ⁷	76.8	78.3	74.3	72.7	77.7
Speech understandable to strangers	92.4	93.3	90.9	92.9	81.5
Started speaking late	15.1	14.9	15.3	18.5	5.0
Stutters or stammers	7.3	6.3	9.5	6.7	10.7

¹ Children living with only one parent or with foster parents are included in the total but are not shown separately.

² Percentages for emerging literacy and numeracy are based on children who can identify all colors, recognize all letters of the alphabet, count to 50 or more, and write their own name.

³ Identify the colors red, yellow, blue, and green by name.

⁴ Includes children who cannot count at all.

⁵ Percentages for small motor development are based on children who can button clothes, hold a pencil properly, and write or draw rather than scribble.

⁶ Percentages for social and emotional development are based on children who do not have tantrums often, who are not afraid to speak to strangers, who do not fidget a lot, who do not have a short attention span, and who can be left with baby-sitters without a fuss.

⁷ Percentages for speech development are based on children whose speech is understandable to strangers, who did not start speaking late, and who do not stutter or stammer.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), 1993.

Table 4-4 Skills and behaviors of 4-year-olds not enrolled in kindergarten, by parents' highest education level: 1993

Skills and behaviors	Total	Parents' highest education level			
		Less than high school	High school graduate or equivalent	Some college ¹	College graduate ²
Percentage of children who can:					
Emerging literacy and numeracy ³	11.4	5.7	7.4	11.5	18.6
Identify colors ⁴					
All of them	84.2	51.0	78.3	91.7	94.2
Some of them	13.7	40.1	19.8	6.7	5.1
None of them	2.1	8.9	1.9	1.7	0.7
Recognize letters					
All of the letters of the alphabet	27.5	9.3	19.3	29.4	42.5
Most of them	29.7	21.4	31.4	31.7	27.9
Some of them	35.3	44.4	40.4	34.1	26.9
None of them	7.5	24.9	9.0	4.9	2.7
Count					
Up to 100 or more	9.5	4.6	6.2	9.6	15.4
Up to 50	11.2	4.9	8.1	14.6	13.3
Up to 20	41.5	24.0	43.9	41.0	45.1
Up to 10	30.1	44.7	32.4	29.4	22.9
Up to 5 ⁵	7.7	21.7	9.4	5.4	3.4
Write first name	70.3	54.0	64.1	72.8	81.2
Small motor development ⁶	71.6	66.0	71.2	72.0	73.4
Can button clothes	93.3	95.3	95.5	93.1	89.9
Hold pencil properly	93.9	95.2	94.3	92.8	94.4
Writes/draws rather than scribbles	77.9	70.1	74.6	80.6	81.7
Social and emotional development ⁷	28.8	13.9	23.4	30.8	38.6
Often has tantrums	23.1	41.2	25.8	20.8	15.9
Afraid to speak to strangers	42.6	44.3	47.2	40.7	38.3
Fidgets a lot	28.8	47.7	30.2	28.4	21.1
Has short attention span	23.1	44.0	25.7	22.3	13.7
Can be left with babysitter without fuss	90.6	75.6	87.2	94.1	95.9
Speech development ⁸	76.8	66.9	75.9	79.4	78.4
Speech understandable to strangers	92.4	81.6	90.7	94.4	96.0
Started speaking late	15.1	15.7	14.5	13.8	17.4
Stutters or stammers	7.3	16.3	7.9	5.9	5.2

¹ Includes vocational/technical education after high school or some college.

² Includes college graduates, or 1 year or more of graduate or professional school.

³ Percentages for emerging literacy and numeracy are based on children who can identify all colors, recognize all letters of the alphabet, count to 50 or more, and write their own name.

⁴ Identify the colors red, yellow, blue, and green by name.

⁵ Includes children who cannot count at all.

⁶ Percentages for small motor development are based on children who can button clothes, hold a pencil properly, and write or draw rather than scribble.

⁷ Percentages for social and emotional development are based on children who do not have tantrums often, who are not afraid to speak to strangers, who do not fidget a lot, who do not have a short attention span, and who can be left with babysitters without a fuss.

⁸ Percentages for speech development are based on children whose speech is understandable to strangers, who did not start speaking late, and who do not stutter or stammer.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey (NHES), 1993.

Table 5-1 Percentage of students who used a computer at school and/or at home, by selected characteristics: 1984

Current education level, race/ethnicity, and family income level*	Used a computer at school and at home	Used a computer at school but not at home	Used a computer at home but not at school	Used a computer at school or at home
Total	5.5	23.0	6.5	35.0
Preschool				
Total	0.7	4.1	7.2	12.1
White	0.9	4.2	8.8	13.9
Black	0.0	3.2	2.1	5.3
Hispanic	0.0	4.5	1.7	6.1
Low	0.0	2.8	0.3	3.0
Middle	0.2	3.9	5.8	10.0
High	1.9	4.9	11.9	18.7
Kindergarten				
Total	1.0	5.7	6.6	13.4
White	1.3	6.4	7.8	15.4
Black	0.2	2.0	4.3	6.6
Hispanic	0.0	3.8	2.9	6.7
Low	0.0	2.0	1.3	3.3
Middle	0.7	5.5	6.2	12.4
High	3.0	10.4	13.5	26.9
Grades 1-6				
Total	6.2	25.1	5.9	37.2
White	7.8	28.6	7.0	43.4
Black	2.0	13.5	3.3	18.8
Hispanic	1.4	15.5	2.2	19.1
Low	1.0	18.1	1.5	20.6
Middle	4.8	25.4	5.2	35.4
High	14.0	29.5	11.1	54.5
Grades 7-12				
Total	6.5	24.2	7.8	38.5
White	7.7	25.9	9.3	43.0
Black	2.7	17.2	2.6	22.6
Hispanic	1.7	21.1	2.2	25.1
Low	1.2	20.7	2.4	24.3
Middle	5.3	24.9	5.5	35.7
High	11.4	24.4	14.7	50.4
Grade 13 and above				
Total	5.0	26.7	5.5	37.1
White	5.3	26.4	6.0	37.7
Black	2.8	26.0	2.6	31.4
Hispanic	2.8	29.7	2.6	35.1
Low	2.5	30.4	2.3	35.3
Middle	4.2	26.1	4.5	34.7
High	7.0	26.2	7.9	41.1

* Low income is the bottom 20 percent of all family incomes; high income is the top 20 percent of all family incomes; and middle income is the 60 percent in-between.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Table 5-2 Percentage of students who used a computer at school and/or at home, by selected characteristics: 1989

Current education level, race/ethnicity, and family income level*	Used a computer at school and at home	Used a computer at school but not at home	Used a computer at home but not at school	Used a computer at school or at home
Total	11.6	33.9	8.2	53.7
Preschool				
Total	1.4	6.9	9.1	17.4
White	1.7	7.5	10.2	19.4
Black	0.0	5.3	5.1	10.5
Hispanic	0.0	4.8	3.1	7.8
Low	1.2	6.3	4.4	12.0
Middle	1.0	6.1	6.9	14.0
High	2.1	8.3	14.4	24.8
Kindergarten				
Total	3.5	16.8	6.6	26.9
White	4.6	19.3	8.1	32.1
Black	0.6	8.9	2.1	11.6
Hispanic	0.0	12.5	3.1	15.6
Low	0.5	9.4	0.8	10.7
Middle	2.8	17.9	4.6	25.3
High	7.7	19.6	16.5	43.8
Grades 1-6				
Total	12.0	42.1	4.6	58.8
White	15.2	45.4	5.7	66.3
Black	4.3	31.6	1.9	37.9
Hispanic	4.0	38.5	1.2	43.7
Low	2.3	38.6	1.1	42.0
Middle	9.4	44.5	4.1	58.1
High	26.0	38.4	8.6	73.0
Grades 7-12				
Total	13.1	33.9	10.0	57.0
White	15.5	33.4	12.1	61.0
Black	6.0	35.7	3.6	45.4
Hispanic	5.7	33.2	4.4	43.3
Low	4.0	38.3	2.6	44.9
Middle	10.5	35.8	7.9	54.3
High	23.2	27.6	18.1	68.9
Grade 13 and above				
Total	13.8	30.9	12.3	56.9
White	14.8	29.9	13.4	58.1
Black	6.8	35.6	5.7	48.1
Hispanic	6.7	31.9	9.1	47.7
Low	12.7	37.5	9.0	59.1
Middle	11.5	30.2	10.5	52.2
High	17.6	29.1	16.3	62.9

* Low income is the bottom 20 percent of all family incomes; high income is the top 20 percent of all family incomes; and middle income is the 60 percent in-between.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Table 5-3 Percentage of students who used a computer at school and/or at home, by selected characteristics: 1993

Current education level, race/ethnicity, and family income level*	Used a computer at school and at home	Used a computer at school but not at home	Used a computer at home but not at school	Used a computer at school or at home
Total	18.8	40.3	9.1	68.1
Preschool				
Total	3.2	8.8	12.6	24.7
White	3.4	8.8	14.6	26.8
Black	0.4	8.6	6.7	15.7
Hispanic	3.5	8.6	3.3	15.4
Low	0.1	9.1	0.9	10.1
Middle	2.9	8.6	9.2	20.6
High	5.1	9.1	23.0	37.2
Kindergarten				
Total	8.6	28.1	7.4	44.1
White	11.8	31.9	9.5	53.1
Black	0.8	20.7	1.9	23.5
Hispanic	2.2	19.8	3.2	25.2
Low	0.8	28.0	1.0	29.8
Middle	6.4	28.2	7.2	41.7
High	21.6	28.0	14.1	63.7
Grades 1-6				
Total	19.7	50.0	4.3	74.0
White	25.3	49.6	5.2	80.1
Black	6.2	50.4	2.5	59.1
Hispanic	5.4	52.4	1.7	59.5
Low	3.3	56.5	0.8	60.5
Middle	15.3	53.7	3.5	72.6
High	42.6	35.9	8.9	87.3
Grades 7-12				
Total	20.6	40.7	9.2	70.4
White	25.7	37.8	11.3	74.8
Black	7.9	47.2	3.3	58.3
Hispanic	6.4	50.3	3.8	60.5
Low	4.6	48.6	1.5	54.8
Middle	16.5	44.7	7.2	68.4
High	37.7	27.8	17.6	83.0
Grade 13 and above				
Total	21.1	33.6	16.9	71.6
White	22.3	31.7	18.6	72.6
Black	15.8	41.3	8.7	65.8
Hispanic	14.4	37.6	12.2	64.2
Low	17.4	40.5	11.3	69.1
Middle	18.8	34.0	15.3	68.1
High	26.4	29.8	22.1	78.3

* Low income is the bottom 20 percent of all family incomes; high income is the top 20 percent of all family incomes; and middle income is the 60 percent in-between.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Table 6-1 Percentage of high school students in grades 10–12, aged 15–24, enrolled the previous October who were enrolled again the following October or who had completed high school, by sex and race/ethnicity: October 1972–93

October	Total	Male	Female	White	Black	Hispanic	Male			Female		
							White	Black	Hispanic	White	Black	Hispanic
1972	93.9	94.1	93.7	94.7	90.5	88.8	95.0	90.2	88.5	94.4	90.7	89.1
1973	93.7	93.2	94.3	94.5	90.1	90.0	94.0	88.2	92.1	95.0	91.8	88.2
1974	93.3	92.6	94.0	94.2	88.4	90.1	93.4	89.2	87.2	95.1	87.7	92.9
1975	94.2	94.6	93.9	95.0	91.3	89.1	95.3	91.6	89.7	94.6	91.0	88.4
1976	94.1	93.5	94.8	94.4	92.6	92.7	93.7	91.5	92.4	95.1	93.7	92.9
1977	93.5	93.1	93.9	93.9	91.4	92.2	93.4	92.2	90.2	94.4	90.7	94.7
1978	93.3	92.5	94.1	94.2	89.8	87.7	93.6	89.0	84.1	94.9	90.5	91.5
1979	93.3	93.2	93.3	94.0	90.1	90.2	93.6	92.2	89.5	94.3	88.3	90.9
1980	93.9	93.3	94.5	94.8	91.8	88.3	94.3	92.3	82.4	95.2	91.3	93.3
1981	94.1	94.0	94.2	95.2	90.3	89.3	94.8	90.6	89.3	95.5	90.0	89.3
1982	94.5	94.2	94.9	95.3	92.2	90.8	95.1	91.1	90.5	95.4	93.4	91.2
1983	94.8	94.2	95.3	95.6	93.0	89.9	95.3	93.1	86.2	96.0	92.9	93.8
1984	94.9	94.6	95.2	95.6	94.3	88.9	95.2	94.0	87.7	95.9	94.5	89.8
1985	94.8	94.6	95.0	95.7	92.2	90.2	95.4	91.7	90.6	95.9	92.7	90.0
1986	95.3	95.3	95.3	96.3	94.6	88.1	96.2	94.9	87.6	96.3	94.3	88.7
1987	95.9	95.7	96.2	96.5	93.6	94.6	96.1	93.8	95.2	96.9	93.3	94.0
1988	95.2	94.9	95.6	95.8	94.1	89.6	95.7	93.8	87.7	95.9	94.4	91.8
1989	95.5	95.5	95.5	96.5	92.2	92.2	96.3	93.0	92.2	96.7	91.4	92.3
1990	96.0	96.0	96.1	96.7	95.0	92.1	96.5	95.8	91.3	96.9	94.3	92.8
1991	96.0	96.2	95.8	96.8	94.0	92.7	97.2	94.7	89.9	96.3	93.2	95.4
1992*	95.5	96.1	95.1	96.3	95.0	91.8	96.5	96.7	92.4	96.0	93.3	91.0
1993*	95.5	95.4	95.7	96.1	94.2	93.3	95.9	93.6	94.9	96.3	94.7	92.0

* Beginning in 1992, the Current Population Survey changed the questions it used to obtain the educational attainment of respondents. See the supplemental note to *Indicator 22* for further discussion.

NOTE: Data for 1987 through 1993 reflect new editing procedures instituted by the Bureau of the Census for cases involving missing data on school enrollment items.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys. U.S. Department of Education, National Center for Education Statistics, *Dropout Rates in the United States: 1993*.

Table 6-2 Continuous attendance and grade level progression rates for students aged 15–24, by sex, race/ethnicity, and grade level the previous October: October 1993

Grade last year	Total	Sex		Race/ethnicity ¹		
		Male	Female	White	Black	Hispanic
Continuous attendance rate (percent) ²						
9–11 average	97.0	97.1	97.0	97.2	96.1	96.3
9	98.4	98.4	98.4	99.0	97.2	96.3
10	96.5	96.3	96.7	96.8	95.1	96.2
11	96.1	96.4	95.8	95.9	96.0	96.4
12	64.3	62.9	65.5	66.1	53.5	59.1
13–15 average	82.3	82.3	82.3	83.2	73.0	81.4
13	79.5	78.9	80.0	81.5	64.3	79.5
14	82.2	81.2	83.3	81.4	83.0	82.1
15	88.2	90.9	85.7	89.1	79.0	(3)
16	38.7	44.5	33.0	39.3	(2)	(3)
17	60.5	63.1	58.5	60.5	(2)	(3)
Grade level progression rate (percent) ²						
9–11 average	97.1	96.3	97.8	97.8	94.7	96.2
9	97.0	96.0	98.1	97.4	95.1	97.2
10	96.8	96.0	97.7	97.7	94.0	95.1
11	97.4	97.1	97.7	98.3	94.9	96.1
12	94.0	91.4	96.4	94.8	86.2	97.5
13–15 average	88.2	88.2	88.1	88.4	88.8	81.7
13	87.6	87.9	87.3	88.0	88.3	83.4
14	86.4	85.3	87.5	86.5	87.2	79.5
15	92.0	93.1	90.8	92.0	92.7	(3)
16	63.4	66.4	59.5	65.4	(3)	(3)
17	54.7	(3)	50.4	52.8	(3)	(3)

¹ Not shown separately are non-Hispanics who are neither black nor white, but who are included in the total.

² The continuous attendance rate is the percentage of those enrolled the previous October who were enrolled again the following October. The grade level progression rate is the percentage of those enrolled two consecutive Octobers who advanced at least one grade level between one October and the next. At most grade levels, the continuous attendance rate is conceptually similar to the school persistence rate of table 6-1, but is numerically slightly different because of data used to measure grade level the previous October. However, the continuous attendance rate for grade 12 is the percentage of students in grade 12 the previous October who enrolled in college (or in grade 12 again) the following October. Similarly, the continuous attendance rate for grade 16 (4th year of college) is the percentage of students in grade 16 the previous October who enrolled in the 5th year of college (or in the 4th year again) the following October.

³ Too few sample observations for a reliable estimate.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Table 6-3 Rate, number, and distribution of status dropouts,¹ by sex, race/ethnicity, income, and region: October 1993

Student characteristic	Status dropout rate	Number of status dropouts (in thousands)	Percent of all dropouts
Total	11.0	3,396	100.0
Sex			
Male	11.2	1,715	50.5
Female	10.9	1,681	49.5
Race/ethnicity²			
White	7.9	1,707	50.3
Black	13.6	615	18.1
Hispanic	27.5	989	29.1
Family income³			
Low	23.9	1,442	42.5
Middle	9.9	1,764	51.9
High	2.7	190	5.6
Region			
Northeast	8.5	488	14.4
Midwest	8.8	674	19.8
South	13.0	1,424	41.9
West	12.5	809	23.8

¹ Status dropouts for 1993 are those persons ages 16–24 in October 1993 who have not completed high school and who are not enrolled at one point in time, regardless of when they dropped out.

² Not shown separately are non-Hispanics who are neither black nor white, but who are included in the total.

³ Low income is the bottom 20 percent of all family incomes; high income is the top 20 percent of all family incomes; middle income is the 60 percent in-between.

NOTE: Percentages may not add to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Dropout Rates in the United States: 1993*, table 8 (based on U.S. Department of Commerce, Bureau of the Census, Current Population Surveys, October 1993).

Note on persistence rates

The event dropout rate is the number of dropouts in the past twelve months (or from one October to the next) as a percentage of estimated 10th-, 11th-, and 12th-grade enrollment the previous October. The high school persistence rate is 100 minus the event dropout rate.

The high school persistence rate is defined as the proportion of students enrolled in grades 10, 11, and 12 the previous October who either enrolled again the following October or who graduated from high school. Calculating these rates requires estimating 1) the number who left high school before graduating (recent dropouts), and 2) the number of students enrolled in grades 10, 11, and 12 the previous October. Using the October Current Population Survey (CPS), the first is estimated as the number of persons 15 to 24 years old who were not enrolled during the month of the survey, but who were enrolled 1 year earlier, and who have not completed 12 years of schooling. The second is estimated by the sum of three groups of those enrolled the previous October: 1) recent dropouts, 2) those 15- to 24-year-olds enrolled in grades 11 and 12 during the survey month, and 3) those 15- to 24-year-olds who have completed 12 (or more) years of schooling and who indicate they graduated during the survey year. Those enrolled in special schools are counted as "not enrolled in regular school" and may be classified as recent dropouts if they had been enrolled in a regular school the previous October.

Change in reporting of educational attainment

From 1972 to 1991, educational attainment in the CPS is reported as "years of schooling completed." Individuals with 12 years of schooling completed are regarded as high school graduates, and those with 16 years completed as college graduates. Years of schooling completed is based on the responses to two questions: 1) "What is the highest grade . . . ever attended?" and 2) "Did . . . complete it?" For example, an individual who responds that the highest grade ever attended was the first year of college and that he/she did not complete it is regarded as having completed 12 years of schooling.

Beginning in 1992, the two questions were changed to a single question: "What is the highest level of school ... has completed or the highest degree ... has received?" The earlier high school levels are listed as single summary categories such as "9th grade, 10th grade, or 11th grade." Then, several new categories were added, including "12th grade, no diploma; H.S. graduate - diploma or equivalent; Some college - no degree." Finally, the different college degrees are listed by type, allowing for a more exact understanding of educational attainment. See note to *Indicator 22* for further discussion of the effects of this change in the measurement of educational attainment.

Table 7-1 Average undergraduate tuition, room, and board (in 1994 constant dollars) and as a percentage of the income of all families at selected family income percentiles, by control of institution: 1964–93

Year	Public institutions				Private institutions			
	Constant dollars	Family income percentile			Constant dollars	Family income percentile		
		20th	50th	80th		20th	50th	80th
1964	\$4,514	29.0	14.4	9.2	\$9,061	58.3	28.8	18.6
1965	4,572	27.7	14.0	9.0	9,325	56.6	28.5	18.3
1966	4,626	25.6	13.4	8.7	9,576	53.1	27.7	17.9
1967	4,643	25.5	13.2	8.5	9,622	52.8	27.3	17.6
1968	4,648	24.0	12.6	8.1	9,657	49.8	26.2	16.9
1969	4,726	23.4	12.4	7.9	9,939	49.1	26.0	16.7
1970	4,808	24.7	12.7	8.1	10,228	52.5	27.1	17.2
1971	4,894	25.6	13.0	8.2	10,520	55.1	27.9	17.7
1972	5,054	25.4	12.8	8.0	10,532	52.9	26.7	16.7
1973	4,828	23.8	12.0	7.5	10,071	49.5	25.0	15.6
1974	4,479	22.5	11.5	7.2	9,751	48.9	25.1	15.7
1975	4,458	23.4	11.8	7.3	9,802	51.4	25.9	16.1
1976	4,523	23.3	11.6	7.3	9,876	50.9	25.3	15.8
1977	4,473	23.1	11.4	7.0	9,852	50.9	25.1	15.5
1978	4,320	21.8	10.8	6.6	9,779	49.3	24.4	15.0
1979	4,139	20.7	10.3	6.4	9,390	46.9	23.4	14.6
1980	4,065	21.9	10.7	6.5	9,371	50.6	24.7	15.1
1981	4,199	23.6	11.5	6.9	9,723	54.6	26.6	15.9
1982	4,453	25.9	12.4	7.2	10,463	60.7	29.0	17.0
1983	4,601	26.4	12.5	7.4	10,947	62.9	29.8	17.5
1984	4,782	26.8	12.7	7.4	11,508	64.5	30.5	17.8
1985	4,870	26.8	12.7	7.4	12,117	66.6	31.7	18.3
1986	5,076	27.0	12.7	7.4	12,909	68.7	32.4	18.9
1987	5,188	27.5	12.9	7.5	13,466	71.4	33.4	19.5
1988	5,234	27.6	13.0	7.5	13,701	72.3	33.9	19.5
1989	5,264	27.5	12.9	7.4	14,046	73.3	34.3	19.7
1990	5,271	27.6	13.1	7.5	14,306	74.8	35.6	20.5
1991	5,514	29.8	14.1	8.0	14,933	80.6	38.1	21.8
1992*	5,601	31.2	14.4	8.2	15,237	84.9	39.1	22.4
1993	5,781	33.0	15.2	8.4	15,766	90.0	41.3	22.9

* Revised from previously published figures.

NOTE: Tuition data are for academic years beginning 1964–93, and family income data are for calendar years 1964–93. Both calendar and school year Consumer Price Indexes (CPIs) were used to calculate constant dollar figures. Higher education institutions include universities, 4-year colleges, and 2-year colleges.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics*, 1994, table 304. U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-60, *Money Income of Families and Persons in the United States*, various years (based on the March supplement to the Current Population Survey).

Table 7-2 Average undergraduate tuition and fees (in 1994 constant dollars) paid by students in higher education institutions, by type and control of institution: Academic years beginning 1964-93

Academic year beginning	Public				Private			
	All	Universities	Other 4-year	2-year	All	Universities	Other 4-year	2-year
1964	\$1,138	\$1,395	\$1,049	\$463	\$5,093	\$6,072	\$4,789	\$3,286
1965	1,178	1,498	1,104	499	5,288	6,273	4,976	3,519
1966	1,222	1,599	1,150	537	5,477	6,467	5,161	3,753
1967	1,217	1,574	1,152	619	5,576	6,595	5,318	3,835
1968	1,209	1,545	1,152	697	5,669	6,715	5,473	3,919
1969	1,250	1,653	1,184	689	5,934	7,002	5,682	4,002
1970	1,292	1,759	1,222	688	6,198	7,287	5,900	4,082
1971	1,336	1,869	1,258	682	6,467	7,579	6,115	4,164
1972	1,390	1,933	1,554	796	6,483	7,603	6,305	4,170
1973	1,374	1,822	1,452	859	6,237	7,448	6,037	4,086
1974	1,220	1,691	1,265	782	5,976	7,379	5,516	3,859
1975	1,142	1,693	1,236	646	5,990	7,595	5,494	3,762
1976	1,193	1,717	1,404	706	6,145	7,599	5,858	3,966
1977	1,194	1,718	1,391	715	6,125	7,564	5,882	3,981
1978	1,158	1,658	1,329	698	6,121	7,444	5,916	3,908
1979	1,099	1,581	1,247	668	5,895	7,177	5,688	3,883
1980	1,072	1,544	1,218	660	5,904	7,215	5,722	4,073
1981	1,109	1,619	1,263	675	6,141	7,593	5,986	4,047
1982	1,189	1,734	1,394	705	6,612	8,317	6,449	4,481
1983	1,280	1,844	1,511	758	6,968	8,931	6,789	4,452
1984	1,342	1,916	1,544	807	7,347	9,460	7,099	4,818
1985	1,404	2,064	1,555	861	7,778	9,908	7,579	4,934
1986	1,454	2,170	1,640	868	8,302	10,670	8,112	4,842
1987	1,538	2,179	1,776	891	8,820	11,071	8,297	5,252
1988	1,550	2,227	1,828	881	9,001	11,402	8,653	5,812
1989	1,561	2,343	1,852	871	9,381	11,916	8,956	5,983
1990	1,587	2,358	1,864	900	9,578	12,424	9,159	6,081
1991	1,718	2,550	2,044	991	9,980	12,898	9,577	6,085
1992	1,828	2,671	2,249	1,052	10,199	13,393	9,780	6,215
1993*	1,939	2,822	2,368	1,113	10,593	13,812	10,151	6,343

* Preliminary data based on fall 1992 enrollment weights.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1994*, tables 304 and 38.

Table 8-1 Cost of college attendance and student financial aid for undergraduate students, by type and control of institution, dependency and attendance status, and family or household income of student: 1992-93

Type and control of institution, dependency and attendance status, and family or household income of student ¹	Estimated population (thousands)	Tuition and fees	Total cost ²	Grants	Total aid ³	Net cost ⁴	Expected family contribution ⁵	Additional family contribution ⁶
Public 4-year institutions								
Dependent, full-time, full-year, 1 institution	2,151	\$3,111	\$9,816	\$963	\$2,038	\$7,778	\$9,253	\$2,156
Low income	434	2,686	9,356	2,288	4,073	5,283	2,485	3,337
Lower middle	434	2,893	9,498	1,081	2,671	6,827	5,158	2,777
Upper middle	485	2,995	9,699	636	1,587	8,113	7,735	2,018
High income	627	3,512	10,285	388	949	9,336	18,110	982
Dependent, full-time	2,999	2,947	9,187	855	1,864	7,326	9,347	1,952
Low income	607	2,559	8,820	2,041	3,746	5,070	2,505	3,132
Lower middle	601	2,728	8,878	961	2,422	6,426	5,255	2,429
Upper middle	719	2,846	8,924	509	1,331	7,598	7,840	1,784
High income	831	3,382	9,758	354	890	8,879	18,727	836
Private, not-for-profit 4-year								
Dependent, full-time, full-year, 1 institution	1,110	11,872	18,537	3,787	6,127	12,409	11,264	4,485
Low income	218	9,768	16,097	6,274	9,548	6,549	2,490	5,056
Lower middle	191	11,238	17,925	5,399	9,024	8,914	4,928	5,296
Upper middle	184	12,037	18,642	4,901	7,756	10,886	8,117	4,475
High income	451	12,948	19,781	1,886	3,331	16,449	19,550	3,856
Dependent, full-time	1,427	11,004	17,301	3,455	5,697	11,552	10,927	4,171
Low income	302	8,444	14,232	5,417	8,350	5,872	2,343	4,425
Lower middle	253	10,560	16,905	4,890	8,270	8,590	4,989	4,980
Upper middle	244	11,195	17,422	4,240	6,934	10,407	7,988	4,204
High income	548	12,399	18,958	1,736	3,150	15,752	19,755	3,633
Private, for-profit								
Dependent, full-time	352	5,223	10,510	810	3,154	7,350	5,026	4,330
Low income	145	4,921	9,684	1,498	3,754	5,888	1,865	4,711
Lower middle	111	5,321	10,420	384	3,040	7,353	4,717	4,481
Upper middle	51	6,017	12,324	131	2,436	9,911	7,046	4,542
High income	30	5,689	12,785	184	2,607	10,200	19,409	1,719
Independent, full-time	726	4,748	10,248	1,346	3,395	6,840	2,534	5,467
Low income	337	4,616	9,855	1,712	3,610	6,225	1,112	5,690
Lower middle	186	4,783	10,240	1,198	3,507	6,722	2,375	5,378
Upper middle	115	4,778	10,432	836	2,967	7,449	3,280	5,770
High income	87	5,137	11,530	931	2,923	8,625	7,367	4,403
Public 2-year								
Dependent, full-time	1,413	1,072	6,410	395	600	5,717	7,119	1,886
Low income	336	948	6,199	1,027	1,322	4,848	2,418	2,852
Lower middle	460	1,052	5,995	312	588	5,348	4,685	1,857
Upper middle	308	1,134	7,060	122	247	6,686	6,701	1,992
High income	215	1,311	6,745	83	167	6,367	20,693	199
Independent, part-time	3,894	347	2,661	204	344	2,301	4,921	1,188
Low income	547	467	4,166	653	1,036	3,122	1,533	2,225
Lower middle	859	393	3,152	233	440	2,694	3,975	1,449
Upper middle	1,192	315	2,435	115	209	2,220	5,491	1,100
High income	1,293	294	1,897	78	112	1,759	6,457	657
Private 2-year								
Dependent, full-time	77	3,857	9,122	1,023	2,286	6,779	6,104	2,375
Low income	22	3,620	8,350	2,246	4,087	4,181	2,016	2,906
Lower middle	17	3,841	8,568	662	2,541	6,027	5,740	1,666
Upper middle	20	3,843	9,307	250	891	8,416	6,812	2,609
High income	—	—	—	—	—	—	—	—

— Not available.

¹ The four categories of family income correspond to the four quartiles of family income calculated separately for dependent and independent students. For dependent students, the dividing points between income categories are \$27,000; \$45,000; and \$60,000. For independent students, the dividing points are \$10,000; \$21,000; and about \$36,000.

² Includes budget allowances for student living expenses and is adjusted for less than full-time or full-year attendance.

³ Includes grants, loans, work-study earnings, and other forms of aid, such as PLUS loans to parents.

⁴ Total cost minus total aid.

⁵ Expected family contribution (EFC) is calculated using the Congressional Methodology (CM) and is dependent on family income and assets and number of siblings in college. The student is also expected to contribute from summer job earnings. However, there are exceptions and EFC can be zero.

⁶ Total cost minus total aid (excluding certain aid, such as PLUS loans to parents, that can be used to finance EFC) minus EFC. However, EFC is greater than net cost for many students, particularly those from high income families. "Additional family contribution" (AFC) is set to zero for those students. Thus, the average of AFC is greater than the difference between average net cost and average expected family contribution in the previous two columns.

NOTE: See supplemental note for further discussion of financial aid concepts and their calculation.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Postsecondary Student Aid Study: 1993 (Data Analysis System).

Supplemental note for Indicator 8

The following definitions are used in the tables of *Indicator 8* and may clarify who or what is included or excluded in the various statistics.

Family income: For dependent students, the four categories, "low income," "lower middle," "upper middle," and "high income" are calculated on the basis of the income of their parents and correspond to the four quartiles of the distribution of parental family income. For independent students, the calculation is the same but is based on the income of the student and their spouse. It is the sum of adjusted gross income for the 1991 calendar year and any untaxed income.

Dependency status: Students were considered independent of their parents for financial aid purposes if the institutional records indicated they were independent or if one of the following seven criteria were met: 1) the student was 24 years old on 12/31/92; 2) the student was a veteran; 3) the student was an orphan or a ward of the court; 4) the student had legal dependents other than a spouse; 5) the student was married and not claimed as a dependent on a parent's 1992 tax return; 6) the student was a graduate student and not claimed as a dependent on a parent's 1992 tax return; and 7) the student was single, an undergraduate, had not been claimed as a dependent on a parent's tax return for the previous 2 years, and was self-sufficient for 2 years prior to receiving any federal aid.

Tuition and fees: The actual amount of tuition charged the student for all terms attended at all institutions during the 1992–93 academic year.

Total cost: The sum of tuition, fees, and the student budget for nontuition expenses. The latter includes the cost of books and supplies, room and board, and commuting and other costs. The latter is also adjusted for students who attended less than full time for the full 1992–93 academic year. If the student was enrolled less than full time/full year, the student budget allowance for nontuition expenses was set equal to 75 percent of the allowance for full-time, full-year students during months the student attended at least half time but less than full time, and to 25 percent during months the student attended less than half time.

Grants: Total amount of all grants from federal, state, institutional, or other sources such as employer-paid tuition and National Merit Scholarships.

Net cost: Total cost (total student budget allowance, tuition and nontuition combined, adjusted for actual attendance status) minus total aid. Total aid is comprehensive and includes, for example, SLS loans (federal supplemental loans for students) and PLUS loans to parents (federal loans to parents with at least half-time dependent students) and aid received from the Veteran's administration and the Department of Defense.

Expected family contribution (EFC): Used to calculate a student's need for financial aid. The most widely used methodology during the 1992–93 academic year was the Congressional Methodology (CM). The CM EFC is the sum of two components: a student contribution, and a parent contribution. The student is expected to contribute from savings and from summer jobs. The amount the parents are expected to contribute depends on their income and assets and other children in college. The EFC variable used in this indicator was taken from the student's financial aid records if available, computed using the CM if all the needed information was available, and imputed using regression methods otherwise. This variable can be interpreted as what is a reasonable amount for the student and family to contribute from currently available resources toward the student's postsecondary education.

Additional family contribution: Equal to total cost (see above) minus total aid subject to EFC limitations minus EFC. Negative values were set to zero. Total aid subject to EFC limitations includes Pell grants, Stafford loans, federal campus-based aid, and any other grant aid. It does not include SLS and PLUS loans that may be used to finance EFC. This variable can be interpreted as the amount students and their families must finance in addition to the "expected family contribution" to meet estimated costs of attendance and student living.

Table 9-1 **Percentage of high school graduates enrolled in college in the October following graduation, by sex and type of college: October 1972-93**

October	Male			Female		
	Total	2-year	4-year	Total	2-year	4-year
1972	52.7	—	—	46.0	—	—
1973	50.0	14.6	35.4	43.4	15.2	28.2
1974	49.4	16.6	32.8	45.9	13.9	32.0
1975	52.6	19.0	33.6	49.0	17.4	31.6
1976	47.2	14.5	32.7	50.3	16.6	33.8
1977	52.1	17.2	35.0	49.3	17.8	31.5
1978	51.1	15.6	35.5	49.3	18.3	31.0
1979	50.4	16.9	33.5	48.4	18.1	30.3
1980	46.7	17.1	29.7	51.8	21.6	30.2
1981	54.8	20.9	33.9	53.1	20.1	33.0
1982	49.1	17.5	31.6	52.0	20.6	31.4
1983	51.9	20.2	31.7	53.4	18.4	35.1
1984	56.0	17.7	38.4	54.5	21.0	33.5
1985	58.6	19.9	38.8	56.8	19.3	37.5
1986	55.8	21.3	34.5	51.9	17.3	34.6
1987	58.3	17.3	41.0	55.3	20.3	35.0
1988	57.1	21.3	35.8	60.7	22.4	38.3
1989	57.6	18.3	39.3	61.6	23.1	38.5
1990	58.0	19.6	38.4	62.2	20.6	41.6
1991	57.9	22.9	35.0	67.1	26.8	40.3
1992	*60.0	*22.1	*37.8	63.8	23.9	40.0
1993	58.7	22.4	36.3	64.0	22.4	41.6

— Not available. The first year for which data by type of college and sex is 1973. Data were not collected by type of college and sex in 1972.

* Revised from previously published figures.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Table 9-2 **Percentage of high school graduates enrolled in college in the October following graduation, by race/ethnicity and type of college: October 1972-93**

October	White			Black			Hispanic		
	Total	2-year	4-year	Total	2-year	4-year	Total	2-year	4-year
1972	49.7	—	—	44.6	—	—	45.0	—	—
1973	47.8	14.6	33.2	32.5	11.4	21.1	54.1	30.1	24.0
1974	47.2	13.9	33.3	47.2	16.4	30.8	46.9	30.0	16.8
1975	51.1	18.0	33.1	41.7	13.1	28.7	58.0	30.6	27.5
1976	48.8	14.9	33.9	44.4	11.3	33.1	52.7	36.5	16.2
1977	50.8	16.7	34.1	49.5	16.6	32.8	50.8	32.3	18.5
1978	50.5	16.4	34.1	46.4	17.5	28.9	42.0	20.4	21.6
1979	49.9	16.8	33.1	46.7	21.0	25.7	45.0	21.3	23.6
1980	49.8	18.8	31.0	42.7	18.8	23.9	52.3	30.9	21.4
1981	54.5	20.2	34.3	42.7	15.5	27.3	52.1	29.7	22.4
1982	52.7	19.5	33.2	35.8	12.7	23.2	43.2	23.4	19.8
1983	55.0	19.5	35.5	38.2	15.7	22.5	54.2	16.9	37.3
1984	59.0	18.7	40.3	39.8	19.8	20.0	44.3	23.9	20.4
1985	60.1	20.1	40.0	42.2	13.2	29.0	51.0	26.8	24.2
1986	56.8	19.9	36.9	36.9	12.7	24.3	44.0	28.5	15.5
1987	58.6	19.2	39.4	52.2	15.8	36.4	33.5	13.4	20.1
1988	61.1	22.2	38.9	44.4	16.7	27.6	57.1	25.9	31.2
1989	60.7	19.6	41.2	53.4	20.8	32.6	55.1	37.2	17.9
1990	63.0	19.7	43.3	46.8	19.6	27.2	42.7	27.0	15.7
1991	65.4	25.8	39.6	46.4	18.7	27.7	57.2	25.2	32.0
1992	64.3	23.0	41.3	48.2	17.4	30.8	55.0	29.4	25.6
1993	62.9	21.9	41.0	55.6	18.9	36.7	62.2	37.8	24.4

— Not available.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

Table 10-1 October 1991 activities of October 1990 students of 2-year institutions, by selected characteristics

Student characteristics	Population of all 2-year college students in October (thousands)	Percentage in each activity category						
		Students			Nonstudents			
		2-year school	4-year school pursuing a bachelor's degree	Other post-secondary students	Working full time	Working part time	Unemployed	Not in the labor force
All	1,650	9.1	11.0	2.7	47.1	15.6	7.1	7.2
Age in 1991								
15-20	373	16.1	18.4	2.4	31.1	19.6	6.7	5.7
21-24	401	9.0	19.1	2.1	46.7	9.2	8.6	5.3
25-29	296	5.9	6.1	2.4	50.2	19.4	8.0	8.0
30-35	232	10.3	2.2	6.6	56.7	13.2	6.2	4.8
36 and over	349	3.8	3.9	1.5	55.8	17.1	5.9	12.0
Race/ethnicity								
White	1,304	9.4	10.6	2.5	47.9	16.4	6.3	6.8
Black	164	10.2	11.7	1.7	50.7	9.4	9.9	6.4
Hispanic	129	4.9	11.6	3.8	43.6	17.0	6.5	12.5
Years of education completed by October 1991								
Less than a full year	418	6.7	3.6	0.5	49.1	21.5	8.0	10.6
1 year of college	467	17.1	7.7	2.0	40.6	15.5	11.6	5.7
2 years of college	527	5.9	21.5	3.0	46.5	13.5	5.4	4.3
3 years of college	238	5.1	7.5	7.5	58.0	10.4	0.9	10.7
Sex								
Male	700	10.1	14.0	3.3	50.0	10.5	8.3	3.6
Female	951	8.4	8.8	2.3	45.0	19.4	6.3	9.9

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Survey, October 1991.

Table 11-1 Median total time-to-degree and registered time-to-degree for doctorate degrees among U.S. citizens and permanent U.S. residents, by field of study: Year of doctorate 1970-93

Year of doctorate	Total	Humanities	Social and behavioral sciences	Natural sciences	Computer sciences and engineering	Education	Other technical/professional*
Total time-to-degree (TTD, in Median total years)							
1970	7.9	9.2	7.6	6.1	6.9	12.7	8.5
1971	8.0	9.3	7.4	6.3	7.3	12.8	8.5
1972	8.2	9.2	7.7	6.5	7.6	12.6	8.6
1973	8.5	9.3	7.9	6.8	8.0	12.5	8.8
1974	8.6	9.4	8.0	6.8	7.9	12.5	8.9
1975	8.7	9.6	8.0	6.7	7.9	12.6	9.3
1976	8.8	9.7	8.1	6.8	7.8	12.8	9.5
1977	8.8	10.0	8.2	6.9	7.6	12.7	9.4
1978	9.0	10.1	8.3	6.9	7.8	12.8	9.6
1979	9.1	10.4	8.7	6.7	7.6	12.9	9.6
1980	9.4	10.7	8.8	6.8	7.7	13.3	9.8
1981	9.6	10.7	9.1	6.8	8.1	13.7	9.9
1982	9.7	11.2	9.4	6.9	7.9	13.9	10.2
1983	10.0	11.2	9.6	7.1	7.9	14.3	10.6
1984	10.3	11.5	9.9	7.3	7.9	14.9	10.9
1985	10.5	11.9	10.1	7.3	8.0	15.4	11.5
1986	10.7	12.2	10.2	7.4	7.9	16.0	11.8
1987	10.8	12.2	10.6	7.4	7.9	16.4	11.9
1988	10.9	12.4	10.8	7.5	8.0	17.2	12.4
1989	11.0	12.6	10.6	7.5	8.1	17.7	12.8
1990	11.3	12.4	10.9	7.6	8.2	18.3	12.9
1991	11.3	12.6	10.9	7.6	8.3	18.8	13.6
1992	11.3	12.3	11.0	7.8	8.4	19.3	13.8
1993	11.2	12.2	10.8	7.8	8.7	19.7	14.0
Registered time-to-degree (RTD, in Median total years)							
1970	5.6	6.0	5.6	5.3	5.3	6.3	5.4
1971	5.6	6.1	5.6	5.4	5.4	6.2	5.4
1972	5.8	6.2	5.8	5.6	5.6	6.2	5.6
1973	5.9	6.4	5.9	5.7	5.8	6.2	5.7
1974	6.0	6.6	5.9	5.6	5.7	6.4	5.8
1975	6.0	6.6	5.9	5.6	5.8	6.5	5.8
1976	6.0	6.8	6.0	5.6	5.8	6.4	5.9
1977	6.1	7.0	6.1	5.7	5.8	6.5	6.0
1978	6.2	7.2	6.2	5.7	5.9	6.6	6.0
1979	6.3	7.4	6.5	5.7	5.7	6.7	6.0
1980	6.4	7.6	6.6	5.8	5.8	7.0	6.1
1981	6.5	7.6	6.7	5.8	6.0	7.1	6.3
1982	6.6	8.0	6.9	5.9	6.1	7.3	6.4
1983	6.8	7.9	7.1	6.1	6.0	7.5	6.5
1984	7.0	8.2	7.3	6.2	5.9	7.8	6.7
1985	7.0	8.3	7.4	6.2	6.0	7.8	6.8
1986	7.0	8.3	7.4	6.2	6.1	7.9	7.0
1987	7.1	8.4	7.5	6.3	5.9	8.0	7.1
1988	7.2	8.5	7.7	6.3	6.0	8.3	7.1
1989	7.2	8.4	7.7	6.3	6.2	8.3	7.3
1990	7.2	8.3	7.8	6.4	6.2	8.3	7.3
1991	7.2	8.5	7.7	6.4	6.2	8.2	7.4
1992	7.3	8.3	7.7	6.5	6.3	8.3	7.4
1993	7.3	8.4	7.6	6.5	6.5	8.3	7.6

* Principally composed of agricultural sciences, business and management, communications, health sciences, and other occupationally oriented fields.

SOURCE: National Research Council, Survey of Earned Doctorates, Doctorate Records File, various years.

Table 11-2 Median total time-to-degree and registered time-to-degree for doctorate degrees among male U.S. citizens and permanent U.S. residents, by field of study: Year of doctorate 1970–93

Year of doctorate	Total	Humanities	Social and behavioral sciences	Natural sciences	Computer sciences and engineering	Education	Other technical/professional*
Total time-to-degree (TTD, in Median total years)							
1970	7.6	9.0	7.4	6.1	6.9	12.2	8.1
1971	7.7	9.2	7.3	6.2	7.3	12.4	8.3
1972	8.0	9.0	7.5	6.5	7.7	12.2	8.3
1973	8.3	9.2	7.8	6.8	8.0	12.1	8.6
1974	8.4	9.3	8.0	6.8	7.9	12.2	8.7
1975	8.5	9.7	8.0	6.7	7.9	12.3	9.0
1976	8.5	9.5	8.0	6.7	7.8	12.6	9.2
1977	8.5	9.8	8.2	6.9	7.7	12.4	9.2
1978	8.6	9.8	8.3	6.9	7.8	12.5	9.3
1979	8.7	10.1	8.5	6.6	7.6	12.5	9.5
1980	8.8	10.1	8.7	6.7	7.7	13.2	9.4
1981	8.9	10.1	8.9	6.6	8.1	13.3	9.4
1982	9.0	10.9	9.2	6.8	8.0	13.5	9.8
1983	9.2	10.6	9.4	7.0	7.9	14.1	9.9
1984	9.4	11.1	9.8	7.2	8.0	14.7	10.4
1985	9.6	11.4	9.9	7.2	8.1	15.0	10.6
1986	9.8	11.7	10.1	7.2	8.0	15.6	11.2
1987	9.9	11.6	10.6	7.3	7.9	16.0	11.0
1988	10.0	12.0	10.5	7.4	8.1	16.9	11.8
1989	9.9	12.2	10.5	7.5	8.1	17.1	11.8
1990	10.0	12.0	10.9	7.5	8.1	17.8	11.8
1991	10.1	12.2	10.8	7.5	8.2	18.1	12.8
1992	10.2	11.8	10.8	7.7	8.4	18.9	12.9
1993	10.2	12.0	10.5	7.7	8.7	19.0	12.7
Registered time-to-degree (RTD, in Median total years)							
1970	5.5	6.0	5.6	5.3	5.3	6.3	5.3
1971	5.6	6.1	5.5	5.4	5.4	6.1	5.4
1972	5.8	6.2	5.7	5.6	5.6	6.1	5.5
1973	5.9	6.3	5.9	5.7	5.8	6.2	5.8
1974	5.9	6.6	5.9	5.6	5.7	6.4	5.7
1975	5.9	6.5	5.8	5.6	5.8	6.6	5.9
1976	6.0	6.6	6.0	5.6	5.9	6.6	5.9
1977	6.1	6.8	6.1	5.7	5.8	6.6	5.9
1978	6.1	7.1	6.1	5.8	5.9	6.7	5.9
1979	6.2	7.2	6.4	5.8	5.7	6.9	6.1
1980	6.3	7.3	6.5	5.8	5.8	7.2	6.1
1981	6.3	7.2	6.7	5.8	6.0	7.4	6.2
1982	6.5	7.7	6.9	5.9	6.0	7.6	6.4
1983	6.6	7.7	7.1	6.1	6.0	7.7	6.4
1984	6.8	8.1	7.3	6.2	5.9	8.0	6.7
1985	6.8	8.1	7.4	6.2	6.0	8.0	6.8
1986	6.8	8.1	7.3	6.1	6.1	8.1	7.0
1987	6.9	8.1	7.5	6.2	5.9	8.2	7.1
1988	7.0	8.4	7.6	6.3	6.0	8.5	7.2
1989	7.0	8.2	7.8	6.3	6.2	8.4	7.2
1990	7.0	8.3	7.8	6.3	6.1	8.4	7.1
1991	7.0	8.2	7.8	6.4	6.2	8.4	7.3
1992	7.1	8.1	7.6	6.5	6.3	8.4	7.3
1993	7.1	8.3	7.6	6.5	6.4	8.4	7.4

* Principally composed of agricultural sciences, business and management, communications, health sciences, and other occupationally oriented fields.

SOURCE: National Research Council, Survey of Earned Doctorates, Doctorate Records File, various years.

Table 11-3 Median total time-to-degree and registered time-to-degree for doctorate degrees among female U.S. citizens and permanent U.S. residents, by field of study: Year of doctorate 1970-93

Year of doctorate	Total	Humanities	Social and behavioral sciences	Natural sciences	Computer sciences and engineering	Education	Other technical/professional*
Total time-to-degree (TTD, in Median total years)							
1970	9.7	9.7	8.2	6.4	7.8	15.1	14.9
1971	9.8	9.5	8.3	6.7	7.8	15.0	13.6
1972	9.8	9.3	8.4	6.7	7.7	14.6	12.1
1973	9.7	9.6	8.2	6.8	6.8	14.0	11.2
1974	9.5	9.5	8.1	6.7	7.7	13.4	11.7
1975	9.7	9.6	8.1	6.7	7.2	13.4	11.1
1976	9.8	10.0	8.2	6.9	7.3	13.1	10.8
1977	9.9	10.2	8.1	7.0	6.7	13.3	10.9
1978	10.2	10.5	8.5	7.1	8.4	13.4	11.0
1979	10.3	10.8	8.9	7.0	8.1	13.5	9.9
1980	10.6	11.2	9.0	6.9	7.5	13.6	10.7
1981	10.9	11.4	9.3	7.0	7.2	14.3	11.3
1982	11.1	11.7	9.7	7.1	7.8	14.3	11.0
1983	11.4	11.6	9.8	7.4	8.3	14.7	11.9
1984	11.8	12.0	10.3	7.6	7.4	15.3	12.1
1985	12.2	12.5	10.3	7.6	7.2	15.8	13.1
1986	12.4	12.9	10.4	7.8	7.7	16.5	12.7
1987	12.6	12.7	10.7	7.8	7.7	16.8	13.1
1988	12.7	13.0	11.2	7.8	7.3	17.5	13.5
1989	13.0	13.2	10.9	7.8	7.9	18.1	14.1
1990	13.3	12.7	11.0	8.1	8.5	18.7	14.5
1991	13.3	13.3	11.0	7.8	8.4	19.3	14.7
1992	13.3	13.0	11.2	7.9	8.0	19.6	15.0
1993	13.2	12.4	11.0	7.9	8.4	20.2	15.4
Registered time-to-degree (RTD, in Median total years)							
1970	5.9	6.1	5.9	5.4	6.3	6.2	6.1
1971	6.0	6.3	6.1	5.4	5.6	6.3	5.9
1972	6.0	6.3	6.0	5.4	6.1	6.3	5.9
1973	6.0	6.4	5.9	5.5	5.7	6.1	5.7
1974	6.1	6.5	6.0	5.5	4.9	6.3	5.8
1975	6.2	6.7	6.1	5.7	5.4	6.3	6.0
1976	6.1	7.1	6.1	5.7	5.2	6.1	5.8
1977	6.3	7.4	6.1	5.7	5.5	6.3	5.9
1978	6.4	7.5	6.3	5.7	6.2	6.4	6.2
1979	6.4	7.7	6.5	5.8	5.8	6.5	5.7
1980	6.6	8.1	6.7	5.9	6.1	6.8	6.1
1981	6.7	8.1	6.7	5.9	6.2	6.9	6.4
1982	6.8	8.3	7.0	6.0	6.0	7.1	6.3
1983	7.0	8.2	7.1	6.0	6.1	7.4	6.7
1984	7.2	8.3	7.3	6.1	5.7	7.6	6.7
1985	7.3	8.6	7.4	6.3	5.8	7.6	6.8
1986	7.3	8.6	7.5	6.3	6.1	7.8	7.0
1987	7.4	8.7	7.5	6.3	6.1	7.9	7.0
1988	7.5	8.8	7.7	6.3	5.9	8.2	7.2
1989	7.5	8.7	7.6	6.2	5.9	8.4	7.4
1990	7.6	8.4	7.8	6.5	6.4	8.2	7.4
1991	7.5	8.8	7.7	6.4	6.4	8.1	7.4
1992	7.6	8.5	7.9	6.5	6.3	8.3	7.5
1993	7.6	8.4	7.6	6.5	6.7	8.3	7.8

* Principally composed of agricultural sciences, business and management, communications, health sciences, and other occupationally oriented fields.

SOURCE: National Research Council, Survey of Earned Doctorates, Doctorate Records File, various years.

Table 11-4 Median total time-to-degree and registered time-to-degree for doctorate degrees among U.S. citizens and permanent U.S. residents, by primary source of financial support: Year of doctorate 1977-93

Year of doctorate	Total*	Personal	University				Federal research assistantship	Other Federal
			Teaching assistantship	Research assistantship	University fellowship	Other university		
Total time-to-degree (TTD, in Median total years)								
1977	8.8	12.0	7.8	6.9	7.3	10.3	—	8.3
1978	9.0	12.0	7.9	6.9	7.3	10.3	—	8.2
1979	9.1	12.0	7.9	6.8	7.4	11.5	—	8.3
1980	9.4	12.4	8.1	6.9	7.5	10.3	—	8.2
1981	9.6	12.4	8.2	7.1	7.7	10.4	—	8.0
1982	9.7	12.9	8.5	7.1	8.1	11.1	—	8.2
1983	10.0	13.3	8.7	7.2	8.1	11.0	—	8.2
1984	10.3	13.3	8.6	7.2	8.3	10.5	—	8.1
1985	10.5	13.7	8.8	7.3	8.3	11.3	—	8.1
1986	10.7	14.1	8.9	7.3	8.5	10.9	—	8.0
1987	10.8	14.1	8.8	7.5	8.1	11.6	7.2	9.0
1988	10.9	14.6	8.9	7.4	8.3	12.4	7.3	8.5
1989	11.0	14.8	9.1	7.5	8.5	13.1	7.1	8.0
1990	11.3	15.3	9.1	7.6	8.6	11.9	7.4	8.1
1991	11.3	15.6	8.9	7.6	8.5	10.7	7.1	7.9
1992	11.3	15.9	9.3	7.7	8.3	11.1	7.7	7.8
1993	11.2	16.4	9.2	7.9	8.7	10.9	7.2	8.0
Registered time-to-degree (RTD, in Median total years)								
1977	6.1	7.2	6.0	5.5	5.6	5.9	—	5.9
1978	6.2	7.1	6.1	5.6	5.6	6.1	—	5.8
1979	6.3	7.2	6.1	5.5	5.6	6.4	—	5.8
1980	6.4	7.4	6.2	5.7	5.8	6.5	—	5.9
1981	6.5	7.4	6.3	5.8	6.0	6.5	—	6.0
1982	6.6	7.7	6.4	5.8	6.0	6.6	—	6.1
1983	6.8	7.8	6.6	5.9	6.2	6.9	—	6.2
1984	7.0	7.9	6.7	6.0	6.4	7.0	—	6.3
1985	7.0	7.9	6.8	6.0	6.3	7.0	—	6.2
1986	7.0	8.0	6.7	6.0	6.4	7.0	—	6.3
1987	7.1	8.0	6.7	6.1	6.2	7.1	6.1	6.4
1988	7.2	8.2	6.8	6.1	6.4	7.6	6.2	6.3
1989	7.2	8.2	6.9	6.2	6.4	7.8	6.1	6.1
1990	7.2	8.2	7.0	6.2	6.5	7.4	6.2	6.2
1991	7.2	8.2	7.0	6.3	6.5	7.1	6.0	6.3
1992	7.3	8.4	7.1	6.3	6.3	7.2	6.5	6.3
1993	7.3	8.4	7.0	6.4	6.6	6.9	6.3	6.3

— Not available.

* Included in the total but not shown separately are doctorates with other primary sources of support including funds from business/employers, foreign governments, state governments, local governments, religious organizations, or welfare.

SOURCE: National Research Council, Survey of Earned Doctorates, Doctorate Records File, various years.

Table 12-1 Percentage of currently employed persons who took one or more courses during the last 12 months to improve their skills on their current job, by work status and worker characteristics: 1991

Characteristic	All workers	Full-time workers	Part-time workers
Total	29.5	33.1	16.4
Sex			
Male	29.3	32.3	8.9
Female	29.7	34.2	19.7
Race/ethnicity			
White	31.6	35.3	18.0
Black	20.1	22.6	7.5
Hispanic	22.7	26.8	10.7
Asian or Pacific Islander	20.6	22.4	15.1
American Indian	33.5	35.0	24.6
Age			
17-19	7.3	10.4	4.8
20-24	20.4	26.0	9.5
25-34	29.7	32.0	19.4
35-44	36.1	38.4	23.9
45-54	29.9	32.4	15.8
55-64	28.4	32.3	17.3
65 and older	18.6	29.1	9.2
Educational attainment			
Less than high school graduate	6.8	8.2	2.8
High school graduate	19.0	21.2	10.8
Vocational/trade school	36.7	39.4	23.4
Some college	33.1	39.4	16.1
Bachelor's degree	46.6	49.4	32.4
Advanced degree	50.3	53.4	34.9
Occupation			
Executive, professional, technical	49.9	51.2	41.2
Executive, administrative, managerial	47.1	47.8	34.3
Professional	51.3	53.2	42.8
Technical	49.7	52.2	36.9
Sales and administrative support	24.0	28.4	11.2
Sales	23.5	28.0	10.1
Administrative support	24.3	28.6	11.9
Service	17.8	22.4	12.0
Farming	7.0	7.3	4.0
Precision production, craft and repair	21.4	22.4	9.9
Operators, fabricators, laborers	19.2	21.7	8.0
Machine operators, assemblers, inspectors	21.9	24.3	3.8
Transportation and material movers	17.2	19.9	8.3
Handlers, equipment cleaners, laborers	15.4	16.7	12.2
Industry			
Agriculture, forestry, and fisheries	9.6	10.2	6.5
Mining	28.5	28.5	—
Construction	18.5	20.1	2.5
Manufacturing	28.7	30.8	9.1
Transportation, communications, public utilities	29.2	30.7	17.3
Trade	18.4	22.2	10.0
Finance, insurance, and real estate	43.8	49.8	20.4
Services	32.5	37.4	20.9
Public administration	47.3	49.2	22.5

— Too few workers for a reliable estimate.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Household Education Survey, 1991 (Adult Education Component).

Table 12-2 Percentage of workers who received skill improvement training at any time while on their current job, by worker characteristics: 1983 and 1991

Worker characteristics	1983	1991
Sex		
Male	35	40
Female	34	41
Age 16 and over	35	41
Age		
16-19	18	18
20-24	28	31
25-34	39	41
35-44	41	48
45-54	37	46
55-64	31	37
65 and over	19	25
Educational attainment		
High school graduate or less	26	29
Some college	41	46
College graduate	54	61
Occupation		
Executive, professional, technical	54	60
Executive, administrative, managerial	47	53
Professional	61	67
Technical	52	59
Sales and administrative support	32	38
Sales	32	35
Administrative support	32	40
Service	23	28
Private household workers	3	6
Service, except private household	25	29
Farming, forestry, fishing	16	21
Precision production, craft and repair	35	38
Operators, fabricators, laborers	19	22
Machine operators, assemblers, inspectors	22	25
Transportation and material moving	18	25
Handlers, equipment cleaners, laborers	14	15
Industry		
Agriculture, forestry, and fisheries	19	23
Mining	35	45
Construction	24	26
Manufacturing	31	38
Durable goods	34	40
Nondurable goods	28	35
Transportation, communications, public utilities	38	46
Trade	24	26
Wholesale	30	34
Retail	22	24
Finance, insurance, and real estate	47	54
Services	41	47
Business and repair services	29	34
Personal services	19	23
Entertainment and recreational services	24	32
Professional and related services	49	55
Public administration	58	68

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *How Workers Get Their Training: A 1991 Update*, Bulletin 2407, August 1992, table 38.

Table 13-1 Explanations of levels of reading proficiency**Level 350: Learns from specialized reading materials**

Readers at this level can extend and restructure the ideas presented in specialized and complex texts. Examples include scientific materials, literary essays, and historical documents. Readers are also able to understand the links between ideas, even when those links are not explicitly stated, and to make appropriate generalizations. Performance at this level suggests the ability to synthesize and learn from specialized reading materials.

Level 300: Understands complicated information

Readers at this level can understand complicated literary and informational passages, including material about topics they study at school. They can also analyze and integrate less familiar material and provide reactions to and explanations of the text as a whole. Performance at this level suggests the ability to find, understand, summarize, and explain relatively complicated information.

Level 250: Interrelates ideas and makes generalizations

Readers at this level use intermediate skills and strategies to search for, locate, and organize the information they find in relatively lengthy passages and can recognize paraphrases of what they have read. They can also make inferences and reach generalizations about main ideas and the author's purpose from passages dealing with literature, science, and social studies. Performance at this level suggests the ability to understand specific or sequentially related information.

Level 200: Partial skills and understanding

Readers at this level can locate and identify facts from simple informational paragraphs, stories, and news articles. In addition, they can combine ideas and make inferences based on short, uncomplicated passages. Performance at this level suggests the ability to understand specific or sequentially related information.

Level 150: Simple, discrete reading tasks

Readers at this level can follow brief written directions. They can also select words, phrases, or sentences to describe a simple picture and can interpret simple written clues to identify a common object. Performance at this level suggests the ability to carry out simple, discrete reading tasks.

NOTE: This scale has a range of 0–500 with a mean of 250 and a standard deviation of 50.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 13-2 Percentage of students aged 9, 13, or 17 scoring at or above five levels of reading proficiency: 1971, 1975, 1980, 1984, 1988, 1990, and 1992

Proficiency level	Age	Year						
		1971	1975	1980	1984	1988	1990	1992
Level 350:	9	0	0	0	0	0	0	0
Learns from specialized reading materials	13	0	0	0	0	0	0	1
	17	7	6	25	6	125	7	7
Level 300:	9	1	1	1	1	1	12	1
Understands complicated information	13	110	110	111	111	111	111	215
	17	139	139	138	40	41	41	243
Level 250:	9	16	15	18	17	18	18	16
Interrelates ideas and makes generalizations	13	58	59	61	59	59	59	62
	17	179	80	81	283	1286	284	282
Level 200:	9	59	262	1268	62	63	59	62
Partial skills and understanding	13	93	93	295	94	95	94	93
	17	96	96	297	1298	1299	298	97
Level 150:	9	91	293	1295	292	93	90	92
Simple, discrete reading tasks	13	100	100	100	100	100	100	100
	17	100	100	100	100	100	100	100

¹ Statistically significant difference from 1992.

² Statistically significant difference from 1971.

NOTE: See table 13-1 for further description of the proficiency levels.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 13-3 Percentile distribution of reading proficiency scores, by age and race/ethnicity: 1980, 1984, 1988, 1990, and 1992

Percentile	Age 9					Age 13					Age 17				
	1980	1984	1988	1990	1992	1980	1984	1988	1990	1992	1980	1984	1988	1990	1992
All students															
5	149	141	142	135	141	199	197	200	196	191	209	220	226	220	213
10	165	159	157	150	156	213	210	213	210	208	228	236	242	237	231
25	191	184	184	179	183	235	234	234	233	235	258	263	266	264	259
50	217	213	214	210	214	260	258	258	257	262	288	290	291	291	288
75	241	240	240	240	239	283	282	281	282	287	316	317	316	319	315
90	262	263	263	266	260	302	302	302	302	309	340	340	337	343	338
95	273	277	278	280	272	314	314	314	314	322	354	353	349	356	351
White															
5	161	152	150	144	153	209	205	204	204	204	226	230	233	229	229
10	175	167	165	160	167	222	218	217	217	219	242	246	247	246	244
25	199	192	192	188	193	243	241	238	240	243	267	271	271	271	268
50	223	220	219	218	221	265	263	262	263	268	294	297	295	298	294
75	246	245	244	247	244	287	286	285	286	292	320	322	320	324	319
90	265	267	267	271	264	306	305	304	306	312	343	343	340	347	341
95	276	280	281	285	276	317	317	316	318	324	357	356	352	360	354
Black															
5	123	121	125	115	119	179	180	191	182	170	176	202	214	201	188
10	139	135	138	129	132	191	192	202	194	185	191	216	228	217	206
25	165	159	162	153	156	211	213	222	217	210	217	239	251	242	235
50	192	187	188	182	185	233	236	242	243	239	244	264	274	268	263
75	216	213	217	211	214	255	259	264	266	266	270	288	300	294	288
90	236	235	238	236	236	275	280	284	286	287	293	311	321	316	312
95	247	248	252	251	249	286	293	299	299	303	307	324	333	331	328
Hispanic															
5	123	120	122	125	125	183	181	181	178	165	184	202	204	206	194
10	138	135	140	139	139	195	193	195	191	184	197	217	218	224	208
25	164	161	165	161	163	215	216	219	214	213	225	242	246	250	235
50	192	189	196	189	193	238	240	240	239	242	253	269	274	276	263
75	218	215	222	219	222	259	264	262	262	267	279	295	298	303	289
90	238	236	247	239	245	279	284	284	284	289	307	318	316	327	313
95	250	247	259	253	255	291	296	297	296	303	321	332	328	339	325

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 13-4 Average reading proficiency, by age and parents' highest education level: 1971, 1975, 1980, 1984, 1988, 1990, and 1992

Parents' highest education level	Year	Age 9		Age 13		Age 17	
		Percent of students	Average proficiency	Percent of students	Average proficiency	Percent of students	Average proficiency
Less than high school graduate	1971	110	189	116	238	120	261
	1975	110	190	1214	239	1216	262
	1980	26	2194	1210	238	1213	262
	1984	26	2195	129	240	1212	2269
	1988	25	192	28	2246	29	267
	1990	25	193	28	241	29	2270
	1992	25	195	26	239	28	271
Graduated from high school	1971	122	208	32	256	31	283
	1975	124	211	133	255	134	281
	1980	1.1225	12213	31	254	132	2278
	1984	1.12219	209	1235	253	1235	281
	1988	216	211	31	253	30	282
	1990	217	209	31	1251	30	283
	1992	215	207	28	252	28	280
Some education after high school	1971	133	224	138	270	142	302
	1975	134	222	140	270	1246	301
	1980	240	1226	1249	271	1251	299
	1984	136	223	1245	268	1250	301
	1988	245	220	252	2265	258	300
	1990	242	2218	1250	2267	258	300
	1992	244	220	256	270	260	299

¹ Statistically significant difference from 1992.

² Statistically significant difference from 1971.

NOTE: "Percent of students" represents the percentage of all students from each subgroup. Not shown are about one-third of students at age 9 and smaller percentages at ages 13 and 17 who did not know their parents' highest education level.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 13-5 Average proficiency scores, by age and grade: 1971, 1975, 1980, 1984, 1988, 1990, and 1992

Year	Below modal grade ¹		At modal grade ¹		Above modal grade ¹	
	Percent	Proficiency	Percent	Proficiency	Percent	Proficiency
Age 9						
1971	224	2178	275	2217	21	232
1975	223	23183	275	2218	231	226
1980	228	3189	271	3225	340	243
1984	2334	23187	2365	3223	340	3254
1988	2337	3193	2363	3223	1	262
1990	342	3189	358	3224	340	242
1992	343	3192	357	3224	340	243
Age 13						
1971	228	2230	271	2265	1	2278
1975	228	2232	272	2265	1	2278
1980	228	3240	270	2266	31	2274
1984	2337	3239	2362	2267	31	294
1988	2339	3243	2360	2267	1	2272
1990	2339	3243	2360	2266	1	290
1992	343	3243	356	3272	1	3312
Age 17						
1971	214	2238	273	2291	213	302
1975	215	2242	273	2292	212	302
1980	214	2244	2377	2291	39	300
1984	2322	3259	2368	23296	310	304
1988	2324	3265	3365	23296	212	305
1990	326	3261	2365	3299	39	310
1992	328	3261	364	3301	38	300

¹ Modal grade is the most common grade level for students of a particular age. For example, the modal grade at age 9 is fourth grade. Nine-year-olds in fifth grade are above modal grade, and 9-year-olds in third grade are below modal grade for their age.

² Statistically significant difference from 1992.

³ Statistically significant difference from 1971.

⁴ Less than 0.5 percent.

NOTE: The modal grades are grade 4 at age 9, grade 8 at age 13, and grade 11 at age 17. The modal grade is lower for 17-year-olds because of differences in age definition and in the time of year the assessment is given, causing more students to be above the modal grade at age 17 than at any other age. For a more complete explanation, see table 13-1.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 13-6 Average reading proficiency, by age and number of reading materials in the home: 1971 and 1992

Number of types of materials in the home	Year	Age 9		Age 13		Age 17	
		Percent of students	Average proficiency	Percent of students	Average proficiency	Percent of students	Average proficiency
0-2	1971	*28	*186	*17	*227	*11	*246
	1992	37	197	22	241	18	269
3	1971	32	*208	*25	*249	*22	*274
	1992	33	214	31	256	27	286
4	1971	*39	223	*58	*266	*67	296
	1992	30	224	48	271	55	299

* Statistically significant difference from 1992.

NOTE: Students were asked whether they had access to each of four types of reading material: newspapers, magazines, books, and encyclopedias.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992*, 1994.

Note on NAEP cohorts

Three of the NAEP assessments, reading, math, and science, report trends in the progress of students by age. Proficiencies are reported for ages 9, 13, and 17. The modal grades for these age groups are 4th, 8th, and 11th grade. The fourth assessment, writing, is given to students in grades 4, 8, and 11, regardless of their age. In all four subjects, it would appear that the time span between the youngest and middle age/grade is greater than between the middle and oldest group. However, the way age is defined (on a calendar or fiscal year basis) and the time at which each age/grade is assessed (fall, winter, or spring) results in the same length of time (or years of schooling) between the three age groups. A discussion of this methodology follows.

Age is determined on a calendar year basis for 9- and 13-year-olds, but on a fiscal year basis for 17-year-olds. In other words, the reading, math, and science scores in 1992 represent students born in 1982 (9-year-olds), students born in 1978 (13-year-olds), and students born between October 1, 1974, and September 30, 1975 (17-year-olds). The writing scores represent students in grades 4, 8, or 11 at the time of the assessment regardless of age.

In addition to different age definitions, the time of the school year when the assessment is administered varies across age levels: 9-year-olds/4th-graders are tested in the winter; 13-year-olds/8th-graders are tested in the fall; and 17-year-olds/11th-graders are tested in the spring for all the assessments. Since 9-year-olds are tested between January and February of the year they turn 10, and 13-year-olds are tested between October and December of the year they turn 13, the 13-year-olds have had almost $3\frac{3}{4}$ more years of schooling than the 9-year-olds. Likewise, since 17-year-olds are tested between March and May, they will be between $16\frac{1}{2}$ and $17\frac{1}{2}$ at the time of the assessment (the difference is due to the age being determined on a fiscal year basis); thus, they have had about $3\frac{3}{4}$ more years of exposure to school than 13-year-olds.

These different means of determining a student's age and the various testing times have been adopted in order to measure a uniform period of growth among the three age/grade groups. Comparing age/grade cohorts over time can be more problematic, however. Nine-year-olds in 1988 generally represent the same age cohort as 13-year-olds in 1992, two points in time not quite 4 years apart. However, the 17-year-olds tested in 1992 were generally younger than the 1988 13-year-old age cohort was in 1992. Therefore, care must be taken when examining student cohorts across assessments in different years.

Table 14-1 Explanations of levels of writing task accomplishment

Level 350: Effective, coherent writing

The writing at this level provides clear complete responses to the assigned task. It tends to contain supportive details and discussion that contributed to the effectiveness of the response. This writing is also characterized by an overall unity and coherence not found at the lower levels.

Level 300: Complete, sufficient writing

Responses at this level tend to be complete and to contain sufficient information to accomplish the basic task.

Level 250: Beginning, focused, clear writing

Writing at this level tends to be more focused and clear, containing enough development and detail likely to accomplish the assigned task successfully.

Level 200: Incomplete, vague writing

The writing at this level, although clearer and more detailed than at the previous level, still tends to be vague and incomplete.

Level 150: Disjointed, unclear writing

Writing at this level tends to be too brief and disjointed to be considered a response to the task or, when longer, so vague and unclear that it was hard to understand.

NOTE: This scale has a range of 0–500, with a mean of 250 and a standard deviation of 50.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *National Assessment of Educational Progress, Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 14-2 Percentage of students at or above each of five writing proficiency levels, by grade: 1984, 1988, 1990, and 1992

Proficiency levels	Grade	Year			
		1984	1988	1990	1992
Level 350:					
Effective, coherent writing	4	0	0	0	0
	8	10	10	121	22
	11	2	1	14	2
Level 300:					
Complete, sufficient writing	4	0	1	0	0
	8	113	113	112	225
	11	39	39	37	36
Level 250:					
Beginning, focused, clear writing	4	10	215	12	13
	8	72	167	1257	75
	11	89	193	284	87
Level 200:					
Incomplete, vague writing	4	54	56	53	58
	8	98	97	1293	98
	11	100	100	99	100
Level 150:					
Disjointed, unclear writing	4	93	91	189	93
	8	100	100	100	100
	11	100	100	100	100

¹ Statistically significant difference from 1992.

² Statistically significant difference from 1984.

NOTE: See table 14-1 for further description of the proficiency levels.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 14-3 Percentile distribution of writing proficiency scores, by grade and race/ethnicity: 1984, 1988, 1990, and 1992

Percentile	Grade 4				Grade 8				Grade 11			
	1984	1988	1990	1992	1984	1988	1990	1992	1984	1988	1990	1992
All students												
5	144	135	131	142	216	209	195	214	236	244	227	233
10	157	151	147	157	227	222	208	227	249	255	240	246
25	179	177	174	182	247	242	231	250	269	273	262	266
50	204	207	203	208	268	264	257	275	291	292	288	288
75	229	235	231	233	288	286	282	300	312	311	312	310
90	250	259	255	256	304	305	304	320	330	326	334	328
95	263	274	268	269	313	316	318	332	340	335	347	338
White												
5	155	151	146	159	224	216	202	220	249	252	235	244
10	167	165	162	172	235	229	215	234	260	263	247	256
25	188	189	186	194	253	248	237	256	277	279	269	275
50	211	216	211	217	273	270	262	280	298	297	294	295
75	233	242	237	240	291	290	287	304	316	314	317	314
90	255	265	260	261	306	309	308	324	333	329	338	331
95	266	278	272	273	315	319	322	335	343	338	350	341
Black												
5	124	109	105	117	201	194	182	200	222	232	213	216
10	135	122	120	130	212	205	193	212	232	243	225	226
25	160	148	144	152	228	226	216	232	252	258	245	245
50	182	173	172	176	248	247	240	257	270	276	268	264
75	205	200	198	198	265	266	263	282	290	294	291	283
90	228	224	223	218	281	285	284	306	309	309	311	300
95	240	238	239	229	292	296	297	319	318	318	324	309
Hispanic												
5	130	125	120	132	197	199	187	203	208	228	217	220
10	141	139	135	144	207	210	199	219	216	236	232	234
25	162	163	159	166	225	230	220	242	238	256	253	252
50	188	191	184	189	247	251	246	265	260	274	275	275
75	214	218	210	213	268	271	270	288	281	294	301	294
90	234	241	234	234	286	290	292	310	297	309	324	314
95	247	256	248	247	298	301	305	324	306	316	338	324

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 14-4 Average writing proficiency, by grade and parents' highest education level: 1984, 1988, 1990, and 1992

Parents' highest education level	Year	Grade 4		Grade 8		Grade 11	
		Percent of students	Average proficiency	Percent of students	Average proficiency	Percent of students	Average proficiency
Less than high school graduate	1984	17	179	110	258	11	274
	1988	5	194	8	254	8	276
	1990	6	186	8	246	8	268
	1992	24	191	27	258	8	271
Graduated high school	1984	120	192	135	1261	135	284
	1988	18	199	31	1258	130	285
	1990	18	197	133	12252	30	278
	1992	216	202	229	2268	227	278
Some education after high school	1984	5	208	110	271	115	298
	1988	5	211	11	275	18	296
	1990	5	214	12	1267	218	292
	1992	6	201	212	280	220	292
Graduated college	1984	133	218	136	1278	136	300
	1988	241	212	241	12270	41	299
	1990	240	2209	138	12265	40	298
	1992	242	214	244	2284	243	296

¹ Statistically significant difference from 1992.

² Statistically significant difference from 1984.

NOTE: "Percent of students" represents the percentage of all students from each subgroup. Not shown are about one-third of students at age 9 and smaller percentages at ages 13 and 17 who did not know their parents' highest education level.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 14-5 Percentage of students making various types of grammatical errors, by sex, type of error, and grade: 1984 and 1992

Type of errors	Grade	Total		Male		Female	
		1984	1992	1984	1992	1984	1992
Run-on sentences	4	15	13	14	13	17	14
	8	7	8	8	9	6	7
	11	5	5	5	5	4	5
Sentence fragments	4	3	4	3	5	3	4
	8	3	4	4	5	3	4
	11	3	4	4	5	2	4
Awkward sentences	4	25	32	26	33	25	32
	8	32	32	34	33	30	30
	11	31	26	35	28	27	25
Misspelled words	4	8	9	9	10	7	8
	8	4	4	4	5	3	3
	11	2	2	3	3	2	2
Word choice errors	4	1	1	1	1	1	1
	8	1	1	1	1	1	1
	11	1	1	1	1	1	1
Capitalization errors	4	1	1	1	1	1	1
	8	0	1	0	2	*0	1
	11	*0	1	*0	1	0	0

* Statistically significant difference from 1992.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992*, 1994.

Table 14-6 Average proficiency scores, by age and grade: 1984, 1988, 1990, and 1992

Year	Below modal age ¹		At modal age ¹		Above modal age ¹	
	Percent	Proficiency	Percent	Proficiency	Percent	Proficiency
Grade 4						
1984	1	204	263	212	236	190
1988	21	2225	261	210	238	199
1990	0	2226	59	205	240	196
1992	0	166	356	212	244	201
Grade 8						
1984	1	2242	264	2272	235	258
1988	1	259	359	2271	240	2254
1990	1	3304	359	2262	240	2248
1992	1	3289	358	2282	241	263
Grade 11						
1984	13	294	67	296	220	267
1988	11	299	268	297	221	270
1990	11	295	364	292	225	270
1992	10	295	64	293	226	269

¹ Modal age is the most common age of students in a particular grade level. For example, the modal age in fourth grade is 9 years old. Ten-year-olds in fourth grade are above modal age, and 8-year-olds in fourth grade are below modal age.

² Statistically significant difference from 1992.

³ Statistically significant difference from 1984.

NOTE: The modal ages are age 9 at grade 4, age 13 at grade 8, and age 17 at grade 11. The modal age is relatively higher for 11th-graders because of differences in the time of year the test is given to the different grade levels, causing more students to be below the modal age at 11th-grade than at any other grade. For a more complete explanation, see the supplemental note to Indicator 13.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 15-1 Explanations of levels of mathematics proficiency

Level 350: Multi-step problem solving and algebra

Students at this level can apply a range of reasoning skills to solve multi-step problems. They can solve routine problems involving fractions and percents, recognize properties of basic geometric figures, and work with exponents and square roots. They can solve a variety of two-step problems using variables, identify equivalent algebraic expressions, and solve linear equations and inequalities. They are developing an understanding of functions and coordinate systems.

Level 300: Moderately complex procedures and reasoning

Students at this level are developing an understanding of number systems. They can compute with decimals, simple fractions, and commonly encountered percents. They can identify geometric figures, measure lengths and angles, and calculate areas of rectangles. These students are also able to interpret simple inequalities, evaluate formulas, and solve simple linear equations. They can find averages, make decisions on information drawn from graphs, and use logical reasoning to solve problems. They are developing the skills to operate with signed numbers, exponents, and square roots.

Level 250: Numerical operations and beginning problem solving

Students at this level have an initial understanding of the four basic operations. They are able to apply whole number addition and subtraction skills to one-step word problems and money situations. In multiplication, they can find the product of a two-digit and a one-digit number. They can also compare information from graphs and charts, and are developing an ability to analyze simple logical relations.

Level 200: Beginning skills and understandings

Students at this level have considerable understanding of two-digit numbers. They can add two-digit numbers, but are still developing an ability to regroup in subtraction. They know some basic multiplication and division facts, recognize relations among coins, can read information from charts and graphs, and use simple measurement instruments. They are developing some reasoning skills.

Level 150: Simple arithmetic facts

Students at this level know some basic addition and subtraction facts, and most can add two-digit numbers without regrouping. They recognize simple situations in which addition and subtraction apply. They also are developing rudimentary classification skills.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 15-2 **Percentage of students scoring at or above five levels of mathematics proficiency: 1978, 1982, 1986, 1990, and 1992**

Proficiency levels	Age	Year				
		1978	1982	1986	1990	1992
Level 350:	9	0	0	0	0	0
Multi-step problem solving and algebra	13	1	0	20	20	0
	17	7	26	6	7	7
Level 300:	9	1	1	1	1	1
Moderately complex procedures and reasoning	13	18	17	16	17	19
	17	152	148	152	256	259
Level 250:	9	120	119	121	228	228
Numerical operations and beginning problem solving	13	165	1271	273	275	278
	17	192	193	296	296	297
Level 200:	9	170	171	174	282	281
Beginning skills and understandings	13	195	298	299	298	299
	17	100	100	100	100	100
Level 150:	9	197	197	1298	299	299
Simple arithmetic facts	13	100	100	100	100	100
	17	100	100	100	100	100

¹ Statistically significant difference from 1992.

² Statistically significant difference from 1978.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 15-3 Percentile distribution of mathematics proficiency scores, by age and race/ethnicity: 1978, 1982, 1986, 1990, and 1992

Percentile	Age 9					Age 13					Age 17				
	1978	1982	1986	1990	1992	1978	1982	1986	1990	1992	1978	1982	1986	1990	1992
All students															
5	157	159	163	173	172	198	212	218	218	221	241	245	252	253	256
10	171	173	177	186	185	213	225	230	230	233	254	256	263	264	267
25	195	196	199	208	208	238	246	248	250	253	276	276	281	283	286
50	220	220	223	231	231	265	270	269	271	274	301	299	301	305	308
75	244	243	246	252	253	291	292	290	292	294	325	322	323	327	328
90	264	263	264	271	271	313	311	309	310	312	345	341	343	345	345
95	276	274	276	282	282	327	322	321	320	323	356	351	354	356	355
White															
5	166	168	171	182	182	212	223	226	228	231	252	253	261	260	264
10	179	181	184	194	194	226	234	236	239	242	263	264	270	270	274
25	201	202	205	215	215	248	254	254	257	260	284	282	287	289	293
50	225	225	228	236	236	272	275	273	277	279	307	304	307	310	313
75	248	247	250	256	256	296	296	293	296	298	329	325	328	330	332
90	267	265	267	274	274	317	314	312	313	315	347	343	346	347	348
95	278	276	278	285	284	330	325	323	323	325	358	353	356	357	357
Black															
5	134	137	146	156	155	170	189	202	202	200	217	225	237	245	238
10	147	150	158	167	166	184	200	213	212	212	228	234	244	254	249
25	169	172	180	186	186	206	219	231	230	231	246	251	260	269	267
50	193	197	203	208	209	229	241	249	249	251	268	271	279	287	287
75	216	218	224	231	230	254	261	267	268	271	290	291	296	307	304
90	236	237	241	249	249	276	280	284	285	286	310	311	312	326	321
95	248	248	251	259	259	288	291	296	296	297	321	321	325	338	331
Hispanic															
5	144	148	155	162	159	180	202	206	206	212	224	232	236	229	248
10	156	161	164	173	169	192	214	216	216	224	234	241	248	242	258
25	179	181	185	193	190	214	231	236	234	241	253	255	265	264	273
50	204	205	206	216	212	237	252	254	255	259	275	275	283	282	292
75	227	226	226	235	234	262	274	274	275	279	298	297	301	304	311
90	250	246	245	252	253	284	293	292	292	295	320	315	319	325	328
95	260	257	254	262	263	296	304	301	303	304	332	327	329	336	336

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 15-4 Average mathematics proficiency, by age and parents' highest education level: 1978, 1982, 1986, 1990, and 1992

Parents' highest education level	Year	Age 9		Age 13		Age 17	
		Percent of students	Average proficiency	Percent of students	Average proficiency	Percent of students	Average proficiency
Less than high school graduate	1978	18	1200	112	1245	113	280
	1982	18	1199	111	1251	114	279
	1986	24	1201	28	2252	28	279
	1990	25	2210	28	2253	28	285
	1992	24	2217	26	2256	28	286
Graduated from high school	1978	123	219	133	263	133	294
	1982	125	218	134	263	133	293
	1986	1216	218	131	263	1228	293
	1990	1216	2226	1227	263	1226	294
	1992	214	222	223	263	221	298
Some education after high school	1978	9	1230	114	1273	116	305
	1982	19	1225	114	275	118	1304
	1986	27	1229	116	1274	224	305
	1990	7	236	217	2277	224	308
	1992	8	2237	218	2278	225	308
Graduated from college	1978	124	1231	126	284	132	317
	1982	1230	1229	1232	282	132	2312
	1986	238	1231	1238	280	1237	314
	1990	240	2238	241	280	239	316
	1992	242	2236	244	283	243	316

¹ Statistically significant difference from 1992.

² Statistically significant difference from 1978.

NOTE: Percent of students represents the percentage of all students from each subgroup. Not shown are about one-third of students at age 9 and smaller percentages at ages 13 and 17 who did not know their parents' highest education level.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 15-5 Average proficiency scores, by age and grade: 1978, 1982, 1986, 1990, and 1992

Year	Below modal grade ¹		At modal grade ¹		Above modal grade ¹	
	Percent	Proficiency	Percent	Proficiency	Percent	Proficiency
Age 9						
1978	226	2191	272	2228	21	241
1982	230	2193	269	2230	1	258
1986	334	23198	366	23234	340	249
1990	335	3207	365	3242	40	239
1992	338	3208	362	3242	340	260
Age 13						
1978	227	2240	270	2274	1	298
1982	228	23247	270	2277	1	304
1986	33	23251	67	23278	1	2297
1990	336	23253	363	3280	1	2278
1992	337	3258	362	3282	40	328
Age 17						
1978	215	2273	275	2305	210	2309
1982	216	2274	275	2302	210	2306
1986	217	2277	275	2307	8	309
1990	322	3282	370	3311	28	311
1992	324	3284	370	3313	36	3318

¹ Modal grade is the most common grade level for students of a particular age. For example, the modal grade at age 9 is fourth grade. Nine-year-olds in fifth grade are above modal grade, and 9-year-olds in third grade are below modal grade for their age.

² Statistically significant difference from 1992.

³ Statistically significant difference from 1973.

⁴ Less than 0.5 percent.

NOTE: The modal grades are grade 4 at age 9, grade 8 at age 13, and grade 11 at age 17. The modal grade is lower for 17-year-olds because of differences in age definition and in the time of year the assessment is given, causing more students to be above the modal grade at age 17 than at any other age. For a more complete explanation, see the supplemental note to Indicator 13.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 16-1 Explanations of levels of science proficiency

Level 350: Integrates specialized scientific information

Students at this level can infer relationships and draw conclusions using detailed scientific knowledge from the physical sciences, particularly chemistry. They also can apply basic principles of genetics and interpret the societal implications of research in this field.

Level 300: Analyzes scientific procedures and data

Students at this level can evaluate the appropriateness of the design of an experiment. They have more detailed scientific knowledge, and the skill to apply their knowledge in interpreting information from text and graphs. These students also exhibit a growing understanding of principles from the physical sciences.

Level 250: Applies general scientific information

Students at this level can interpret data from simple tables and make inferences about the outcomes of experimental procedures. They exhibit knowledge and understanding of the life sciences, including a familiarity with some aspects of animal behavior and of ecological relationships. These students also demonstrate some knowledge of basic information from the physical sciences.

Level 200: Understands simple scientific principles

Students at this level are developing some understanding of simple scientific principles, particularly in the life sciences. For example, they exhibit some rudimentary knowledge of the structure and function of plants and animals.

Level 150: Knows everyday science facts

Students at this level know some general scientific facts of the type that could be learned from everyday experiences. They can read simple graphs, match the distinguishing characteristics of animals, and predict the operation of familiar apparatus that work according to mechanical principles.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Education Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 16-2 Percentage of students scoring at or above five levels of science proficiency: 1977, 1982, 1986, 1990, and 1992

Proficiency level	Age	Year				
		1977	1982	1986	1990	1992
Level 350:	9	0	0	0	0	0
Integrates specialized scientific information	13	11	0	20	0	20
	17	8	17	8	9	10
Level 300:	9	3	2	3	3	3
Analyzes scientific procedures and data	13	11	10	9	11	12
	17	142	1237	141	43	247
Level 250:	9	126	124	128	231	233
Applies general scientific information	13	149	151	152	1256	261
	17	82	1277	81	81	83
Level 200:	9	168	171	1272	276	278
Understands simple scientific principles	13	186	1290	292	292	293
	17	97	1296	97	97	98
Level 150:	9	194	195	1296	297	297
Knows everyday science facts	13	198	2100	2100	2100	2100
	17	100	100	100	100	100

¹ Statistically significant difference from 1992.² Statistically significant difference from 1977.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 16-3 Percentile distribution of science proficiency scores, by age, and race/ethnicity: 1977, 1982, 1986, 1990, and 1992

Percentile	Age 9					Age 13					Age 17				
	1977	1982	1986	1990	1992	1977	1982	1986	1990	1992	1977	1982	1986	1990	1992
All students															
5	144	151	155	160	163	174	185	189	191	193	213	203	212	210	218
10	161	167	170	176	178	191	200	203	206	209	231	222	230	229	234
25	190	194	196	202	204	218	224	227	230	235	261	252	260	260	264
50	222	221	225	230	232	249	251	252	256	260	291	285	290	292	296
75	251	249	253	257	258	278	277	276	281	284	320	315	319	323	327
90	276	272	277	279	281	302	299	298	302	303	346	342	344	348	350
95	291	286	291	292	294	317	313	310	315	315	362	357	360	363	364
White															
5	163	167	166	177	178	191	198	204	209	213	231	223	228	233	234
10	178	182	181	190	192	205	211	216	220	226	246	239	245	249	251
25	202	204	206	213	214	229	233	237	241	246	270	266	271	273	277
50	230	229	233	238	240	256	258	259	264	268	298	294	299	301	306
75	257	255	259	262	264	283	282	282	287	289	325	321	325	329	333
90	281	278	282	284	285	307	303	302	307	307	350	346	349	352	355
95	295	291	295	296	298	321	316	314	319	318	365	361	364	367	368
Black															
5	107	124	133	131	138	144	160	168	170	162	172	166	189	182	192
10	123	137	147	145	152	158	173	180	182	177	187	181	202	197	207
25	147	159	170	170	174	181	194	198	202	199	212	206	225	220	230
50	174	188	196	196	201	207	217	221	226	224	240	235	252	252	255
75	203	214	223	224	226	235	241	244	249	251	268	263	280	283	282
90	229	236	246	247	284	260	262	264	269	272	293	289	306	314	308
95	244	246	260	260	260	275	275	277	283	286	310	305	323	329	325
Hispanic															
5	125	127	134	146	143	147	166	171	174	180	194	178	194	189	197
10	140	142	148	159	157	161	179	181	185	193	208	194	209	204	215
25	164	162	173	181	179	186	201	202	206	215	234	219	232	231	242
50	191	191	200	206	205	213	226	226	231	238	262	248	259	260	273
75	219	216	226	233	230	240	249	250	256	261	290	278	286	293	298
90	246	236	252	253	254	266	271	270	280	282	317	302	310	317	323
95	261	246	265	267	265	282	285	283	294	292	331	321	324	330	339

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 16-4 Average science proficiency, by age and parents' highest education level: 1977, 1982, 1986, 1990, and 1992

Parents' highest education level	Year	Age 9		Age 13		Age 17	
		Percent of students	Average proficiency	Percent of students	Average proficiency	Percent of students	Average proficiency
Less than high school graduate	1977	19	1198	113	1224	115	265
	1982	6	1198	1210	225	113	258
	1986	24	1204	28	229	28	258
	1990	25	2210	28	2233	28	261
	1992	24	2217	26	2234	28	262
Graduated from high school	1977	127	223	133	245	133	284
	1982	215	218	226	243	1229	2275
	1986	1216	220	131	245	1228	2277
	1990	1216	226	1227	247	1226	2276
	1992	214	222	223	246	221	280
Some education after high school	1977	7	237	115	1260	117	296
	1982	8	229	17	1259	1222	2290
	1986	7	236	116	1258	224	295
	1990	7	238	17	263	224	296
	1992	8	237	218	2266	225	296
Graduated from college	1977	123	1232	127	266	130	309
	1982	242	1230	1237	1264	132	12300
	1986	238	235	1238	264	1237	304
	1990	240	236	241	268	239	306
	1992	242	2239	244	269	243	308

¹ Statistically significant difference from 1992.

² Statistically significant difference from 1977.

NOTE: Percent of students represents the percentage of all students from each subgroup. Not shown are approximately one-third of students at age 9 and smaller percentages at ages 13 and 17 who did not know their parents' highest education level.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of American Students in Science, 1969 to 1992; Mathematics 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 16-5 Average proficiency scores, by age and grade: 1977, 1982, 1986, 1990, and 1992

Year	Below modal grade ¹		At modal grade ¹		Above modal grade ¹	
	Percent	Proficiency	Percent	Proficiency	Percent	Proficiency
Age 9						
1977	224	2197	275	2227	21	244
1982	2330	2198	270	2231	21	366
1986	334	23205	266	23234	340	235
1990	335	3211	365	3238	340	235
1992	338	3215	362	3240	340	248
Age 13						
1977	227	2223	272	2256	1	285
1982	228	2229	272	2258	40	287
1986	33	233234	67	2260	1	2266
1990	336	3240	363	3264	1	262
1992	337	3244	362	3266	40	313
Age 17						
1977	214	2253	275	2295	211	301
1982	216	2251	275	23289	29	3292
1986	217	259	275	2294	38	299
1990	322	3260	370	23299	238	298
1992	324	3263	370	3304	36	305

¹ Modal grade is the most common grade level for students of a particular age. For example, the modal grade at age 9 is fourth grade. Nine-year-olds in fifth grade are above modal grade, and 9-year-olds in third grade are below modal grade for their age.

² Statistically significant difference from 1992.

³ Statistically significant difference from 1977.

⁴ Less than 0.5 percent.

NOTE: The modal grades are grade 4 at age 9, grade 8 at age 13, and grade 11 at age 17. The modal grade is lower for 17-year-olds because of differences in age definition and in the time of year the assessment is given, causing more students to be above the modal grade at age 17 than at any other age. For a more complete explanation, see the supplemental note to Indicator 13.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Trends in Academic Progress: Achievement of U.S. Students in Science, 1969 to 1992; Mathematics, 1973 to 1992; Reading, 1971 to 1992; Writing, 1984 to 1992, 1994.*

Table 17-1 Average reading literacy scale scores, by age, sex, and country: School year 1991-92

Country	Age 9			Age 14		
	Total	Male	Female	Total	Male	Female
Belgium ¹	507	503	512	481	480	486
Botswana	—	—	—	330	327	333
British Columbia, Canada ²	500	495	506	522	513	534
Cyprus	481	479	484	497	493	501
Denmark	475	463	489	525	523	527
East Germany ³	499	490	509	526	523	530
Finland ⁴	569	564	575	560	554	568
France ⁵	531	530	533	549	553	549
Greece ⁶	504	499	510	509	509	510
Hong Kong ⁷	517	512	524	535	533	538
Hungary ⁸	499	495	504	536	528	542
Iceland ⁹	518	508	528	536	530	543
Ireland ¹⁰	509	502	517	511	502	525
Italy ¹¹	529	525	537	515	511	520
Netherlands	485	483	488	514	511	520
New Zealand	528	519	539	545	544	549
Norway ¹²	524	517	533	516	516	520
Philippines ¹³	—	—	—	430	427	432
Portugal	478	474	483	523	528	520
Singapore	515	510	521	534	534	534
Slovenia	498	491	506	532	529	534
Spain ¹⁴	504	500	508	490	488	492
Sweden	539	533	546	546	540	555
Switzerland	511	507	517	536	535	538
Thailand ¹⁵	—	—	—	477	464	488
Trinidad/Tobago	451	443	460	479	466	492
United States ¹⁶	547	543	552	535	530	543
Venezuela ¹⁷	383	379	392	417	419	421
West Germany ¹⁸	503	501	508	522	522	526
Zimbabwe	—	—	—	372	380	363

— Country did not participate at this age level.

¹ Schools in French-speaking Belgium only; students instructed in Flemish or German were excluded.

² Students in Government Native Indian schools were excluded.

³ Students in special schools for disabled students and institutions for specially talented students were excluded.

⁴ Swedish-speaking, special education, and laboratory schools were excluded.

⁵ Private schools were excluded (16 percent of 9-year-olds and 21 percent of 14-year-olds).

⁶ For 14-year-olds, 1.4 percent in evening schools were excluded.

⁷ International schools, ESF Foundation schools, schools not participating in Secondary School Places Allocation System (SSPA), and schools with class size of less than 20 were excluded.

⁸ Very small schools in remote areas and ungraded schools were excluded.

⁹ Schools where there were fewer than 5 students were excluded.

¹⁰ Private schools and schools with fewer than 5 students were excluded.

¹¹ Non-government schools were excluded.

¹² Schools for Lapps were excluded.

¹³ Schools in earthquake and insurgency areas (about 39 percent of the population) were excluded.

¹⁴ Students from schools with fewer than 10 students in the defined grade and from schools where medium of instruction was not Castilian Spanish were excluded.

¹⁵ Laboratory schools and schools controlled by the Department of Fine Arts and Culture were excluded.

¹⁶ Students in eligible schools not capable of taking the test (4.9 percent of each age group) were excluded.

¹⁷ Students attending private rural schools were excluded.

¹⁸ Students in special schools for disabled students and non-graded private schools were excluded.

SOURCE: International Association for the Evaluation of Educational Achievement, Study of Reading Literacy, *How in the World Do Students Read?*, 1992.

Table 17-2 Average scores across narrative, expository, and documents domains for 9-year-olds on reading literacy assessment, by country: School year 1991-92

Country	Average score			Percentile score, narrative domain					
	Narrative	Expository	Documents	1st	5th	10th	90th	95th	99th
Belgium ¹	510	505	506	293	361	385	612	643	695
British Columbia, Canada ²	502	499	500	186	345	389	619	644	697
Cyprus	492	475	476	283	351	373	601	626	686
Denmark	463	467	496	186	186	299	592	628	682
East Germany ³	482	493	522	219	324	361	590	626	686
Finland ⁴	568	569	569	353	420	466	649	681	708
France ⁵	532	533	527	335	381	411	640	672	701
Greece	514	511	488	303	367	400	622	647	699
Hong Kong ⁶	494	503	554	273	350	383	601	618	677
Hungary ⁷	496	493	509	299	362	390	588	617	661
Iceland ⁸	518	517	519	297	361	390	627	647	700
Indonesia ⁹	402	411	369	205	280	316	489	528	566
Ireland ¹⁰	518	514	495	301	363	390	631	649	701
Italy ¹¹	533	538	517	303	379	411	627	650	701
Netherlands	494	480	481	311	359	382	591	625	688
New Zealand	534	531	521	299	365	403	647	679	707
Norway ¹²	525	528	519	186	342	390	629	654	702
Portugal	483	480	471	300	356	386	587	617	670
Singapore	521	519	504	306	364	395	623	653	701
Slovenia	502	489	503	296	355	389	648	650	700
Spain ¹³	497	505	509	291	357	389	597	641	687
Sweden	536	542	539	239	364	406	644	673	706
Switzerland	506	507	522	237	362	391	602	642	696
Trinidad/Tobago	455	458	440	232	312	343	567	605	676
United States ¹⁴	553	538	550	330	389	420	655	685	708
Venezuela ¹⁵	378	396	374	186	186	220	474	500	554
West Germany ¹⁶	491	497	520	226	340	372	594	629	690

¹ Schools in French-speaking Belgium only; students instructed in Flemish or German were excluded.

² Students in Government Native Indian schools were excluded.

³ Students in special schools for disabled students and institutions for specially talented students were excluded.

⁴ Swedish-speaking, special education, and laboratory schools were excluded.

⁵ Private schools were excluded (16 percent).

⁶ International schools, ESF Foundation schools, schools not participating in Secondary School Places Allocation System (SSPA), and schools with class size of less than 20 were excluded.

⁷ Very small schools in remote areas and ungraded schools were excluded.

⁸ Schools where there were fewer than 5 students were excluded.

⁹ Schools outside of Java, Riau (Sumatra), and East Nusa Tenggara were excluded (30 percent of target population).

¹⁰ Private schools and schools with fewer than 5 students were excluded.

¹¹ Non-government schools were excluded.

¹² Schools for Lapps were excluded.

¹³ Students from schools with fewer than 10 students in the defined grade and from schools where medium of instruction was not Castilian Spanish were excluded.

¹⁴ Students in eligible schools not capable of taking the test (5 percent) were excluded.

¹⁵ Students attending private rural schools were excluded.

¹⁶ Students in special schools for disabled students and non-graded private schools were excluded.

SOURCE: International Association for the Evaluation of Educational Achievement, Study of Reading Literacy, *How in the World Do Students Read?*, 1992.

Table 17-3 Average scores across narrative, expository, and documents domains for 14-year-olds on reading literacy assessment, by country: School year 1991-92

Country	Average score			Percentile score, expository domain					
	Narrative	Expository	Documents	1st	5th	10th	90th	95th	99th
Belgium ¹	484	477	483	242	319	360	572	605	685
Botswana	340	339	312	121	227	247	411	417	452
British Columbia, Canada ²	526	516	522	290	362	394	635	676	750
Cyprus	516	492	482	282	340	378	601	638	705
Denmark	517	524	532	295	380	411	636	673	741
East Germany ³	512	523	543	315	381	408	633	648	708
Finland ⁴	559	541	580	354	421	453	628	641	699
France ⁵	556	546	544	362	414	447	639	681	748
Greece ⁶	526	508	493	322	376	401	602	640	711
Hong Kong ⁷	509	540	557	343	407	434	621	642	718
Hungary ⁸	530	536	542	326	389	420	640	680	748
Iceland ⁹	550	548	509	316	385	413	660	686	748
Ireland ¹⁰	510	505	518	282	356	384	630	643	725
Italy ¹¹	520	524	501	324	386	413	616	643	727
Netherlands	506	503	533	291	365	395	593	624	694
New Zealand	547	535	552	290	363	410	660	692	757
Norway ¹²	515	520	512	313	386	413	609	642	713
Philippines ¹³	421	439	430	272	321	342	530	571	662
Portugal	523	523	523	341	411	429	606	636	698
Singapore	530	539	533	367	410	434	629	666	735
Slovenia	534	525	537	360	410	441	607	643	700
Spain ¹⁴	500	495	475	308	364	391	581	613	688
Sweden	556	533	550	324	384	420	637	677	749
Switzerland	534	525	549	307	381	412	632	654	722
Thailand ¹⁵	468	486	478	239	324	363	573	599	662
Trinidad/Tobago	482	485	472	255	330	358	600	636	729
United States ¹⁶	539	539	528	324	381	410	673	705	764
Venezuela ¹⁷	407	433	412	220	290	330	526	556	629
West Germany ¹⁸	514	521	532	323	381	411	622	667	736
Zimbabwe	367	374	373	139	272	291	453	483	551

¹ Schools in French-speaking Belgium only; students instructed in Flemish or German were excluded.

² Students in Government Native Indian schools were excluded.

³ Students in special schools for disabled students and institutions for specially talented students were excluded.

⁴ Swedish-speaking, special education, and laboratory schools were excluded.

⁵ Private schools were excluded (21 percent).

⁶ Students in evening schools were excluded (1 percent).

⁷ International schools, ESF Foundation schools, schools not participating in Secondary School Places Allocation System (SSPA), and schools with class size of less than 20 were excluded.

⁸ Very small schools in remote areas and ungraded schools were excluded.

⁹ Schools where there were fewer than 5 students were excluded.

¹⁰ Private schools and schools with fewer than 5 students were excluded.

¹¹ Non-government schools were excluded.

¹² Schools for Lapps were excluded.

¹³ Schools in earthquake and insurgency areas (about 39 percent of the population) were excluded.

¹⁴ Students from schools with fewer than 10 students in the defined grade and from schools where medium of instruction was not Castilian Spanish were excluded.

¹⁵ Laboratory schools and schools controlled by the Department of Fine Arts and Culture were excluded.

¹⁶ Students in eligible schools not capable of taking the test (5 percent) were excluded.

¹⁷ Students attending private rural schools were excluded.

¹⁸ Students in special schools for disabled students and non-graded private schools were excluded.

SOURCE: International Association for the Evaluation of Educational Achievement, *Study of Reading Literacy, How in the World Do Students Read?*, 1992.

Table 17-4 Average reading achievement scores for students speaking a different language at home and for students speaking the school language, by country: School year 1991-92

Country	Age 9				Age 14			
	Non-school language		School language		Non-school language		School language	
	Percentage of students	Average score	Percentage of students	Average score	Percentage of students	Average score	Percentage of students	Average score
Belgium ¹	11	481	89	512	9	435	91	491
Botswana	—	—	—	—	61	328	39	334
British Columbia, Canada ²	11	488	89	502	8	506	92	524
Cyprus	4	476	96	482	0	437	100	497
Denmark	5	441	95	480	3	470	98	527
East Germany ³	2	472	98	500	1	521	99	527
Finland ⁴	2	532	99	569	1	533	99	562
France ⁵	9	491	91	536	4	516	96	552
Greece ⁶	6	472	94	508	3	487	97	510
Hong Kong ⁷	13	488	87	522	4	495	96	537
Hungary ⁸	3	468	97	501	1	493	99	536
Iceland ⁹	4	487	97	519	0	508	100	536
Indonesia ¹⁰	73	394	28	403	—	—	—	—
Ireland ¹¹	3	495	97	510	1	482	99	513
Italy ¹²	27	513	73	537	26	488	74	525
Netherlands	13	459	88	489	9	489	91	518
New Zealand	8	465	92	535	6	470	94	551
Norway ¹³	4	471	96	527	2	473	98	519
Philippines ¹⁴	—	—	—	—	90	428	10	449
Portugal	3	469	97	479	2	504	98	524
Singapore	73	505	28	543	74	523	26	566
Slovenia	12	469	89	502	6	506	94	534
Spain ¹⁵	13	499	87	505	11	481	89	491
Sweden	9	486	91	544	5	501	95	549
Switzerland	21	476	79	521	15	497	85	544
Thailand ¹⁶	—	—	—	—	39	476	61	479
Trinidad/Tobago	15	439	85	456	16	456	84	485
United States ¹⁷	4	520	97	549	4	478	96	539
West Germany ¹⁸	11	461	90	509	8	455	92	530
Venezuela ¹⁹	18	383	82	388	5	394	95	421
Zimbabwe	—	—	—	—	83	371	17	385

— Country did not participate at this age level.

¹ Schools in French-speaking Belgium only. Students instructed in Flemish or German were excluded.

² Students in Government Native Indian schools were excluded.

³ Students in special schools for disabled students and institutions for specially talented students were excluded.

⁴ Swedish-speaking, special education, and laboratory schools were excluded.

⁵ Private schools were excluded (16 percent of 9-year-olds and 21 percent of 14-year-olds).

⁶ For 14-year-olds, 1.4 percent in evening schools were excluded.

⁷ International schools, ESF Foundation schools, schools not participating in Secondary School Places Allocation System (SSPA), and schools with class size of less than 20 were excluded.

⁸ Very small schools in remote areas and ungraded schools were excluded.

⁹ Schools where there were fewer than 5 students were excluded.

¹⁰ Schools outside of Java, Riau (Sumatra), and East Nusa Tenggara were excluded (30 percent of target population).

¹¹ Private schools and schools with fewer than 5 students were excluded.

¹² Non-government schools were excluded.

¹³ Schools for Lapps were excluded.

¹⁴ Schools in earthquake and insurgency areas (about 39 percent of the population) were excluded.

¹⁵ Students from schools with fewer than 10 students in the defined grade and from schools where medium of instruction was not Castilian Spanish were excluded.

¹⁶ Laboratory schools and schools controlled by the Department of Fine Arts and Culture were excluded.

¹⁷ Students in eligible schools not capable of taking the test (5 percent of each age group) were excluded.

¹⁸ Students attending private rural schools were excluded.

¹⁹ Students in special schools for disabled students and non-graded private schools were excluded.

SOURCE: International Association for the Evaluation of Educational Achievement, Study of Reading Literacy, *How in the World Do Students Read?*, 1992.

Table 18-1 Distribution of proficiency scores of 9-year-olds on mathematics assessment, by country: 1991

Country	Average proficiency score			Percentile scores						
	Total	Male	Female	1st	5th	10th	Median	90th	95th	99th
Comprehensive populations										
Canada ¹	430	430	431	296	337	363	435	490	506	537
Hungary	452	452	452	312	357	379	455	520	536	573
Ireland	426	425	427	273	317	345	433	493	514	545
Israel ²	442	447	438	310	347	373	445	504	523	555
South Korea	473	480	465	334	383	407	475	534	550	586
Slovenia	413	413	414	303	336	355	417	467	482	508
Soviet Union ³	447	448	446	310	349	374	450	514	532	579
Spain ⁴	432	432	432	287	330	353	437	499	518	551
Taiwan	454	455	453	304	360	384	457	521	539	571
United States ⁵	420	422	419	278	305	333	427	492	513	549
Populations with exclusions or low participation										
England ⁶	427	427	427	292	322	352	428	501	521	556
Italy, Emilia-Romagna ⁶	451	456	446	315	360	386	453	518	536	570
Portugal ⁷	418	422	414	284	327	347	422	485	500	530
Scotland ⁶	446	446	446	314	356	382	447	511	525	559
Canadian populations										
British Columbia	434	433	434	291	336	365	437	497	512	548
New Brunswick-English	427	429	426	288	326	353	433	489	505	540
Ontario-English	420	417	421	286	321	351	425	482	497	527
Ontario-French	414	415	414	292	333	353	419	470	482	512
Quebec-English	435	437	434	294	334	365	440	499	518	549
Quebec-French	443	444	441	318	356	380	447	497	513	540

¹ Four out of 10 provinces.² Hebrew-speaking schools.³ Fourteen out of 15 republics in the former Soviet Union; Russian-speaking schools.⁴ Regions except Cataluña; Spanish-speaking schools.⁵ Combined school and student participation rate is below .80 but at least .70; interpret results with caution because of possible nonresponse bias.⁶ Combined school and student participation rate is below .70; interpret results with extreme caution because of possible nonresponse bias.⁷ Restricted grades.

SOURCE: Educational Testing Service, International Assessment of Educational Progress, 1992.

Table 18-2 Distribution of proficiency scores of 13-year-olds on mathematics assessment, by country: 1991

Country	Average proficiency scores			Percentile scores						
	Total	Male	Female	1st	5th	10th	Median	90th	95th	99th
Comprehensive populations										
Canada ¹	513	515	512	400	443	462	515	564	580	608
France	519	523	515	404	442	460	521	574	588	616
Hungary	529	528	528	401	447	465	531	588	605	639
Ireland	509	514	505	381	425	449	514	565	580	614
Israel ²	517	520	514	396	441	462	520	567	578	607
Italy, Emilia-Romagna ³	517	521	513	402	444	459	522	569	581	610
Jordan	458	461	454	345	371	390	459	520	539	568
South Korea	542	546	537	390	445	470	545	609	629	665
Scotland ³	511	511	512	400	438	454	513	564	580	604
Slovenia	504	506	501	407	432	445	507	556	570	599
Soviet Union ⁴	533	533	532	413	458	477	536	584	596	629
Spain ⁵	495	498	492	390	429	446	496	542	556	577
Switzerland ⁶	539	544	534	443	475	491	542	586	598	631
Taiwan	545	546	544	368	424	454	550	631	659	694
United States ³	494	494	494	366	407	430	495	554	574	616
Populations with exclusions or low participation										
Brazil, Fortaleza ⁷	432	442	425	319	345	364	429	502	519	544
Brazil, Sao Paulo ⁸	444	445	443	331	358	378	441	515	531	554
China ⁹	561	565	556	457	491	508	559	613	633	662
England ¹⁰	511	510	511	371	424	448	512	573	590	617
Mozambique ^{10,11}	427	431	424	346	370	385	429	468	478	503
Portugal ^{3,7}	483	485	482	369	406	427	487	535	549	577
Canadian populations										
Alberta	516	517	515	407	446	464	517	567	583	615
British Columbia	523	524	521	424	455	472	522	575	593	624
Manitoba-English	502	502	502	381	424	448	505	554	565	601
Manitoba-French	516	519	513	413	455	472	516	560	572	594
New Brunswick-English	501	503	500	381	426	448	503	552	570	598
New Brunswick-French	509	508	510	394	433	453	513	559	571	591
Newfoundland	506	504	509	386	431	454	509	555	571	601
Nova Scotia	509	511	506	395	435	457	510	560	575	613
Ontario-English	504	506	502	396	435	453	504	556	572	600
Ontario-French	494	493	495	384	423	442	497	538	553	582
Quebec-English ³	523	523	522	408	453	470	522	577	594	630
Quebec-French	528	531	525	435	465	481	529	573	587	609
Saskatchewan-English	513	516	510	407	438	461	515	562	577	608
Saskatchewan-French	525	527	524	447	461	482	525	566	578	601

¹ Nine out of 10 provinces.

² Hebrew-speaking schools.

³ Combined school and student participation rate is below .80 but at least .70; interpret results with caution because of possible nonresponse bias.

⁴ Fourteen out of 15 republics in the former Soviet Union; Russian-speaking schools.

⁵ Regions except Cataluña; Spanish-speaking schools.

⁶ Fifteen out of 26 cantons.

⁷ In-school population, restricted grades.

⁸ Restricted grades.

⁹ Twenty out of 29 provinces and independent cities; in-school population, restricted grades.

¹⁰ Combined school and student participation rate is below .70; interpret results with extreme caution because of possible nonresponse bias.

¹¹ Cities of Maputo and Beira; in-school population.

SOURCE: Educational Testing Service, International Assessment of Educational Progress, 1992.

Table 19-1 Distribution of proficiency scores of 9-year-olds on science assessment, by sex, percentile, and country: 1991

Country	Average proficiency score			Percentile scores						
	Total	Male	Female	1st	5th	10th	Median	90th	95th	99th
Comprehensive populations										
Canada ¹	437	439	434	257	316	346	443	517	538	582
Hungary	438	443	434	270	331	360	441	511	534	567
Ireland	401	409	393	221	258	289	408	496	515	561
Israel ²	431	440	423	247	309	337	430	524	553	595
South Korea	460	474	446	303	357	383	460	541	563	609
Slovenia	403	406	401	262	299	325	405	478	497	528
Soviet Union ³	434	441	428	284	328	356	433	515	547	588
Spain ⁴	430	439	421	250	305	334	435	522	541	567
Taiwan	456	466	445	254	321	359	458	553	576	627
United States ⁵	446	451	441	235	292	328	453	543	567	605
Populations with exclusions or low participation										
England ⁶	438	441	435	245	300	329	445	529	554	604
Italy, Emilia-Romagna ⁶	459	465	454	293	345	371	460	547	569	626
Portugal ⁷	394	402	387	233	280	306	395	480	499	549
Scotland ⁶	433	434	432	248	314	339	436	515	538	568
Canadian populations										
British Columbia	455	455	455	269	336	368	463	531	551	590
New Brunswick-English	429	429	429	223	273	319	440	516	542	579
Ontario-English	434	437	431	242	296	334	443	521	544	581
Ontario-French	402	402	403	255	294	321	401	480	502	545
Quebec-English	438	443	434	259	312	339	443	530	549	594
Quebec-French	437	439	434	283	329	358	441	512	531	567

¹ Four out of 10 provinces.² Hebrew-speaking schools.³ Fourteen out of 15 republics in the former Soviet Union; Russian-speaking schools.⁴ Regions except Cataluña; Spanish-speaking schools.⁵ Combined school and student participation rate is below .80 but at least .70; interpret results with caution because of possible nonresponse bias.⁶ Combined school and student participation rate is below .70; interpret results with extreme caution because of possible nonresponse bias.⁷ Restricted grades.

SOURCE: Educational Testing Service, International Assessment of Educational Progress, 1992.

Table 19-2 Distribution of proficiency scores of 13-year-olds on science assessment, by country: 1991

Country	Average proficiency score			Percentile scores						
	Total	Male	Female	1st	5th	10th	Median	90th	95th	99th
Comprehensive populations										
Canada ¹	533	539	527	384	434	460	534	606	628	670
France	532	540	524	370	417	442	534	611	639	677
Hungary	553	563	544	386	436	467	555	639	665	717
Ireland	510	521	499	334	391	418	511	594	616	668
Israel ²	534	543	527	379	426	449	536	614	635	676
Italy, Emilia-Romagna ³	537	545	529	384	432	459	538	612	632	672
Jordan	473	475	470	292	342	375	480	557	584	628
South Korea	571	580	559	395	457	490	575	648	670	710
Scotland ⁴	530	535	525	363	416	441	532	611	631	674
Slovenia	537	544	530	398	434	461	539	615	638	671
Soviet Union ⁴	541	546	535	383	438	465	545	612	629	661
Spain ⁵	525	531	519	380	428	453	524	596	617	663
Switzerland ⁶	562	573	551	408	467	491	566	637	662	701
Taiwan	563	567	560	339	420	463	572	655	673	715
United States ³	521	530	513	334	410	436	523	601	627	665
Populations with exclusions or low participation										
Brazil, Fortaleza ⁷	426	439	416	279	313	333	425	520	542	589
Brazil, Sao Paulo ⁸	454	469	442	305	333	354	454	545	578	629
China ⁹	526	535	517	355	411	439	528	608	638	683
England ¹⁰	532	537	528	358	415	443	535	615	639	685
Portugal ^{3,7}	506	517	497	339	391	418	509	589	614	654
Canadian populations										
Alberta	554	564	544	407	456	483	556	624	643	683
British Columbia	548	552	545	407	453	479	552	613	636	676
Manitoba-English	531	536	525	356	417	445	533	611	634	671
Manitoba-French	522	533	514	359	426	449	524	594	613	652
New Brunswick-English	521	527	515	344	406	441	525	597	616	657
New Brunswick-French	510	511	509	354	399	430	513	585	607	650
Newfoundland	521	530	512	361	413	441	522	601	624	663
Nova Scotia	532	537	527	364	428	453	534	609	631	668
Ontario-English	526	531	520	378	426	453	526	595	622	669
Ontario-French	497	503	491	345	401	422	496	572	590	630
Quebec-English ³	535	543	528	386	436	463	536	611	637	675
Quebec-French	544	551	536	403	449	475	543	614	638	675
Saskatchewan-English	538	544	531	379	435	464	540	611	635	676
Saskatchewan-French	517	521	513	380	440	460	513	585	608	639

¹ Nine out of 10 provinces.

² Hebrew-speaking schools.

³ Combined school and student participation rate is below .80 but at least .70; interpret results with caution because of possible nonresponse bias.

⁴ Fourteen out of 15 republics in the former Soviet Union; Russian-speaking schools.

⁵ Regions except Cataluña; Spanish-speaking schools.

⁶ Fifteen out of 26 cantons.

⁷ In-school population, restricted grades.

⁸ Restricted grades.

⁹ Twenty out of 29 provinces and independent cities; in-school population, restricted grades.

¹⁰ Combined school and student participation rate is below .70; interpret results with extreme caution because of possible nonresponse bias.

SOURCE: Educational Testing Service, International Assessment of Educational Progress, 1992.

Table 20-1 Scholastic Aptitude Test (SAT) test-takers as a percentage of high school graduates, percentage of test-takers who are minorities, SAT mean scores, standard deviations, and percent scoring over 600: 1972-94

Year	SAT test-takers				Total mean	Verbal			Mathematics		
	Number of high school graduates ¹	Number ¹	As a percent of high school graduates ²	Percent minority		Mean	Standard deviation	Percent scoring 600 or higher	Mean	Standard deviation	Percent scoring 600 or higher
(in thousands)											
1972	3,001	1,023	34.1	—	937	453	111	11	484	115	17
1973	3,036	1,015	33.4	—	926	445	108	10	481	113	16
1974	3,073	985	32.1	—	924	444	110	10	480	116	17
1975	3,133	996	31.8	—	906	434	109	8	472	115	15
1976	3,148	1,000	31.8	15.0	903	431	110	8	472	120	17
1977	3,155	979	31.0	16.1	899	429	110	8	470	119	16
1978	3,127	989	31.6	17.0	897	429	110	8	468	118	15
1979	3,117	992	31.8	17.1	894	427	110	7	467	117	15
1980	3,043	992	32.6	17.9	890	424	110	7	466	117	15
1981	3,020	994	32.9	18.1	890	424	110	7	466	117	14
1982	2,995	989	33.0	18.3	893	426	110	7	467	117	15
1983	2,888	963	33.3	18.9	893	425	109	7	468	119	16
1984	2,767	965	34.9	19.7	897	426	110	7	471	119	17
1985	2,677	977	36.5	20.0	906	431	111	7	475	119	17
1986	2,643	1,001	37.9	—	906	431	110	8	475	121	17
1987	2,694	1,080	40.1	21.8	906	430	111	8	476	122	18
1988	2,773	1,134	40.9	23.0	904	428	109	7	476	120	17
1989	2,727	1,088	39.9	25.3	903	427	111	8	476	121	18
1990	2,588	1,026	39.7	26.6	900	424	111	7	476	123	18
1991	2,503	1,033	41.2	28.0	896	422	111	7	474	123	17
1992	2,471	1,034	41.8	28.5	899	423	112	7	476	123	18
1993 ⁴	2,512	1,044	41.6	30.0	902	424	113	7	478	125	19
1994 ⁴	2,513	1,050	41.8	31.0	902	423	113	7	479	124	18

— Not available.

¹ Includes public and private schools.

² The ratio of the number of high school graduates taking the SAT at any time while they were in high school to the total number of high school graduates expressed as a percentage.

³ Data have been revised from previously published figures.

⁴ Number of public high school graduates is based on state estimates.

SOURCE: College Entrance Examination Board, *National Report: College Bound Seniors, 1972-1994*. (Copyright ©1994 by College Entrance Examination Board. All rights reserved.) U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1994*, table 99.

Table 20-2 SAT mean scores of college-bound seniors, by race/ethnicity: 1976–94

Year	White		Black		Mexican American		Puerto Rican		Other Hispanic		Asian American		American Indian	
	Verbal	Math	Verbal	Math	Verbal	Math	Verbal	Math	Verbal	Math	Verbal	Math	Verbal	Math
1976	451	493	332	354	371	410	364	401	—	—	414	518	388	420
1977	448	489	330	357	370	408	355	397	—	—	405	514	390	421
1978	446	485	332	354	370	402	349	388	—	—	401	510	387	419
1979	444	483	330	358	370	410	345	388	—	—	396	511	386	421
1980	442	482	330	360	372	413	350	394	—	—	396	509	390	426
1981	442	483	332	362	373	415	353	398	—	—	397	513	391	425
1982	444	483	341	366	377	416	360	403	—	—	398	513	388	424
1983	443	484	339	369	375	417	358	403	—	—	395	514	388	425
1984	445	487	342	373	376	420	358	405	—	—	398	519	390	427
1985	449	490	346	376	382	426	368	409	—	—	404	518	392	428
1986	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1987	447	489	351	377	379	424	360	400	387	432	405	521	393	432
1988	445	490	353	384	382	428	355	402	387	433	408	522	393	435
1989	446	491	351	386	381	430	360	406	389	436	409	525	384	428
1990	442	491	352	385	380	429	359	405	383	434	410	528	388	437
1991	441	489	351	385	377	427	361	406	382	431	411	530	393	437
1992	442	491	352	385	372	425	366	406	383	433	413	532	395	442
1993	444	494	353	388	374	428	367	409	384	433	415	535	400	447
1994	443	495	352	388	372	427	367	411	383	435	416	535	396	441

— Not available.

NOTE: The first year for which SAT scores by racial/ethnic group are available is 1976. Data were not collected by racial/ethnic group in 1986. See the supplemental note for information on interpreting the SAT scores.

SOURCE: College Entrance Examination Board, *National Report: College Bound Seniors, 1972–1994*. (Copyright ©1994 by College Entrance Examination Board. All rights reserved.)

Table 20-3 Percentage of college-bound seniors taking the SAT who scored in various ranges on the verbal and mathematics sections of the SAT, by sex: 1994

Verbal				Math		
Total	Male	Female	Score	Total	Male	Female
0	0	0		750–800	1	2
1	1	1	700–740	3	5	2
2	2	2	650–690	6	7	4
4	4	4	600–640	8	10	7
7	7	7	550–590	11	12	10
11	11	11	500–540	14	15	14
14	14	14	450–490	15	14	15
17	17	18	400–440	14	12	15
17	16	17	350–390	11	10	13
12	12	13	300–340	9	7	11
8	8	8	250–290	5	4	6
5	5	5	200–240	1	1	2
423	425	421	Mean	479	501	460
113	114	111	Standard deviation	124	127	117

NOTE: 800 is the highest score possible, and 200 is the lowest score possible on each section of the SAT. The term “college-bound seniors” refers to those students from each high school graduating class who participate in the College Board Admission Testing Program, and does not include all first-year college students nor all high school seniors.

SOURCE: College Entrance Examination Board, *College Bound Seniors: 1994 Profile of SAT and Achievement Test Takers*.

Table 20-4 Distribution of college-bound seniors and average verbal and mathematics SAT scores, by selected characteristics: 1988, 1991, and 1994

Characteristic	1988			1991			1994		
	Percent of SAT test-takers	SAT mean score		Percent of SAT test-takers	SAT mean score		Percent of SAT test-takers	SAT mean score	
		Verbal	Math		Verbal	Math		Verbal	Math
All students	100	428	476	100	422	474	100	423	479
Parents' income									
Less than \$10,000	5	363	418	5	353	415	6	350	416
\$10,000-\$19,999	13	393	440	11	379	434	11	377	435
\$20,000-\$29,999	17	416	460	15	404	452	13	402	454
\$30,000-\$39,000	20	429	473	18	418	466	16	416	469
\$40,000-\$49,999	14	441	487	13	430	480	13	429	482
\$50,000-\$59,999	10	449	497	11	440	491	11	437	492
\$60,000-\$69,999	6	456	505	7	449	500	8	446	502
\$70,000 or more	15	469	523	19	469	528	23	469	531
Parents' highest education level									
No high school diploma	4	347	410	5	339	409	5	336	407
High school diploma	37	402	446	38	395	443	36	393	445
Associate's degree	7	414	457	8	407	454	8	406	458
Bachelor's degree	27	446	496	27	442	497	27	443	503
Graduate degree	24	476	524	23	476	528	24	478	535
Locality									
Large city	23	418	466	24	410	463	23	410	468
Mid-size city	13	431	477	13	424	474	14	424	479
Small city, town	20	429	474	20	423	471	19	422	475
Suburb	33	443	493	32	439	494	32	441	500
Rural area	11	421	461	12	413	458	11	413	462

SOURCE: College Entrance Examination Board, *College Bound Seniors: Profile of SAT and Achievement Test Takers*, various years.**Table 20-5** Average verbal and mathematics SAT scores of college-bound seniors, by race/ethnicity and parents' highest education level: 1994

Parents' highest education level	White		Black		Mexican American		Puerto Rican	
	Verbal	Math	Verbal	Math	Verbal	Math	Verbal	Math
No high school diploma	371	420	306	350	330	391	320	356
High school diploma	411	460	337	374	371	426	359	398
Associate's degree	420	472	351	386	388	437	365	406
Bachelor's degree	455	510	376	410	415	466	382	434
Graduate degree	486	540	402	435	427	478	411	463

Parents' highest education level	Other Hispanic		Asian American		American Indian		Other	
	Verbal	Math	Verbal	Math	Verbal	Math	Verbal	Math
No high school diploma	323	377	331	479	329	378	338	410
High school diploma	372	420	377	502	377	421	390	439
Associate's degree	389	435	392	500	388	435	403	451
Bachelor's degree	413	466	423	547	421	468	441	500
Graduate degree	426	487	487	588	440	483	484	541

SOURCE: College Entrance Examination Board, *College Bound Seniors: 1994 Profile of SAT and Achievement Test Takers*.

Table 20-6 Average verbal and mathematics SAT scores of college-bound seniors, by class rank expressed in quintiles: 1977-94

Year	Top tenth		Second tenth		Second fifth		Third fifth		Fourth fifth		Lowest fifth	
	Verbal	Math	Verbal	Math	Verbal	Math	Verbal	Math	Verbal	Math	Verbal	Math
1977	518	574	452	499	415	453	372	401	347	374	339	364
1978	515	570	450	494	414	451	372	400	349	374	339	364
1979	514	568	448	494	413	451	371	400	347	372	337	364
1980	510	568	446	494	411	451	370	401	346	373	339	366
1981	511	567	447	496	412	453	371	402	348	374	339	368
1982	511	568	449	497	415	454	374	404	349	375	343	368
1983	508	570	447	498	414	455	374	403	351	375	343	369
1984	511	575	450	503	417	459	377	406	353	377	341	365
1985	516	577	455	511	421	463	381	411	357	380	346	369
1986	514	579	454	507	419	460	381	410	360	383	352	376
1987	518	585	456	511	418	461	380	409	358	380	353	374
1988	515	585	454	511	417	463	379	411	358	382	352	373
1989	515	585	453	512	416	463	376	410	354	381	346	373
1990	512	585	449	512	412	463	373	410	351	381	342	370
1991	512	584	448	511	411	462	372	409	350	379	340	368
1992	512	585	448	511	412	464	373	411	350	379	338	363
1993	513	586	449	513	412	466	373	413	350	380	336	363
1994	512	586	447	514	410	467	373	415	349	382	332	363

SOURCE: College Entrance Examination Board, *National Report: College Bound Seniors, 1972-1994*. (Copyright ©1994 by College Entrance Examination Board. All rights reserved.)

Table 20-7 Percentage of students intending to major in selected fields, and their verbal and mathematics SAT scores: 1994

Intended college major	Percent of test-takers intending to major in that subject			SAT scores	
	Total	Male	Female	Verbal	Math
Agriculture/Natural resources	2	2	1	410	453
Architecture/Environmental design	3	3	1	407	492
Arts: Visual and performing	6	5	5	434	463
Biological sciences	5	4	5	466	517
Business and commerce	14	13	12	397	469
Communications	4	3	4	442	464
Computer/Information sciences	3	4	1	406	488
Education	8	4	10	407	447
Engineering	9	14	3	446	553
Foreign/Classical languages	1	0	1	475	506
General/Interdisciplinary	0	0	0	500	531
Health and allied sciences	19	11	22	417	474
Home economics	0	0	0	374	414
Language and literature	1	1	1	529	518
Library and archival sciences	0	0	0	457	481
Mathematics	1	1	0	471	611
Military sciences	1	1	0	424	481
Philosophy/Religion/Theology	0	1	0	478	509
Physical sciences	1	2	1	496	574
Public affairs and services	3	3	2	376	415
Social sciences and history	12	8	14	450	479
Technical and vocational	1	1	1	353	406
Undecided	6	6	5	423	482

NOTE: Numbers appearing as zeros have a numeric value less than 0.5.

SOURCE: College Entrance Examination Board, *College Bound Seniors: 1994 Profile of SAT and Achievement Test Takers*.

Note on interpreting SAT test scores and the new version of the SAT

Interpreting Test Scores

According to the College Board, the Scholastic Aptitude Test (SAT) is designed to measure verbal and quantitative reasoning skills related to academic performance in college. SAT scores are statistically controlled to maintain the same meaning from year to year, and therefore useful comparisons over time can be made.¹

Since 1941, SAT scores have been expressed relative to the performance of a group of approximately 11,000 candidates who took the test in 1941.² The mean raw score of that group was given the scaled score of 500 with a standard deviation of 100. In order that scores could be compared to this reference group, a short set of common items is included in each year's forms. Each new form is then linked with a previous form through these common items, allowing the forms to be equated back to the 1941 form. Therefore, a score of 500 on any form of the SAT corresponds to the mean of the 1941 group. Likewise, a score of 600 falls one standard deviation above the mean of the 1941 group, and a score of 400 falls one standard deviation below the mean of the 1941 group.³

The decline or rise of test scores depends on many factors. Changes can involve variations in the composition of the test-takers. For example, between 1963 and 1970, a significant SAT score decline occurred. Because of a continuing increase in the proportion of high school graduates going to college over this period, the group of test-takers became progressively less selective, and this was likely a major factor in the score decline.⁴ The College Board notes that the relationship between SAT test scores and students' characteristics are "complex and interdependent."⁵ For example, educational, demographic, and socioeconomic factors might influence test scores. However, while these factors may be related, they are not necessarily causal. Moreover, changes in test scores can also be related to variations in performance among similar types of test-takers.

Standard Deviation Units

Performance on the SAT can be measured in a number of ways. Changes in standard deviation

units is one useful metric. Standard deviation units indicate how scores, on average, deviated from the mean. Since the standard deviation is measured on a *common scale* across different tests, it can also be used to compare score changes on a variety of measures.⁶

Once changes in scores across measures have been noted, the significance of these changes should be considered. Some have considered a decline of one standard deviation to be significant. This designation, however, is arbitrary.⁷ In *Investment in Learning*, Howard Bowen provides some guidelines for describing changes in standard deviation units (SDUs).⁸

Estimated changes as expressed in SDUs	Descriptive judgment
+ .75 or above	Extreme increase
+ .40 to .74	Large increase
+ .20 to .39	Moderate increase
+ .10 to .19	Small increase
-.09 to +.09	No change
-.10 to -.19	Small decline
-.20 to -.39	Moderate decline
-.40 to -.74	Large decline
-.75 or below	Extreme decline

Changes in standard deviation units are calculated using the following formula:

$$\frac{\mu_1 - \mu_2}{\sqrt{\frac{1}{2}(\sigma_1^2 + \sigma_2^2)}}$$

where μ_1 and μ_2 are the mean scores in years 1 and 2, respectively, and σ_1 and σ_2 are the standard deviations of scores in years 1 and 2, respectively.

For example, table 20-1 indicates that between 1980 and 1985, mean verbal scores increased 7 points, and between 1980 and 1987, mean mathematics scores increased 10 points.

Applying the above formula, the following standard deviation units are produced:

Verbal: $431-424/110.5 = +.063$

Math: $476-466/119.5 = +.084$

According to Bowen's template, the changes in standard deviation units suggest no significant change in scores during this period. Using the

same calculation, the declines in verbal and mathematics scores from 1972 to 1993 were $-.259$ and $-.050$, respectively — moderate and not significant declines.

The New Version of the SAT

A new version of the SAT, now called the Scholastic Assessment Test, was introduced in March of 1994. The SAT was divided into the SAT I: Reasoning Tests, and the SAT II: Subject Tests. The SAT I is organized into verbal and mathematics sections similar to the previous version of the SAT, while the SAT II replaces the achievement tests for specific subject areas. Scores on the mathematics section of the SAT I can be compared to those from the previous version of the test. The new mathematics section contains some grid-in (or fill-in-the-blank) items, and calculators can now be used during the test; however, otherwise relatively little has changed. Because only minor changes were made to the types of questions students must complete, scores on the new mathematics section are comparable to those from the previous test version, and the scores of the March 1994 test-takers were included in the results for the graduating class of 1994. However, the verbal test has changed significantly. The original version of the SAT contained four types of verbal items: reading comprehension, sentence completion, analogies, and antonyms. The new SAT contains only three types of verbal items: critical reading, sentence completion, and analogies. These changes do not provide subscores comparable to the previous subscores.

Therefore, the verbal scores reported for the graduating class of 1994 do not include the March test-takers who took the new version of the SAT, approximately 3 percent of all test-takers. Because the March population was excluded in 1994, the verbal scores from this year are not necessarily comparable to other years. Any student taking the SAT after March 1994 took the new version, and these scores will be reported in 1995.

NOTES:

¹College Entrance Examination Board. *National Report: College Bound Seniors*, 1991.

²Anne Anastasi. *Psychological Testing*. MacMillan, Fifth edition, 1982, p. 90.

³College Entrance Examination Board. *National Report: College Bound Seniors*, 1991.

⁴College Entrance Examination Board. *On Further Examination: Report of the Advisory Panel on the Scholastic Aptitude Test Score Decline*, 1977.

⁵College Entrance Examination Board, *National Report: College Bound Seniors*, 1991.

⁶The Congress of the United States, Congressional Budget Office. *Trends in Educational Achievement*, April 1986.

⁷Clifford Adelman. *The Standardized Test Scores of College Graduates, 1964–1982*. National Institute of Education, 1985, p.11.

⁸Howard Bowen. *Investment in Learning*. Jossey-Bass, 1977.

Table 21-1 Scores on the Graduate Record Examination (GRE) and the number of GRE test-takers: School years ending 1965-93

School year ending	Number of bachelor's degrees	GRE test-takers		GRE scores				
		Number	As percent of bachelor's degrees ¹	Total	Verbal		Quantitative	
					Mean	Standard deviation	Mean	Standard deviation
1965	501,713	93,792	18.7	1,063	530	124	533	137
1966	520,923	123,960	23.8	1,048	520	124	528	133
1967	558,852	151,134	27.0	1,047	519	125	528	134
1968	632,758	182,432	28.8	1,047	520	124	527	135
1969	729,071	206,113	28.3	1,039	515	124	524	132
1970	792,656	265,359	33.5	1,019	503	123	516	132
1971	839,730	293,600	35.0	1,009	497	125	512	134
1972	887,273	293,506	33.1	1,002	494	126	508	136
1973	922,362	290,104	31.5	1,009	497	125	512	135
1974	945,776	301,070	31.8	1,001	492	126	509	137
1975	922,933	298,335	32.3	1,001	493	125	508	137
1976	925,746	299,292	32.3	1,002	492	127	510	138
1977	919,549	287,715	31.3	1,004	490	129	514	139
1978	921,204	286,383	31.1	1,002	484	128	518	135
1979	921,390	282,482	30.7	993	476	130	517	135
1980	929,417	272,281	29.3	996	474	131	522	136
1981	935,140	262,855	28.1	996	473	128	523	136
1982	952,998	256,381	26.9	1,002	469	130	533	137
1983	969,510	263,674	27.2	1,014	473	131	541	138
1984	974,309	265,221	27.2	1,016	475	130	541	139
1985	979,477	271,972	27.8	1,019	474	126	545	140
1986	987,823	279,428	28.3	1,027	475	126	552	140
1987	991,264	293,560	29.6	1,027	477	126	550	140
1988	994,829	303,703	30.5	1,040	483	123	557	140
1989	1,018,775	326,096	32.0	1,044	484	125	560	142
1990	21,051,344	344,572	32.8	1,048	486	123	562	143
1991	21,094,538	379,882	34.7	1,047	485	122	562	141
1992	21,136,553	411,528	36.2	1,044	483	120	561	140
1993	21,145,000	400,246	35.0	1,038	481	117	557	140

¹ Ratio of the number of GRE test-takers in a year to the number of bachelor's degrees awarded in that year expressed as a percentage.

² Revised from previously published data.

³ Estimated.

SOURCE: Educational Testing Service and U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1994*, table 234.

Table 21-2 Characteristics of Graduate Record Examination (GRE) test-takers: school years ending 1976–88

School year ending	Percent who are U.S. citizens	*Percent for whom English is not the preferred language
1976	92.5	6.0
1977	91.3	6.0
1978	91.1	6.0
1978	*89.1	—
1979	90.0	8.0
1980	89.3	8.0
1981	86.8	9.0
1982	86.7	10.2
1983	86.1	10.8
1984	85.9	11.4
1985	84.9	11.8
1986	84.5	12.4
1987	84.2	12.7
1988	*79.5	—

— Not available

* Based on revised procedures including an improved sample and data handling procedures. See Wah and Robinson (1990).

SOURCE: Diane M. Wah and Dawn S. Robinson, *Examinee and Score Trends for the GRE General Test: 1977–78, 1982–83, 1986–87, and 1987–88*, Educational Testing Service, 1990. Graduate Record Examination Board, *A Summary of Data Collected from Graduate Record Examinations Test-Takers During 1986–87: Data Summary Report #12*, June 1988 and earlier editions.**Table 21-3** Graduate Record Examination (GRE) scores for U.S. citizens only: school years ending 1973–88

School year ending	Verbal				Quantitative		
	Total	Mean	Standard deviation	Percent scoring over 500	Mean	Standard deviation	Percent scoring over 500
1973	1,010	500	—	—	510	—	—
1974	1,003	498	—	—	505	—	—
1975	1,004	497	—	—	507	—	—
1976	1,005	498	—	—	507	—	—
1977	1,004	495	—	—	509	—	—
1978	1,003	491	—	—	512	—	—
1979	1,011	499	118	49.7	512	130	53.8
1980	1,013	500	117	50.1	513	129	54.7
1981	1,015	499	115	50.8	516	130	55.8
1982	1,019	498	115	49.4	521	132	58.8
1983	1,032	503	117	50.9	529	133	59.7
1984	1,032	504	116	50.7	528	134	58.4
1985	1,029	502	114	49.9	527	134	58.6
1986	1,038	506	113	52.0	532	134	60.2
1987	1,036	505	115	51.5	531	134	59.5
1988*	1,045	508	114	—	537	135	—

— Not available.

* Based on revised procedures. Earlier procedures reported participants in international administration only. The later procedures included participants in international administration (including standby examinees) as well as special administrations at regional offices, Defense Activity for Non-Traditional Education Support (DANTES) for military personnel, and the Summer Institutional Testing Program (SITP). See Wah and Robinson (1990).

SOURCE: Diane M. Wah and Dawn S. Robinson, *Examinee and Score Trends for the GRE General Test: 1977–78, 1982–83, 1986–87, and 1987–88*, Educational Testing Service, 1990. Graduate Record Examination Board, *A Summary of Data Collected from Graduate Record Examinations Test-Takers During 1986–87: Data Summary Report #12*, June 1988 and earlier editions.

Table 21-4 Number of students taking the GRE subject tests as a percentage of college graduates, and their means and standard deviations, by subject: Selected school years ending 1983, 1988, and 1993

Subject	1982-83			1987-88			1992-93		
	Percentage distribution of subject tests	Mean	Standard deviation	Percentage distribution of subject tests	Mean	Standard deviation	Percentage distribution of subject tests	Mean	Standard deviation
All subjects	100.0	—	—	100.0	—	—	100.0	—	—
Mathematics and science	38.1	—	—	34.7	—	—	32.4	—	—
Mathematics	4.6	695	153	5.0	720	161	5.2	737	166
Biology	16.9	617	115	16.1	615	114	13.6	606	114
Chemistry	6.5	615	105	5.9	631	108	6.0	662	133
Geology	5.4	574	87	1.9	582	88	1.5	565	84
Physics	4.7	641	139	5.8	645	147	6.1	664	153
Computer and engineering sciences	15.7	—	—	18.2	—	—	14.4	—	—
Computer science	5.0	602	98	7.9	622	98	7.4	648	99
Engineering	10.7	590	114	10.3	622	120	7.0	602	115
Social sciences	30.4	—	—	28.9	—	—	34.0	—	—
Economics	4.4	613	107	3.6	625	105	3.3	637	120
Education	5.5	453	90	4.3	467	85	2.6	462	80
Psychology	18.8	542	95	18.9	537	94	25.0	536	97
Sociology	1.7	434	106	2.1	434	100	3.1	425	94
English and history	12.1	—	—	15.0	—	—	17.1	—	—
English literature	6.3	520	98	8.7	525	94	11.5	516	94
History	3.1	502	77	3.6	505	79	3.6	499	76
Political science	2.7	463	87	2.7	457	80	2.1	453	76
Foreign Language	1.1	—	—	1.2	—	—	—	—	—
French	0.6	508	88	0.5	519	88	—	—	—
Spanish	0.5	520	106	0.7	533	111	—	—	—
Music*	2.6	503	91	2.1	492	88	2.1	502	94

— Not applicable.

* The music test was revised beginning with the 1989-90 school year.

NOTE: The number of subject tests as a percentage of general tests taken has decreased over the years, falling from 29 percent in 1983 to 26 percent in 1988 and to 19 percent in 1993. Subject matter scores range from 200 to 990.

SOURCE: Educational Testing Service and U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1994*, table 303.

Table 22-1 Percentage of 25- to 29-year-olds who have completed high school,* by race/ethnicity and sex: 1971-94

March	All			White			Black			Hispanic		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
1971	77.7	79.1	76.5	81.7	83.0	80.5	58.8	56.7	60.5	48.3	51.3	45.7
1972	79.8	80.5	79.2	83.4	84.1	82.7	64.1	61.7	66.0	47.6	47.1	47.9
1973	80.2	80.6	79.8	84.0	84.2	83.9	64.1	63.2	64.9	52.3	54.2	50.6
1974	81.9	83.1	80.8	85.5	86.0	85.0	68.4	71.5	65.8	54.1	55.9	52.5
1975	83.1	84.5	81.7	86.6	88.0	85.2	71.1	72.3	70.1	53.1	52.2	53.9
1976	84.7	86.0	83.5	87.7	89.0	86.4	74.0	72.8	74.9	58.1	57.6	58.4
1977	85.4	86.6	84.2	88.6	89.2	88.0	74.5	77.5	72.0	58.0	61.9	54.6
1978	85.3	86.0	84.6	88.5	88.8	88.2	77.4	78.7	76.3	56.5	58.5	54.6
1979	85.6	86.3	84.9	89.2	89.8	88.5	74.7	74.0	75.3	57.1	55.5	58.6
1980	85.4	85.4	85.5	89.2	89.1	89.2	76.7	74.8	78.3	57.9	57.0	58.8
1981	86.3	86.5	86.1	89.8	89.7	89.9	77.6	78.8	76.6	59.8	59.1	60.4
1982	86.2	86.3	86.1	89.1	89.1	89.1	81.0	80.4	81.5	61.0	60.6	61.2
1983	86.0	86.0	86.0	89.3	89.3	89.3	79.5	79.0	79.9	58.4	57.8	58.9
1984	85.9	85.6	86.3	89.4	89.4	89.4	79.1	75.9	81.7	58.6	56.7	60.1
1985	86.2	85.9	86.4	89.5	89.2	89.9	80.5	80.6	80.5	61.0	58.6	63.1
1986	86.1	85.9	86.4	89.6	88.7	90.4	83.5	86.4	81.0	59.1	58.2	60.0
1987	86.0	85.5	86.4	89.4	88.9	90.0	83.5	84.5	82.6	59.8	58.6	61.0
1988	85.9	84.7	87.1	89.7	88.4	90.9	80.9	80.9	80.9	62.3	59.9	64.8
1989	85.5	84.4	86.5	89.3	88.2	90.4	82.3	80.5	83.8	61.0	61.0	61.1
1990	85.7	84.4	87.0	90.1	88.6	91.6	81.8	81.4	82.0	58.2	56.6	59.9
1991	85.4	84.9	85.8	89.8	89.2	90.5	81.8	83.6	80.1	56.7	56.4	57.2
High school graduate - Diploma or equivalency certificate												
1992	86.3	86.1	86.5	90.6	90.3	91.1	80.9	82.7	79.3	60.9	61.1	60.6
1993	86.7	86.0	87.4	91.2	90.7	91.8	82.7	84.8	80.8	60.9	58.2	63.9
1994	86.1	84.5	87.6	91.1	90.0	92.3	84.1	82.8	85.3	60.3	58.0	63.0

* 12 years of schooling completed for 1971-91 and high school diploma or equivalency certificate for 1992-94.

NOTE: Beginning in 1992, the Current Population Survey changed the questions it used to obtain the educational attainment of respondents. See the supplemental note to this indicator for further discussion.

SOURCE: U.S. Department of Commerce, Bureau of the Census, March Current Population Surveys.

Table 22-2 Percentage of 25- to 29-year-old high school graduates* who have completed 1 or more years of college, by race/ethnicity and sex: 1971-94

March	All			White			Black			Hispanic		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
1971	43.6	48.7	38.4	44.9	50.2	39.5	30.9	29.0	32.2	30.6	38.3	22.8
1972	45.1	50.7	39.5	46.3	52.3	40.2	33.3	31.7	34.6	32.1	37.2	28.3
1973	45.3	51.4	39.4	46.6	53.0	40.2	33.5	33.5	33.5	31.6	39.4	24.5
1974	48.9	53.8	44.1	50.4	55.6	45.2	35.4	36.9	34.1	39.2	44.1	34.5
1975	50.1	56.0	44.1	51.2	57.3	44.9	38.7	41.0	36.8	41.1	50.4	32.6
1976	52.1	58.2	46.0	53.8	60.1	47.4	37.2	40.5	34.7	36.3	42.3	31.2
1977	53.2	58.0	48.5	54.8	59.9	49.7	41.7	44.2	39.6	41.1	42.6	39.5
1978	54.4	59.3	49.6	55.9	61.4	50.3	44.9	45.2	44.4	43.6	47.2	40.1
1979	54.1	57.7	50.6	55.7	59.4	51.9	41.7	40.7	42.5	44.0	50.7	38.0
1980	52.3	55.8	49.0	53.8	57.3	50.3	42.3	43.6	41.3	39.9	45.5	34.7
1981	50.1	52.7	47.5	51.2	54.1	48.3	42.5	43.0	42.2	39.6	41.7	37.7
1982	49.9	51.5	48.3	50.7	52.2	49.1	45.8	47.4	44.6	39.6	40.6	38.7
1983	50.6	52.1	49.0	51.6	53.4	49.7	41.6	42.0	41.2	42.9	41.1	44.6
1984	50.1	50.9	49.3	51.0	51.7	50.3	41.6	41.6	41.7	45.6	47.5	44.0
1985	50.8	51.5	50.1	51.8	52.5	51.2	42.7	42.4	42.9	44.2	45.9	42.9
1986	51.0	51.4	50.8	52.3	52.8	51.8	43.4	41.5	45.2	42.9	42.8	43.0
1987	50.7	50.4	51.0	51.4	51.5	51.4	43.0	38.4	47.0	44.6	46.3	43.1
1988	50.8	51.6	50.1	51.8	52.4	51.2	41.2	42.9	39.7	44.9	44.3	45.6
1989	51.3	52.0	50.5	52.8	53.4	52.2	42.1	42.2	41.9	44.3	44.8	43.9
1990	52.0	51.8	52.1	53.6	53.4	53.8	44.1	43.0	45.0	40.1	40.4	39.8
1991	53.1	52.3	53.8	54.9	54.7	55.1	43.2	38.3	47.7	42.2	40.9	43.4
Some college or more												
1992	56.7	56.0	57.4	58.8	58.3	59.2	44.7	42.3	46.9	46.8	44.5	49.6
1993	58.9	57.6	60.1	61.0	60.3	61.6	48.4	43.6	52.5	48.8	46.1	51.9
1994	60.5	58.9	62.0	62.7	61.0	64.3	49.6	48.7	50.3	51.5	48.3	55.0

* 12 years of schooling completed for 1971-91 and high school diploma or equivalency certificate for 1992-94.

NOTE: Beginning in 1992, the Current Population Survey changed the questions it used to obtain the educational attainment of respondents. See the supplemental note to this indicator for further discussion.

SOURCE: U.S. Department of Commerce, Bureau of the Census, March Current Population Surveys.

Table 22-3 Percentage of 25- to 29-year-old high school graduates* who have completed 4 or more years of college, by race/ethnicity and sex: 1971-94

March	All			White			Black			Hispanic		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
1971	22.0	25.8	18.1	23.1	27.0	19.1	11.5	12.1	10.9	10.5	15.4	5.8
1972	23.7	27.3	20.2	24.9	28.6	21.1	13.1	11.6	14.3	7.8	9.5	6.4
1973	23.6	26.8	20.5	24.8	28.3	21.3	12.7	11.3	13.8	10.8	12.4	9.7
1974	25.3	28.7	21.8	27.2	31.1	23.2	11.5	12.3	11.0	10.1	8.9	11.2
1975	26.3	29.7	22.9	27.5	31.1	23.7	14.7	15.3	14.2	16.6	19.7	13.4
1976	28.0	32.0	24.1	29.3	33.5	25.0	17.6	16.5	18.6	12.7	17.9	8.2
1977	28.1	31.2	25.1	29.8	33.4	26.3	16.9	16.5	17.3	11.5	11.3	11.7
1978	27.3	30.2	24.4	28.9	32.6	25.3	15.2	13.6	16.5	17.1	16.4	17.9
1979	27.0	29.9	24.2	28.6	31.6	25.5	16.6	17.8	15.7	12.9	14.2	11.4
1980	26.3	28.1	24.5	28.0	30.1	26.0	15.0	14.0	15.8	13.2	15.0	11.8
1981	24.7	26.6	22.8	26.3	28.4	24.2	14.9	15.4	14.5	12.5	14.4	10.9
1982	25.2	26.9	23.4	26.7	28.8	24.6	15.6	14.6	16.4	15.9	17.8	14.2
1983	26.2	27.8	24.6	27.4	29.4	25.4	16.2	16.5	15.9	17.8	16.8	18.8
1984	25.5	27.1	24.0	27.0	28.5	25.4	14.8	17.1	13.0	18.1	17.0	19.2
1985	25.7	26.9	24.6	27.3	28.6	26.0	14.4	12.9	15.6	18.2	18.6	17.7
1986	26.0	26.7	25.3	28.1	29.1	27.1	14.2	11.9	16.3	15.3	15.4	15.2
1987	25.6	26.1	25.2	27.6	28.0	27.1	13.8	14.0	13.6	14.5	15.7	13.4
1988	26.4	27.6	25.2	28.0	29.1	26.9	14.8	15.3	14.4	18.1	19.8	16.3
1989	27.3	28.3	26.5	29.5	30.5	28.5	15.4	15.0	15.6	16.5	15.7	17.2
1990	27.1	28.0	26.2	29.3	30.0	28.6	16.4	18.6	14.5	14.0	12.9	15.2
1991	27.2	27.0	27.3	29.7	29.7	29.8	13.4	13.7	13.1	16.3	14.4	18.1
Bachelor's degree or more												
1992	27.3	26.9	27.8	30.0	29.5	30.4	13.7	14.2	13.2	15.6	14.3	17.0
1993	27.3	27.2	27.4	29.8	30.0	29.5	16.1	14.8	17.2	13.6	12.1	15.3
1994	27.0	26.6	27.4	29.7	29.8	29.6	16.2	14.0	17.9	13.3	11.3	15.5

* 12 years of schooling completed in 1971-91 and high school diploma or equivalency certificate for 1992-94.

NOTE: Beginning in 1992, the Current Population Survey changed the questions it used to obtain the educational attainment of respondents. See the supplemental note to this indicator for further discussion.

SOURCE: U.S. Department of Commerce, Bureau of the Census, March Current Population Surveys.

Note on educational attainment

The Current Population Survey, which is used for *Indicators 6, 22, 29, 30, 32*, and others, changed the questions used to determine a respondent's educational attainment beginning in 1992.

Before 1992, the questions were 1) "What is the highest grade or year of regular school ... has ever attended?" and 2) "Did ... complete the grade?"

There were 19 response categories for grades 1 through 8: 1st through 4th year of high school, and 1st through 6th year of college.

If respondents attended, for example, grade 12 but did not complete it, it was assumed that they had completed grade 11. If the highest grade respondents had completed was 9, 10, or 11, they were classified as high school dropouts. If the highest grade completed was 12 or greater, they were considered to have completed high school. If it was the 4th year of college or greater, they were considered to have completed college.

Beginning in 1992, the two questions were changed to a single question: "What is the highest level of school ... has completed or the highest degree ... has received?" In the new response categories, several of the lower levels have been collapsed into a single summary category such as "1st, 2nd, 3rd, or 4th grades." At the high school level, a new category "12th grade, no diploma" was added. The biggest change was in the categories for high school completion and beyond, which are as follows:

- High school graduate—high school diploma or equivalent (for example, GED)
- Some college but no degree
- Associate's degree in college—Academic program
- Associate's degree in college—Occupational or vocational program
- Bachelor's degree (For example: BA, AB, BS)
- Master's degree (For example: MA, MS, MEd, MEd, MSW, MBA)
- Professional school degree (For example: MD, DDS, DVM, LLB, JD)
- Doctoral degree (For example: PhD, EdD)

The new question puts more emphasis on credentials received beginning at the high school level, and it puts less emphasis on the level attended or completed in college if that attendance did not lead to a credential.

These changes created some uncertainty about the comparability of measures, such as high school completion rates and college completion rates over time.

High school completion: The earlier education attainment question did not deal explicitly with high school equivalency certificates. Therefore, it is possible that a person who attended grade 10, dropped out without completing it, and later took the GED test and received a high school equivalency credential would not have been counted as a high school completer. The new question, however, explicitly treats these people as high school graduates. Since 1988, an additional question was added to the October Current Population Survey that explicitly asked respondents whether they had taken the GED. The vast majority of those who responded "yes" were classified as high school graduates using the attainment question.

The earlier education attainment question treated people who completed grade 12 as high school graduates. However, the new question added a new response category called "12th grade, no diploma," and these respondents were not treated as graduates. However, the number of people in this category has been very small. In summary, it appears that the change has had minor effects on measured high school completion rates.

College completion: With the increasing prevalence of people taking more than 4 years to finish college (i.e., receive a bachelor's degree), some analysts have worried that the college completion rate based on "4th year or higher of college completed" would overstate the bachelor's degree (or higher) completion rate. However, the college completion rates among 25- to 29-year-olds in 1992 and 1993 using the new question are very similar to the completion rates in 1990 and 1991 using the old questions. In summary, it appears that the change has had a very small effect on measured college completion rates.

Some college. With the new question, someone who attends college for only a few months should respond "Some college," but with the old questions they should have responded "Attended first year of college and did not complete it." In the past, the calculation of the percentage of the population with 1 to 3 years of college excluded these people. However, with the new question, the information to exclude them is not available, and those with only a few months of college are included in the category "Some college." So, in principle, the percentage of people with "Some college" or an associate's degree would be expected to be larger than the percentage with 1 to 3 years of college. Therefore, it does not appear useful to compare the percentage with "Some college or an associate's degree," using the new item, to the percentage who completed "1 to 3 years of college," using the old item.

Indicators 29 and 30 use labor force statistics for the civilian population and annual earnings for wage and salary workers with different levels of educational attainment. The discussion above suggests that the "high school graduate with no further education" category based on the new items is larger than before because it includes equivalency graduates but smaller than before because it excludes those who completed "12th grade, no diploma," and those with only a few months of college. The latter group is now included in the "1 to 3 years of college" category.

Nevertheless, the employment and earnings of the respondents who have been added and dropped from each category are similar; therefore, the net effect of the misclassification on employment rates and average annual earnings are likely to be minor. For this reason, it was decided that it would be useful to continue the series—that is, to compare the employment rates and average annual earnings of recent cohorts with "Some college or an associate's degree" to older cohorts who completed "1 to 3 years of college."

For further information on this issue, see Robert Kominski and Paul M. Siegel; "Measuring Education in the Current Population Survey," *Monthly Labor Review*, September 1993.

Table 23-1 Percentage of the population who have completed secondary and higher education, by sex, country, and age: 1992

Country	Both sexes		Male		Female	
	Secondary education	Higher education	Secondary education	Higher education	Secondary education	Higher education
25-64 years old						
Large countries						
United States ¹	84.0	23.6	83.8	26.0	84.3	21.3
Japan ²	69.7	13.3	70.9	21.5	68.5	5.2
Germany	81.9	11.6	88.6	14.8	75.1	8.3
United Kingdom	68.1	10.7	73.9	13.8	62.2	7.7
France	52.2	10.2	56.2	11.3	48.4	9.2
Italy	28.4	6.4	30.5	7.3	26.4	5.4
Canada	71.3	15.0	71.0	16.8	71.5	13.2
Other countries						
Australia ³	52.8	11.8	62.9	12.9	42.6	10.7
Austria	68.0	6.9	77.7	7.9	58.3	6.0
Belgium	45.3	8.8	47.0	11.6	43.6	6.1
Denmark	58.9	13.3	63.4	14.0	54.4	12.7
Finland	61.5	10.4	61.1	12.1	61.9	8.8
Ireland	42.2	8.3	38.9	9.8	45.5	6.9
Netherlands	57.9	20.9	63.8	23.8	51.9	17.8
New Zealand	56.4	11.1	62.2	13.5	50.8	8.7
Norway	79.0	12.4	79.9	14.8	78.1	10.0
Portugal ⁴	14.2	5.0	14.7	5.4	13.7	4.6
Spain	22.9	10.0	25.7	10.7	20.3	9.4
Sweden	69.9	11.7	68.3	12.2	71.4	11.2
Switzerland	80.8	8.0	87.0	11.0	74.6	5.1
25-34 years old						
Large countries						
United States ¹	86.5	23.2	85.9	23.3	87.0	23.1
Japan ²	90.6	22.9	89.3	34.2	91.8	11.5
Germany	88.6	11.8	90.9	13.0	86.3	10.5
United Kingdom	80.9	12.5	82.2	14.3	79.6	10.7
France	67.1	12.3	68.4	12.4	65.7	12.1
Italy	42.4	6.8	41.5	6.8	43.3	6.7
Canada	80.8	16.1	79.0	16.0	82.5	16.2
Other countries						
Australia ³	56.6	13.1	65.2	13.1	47.8	13.1
Austria	78.9	7.9	85.0	7.6	72.7	8.3
Belgium	59.9	11.5	57.7	13.2	62.2	9.6
Denmark	66.9	12.3	67.7	12.4	66.0	12.1
Finland	81.7	11.1	79.8	12.2	83.7	9.9
Ireland	55.8	9.8	50.3	10.1	61.1	9.6
Netherlands	67.9	23.6	68.6	24.3	67.1	22.8
New Zealand	59.6	12.6	64.1	14.3	55.4	10.9
Norway	88.1	12.7	86.5	12.9	89.7	12.4
Portugal ⁴	20.6	6.9	18.7	6.1	22.5	7.7
Spain	41.3	16.3	41.2	14.5	41.3	18.1
Sweden	88.0	9.3	81.4	9.4	84.7	9.3
Switzerland	87.2	8.7	89.7	11.4	84.7	6.1

Table 23-1 Percentage of the population who have completed secondary and higher education, by sex, country, and age: 1992—Continued

Country	Both sexes		Male		Female	
	Secondary education	Higher education	Secondary education	Higher education	Secondary education	Higher education
35-44 years old						
Large countries						
United States ¹	88.2	26.8	88.0	28.6	88.3	25.1
Japan ²	77.0	14.5	77.0	23.6	77.0	5.4
Germany	86.9	15.4	91.3	18.8	82.5	11.9
United Kingdom	71.1	13.0	77.4	16.6	64.9	9.3
France	57.0	11.2	60.9	11.7	53.2	10.7
Italy	34.5	9.2	37.0	10.2	31.9	8.1
Canada	77.5	17.4	77.1	19.1	77.9	15.8
Other countries						
Australia ³	56.3	14.7	67.1	16.3	45.5	13.1
Austria	70.4	9.4	78.2	10.0	62.7	8.7
Belgium	51.5	10.7	53.2	13.7	49.7	7.6
Denmark	60.9	16.2	65.4	16.2	56.1	16.1
Finland	69.1	13.0	67.9	14.5	70.3	11.5
Ireland ³	43.6	8.9	41.0	10.6	46.3	7.2
Netherlands	61.0	24.2	66.8	27.7	54.7	20.5
New Zealand	58.3	12.9	63.7	15.1	53.1	10.6
Norway	83.2	15.5	83.7	18.5	82.6	12.2
Portugal ⁴	16.7	6.4	17.7	7.1	15.6	5.7
Spain	24.3	10.9	28.0	12.0	20.8	9.9
Sweden	76.1	14.4	73.1	14.9	79.2	13.8
Switzerland	83.9	9.5	88.2	12.6	79.4	6.2
45-54 years old						
Large countries						
United States ¹	82.7	24.1	82.8	29.0	82.6	19.6
Japan ²	59.6	9.1	62.4	15.8	56.9	2.5
Germany	80.6	11.4	87.8	16.0	73.1	6.7
United Kingdom	62.0	9.1	70.6	12.9	53.5	5.3
France	47.3	10.4	52.6	12.2	41.9	8.6
Italy	20.5	5.6	24.4	7.0	16.8	4.3
Canada	65.4	14.9	66.1	18.6	64.7	11.1
Other countries						
Australia ³	50.7	10.9	61.8	12.8	39.1	8.9
Austria	64.9	5.9	77.3	8.5	52.7	3.3
Belgium	38.2	7.4	41.6	11.1	34.8	3.6
Denmark	58.0	13.2	63.3	14.9	52.6	11.5
Finland	52.1	10.4	52.0	12.6	52.2	8.1
Ireland ³	34.7	7.8	32.5	10.1	37.1	5.5
Netherlands	52.2	18.4	61.2	22.5	42.9	14.1
New Zealand	54.6	10.1	62.4	13.7	46.8	6.4
Norway	75.4	12.6	77.0	15.9	73.7	9.3
Portugal ⁴	10.4	3.7	12.2	4.7	7.1	2.8
Spain	13.8	7.1	17.9	9.0	9.8	5.3
Sweden	65.4	13.6	63.4	14.1	67.5	13.1
Switzerland	77.5	7.8	85.8	10.9	68.9	4.6

¹ In the United States, completing secondary education is defined as graduating from high school or earning a GED; completing higher education is defined as earning a bachelor's degree or more.

² 1989 data.

³ 1993 data.

⁴ 1991 data.

SOURCE: Organization for Economic Cooperation and Development, *Indicators of Education's Systems, Digest of International Education Statistics*, forthcoming.

Table 24-1 Average years of study required in core subjects for public high school graduation, and percentage of students in districts with graduation requirements at or above the National Commission on Excellence in Education's (NCEE) recommendations, by subject and selected school district characteristics: 1990-91

District characteristics	English		Math		Science		Four core subjects ¹	
	Years	Percent with 4 or more	Years	Percent with 3 or more	Years	Percent with 3 or more	Years	Percent with 13 or more
Total	3.8	81.5	2.5	41.6	2.1	21.1	11.3	19.8
Residents aged 25 and older who have completed high school								
Less than 65.0 percent	3.9	93.8	2.5	47.3	2.2	22.8	11.3	21.0
65 to 84.9 percent	3.8	81.7	2.5	43.3	2.1	22.6	11.4	20.8
85 percent or more	3.8	71.6	2.3	30.2	2.1	14.3	11.1	13.3
Residents aged 25 and older with a 4-year college degree or higher								
Less than 10.0 percent	3.8	82.2	2.5	44.5	2.1	23.4	11.2	20.6
10.0 to 24.9 percent	3.9	83.5	2.5	41.5	2.2	21.6	11.4	20.2
25.0 percent or more	3.8	75.8	2.4	38.5	2.1	16.9	11.2	15.6
Residents who are minority								
Less than 5.0 percent	3.8	73.3	2.4	31.5	2.1	20.4	11.2	18.0
5.0 to 19.9 percent	3.8	79.7	2.4	39.1	2.1	17.9	11.2	16.8
20.0 to 49.9 percent	3.9	84.7	2.6	54.6	2.2	28.5	11.6	25.8
50.0 percent or more	3.9	95.3	2.4	40.6	2.0	15.5	11.5	15.8
Households receiving public assistance								
Less than 5.0 percent	3.9	81.0	2.5	41.9	2.1	21.9	11.4	19.8
5.0 to 9.9 percent	3.8	79.3	2.5	43.5	2.2	21.1	11.3	19.4
10.0 percent or more	3.9	87.0	2.4	38.0	2.1	20.1	11.3	19.1
Single-parent households in poverty ²								
Lowest 25 percent	3.8	76.6	2.4	36.6	2.1	17.1	11.3	16.3
Middle 50 percent	3.8	80.8	2.4	40.4	2.1	21.2	11.3	19.3
Highest 25 percent	3.9	89.3	2.5	49.1	2.2	25.1	11.5	22.8
Linguistically isolated households ³								
Less than 5.0 percent	3.8	82.9	2.5	40.1	2.1	19.3	11.1	16.8
5.0 to 14.9 percent	3.8	79.0	2.5	41.6	2.2	24.6	11.4	22.1
15.0 percent or more	3.9	86.4	2.4	42.5	2.1	15.8	11.5	16.4
Median household income ⁴								
Lowest 25 percent	3.8	85.7	2.5	49.7	2.2	27.4	11.4	24.5
Middle 50 percent	3.9	82.8	2.4	40.7	2.1	21.7	11.3	20.3
Highest 25 percent	3.8	76.0	2.4	35.2	2.1	13.7	11.3	12.7
District spending per pupil								
Less than \$3,500	3.8	86.2	2.5	44.0	2.1	17.7	11.1	14.9
\$3,500 to \$4,499	3.8	74.7	2.5	43.2	2.1	20.2	11.2	19.0
\$4,500 to \$5,499	3.9	81.4	2.6	50.5	2.2	33.2	11.7	32.0
\$5,500 or more	3.9	89.6	2.3	27.5	2.1	14.4	11.5	13.8
Urbanicity of district								
Central city	3.9	84.0	2.4	40.9	2.1	18.8	11.5	18.4
Suburban/other urban	3.8	79.6	2.5	41.6	2.1	21.8	11.3	20.5
Rural/small town	3.8	82.3	2.5	42.2	2.2	22.0	11.3	19.8

¹ The fourth core subject is social studies.

² The lowest 25 percent are those with 1.8 percent or fewer and the highest 25 percent are those with 5.3 percent or more households headed by a single parent in poverty.

³ The Census Bureau defines these as households in which no members over age 13 speak English "very well," and all members over age 13 speak a language other than English at home.

⁴ The lowest 25 percent are those with median household income less than about \$24,000, and the highest 25 percent are those with median household income greater than about \$36,000.

NOTE: Estimates are weighted using district enrollment in grades 9-12. Districts with 3-year high school program requirements were excluded from the analysis. These districts comprised about 3 percent of the total. Districts that did not serve students in grades 10-12 were also excluded.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990-91 (Teacher Demand and Shortage Questionnaire); Common Core of Data 1989-90; 1990 Census School District Special Tabulation, Summary File Set 1 extract; and NCEE, *A Nation at Risk* (1983).

Table 24-2 Percentage of public high school students in districts with course graduation requirements above their own state's requirements, by subject and selected school district characteristics: 1990-91¹

District characteristics	English	Math	Social studies	Science	Four core subjects	Computer science	Foreign language
Total	28.1	50.3	44.3	18.0	57.1	22.1	22.0
Residents aged 25 and older who have completed high school							
Less than 65.0 percent	25.3	47.7	36.7	15.2	59.6	26.5	20.4
65.0 to 84.9 percent	26.1	49.7	44.3	16.6	53.0	21.2	21.4
85.0 percent or more	35.5	54.4	51.6	25.3	68.2	21.0	23.2
Residents aged 25 and older with a 4-year college degree or higher							
Less than 10.0 percent	24.8	53.6	47.5	20.7	54.1	29.7	18.8
10.0 to 24.9 percent	26.5	47.1	41.5	15.7	55.2	20.2	20.2
25.0 percent or more	34.9	57.1	50.7	22.7	65.6	19.6	29.1
Residents who are minority							
Less than 5.0 percent	29.4	54.3	51.9	27.9	55.7	25.1	15.6
5.0 to 19.9 percent	28.1	49.3	46.1	16.9	58.8	20.8	17.3
20.0 to 49.9 percent	21.0	50.0	39.0	15.1	55.6	23.0	23.6
50.0 percent or more	35.5	45.4	37.7	8.5	57.4	17.7	36.1
Households receiving public assistance							
Less than 5.0 percent	25.6	54.3	46.3	18.8	58.3	22.9	17.2
5.0 to 9.9 percent	25.1	48.7	45.0	18.5	56.1	21.8	20.2
10.0 percent or more	34.9	47.0	40.6	16.1	56.0	21.3	30.0
Single-parent households in poverty ²							
Lowest 25 percent	30.9	56.2	47.9	20.9	58.8	23.4	22.0
Middle 50 percent	28.9	44.7	42.4	17.3	58.2	21.1	18.1
Highest 25 percent	21.9	55.3	44.8	16.4	52.3	22.5	28.1
Linguistically isolated households ³							
Less than 5.0 percent	15.0	50.9	45.3	19.0	53.3	20.4	12.5
5.0 to 14.9 percent	27.0	52.6	47.8	22.5	56.3	23.5	16.1
15.0 percent or more	38.7	45.2	37.3	8.7	60.6	20.5	39.1
Median household income ⁴							
Lowest 25 percent	18.1	53.1	50.8	19.5	57.3	28.3	17.6
Middle 50 percent	28.0	46.6	40.9	15.7	53.8	19.0	20.7
Highest 25 percent	36.7	54.6	45.0	21.2	62.7	21.9	27.3
District spending per pupil							
Less than \$3,500	86.2	44.0	65.0	17.7	14.9	25.3	14.9
\$3,500 to \$4,499	74.7	43.2	67.1	20.2	19.0	25.0	18.2
\$4,500 to \$5,499	81.4	50.5	79.6	33.2	32.0	16.0	20.5
\$5,500 or more	89.6	27.5	81.1	14.4	13.8	16.7	33.4
Urbanicity of district							
Central city	11.9	51.3	55.9	12.0	63.2	22.6	15.3
Suburban/other urban	32.0	53.6	47.6	21.1	57.9	24.9	18.9
Rural/small town	27.3	40.5	28.2	13.6	46.6	18.7	34.9

¹ Districts in Colorado, Iowa, Massachusetts, Nebraska, and Wyoming were excluded from the analysis for this table to avoid skewing the results, because these states have either no or minimal subject-specific requirements.

² The lowest 25 percent are those with 1.8 percent or fewer and the highest 25 percent are those with 5.3 or more households headed by a single parent in poverty.

³ The Census Bureau defines these as households in which no members over age 13 speak English "very well," and all members over age 13 speak a language other than English at home.

⁴ The lowest 25 percent are those with median household income less than about \$24,000 and the highest 25 percent are those with median household income greater than about \$36,000.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990-91 (Teacher Demand and Shortage Questionnaire); Common Core of Data 1989-90; 1990 Census School District Special Tabulation, Summary File Set 1 extract; and Education Commission of the States, *Clearinghouse Notes* (1993).

Table 24-3 Average years of study required for public high school graduation, by subject and state: 1990-91

State	English	Math	Social studies	Science	Four core subjects	Computer science	Foreign language
Total	3.8	2.5	2.9	2.1	11.3	0.2	0.3
State							
Alabama	3.9	2.2	3.2	2.2	11.5	0.2	0.4
Alaska	4.0	2.1	3.0	2.3	11.4	0.2	0.0
Arizona	4.0	2.3	3.1	2.1	11.5	0.1	0.1
Arkansas	4.0	2.8	2.8	2.3	11.9	0.3	0.1
California	3.7	2.3	3.1	2.0	11.1	0.1	0.7
Colorado	3.7	2.3	3.0	2.2	11.1	0.2	0.1
Connecticut	4.0	3.0	3.0	2.3	12.3	0.1	0.1
Delaware	3.8	2.3	2.7	2.0	10.7	0.1	0.0
District of Columbia	4.0	2.0	2.0	2.0	10.0	1.0	2.0
Florida	4.0	3.0	3.0	2.9	12.9	0.1	0.1
Georgia	3.6	2.4	2.9	2.1	11.0	0.4	0.4
Hawaii	4.0	2.0	4.0	2.0	12.0	0.0	0.0
Idaho	3.8	2.3	2.9	2.3	11.3	0.1	0.2
Illinois	3.6	2.1	2.5	1.5	9.6	0.1	0.3
Indiana	3.7	2.6	2.6	2.2	11.1	0.2	0.0
Iowa	3.5	2.1	3.0	2.0	10.6	0.2	0.0
Kansas	4.0	2.2	2.9	2.0	11.0	0.2	0.1
Kentucky	4.0	3.0	2.2	2.2	11.3	0.1	0.1
Louisiana	3.9	3.0	3.0	3.0	12.9	0.5	0.1
Maine	4.0	2.7	2.4	2.2	11.3	0.6	0.2
Maryland	4.0	3.0	3.0	2.2	12.2	0.5	0.2
Massachusetts	4.0	2.4	2.4	2.0	10.8	0.3	0.4
Michigan	3.6	2.1	2.9	2.0	10.6	0.5	0.3
Minnesota	3.7	1.8	3.5	1.7	10.7	0.1	0.0
Mississippi	4.0	2.5	2.8	2.2	11.5	0.1	0.1
Missouri	3.4	2.2	2.9	2.1	10.5	0.2	0.2
Montana	4.0	2.3	2.6	2.1	10.9	0.2	0.2
Nebraska	3.9	2.2	3.1	2.1	11.2	0.3	0.1
Nevada	3.4	2.3	2.8	1.5	9.9	0.3	0.0
New Hampshire	3.9	2.1	2.5	2.1	10.6	0.7	0.3
New Jersey	4.0	2.8	2.9	2.0	11.6	0.3	0.2
New Mexico	4.0	3.0	3.0	2.1	12.0	0.1	0.2
New York	4.0	2.1	4.0	2.0	12.1	0.1	1.2
North Carolina	4.0	2.4	2.3	2.3	10.9	0.1	0.0
North Dakota	4.0	2.3	3.0	2.1	11.3	0.2	0.0
Ohio	3.6	2.2	2.5	1.6	9.9	0.1	0.1
Oklahoma	4.0	2.3	2.6	2.1	11.0	0.1	0.1
Oregon	3.8	2.0	2.9	1.9	10.6	0.1	0.2
Pennsylvania	4.0	3.1	3.4	2.9	13.3	0.2	0.2
Rhode Island	4.0	2.3	2.3	2.1	10.7	0.5	1.2
South Carolina	3.9	3.0	2.8	2.0	11.8	0.1	0.1
South Dakota	4.0	2.2	3.1	2.2	11.5	0.7	0.1
Tennessee	4.0	2.1	1.8	2.0	10.0	0.1	0.5
Texas	4.0	2.9	2.9	2.2	12.0	0.4	0.4
Utah	3.9	2.1	2.9	2.1	10.9	0.4	0.2
Vermont	3.8	2.7	2.9	2.6	12.0	0.0	0.2
Virginia	3.9	2.4	3.0	2.2	11.5	0.1	0.4
Washington	3.6	2.1	3.0	2.0	10.7	0.1	0.1
West Virginia	4.0	2.5	3.1	2.1	11.7	0.1	0.3
Wisconsin	3.9	2.1	3.1	2.1	11.2	0.2	0.1
Wyoming	3.7	2.3	2.8	2.1	10.9	0.1	0.1

NOTE: Averages are calculated by weighting school district requirements by district enrollment in grades 9 to 12. Districts with 3-year high school program requirements were excluded from the table.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990-91 (Teacher Demand and Shortage Questionnaire).

Table 24-4 Average years of study required for private high school graduation, by subject and private school type: 1990-91

Private school type	English	Mathematics	Social studies	Science	Four core subjects	Computer science	Foreign language
Total	3.9	2.8	3.0	2.4	12.1	0.4	1.4
Catholic							
Parochial	3.8	2.6	3.0	2.4	11.8	0.6	0.9
Diocesan	4.0	2.7	3.1	2.4	12.2	0.3	1.1
Private order	3.9	2.9	3.0	2.4	12.2	0.5	2.0
Other religious							
Conservative Christian	4.0	2.7	3.3	2.4	12.3	0.4	0.8
Other religious affiliated	3.9	2.7	3.0	2.3	11.8	0.5	1.3
Other religious unaffiliated	3.8	2.8	2.9	2.5	11.9	0.5	1.4
Nonsectarian							
Regular	3.9	3.0	2.9	2.5	12.3	0.5	2.0
Special emphasis	3.7	3.0	2.8	2.5	12.0	0.5	2.0
Special education	3.9	2.7	3.2	2.4	12.2	0.5	0.2

NOTE: Averages are calculated by weighting the school's requirements by the school's enrollment in grades 9 to 12. Estimates vary somewhat from those in other publications that weight by the number of schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990-91 (Teacher Demand and Shortage Questionnaire).

Table 24-5 Percentage of public high school students in districts with course graduation requirements at or above the NCEE recommendations, by subject and state: 1990-91

State	English (4 or more)	Math (3 or more)	Social studies (3 or more)	Science (3 or more)	Four core subjects (13 or more)	Computer science (0.5 or more)	Foreign language (2 or more)
Total	85.7	43.0	75.5	21.9	20.5	23.0	21.9
State							
Alabama	96.0	24.3	93.9	17.9	19.5	26.3	23.8
Alaska	96.6	7.7	99.3	5.5	5.8	41.9	0.0
Arizona	100.0	28.0	86.0	12.6	12.5	9.4	9.4
Arkansas	98.5	78.3	77.9	34.3	22.5	32.5	13.0
California	74.1	29.3	92.7	4.8	9.6	16.3	57.5
Colorado	85.5	20.1	69.2	16.7	10.1	23.8	6.1
Connecticut	98.0	94.2	97.4	28.3	26.1	14.3	4.1
Delaware	94.0	39.3	70.2	6.6	6.6	8.4	0.0
District of Columbia	100.0	0.0	0.0	0.0	0.0	100.0	100.0
Florida	100.0	100.0	93.7	93.9	92.0	20.5	10.2
Georgia	87.1	31.4	84.5	24.3	12.5	37.0	21.8
Hawaii	100.0	0.0	100.0	0.0	0.0	0.0	0.0
Idaho	93.5	20.4	59.4	20.6	7.4	15.5	13.4
Illinois	50.9	6.6	44.5	4.0	2.5	12.6	19.3
Indiana	88.6	40.3	46.8	19.2	11.6	23.3	0.8
Iowa	46.3	12.7	79.9	9.6	6.7	19.7	1.6
Kansas	98.0	16.0	86.3	6.9	3.8	31.0	7.6
Kentucky	100.0	90.8	22.8	17.9	13.0	3.9	6.5
Louisiana	95.8	98.9	96.8	95.5	94.7	81.0	3.4
Maine	100.0	58.3	39.0	20.8	27.2	60.6	17.9
Maryland	100.0	98.3	100.0	24.2	24.2	28.5	16.4
Massachusetts	98.2	45.1	45.2	21.2	23.2	27.5	23.6
Michigan	57.0	11.1	74.6	5.6	5.5	71.8	15.3
Minnesota	82.6	9.1	86.8	6.7	7.2	13.1	1.6
Mississippi	99.4	41.1	56.3	21.2	14.8	11.1	12.1
Missouri	37.9	15.0	79.2	12.4	6.8	16.1	12.8
Montana	100.0	23.4	54.2	11.7	6.7	23.1	10.6
Nebraska	85.3	20.5	84.8	13.6	11.6	26.9	6.4
Nevada	37.5	26.5	75.0	2.8	2.1	34.7	0.2
New Hampshire	97.7	11.4	24.6	8.1	4.0	96.8	21.8
New Jersey	98.6	69.5	79.7	18.1	19.5	27.1	12.3
New Mexico	100.0	96.6	94.0	8.2	10.2	11.7	15.2
New York	99.5	4.3	99.6	3.5	5.7	6.5	77.8
North Carolina	100.0	42.6	29.4	28.7	20.8	6.0	0.6
North Dakota	98.7	27.1	83.6	8.0	5.1	15.6	0.0
Ohio	62.3	14.8	47.7	8.7	6.0	12.8	6.4
Oklahoma	98.6	25.1	39.8	15.1	8.8	11.5	7.0
Oregon	80.6	5.8	63.1	2.9	2.9	10.8	18.4
Pennsylvania	98.0	95.3	95.9	92.1	92.0	20.2	8.7
Rhode Island	100.0	23.3	23.8	9.2	6.3	69.2	60.4
South Carolina	98.2	96.5	79.3	15.1	13.0	5.2	5.9
South Dakota	98.0	17.2	90.3	15.5	8.7	98.4	6.4
Tennessee	99.6	7.8	8.8	8.8	6.1	6.8	23.7
Texas	97.4	95.6	77.8	22.9	21.8	37.7	23.0
Utah	85.1	4.4	84.9	2.4	2.4	60.5	14.5
Vermont	94.2	69.5	83.5	55.2	38.0	5.4	10.5
Virginia	97.4	37.2	95.2	18.0	13.5	10.7	13.2
Washington	48.6	10.5	80.7	5.7	4.3	7.4	2.9
West Virginia	100.0	46.0	94.6	10.4	15.1	13.9	24.3
Wisconsin	94.4	13.4	91.9	9.4	6.9	35.1	6.1
Wyoming	61.6	22.1	73.8	13.2	9.3	12.1	6.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990-91 (Teacher Demand and Shortage Questionnaire); and NCEE, *A Nation at Risk* (1983).

Table 24-6 Percentage of private high school students in schools with graduation requirements at or above the NCEE recommendations, by subject and private school type: 1990-91

Private school type	English (4 or more)	Math (3 or more)	Social studies (3 or more)	Science (3 or more)	Four core subjects (13 or more)	Computer science (0.5 or more)	Foreign language (2 or more)
Total	94.0	65.8	77.6	40.7	42.2	47.8	63.7
Catholic							
Parochial	88.9	50.0	70.1	33.9	38.4	53.7	49.8
Diocesan	98.4	60.0	86.2	45.4	41.5	38.6	52.7
Private order	94.9	69.2	74.1	35.3	43.1	53.4	84.6
Other religious							
Conservative Christian	98.6	64.0	85.3	40.9	42.4	53.1	47.8
Other religious affiliated	84.4	59.3	71.1	35.1	40.1	45.6	51.6
Other religious unaffiliated	92.0	65.6	79.4	48.7	48.9	50.3	62.9
Nonsectarian							
Nonsectarian regular	93.5	87.9	70.2	47.9	46.0	53.5	81.6
Nonsectarian special emphasis	80.6	80.5	64.1	35.1	37.8	38.0	78.9
Nonsectarian special education	97.8	58.7	86.7	32.3	31.6	53.9	14.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990-91 (Teacher Demand and Shortage Questionnaire); and NCEE, *A Nation at Risk* (1983).

Table 24-7 Public districts' graduation requirements in four core subjects grouped into percentile ranges and ranked by median value, by state: 1990-91

State	Percentile				
	5th	25th	50th	75th	95th
Illinois	8.0	8.0	9.5	10.0	14.0
Minnesota	7.0	8.0	10.0	11.0	12.0
Missouri	9.0	9.5	10.0	11.0	13.0
North Carolina	10.0	10.0	10.0	11.0	13.0
Ohio	8.0	9.0	10.0	11.0	13.0
Rhode Island	9.0	10.0	10.0	11.0	13.0
Tennessee	9.0	9.5	10.0	10.0	12.0
Oklahoma	9.0	10.0	10.3	11.0	13.0
Michigan	7.0	10.0	10.5	11.0	13.0
New Hampshire	9.0	10.3	10.5	11.0	12.0
Alabama	10.0	11.0	11.0	12.0	14.0
Alaska	9.0	11.0	11.0	12.0	13.0
Colorado	9.0	11.0	11.0	13.0	14.0
Delaware	1.1	11.0	11.0	12.0	15.0
Georgia	10.0	11.0	11.0	12.0	15.0
Idaho	10.0	10.5	11.0	12.0	14.0
Indiana	10.0	10.0	11.0	12.0	14.0
Iowa	8.0	10.0	11.0	12.0	13.5
Kansas	10.0	11.0	11.0	11.0	13.0
Kentucky	10.0	11.0	11.0	12.0	13.0
Maine	8.0	10.0	11.0	12.0	14.0
Massachusetts	8.5	10.0	11.0	13.0	14.0
Mississippi	10.0	10.5	11.0	12.0	14.0
Montana	10.0	10.0	11.0	12.0	13.0
Nevada	9.0	10.0	11.0	12.0	13.0
North Dakota	10.5	11.0	11.0	12.0	13.0
Oregon	9.5	11.0	11.0	12.0	13.0
South Dakota	10.0	11.0	11.0	12.0	14.0
Utah	9.0	10.0	11.0	11.0	13.5
Washington	8.5	10.5	11.0	12.0	13.5
Wisconsin	10.0	11.0	11.0	11.5	13.0
Wyoming	7.0	10.3	11.0	12.0	13.0
Arizona	10.0	11.0	11.5	12.0	13.5
California	9.4	10.5	11.5	12.0	14.0
Nebraska	10.0	11.0	11.5	12.0	13.0
Arkansas	10.0	11.0	12.0	13.0	14.0
Connecticut	12.0	12.0	12.0	13.0	14.0
Maryland	12.0	12.0	12.0	12.0	13.0
New Jersey	9.0	10.5	12.0	12.0	13.0
New Mexico	10.0	12.0	12.0	13.0	13.5
New York	11.0	12.0	12.0	12.0	14.0
South Carolina	10.0	12.0	12.0	12.0	14.0
Texas	11.0	12.0	12.0	13.0	13.0
Vermont	10.0	12.0	12.0	13.0	13.0
Virginia	7.0	11.0	12.0	12.0	13.0
West Virginia	11.0	11.0	12.0	12.0	13.0
Florida	11.0	13.0	13.0	13.0	14.0
Louisiana	10.0	13.0	13.0	13.0	13.0
Pennsylvania	10.0	13.0	13.0	14.0	15.0

NOTE: Hawaii and the District of Columbia each have only one school district and therefore are excluded from this table. Estimates were weighted by district enrollment in grades 9 to 12.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990-91 (Teacher Demand and Shortage Questionnaire).

Table 24-8 Private schools' graduation requirements in four core subjects grouped into percentile ranges, by private school: 1990-91

Private school type	Percentile				
	5th	25th	50th	75th	95th
Catholic					
Parochial	10.0	10.0	12.0	13.0	15.0
Diocesan	10.0	11.8	12.0	13.0	14.0
Private order	10.0	11.0	12.0	13.5	16.0
Other religious Conservative					
Christian	10.5	12.0	13.0	14.0	15.0
Other religious affiliated	10.0	12.0	13.0	14.0	16.0
Other religious unaffiliated	10.0	12.0	13.0	14.0	16.0
Nonsectarian					
Regular	10.0	12.0	13.0	14.0	16.0
Special emphasis	8.0	10.0	12.0	14.0	16.0
Special education	9.0	12.0	12.0	13.0	16.0

NOTE: Averages are weighted by enrollment in grades 9 to 12. Estimates vary somewhat from those in other publications that weight by the number of schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1990-91 (Teacher Demand and Shortage Questionnaire).

Table 24-9 Summary of state high school graduation requirements, by subject: High school class of 1991

State	Abbreviation	English	Mathematics	Social Science	Science	Four core subjects	Computer science	Foreign language
Alabama	AL	4	2	3	2	11	0	0
Alaska	AK	4	2	3	2	11	0	0
Arizona	AZ	4	2	3	2	11	0	0
Arkansas	AR	4	3	3	2	12	0	0
California	CA	3	2	3	2	10	0	10
Colorado	CO ²	0	0	0	0	0	0	0
Connecticut	CT	4	3	3	2	12	0	0
Delaware	DE	4	2	3	2	11	0	0
District of Columbia	DC	4	2	2	2	10	0	1
Florida	FL	4	3	3	3	13	0	0
Georgia	GA	4	2	3	2	11	0	0
Hawaii	HI	4	2	4	2	12	0	0
Idaho	ID	4	2	2	2	10	0	0
Illinois	IL	3	³² 2	2	1	6	³⁰ 0	0
Indiana	IN	4	2	2	2	10	0	0
Iowa	IA ⁴	0	0	0	0	0	0	0
Kansas	KS	4	2	3	2	11	0	0
Kentucky	KY	4	⁵³ 3	⁵² 3	⁵² 3	4	0	0
Louisiana	LA	4	3	3	3	13	1	0
Maine	ME	4	2	2	2	10	⁶⁰ 0	0
Maryland	MD	4	3	3	2	12	0	0
Massachusetts	MA	0	0	1	0	1	0	0
Michigan	MI	0	0	1	0	1	0	0
Minnesota	MN	4	1	3	1	9	0	0
Mississippi	MS	4	2	2	2	10	0	0
Missouri	MO	3	2	2	2	9	0	0
Montana	MT	4	2	2	1	9	0	0
Nebraska	NE ⁷	0	0	0	0	0	0	0
Nevada	NV	3	2	2	1	8	1	0
New Hampshire	NH	4	2	3	2	11	1	0
New Jersey	NJ	⁸⁴ 4	2	2	1	5	0	0
New Mexico	NM	4	3	3	2	12	⁹⁰ 0	0
New York	NY	4	2	4	2	12	0	0
North Carolina	NC	4	2	2	2	10	0	0
North Dakota	ND	¹⁰⁴ 4	¹⁰² 2	3	2	5	0	¹⁰⁰ 0
Ohio	OH	3	2	2	1	8	0	0
Oklahoma	OK	4	2	2	2	10	0	0
Oregon	OR	3	2	4	2	11	0	0
Pennsylvania	PA	4	3	3	3	13	¹¹⁰ 0	0
Rhode Island	RI	4	2	2	2	10	0	0
South Carolina	SC	4	¹²³ 2	3	¹²² 3	7	¹²⁰ 0	0
South Dakota	SD	4	2	3	3	12	1	0
Tennessee	TN	4	2	1	2	9	0	0
Texas	TX	4	3	3	2	12	0	0
Utah	UT	3	2	3	2	10	¹³⁰ 0	0

Table 24-9 Summary of state high school graduation requirements, by subject: High school class of 1991—Continued

State	Abbreviation	English	Mathematics	Social Science	Science	Four core subjects	Computer science	Foreign language
Vermont	VT	4	¹⁴³	3	¹⁴²	12	0	0
Virginia	VA	4	¹⁵²	3	¹⁵²	7	0	0
Washington	WA	3	2	3	2	10	0	0
West Virginia	WV	4	2	3	2	11	0	¹⁶⁰
Wisconsin	WI	4	2	3	2	11	0	0
Wyoming ¹⁷	WY	0	0	1	0	1	0	0

¹ CA: One year of either foreign language or fine arts is required.

² CO: There are no state course-specific requirements, but for schools to be accredited, they must require 30 units among the core subjects and other specified subjects.

³ IL: Computer technology can be substituted for 1 unit of mathematics.

⁴ IA: In 1991 the only state-mandated requirement was physical education for every year in attendance.

⁵ KY: One additional year of mathematics, science, social science, or vocational education is required.

⁶ ME: Students must pass a computer proficiency test, but no specific coursework is required.

⁷ NE: State sets requirements for total core courses as a group, but local boards set subject-specific requirements.

⁸ NJ: Note that English must be taken during every year enrolled; therefore 4 years are required for those who finish high school in the normal 4 years, but different requirements apply for early or late graduates.

⁹ NM: Students must demonstrate computer proficiency, but no specific coursework is required.

¹⁰ ND: Fourth year of English may be replaced by upper-level foreign language; 1 year of mathematics may be business mathematics.

¹¹ PA: Computer science can be substituted for arts/humanities requirement.

¹² SC: One unit of computer science counts toward the mathematics requirement; science requirement can be met with 1 year of science plus 6 units in a specific occupational area.

¹³ UT: Computer literacy must be demonstrated, but no specific coursework is required.

¹⁴ VT: Five years total for mathematics and science are required (2+3 or 3+2).

¹⁵ VA: One additional unit of mathematics or science is required, but this can be met with a vocational education class or ROTC.

¹⁶ WV: One year of electives must be foreign language or applied/fine arts.

¹⁷ WY: In 1991, the state required only 1 year of social studies. New accreditation standards that will apply in 1997 require public high schools to require 4 years of English, 3 years of social studies, 2 years of mathematics, and 2 years of science.

NOTE: Elective requirements may encourage course taking in computer science or foreign language, but allow substitution with some other course. Such flexible requirements are not counted in these categories because they are not absolute. Additional and/or higher requirements were set for advanced/scholars' diplomas in many states.

SOURCE: Education Commission of the States, *Clearinghouse Notes*, 1993.

Supplemental note on high school graduation requirements

"Linguistically isolated" refers to households in which no members over age 13 speak English "very well," and all members over age 13 speak a language besides English.

The percentage of a district's residents who had not completed high school applies only to adults 20 years old and older.

District per-pupil spending figures reflect only current annual operating expenditures, excluding capital and other unusual expenditures.

The NCEE recommended in *A Nation at Risk* that students be required to complete 4 years of English; 3 years each of math, science, and social studies; and one-half year of computer science. In addition, for college-bound students, the Commission recommended 2 years of high school-level foreign language (not counting any foreign language study from earlier grades).

Table 25-1 Percentage of high school graduates taking 4 units in English, 3 units in social studies, 3 units in science, 3 units in math, and 0.5 units in computer science,* by student and school characteristics: 1982, 1987, 1990, and 1992

Characteristic	1982	1987	1990	1992	Percentage point change			
					1982-1987	1987-1990	1990-1992	1982-1992
Total	2.1	16.3	22.7	29.4	14.2	6.4	6.7	27.2
Sex								
Male	2.9	18.4	23.9	28.1	15.4	5.5	4.3	25.2
Female	1.4	14.4	21.6	30.6	13.0	7.2	9.0	29.2
Race/ethnicity								
White	2.5	17.2	22.7	29.6	14.8	5.5	6.9	27.1
Black	1.1	11.7	25.1	27.6	10.6	13.3	2.5	26.5
Hispanic	0.7	8.6	20.3	28.7	7.9	11.7	8.4	28.0
Asian/Pacific Islander	6.0	28.1	27.8	32.2	22.1	-0.3	4.5	26.3
American Indian/Alaskan Native	0.6	—	—	22.1	—	—	—	21.5
Urbanicity (1982,1992)								
Urban	1.7	—	—	32.7	—	—	—	31.0
Suburban	2.7	—	—	27.3	—	—	—	24.7
Rural	1.5	—	—	29.3	—	—	—	27.8
Urbanicity (1987,1990)								
Big city	—	13.2	22.9	—	—	9.7	—	—
Urban fringe	—	18.7	22.9	—	—	4.2	—	—
Medium city	—	13.7	21.6	—	—	7.9	—	—
Small place	—	16.6	22.7	—	—	6.1	—	—
Control of school								
Public	2.1	15.5	22.4	28.7	13.5	6.9	6.3	26.6
Private	1.1	23.5	25.4	36.0	22.5	1.9	10.6	34.9
Parents' highest education level								
Didn't finish high school	1.2	—	—	32.2	—	—	—	31.0
High school graduate	1.2	—	—	28.1	—	—	—	26.9
Some college	2.8	—	—	28.8	—	—	—	26.0
College graduate	4.2	—	—	29.6	—	—	—	25.4

— Not available.

* This course of study was recommended in *A Nation at Risk* for all high school graduates.SOURCE: U.S. Department of Education, National Center for Education Statistics, *The 1990 High School Transcript Study Tabulations*, 1993 (based on the High School and Beyond Transcript Study and the 1987 and 1990 NAEP High School Transcript Studies), and the National Education Longitudinal Study Transcripts, 1992.

Table 25-2 Percentage of high school graduates taking 4 units in English, 3 units in social studies, 3 units in science, 3 units in math, 0.5 units in computer science, and 2 units in foreign language,* by student and school characteristics: 1982, 1987, 1990, and 1992

Characteristic	Percentage point change							
	1982	1987	1990	1992	1982-1987	1987-1990	1990-1992	1982-1992
Total	1.6	12.0	17.3	23.3	10.4	5.2	6.0	21.7
Sex								
Male	2.0	13.3	17.7	21.0	11.2	4.4	3.3	19.0
Female	1.2	10.9	16.9	25.5	9.7	6.0	8.7	24.3
Race/ethnicity								
White	1.9	12.7	18.1	23.7	10.8	5.3	5.6	21.8
Black	0.7	8.3	14.4	21.9	7.6	6.1	7.6	21.2
Hispanic	0.3	5.5	15.7	20.0	5.2	10.2	4.3	19.7
Asian/Pacific Islander	5.2	24.3	23.8	29.4	19.1	-0.5	5.6	24.2
American Indian/Alaskan Native	0.6	—	—	11.4	—	—	—	10.8
Urbanicity (1982,1992)								
Urban	1.3	—	—	26.5	—	—	—	25.2
Suburban	2.0	—	—	23.4	—	—	—	21.4
Rural	1.3	—	—	20.6	—	—	—	19.3
Urbanicity (1987,1990)								
Big city	—	10.9	19.0	—	—	8.1	—	—
Urban fringe	—	15.4	19.3	—	—	3.9	—	—
Medium city	—	10.6	18.2	—	—	7.6	—	—
Small place	—	10.7	15.5	—	—	4.8	—	—
Control of school								
Public	1.5	11.4	16.9	22.4	9.9	5.5	5.6	21.0
Private	1.3	18.3	21.8	31.5	17.0	3.5	9.7	30.2
Parents' highest education level								
Didn't finish high school	1.0	—	—	25.0	—	—	—	24.0
High school graduate	1.2	—	—	22.1	—	—	—	20.9
Some college	2.1	—	—	22.9	—	—	—	20.8
College graduate	3.4	—	—	23.5	—	—	—	20.1

— Not available.

* This course of study was recommended in *A Nation at Risk* for high school students planning to attend college.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *The 1990 High School Transcript Study Tabulations*, 1993 (based on the High School and Beyond Transcript Study and the 1987 and 1990 NAEP High School Transcript Studies), and the National Education Longitudinal Study Transcripts, 1992.

Note on High School Transcript Studies

Indicators 25 and 26 contain data from high school transcript studies conducted by the National Center for Education Statistics (NCES). Average course credits, or Carnegie units, for high school graduates are from the following studies: 1992 data are from the 1988 National Education Longitudinal Study (NELS:88) Second Follow-up High School Transcript Study; 1987 and 1990 data are from the 1987 and 1990 National Assessment of Educational Progress (NAEP) High School Transcript Studies; and 1982 data are from the High School and Beyond (HS&B) Transcript Study. A brief description of these studies, including descriptions of the sampled populations, follows.

The 1988 NELS Second Follow-up High School Transcript Study is a major longitudinal study sponsored by NCES. Transcripts were collected for 17,281 students selected to be in the second follow-up study. From this sample, a subsample was created that is nationally representative of 1992 high school graduates.

The 1990 NAEP High School Transcript Study was conducted using methodology and techniques nearly identical to those used in the 1987 NAEP High School Transcript Study. In the spring of 1991, transcripts were collected from 21,607 students who graduated from high school in 1990. These students attended 330 schools that had previously been sampled for the NAEP. The sample of schools was a nationally representative sample of schools teaching grade 12 or having 17-year-old students. The sample was also a representative sample of graduating seniors from each school.

Since the focus of the 1990 Transcript Study was high school graduates, schools with 17-year-olds but without 12th grade were not included in the subsample used in these analyses. Of the remaining schools, only those students who graduated were selected.

The sample of schools for the 1987 High School Transcript Study consisted of a nationally representative sample of 471 secondary schools selected for the 1986 NAEP for grade 11, age 17

students, of which 433 schools participated. The 1987 study was restricted to students who were in grade 11 in 1985–86. Data for 1987 and 1990 in *Indicators 25 and 26* are from the NCES publication *The 1990 High School Transcript Study Tabulations*.

High School and Beyond (HS&B) is a survey of high school sophomores and seniors. In 1982, high school transcripts were collected for members of the sophomore cohort who were selected to be in the second follow-up survey (about 12,000 transcripts). As in the 1987 and 1990 High School Transcript Studies, records were obtained from all types of high schools. However, because the 1982 HS&B used a different method of identifying handicapped students than the 1987 and 1990 High School Transcript Studies, students who had participated in a special education program were excluded from the tabulations in order to make the figures consistent. To better match the selection rules used to create the NELS Transcripts subsample, the 1982 HS&B data in *Indicators 25 and 26* are based on original runs and differ slightly from data published in *The 1990 High School Transcript Study Tabulations*.

Each of the transcript studies used the taxonomy of Classification of Secondary School Courses (CSSC), which contains approximately 1,800 course codes used to define course content and level. These studies also included additional course and student information, such as grade and credit received, grade level, graduation status, age, gender, and race/ethnicity.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *The 1990 High School Transcript Study Tabulations*, 1992.

Table 26-1 Percentage of high school graduates taking selected mathematics and science courses, by sex: 1982, 1987, 1990, and 1992

Mathematics and science courses (credits)	1982			1987			1990			1992		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Mathematics												
Any mathematics (1.00)	99.0	99.4	98.7	99.4	99.3	99.4	99.6	99.4	99.7	99.6	99.3	99.9
Remedial/below grade level math (1.00)	32.5	35.9	29.5	24.9	26.7	23.2	23.6	25.7	21.7	17.4	19.5	15.4
Algebra I (1.00)	180.2	177.9	182.2	—	—	—	—	—	—	193.2	192.5	193.9
Algebra II (0.50)	36.9	37.5	36.3	47.1	45.8	48.4	49.2	47.8	50.5	56.1	54.0	58.1
Geometry (1.00)	48.4	48.3	48.5	61.5	61.2	61.7	64.7	63.9	65.4	70.4	69.0	71.7
Trigonometry (0.50)	12.2	13.3	11.2	19.0	20.3	17.8	18.4	18.4	18.3	21.1	21.4	20.8
Analysis/pre-calculus (0.5)	5.8	6.1	5.5	12.8	14.0	11.6	13.5	14.3	12.9	17.2	16.8	17.6
Calculus (1.00)	4.3	4.7	4.0	6.2	7.7	4.7	6.6	7.7	5.6	10.1	10.3	9.8
AP calculus (1.00)	1.4	1.4	1.4	3.4	4.0	2.8	4.2	5.1	3.4	5.5	5.7	5.4
Algebra II and geometry (1.50)	29.1	30.1	28.2	42.4	41.5	43.3	44.0	43.0	45.0	50.1	48.6	51.6
Algebra II, geometry, and trigonometry (2.00)	7.4	8.5	6.3	14.7	15.2	14.1	12.5	12.7	12.4	14.5	14.7	14.4
Algebra II, geometry, trigonometry, and calculus (3.00)	0.8	1.1	0.5	2.4	2.9	1.9	2.2	2.5	1.8	2.7	2.6	2.8
Science												
Any science (1.00)	97.6	97.5	97.7	98.7	98.4	99.0	99.4	99.2	99.7	99.6	99.5	99.7
Biology (1.00)	78.7	76.5	80.6	88.3	87.0	89.7	91.6	90.4	92.7	93.0	91.9	94.2
AP/honors biology (1.00)	6.7	6.2	7.2	2.8	2.8	2.7	5.0	4.5	5.4	5.7	5.8	5.7
Chemistry (1.00)	31.6	32.4	30.9	44.8	45.9	43.7	49.6	48.8	50.4	55.5	54.2	56.8
AP/honors chemistry (1.00)	2.6	3.1	2.1	3.4	4.0	2.8	3.5	4.2	2.9	4.0	4.3	3.7
Physics (1.00)	13.5	17.9	9.4	19.5	24.6	14.8	21.5	25.5	17.8	24.7	28.2	21.4
AP/honors physics (1.00)	0.9	1.2	0.5	1.7	2.5	0.9	2.1	2.6	1.6	2.9	4.0	1.9
Engineering (1.00)	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	20.0	0.3	0.4	0.3
Astronomy (0.50)	0.2	0.3	0.1	1.0	1.1	0.8	1.3	1.5	1.1	0.7	0.9	0.6
Geology (0.50)	11.4	12.7	10.2	14.9	15.6	14.1	25.3	26.2	24.5	18.4	18.8	18.0
Biology and chemistry (2.00)	28.6	28.4	28.9	43.0	43.7	42.3	48.2	47.2	49.1	53.9	52.2	55.6
Biology, chemistry, and physics (3.00)	9.8	12.5	7.4	16.8	20.8	12.9	18.9	22.1	16.0	21.6	24.4	18.9

— Not available.

¹ Algebra I was revised from previously published figures to include those students who had taken Algebra I, or its equivalent, before entering high school.² Percent is less than 0.05 and is rounded to 0.0.SOURCE: U.S. Department of Education, National Center for Education Statistics, *The 1990 High School Transcript Study Tabulations*, 1993 (based on the High School and Beyond Transcript Study and the 1987 and 1990 NAEP High School Transcript Studies), and the National Education Longitudinal Study Transcripts, 1992.

Table 26-2 Percentage of high school graduates taking selected mathematics and science courses, by race/ethnicity: 1982, 1987, 1990, and 1992

Mathematics and science courses (credits)	1982					1987				
	White	Black	Hispanic	Asian/ Pacific Islander	American Indian/ Alaskan Native	White	Black	Hispanic	Asian/ Pacific Islander	American Indian/ Alaskan Native
Mathematics										
Any mathematics (1.00)	99.1	99.6	98.6	100.0	96.6	99.3	99.5	99.4	100.0	99.4
Remedial/below grade level math (1.00)	27.0	54.4	48.5	18.8	52.6	20.6	46.5	42.5	16.3	40.7
Algebra I (1.00)	*84.0	*68.4	*66.8	*93.4	*59.0	—	—	—	—	—
Algebra II (0.50)	40.5	26.2	22.5	55.0	20.0	51.9	32.4	30.2	67.2	28.5
Geometry (1.00)	53.9	30.3	29.0	64.3	26.3	65.1	44.0	40.2	81.4	48.4
Trigonometry (0.50)	13.8	6.3	6.8	25.7	7.7	20.9	10.9	9.9	42.1	6.5
Analysis/pre-calculus (0.50)	6.7	2.1	3.0	15.1	0.7	13.5	5.1	7.4	39.6	7.5
Calculus (1.00)	5.0	1.4	1.6	13.1	1.2	5.9	2.3	3.6	29.8	3.2
AP calculus (1.0)	1.7	0.3	0.3	5.9	0.0	2.8	1.4	2.6	24.0	1.3
Algebra II and geometry (1.50)	33.0	17.0	14.4	40.3	13.6	47.0	28.6	24.3	62.4	23.5
Algebra II, geometry, and trigonometry (2.00)	8.5	2.9	4.2	12.9	3.1	16.9	8.0	7.4	31.1	3.5
Algebra II, geometry, trigonometry, and calculus (3.00)	0.9	0.2	0.5	2.0	0.0	2.3	1.2	2.2	14.5	1.0
Science										
Any science (1.00)	97.7	98.6	95.9	97.1	98.4	98.7	98.7	98.5	99.4	98.6
Biology (1.00)	80.1	75.3	73.2	83.5	65.5	89.2	86.2	85.4	91.5	88.8
AP/honors biology (1.00)	7.5	4.5	3.5	13.1	5.1	2.8	1.5	1.6	4.3	0.9
Chemistry (1.00)	34.7	22.5	16.7	51.9	34.1	47.7	29.8	29.4	69.9	30.1
AP/honors chemistry (1.00)	2.9	1.6	1.3	5.8	0.9	3.5	1.2	2.3	13.9	0.8
Physics (1.00)	15.3	6.8	5.5	35.8	6.9	20.9	10.1	9.8	47.1	11.5
AP/honors physics (1.00)	0.9	0.8	0.4	3.5	0.0	1.7	0.4	0.8	5.7	1.8
Engineering (1.00)	0.2	0.2	0.1	0.0	0.0	0.1	0.4	0.1	0.4	0.0
Astronomy (0.50)	0.2	0.2	0.3	0.0	0.0	0.9	0.3	0.8	0.7	0.7
Geology (0.50)	12.0	8.7	9.6	7.9	9.1	14.4	18.8	11.8	13.3	13.4
Biology and chemistry (2.00)	31.6	20.2	15.2	47.2	19.1	46.0	28.6	28.2	66.0	27.8
Biology, chemistry, and physics (3.00)	11.2	4.7	3.7	28.6	4.7	17.9	8.8	8.2	42.4	8.4
Mathematics and science courses (credits)	1990					1992				
	White	Black	Hispanic	Asian/ Pacific Islander	American Indian/ Alaskan Native	White	Black	Hispanic	Asian/ Pacific Islander	American Indian/ Alaskan Native
Mathematics										
Any mathematics (1.00)	99.7	98.7	99.8	99.9	100.0	99.7	99.1	99.8	100.0	100.0
Remedial/below grade level math (1.00)	20.0	35.4	38.3	19.9	37.7	14.6	30.9	24.2	14.5	35.2
Algebra I (1.00)	—	—	—	—	—	*94.0	*89.0	*92.5	*93.9	*87.3
Algebra II (0.50)	52.4	39.0	38.6	59.5	47.3	59.2	40.9	46.9	60.8	42.1
Geometry (1.00)	67.2	56.3	54.4	72.1	54.5	72.6	60.4	62.9	77.1	53.6
Trigonometry (0.50)	19.6	14.1	11.0	35.2	15.6	22.5	13.0	15.2	31.3	10.0
Analysis/pre-calculus (0.50)	15.0	6.2	7.3	25.5	8.5	17.9	12.6	10.6	33.9	3.0
Calculus (1.00)	7.0	2.8	3.9	18.6	6.1	10.7	6.9	4.7	20.1	1.4
AP calculus (1.00)	4.3	1.2	3.0	15.6	4.2	5.8	2.5	2.2	16.1	1.3
Algebra II and geometry (1.50)	47.2	32.9	34.5	53.2	37.8	53.1	35.0	41.9	55.5	35.7
Algebra II, geometry, and trigonometry (2.00)	13.6	8.1	8.6	21.5	10.3	15.9	6.8	10.9	18.2	5.9
Algebra II, geometry, trigonometry, and calculus (3.00)	2.3	1.1	1.5	6.5	3.2	3.0	0.9	1.2	5.4	0.6
Science										
Any science (1.00)	99.5	99.0	99.3	99.8	99.5	99.5	100.0	99.7	100.0	100.0
Biology (1.00)	92.0	91.0	90.3	90.5	91.1	93.5	92.2	91.2	93.4	84.5
AP/honors biology (1.00)	5.1	3.8	2.4	6.4	3.2	6.5	3.2	2.4	6.8	5.0
Chemistry (1.00)	52.3	40.3	38.8	64.1	38.6	58.0	45.9	42.6	67.4	32.9
AP/honors chemistry (1.00)	3.8	2.5	1.2	7.7	4.8	4.2	2.3	2.5	9.1	1.8
Physics (1.00)	23.1	14.5	13.0	38.4	18.9	25.9	17.6	15.7	41.6	13.3
AP/honors physics (1.00)	2.1	0.7	1.0	5.9	2.7	2.9	1.4	2.4	9.2	0.6
Engineering (1.00)	0.1	0.1	0.0	0.0	0.0	0.3	0.2	0.1	0.5	0.0
Astronomy (0.50)	1.4	0.4	1.1	0.7	2.2	1.0	0.1	0.1	0.1	0.0
Geology (0.50)	28.3	15.8	14.2	15.6	30.6	19.3	17.6	11.5	16.6	29.7
Biology and chemistry (2.00)	50.9	39.6	36.8	60.5	37.6	56.5	44.2	40.5	65.4	31.2
Biology, chemistry, and physics (3.00)	20.7	12.1	10.2	33.8	16.0	22.6	15.5	12.8	38.2	10.8

— Not available.

* Algebra I was revised from previously published figures to include those students who had taken Algebra I, or its equivalent, before entering high school.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *The 1990 High School Transcript Study Tabulations*, 1993 (based on the High School and Beyond Transcript Study and the 1987 and 1990 NAEP High School Transcript Studies), and the National Education Longitudinal Study Transcripts, 1992.

Table 26-3 Percentage of high school graduates taking selected mathematics and science courses, by control of school: 1982, 1987, 1990, and 1992

Mathematics and science courses (credits)	1982 ¹		1987		1990		1992	
	Public	Private	Public	Private	Public	Private	Public	Private
Mathematics								
Any mathematics (1.00)	98.9	99.9	99.3	99.9	99.5	99.8	99.6	100.0
Remedial/below grade level math (1.00)	34.5	17.0	26.8	7.1	25.0	9.8	18.3	9.4
Algebra I (1.00)	278.3	295.3	—	—	—	—	292.5	299.9
Algebra II (0.50)	34.9	52.5	45.0	67.5	47.8	63.1	54.5	71.2
Geometry (1.00)	44.9	76.0	58.9	85.8	62.5	85.5	68.6	86.6
Trigonometry (0.50)	11.1	20.9	18.0	28.4	17.5	27.3	19.5	36.2
Analysis/pre-calculus (0.50)	5.1	11.6	11.7	23.4	12.3	25.4	15.1	37.2
Calculus (1.00)	3.6	10.2	5.7	11.1	6.3	9.7	8.8	21.3
AP calculus (1.00)	1.2	3.0	3.2	5.6	3.9	7.1	5.2	8.7
Algebra II and geometry (1.50)	26.7	47.5	40.2	63.4	42.5	58.6	48.7	62.9
Algebra II, geometry, and trigonometry (2.00)	6.9	11.1	14.2	19.0	12.4	14.1	13.8	21.4
Algebra II, geometry, trigonometry, and calculus (3.00)	0.7	1.6	2.5	1.6	2.3	1.0	2.8	1.4
Science								
Any science (1.00)	97.4	99.1	98.6	99.9	99.4	99.9	99.5	100.0
Biology (1.00)	77.1	91.4	87.5	96.4	91.1	97.0	92.5	97.7
AP/honors biology (1.00)	6.6	7.7	2.2	8.1	5.1	3.9	4.9	13.8
Chemistry (1.00)	29.6	47.5	42.0	70.9	47.9	67.0	53.1	78.6
AP/honors chemistry (1.00)	2.5	3.5	3.2	5.0	3.7	2.1	4.0	3.9
Physics (1.00)	12.7	19.4	18.5	29.2	20.4	31.6	22.4	46.3
AP/honors physics (1.00)	0.8	1.3	1.4	4.7	1.9	3.2	2.6	5.7
Engineering (1.00)	0.2	0.1	0.1	30.0	0.1	0.1	0.3	30.0
Astronomy (0.50)	0.3	30.0	1.1	0.3	1.3	0.7	0.8	0.7
Geology (0.50)	12.0	6.9	15.2	11.6	25.6	22.1	19.1	11.3
Biology and chemistry (2.00)	26.5	44.9	40.2	69.3	46.5	65.3	51.4	77.3
Biology, chemistry, and physics (3.00)	9.1	15.3	15.9	25.2	17.9	28.3	19.3	43.4

— Not available.

¹ Revised from previously published figures.

² Algebra I was revised from previously published figures to include those students who had taken Algebra I, or its equivalent, before entering high school.

³ Percent is less than 0.05 and is rounded to 0.0.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *The 1990 High School Transcript Study Tabulations*, 1993 (based on the High School and Beyond Transcript Study and the 1987 and 1990 NAEP High School Transcript Studies), and the National Education Longitudinal Study Transcripts, 1992.

Table 26-4 Percentage of high school graduates taking selected mathematics and science courses, by urbanicity: 1982 and 1992

Mathematics and science courses (credits)	1982			1992		
	Urban	Suburban	Rural	Urban	Suburban	Rural
Mathematics						
Any mathematics (1.00)	98.6	99.2	99.0	99.7	99.5	99.8
Remedial/below grade level math (1.00)	36.1	29.1	35.8	17.8	15.8	19.3
Algebra I (1.00)	*80.2	*83.1	*75.5	*94.7	*93.8	*91.1
Algebra II (0.50)	36.2	38.8	34.2	56.7	56.0	55.7
Geometry (1.00)	47.0	52.7	42.6	74.9	72.6	63.6
Trigonometry (0.50)	11.8	14.8	8.5	24.5	21.5	17.7
Analysis/pre-calculus (0.50)	4.7	7.3	4.1	22.4	18.1	11.8
Calculus (1.00)	3.5	5.2	3.4	10.8	11.6	7.3
AP calculus (1.00)	1.0	1.9	0.9	7.3	6.1	3.2
Algebra II and geometry (1.50)	27.6	31.6	26.0	51.9	50.5	48.1
Algebra II, geometry, and trigonometry (2.00)	6.9	8.6	5.8	15.5	14.0	14.4
Algebra II, geometry, trigonometry, and calculus (3.00)	0.3	1.0	0.7	1.9	2.7	3.3
Science						
Any science (1.00)	97.7	97.2	98.0	99.4	99.8	99.4
Biology (1.00)	78.2	78.6	79.1	92.7	92.6	93.8
AP/honors biology (1.00)	5.2	7.5	6.4	5.3	6.8	4.7
Chemistry (1.00)	28.5	34.1	29.6	60.0	58.3	48.0
AP/honors chemistry (1.00)	2.9	2.8	2.1	4.7	3.7	3.9
Physics (1.00)	13.5	14.6	11.6	28.8	25.0	20.9
AP/honors physics (1.00)	0.9	1.1	0.6	3.9	3.3	1.7
Engineering (1.00)	0.1	0.2	0.2	0.2	0.4	0.3
Astronomy (0.50)	0.3	0.3	0.0	0.6	0.4	1.4
Geology (0.50)	11.1	12.0	10.6	15.6	21.7	16.2
Biology and chemistry (2.00)	26.1	30.8	26.7	58.7	56.3	46.7
Biology, chemistry, and physics (3.00)	9.7	10.5	8.8	26.2	21.9	17.3

* Algebra I was revised from previously published figures to include those students who had taken Algebra I, or its equivalent, before entering high school.

NOTE: The 1987 and 1990 NAEP High School Transcript Studies definition of urbanicity is not comparable to the definitions in the 1982 High School and Beyond Transcript Study and the 1992 National Education Longitudinal Study Transcripts.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1982 High School and Beyond Transcript Study, and the National Education Longitudinal Study Transcripts, 1992.

Table 26-5 Percentage of high school graduates taking selected mathematics and science courses, by parents' highest level of education: 1982 and 1992

Mathematics and science courses (credits)	1982				1992			
	Didn't finish high school	High school graduate	Some college	College graduate	Didn't finish high school	High school graduate	Some college	College graduate
Mathematics								
Any mathematics (1.00)	98.6	100.0	99.3	99.5	99.8	99.6	99.6	99.6
Remedial/below grade math (1.00)	38.6	34.3	26.5	17.2	19.9	17.2	16.3	17.8
Algebra I (1.00)	174.7	176.4	186.2	191.3	185.4	188.8	193.8	198.4
Algebra II (0.50)	28.1	33.4	44.1	53.1	52.1	55.2	55.8	58.6
Geometry (1.00)	38.9	47.2	56.7	69.1	68.2	69.3	69.8	72.7
Trigonometry (0.50)	7.8	13.0	16.0	20.3	20.1	20.6	21.4	21.9
Analysis/pre-calculus (0.50)	3.2	5.4	7.4	12.5	19.1	15.4	16.0	18.9
Calculus (1.00)	2.1	1.8	5.7	8.0	9.9	9.4	9.7	10.5
AP calculus (1.00)	0.8	0.2	1.9	2.9	7.1	4.9	5.5	5.3
Algebra II and geometry (1.50)	21.0	26.2	35.5	45.1	47.0	49.0	49.8	52.3
Algebra II, geometry, and trigonometry (2.00)	4.0	8.7	10.0	12.3	13.7	14.0	14.7	15.3
Algebra II, geometry, trigonometry, and calculus (3.00)	0.3	0.0	1.3	0.7	2.5	3.0	3.0	2.2
Science								
Any science (1.00)	96.3	98.7	98.5	99.3	99.1	99.7	99.9	99.4
Biology (1.00)	76.1	73.6	82.0	87.0	91.7	93.6	92.5	93.6
AP/honors biology (1.00)	5.4	7.6	7.7	9.3	5.3	6.4	4.3	7.3
Chemistry (1.00)	22.0	25.7	38.2	52.1	53.1	54.3	55.1	57.7
AP/honors chemistry (1.00)	1.8	1.5	2.7	5.6	3.2	3.7	4.7	3.7
Physics (1.00)	8.2	13.1	16.9	23.5	23.4	23.9	23.7	26.7
AP/honors physics (1.00)	0.5	0.4	1.0	1.8	1.7	2.6	3.3	3.2
Engineering (1.00)	20.0	0.0	0.2	0.1	0.3	0.4	0.4	0.2
Astronomy (0.50)	0.1	0.0	0.3	0.2	1.6	1.0	0.6	0.5
Geology (0.50)	12.6	9.7	10.4	10.9	16.0	20.4	18.5	17.6
Biology and chemistry (2.00)	20.1	24.1	34.4	48.0	50.9	53.1	53.6	56.1
Biology, chemistry, and physics (3.00)	5.5	8.0	13.0	17.9	20.5	21.0	21.1	22.7

¹ Algebra I was revised from previously published figures to include those students who had taken Algebra I, or its equivalent, before entering high school.

² Percent is less than 0.05 and is rounded to 0.0.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1982 High School and Beyond Transcript Study, and the National Education Longitudinal Study Transcripts, 1992.

Table 27-1 Female field concentration ratio¹ at the master's degree level, by field of study: Academic years ending 1971–92²

Field of study	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Humanities	1.58	1.52	1.45	1.34	1.32	1.24	1.17	1.16	1.12	1.08	1.03
Social and behavioral sciences	0.69	0.69	0.68	0.67	0.69	0.73	0.76	0.77	0.84	0.88	0.91
Natural sciences	0.48	0.48	0.44	0.43	0.41	0.41	0.44	0.42	0.44	0.43	0.43
Life sciences	0.76	0.72	0.62	0.58	0.53	0.54	0.57	0.59	0.62	0.60	0.63
Physical sciences	0.23	0.24	0.22	0.22	0.21	0.20	0.22	0.22	0.23	0.23	0.26
Mathematics	0.56	0.58	0.56	0.53	0.54	0.53	0.55	0.50	0.49	0.51	0.45
Computer sciences and engineering	0.03	0.04	0.04	0.05	0.05	0.06	0.07	0.09	0.09	0.11	0.12
Computer and information sciences	0.17	0.19	0.17	0.20	0.21	0.20	0.22	0.25	0.24	0.27	0.30
Engineering	0.02	0.02	0.02	0.03	0.03	0.04	0.05	0.06	0.07	0.08	0.09
Technical/professional	1.27	1.25	1.26	1.26	1.24	1.23	1.23	1.24	1.22	1.23	1.24
Education	1.92	1.98	1.98	1.99	2.04	2.10	2.18	2.26	2.28	2.42	2.48
Business management	0.06	0.06	0.07	0.09	0.11	0.15	0.19	0.22	0.25	0.30	0.33
Health professions	1.85	1.90	1.91	2.00	1.99	2.29	2.37	2.53	2.54	2.66	2.80
Other technical/professional	1.56	1.46	1.34	1.24	1.15	1.08	1.04	1.07	1.08	1.10	1.14

Field of study	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Humanities	1.08	1.06	1.08	1.12	1.12	1.06	1.06	1.06	1.06	1.09	1.08
Social and behavioral sciences	0.92	0.99	1.04	1.06	1.08	1.05	1.06	1.07	1.06	1.10	1.05
Natural sciences	0.45	0.48	0.52	0.52	0.53	0.55	0.54	0.56	0.55	0.55	0.54
Life sciences	0.69	0.77	0.82	0.91	0.91	0.91	0.92	0.92	0.93	0.92	0.91
Physical sciences	0.27	0.27	0.31	0.30	0.32	0.32	0.31	0.34	0.32	0.33	0.32
Mathematics	0.43	0.47	0.50	0.49	0.50	0.57	0.58	0.57	0.55	0.56	0.54
Computer sciences and engineering	0.14	0.15	0.18	0.18	0.20	0.20	0.19	0.19	0.20	0.19	0.19
Computer and information sciences	0.35	0.39	0.42	0.40	0.42	0.40	0.35	0.36	0.35	0.36	0.32
Engineering	0.10	0.10	0.12	0.12	0.13	0.14	0.13	0.14	0.14	0.14	0.15
Technical/professional	1.25	1.25	1.25	1.26	1.26	1.28	1.29	1.28	1.28	1.27	1.27
Education	2.54	2.64	2.63	2.64	2.66	2.71	2.84	2.84	2.84	2.81	2.84
Business management	0.38	0.41	0.44	0.45	0.45	0.47	0.48	0.47	0.47	0.46	0.46
Health professions	3.03	3.01	3.16	3.23	3.16	3.58	3.41	3.29	3.14	3.24	3.30
Other technical/professional	1.15	1.22	1.25	1.29	1.27	1.28	1.27	1.30	1.32	1.30	1.33

¹ The female field concentration ratio is calculated as the percentage of women earning degrees who majored in a specific field divided by the percentage of men earning degrees who majored in the same field.

² Because of reclassification of Instructional Programs in 1991–92, the figures for earlier years have been reclassified when necessary to make them conform to the new taxonomy. Therefore, most numbers shown are revised from previously published figures. To facilitate trend comparisons, certain aggregations have been made of the degree fields as reported in the IPEDS "Completions" survey: "Business management" includes Business and management, Business (administrative support), Marketing and distribution, and Consumer, personal, and miscellaneous services.

NOTE: See Glossary for full definition of "other technical/professional" fields.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1994*, tables 239 and 240 (based on IPEDS/HEGIS surveys of degrees conferred).

**Table 27-2 Percentage distribution of master's degrees, by field of study and sex:
Academic years ending 1971-92¹**

Field of study	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Female											
Number	92,363	102,083	108,903	119,191	130,880	144,523	149,381	150,408	147,709	147,332	148,696
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Humanities	16.3	15.2	13.9	13.2	12.5	11.2	10.6	10.4	10.0	10.0	9.6
Social and behavioral sciences	7.6	7.6	7.5	7.4	7.2	7.0	7.2	7.0	7.0	6.9	7.2
Natural sciences	4.7	4.4	3.9	3.7	3.3	2.9	3.1	3.0	3.2	3.1	2.9
Life sciences	2.1	2.0	1.8	1.7	1.5	1.4	1.6	1.6	1.7	1.6	1.6
Physical sciences	0.9	0.9	0.8	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.7
Mathematics	1.7	1.5	1.4	1.3	1.1	0.9	0.9	0.8	0.8	0.8	0.7
Computer sciences and engineering	0.4	0.5	0.5	0.5	0.5	0.7	0.8	1.0	1.0	1.3	1.6
Computer and information sciences	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.7
Engineering	0.2	0.3	0.3	0.3	0.3	0.4	0.5	0.6	0.6	0.8	0.9
Technical/professional	71.0	72.3	74.2	75.2	76.5	78.2	78.4	78.6	78.8	78.7	78.7
Education	53.4	54.4	55.5	55.6	56.1	56.2	54.9	52.7	51.1	48.5	46.5
Business management	1.1	1.2	1.4	1.8	2.3	3.4	4.4	5.4	6.5	8.3	9.7
Health professions	3.4	4.0	4.4	4.8	5.0	5.8	5.9	6.7	7.4	7.7	8.2
Other technical/professional	13.1	12.8	12.9	13.0	13.0	12.9	13.2	13.9	13.8	14.2	14.3
Not classified in a field	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Male											
Number	138,146	149,550	154,468	157,842	161,570	167,248	167,783	161,212	153,370	150,749	147,043
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Humanities	10.3	10.0	9.6	9.8	9.4	9.0	9.0	9.0	8.9	9.3	9.3
Social and behavioral sciences	11.0	11.0	11.0	11.0	10.5	9.6	9.4	9.0	8.3	7.9	7.8
Natural sciences	9.8	9.0	8.8	8.6	8.0	7.2	7.1	7.2	7.3	7.0	6.8
Life sciences	2.8	2.7	2.8	2.9	2.8	2.7	2.8	2.7	2.8	2.7	2.5
Physical sciences	4.0	3.6	3.5	3.3	3.1	2.8	2.7	2.9	2.9	2.8	2.9
Mathematics	3.0	2.7	2.5	2.4	2.1	1.8	1.6	1.6	1.6	1.5	1.4
Computer sciences and engineering	12.8	12.3	11.8	10.8	10.5	10.8	10.6	11.2	11.1	11.9	12.6
Computer and information sciences	1.0	1.2	1.2	1.3	1.2	1.3	1.4	1.5	1.6	1.9	2.2
Engineering	11.8	11.2	10.6	9.5	9.3	9.4	9.3	9.6	9.5	10.0	10.4
Technical/professional	56.1	57.6	58.8	59.9	61.6	63.4	63.8	63.6	64.4	63.9	63.4
Education	27.8	27.5	28.0	27.9	27.5	26.8	25.2	23.4	22.4	20.1	18.7
Business management	18.1	19.3	18.9	19.0	20.3	22.2	23.5	24.7	26.3	28.1	29.2
Health professions	1.9	2.1	2.3	2.4	2.5	2.5	2.5	2.6	2.9	2.9	2.9
Other technical/professional	8.4	8.7	9.6	10.5	11.3	11.9	12.7	13.0	12.8	12.8	12.5
Not classified in a field	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Index of dissimilarity ²	35.5	36.0	35.5	34.7	35.0	35.3	34.9	35.3	34.8	34.7	34.2

**Table 27-2 Percentage distribution of master's degrees, by field of study and sex:
Academic years ending 1971-92¹—Continued**

Field of study	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Female											
Number	150,014	145,224	140,668	142,861	145,059	148,080	151,883	160,898	169,539	176,849	189,139
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Humanities	9.9	9.5	10.1	10.0	10.0	9.7	9.5	9.5	9.6	9.5	9.5
Social and behavioral sciences	7.1	7.3	7.2	7.3	7.3	7.1	6.8	7.0	7.1	7.5	6.7
Natural sciences	3.1	3.2	3.4	3.4	3.5	3.5	3.5	3.4	3.2	3.1	2.9
Life sciences	1.6	1.7	1.7	1.7	1.7	1.6	1.6	1.5	1.5	1.4	1.3
Physical sciences	0.8	0.8	0.9	0.9	1.0	1.0	0.9	0.9	0.8	0.8	0.8
Mathematics	0.7	0.7	0.8	0.8	0.8	0.9	1.0	0.9	0.9	0.9	0.8
Computer sciences and engineering	2.0	2.3	2.8	3.0	3.4	3.6	3.5	3.6	3.6	3.6	3.4
Computer and information sciences	0.9	1.0	1.3	1.4	1.7	1.7	1.6	1.6	1.6	1.6	1.4
Engineering	1.1	1.2	1.5	1.6	1.7	1.9	1.9	2.0	2.0	2.0	2.0
Technical/professional	77.9	77.7	76.5	76.2	75.8	76.0	76.7	76.5	76.4	76.4	77.5
Education	44.2	41.6	38.8	37.9	37.6	37.0	37.8	38.0	38.0	37.8	37.8
Business management	11.3	12.9	14.2	14.6	14.3	15.0	15.3	15.2	15.4	15.5	15.8
Health professions	8.3	8.8	9.4	9.3	9.8	9.8	9.6	9.3	9.3	9.5	9.7
Other technical/professional	14.1	14.3	14.2	14.5	14.2	14.3	13.9	13.9	13.7	13.6	14.2
Not classified in a field	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.2	0.7	2.2	1.0
Male											
Number	145,532	144,697	143,595	143,390	143,508	141,269	143,290	148,872	152,926	151,796	159,543
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Humanities	9.2	9.0	9.3	8.9	8.9	9.2	9.0	8.9	9.1	8.7	8.8
Social and behavioral sciences	7.8	7.3	6.9	6.9	6.8	6.8	6.4	6.5	6.7	6.8	6.4
Natural sciences	6.9	6.7	6.6	6.5	6.6	6.4	6.4	6.1	5.9	5.7	5.4
Life sciences	2.4	2.2	2.1	1.8	1.8	1.8	1.7	1.7	1.6	1.5	1.4
Physical sciences	3.0	2.9	3.0	3.1	3.1	3.0	3.0	2.8	2.6	2.5	2.5
Mathematics	1.6	1.6	1.5	1.6	1.7	1.6	1.7	1.6	1.7	1.6	1.5
Computer sciences and engineering	13.7	14.8	15.9	17.0	17.3	18.3	19.0	18.9	18.5	18.4	18.2
Computer and information sciences	2.5	2.6	3.0	3.5	3.9	4.2	4.7	4.6	4.6	4.3	4.3
Engineering	11.2	12.1	12.9	13.4	13.4	14.0	14.3	14.4	14.0	14.1	13.9
Technical/professional	62.5	62.2	61.2	60.6	60.4	59.4	59.2	59.5	59.8	60.4	61.2
Education	17.4	15.8	14.7	14.3	14.1	13.7	13.3	13.4	13.4	13.5	13.3
Business management	30.1	31.8	32.2	32.2	32.0	31.8	32.1	32.6	33.1	33.5	34.3
Health professions	2.8	2.9	3.0	2.9	3.1	2.7	2.8	2.8	3.0	2.9	2.9
Other technical/professional	12.3	11.7	11.4	11.2	11.1	11.2	11.0	10.7	10.4	10.4	10.6
Not classified in a field	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.3	0.5	3.1	1.4
Index of dissimilarity ²	34.0	33.6	32.9	33.1	33.2	32.8	33.7	33.8	33.6	33.9	34.0

¹ Because of reclassification of Instructional Programs in 1991-92, the figures for earlier years have been reclassified when necessary to make them conform to the new taxonomy. Therefore, most numbers shown are revised from previously published figures. To facilitate trend comparisons, certain aggregations have been made of the degree fields as reported in the IPEDS "Completions" survey: "Business management" includes Business and management, Business (administrative support), Marketing and distribution, and Consumer, personal, and miscellaneous services.

² The index of dissimilarity is calculated as the sum of the absolute differences between the proportions of women and men earning degrees in each of the fields divided by 2. It was calculated here from the 10 most detailed categories shown above (does not include "other technical/professional"). Here, it represents the percentage of one sex who would have to change fields in order for it to have the identical field distribution as the other sex.

NOTE: Detail may not add to totals due to rounding. See Glossary for full definition of "other technical/professional" fields.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1994*, tables 239 and 240 (based on IPEDS/HEGIS surveys of degrees conferred).