

DOCUMENT RESUME

ED 270 879

EA 018 564

AUTHOR Guthrie, James W., Ed.; Kirst, Michael W., Ed.
TITLE Conditions of Education in California, 1985.
INSTITUTION California Univ., Berkeley. School of Education.;
Policy Analysis for California Education, Berkeley,
CA.; Policy Analysis for California Education,
Stanford.; Stanford Univ., Calif. School of
Education.
SPONS AGENCY William and Flora Hewlett Foundation, Palo Alto,
Calif.
REPORT NO PACE-PP85-9-5
PUB DATE Sep 85
NOTE 120p.
AVAILABLE FROM Publication Sales, PACE--Policy Analysis for
California Education, 3659 Tolman Hall, Department of
Education, University of California, Berkeley, CA
94720 (\$4.50; quantity discounts).
PUB TYPE Reports - Research/Technical (143)
EDRS PRICE MF01/PC05 Plus Postage.
DESCRIPTORS *Educational Change; Educational Improvement;
*Educational Trends; Elementary Secondary Education;
*Finance Reform; Government School Relationship;
Politics of Education; School Funds; School Policy;
*School Support; State Legislation
IDENTIFIERS *California

ABSTRACT

This technical report is the second edition of "Conditions of Education in California," and contains 53 figures and tables of data that range from student test performances to state revenue projections. Following a summary of state education highlights, the section "The Evolving Context of California Education" presents past, present and future issues. Despite improvements resulting from recent major educational reform, school financing is returning to 1979-80 levels; the researchers argue that taxpayer sacrifices may be necessary. This section gives an overview of factors affecting the state's educational future, including teacher shortages and economic conditions. The next section, "Student Enrollment, Ethnicity, and Language" discusses enrollment projections and the roles of state ethnic populations and their languages. "Student Performance" analyzes test scores as reflections of achievement and minority student test performance. Measures include the California Assessment Program and the Scholastic Aptitude Test. Test scores are supplemented by such data as student absenteeism rates and admissions to postsecondary institutions. The section "Curriculum and School Reform" includes descriptions of teacher programs and salaries and the School Based Program Coordination Act. "Human Resources" evaluates teachers' salaries relative to workloads. The final section, "Fiscal Resources," offers national comparisons of funding, enrollment projections, and fiscal needs. Four pages of references are included. (CJH)

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EDUCATION

Policy Paper No. PP85-9-5

**CONDITIONS OF EDUCATION
IN CALIFORNIA, 1985**

**James W. Guthrie
Michael W. Kirst
Editors**

Terry S. Emmett, Compiler

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This paper was sponsored and published by Policy Analysis for California Education, PACE. PACE is funded by the William and Flora Hewlett Foundation and directed jointly by James W. Guthrie and Michael W. Kirst. The analyses and conclusions in this paper are those of the authors and are not necessarily endorsed by the Hewlett Foundation.

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POLICY ANALYSIS FOR CALIFORNIA EDUCATION

Policy Analysis for California Education, PACE, is a university-based research center focusing on issues of state educational policy and practice. PACE is located in the Schools of Education at the University of California, Berkeley and Stanford University. It is funded by the William and Flora Hewlett Foundation and directed jointly by James W. Guthrie and Michael W. Kirst. PACE has expanded to include satellite centers in Sacramento and Southern California. These are directed by Gerald C. Hayward (Sacramento) and Allan R. Odden (University of Southern California).

PACE efforts center on four tasks: (1) collecting and distributing objective information about the conditions of education in California, (2) analyzing state educational policy issues and the policy environment, (3) evaluating school reform implementation efforts and state educational practices, and (4) facilitating communication among policymakers, researchers, and others.

The PACE research agenda is developed in consultation with public officials and staff. In this way, PACE endeavors to address policy issues of immediate concern and to fill the short-term needs of decisionmakers for information and analysis.

PACE publications include Policy Papers, which report research findings; the Policy Forum, which presents views of notable individuals; and Update, an annotated list of all PACE papers completed and in progress.

PACE is located at 3659 Tolman Hall, School of Education, University of California, Berkeley, California 94720. Additional copies of this paper may be obtained by sending \$4.50 (checks payable to the Regents of the University of California) to PACE at this address.

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FOREWORD

This is the second edition of Conditions of Education in California. It is a technical report intended primarily for individuals such as public officials, professional educators, association executives, union leaders, governmental agency staff, education journalists, business executives, informed citizens, and others who have more than a passing interest in California's educational system. PACE also publishes a "popular" version which is based upon data contained in this technical report but presents less detail. Twenty-five thousand copies of the "popular" version are distributed to individuals and organizations throughout California.

The format of this report continues to evolve. We have not yet had sufficient experience to know precisely which strands of information and in what form best serve our readers. In this edition, we preserved items from the prior effort which readers deemed useful. In addition, we added features that users suggested would be advantageous.

Some components of this publication have been altered. Nevertheless, we attempted to maintain sufficient uniformity so that readers can compare Conditions 1985 with its predecessor. For example, basic data regarding enrollment, numbers of teachers, teacher-pupil ratios, revenues and expenditures, and salaries are continued in this edition for purposes of year-to-year comparisons. We added an assessment of data about California's school reforms. California has devoted so much of its educational energy and resources to upgrading schooling that we thought it important to provide early indicators of reform progress. In subsequent years other dimensions of education may warrant inclusion.

We welcome comments from readers. It is helpful to know both those features which ought to be retained and those which ought to be altered or added.

The compilation and synthesis of information contained in this publication has been the primary responsibility of Terry Emmett, PACE Research Associate. In addition, she undertook the difficult task of initiating the first draft of this report. She has been assisted substantially in undertaking various quantitative analyses by Todd Greenspan, PACE Policy Analyst. Editing, production, and distribution have been ably handled by Jacob Adams, Associate Director of PACE.

General directions and constructive criticisms have been offered at each step by Allan R. Odden and Gerald C. Hayward, Directors, respectively, of the Southern California and Sacramento PACE Centers. Constructive criticism and factual additions have been generously contributed by Helen Cagampang and William Gerritz, PACE Policy Analysts, and by Eric Hartwig, PACE Research Associate.

Keith Pailthorpe and Norman Gold of the California Postsecondary Education Commission, Richard Pratt of the Legislative Analyst's Office, James Wilson and James Fulton of the State Department of Education, Roger Rasmussen of the Los Angeles Unified School District, Kati Haycock of the Achievement Council, and Mark Ventresca of Stanford University all provided information, materials, advice, and patience.

Secretarial and administrative contributions have been made tirelessly by Judy Snow, PACE Administrative Assistant, and Norma Needham. Conversion of seemingly endless streams of information into comprehensive and understandable graphics has been undertaken by Jean Thompson and Rabiya Tuma.

In an undertaking this large, there undoubtedly are others whose contributions we have overlooked, and in this regard we apologize.

James W. Guthrie
Michael W. Kirst

September 1985

FACTUAL SUMMARY AND HIGHLIGHTS

Student Enrollment, Ethnicity, and Language

- California public school enrollment has begun to rise, following declines through the 1970s. K-12 enrollment for 1984-85 totaled 4.15 million.
- K-12 enrollment is projected to reach 4.6 million by 1990. Growth is occurring rapidly in grades K-3.
- Secondary enrollment will continue to decline in the short term, begin to grow in the mid-1990s, and increase well into the twenty-first century.
- Minority enrollment is expected to exceed 50% of total K-12 enrollment before 1990, creating a "majority of minorities."
- Twenty-five percent of the nation's immigrants are settling in California, predominantly in the San Francisco and Los Angeles areas.
- An estimated 23 percent of 5- to 17-year-olds in California speak a language other than English at home.
- Students with limited English proficiency composed 11.9 percent of K-12 enrollment. Forty-one different primary languages are represented; however five languages (Spanish, Vietnamese, Cantonese, Korean, and Filipino) are spoken by 87 percent of this group.

Student Performance

- California Assessment Program results are mixed. In 1983-84, third grade scores rose in math, reading, and written language. Sixth grade math and language scores rose; reading scores dropped. Twelfth grade scores were down in all areas. 1984-85 twelfth grade scores have reversed direction and are up in all subjects.
- California students taking SAT Achievement Tests scored below national averages in all areas except Hebrew and Latin; they scored near national averages in Spanish and German.

- California SAT math scores rose four points and verbal scores rose three points in 1984-85.
- California has an enormous and apparently growing drop-out problem. As many as 34 percent of students enrolled in first grade may leave school prior to graduation.
- Hispanics have the highest drop-out rate. Data indicate that more than 40 percent of Hispanics leave school between first grade and graduation.
- High school graduation followed immediately by four years of college is not now the conventional pattern. Less than 5 percent of 9th grade white students earn a bachelor's degree in a public university system within five years of high school graduation. For blacks and Hispanics the rate is less than 2 percent; for Asians it is approximately 20 percent.

Curriculum and School Reform

- A State Department of Education survey indicates that 84 percent of districts will meet the curricular requirements of SB 813 for the graduating class of 1985. This figure is expected to reach 90 percent by 1988.
- Section offerings in mathematics, science, and foreign language courses have increased while courses in home economics, industrial arts, and business have decreased.
- Course offerings in advanced placement classes have increased. Sections offered in English, U.S. history, calculus, biology, chemistry, physics, and European history are up 34 percent over 1982-83. In addition, new advanced placement courses are being offered in computer science, foreign languages, art history, and music.
- In 1984-85--one year--high school students surpassed two-year statewide targets on quality indicators for course enrollments in math and English, and for CAP scores in math and reading.

Human Resources

- The average California teacher's salary increased by 101.4 percent between 1974 and 1984. The Consumer Price Index rose by 129.4 percent during the same period.
- Major shortages of teachers holding appropriate credentials are occurring in mathematics, special education, science, bilingual education, and computer science.
- Women hold 64.9 percent of teaching positions and 33.2 percent of administrative positions. They are concentrated in program and subject areas at the district level and program administration at school sites.
- California teacher salaries rank among the highest in the nation. National Education Association data rank California third at \$26,300. Teachers average 42.4 years of age, have an average of 14.8 years of experience, and over 90 percent have at least 30 semester hours beyond a bachelor's degree.
- The student-teacher ratio is higher in California than in any other state, except Utah. The current ratio is approximately 23.5 students for every instructor.

Fiscal Resources

- Funding for K-12 education is budgeted at \$17.36 billion for 1985-86, an increase of 6.1 percent per pupil over 1984-85. However, in constant dollars, funding is essentially at the same level as 1984-85.
- Increased funding since 1983-84 has returned real expenditures per student to 1979-80 levels.
- Recent increases in funding have begun to move California closer to the national average expenditure. From spending \$187 less per pupil than the nation's average in 1982-83, it has moved to \$89 below the average in 1985-86.
- State funds now provide over 67 percent of California's K-12 revenues. Federal sources currently supply less than 7 percent.

- By 1990-91 total California K-12 revenues must rise to \$24.6 billion in order to maintain real expenditures per pupil at current levels, a \$7.2 billion increase.
- If education continues to be funded at rates operative in 1983-84 through 1984-85, California expenditures for education could be raised from below the national average to the level of the 25th percentile of all states. By 1990-91 revenues could reach \$30 billion if this effort were sustained.

THE EVOLVING CONTEXT OF CALIFORNIA EDUCATION

The magnitude and complexity of public education in California are seldom well understood. Public schools in this state now serve more than four million students and cost \$17 billion annually. The school system is sufficiently large as to assume glacial qualities. The direction and speed of its movement are often difficult to discern except from the vantage of time and the use of outside references. Consequently, this report repeatedly offers comparisons of California's educational system to itself in prior years and to those in other states. These comparisons reveal patterns of change and suggest future trends worthy of emphasis. The evolving context of California education which emerges from these trends serves as a guide for the many facts and figures that appear in this report.

The Last Ten Years: 1975-85

In the decade between 1975 and 1985 California schools experienced dramatic declines in pupil enrollment, student academic performance, and financial resources. All these trends have now begun to reverse themselves. Nevertheless, the depth of the decline strongly influences educational policy today.

Statewide school enrollment reached a high of 4.5 million students in 1970. By 1980 enrollment had fallen to 3.9 million, a 13 percent decrease.

From the public's view, declines in student academic performance were far more significant than dwindling enrollment. Scholastic Aptitude Test (SAT) scores declined. California Assessment Program (CAP) scores dropped for secondary school students. High school drop-out rates intensified (29 percent of California's ninth grade students are now estimated to drop out before completing high school).

Publication of dramatic reports such as A Nation At Risk, issued by the National Commission on Excellence in Education, alerted the American public to the general decline in educational standards. California's school conditions eventually came to be seen as particularly distressing. Students from middle-income homes, the ones that typically would have been predicted to perform satisfactorily, were performing more poorly in California than for the nation. California's SAT scores had dropped more precipitously than for the U.S. Scores on Advanced

Placement Achievement Tests were higher for students in other states. Outstanding student performers in science and math were found in other states more often than in California. Whereas the nation was at risk, California already appeared to be in substantial difficulty.

School finance, like student performance, also suffered during this time. In 1974-75, California spent \$3,472 per pupil (1985 dollars*). As a consequence of rampant inflation in the 1970s and an economic recession in the early 1980s, purchasing power of school budgets weakened. Per pupil expenditures dropped to \$3,353 (1985 dollars). Based on California's average class size of 24 students--the second largest in the United States--the state was spending \$8,256 per classroom less in 1982-83 than was the case five years previously. If enrollment had not been declining simultaneously, California school dollars would have been spread even more thinly.

In addition, the physical infrastructure of schooling, items such as buildings and school buses, deteriorated as a consequence of the eroding financial base and need to defer maintenance. Moreover, local districts were constantly adjusting to repeated alterations in the state's method of financing schools. School finance arrangements changed no fewer than five times in ten years in an effort to adapt to the court decisions in Serrano vs. Priest and as a consequence of Proposition 13.

The unsettling condition of California's pupil achievement triggered a massive reform effort, the state policy manifestation of which was the 1983 enactment of Senate Bill 813. The major energy of the state's educational system for the past two years has been directed at implementing this statute's provisions and measuring outcomes of the reform effort. Various state agencies have enacted policies to intensify high school graduation standards, lengthen the school day and school year, provide more counseling to secondary students, and make college and university entrance subject to greater rigor. Also, the state has begun to utilize a vastly expanded battery of tests and other output measures in order more completely to assess the performance of the school system.

* Conversions to 1985 dollars are calculated employing the California Consumer Price Index.

In short, during the past decade, California's academic standards deteriorated badly along with the financial base and physical infrastructure of schools. However, a major reform effort was mounted aimed at making schooling more effective and beginning to provide the added resources which appeared to be necessary.

The Present

Many of the downward trends of the 1970s and early 1980s are now undergoing a reversal. In the last two years, the state has made substantial progress in restoring the school's financial base. Per-pupil revenues, in real dollar terms, increased 8.7 percent in 1983-84 and another 7.2 percent in 1984-85. Funds budgeted for the current year remain at essentially the same level.

Enrollment increased 62,000 from 1983 to 1984, and is projected to increase approximately 100,000 per year for each of the next five years.

Significant evidence of improved student performance is still to come, but analyses suggest that the educational reforms initiated in 1983 with enactment of SB 813 have been implemented. For example, a report by the California Tax Foundation suggests that most school districts are making significant efforts to implement the major SB 813 reforms, including more rigorous graduation standards and longer school days and school years. Studies by PACE indicate that California's high schools are offering more courses in science, math, advanced placement, and comprehensive English, and that many students are selecting these tougher courses. Expansion of tenth-grade counseling programs is providing more students with information about their educational opportunities and abilities.

Moreover, the State Education Department has developed more rigorous model curriculum standards for core academic subjects. New measures of school quality, which are reported periodically by the State Education Department, enable educators, parents, and others at each school to plan and monitor educational improvements. The state superintendent is pressuring textbook publishers to produce more challenging and interesting textbooks, and the California Commission on the Teaching Profession is exploring ways to improve teaching and to attract outstanding talent into California's classrooms.

While this evidence of success and momentum on school reform is encouraging, many important educational outcomes

cannot be captured by initial assessments. Analyses at this early stage focus on changes in quantity, like more instructional minutes per day and increased enrollment in academic courses. Missing still are measures of changes in the quality of educational programs.

In addition, local implementation and "bottom-up" enthusiasm for school reform is crucial to its continuing success. State-level strategies to initiate reform have been pursued aggressively, but are limited. Much of the focus on reform now shifts to school districts and individual schools.

These positive changes should not disguise the fact that educational trouble spots remain. Efforts to comply with Serrano have resulted in remarkable equalization of per-pupil revenues throughout the state. It is estimated that more than 90 percent of California's school districts are now within the \$100 per pupil spending level (adjusted for inflation) called for by the court in its 1976 decision.

In the process of achieving this equalization, however, large cities, which often contain schools with the most intense social and educational problems, have not been able to gain the added resources they need. For example, Los Angeles spends only 5.9 percent per pupil above the state average; Oakland spends 8.8 percent above the state average. Funding at this level provides these districts little help with which to address the added problems they encounter.

Also, whereas school financing is rebounding and per-pupil revenues are returning to their 1979-80 level in terms of purchasing power, the prior school funding shortfall created an unresolved backlog of problems with salaries and buildings. Between 1978 and 1983, purchasing power of teacher salaries dropped 18 percent. The backlog of deferred building maintenance grew to a level which is now estimated to cost \$500 million to \$1 billion annually.

The Future

Not only is there a continuing backlog of educational problems, it is also the case that social and economic conditions are emerging which portend even more intense challenges for the future. These trends involve increasing enrollment, a shortage of highly qualified teachers, continued expansion of high-need student populations--for example, children from poverty households and students with limited understanding of the English language--significant

alterations in family structure, and evolving economic and workforce needs.

A Shortfall of Highly Qualified Teachers

Estimates vary regarding the number of new teachers California will need in the next five years. However, virtually all analyses suggest that burgeoning school enrollment and a particularly large number of retiring teachers will necessitate a larger number of new teachers than has been the case in California for more than a decade. Even if class size stays at its present level, California will need approximately 80,000 additional teachers in the next five years. Approximately 8,000 additional teachers are needed to reduce class size by one student per teacher. Almost 58,000 more teachers would be needed to reduce California class size to the national average of 18 to 1.

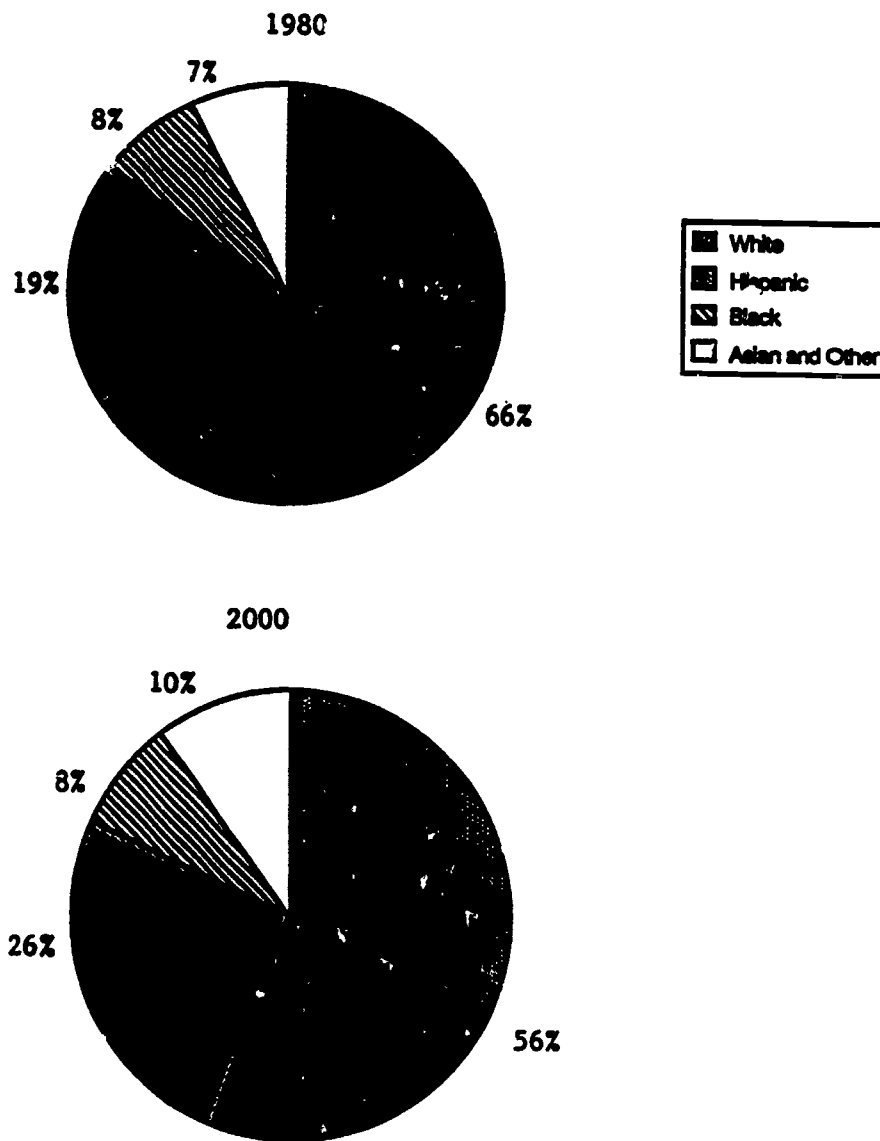
By recruiting from out of state, some portion of the shortfall may be offset. However, it is unlikely under present conditions that California will have enough teachers in specialized areas such as science, mathematics, and bilingual education, as well as instructors for handicapped students. Added attention must be given to expanding the labor pool in these areas. However, the larger problem is ensuring that teaching is made sufficiently attractive as an occupation to induce larger numbers of more able individuals to enter the profession. Altering the organizational and economic incentive systems and working conditions for teachers appear as crucial steps in solving this problem.

Population Diversity

California's population is being transformed from a predominantly white, relatively homogeneous group to one which is increasingly diverse in its ethnic and linguistic characteristics. For example, in 1980 ethnic minorities composed 33.4 percent of California's population (Figure 1). Of approximately 23.7 million Californians in 1980, 4.5 million were Hispanic, 1.8 million black, and 1.3 million Asian. In 2000, ethnic minorities are projected to compose 44 percent of California's population. Factors contributing to changes in the ethnic mix of the population include higher than national average fertility rates for blacks and Hispanics, immigration of Hispanics from Mexico and Central and South America, and an unprecedented influx of Asians. Indeed, 25 percent of the nation's immigrants are settling in California,

FIGURE 1

California Population by Ethnicity, 1980 and 2000



Source: Based on Patricia R. Brown and Kati Haycock, Excellence for Whom? (Oakland: The Achievement Council, Inc., 1984), citing Projections of the Hispanic Population for California, 1985-2000 with Projections of Non-Hispanic White, Black, and Asian and Other Population Groups, Center for Continuing Study of the California Economy.

predominantly in the greater San Francisco and Los Angeles areas, bringing with them added social needs ranging from health care to instruction in the English language. In short, California is acquiring an added wealth of cultural divergence which brings with it an intensified need for educational services.

Poverty Among Children

In 1979, approximately 15.2 percent of children under age 18 lived in poverty, up from 12.7 percent in 1969. The rate of increase of childhood poverty in California has exceeded both the national and western regional averages (Table 1). By 1979, the state slipped to 31st place nationally in the proportion of its children above the poverty level. During the same year, California ranked 5th in per capita personal income.

Families headed by women and minorities are disproportionately poor, and, in California, both groups are growing. In 1979, 20 percent of black families and 16.8 percent of Hispanic families in this state had incomes below the poverty level (\$7,412 for a family of four) compared with 5.5 percent of white families. Of approximately one million California children under age 18 living in poverty, about 300,000 are white, 170,000 are black, and 400,000 are Hispanic.

Changes in Family Structure

In California, as throughout the nation, children now live in family structures that have changed dramatically. Average household size is currently at an all-time low and is expected to continue to shrink. The kinds of households have changed as well. Single-parent and two-working-parent families have proliferated. In 1955, 60 percent of U.S. households consisted of a working father, a housewife mother, and two or more school-age children. In 1985, only seven percent of U.S. households reflect this profile. More than 70 percent of working-age women now work outside the home. Single-parent families, which include divorced and separated parents as well as mothers who never married, account for an increasing proportion of all households. Because parents are working and older siblings are often not present, children as young as six are caring for themselves after school. Day care has become a primary necessity and "latch-key kids" are commonplace. Schools are looked to increasingly as a resource in these areas, yet no data exist that could

TABLE 1

Percent of Persons, Families, and Children
Below Poverty Level, U.S. and California,
1969 and 1979

PERCENT BELOW POVERTY LEVEL

Area	Persons		Families		Related children under 18	
	1969	1979	1969	1979	1969	1979
	----	----	----	----	----	----
California	11.1	11.4	8.4	8.7	12.7	15.2
U.S.	13.7	12.4	10.7	9.6	15.1	16.0
Western States	11.7	11.3	8.9	8.5	12.9	14.2

Note: Data on children in poverty exclude children in institutions, foster care, and unrelated to families.

Source: John J. Kirilin and Donald R. Winkler, eds, California Policy Choices: 1984 (Los Angeles: University of Southern California, 1984), citing Statistical Abstract of the United States, 1982-83, U.S. Department of Commerce, Bureau of the Census.

indicate whether or how students are affected by these changes and, therefore, what additional educational needs they have.

Of every 100 children born today, only 41 will live with both parents until the age of 18. Twelve of the hundred are born out of wedlock. Half of those are born to teenage mothers. These pregnancies often lead to premature births due to inadequate prenatal examinations, medical care, and diet. Low birth weights of premature infants are, in turn, highly associated with major learning difficulties in school.

Households without children, so-called non-family households, are increasing in number at a rate faster than family households. Single persons, living alone, account for the majority of these households. In 1982, "non-families" composed 27 percent of total U.S. households, up from 19 percent in 1970. This change, along with others, has resulted in a reduction of the conventional constituency for educational services.

Employment and Economic Considerations

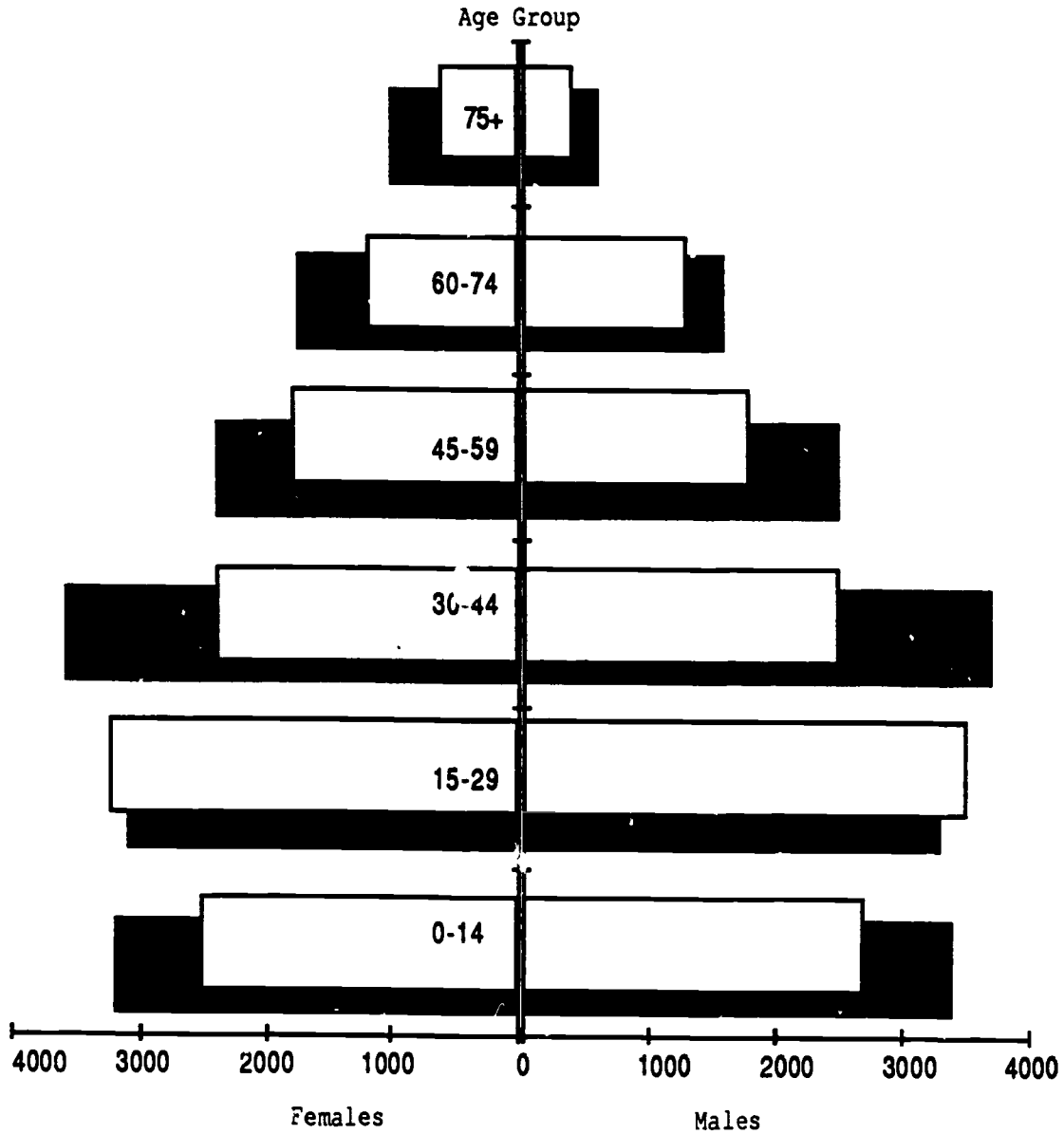
Historically, California has enjoyed considerable economic prosperity. Growth was facilitated by an expanding work force. For continued economic expansion, however, California will depend on a highly trained work force, continued technological innovation, and responsiveness to changing economic conditions. These changing conditions present challenges for California's economy and school system.

First, demographic changes will produce fewer entrants to the work force; indeed, the State Department of Finance projects a decline in the entry-level workforce between 1980 and 1995 (Figure 2). While the population as a whole will grow, youths between the ages of 15 and 29 will decline in number. This group, increasingly composed of language and ethnic minorities, will fill entry-level employment positions in all economic sectors, including teaching, over the next 15 years. In order to maintain a highly qualified labor force, schools must improve the academic attainment of students with whom the educational system has not been highly successful previously.

Second, California has a stable employment pattern, with most jobs in trade and manufacturing (Table 2), and projections of employment by occupation suggest that most new jobs will occur in traditional occupations rather than high-technology areas. Seventy-five percent of non-

FIGURE 2

California Population Pyramid, 1980
Superimposed on 1995



POPULATION IN THOUSANDS

Source: California Postsecondary Education Commission, A Prospectus for California Postsecondary Education, 1985-2000 (Sacramento: California Postsecondary Education Commission, 1985), citing Population Projections for California's Counties, 1980-2020, California Postsecondary Education Commission.

TABLE 2

**Percent Employment in Major
Occupational Categories,
U.S. and California, 1980 and 1985**

<u>Category</u>	<u>United States</u>		<u>California</u>	
	1980 ----	1985 ----	1980 ----	1985 ----
Professional, technical and related	16.1	17.1	17.4	17.2
Managers, officials, and proprietors	9.2	9.6	10.9	11.1
Sales workers	6.7	6.9	6.9	7.0
Clerical workers	18.5	18.9	19.9	20.0
Crafts and related	12.1	11.6	11.8	11.8
Operatives	13.9	12.1	12.4	12.4
Service workers	15.2	16.3	12.8	12.9
Laborers except farm	5.7	5.5	4.7	4.8
Farmers and farm workers	2.6	1.9	3.2	3.0
	-----	-----	-----	-----
TOTAL	100.0	99.9	100.0	100.2
Total number employed (in thousands)	102,107	127,110	10,873	12,555

Source: David Stern, Education for Employment in California: 1985 to 2010 (Berkeley: University of California, Berkeley, 1985), citing for U.S. in 1980, Occupational Projections and Training Data Bulletin 2202, December 1982, U.S. Bureau of Labor Statistics; citing for U.S. in 1985, George T. Sivestric, John M. Lukasiewicz, and Marcus E. Einstein, "Occupational Employment Projections Through 1995" ("moderate" projection), Monthly Labor Review, November 1983; citing for California, Projections of Employment, 1980-1985, September 1982 update, California Employment Development Department.

agricultural employment growth between 1970 and 1980 occurred in what economists term the "tertiary sector," that is, trade, finance, services, and government. This sector is expected to be the major locus of growth for the immediate future, supplemented by agriculture and high technology.

Third, while many high-technology job classifications display rapid growth, particularly in the computer field, relatively small numbers of employees are involved. In California, most new jobs between 1980 and 1985 occurred in management, sales, secretarial, clerical, bookkeeping, agriculture, and services such as cook, waiter or waitress, janitor, and gardener (Table 3). However, manufacture of high-tech equipment does require a growing number of workers with special skills (Table 4). In addition, transfer of specialized equipment into the workplace generally will require the majority of workers to learn new skills.

Finally, the nature of job opportunities is changing, in part because manufacture of high-volume, standardized items, such as clothing, appliances, automobiles, and toys has shifted to developing nations. This trend to "offshore" manufacturing now extends into high-tech areas such as computers, chips, and electronic assemblies. If the state is to compete economically, new products, areas of expertise, and production methods must be developed continually. Workers in occupations other than services may be engaged in quite different activities 10 or 20 years from now.

All these changes raise the question: what skills will be needed by future job market entrants? Will skill requirements need to be increased, or will there be a proliferation of low-level, low-skill service sector jobs? A consensus appears to exist among economists, educators, and business leaders that education must, in the foreseeable future, prepare students for "learning to learn." Education must enable students to adapt to rapid change with results from new technology permeating the workplace.

Emerging Challenges

During the last decade, California's public schools weathered difficult economic and educational times. Now, at a time when Californians seem committed to addressing the consequences of past problems, it appears that several intense new challenges are emerging. Additional funds are needed to pay for enrollment increases. Schools must be

TABLE 3

Occupations with Substantial Job Opportunities
in California, 1980-1985

<u>Occupations</u>	<u>Employment</u> <u>1980</u>	<u>Total Job</u> <u>Opportunities</u> <u>1980-1985</u>	<u>Average</u> <u>Annual Job</u> <u>Opportunities</u>	<u>Percent</u> <u>Due to</u> <u>Replacement</u>
Total, All occupations	10,872,834	3,478,398	695,680	52
Other Managers, Administrators ¹	670,151	259,116	51,823	50
Sales Workers, n.e.c. ¹	562,670	202,539	40,508	54
Secretaries, Other	397,909	157,228	31,446	49
Bookkeepers, Accounting clerks	250,678	91,329	18,266	57
Farm Laborers, Wage Workers	270,997	73,764	14,753	72
Miscellaneous Clerical Workers ¹	202,631	68,556	13,711	51
Cooks, Except Private	143,015	65,230	13,046	41
Waiters, Waitresses	198,151	64,538	12,908	49
Janitors and Sextons	173,678	64,508	12,902	65
Gardeners, Groundskeepers, except farm	133,062	60,486	12,097	61
Typists	165,832	54,350	10,870	57
Accountants	125,529	53,663	10,733	45
Cashiers	148,319	52,825	10,565	47
Real Estate Agents, Brokers	89,533	51,514	10,303	63
Assemblers	156,679	50,400	10,080	40
Blue-Collar Workers Supvr., n.e.c. ¹	169,992	48,677	9,735	45
Registered Nurses	111,102	39,160	7,832	57
Guards	61,110	38,920	7,784	56
Miscellaneous Machine Operatives ¹	115,265	33,599	6,720	40
Operatives, n.e.c. ¹	113,829	33,563	6,713	42
Bank, Financial Managers	82,557	32,924	6,585	33
Truck Drivers	133,571	32,269	6,454	38
Carpenters	109,921	31,831	6,366	51
Receptionists	83,337	30,884	6,177	53

¹ Summary categories such as "Other Managers, Administrators" and "Sales Workers, n.e.c." represent a large number of distinct occupations, few of which are particularly large on their own.

Source: David Stern, Education for Employment in California: 1985 to 2010 (Berkeley: University of California, Berkeley, 1985), citing Projections of Employment 1980-1985, California Employment Development Department.

TABLE 4

Percent Distribution of Employment
by Occupation in High-Tech
and Other Industries, California 1980

<u>Occupation</u>	(1) <u>All industries</u>	(2) <u>All manufacturing</u>	(3) <u>High-Tech¹ manufacturing</u>	(4) <u>Electronic computing equipment manufacturing</u>
Professionals and managers	25.7	18.9	36.4	9.4
Technicians	6.0	7.8	12.4	16.2
Clerical	19.9	14.1	16.2	16.2
Production workers	12.5	44.0	25.3	19.0
Other ²	36.0	15.2	9.7	9.2
TOTAL	100.1	100.0	100.0	100.0

¹ Pharmaceuticals; ordnance; office and accounting machines; electronic computing equipment; communication equipment; electrical machinery; guided missiles and space vehicles; miscellaneous transportation equipment; scientific and controlling instruments; optical and health services supplies; photographic equipment and supplies; watches, clocks, and clockwork devices.

² Sales, construction, transportation and utilities crafts, other crafts, transportation equipment operatives, service workers, laborers, and farm workers.

Sources: David Stern, Education for Employment in California: 1985 to 2010, (Berkeley: University of California, Berkeley, 1985), citing, for columns (1) and (2), Projections of Employment, 1980-1985, September 1982 update, California Employment Development Department; citing for columns (3) and (4), analysis of 1980 Census microdata by Susan Goodman and John P. Campbell, Bureau of Business Research, University of Texas at Austin, from works in progress.

built, older buildings repaired, and buses purchased. The changing nature of the school population will probably necessitate special, added resources. In addition, if California is to sustain the momentum of school reform, as it must if the state's workforce is to adapt to new economic conditions, even greater resources are needed. Yet, demographic shifts are diluting the conventional political constituency for education.

Funding Public Schools

A major question emerges regarding money. How much will it cost simply to keep school spending even over time in today's dollar terms? How much will it cost to meet California's capital outlay needs? How much more might improvements such as lowered class size and increased teacher salaries cost? Will the money be available in the future? It is possible, within boundaries, to offer educated estimates regarding these questions?

Staying Even Financially

If California is to sustain its present per-pupil spending level, then total K-12 revenues for current operations must increase to \$24.6 billion by 1990. This is an increase of \$7.2 billion over revenues available in 1985-86. These projections assume five percent inflation over the period involved and expected enrollment growth of approximately 500,000 additional students.

Making Real Improvements

In addition to inflation and enrollment growth, the California State Education Department estimates that it will take \$3.6 billion to build needed classrooms. New school buses are predicted to cost an additional \$300 million. Capital outlay requirements are over and above the expenditures needed for basic operation.

In contrast, the cost of sustaining educational reform is more difficult to project. Some improvements at first appear to involve only minimal expense. Intensifying high school graduation standards is an example. However, such changes, to the extent that they have implications for added personnel, may eventually involve more money.

The cost of other reforms is known. For example, reducing class size from 24 to 23 students would cost the state more than \$163 million annually, and achieving class

sizes that equal the national average will cost between \$1.3 and \$1.6 billion per year. These projections do not account for the additional classrooms needed if average class size was reduced. Similarly, raising the average teacher salary from the current \$26,300 to \$30,000 or \$35,000 per year would cost \$629 million to \$1.5 billion for the present year alone.

California's Recent Commitment

California's economy has generally recovered from the unstable period of the late 1970s and the early 1980s, and education is already benefiting. Added appropriations for 1983-84 and 1984-85 have virtually restored the state to its 1979-1980 per-pupil spending level. If the fiscal effort of these years (1983-84 to 1984-85) is sustained through 1990, then California can be expected to generate a total of \$30 billion for schools. This level of funding would provide for enrollment growth and inflation; it would include expenditures for capital improvements and move the state substantially closer to the twenty-fifth percentile of state spending on education nationally. Such an increase could fund improvements in quality needed to sustain educational reform. The question becomes: will California maintain its effort?

Given the difficulties through which schooling has come, and the challenges now developing, it appears as if California must sustain its investment in education and, consequently, human capital. It may necessitate added short-run sacrifices on the part of the general public. For example, the next several years may not be a propitious time to reduce taxes. However, not to make such a commitment now runs the downstream risk of an ill-prepared work force and an undernourished civic culture. Such would be far more costly eventually than investing now in schooling.

STUDENT ENROLLMENT, ETHNICITY, AND LANGUAGE

Enrollment

California public school enrollment declined through the 1970s, but has been rising steadily since 1981-82. Enrollment for 1984-85 totaled 4.15 million, up 2.1 percent since 1982-83 (Table 5). This trend is reflected throughout California. Marin County is the only county in which total enrollment is projected to decrease in the next decade. Secondary enrollment will decrease in eight counties, but increases at the elementary level will more than compensate.

Enrollment is expected to rise through the turn of the century. Entrance of the massive baby-boom generation (born 1946 to 1959) into prime child-bearing years caused an upturn in the number of births during the 1970s, despite low fertility levels. (Although women are having fewer children, many more women are now bearing children.) These recent births are beginning to expand the size of early elementary enrollment. In addition, a considerable percentage of recent growth can be attributed to immigration from Vietnam, Cambodia, Taiwan, and Thailand, and from Mexico and Central and South America.

Estimates indicate that approximately 4.6 million students will attend California public schools by 1990, an increase of approximately 500,000 from 1985-86 (Figure 3). Initial growth is occurring in grades K-3, with increases in grades 4-8 anticipated by 1987. Secondary school enrollment in California will continue to decline in the short term, begin to grow in the mid-1990s, and continue increasing well into the twenty-first century (Figure 4).

A portion of the increase is likely to occur in urban or suburban areas particularly as Hispanic and Asian immigrants settle there. Otherwise, migration patterns now favor rural areas, new suburbs of existing urban spread, and small metropolitan centers, typically under 250,000 population. The expected shift into previously under-developed areas will require capital outlay for new school buildings. In addition, new teaching positions, initially at the elementary level, should occur in these areas of growing enrollment.

The number of students graduating from public high schools continues to decline. The 1984 graduating class of 232,199 was four percent smaller than the 1981 class. This

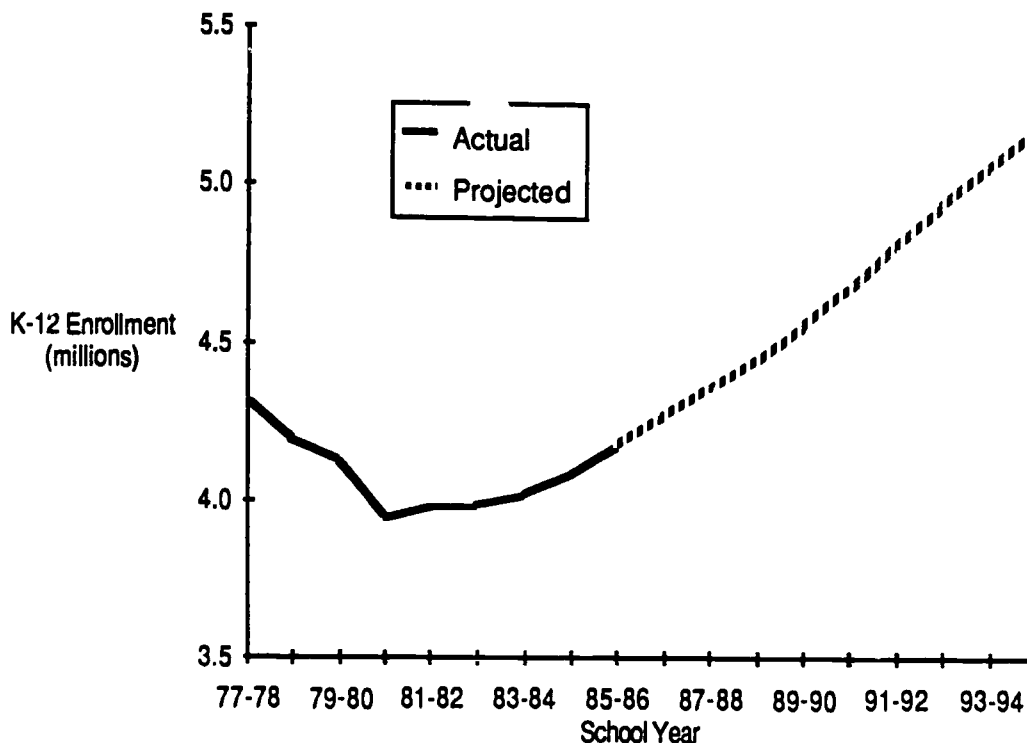
TABLE 5
Enrollment in California Public Schools,
1982-83 Through 1984-85

Level	Enrollment			Percent increase (or decrease)	
	1982-83	1983-84	1984-85	Between 1983-84 and 1984-85	Between 1982-83 and 1983-84
State TOTAL	4,065,486	4,089,017	4,065,486	1.5	0.6
K	313,584	319,328	336,766	5.5	1.8
1	308,359	322,144	330,089	2.5	4.5
2	292,515	300,621	315,807	5.1	2.8
3	288,150	293,402	303,547	3.5	1.8
4	282,776	290,277	298,081	2.7	2.6
5	291,642	285,894	294,265	2.9	(1.9)
6	313,067	294,405	290,546	(1.3)	(5.9)
7	334,426	324,883	306,763	(5.6)	(2.8)
8	323,194	333,082	324,432	(2.6)	3.0
Other elementary	54,105	49,488	45,666	(7.7)	(8.5)
SUBTOTAL ELEMENTARY	2,801,818	2,813,524	2,845,962	1.2	0.4
9	331,791	346,363	364,166	5.1	4.4
10	330,936	335,492	352,756	5.1	1.4
11	303,598	301,223	307,314	2.0	(0.8)
12	270,700	266,889	254,211	(4.8)	(1.4)
Other secondary	26,643	25,526	26,701	4.6	(4.2)
SUBTOTAL SECONDARY	1,263,668	1,275,493	1,305,148	2.3	0.9

Source: California State Department of Education,
Enrollment Data California Elementary and Secondary Public
Schools 1984-85, (Sacramento: California State Department
of Education, 1985).

FIGURE 3

K-12 Enrollment in California Public Schools,
1977-78 Through 1984-85
and Projected Through 1994-95

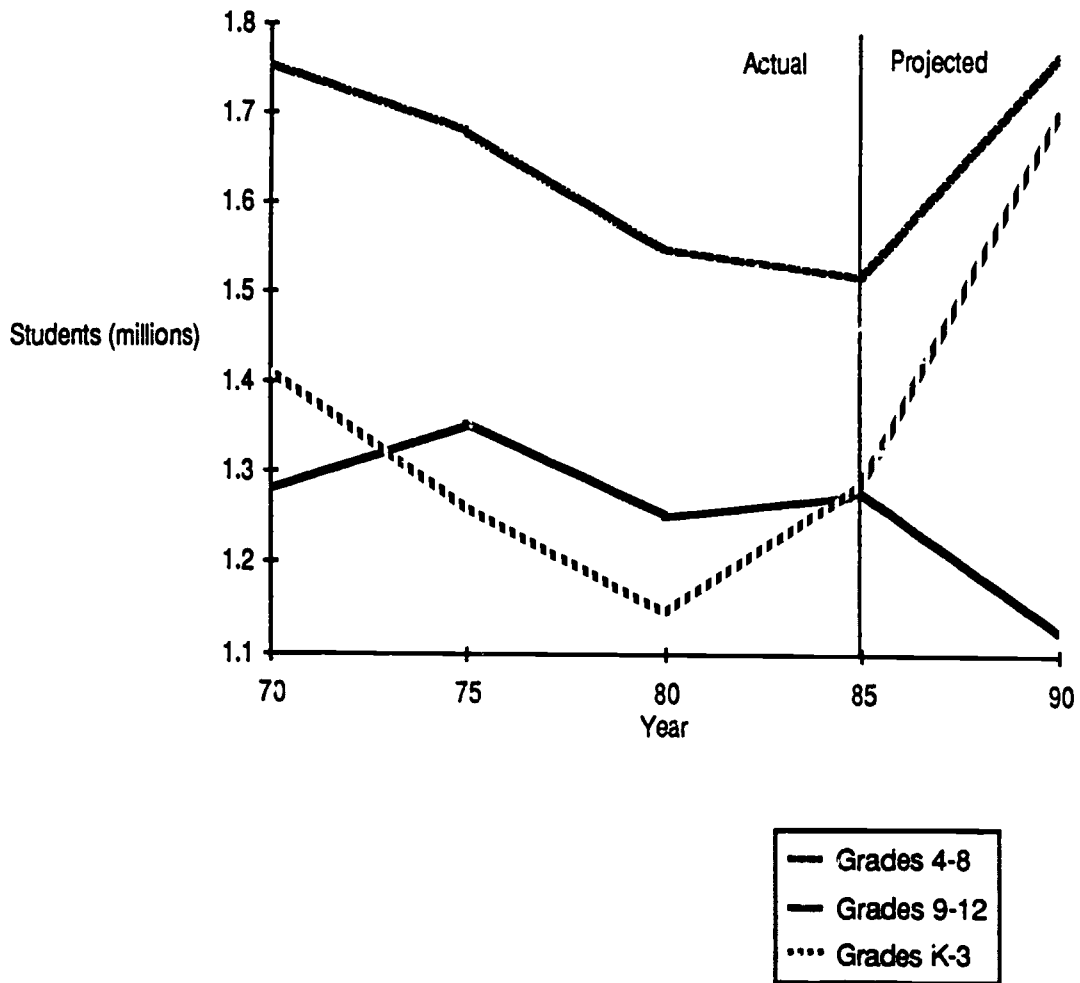


Note: Figures for K-12 enrollment include special education students in special classes, students in continuation classes, and other non-graded students.

Source: California State Department of Education, Enrollment Data, California Elementary and Secondary Public Schools (Sacramento: California State Department of Education, 1978-1985). Projected data calculated from California State Department of Finance data.

FIGURE 4

California Public School Enrollment by
Grade Level, 1970 to 1991



Source: California Postsecondary Education Commission, A Prospectus for California Postsecondary Education, 1985-2000 (Sacramento: Postsecondary Education Commission, 1985), citing 1970 to 1980, California State Department of Education 1981 to 1991, California Department of Finance

decline reflects a shrinking secondary school-age group and high drop-out rates (discussed later). Graduation rates are expected to rise slightly between now and 1988, decline until 1991, and then rise sharply through the turn of the century.

Private school enrollment in California climbed to 540,127 in 1984-85, continuing the pattern of increases noted since the early 1970s. However, as a percent of total K-12 enrollment, private school enrollment fell in 1984-85 from 11.7 to 11.5 percent, the first proportional decline in at least a decade.

Ethnic and Language Distribution

California's school-age population is more diverse ethnically than the state's total population. According to 1981-82 data from the State Department of Education, public schools are 56.4 percent white and 43.6 percent minority. Minority students include: black (9.9%), Hispanic (25.8%), Filipino (1.6%), Asian or Pacific Islander (5.5%), and Native American or Alaskan Native (.8%).

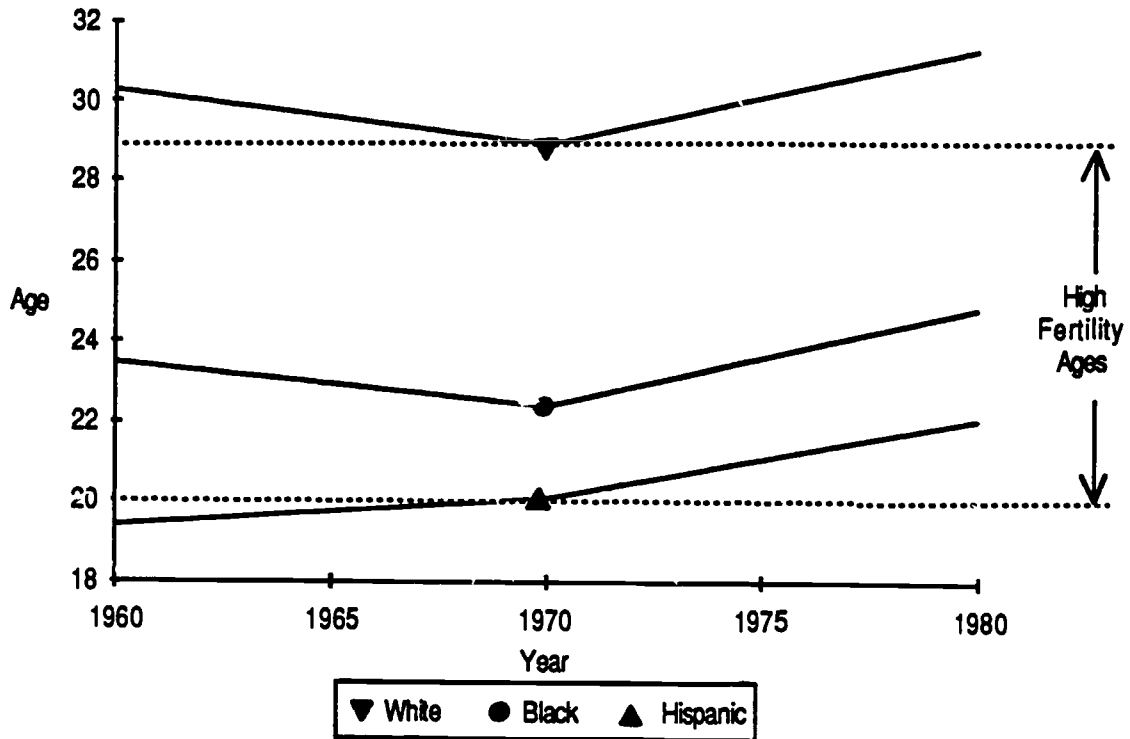
Moreover, these standard categories, particularly Asian and Hispanic, describe heterogeneous populations. For example, Hispanic and Asian school populations particularly are composed of both native-born Americans and recent immigrants, groups often with different educational needs.

Growth in the minority proportion of public school students is expected to continue. Minorities represent a greater proportion of younger age groups, both those now reproducing and those approaching child-bearing years (Figure 5). Also, immigration is likely to continue as population growth and other conditions elsewhere make California an attractive place to settle. In fact, between 1970 and 1980 the proportion of minority student enrollment in California grew by 15.6 percent to 42.9 percent. This increase was the largest in the nation (Table 6). If growth continues at anywhere near this rate, minority enrollment should exceed 50 percent of total K-12 enrollment before 1990. Even conservative estimates predict that "minorities" will constitute a majority of public school enrollment by the year 2000 (Figure 6).

Despite efforts to integrate public schools, a large percentage of minorities still attend schools that are ethnically isolated by attendance area. Thirty-nine percent of California elementary schools and 18 percent of

FIGURE 5

Median Age of Hispanic, Black, and White Populations (U.S.) Compared With High Fertility Age Groups, 1960 To 1980



Source: Ian McNett, Demographic Imperatives: Implications for Educational Policy (American Council on Education, 1983).

TABLE 6

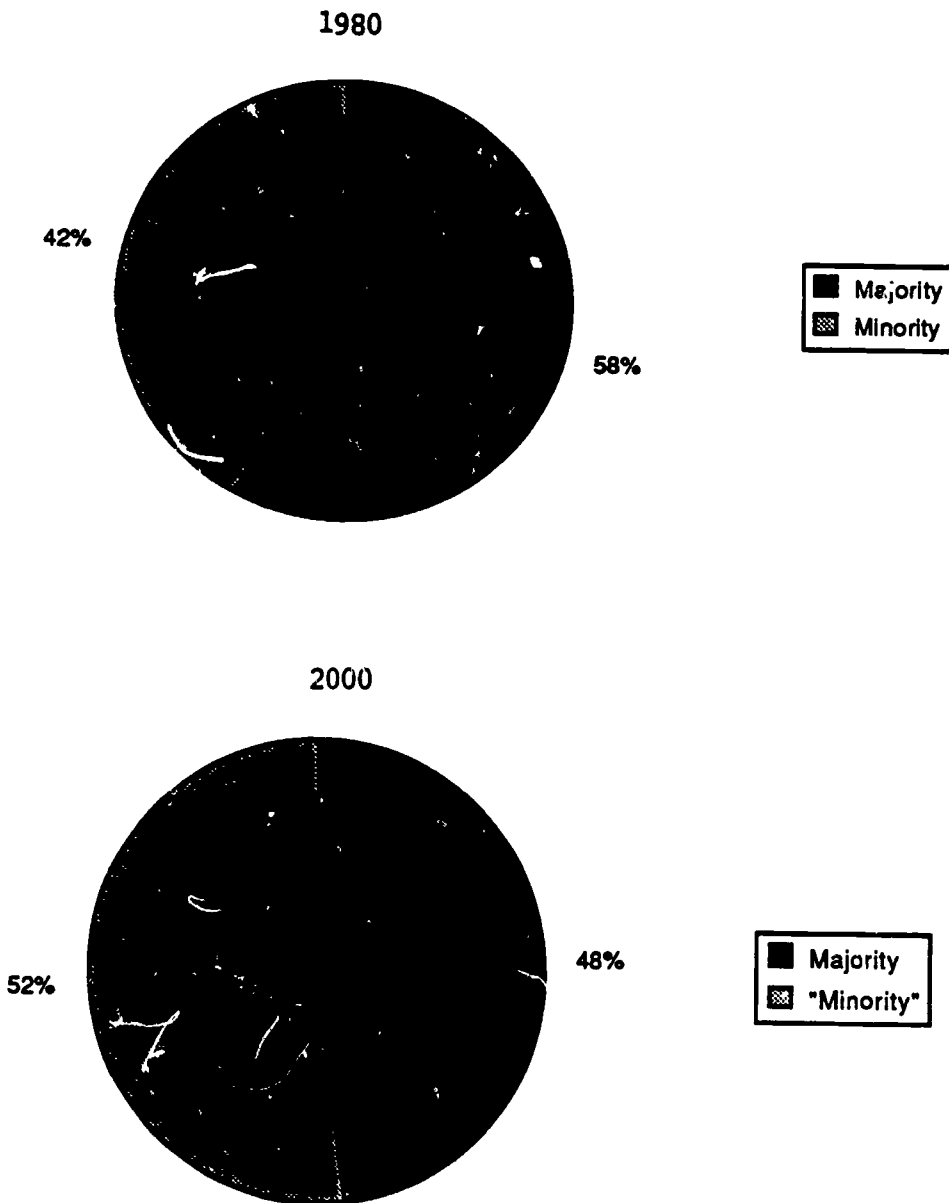
Percent Distribution of Public School Enrollment by Ethnicity,
Selected States, Fall 1980 and Change from Fall 1970

State	Total	White	Total Minority	Black	Hispanic	Native American/ Alaskan Native	Asian/ Pacific Islander	Percent Minority in 1970	Proportional Minority Change from 1970 to 1980
U.S.	100.0	73.3	26.7	16.1	8.0	0.8	1.9	20.7	6.0
Alaska	100.0	71.6	28.4	3.9	1.6	20.6	2.3	17.5	10.9
Arizona	100.0	66.3	33.7	4.2	24.2	4.1	1.1	28.8	4.9
California	100.0	57.1	42.9	10.1	25.3	0.8	6.6	27.3	15.6
Colorado	100.0	77.9	22.1	4.6	15.3	0.5	1.7	18.8	3.3
Florida	100.0	67.8	32.2	23.4	7.9	0.1	0.8	27.9	4.3
Illinois	100.0	71.4	28.6	20.9	6.1	0.1	1.5	22.0	6.6
Kansas	100.0	87.3	12.7	7.8	3.0	0.6	1.2	8.8	3.9
Massachusetts	100.0	89.3	10.7	6.2	3.3	0.1	1.1	6.0	4.7
Minnesota	100.0	94.1	5.9	2.1	0.7	1.6	1.5	2.6	3.3
Mississippi	100.0	48.4	51.6	51.9	0.1	0.1	0.4	51.0	0.6
New Mexico	100.0	43.0	57.0	1.1	46.5	7.8	0.6	48.1	8.9
New York	100.0	68.0	32.0	17.9	12.0	0.2	2.0	25.3	6.7
North Carolina	100.0	68.1	31.9	29.6	0.2	1.6	0.4	30.7	1.2
Oregon	100.0	91.5	8.5	2.1	2.6	1.7	2.2	4.5	4.0
Texas	100.0	54.1	45.9	14.4	30.4	0.2	1.1	37.1	8.8
West Virginia	100.0	95.7	4.3	3.9	0.1	0	0.3	4.9	-0.6

Source: U.S. Department of Education, Office of Civil Rights, 1980 Elementary and Secondary Civil Rights Survey, National Summaries, 1982, and State Summaries, 1982, projected data; and unpublished tabulations (December 1983).

FIGURE 6

Proportional Growth in California's Minority
School Age Population, 1980 to 2000



Source: California Postsecondary Education Commission, A Prospectus for California Postsecondary Education, 1985-2000, (Sacramento: California Postsecondary Education Commission, 1985), citing Projections of California's Hispanic Population, 1985-2000, California State Department of Education projection.

high schools are 50 percent or more black or Hispanic (Table 7). Minority students are concentrated in relatively few districts. For example, eighty-three percent of Black students attend schools in eight urban counties. Eighty-one percent of Hispanic students attend school in eight urban and agricultural counties. Within these counties, minorities tend to be concentrated in relatively few school districts and, within them, in specific schools.

The substantial number of languages spoken by students presents another challenge for California's school system. An estimated 23 percent of 5- to 17-year-olds in California speak a language other than English at home. (This is almost one fourth of all non-English speaking 5- to 17-year-olds in the United States). While not all these students have limited proficiency in English, many do. (The State Department of Education reports that 11.9 percent of the 1983-84 public school population has been identified, through testing, as "limited English proficient.")

The absolute number of limited English proficient (LEP) students almost doubled between 1977 and 1983 due to an influx of immigrants and more extensive attempts to identify such students (Figure 7). A total of 41 different primary languages are spoken in California schools. Five languages are spoken by 87 percent of LEP students. These are: Spanish, Vietnamese, Cantonese, Korean, and Filipino (Figure 8). The distribution of LEP students is heavily weighted, as is that of ethnic minority enrollment, toward lower age groups. Seven of ten LEP students were in kindergarten and grades one through six in 1984. Only 53 percent of fluent English speakers were in these grades.

TABLE 7

Number and Percent of Predominantly Minority Schools in California, 1981-82

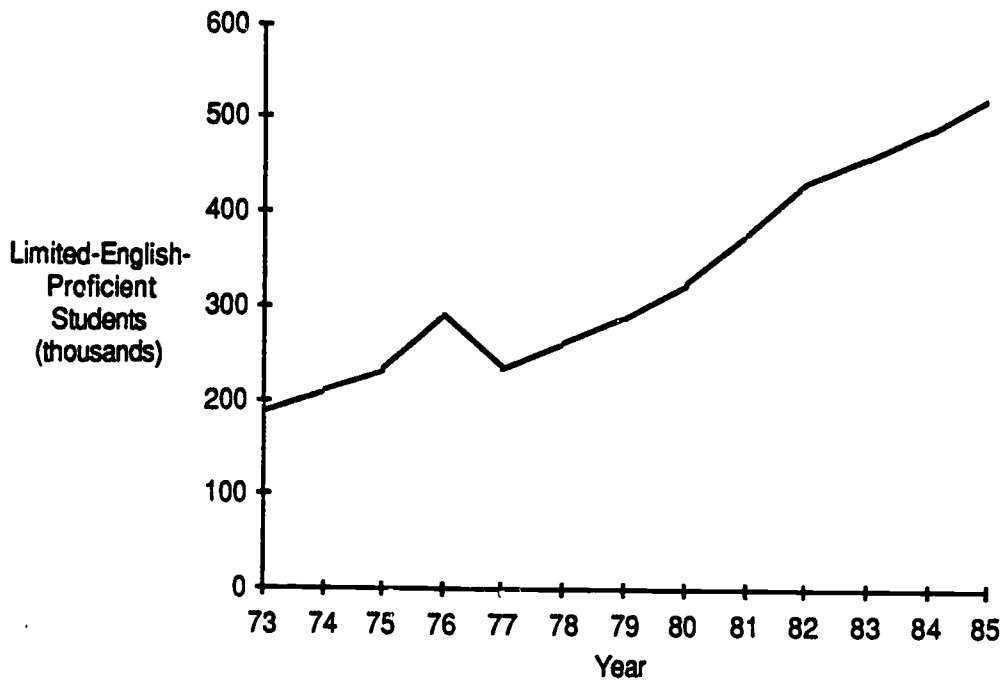
Type of school	Total Number	Total with $\geq 50\%$ minority enrollment	$\geq 50\%$ Black	$\geq 50\%$ Hispanic	$\geq 50\%$ Black & Hispanic*
Elementary	4702	1834 (39%)	249 (5.3%)	635 (18.4%)	720 (15.3%)
Secondary	827	148 (18%)	31 (3.7%)	66 (8.9%)	51 (6.2%)

* Does not include schools in other reported categories.

Source: Patricia R. Brown and Kati Haycock, Excellence for Whom? (Oakland: The Achievement Council, Inc, 1984), citing Consolidated Programs Data Base, California State Department of Education, Special Compilation for the Achievement Council.

FIGURE 7

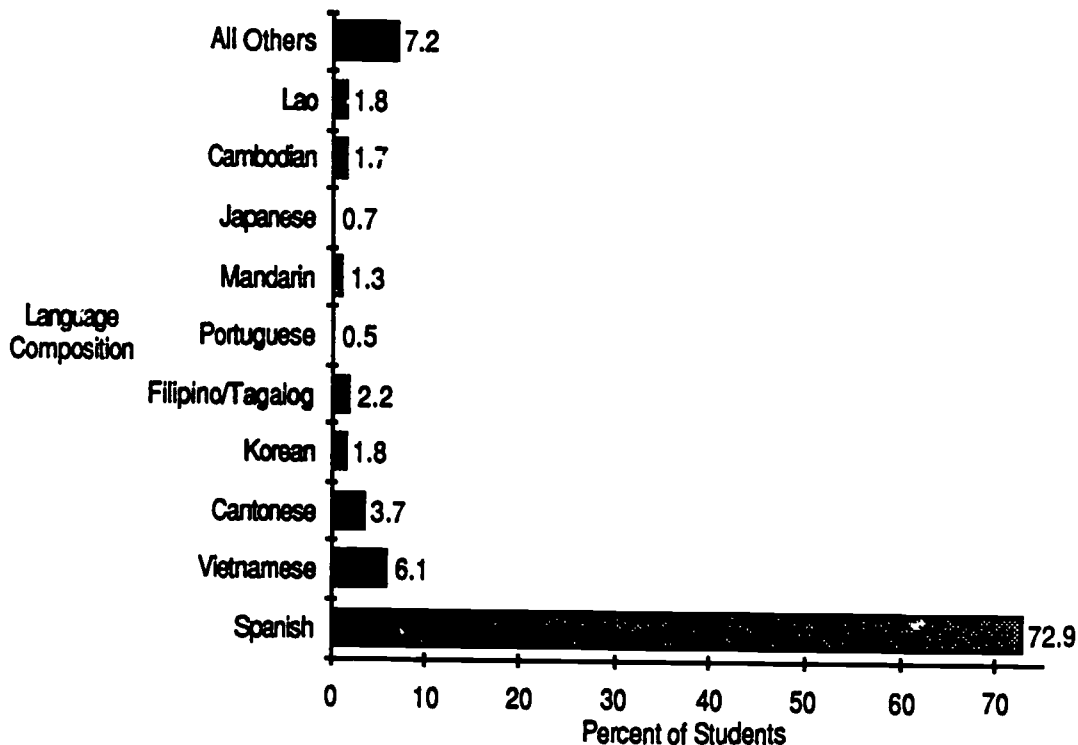
Number of Limited-English-Proficient
Students in California's Public Schools,
1973 to 1984



Source: California Postsecondary Education Commission, A Prospectus for California Postsecondary Education, 1985-2000 (Sacramento: California Postsecondary Education Commission, 1985), citing California State Department of Education.

FIGURE 8

Language Composition of California's
Limited-English-Proficient
Public School Enrollment, 1984



Source: California Postsecondary Education Commission, A Prospectus for California Postsecondary Education, 1985-2000 (Sacramento: California Postsecondary Education Commission, 1985), citing California State Department of Education Language Survey.

STUDENT PERFORMANCE

Efforts to improve student achievement in California underlie many of today's educational policy decisions. Thus, ways to assess student performance and track improvements receive considerable attention. Available measures include school district proficiency tests, the statewide California Assessment Program (CAP), the Scholastic Aptitude Test (SAT), and SAT Achievement Tests.* Because test scores are an incomplete indication of achievement, data on student attrition, absenteeism, admissions to postsecondary institutions, and enrollment in advanced placement academic courses, also need to be analyzed.

Proficiency Tests

State law requires that the academic performance of students in California public schools be assessed through locally developed tests at least once in grades four through six, once in grades seven through nine, and twice in grades ten and eleven. Local proficiency tests must cover reading comprehension skills, writing, and computation. Because tests are constructed to meet local needs and standards, they vary widely from district to district. Strict comparisons of student or district performance are therefore impossible.

Proficiency test scores provide an indication of differential pass rates for ethnic minorities within districts, and, at the 12th grade level, provide information allowing comparisons of reasons for failure to graduate. By the twelfth grade, LEP students, Hispanics, and blacks, despite higher drop-out rates, have consistently higher failure rates on local proficiency tests than whites and Asians. For 1982 (the latest year available), 21 percent of students in the first semester of grade twelve were in danger of not graduating solely

*National Assessment of Educational Progress (NAEP) reports show average reading proficiency increasing for nine and thirteen year-olds since 1971, and for seventeen year-olds since 1980. Black and Hispanic students made improvements in reading over the period. These gains narrowed the gap between white and minority reading performance. Over the period 1975-1984, Western Region scores show consistent increases for seventeen year-olds. Reading performance for nine and thirteen year-olds improved between 1975 and 1980, but has not increased over the last four years. Results are not available by state.

because of failure to pass one or more local proficiency tests (Figure 9). In contrast, only 2 percent of students were in danger of not graduating because they were unable to meet course requirements alone.

California Assessment Program

Statewide testing of all California third, sixth, and twelfth graders has been conducted since 1973. This testing program uses questions specifically designed to match the California school curriculum. Beginning in May 1984, eighth-grade students also were tested; tenth-grade exams will be added in the near future. Reading, math, and written language are assessed currently; future tests are scheduled to include writing samples as well as science, history-social science, and critical thinking.

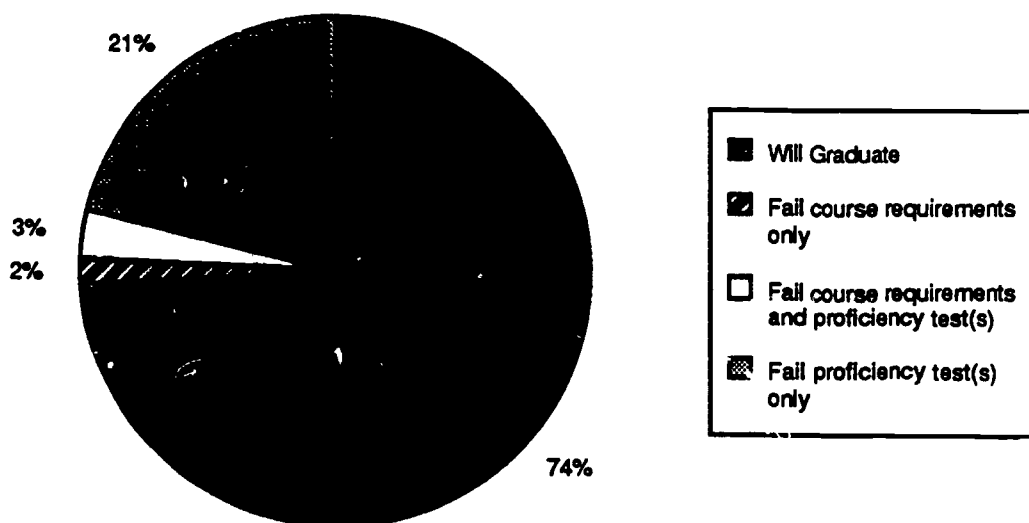
Compared with the previous year, 1983-84 test scores in reading, math, and written language increased for third graders. At the sixth grade level, math and language scores rose slightly, but reading scores dropped considerably. Twelfth grade scores were down in all areas. As this was the first year eighth grade students were tested, comparisons with previous years are not possible (Table 8).

When results of these tests are compared to national performance using recent norms, several patterns emerge. California third graders are slightly above national averages in mathematics and slightly below in reading and written language. By the sixth grade, average performance rises. Students continue to score somewhat above the national average in mathematics and at the average in reading and language. But by eighth grade, student performance begins to decline. Eighth graders seem to score at lower percentiles than sixth graders, although levels for these tests are as yet unclear. By twelfth grade, California students appear to score slightly below national averages.*

*It is important to understand that determination of national norms is based on sampling conducted by publishers of tests. CAP scores are then compared with national test norms by collecting data on California students who have taken both tests. This process contains a margin of error. Thus we see disparities on percentile rankings determined by comparison with different tests. Care should be exercised in using specific percentile rankings.

FIGURE 9

Potential Impact of District Graduation Requirements and Proficiency Tests on High School Graduation Rates, Class of 1982



Note: Based on December 1981 data.

Source: California State Department of Education, "Statewide Summary of Student Performance on School District Proficiency Assessments" (Sacramento: California State Department of Education, 1982).

TABLE 8

**California Assessment Program Average Test Scores By Grade
Level and Content Area, 1979-80 Through 1983-84**

<u>Grade level and content area</u>	<u>Average Test Score</u>						<u>Difference</u>				
	1979-80	80-81	81-82	82-83	83-84	84-85	79-80 to 80-81	80-81 to 81-82	81-82 to 82-83	82-83 to 83-84	83-84 to 84-85
Grade 3¹											
Reading	250	254	258	263	268		+4	+4	+5	+5	
Written Language	250	255	260	266	272		+5	+5	+6	+6	
Mathematics	250	254	261	267	274		+4	+7	+6	+7	
Grade 6											
Reading	250	252	254	253	249		+2	+2	-1	-4	
Written Language	250	253	257	259	260		+3	+4	+2	+1	
Mathematics	250	253	258	260	261		+3	+5	+2	+1	
Grade 8²											
Reading	---	---	---	---	250		---	---	---	---	
Written Language	---	---	---	---	250		---	---	---	---	
Mathematics	---	---	---	---	250		---	---	---	---	
Grade 12³											
Reading	63.1	63.4	63.2	63.1	62.2	62.9	+0.3	-0.2	-0.1	-0.9	+0.7
Written Language	62.4	63.1	63.2	63.0	62.6	63.2	+0.7	+0.1	-0.2	-0.4	+0.6
Spelling	68.8	69.0	69.5	69.5	69.4	69.7	+0.2	+0.5	0	-0.1	+0.3
Mathematics	66.8	68.0	67.7	67.7	67.4	68.3	+1.2	-0.3	0	-0.3	+0.9

¹The scores for grades three, six and eight are reported in scaled score units. These scores range from approximately 100 to 400 with a statewide average of 250. The base year for grades three and six was 1980.

²The grade eight test was first administered in 1983-84.

³The scores for grade twelve represent the percentage of questions answered correctly unlike the scores for grades 3, 6 and 8.

Source: California Assessment Program, California State Department of Education, Student Achievement in California Schools 1983-84 Annual Report (Sacramento: California State Department of Education, 1985).

Scholastic Aptitude Tests

The College Entrance Examination Board (CEEB) conducts a college admissions testing program which includes the Scholastic Aptitude Test (SAT), Test of Standard Written English, and Achievement Tests in fourteen different subject areas.

Much attention has been focused on the Scholastic Aptitude Test as a measure of educational accomplishment. National declines in scores over the past 15 years have been interpreted as indicative of declining quality in American schools. This matter deserves careful consideration for a number of reasons.

The SAT is not intended to measure educational quality; it is designed to predict performance of students for the first year of college. It purposefully provides a measure other than simple educational achievement for college admission personnel. While mathematical knowledge, reading skill, vocabulary, and language capability are prerequisites for doing well on the SAT, the test also assesses factors such as reasoning ability, conceptualization, and critical thinking. These factors are not acquired or cultivated through schooling alone.

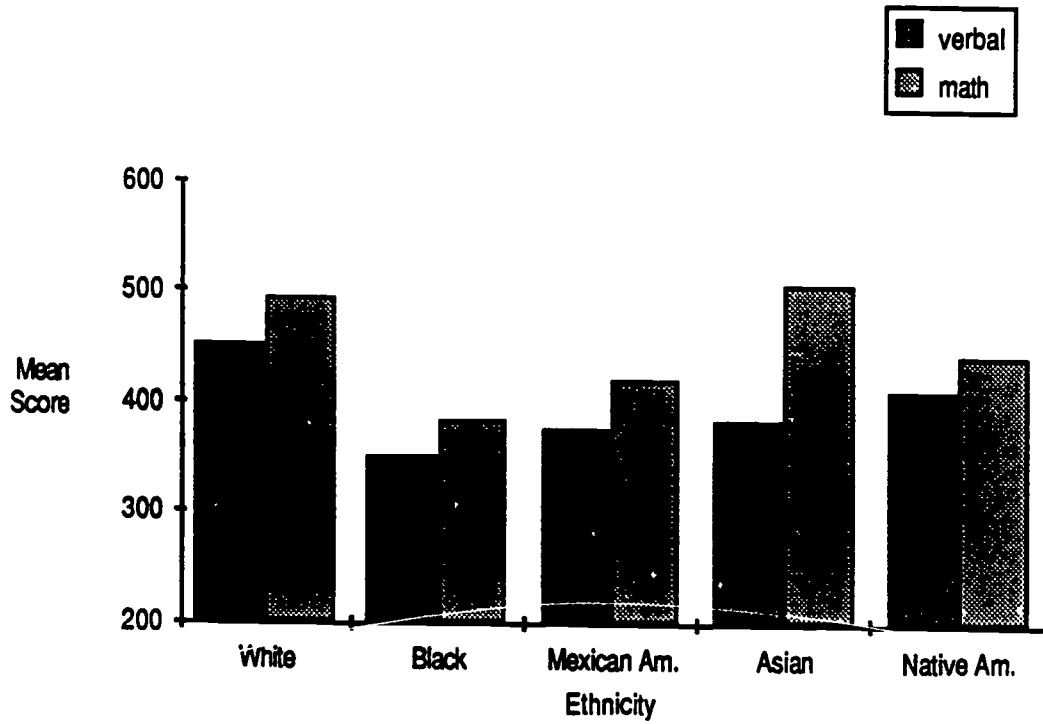
The College Board Advisory Panel has produced a report discussing the decline in SAT scores. One reason given for the decline was the change in composition of the test-taking group. Higher SAT scores correlate positively with being male and white or Asian (Figure 10), and with higher socioeconomic status.

As greater numbers of females, ethnic minorities, and disadvantaged students apply to colleges, especially selective colleges that require SAT, averages are likely to drop. In fact, the College Board Panel stated that a considerable part of the national score decline could be attributed to the presence of many more conventionally low-scoring examinees.

Another indication that SAT scores are ill-suited for judging educational quality is the finding that the number of years of basic coursework completed by a student has little bearing on corrected state SAT rankings. Nationwide, from 1973 to 1984 there was a slight, but steady, increase in the average number of course-years in which students were enrolled. During this period, however, there was no corresponding increase in SAT scores.

FIGURE 10

California Mean Scholastic Aptitude Test Scores
by Ethnicity, 1984



Source: Admissions Testing Program, State SAT Scores, 1976 Through 1984 (New York: The College Board, 1984).

In 1984, California students taking the test composed 10.6 percent of the nationwide pool of test takers. Because California's percentage of the total group is so large, one would expect California's average scores to fall near the nationwide averages, as in fact, they do (Figure 11).

In 1984-85, SAT scores for California students fall five points above the national average in mathematics and seven points below in verbal performance. Between 1971-72 and 1983-84, SAT verbal scores dropped 43 points in California compared to 26 points nationally. Mathematics scores dropped 17 points in California while national scores dropped 13 points. In 1984-85 California SAT math scores climbed four points and verbal scores climbed three points (Table 9).

Achievement Tests

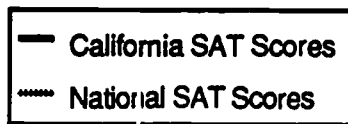
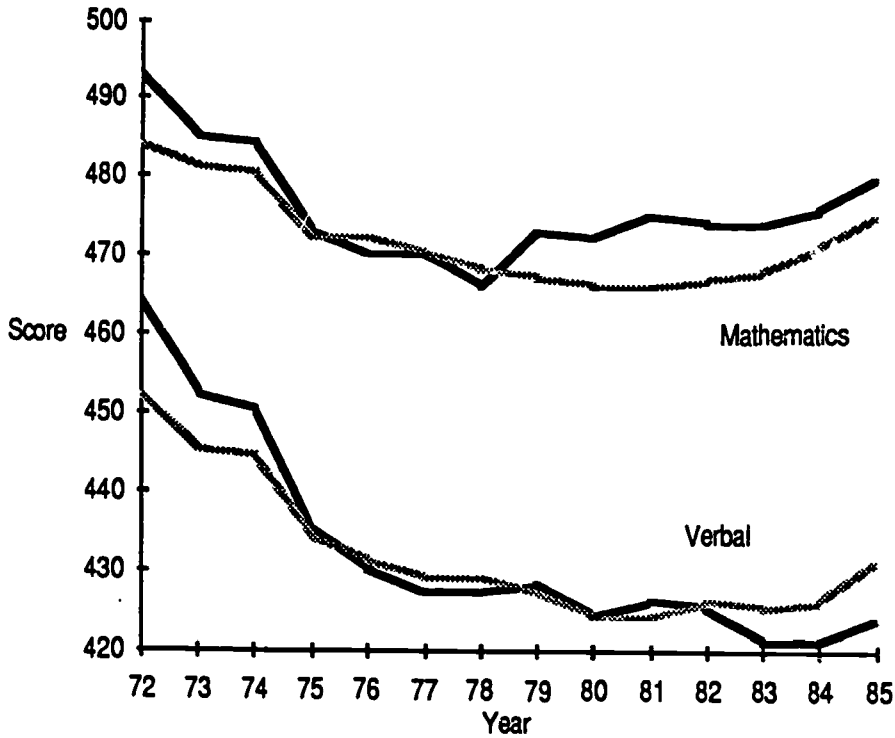
College Board Achievement Test scores present a more complete picture, but still of a limited subset of students. These tests are designed to measure acquired knowledge in specific academic subjects. However, only students aspiring to attend colleges or universities are assessed.

Unlike other state systems, the University of California requires all applicants to take achievement tests. Thus, California's participation in SAT Achievement tests is extremely high. Scores of California students constituted 19.1 percent of all scores versus a representation of California students in national enrollment of 10.3 percent. As California scores represent a larger fraction of eligible high school students in the state than national scores do for the nation as a whole, California mean scores would be expected to be lower than national means, as, in fact, they are.

California students scored appreciably lower than national averages on all tests except those for Hebrew and Latin. They scored slightly below the national average on tests of Spanish and German. However, if only those tests are considered for which California participation rates are close to the national student population percentage, mean scores for California are still noticeably lower than national means. (See starred items on Table 10). While far from conclusive, relative scoring does indicate that California students may lack preparation for these tests or are, indeed, not learning as much about the subject matter as their counterparts across the nation.

FIGURE 11

Scholastic Aptitude Test Scores of California High School Seniors Compared to the Nation, 1972 Through 1985



Source: California Assessment Program, Student Achievement in California Schools 1983-84 Annual Report (Sacramento: California State Department of Education, 1985).

TABLE 9

Scholastic Aptitude Test (SAT) Scores,
California and Nation, 1971-72 to 1984-85

Year	National		California			
	Verbal	Math	Verbal	Math	Number Taking	Percent Seniors Tested
1971-72	452	484	464	493	91,595	30
1972-73	445	481	452	485	95,206	31
1973-74	444	480	450	484	98,149	32
1974-75	434	472	435	473	106,786	34
1975-76	431	472	430	470	108,644	35
1976-77	429	468	427	470	107,586	35
1977-78	429	468	427	466	111,524	36
1978-79	427	467	428	473	102,595	33
1979-80	424	466	424	472	102,723	34
1980-81	424	466	426	475	100,131	34
1981-82	426	467	425	474	102,261	33
1982-83	425	468	421	474	100,495	33
1983-84	426	471	421	476	102,358	35
1984-85	431	475	424	480	104,585	37

Source: California State Department of Education.

TABLE 10

Comparison of Mean Scores on Achievement Tests,
California and the Nation (College Board)

	Mean Calif. <u>score</u>	Mean nat'l. <u>score</u>	U.S.-Calif. difference in mean <u>score</u>	California participation as a percent of U.S. <u>participation</u>
English				
Composition	492	518	-26	19.4%
Mathematics I	517	542	-25	19.9%
American History	501	521	-20	31.5%
Mathematics II	647	659	-12	19.1%
Spanish	526	528	- 2	24.4%
Biology	519	550	-31	13.2%
Literature	496	521	-25	24.2%
Chemistry	557	573	-16	10.3%*
French	526	554	-18	12.2%*
Physics	577	597	-20	8.9%*
German	574	578	- 4	14.6%
European History	520	548	-28	10.7%*
Latin	563	558	+ 5	5.9%
Hebrew	654	625	+29	7.8%

*Tests for which California participation rates are close to the ratio of California students to U.S. students (10.3%).

Sources: College Entrance Examination Board, "California College-Bound Seniors" (Princeton: College Entrance Examination Board, 1984); and College Entrance Examination Board, "National College-Bound High School Seniors" (Princeton: College Entrance Examination Board, 1984).

Dropouts

While there is little agreement on exact numbers and no widely accepted procedure for generating data, California appears to have an enormous and apparently growing school drop-out problem. Available information indicates that more than 17 percent of all tenth graders are not enrolled by twelfth grade and that total attrition--first grade through failure-to-graduate--may run as high as 34 percent.

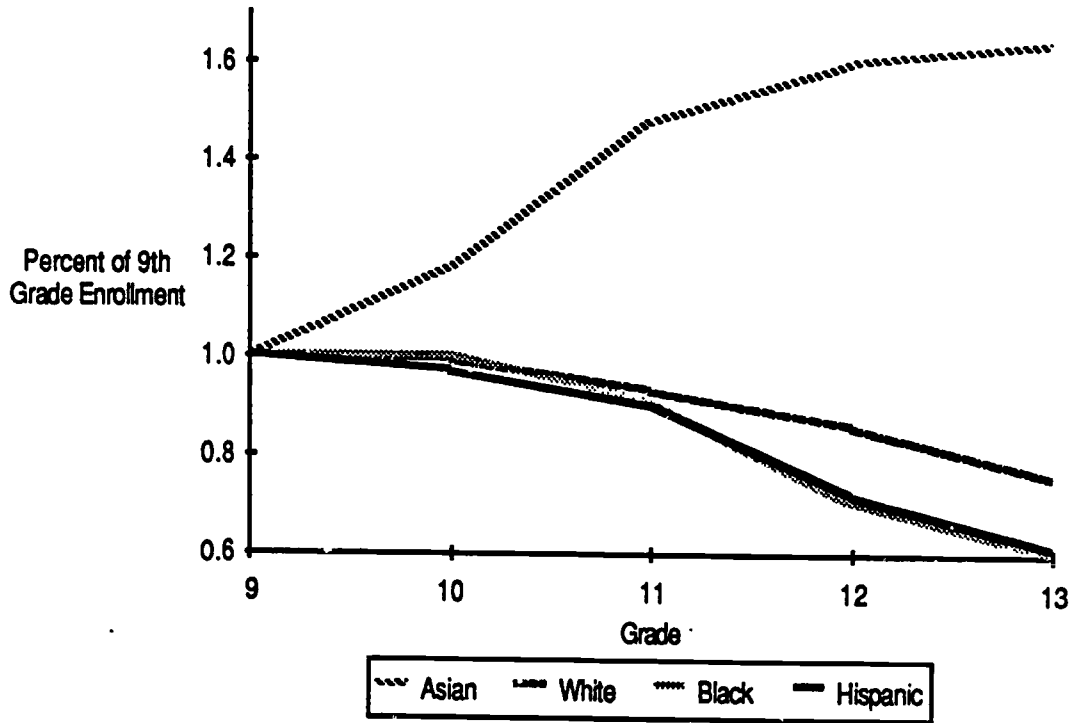
The extreme range of attrition figures can be attributed to several factors, including differences in districts' reporting practices. For instance, in some instances students who marry (a small number) may not be counted as dropouts, while students who have died or transferred (a large number) may be included. Another cause of disparities in drop-out rates is immigration. Because new students may replace some who are leaving, attrition rates may be underestimated. Some analyses avoid this problem by providing combined attrition and accrual rates (Figures 12 and 13). A third factor is the extreme youth of some school-leavers. Forty percent of Hispanics are estimated to leave school before the age of 15, often in junior high school. These students are not included in ninth and tenth grade base year enrollment counts and consequently are never reported as dropouts.

Hispanics have the highest drop-out rate. As many as 29 percent of Hispanic students who complete the tenth grade leave school before graduation (Figure 14). The best available data indicate that, despite immigration, less than 60 percent of Hispanics enrolled in first grade graduate from high school twelve years later (Table 11). This high school completion rate was lower in 1981 than in 1979. Further evidence for growth in Hispanic attrition is presented in Table 12, which compares grade six and grade twelve enrollments for the graduating classes of 1974, 1980, and 1985. The retention rate for Hispanics drops from .793 in 1974 to .692 in 1985 despite a slight overall increase in the retention rate for all students between 1980 and 1985.

Characteristics of the majority of high school dropouts are well established. Attrition is highest among the poor, members of ethnic, language, and cultural minorities, those living in single-parent homes, those with many siblings, students who are mothers or mothers-to-be, and students who work more than 15 hours per week. School-related factors which correlate with dropping out

FIGURE 12

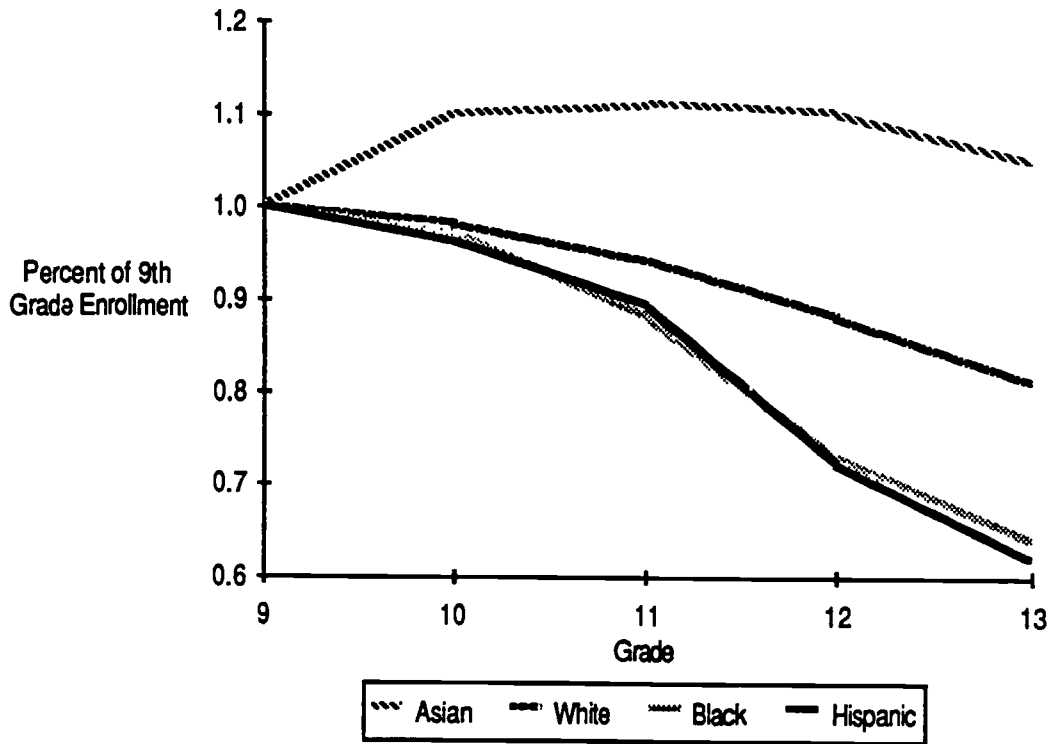
The Combined Effects of Attrition and Accretion on High School Grade Cohorts, 1979 Through 1981



Source: California Postsecondary Education Commission, A Prospectus for California Postsecondary Education, 1985-2000 (Sacramento: California Postsecondary Education Commission, 1985), citing California Postsecondary Education Commission staff analysis of CBEDS data.

FIGURE 13

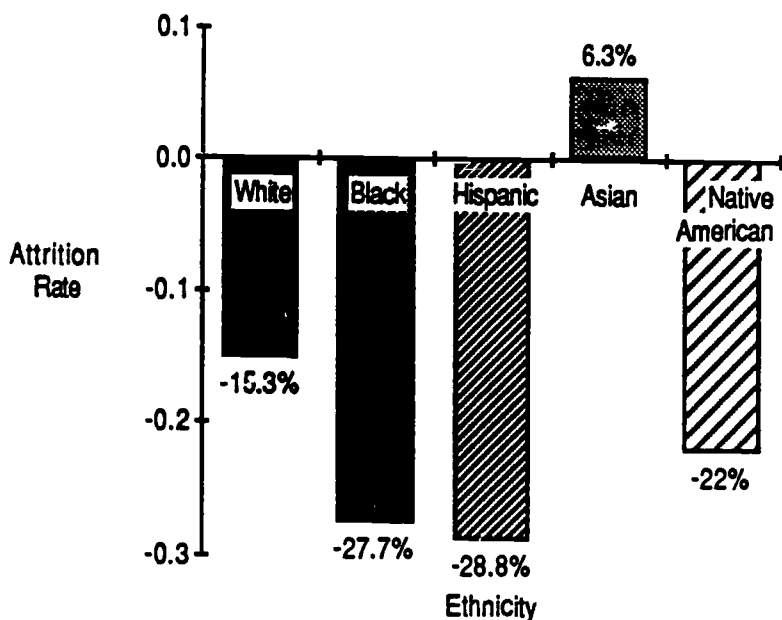
The Combined Effects of Attrition and Accretion on High School Grade Cohorts, 1981 Through 1984



Source: California Postsecondary Education Commission, A Prospectus for California Postsecondary Education, 1985-2000 (Sacramento: California Postsecondary Education Commission, 1985), citing California Postsecondary Education Commission staff analysis of CBEDS data.

FIGURE 14

California High School Attrition by Ethnicity,
Grades 10 to 12, 1979 to 1981



Source: Patricia R. Brown and Kati Haycock, Excellence for Whom? (Oakland: The Achievement Council, Inc., 1984), citing "Ethnic Data and Higher Education," Office of the Provost and Vice-President, California State University, Long Beach.

TABLE 11

California Public School Enrollment in Grade 1 and
Number of Graduates by Ethnicity, for Graduating
Classes of 1979 and 1981

<u>Class of 1979</u>	<u>Grade 1 enrollment</u> (Fall 1967)	<u>Number of graduates</u> (Summer 1979)	<u>Graduates:Grade 1 ratio</u>
Asian	7,585*	11,448	1.509
Black	36,413	23,262	0.639
Hispanic	63,392	37,614	0.593
White	275,406	174,347	0.633
TOTAL	387,413	250,708	0.647
<u>Class of 1981</u>	<u>(Fall 1969)</u>	<u>(Summer 1981)</u>	
Asian	7,614	12,023	1.579
Black	35,304	19,685	0.558
Hispanic	67,458	37,497	0.556
White	248,994	164,584	0.661
TOTAL	364,131	239,132	0.657

*includes only Chinese, Japanese, and Korean.

Source: David Stern, Educational Attainment and Employment of Major Racial or Ethnic Groups in California, (Berkeley: University of California, Berkeley, 1985), citing California State Department of Education, Office of Intergroup Relations.

TABLE 12

**California Public School Enrollment in
Grades 6 and 12 and Ratio of Grade 12 to
Grade 6 Enrollment by Ethnicity, for
Graduating Classes of 1974, 1980, and 1985**

<u>Class of 1974</u>	Grade 6 <u>enrollment</u> (Fall 1967)	Grade 12 <u>enrollment</u> (Fall 1973)	<u>Grade 12:Grade 6 ratio</u>
Native American	1,021	1,173	1.149
Asian	7,051	8,828	1.252
Black	26,051	22,141	0.821
Hispanic	45,191	35,838	0.793
Other	256,235 ¹	213,741	0.834
TOTAL	336,473	281,721	0.837
<u>Class of 1980</u>	(Fall 1973)	(Fall 1979)	
Native American	1,978	2,267	1.146
Asian	10,489	12,590	1.200
Black	33,984	26,790	0.788
Hispanic	60,027	44,158	0.736
Other	242,048	193,739 ²	0.800
TOTAL	348,526	279,544	0.802
<u>Class of 1985</u>	(Fall 1979, Grade 7)	(Fall 1984)	
Native American	3,216	2,234	0.695
Asian	12,624	19,005	1.505
Black	31,744	23,005	0.725
Filipino	4,124	4,769	1.156
Hispanic	69,209	47,907	0.692
White	184,597	157,291	0.852
TOTAL	305,514	254,211	0.832

¹Includes 2,341 Other Non-White and 253,894 Other White

²Includes 3,519 Filipino and 190,220 White

Source: David Stern, Educational Attainment and Employment of Major Racial or Ethnic Groups in California, (Berkeley: University of California, Berkeley, 1985), citing California State Department of Education, Office of Intergroup Relations.

include: poor achievement, being held back a grade level, difficulty with peer relations, absenteeism/truancy, discipline problems, and sheer unhappiness (lack of academic self-esteem, a personal sense of inability to succeed in school, feelings of powerlessness, and inability to aspire to academic achievement).

Based on self-reports of students who dropped out of school between sophomore and senior years (Stern, et al., 1985), the single most common reason for leaving was: "School was not for me; I did not like school." Male minorities cited poor grades as the most compelling reason for leaving (Table 13). One study (Treadway, 1985*) noted that the strongest predictor of a student's eventual decision to leave school is low expectation of educational attainment. Students who expect to complete high school do so, while those who do not expect to finish do not.

University and College Participation

Enrollment in California's three segments of higher education has increased since 1972. Community college enrollment has grown at a rate exceeding the rate of all growth for higher education. Most recently, community college enrollment has dropped, but is expected to recover after 1985. By 1995, enrollment in all segments of publicly supported higher education is predicted to rise (Figure 15).

A major shift has occurred in the number and proportion of women enrolling in California's colleges and universities. This trend began in 1973, and by 1977 the percentage of women surpassed that of males. Female enrollment increased by 58 percent for the period 1973 to 1982, accounting for 81.5 percent of total enrollment growth. Men still enroll in the University of California and private institutions at a rate exceeding that for women, but the margin has narrowed considerably (Table 14).

Minorities are still under-represented in California's institutions of higher learning. For example, although Hispanics constitute 21.7 percent of the population aged 20 to 29, they make up only 11.7 percent of those attending two-year colleges, 8.2 percent of four-year college enrollment, and 4.9 percent of graduate students (Figure 16). Hispanics acquire 6.1 percent of

*Citing G. G. Wehlage and R. A. Rutter, "Dropping Out: How Much Do Schools Contribute to the Problem?" Madison, WI: University of Wisconsin-Madison, 1984. [Draft]

TABLE 13

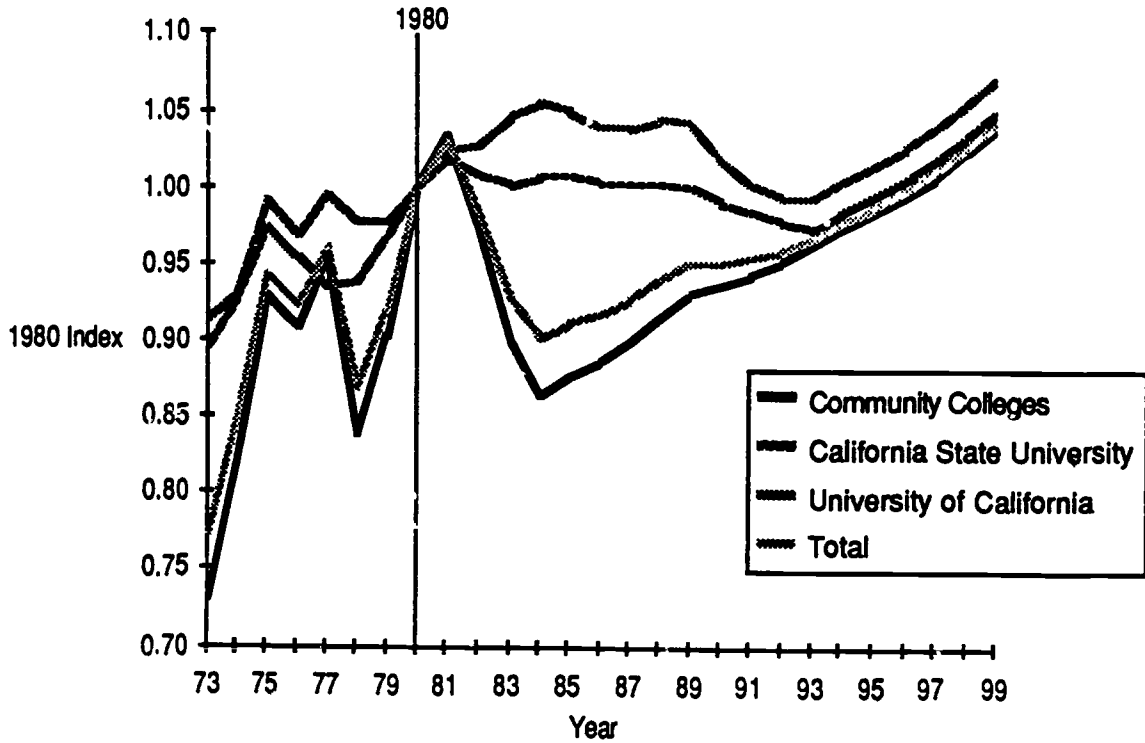
**Reasons for Leaving School Before Graduation Reported
by Sophomore Dropouts from California Public and
Private Schools by Gender and Ethnicity, 1980**

Reasons	Male		Female	
	Minority	Other	Minority	Other
School-related				
1. Expelled or suspended	17.3	7.7	1.6	0
2. Had poor grades	26.4	35.7	36.1	20.2
3. School was not for me	20.8	37.5	47.1	29.9
4. School ground too dangerous	10.7	0	1.5	0
5. Didn't get into desired program	11.0	0.5	18.5	0
6. Couldn't get along with teachers	12.9	3.2	3.3	2.9
Family-related				
1. Married or planned to get married	4.1	0	18.6	11.2
2. Was pregnant	NA	NA	13.8	22.8
3. Had to support family	7.0	18.9	4.5	1.0
Peer-related				
1. Friends were dropping out	1.0	1.4	4.5	1.4
2. Couldn't get along with students	3.5	0.1	4.9	2.4
Health-related				
1. Illness or disability	2.7	2.9	2.1	1.0
Other				
1. Offered job and chose to work	24.8	19.0	6.3	13.6
2. Wanted to enter military	3.2	11.8	5.6	0
3. Moved too far from school	4.1	4.9	3.5	2.5
4. Wanted to travel	3.7	1.4	3.5	14.0
Sample size	62	58	58	41

Source: David Stern et al., Reducing the High School Dropout Rate in California: Why We Should and How We May, Report to the California Policy Seminar (Berkeley: University of California, Berkeley, 1985).

FIGURE 15

Actual and Projected Relative Enrollment
in California Public Postsecondary Education,
1973 to 1999, Indexed to 1980



Note: 1983 through 1998 projected.

Source: California Postsecondary Education Commission, Background Papers to a Prospectus for California Postsecondary Education, 1985-2000 (Sacramento: California Postsecondary Education Commission, 1985), citing Population Research Unit, California State Department of Finance, May 1984.

TABLE 14

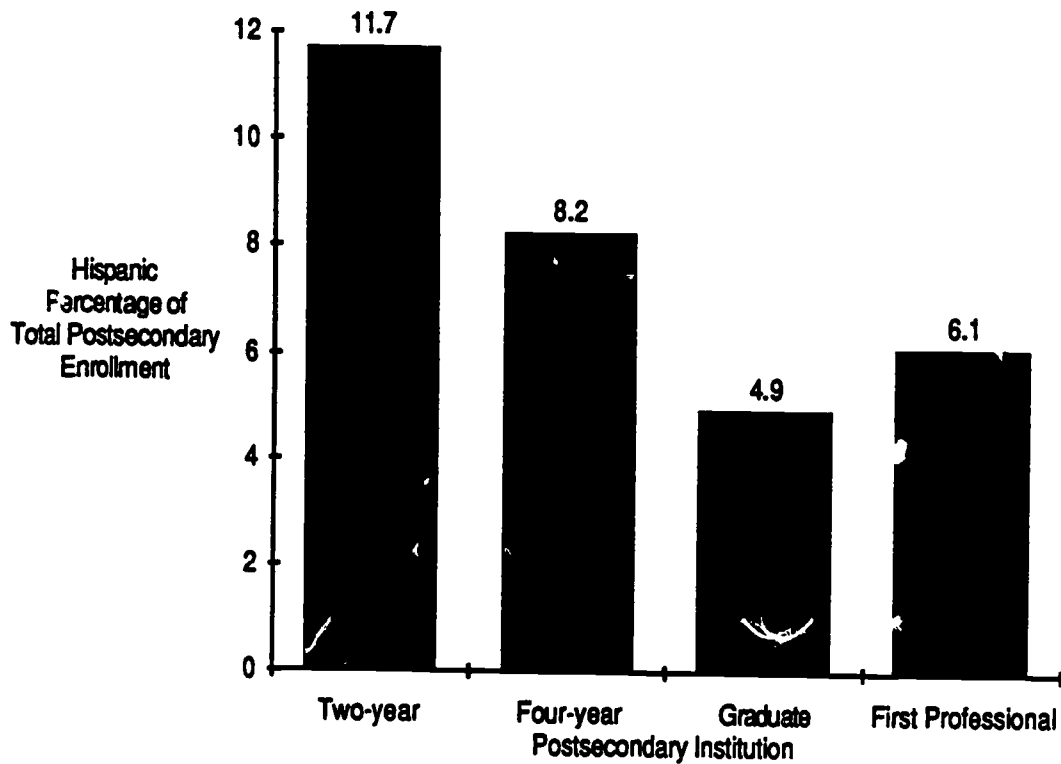
**Percent Enrollment in California Public Postsecondary
Institutions by Gender, Fall 1973 Through Fall 1982**

Segment and Gender	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	Ten-year Change
California											
Total Male	56.4	55.1	55.4	52.0	50.0	49.2	48.0	47.7	47.1	47.5	-15.8%
California											
Total Female	43.5	44.9	44.6	48.0	50.0	50.8	52.05	52.3	52.9	52.5	+20.7%
Community College											
Total Male	55.0	53.4	54.2	49.8	47.4	46.6	45.3	45.3	44.7	45.3	-17.6%
Community College											
Total Female	45.0	46.6	45.8	50.2	52.6	53.4	54.7	54.7	55.3	54.7	+21.6%
State University											
Total Male	56.2	54.8	54.3	53.5	51.1	49.8	48.6	48.0	47.6	47.7	-15.1%
State University											
Total Female	43.8	45.2	45.7	47.5	48.9	50.1	51.4	52.0	52.4	52.3	+19.4%
University											
Total Male	59.7	58.9	58.3	57.5	56.8	56.0	55.4	54.8	54.1	53.5	-10.4%
University											
Total Female	40.3	41.1	41.7	42.5	43.2	44.0	44.6	45.2	45.9	46.5	+15.4%
Independent											
Total Male	63.2	62.9	62.5	61.2	59.9	58.8	57.6	56.9	56.6	56.5	-10.6%
Independent											
Total Female	36.8	37.1	37.5	38.8	40.1	41.2	42.4	43.1	43.4	43.5	+18.2%

Source: California Postsecondary Education Commission, Background Papers to a Prospectus for California Postsecondary Education (Sacramento: California Postsecondary Education Commission, 1985).

FIGURE 16

Hispanic Postsecondary Enrollment
in California, 1980



Note: Hispanic Percentage of Population Aged 20-29 was 21.7%.

Source: Geoffrey Dolman Jr. and Norman S. Kaufman, Minorities in Higher Education: The Changing Southwest--California (Boulder: Western Interstate Commission for Higher Education, 1984), citing N.S. Kaufman, D. Dolman, and B.P. Bowser, The Changing Demographics of the Southwest: Data and Issues Relating to Minority Representation in Postsecondary Education in Seven Southwest States (Boulder: Western Interstate Commission for Higher Education, 1983).

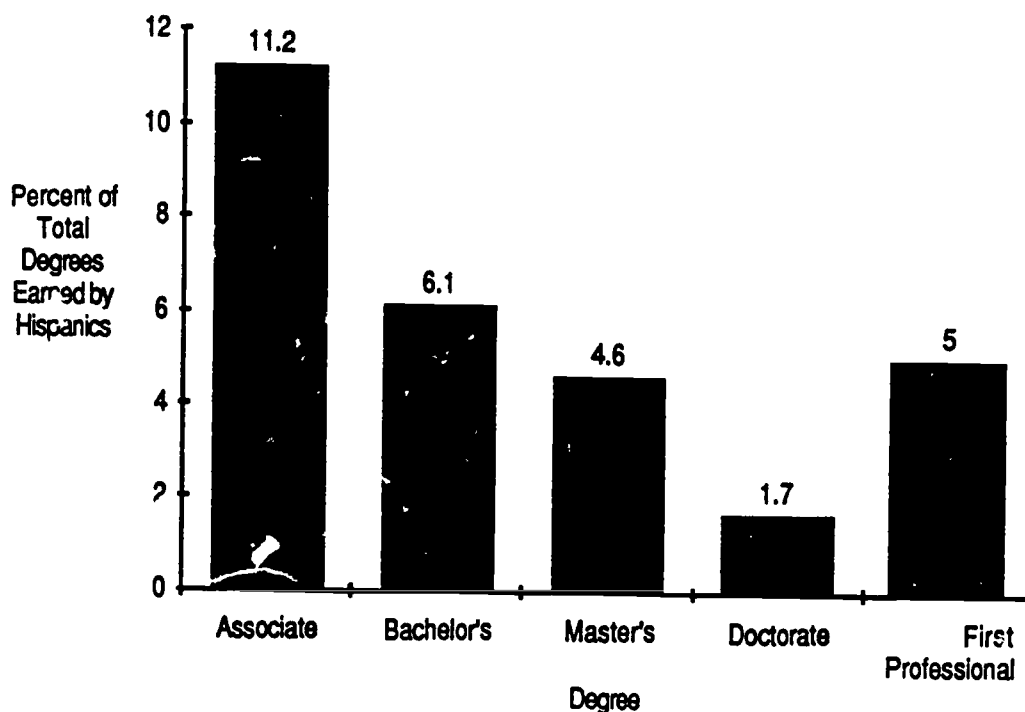
bachelor's degrees, 4.6 percent of master's degrees, and 1.7 percent of doctorates (Figure 17).

Black students display attendance levels at two-year programs that match or exceed their representation in the general population and almost achieve similar levels of attendance at four-year institutions. However, they still acquire bachelor's and higher degrees at about half this rate (Figures 18 and 19).

Few students in a four-year university system are earning bachelor's degrees within five years. The notion of four years elapsed time from high school graduation until completion of a bachelor's degree is now substantially altered. For every thousand black ninth graders, only 16 black students earn a bachelor's degree within five years of high school graduation. For Hispanics, the rate is 17 out of a thousand, or less than 2 percent. For whites, the rate is 48 out of a thousand, or less than 5 percent. Asians are the only group graduating more quickly. Two hundred nine of every thousand, or approximately 20 percent, graduate within five years (Figure 20).

FIGURE 17

Degrees Earned by Hispanics
in California, 1980

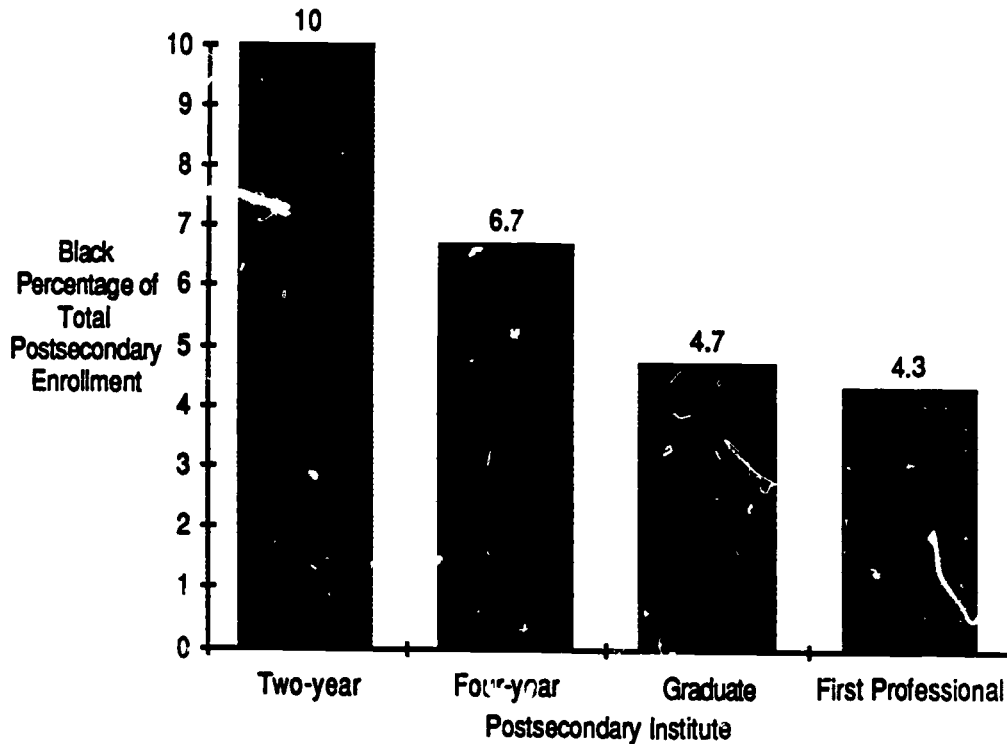


Note: Hispanic Percentage of Population Aged 20-29 was 21.7%

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FIGURE 18

Black Postsecondary Enrollment
in California, 1980

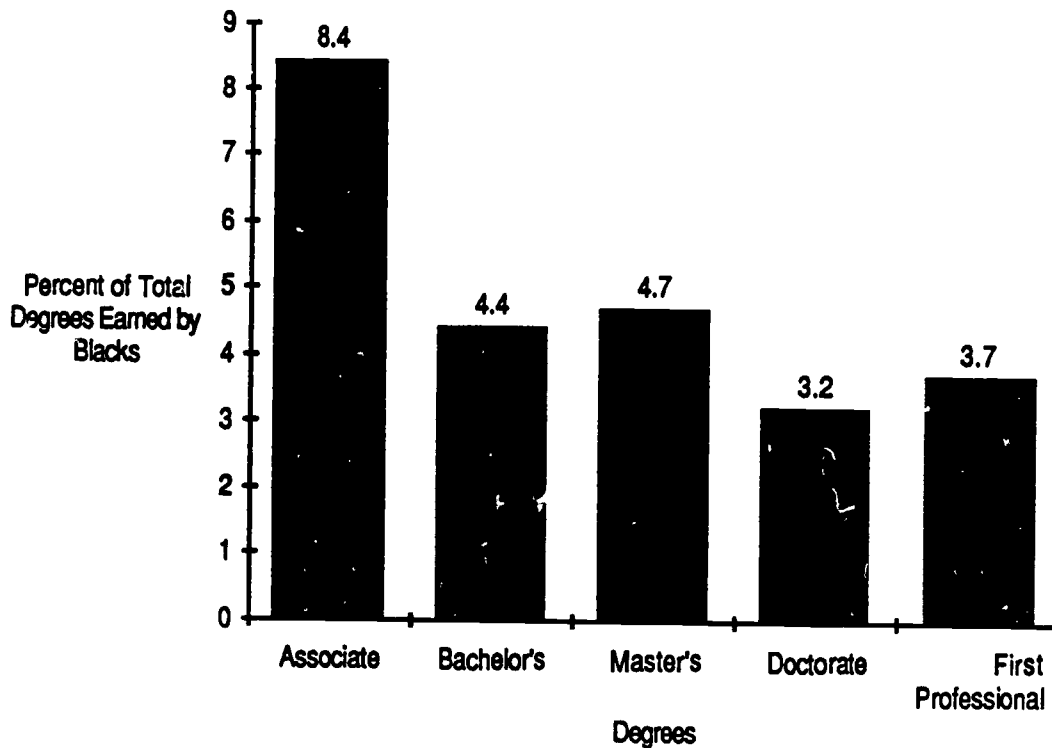


Note: Black Percentage of Population aged 20-29 was 8.1%

Source: Geoffrey Dolman Jr. and Norman S. Kaufman, Minorities in Higher Education: The Changing Southwest--California. (Boulder: Western Interstate Commission for Higher Education, 1984), citing N.S. Kaufman, D. Dolman, and B.P. Bowser, The Changing Demographics of the Southwest: Data and Issues Relating to Minority Representation in Postsecondary Education in Seven Southwest States (Boulder: Western Interstate Commission for Higher Education, 1983).

FIGURE 19

Degrees Earned by Blacks
in California, 1980

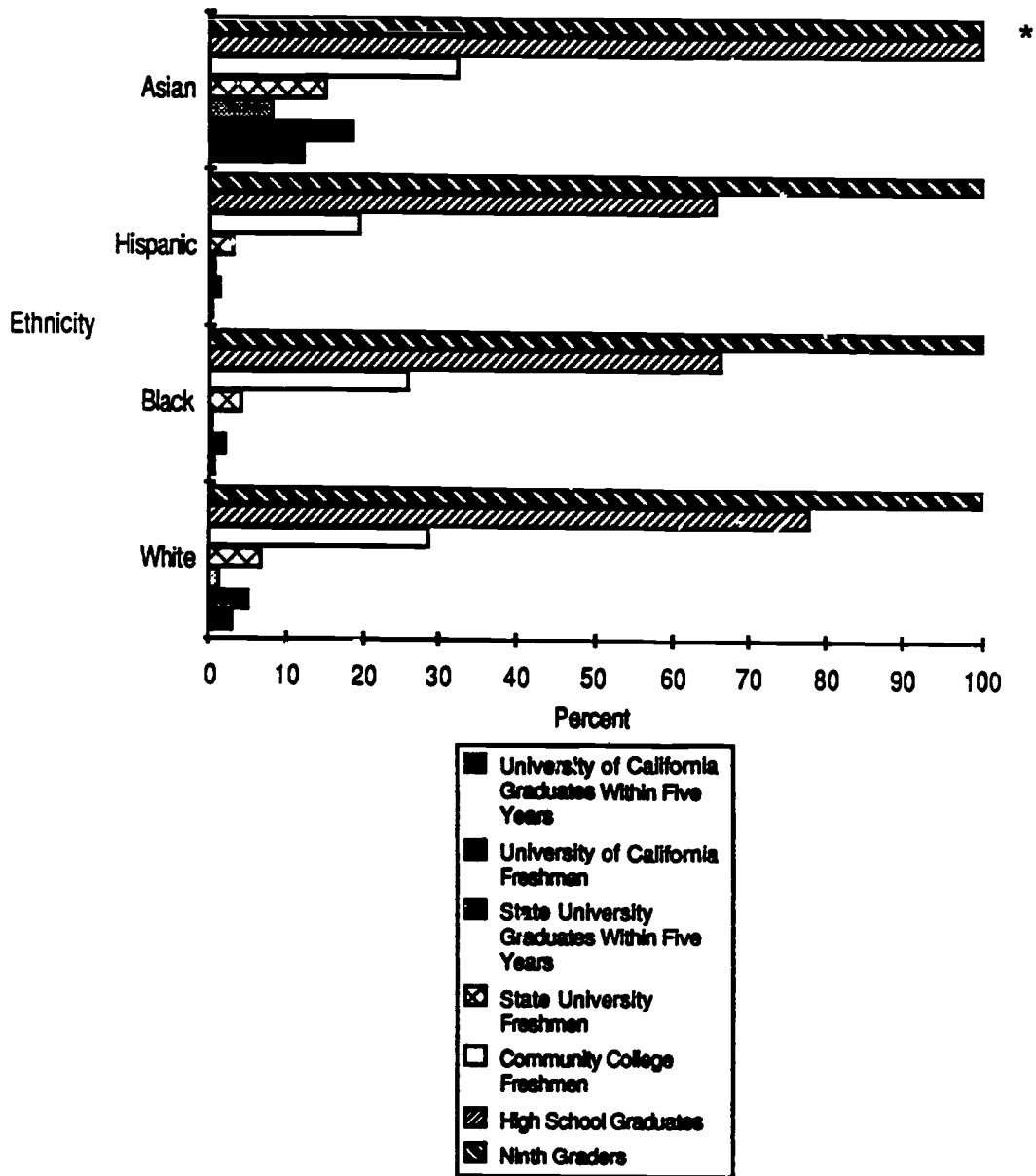


Note: Black Percentage of Population Aged 20-29 was 8.1%

Source: Geoffrey Dolman Jr. and Norman S. Kaufman, Minorities in Higher Education: The Changing Southwest--California (Boulder: Western Interstate Commission for Higher Education, 1984), citing N.S. Kaufman, D. Dolman, and B.P. Bowser, The Changing Demographics of the Southwest: Data and Issues Relating to Minority Representation in Postsecondary Education in Seven Southwest States (Boulder: Western Interstate Commission for Higher Education, 1983).

FIGURE 20

Percent of California Ninth Graders Remaining in Public Educational Institutions Through the Bachelor's Degree



*High School retention rate of Asian students is unknown, due to high immigration.

Source: California Postsecondary Education Commission, A Prospectus for California Postsecondary Education, 1985-2000 (Sacramento: California Postsecondary Education Commission, 1985), citing California Postsecondary Education Commission staff analysis.

CURRICULUM AND SCHOOL REFORM

Major changes are occurring in the amount of time devoted to schooling and in selected curricular areas. These changes are largely the result of Senate Bill 813, the 1983 educational reform act. While it is too early to evaluate the full impact of SB 813, it is possible to identify school district progress in implementing SB 813 reforms. Policies for lengthening instructional time, raising graduation standards, and implementing mentor teacher programs already are well established in most districts. Somewhat fewer districts have taken advantage of incentive funding to raise beginning teacher salaries, but participation is increasing. Reforms in personnel management seem to have had minimal effect on district practices. In general, those reforms that affect students most directly are the ones districts have implemented most quickly.

Instructional Time

Prior to SB 813, California students spent appreciably less time in school than the national average. In 1982-83 California students had already averaged one half year less of school than the national average by the end of grade three. By graduation, they had averaged one and one-third years less class time. Senate Bill 813 stipulates that districts can receive a financial bonus from the state to increase the number of instructional minutes between their 1982-83 minutes and:

36,000 annual minutes in kindergarten
50,000 annual minutes in grades one through three
54,400 annual minutes in grades four through eight
64,800 annual minutes in grades nine through twelve.

According to the State Department of Education, 97 percent of all California school districts, which enroll 99.7 percent of all pupils, are participating in the longer school year and school day incentive program. Only 14 districts declined to participate in both longer day and longer year funding.

A study of 24 districts by the California Tax Foundation found that all participating districts increased their school years to at least 180 days, an average increase of four days. Many districts met instructional time goals through an increase in the instructional year only. When districts lengthen the school day, grades one and two, and grades nine through twelve usually receive the greatest increases.

Virtually all additional funding designated for increased instructional time has been used to increase teacher salaries, in compensation for the additional time teachers spend teaching. Some high school districts, however, used a portion of the money to reinstate a sixth period. Aside from the addition of a sixth period, most educators surveyed by the California Tax Foundation contend that increasing the instructional year will have a greater effect than adding more minutes to the school day.

Enhanced Counseling Services

Senate Bill 813 provides additional funds to school districts attempting to intensify counseling services available to students beginning the tenth grade. This academic counseling was intended as a checkpoint for assessing students' progress toward graduation and broadening their educational and career options. Intended as a supplement to existing comprehensive guidance programs, it gives priority to students not progressing satisfactorily toward graduation, and to students with college potential who are not college bound.

A PACE assessment of a sample of California districts reveals that the major impact of the SB 813 counseling program is that targeted students receive more individual attention, and existing counseling services are strengthened. There is no way of knowing yet the impact of these services on students' progress in school. Follow-up support was lacking because the SB 813 counseling money was inadequate to fund follow-up activities also. In addition, the counselor-student ratio did not change. Expenditures under this program largely purchased services for students rather than purchasing personnel, computers, or the like for school districts. A significant consequence has been involvement of many parents, often for the first time, in their child's secondary school career.

Graduation Requirements and Curricular Change

Senate Bill 813 also increased high school graduation requirements to: three years of English, two years of mathematics, two years of science, three years of social studies, and one year of foreign language or fine arts, as well as the two years of physical education previously required.

In 1982 the State Board of Education recommended even more stringent graduation standards (Table 15). Critics

TABLE 15

Graduation Requirements Required by SB 813
and Recommended by the State Board of Education,
Nation At Risk¹, and Improving Student Performance²

Subject	SB 813	State Board of Education	Nation At Risk	Improving Student Performance ^e
English	3	4	4	4
Mathematics	2	3	3	2
Algebra		(1)		
Geometry		(1)		
Science	2	2	3	1.5
Physical	(1)	(1)		
Life	(1)	(1)		
Social Studies	3	3	3	4
World Civ.	(1)	(1)		
U.S. History	(1)	(1)		(1)
Ethics		(.5)		
American Gov.	(1) ^a			(1)
Economics		(.5)		
Foreign Language	1 ^b	2 ^c	2 ^d	1
Fine Arts	1 ^b	1		
Computer Studies		.5	.5	.5
Physical Education (prior law)	2			2

^a Including civics and economics.

^b One year foreign language or fine arts.

^c Must be in same language.

^d Suggested for college-bound.

^e Suggested first year of two-year phase-in.

¹National Commission on Excellence in Education, A Nation at Risk (Washington, D.C.: U.S. Department of Education, 1983).

²Paul Berman and Daniel Weiler, Improving Student Performance in California, Recommendations for the California Roundtable (Berkeley: 1983).

Source: Loren Kaye, Making the Grade? Assessing School District Progress on SB 813 (Sacramento: California Tax Foundation, 1985).

feared that proposed requirements would lead to higher drop-out rates and numbers of students failing to receive diplomas.

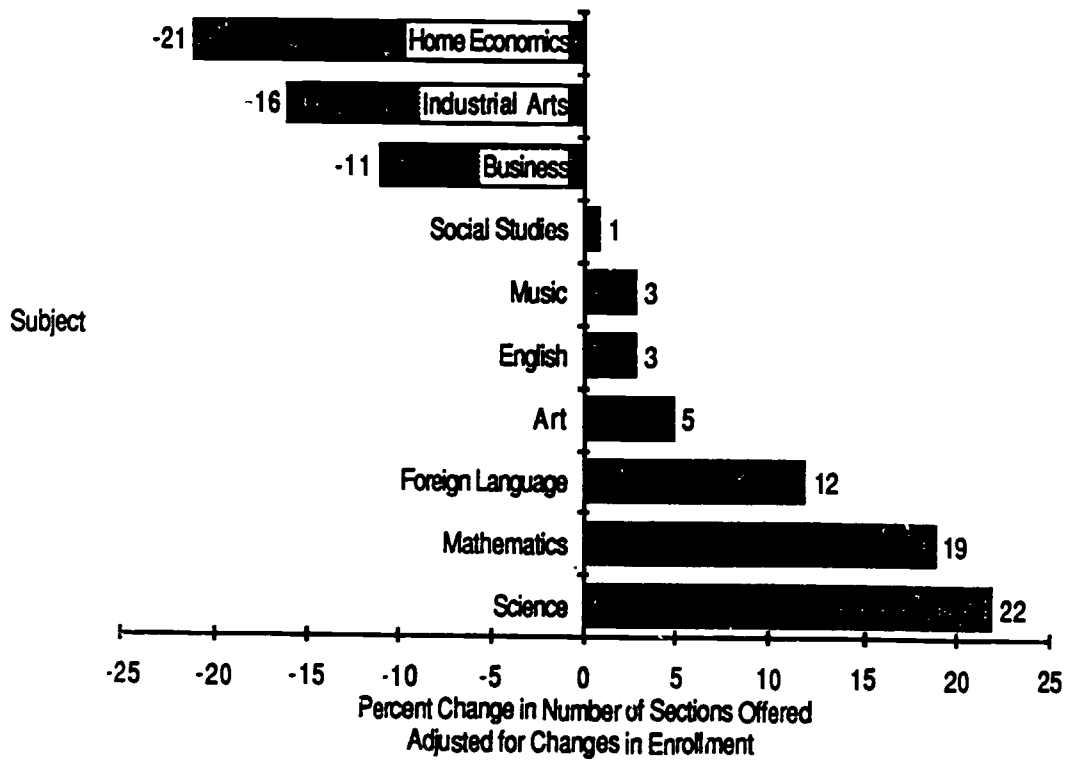
According to a survey conducted in the fall of 1984 by the State Department of Education, 84 percent of responding districts will meet SB 813 requirements and 65 percent will meet the State Board model for the graduating class of 1985. By 1988, when SB 813 is designed to be fully in effect, 90 percent of districts indicate they will meet SB 813 standards and 73 percent will meet the Board's standards. The State Department also notes that virtually all districts already are requiring at least three years of English, that most districts will meet social studies requirements by 1988, and that providing foreign language classes is difficult for many districts, especially small ones, because of time and staffing constraints. The SB 813 requirement of one year of foreign language or fine arts is therefore likely to be met initially through fine arts.

All districts surveyed by the California Tax Foundation indicated that they had adopted graduation requirements for the 1986-87 school year which would meet or exceed requirements mandated by SB 813. More than half the districts had also increased the number of units required for graduation. Districts indicated that they would continue to offer vocational courses and electives and were planning few curricular changes other than adding courses in science, math, geography, and economics. All districts surveyed planned to offer six periods in high school by 1986-87. The resulting 24 year-courses (six courses per year multiplied by four years of high school) exceed the 13 year-courses required by SB 813 by 22 semesters which are then available for vocational education and other electives.

Results of a recent PACE study confirm that districts have begun to implement changes aimed at meeting state curricular standards. A representative sample of secondary schools was surveyed. Numbers of class sections in each departmental area were taken from teachers' master schedules. After adjustments for changes in enrollment, it is clear that more sections of mathematics, science, and foreign language courses are being offered while courses in home economics, industrial arts, and business are decreasing (Figure 21). In science, the largest increase occurred in physical science offerings, apparently in response to the new graduation requirement of one year of physical science. All areas of mathematics displayed increases, but computer science showed the largest increase (+91 percent) followed by more advanced math courses such

FIGURE 21

Percent Change in Number of Course Sections Offered,
Adjusted for Changes in Enrollment,
1982-83 to 1984-85



Source: Pam Grossman and Michael W. Kirst, et al., Study of Curricular Change in California Comprehensive High Schools: 1982-83 to 1984-85, Policy Paper No. PP85-7-4 (Berkeley: Policy Analysis for California Education, July 1985).

as calculus, analytic geometry, trigonometry, and geometry. Calculus and analytic geometry courses were represented with 33 percent greater frequency while general math courses increased by 11 percent.

The same PACE study showed an even more substantial increase in the number of advanced placement course offerings. Additions to courses which had been offered in 1982-83 (English, U.S. history, calculus, biology, chemistry, physics, and European history) constituted, by 1984-85, a 34 percent increase. In addition, new advanced placement courses were offered in computer science, foreign languages, art history, and music. The average increase in all advanced placement courses, across all sample schools was 117 percent, after adjustments for enrollment changes. While the small base of advanced placement courses exaggerates this change, it is still an important indicator of movement toward a more academic curriculum for California's high schools.

Model Curriculum Standards and Broader Tests

In addition, the State Department of Education has made efforts to improve the substantive depth of academic courses by developing model curricular standards for high school level English/Language Arts, Foreign Language, History/Social Science, Mathematics, Science, and Visual and Performing Arts. Suggestions include appropriate literature, types of problems and courses of study as well as guidelines for encouraging excellence. This move is indicative of the increased state interest in a more rigorous curriculum. Not only are these standards increasing, the state is also rewriting its tests (California Assessment Program) to stress higher order thinking skills and subject matter knowledge.

Mentor Teacher Programs

The Mentor Teacher Program provides state-funded stipends for permanent classroom teachers who have demonstrated outstanding abilities and who, as a result of the stipend, assume additional responsibilities. The Department of Education reports that 72 percent of districts participated in the Mentor Teacher Program in 1984-85. The 64 percent of districts which began the program in 1983-84 enrolled 89 percent of the state's students and teachers. While figures are not yet available, this percentage should be larger for the current year. New mentor teacher positions, which were only funded at a rate of one mentor per 19 teachers,

still constituted almost half the number of positions funded in 1983-84 (1,662 versus 3,556). A total of \$30.8 million was provided for costs in 1984-85.

The California Tax Foundation found that 19 of 24 districts surveyed participated in the program. Those that did not were small (three districts), already had an extensive staff development program (one district), or shelved the program in the interest of labor peace at the request of the employee association (one district).

Minimum Teacher Salaries

The minimum teacher salary provision of SB 813 allots state funds for the purpose of increasing the lowest level of district salary scales by 10 percent per year up to a maximum of \$18,000 in 1983-84, \$19,084 in 1984-85, and \$20,200 in 1985-86. The measure is designed to provide an incentive for recruitment of high quality teachers for an estimated 80,000 to 100,000 positions expected to be filled by 1990. State Department of Education figures indicate that 376 (37%) districts participated in this program in 1984-85, up from 318 (29%) in 1983-84. Participating districts account for two-thirds of total statewide student enrollment. Larger districts and districts not located in rural areas took part more consistently. All funds appropriated for raising beginning teacher salaries are not being spent. In 1983-84 only \$2.9 million of \$12.3 million was actually spent. So far for 1984-85, claims are approximately \$5.8 million, although \$24.8 million was appropriated.

According to a PACE study of 48 districts (heavily weighted with large districts), participation in 1983-84 was high for large districts, those located in urban areas, and unified school districts. Use of this program was lowest for medium and small districts, suburban districts, and high school districts. For 1984-85 and 1985-86, medium and small districts and suburban districts were planning not to participate at expected rates. While districts chose not to take part for a variety of reasons in 1983-84, 83 percent of districts named "an already elevated lowest step on the salary scale" or "few or no teachers low enough on the salary scale" as reasons for non-participation in 1984-85 and 1985-86. In other words, the majority of districts intending not to make use of this provision are those for which it may not be applicable.

Personnel Management

Reforms in personnel management have had minimal effect on school district practices. The only reform that has been widely implemented is the requirement that boards of education adopt policies certifying principals and other administrators as competent to evaluate teachers. Districts have, on average, responded to this requirement by adopting the required policy and supporting programs to improve the skills of administrators. To what degree the training has improved teacher supervision or evaluation is a matter for future research. In contrast, the requirement that boards ensure probationary teachers' needs for training, assistance, and evaluation has resulted in few changes other than pro forma adoption of policies.

Changes in legal requirements for dismissal and layoff of probationary and tenured teachers have, as yet, had little effect. Conflicts over due process procedures for probationary employees have resulted in litigation which is not expected to be resolved in the short term. As a result, most districts have not attempted to take advantage of SB 813 provisions regarding dismissal of tenured teachers. Few districts have altered procedures, and attempts to dismiss incompetent teachers have not increased. While changes in required layoff procedures may potentially affect district practices, they have been ineffectual to this point because districts have not had to lay off teachers.

A conference of educational attorneys and policy experts held in February of 1985 under the auspices of PACE has served to clarify this section of SB 813. Most provisions of the act were clear including the stipulation that layoffs may be instituted as a result of modifications to a district's curriculum. However, attorneys were divided on the question of whether SB 813 revoked rights of first-year probationary teachers to termination hearings. The first test of this issue is now in litigation in a case filed by the California Teachers Association (CTA) against the Muroc Joint Unified School District in Bakersfield. Some assert that probationary teachers have a property interest in employment protected by the due process clause of the California constitution. A number of participating attorneys believed that the act has had a significant impact in the field, altering the labor-management atmosphere to one in which school districts are more aggressively pursuing dismissals of teachers alleged to be unprofessional

Performance Indicators

The State Department of Education, has developed a set of state schooling goals and associated quality indicators applicable for the next six years. Goals are to:

- o Increase enrollments in academic courses
- o Improve statewide test scores
- o Reduce drop-out rates and improve attendance
- o Increase performance of college-bound students by improving Scholastic Aptitude Test (SAT) scores and performance on Advance Placement (AP) achievement examinations
- o Increase amounts and quality of homework and writing

Statewide information is synthesized and then reported to individual schools reflecting current statewide performance on each measure; statewide targets for 1985-86, 1987-88, and 1989-90; and current levels of performance at each school site. Using these data, school administrators will be able to compare their local school's performance with statewide performance and with similar schools.

In addition to setting local goals for performance on statewide indicators, schools are expected to provide local indicators of educational quality. This provision allows individual schools an opportunity to include qualitative information and material requiring professional judgment which might otherwise be overlooked.

Quality indicators for elementary and intermediate schools are being developed. Initial indicators include: instructional time and time allocated for various subjects, CAP scores for reading and mathematics, amount of writing and homework completed, attendance rates, and enrollments in science and algebra.

Indicators at the high school level are now available. Selected indicators include: enrollment in academic courses, number of units required for graduation, percentage of students meeting State Board of Education graduation standards, enrollment in courses required for University of California admission, scores on CAP, SAT and SAT Advanced Placement exams, drop-out and attendance rates, student participation in extracurricular activities, and amount of homework and writing assignments completed. Among the first year results, high school students surpassed two-year statewide targets in one year

for course enrollments in math and English, and for CAP scores in math and reading (Table 16).

Teacher Response to Reform

According to a spring 1985 survey conducted by the California Commission on the Teaching Profession, many education reforms are supported by California teachers. Approximately 80 percent favor professional career ladders; more than three-quarters support a pre-service test in basic reading, writing, and mathematics; and a majority (57%) believe that teachers should take a professional examination (like the bar exam or medical boards) prior to credentialing. Forty-three percent reported that teacher salaries should be related in part to teacher effectiveness.

Familiarity With Technology

In order to meet requirements of an increasingly complex job market, preparation of students in high technology areas is also a recent objective of educational reform. By 1995, nearly one-third of all jobs will be technical, scientific, managerial, or professional, according to the Bureau of Labor Statistics. In addition, technological dimensions are becoming more prevalent in a variety of jobs. Secretaries must know word processing; businesses, even small ones, use computers for inventory and accounting; auto mechanics are using sophisticated diagnostic programs. This means that a large portion of high school graduates will need a general understanding of science and technology in order to be reasonably well educated for the future and in order to adapt to the changing job market requirements.

According to a 1982-83 study conducted by the State Education Department, approximately 15 percent of sixth graders and more than half of twelfth graders reported having used a programming language (usually Logo or Basic). A substantial majority showed some understanding of the applications and usefulness of computers. Detailed knowledge of programming and of computers themselves, however, was low, in the case of programming, close to the level of chance. Boys scored consistently higher than girls and high scores were correlated with parental educational level.

Schools have begun to implement programs to teach both familiarity with and technical facets of computers. The legislature appropriated \$26.9 million to continue funding the state's Educational Technology Program and

TABLE 16

Quality Indicators and Statewide Targets
for California High Schools

Quality Indicator	Statewide Averages		Statewide Targets		
	83-84 -----	84-85 -----	85-86 -----	87-88 -----	89-90 -----
A. Course enrollments					
1. Mathematics					
3 or more years	67%	74%	70%	73%	75%
Advanced Math (per 100 juniors and seniors enrolled)	28	32	32	36	40
2. English					
4 or more years	73%	86%	75%	78%	80%
3. Science					
3 or more years	33%	36%	38%	42%	50%
Chemistry (per 100 seniors in school)	25	31	27	32	40
Physics (per 100 seniors in school)	10	12	16	21	25
4. History/Social Science					
4 or more years	33%	37%	38%	42%	50%
5. Foreign Language					
3 or more years	22%	22%	25%	29%	32%
6. Fine Arts					
1 or more years	65%	67%	66%	68%	70%
7. Enrollment in a-f Courses Percentage of school enrollments in a-f courses	*	38%	40%	45%	50%
Percentage of graduates completing a-f requirements	<--To Be Announced (Spring 1986)-->				
8. Units Required for Graduation	<--To Be Announced (Spring 1986)-->				
9. State Board Model Graduation Standards Percentage of graduates meeting standards	<--To Be Announced (Spring 1986)-->				

* Data first collected in 1984-85.

Table 16 continued on next page.

TABLE 16
(continued)

Quality Indicator	Statewide Averages		Statewide Targets*		
	83-84 -----	84-85 -----	85-86 -----	87-88 -----	89-90 -----
B. California Assessment Program (CAP) Scores*					
1. Reading					
Percent correct score	62.2	62.9	62.7	63.7	64.7
Percent scoring					
above Q ₃	25%	27%	26%	27%	28%
above Q ₂	50%	52%	52%	56%	60%
above Q ₁	75%	77%	76%	78%	80%
2. Mathematics					
Percent correct score	67.4	68.3	67.9	68.9	69.8
Percent scoring					
above Q ₃	25%	29%	26%	27%	28%
above Q ₂	50%	48%	52%	56%	60%
above Q ₁	75%	77%	76%	78%	80%
C. Dropout/Attendance					
1. Dropout rate (statewide averages and targets are attrition rates, grades 9 to graduation)					
	29.3%	29.0%	28.3%	26.0%	23.5%
2. Attendance rate--percent in attendance on a specified day					
	**	93.7%	94.0%	94.5%	95.0%

*Targets are compared to 1983-84 standards.

**Data first collected in 1984-85.

Table 16 continued on next page.

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TABLE 16
(continued)

<u>Quality Indicator</u>	<u>Statewide</u>	<u>Statewide Targets</u>		
	<u>Average</u>			
	83-84	85-86	87-88	89-90
	-----	-----	-----	-----
D. Performance of College Bound Students				
1. Scholastic Aptitude Test (SAT)				
Percent seniors taking Verbal	33.3%	*	*	*
Average score	419	428	436	444
Percent of seniors scoring at least 450	15.5%	17.5%	21.0%	25.0%
Mathematics				
Average score	481	481	489	496
Percent of seniors scoring at least 500	16.5%	17.8%	19.1%	20.5%
2. Achievement Tests				
Test of Standard Written				
English	42.6	43.0	43.5	44.0
English Composition	492	503	511	425
Mathematics Level 1	517	528	539	550
Mathematics Level 2	647	656	665	675
American History	501	509	517	525
3. Advanced Placement (AP)				
Number of scores 3 or better (per 100 seniors in school)	9.5	12.0	15.0	18.0

*Percent of takers for information only; no statewide targets have been established.

Source: California State Department of Education, 1985

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Institute for Computer Technology. These funds provide matching grants to districts and county offices for the purchase of computer hardware and software as well as demonstration programs and other technological education. Teacher Education and Computer Centers (TECC) have been refunded as well in the amount of \$12.5 million. These centers provide regional delivery of staff development services with an emphasis on math, science, and computer education. The "sunset date" for these centers is June 30, 1986.

School Based Program Coordination

The School Based Program Coordination Act allows schools and school districts to coordinate one or more of all categorical programs at the school site level. Major programs which may be included are: Special Education, Economic Impact Aid, School Improvement Program, Miller-Unruh Reading Program, Gifted and Talented Education, Educational Technology, and Local Staff Development Programs. Under this act, materials and staff funded by any of these programs may be woven together to provide services without the requirement that students be identified as eligible for each specific program. A school site council is required to plan resource distribution.

The 1984-85 year is the third full year this act has been in effect. However, only 512 schools in 191 districts are reported as participating. (There are 7,416 schools in 1,029 districts statewide.) Districts implementing the program appear to be deploying funds to purchase services of staff, primarily resource teachers and instructional aides, and instructional materials previously used in the separate categorical programs. The program allows school staff, such as resource specialists, to assist students who do not quite qualify for special education or other programs and consequently may not receive the extra help they require in order to succeed.

1984-85

HUMAN RESOURCES

Approximately 175,000 teachers are employed in public K-12 schools in California. They average 42.4 years of age and have an average of 14.8 year experience. Most are female (64.9%) and white (82.1%). Approximately 25 percent of teachers have a master's degree plus thirty or more semester hours, or a doctorate (0.8%); 13 percent have a master's degree alone; and 52.2 percent have a bachelor's degree plus thirty or more semester hours; 9.9 percent have a bachelor's degree or less.

The National Education Association (NEA) reports an estimated average teacher salary for California of \$26,300 for 1984-85.* Using this figure, California salaries increased by 101.4 percent between 1974 and 1984. Over the same period, the U.S. Consumer Price Index (CPI) rose by 129.4 percent.

The average teacher salary in California ranks among the highest in the nation. Using NEA figures, California ranked third in 1984. At the same time, only Utah has a higher student to teacher ratio. In other words, California teachers are well paid by national standards, but they bear heavier student loads.

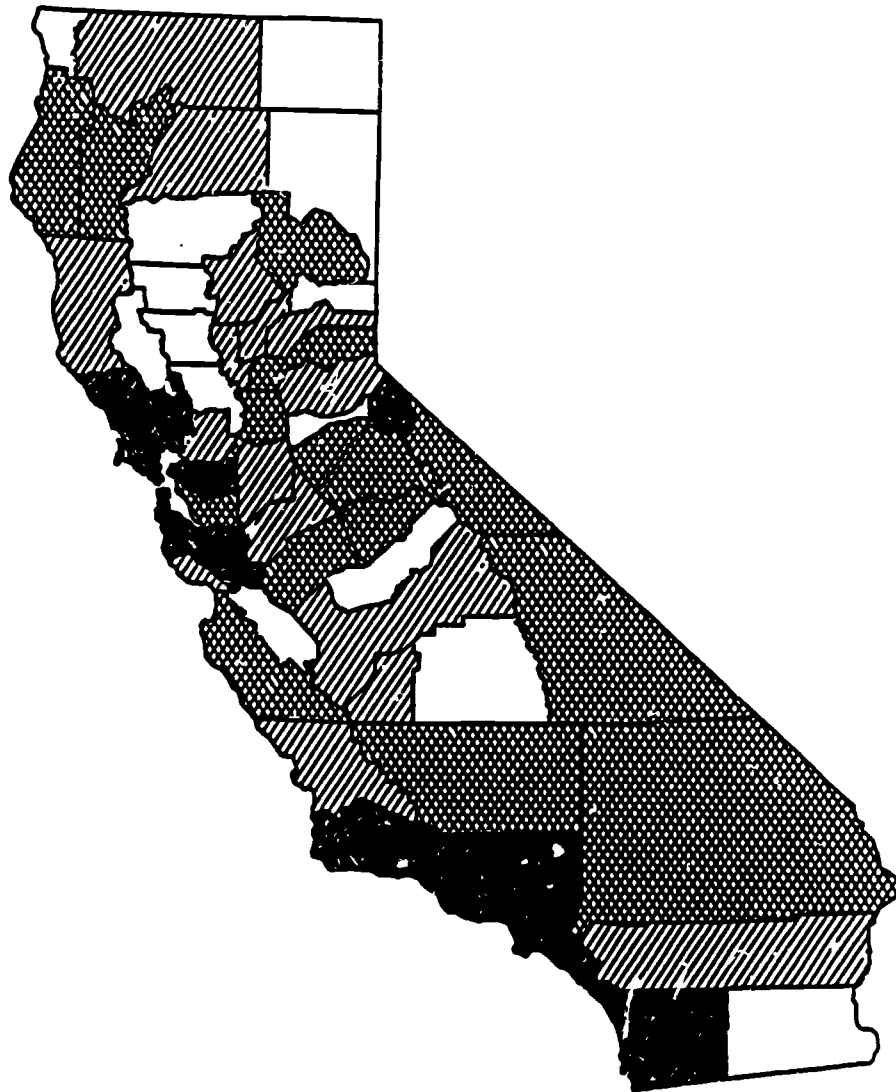
Average salaries by county vary considerably (Figure 22). In 1983-84 average salaries ranged from \$20,475 to \$28,440. Higher salaries were found largely in population centers where higher costs for goods and services (especially housing) were noted (Figure 23). This relationship was more clearly established for salaries of late career teachers than for those who had been teaching ten or fewer years. Overall the ratio of average housing cost to early career teacher salaries is in the range of 2.2 to 4.0. However, in most counties bordering large metropolitan areas and in the Tahoe area it is distinctly unfavorable (that is, 4.1 to 7.0).

Between 1980-81 and 1983-84 the proportion of male professional staff dropped 1.2 percent to 37.3 percent. A disproportionate number of men occupy administrative

*The State Department of Education has somewhat different figures (\$24,843 in 1983-84). This information is gathered from individual staff members as part of the California Basic Educational Data System (CBEDS). There is concern about how error prone these data are. The NEA data are estimated from prior figures due to lack of precise information from the state.



FIGURE 22

Average Teacher Salaries By County, 1983-84



LEGEND: SALARY

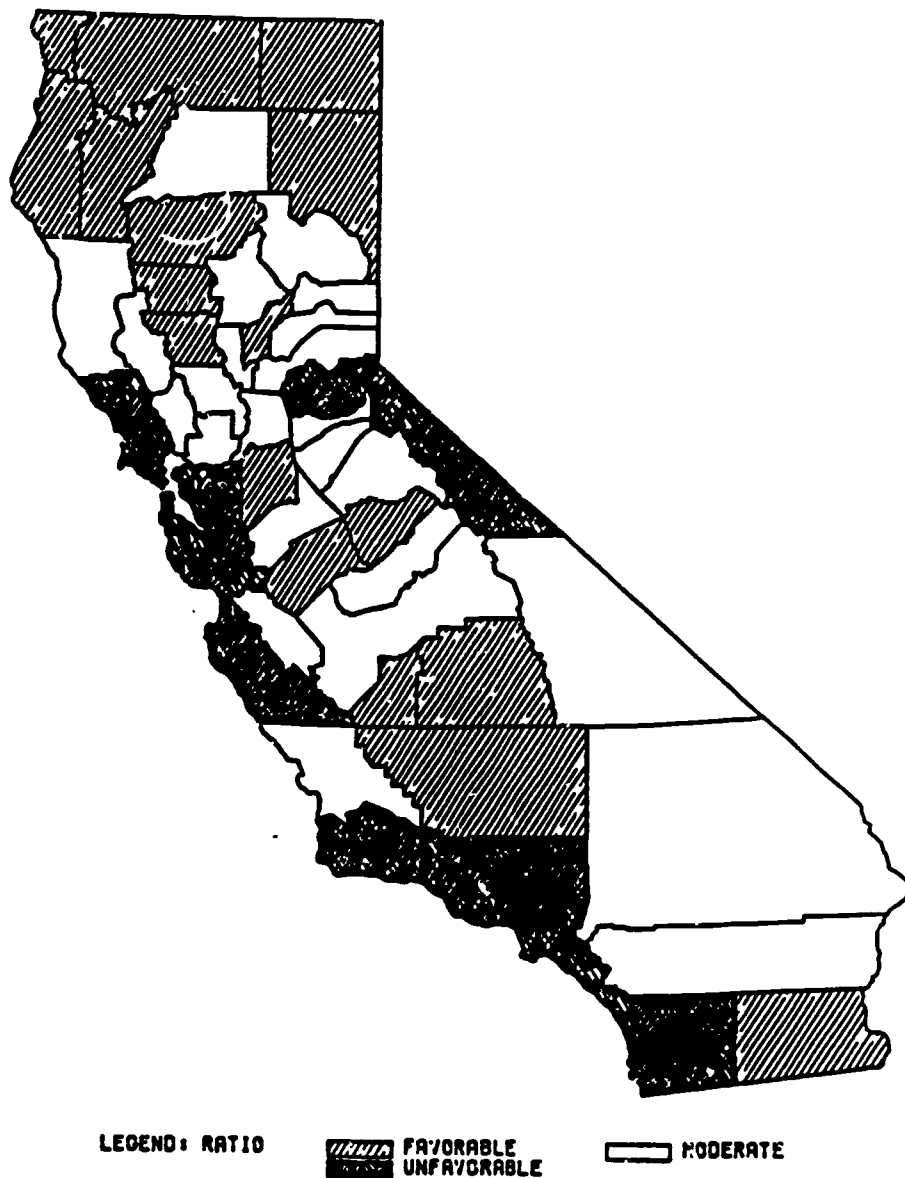
 \$20475 - \$22540
 \$23903 - \$25014

 \$22641 - \$23885
 \$25113 - \$28440

Source: James A. Fulton, "Teacher Salaries: A Preliminary Analysis" (Sacramento: California State Department of Education, 1984), citing California Basic Educational Data System data.

FIGURE 23

Relative Housing Costs for Early Career Teachers



Source: James A. Fulton, "Teacher Salaries: A Preliminary Analysis" (Sacramento: California State Department of Education, 1984), citing California Basic Educational Data System data.

positions; conversely, a small percentage (35.1%) of classroom teachers are male. It is unclear to what extent this change reflects male reluctance to enter the profession and to what extent it indicates a desire to leave teaching. The percentage of males has dropped since 1982-83 in science (71.6% to 70.9%), mathematics (66.0% to 65.4%), and computer science (71.6% to 68.4%). Men have traditionally dominated these areas of study; and without their continuing interest it becomes increasingly difficult to find qualified teachers.

Teacher Supply and Demand

There is little agreement on a procedure for accurately determining teacher shortages. Projections indicate that California must hire approximately 80,000 to 100,000 teachers over the next five years. This estimate is based on the presumption that the state is willing to tolerate the current student to teacher ratio of 24 to 1, second highest in the nation. The requirement for new teachers is due to a combination of enrollment growth (500,000 projected additional students by 1990-91), retirement (13.7 percent of California's 175,024 teachers are 55 or older), and attrition.

Teacher shortages vary widely by subject area. Table 17 presents data from the California Teacher Shortage Loan Assumption Program gathered in 1984, for grades 7-12. A total of 509 positions were left unfilled; 3,236 teachers did not hold appropriate teaching credentials for the position occupied; and the largest shortages were in mathematics (965.6), bilingual education (555.9), English/Language Arts (341.1), special education (453.9), and science (442.1). Those subject areas showing the largest percentage deficits were: bilingual education (26.8%), mathematics (11.6%), computer science (9.9%), and science (8.1%) (Table 18).

Several factors now contribute to a general teacher shortage: the legacy of the teacher surplus of the 1970s as reflected in a decline in the number of college students who pursue teacher training programs; increased opportunities for women and minorities who had only education, nursing, and social work as career choices in the past; the rising service sectors of the economy which provide positions for service-oriented people and often pay better than education; large numbers of teacher retirements due mainly to age; a decline in the status of the profession; and a decline in teacher salaries compared to other professions requiring comparable training.

TABLE 17

California Teacher Shortages in Selected Subject Areas At Secondary Level (Grade 7-12), 1984-85

<u>Subject Area</u>	<u>Number of Teachers Employed</u>	<u>Teacher Not Holding Certificate</u>	<u>Positions Vacant</u>	<u>Total Shortage</u>
Art	1,911.7	23.9	0.0	23.9
Basic Skills	1,269.6	64.9	13.5	78.4
Bilingual	2,072.9	512.3	43.6	555.9
Business Educ.	3,136.9	43.0	8.5	51.5
Computer Science	716.4	60.8	10.4	71.2
English/ Language Arts	9,835.8	502.8	38.3	541.1
Foreign Languages	2,974.4	60.1	11.9	81.0
Health, Physical Education	6,554.7	7.3	26.9	74.2
Home Economics	1,721.5	16.8	5.6	22.4
Industrial Arts	2,454.0	26.2	6.4	32.6
Mathematics	8,351.7	885.2	80.4	965.6
Music	1,320.2	24.7	19.2	43.9
Reading	1,376.8	48.3	15.4	63.7
Social Studies/ Science	8,363.0	143.6	14.6	158.2
Science	5,445.8	402.1	40.0	442.1
Special Ed.	6,532.8	328.1	125.8	453.9
Vocational Ed.	3,183.8	6.4	8.3	14.7
Other Secondary	9,992.3	30.7	40.2	70.9
TOTAL				
SECONDARY	77,214.3	3,236.2	509.0	3,745.2

NOTE: Numbers reported as full-time equivalents.

Source: California State Department of Education, "Report of California Secondary Level Teacher Shortage 1984-85" Sacramento: California State Department of Education, 1985), citing California Basic Educational Data Systems (CBEDS), October 1984.

TABLE 18

**California Teacher Shortage as a Ratio to Current
Teachers in Selected Subject Areas at Secondary
Level (Grades 7-12), 1984-85**

<u>Subject Area</u>	<u>Shortage Per 1,000 Current Teachers in Subject Area</u>
Art	12.5
Basic Skills	61.8
Bilingual	268.2
Business Education	16.4
Computer Science	99.4
English/Language Arts	55.0
Foreign Languages	27.2
Health, Physical Education	11.3
Home Economics	13.0
Industrial Arts	13.3
Mathematics	115.6
Music	33.3
Reading	46.3
Social Studies/Science	18.9
Science	81.2
Special Education	69.5
Vocational Education	4.6
Other Secondary	7.1
TOTAL SECONDARY	48.5

Source: California State Department of Education, "Report of California Secondary Level Teacher Shortage 1984-85" (Sacramento: California State Department of Education, 1985).

Information necessary to project the availability or supply of teachers over the next few years is not readily available. Contributing to this unreliability are factors such as: changing options for entering the teaching profession (that is, emergency credentials and relaxed reciprocity with other states), the unknown size of the reserve pool (that is, credentialed teachers not currently employed in education), the effect of more rigorous admissions standards for teacher training programs, a lack of systematic comprehensive reports on credentials issued by type and county, a lack of information on entry and re-entry ages, and a lack of coordinated data among teacher training institutions, Commission on Teacher Credentialing, State Department of Education (CBEDS), and State Teacher Retirement System.

Most studies of availability indicate that the potential supply of teachers is great. As an example, the National Education Association estimates that there are two additional qualified teachers for every teacher currently in the classroom. One nationwide survey of 1979-80 college graduates determined that there were 19,000 certified math and science teachers who had never taught (Table 19).

California approves approximately 7,700 average first-issue teaching credentials annually. Continuing demand in specific areas indicates that an insufficient number of newly credentialed teachers choose to enter teaching, that they acquire credentials in subject areas which are already adequately staffed, or that trained persons may not live in areas where openings exist. For example, in 1980-81, the last year for which there is published data, 57 percent of emergency credentials were issued in Los Angeles County. Those with mathematics, computer science, or science backgrounds can still command higher entry-level salaries in private industry, although recent state subsidies for raising minimum teacher salaries are narrowing the gap.

National data suggest that less able students go into teaching today. Undergraduates stating an interest in education rank at the bottom of the score distribution of the American College Test (ACT) and Graduate Record Examination (GRE). High school students planning to study education also rank poorly on the Scholastic Aptitude Test (SAT). Students taking the test designate a preference among 30 job categories. Students designating education rank 27th of the 30 groups on tests of verbal skills and 28th of 30 on tests of mathematical skills. It should be noted, however, that prospective high school teachers would indicate a subject matter discipline rather than education as an interest. Indeed, many liberal arts graduates who later become elementary teachers may state a

TABLE 19

1979-80 College Graduates Certified in
Mathematics and Science by Experience Level, Degree,
and College Major

Degree <u>College Major</u>	All <u>Graduates</u>	<u>Certified Teachers¹</u>			
		Inexperienced		Experienced	
		Total	M/S2	Total	M/S2
		-----	----	-----	----
Bachelors	905,500	125,800	15,500	9,800	1,500
Education	129,800	103,100	10,500	15,700	1,200
Math/Science	3,500	3,000	2,900	300	300
Other	126,300	100,100	7,600	15,400	900
Math/Science	204,700	4,000	3,800	800	300
Other	571,000	18,700	1,200	3,300	---
Masters	282,200	28,700	3,500	88,900	15,700
Education	102,600	20,900	2,600	71,600	10,700
Math/Science	3,200	700	700	2,200	2,200
Other	99,400	20,200	1,900	69,400	8,500
Math/Science	39,600	900	700	3,400	2,200
Other	140,000	6,900	200	13,900	2,800
TOTAL	1,187,700	154,500	19,000	108,700	17,200

¹Certified or eligible for certification to teach.

²Certified or eligible for certification to teach
mathematics, biological sciences, or physical sciences.

Note: 1979-80 college graduates are persons who received bachelors or masters degrees between July 1, 1979 and June 30, 1980. Inexperienced teachers are teachers who never taught prior to graduation. Experienced teachers are teachers who had taught prior to graduation.

Source: Russel W. Rumberger, Is there Really a Shortage of Mathematics and Science Teachers? A Review of the Evidence, Institute for Research on Educational Finance and Governance Project Report No. 84-A26, (Stanford: Institute for Research on Educational Finance and Governance Project, 1984), citing the 1981 Survey of 1979-80 College Graduates, National Center for Education Statistics.

field of study such as art history, English literature, American history, or child psychology. Among undergraduates, those taking the GRE are students intending to pursue advanced degrees.

Unlike many states, California requires that students pursue subject matter disciplines as undergraduates. Potential educators are then even less likely to report education as a major field of study. Only 3.6 percent of California students reported an interest in education when taking the SAT in 1984, versus 4.6 percent nationwide. As a result, information on the quality of potential teachers is less complete for California than for the remainder of the nation.

Passing scores on the California Basic Educational Skills Test (CBEST) are required for credentials. The passing rate for those currently teaching was 73 percent in 1984. Passing rates for new entrants to the profession were: 65 percent, considering application; 70 percent, already applied; 69 percent, admitted; and 63 percent, serving as substitute teachers. Those who had started student teaching at the time of testing had only a 61 percent first-time pass rate. These examinees were apparently enrolled in programs prior to the effective date of the pre-admission testing program.

In 1984, 76 percent of whites passed on the first attempt compared to 30 percent of blacks, 38 percent of Mexican-Americans, and 43 percent of other Hispanics. An effort has been made to determine racial bias. A panel of specialists performed an item analysis and concluded that individual questions were, with few exceptions, essentially free of bias. This group recommended a follow-up study to determine educational background and other characteristics of those who do not pass. They stated, in addition, that use of timed standardized tests may, in itself, bias results. Examinees for whom English is a second language may find it difficult to respond to test questions under time pressures.

The high failure rate of minorities on the CBEST is particularly disturbing in light of increased needs for teachers who are bilingual or members of ethnic minorities. The proportion of Hispanic teachers to students is extremely low. Hispanic youngsters composed 25.8 percent of public school enrollment in 1981, while Hispanic teachers constituted 6.1 percent of the teaching force.

The problem is equally severe in providing for LEP students. There are 2.0 bilingual teachers for every 100

students identified as LEP. Between 1982 and 1984, the number of LEP students increased 13.1 percent while teachers increased 4.2 percent. As the number of limited English speaking students grows with projected immigration, the difficulty experienced in providing an adequate education may expand.

Further information is required, specific to California, regarding the quality of prospective teachers. Little is known about the competencies of those entering the profession. For instance, retrospective studies could be done of relative scoring on SAT, GRE, or similar examinations to determine how newly credentialed teachers actually rank on such measures. Comparisons could be made of relationships between CBEST scores and other examinations which might indicate level of difficulty and help to determine the acceptability of current pass rates.

Administrative Personnel

Approximately 16,000 administrators are currently employed in California's public school system at elementary and secondary levels. Community colleges employ an additional 2,170. Non-public schools are estimated to employ 1,600 more. The K-12 administrative staff is predominantly male (66.8%), white (80.7%), and averages 47.4 years of age. Most administrators have at least a Master's degree and 12.7 percent hold doctorates (primarily district central office staff). Forty-seven percent of superintendents possess doctorates.

A recent PACE analysis indicated that the supply of administrative services credential holders (ASC) far outstrips demand. From 1979 through 1982 approximately 3,500 credentials were granted per year. Almost 14,000 credentials were granted in four years for a job category that includes only 16,000 positions overall. The turnover rate has been estimated at between five and nine percent annually. If the number of credentials granted per year continues at the present rate, between 2.5 and 5 times the required number of administrators will be produced each year.

Women hold 64.9 percent of of California's full-time equivalent teaching positions. They constitute 33.2 percent of administrators. They are largely concentrated in program and subject area positions at the district level (48%) and program administration at the school site (44.6%). Women hold 27.3 percent of principalships and 5.1 percent of superintendencies.

Recently, changes have been noted in the representation of women in supervisory positions, and well over half of those preparing for the ASC are women. Also, according to a limited survey conducted by PACE, approximately 55 percent of new administrators are women.

FISCAL RESOURCES

Education in California has experienced a decade of financial instability. Following passage of Proposition 13, districts were no longer able to raise sufficient local revenues. For the first few years, the state treasury was able to provide funds from its accumulated surplus to compensate for property tax reductions. By 1982-83, however, with the state surplus exhausted, schools received less than a one percent increase. In inflation-adjusted dollars per ADA, education revenues fell 7.5 percent in 1981-82 and 4.7 percent in 1982-83. In addition, uncertainties over funding levels and timing created major planning difficulties for districts.

This trend now has been reversed. Since 1983, the year in which SB 813 was enacted, funding for education has improved. Total funding over the period 1982-83 through 1985-86 has increased \$4.5 billion to \$17.3 billion. The years 1983-84 and 1984-85 saw increases of 9.95 percent and 12.8 percent in total estimated revenues for education. When adjusted for enrollment growth (changes in ADA), funding still increased 9.2 percent in 1983-84 and 11.0 percent in 1984-85. Even when adjusted for inflation, per-pupil expenditures increased 8.7 and 7.2 percent for the two years.

The 1985-86 budget also shows an absolute dollar increase of 8.8 percent. However, when adjusted for inflation and enrollment growth, 1985-86 school revenues are virtually unchanged from the previous annual level (Table 20).

Recent funding increases have essentially succeeded in returning constant dollar, per-pupil expenditures for education to peak funding levels of five years ago (Figure 24). Much of this new funding, however, is restricted to special purposes. Therefore districts appear to have less discretionary funding than in previous years.

Education, at all levels, receives the largest share of state appropriations. Fifty-three percent of California's total General Fund expenditures are devoted to education; of that, 38 percent goes for K-12 funding and 15 percent for the University of California, California State University, and Community College systems (Figure 25). Additional revenues include state special funds, local property taxes, and federal funds. In short, education receives substantial amounts of money, garners the greatest portion of state revenues, and has received major increases in funding for the last two years.

TABLE 20

K-12 Total Revenues

<u>Year</u>	<u>Total Funding (millions)</u>	<u>Total Funding</u>		<u>1985 Dollars</u>	
		<u>Per ADA</u>	<u>Percent Change</u>	<u>Per ADA</u>	<u>Percent Change</u>
1979-80	\$10,981.6	\$2,611		\$3,933	
1980-81	12,341.2	2,929	12.2%	3,806	-3.2%
1981-82	12,615.4	3,003	2.5	3,520	-7.5
1982-83	12,864.1	3,041	1.3	3,353	-4.7
1983-84	14,144.2	3,321	9.2	3,643	8.7
1984-85	15,950.4	3,686	11.0	3,904	7.2
1985-86 ¹	17,356.7	3,912	6.1	3,912	0.2

Cumulative Change:

Amount	\$6,375.1	\$1,301		-\$21	
Percent	58.1%	49.8%		-0.5%	

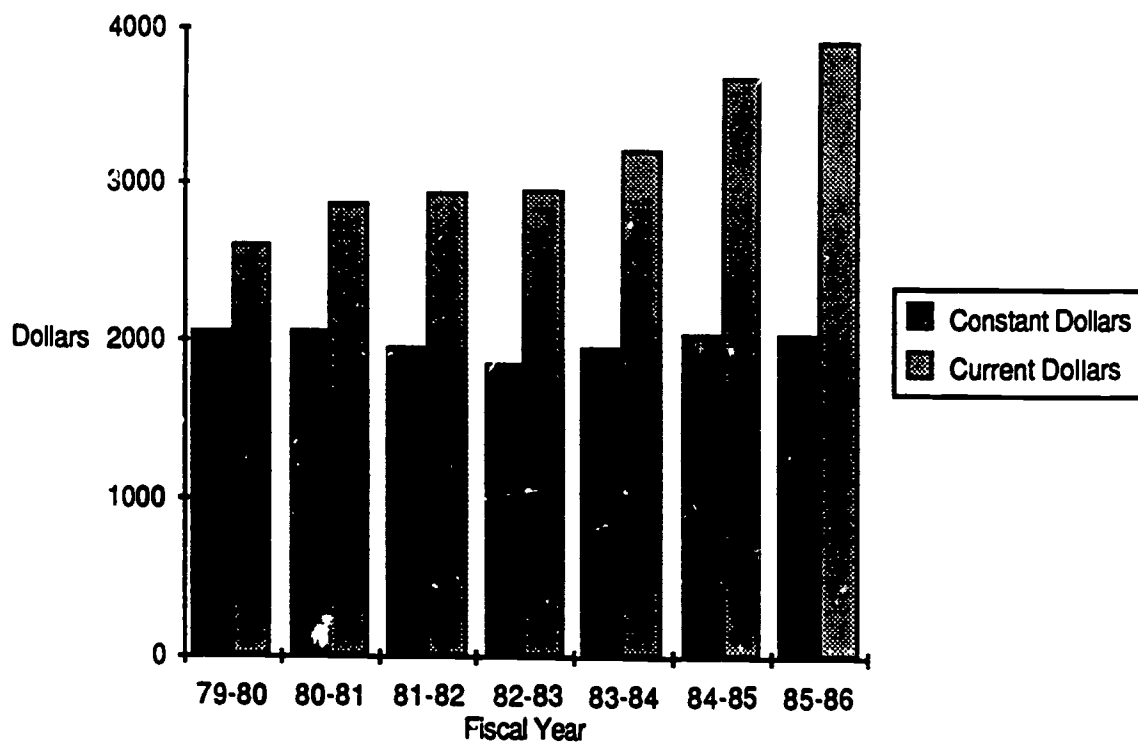
¹1985-86 budget as enacted. The Legislative Analyst's figure of \$3,912 includes adult education revenues, child care revenues, cafeteria fund revenues, state payments to STRS, and miscellaneous revenues.

Note: Conversion to 1985 dollars based on California CPI.

Source: Legislative Analyst (updated for the 1985-86 budget and corrections as of September 1985).

FIGURE 24

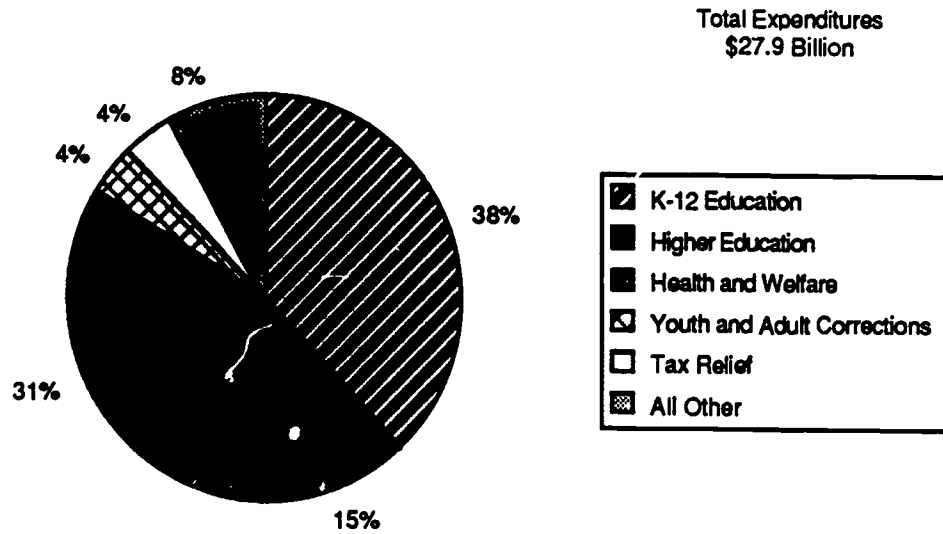
K-12 Education Funding Per Pupil in Constant
1976-77 Dollars and Current Dollars



Source: Legislative Analyst, Analysis of the Budget Bill, 1985-86 (Sacramento: Legislative Analyst, 1985), p. 1064.

FIGURE 25

General Fund Expenditures, 1985-86



Source: Legislative Analyst, The 1985-86 Budget: Perspectives and Issues (Sacramento: Legislative Analyst, 1985).

National Comparisons

Compared with the national average, California spends a smaller proportion of its personal income on education. A formula used by The National Center for Educational Statistics (NCES) considers each state's wealth and population in addition to its per-pupil revenues. Rankings, therefore, provide evidence both of a state's performance (effort) and of its ability to generate revenues based on per-capita income. In addition, the ratio of each state's enrollment to its population is employed in order to make between-state comparisons more valid. By this measure, California had fallen from a national rank of 18th to 45th over the ten years 1972-73 to 1982-83 (the latest year available). Recent increases in funding have begun to move California closer to the national average expenditure (Figure 26). In 1977-78, California ranked 23rd in dollars per ADA, in 1982-83, 30th, and in 1984-85, 26th. From \$187 less per pupil than the nation's average in 1982-83, California moved to \$89 below the average in 1985-86.

Despite improvements in funding, California is not only below the national average in funding per pupil but also it is markedly below other states with similar technological bases (Table 21). For example, in 1983-84 New York's expenditures per ADA were 166 percent of California's, Michigan's were 120 percent, and Minnesota's were 116 percent.

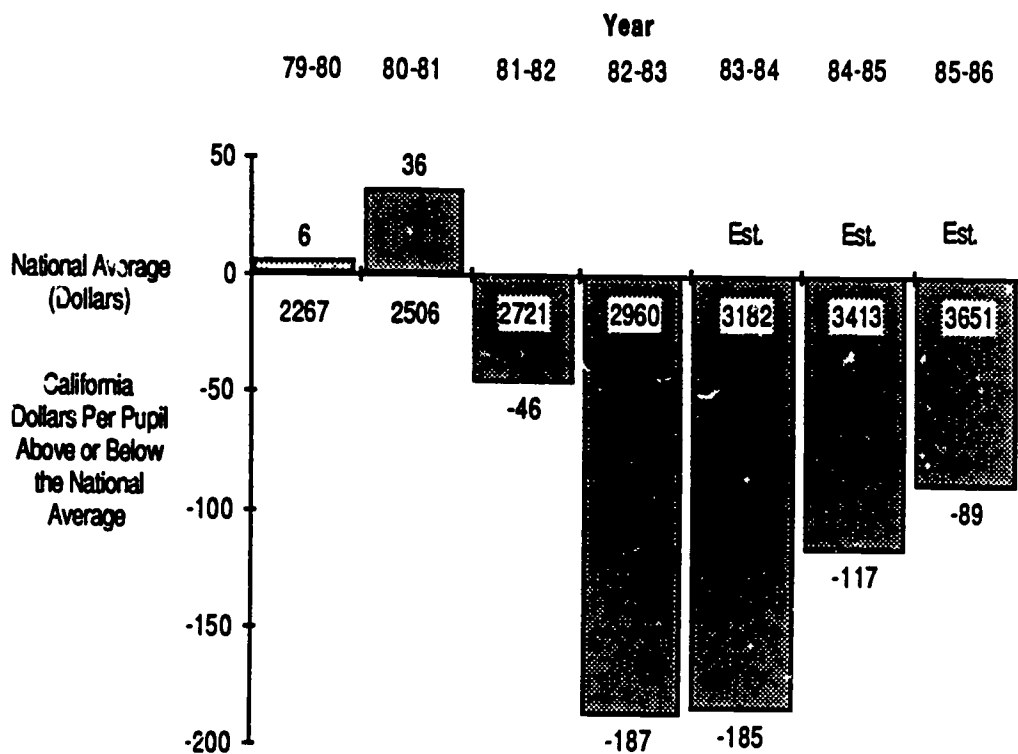
Enrollment Growth

According to California State Department of Finance projections, K-12 enrollments* will reach 4.67 million by 1990-91. This constitutes an increase of approximately 100,000 K-12 students per year. This rise is in striking contrast to the enrollment decline occurring through the 1970s and to the slow increase, totaling approximately 3.5 percent or 35,000 students per year, over the period 1980 through 1984. The fact that enrollment was declining or increasing slowly made it possible for educational services to continue despite reductions in revenues. However, future funding must include substantial sums to cover enrollment increases just to maintain services at current levels. A PACE analysis employing a five percent inflation factor indicates that through the year 1990-91 an extra \$7.2 billion will be required to maintain the status quo (Table 22 and Figure 27).

*exclusive of summer school, adult education, students in special education classes, and other ungraded students.

FIGURE 26

California Funding Per Pupil Compared to the National Average



Note: Funding per pupil is based on a National Education Association formula used for national comparisons which removes adult education, summer school, state libraries, capital outlay, and similar expenditures.

Source: California State Department of Education Analysis.

TABLE 21

Comparisons of Educational Expenditures, Teacher Salaries, Student-Teacher Ratios, and Graduation Rates Among California, New York, Minnesota, and Michigan, 1983-84

	California	New York	Minnesota	Michigan
Expenditures per pupil in ADA ¹	\$2,912	\$4,845	\$3,376	\$3,498
Rank (expenditures/pupil)	31	3	17	15
State and local revenues as % of personal income	3.75%	4.93%	5.12%	5.01%
State and local expenditures for local schools as % of total government expenditures	22.16%	22.08%	23.77%	25.77%
Teacher salary	\$26,403	\$26,750	\$24,480	\$28,877
Students/teacher	24	16	18	23
High school graduation rate (% of ninth grade enrollment four years earlier)	69%	66%	89%	73%

¹Figures denoting expenditures per pupil include different programs and populations. Consequently they may vary from table to table, but, theoretically, are consistent within each set of data.

Source: Will S. Myers, Comp., et al., How States Rate: Measures of Educational Excellence (Washington, D.C.: National Education Association, 1984).

TABLE 22
Projections of Revenue Requirements Due to Rising Enrollment
and Inflation, 1985-90

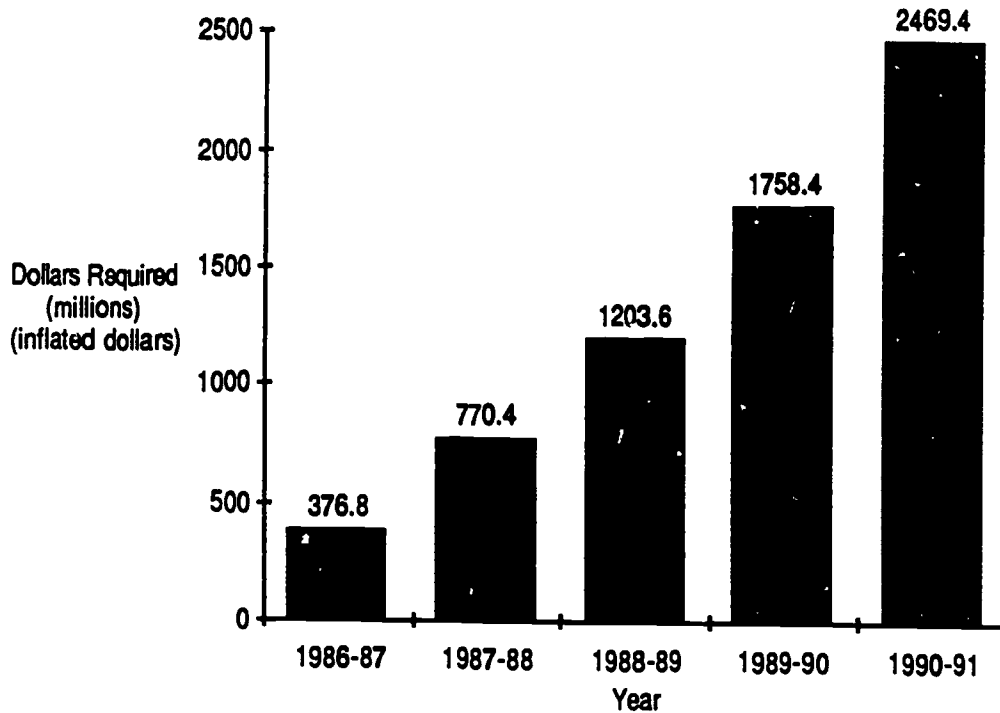
Year	Per ADA K-12 exp. (1985-86 \$)	Enrollment increase	ADA increase (ADA/enroll ratio=.9897)	Annual increase over previous year for enrollment growth (Inflated \$)	Annual increase for inflation of 1985-86 base	Annual increase for inflation & enrollment growth	Total annual revenue requirement (Inflated \$)	Increase over 1985-86 budget
				Millions	Millions	Millions	Millions	Millions
85-86	\$3,912							
86-87	\$3,912	92,699	91,744	\$376.8	\$867.8	\$1,244.7	\$18,601.4	\$1,244.7
86-87	\$3,912	87,795	86,891	\$393.6	\$911.2	\$1,304.8	\$19,906.2	\$2,549.5
88-89	\$3,912	88,050	87,143	\$433.2	\$956.8	\$1,389.9	\$21,296.2	\$3,939.5
89-90	\$3,912	105,105	104,022	\$554.8	\$1,004.6	\$1,559.4	\$22,855.6	\$5,498.9
90-91	\$3,912	126,082	124,783	\$710.9	\$1,054.9	\$1,765.8	\$24,621.4	\$7,264.7

Note: Projections assume a 5% inflation factor.

Source: Policy Analysis for California Education (PACE) analysis based on California State Department of Finance projections of enrollment increase.

FIGURE 27

Additional Revenues Required to Fund California
K-12 Enrollment Growth to 1990-91



Note 1: Enrollment figures do not include special education students in special classes, students in continuation classes, and other nongraded students.

Note 2: Figures are calculated based on a 1985-86 expenditure per ADA of \$3,912. They reflect an inflation factor of 5% per year.

Source: PACE analysis.

Funding Requirements

Projections of total funding requirements, again using a five percent inflation factor, indicate that by 1990-91, yearly expenditures for education may reach \$24.62 billion. If revenues to education are generated at a rate consistent with recent funding, the K-12 budget will cover both enrollment increases and inflation. For example, projections based on funding increases between 1982-83 and 1984-85 would provide a total of \$30.23 billion for education by 1990-91 (Table 23). However, if revenues increase at a rate more typical of the years 1979-80 to 1985-86, a total of only \$25.29 billion will be provided. This amount is just sufficient to provide the previously mentioned \$24.62 billion which is expected to be the minimum required to maintain existing levels of service.

It should also be noted that revenues for K-12 education are derived from several sources: federal funds, local property taxes, and state contributions (Table 24). Federal funding, currently 6.8 percent of the total, is declining from year to year and is unlikely to contribute to the supplementary revenues required. While local funds for education (26.1 percent of the total) are expected to expand, they should only be sufficient to fund a modest portion of growth in expenditures. Moreover, since Proposition 13 in 1978, local property taxes, with few exceptions, have been regulated by the state. In effect, this created a state property tax and restricted school board control over an ostensibly local source of school revenue. State contributions must provide the major increase in expected revenues. Only by this measure will real revenues per pupil be maintained at present levels.

It appears, then, that California may be able to provide sufficient revenues to maintain existing programs and also to compensate for vastly increased enrollments. However, in this scenario, California class sizes remain high, expenditures in dollars per ADA continue to trail national averages, and new school buildings, school buses, and other capital outlay purchases will be minimal. To compound matters, pressure to increase class size is likely to mount as enrollment increases.

Capital Outlay

In addition to program requirements, California has a substantial need for new and refurbished school facilities and new school buses. It has been estimated that in order to bring school facilities to an appropriate level of readiness and to provide a sufficient number of safe

TABLE 23

Projections of Revenue Available for K-12 Education
Based on Income Elasticities¹

Computing the Alternative Income Elasticities

Year	Total Funding K-12 Education ² (millions)	%Increase	State Personal Income ³ (billions)	%Increase	
79-80	\$10,981.6		\$229.3		
80-81	12,341.2	12.38%	259.6	13.21%	
81-82	12,615.4	2.22%	292.1	12.5%	
82-83	12,864.1	1.97%	311.0	6.47%	
83-84	14,144.2	9.95%	334.6	7.59%	
84-85	15,950.4	12.77%	369.3	10.37%	
85-86	17,356.7	8.82%	399.2	8.10%	
		Mean % increase ⁴		Mean % increase ⁴	Elasticity ⁵
79-80 to 85-86		44.9%		54.0%	0.832
81-82 to 84-85		23.35%		23.34%	1.000
82-83 to 84-85		21.42%		17.14%	1.250

Table 23 continued on next page.

TABLE 23
(continued)

Projections of K-12 Revenue Available Based on Three
Alternative Income Elasticities

Year	1979-80 to 1985-86 Elasticity =0.832	1981-82 to 1984-85 Elasticity =1.000	1982-83 to 1984-85 Elasticity =1.250	State Personal Income ³ (billions)	Percent Increase
85-86	\$17,357	\$17,357	\$17,357	\$399.2	
86-87	18,594	18,844	19,215	433.4	8.57%
87-88	20,029	20,592	21,443	473.6	9.28%
88-89	21,620	22,558	24,001	518.8	9.54%
89-90	23,361	24,741	26,903	569.0	9.68%
90-91	25,285	27,190	30,230	625.3	9.89%

¹For general methodology see, Jack W. Osman, Revenue and Expenditure for California K-12 Education 1985-86 through 1989-90, Policy Paper No. PP85-3-1 (Berkeley:Policy Analysis for California Education, 1985).

²Figures provided by the Legislative Analyst.

³State personal income (actual & projected) from "The UCLA Business Forecast for California," September 1980.

⁴Mean % Increase = $\frac{\text{end value} - \text{beginning value}}{(\text{end value} + \text{beginning value})/2}$

⁵Elasticities equal the ratio of the mean percent increase in K-12 revenue to the mean percent increase in state personal income.

Source: See notes one, two, and three.

TABLE 24

Percent Revenues for Elementary and Secondary Schools by Source, Selected Years

	United States			California		
	Fed.	Local	State	Fed.	Local	State
1969-70	7.2%	51.9%	40.9%	5.3%	57.4%	37.3%
1979-80	9.2%	42.0%	48.9%	9.7%	19.1%	71.2%
1982-83	7.4%	42.3%	50.3%	7.5%	26.1%	66.4%
1984-85	6.2%	44.8%	49.0%	6.8%	26.1%	67.1%

Sources: For 1969-70 through 1982-83, Advisory Commission on Intergovernmental Relations, Significant Features of Fiscal Federalism 1984 Edition (Washington, D.C.: Advisory Commission on Intergovernmental Relations, 1985), p. 43; for 1984-85, National Education Association. Estimates of School Statistics, 1984-85 (Washington, D.C.: National Education Association, 1985).

school buses, a total of between \$500 million and \$1 billion would be required in 1985-86 and an equivalent amount, adjusted for inflation, for each year up to 1990-91.

Funding for capital outlay is currently furnished by bond funds and tidelands oil revenues. These revenues are expected to total \$594 million in 1985-86, of which \$279 million is allocated in the budget proposal. An additional \$71.2 million from other sources is proposed for deferred maintenance. Although \$450 million will be raised from Proposition 26 bonds, a sum included in the above-mentioned \$594 million figure, these funds will be distributed over several years. It appears that only a little more than a quarter of funds needed for building and rebuilding are being made available each year.

Raising Expenditures to National Levels

Consideration has been given to the possibility of raising California's per-pupil expenditures to the national average and to the level of the top quartile nationally. Analyses indicate that this would require approximately \$707 million (national average) and \$4.68 billion (top quartile) per year by 1990-91.*

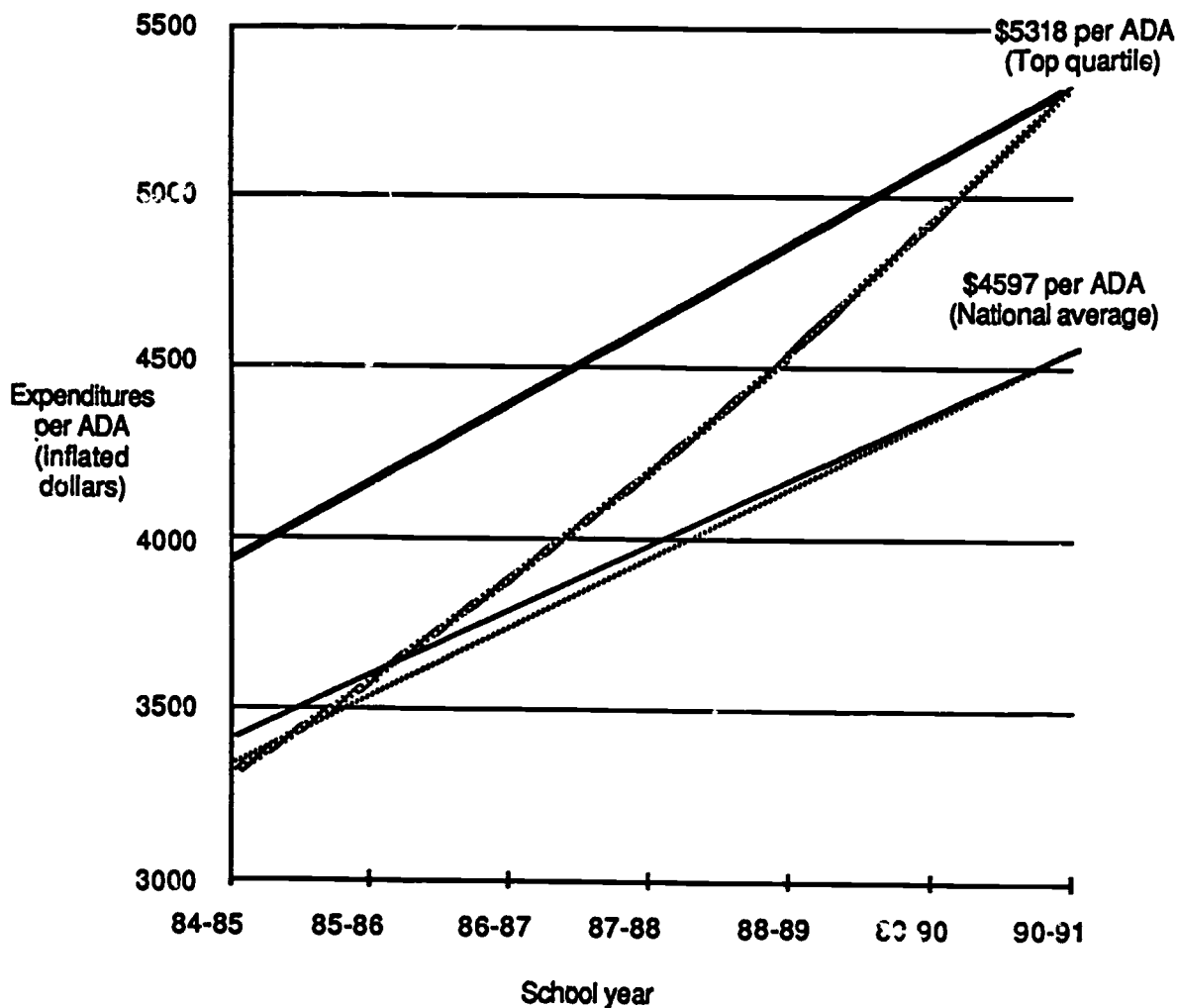
When these amounts are combined with projections for increases in enrollment and inflation, anticipated revenue requirements for 1990-91 become \$25.33 billion to raise expenditures to the national average and \$29.30 billion to reach the top quartile (Figures 28 and 29). Capital outlay expenditures would be additional.

Considering that budgeted revenues for 1985-86 total only \$17.36 billion, these numbers seem prohibitive. However, if California were to generate funding for education at the same rate it did over the period 1982-83 to 1984-85, a period when public education was the top state policy priority, revenues of \$30.23 billion would be provided, essentially meeting top quartile inflation adjusted levels and providing for building construction and bus purchases. If revenues are produced at the rate of the period 1979-80 to 1985-86, that is, if the average effort of the last six years continues, only \$25.29 billion will be generated, falling short of funding needed to meet national average goals.

*An assumption is made that average and top quartile levels, for the nation as a whole, increase only by inflation.

FIGURE 28

California Expenditures Per ADA Required to Reach the National Average and the Top Quartile by 1990-91



Source: PACE analysis (current per ADA figures provided by the State's Department of Education).

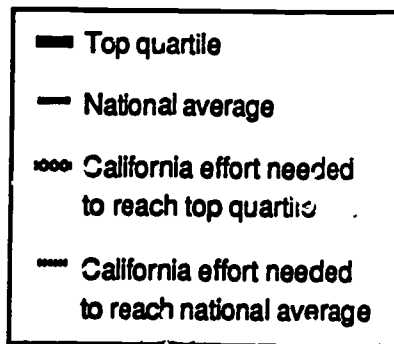
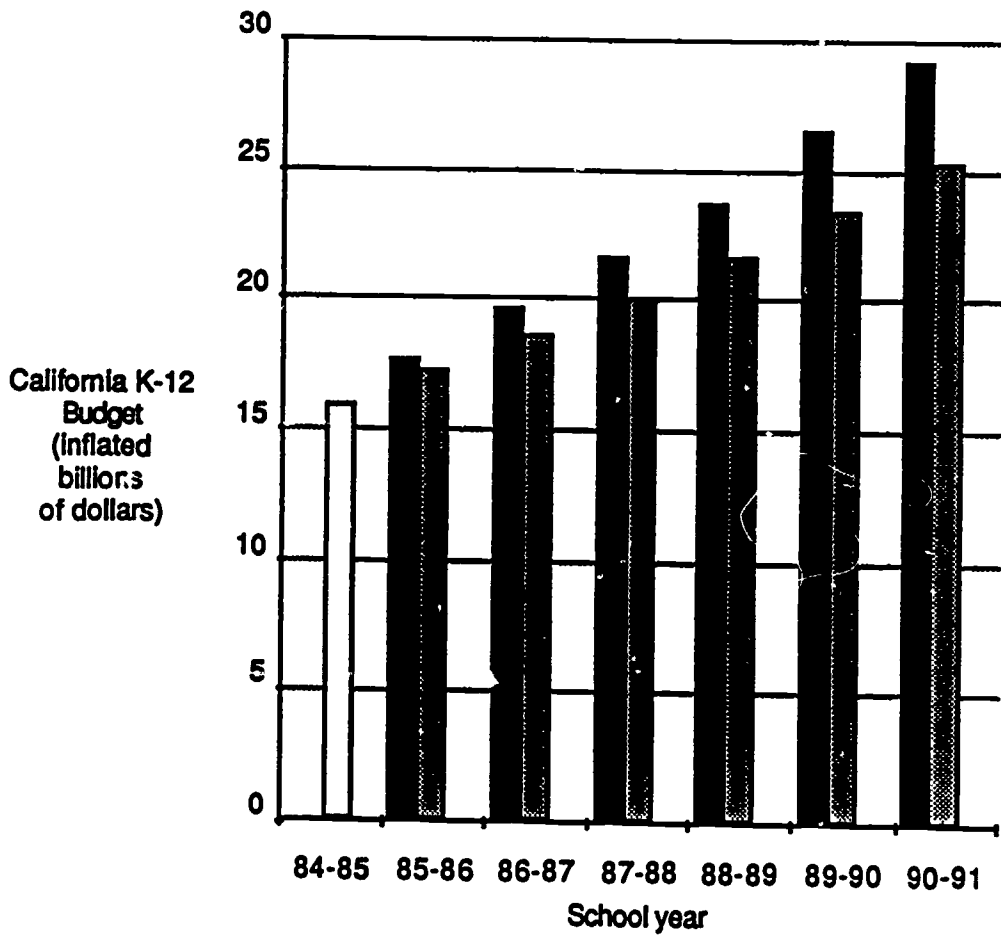
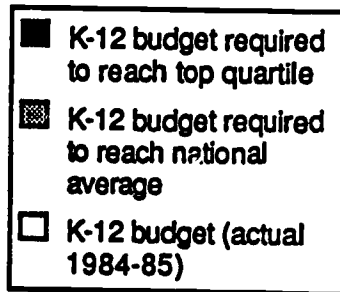


FIGURE 29

California K-12 Budget Required to Reach the National Average and the Top Quartile by 1990-91



Source: PACE analysis



The Lottery

In 1984, Californians voted to legalize a state lottery. The new law provides that education will receive approximately one-third of lottery proceeds, the remainder being allocated to administrative costs and payments to winners. Estimates have suggested that this might result in as much as \$400 million additional per year for K-12 school support.

At least for the 1985-86 school year, this is likely to be a substantial overprojection. The lottery was launched far later in the year than scheduled. In fact it is difficult to predict likely revenue increments from the lottery. However, even if the lottery is the financial success expected by its proponents, revenues for schools generated by the lottery will not provide the fiscal dividends California needs to meet enrollment increases, keep pace with inflation, repair buildings, and boost school quality.

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