CALIFORNIA
POSTSECONDARY
EDUCATION
COMMISSION

THE PRICE OF ADMISSION:

An Assessment of the Impact of Student Charges on Enrollments and Revenues in California Public Higher Education

Adopted
February 1980

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Comment	Segment	
The payment of fees [illegible] might im[illegible] [illegible] retention. [illegible]ast a minimal fee, such fees would be less likely to drop a course, drop out of school, or stop short of degree completion than a student who paid no fee.	Independent Colleges	
The report should examine the possible relationship between level of per capita expenditure on public higher education and the level of participation in public higher education, the argument being that some states spend less than California and may have participation rates that are as high.	Independent Colleges	Disag on th
The report advises against the adoption of either Option 2 or Option 4, but the $100 increase outlined in Option 2 would be a bargain for the educational consumer.	Independent Colleges	The rep any of t
The report implies on page 82 that a shift of a student from the public segments to an independent college or university should be counted as a loss of educational opportunity.	Independent Colleges	Disagree.

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Comment	Segment
The payment of fees, at least a minimal fee, might improve retention. A student who paid such fees would be less likely to drop a course, drop out of school, or stop short of degree completion than a student who paid no fee.	Independent Colleges
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Commission Staff Response

There is one study which suggests that the course-completion rate is lower at two-year colleges charging low or no fees than at two-year colleges charging more than $200 per year. One reviewer of that study opined, "It is tempting to observe that where the student invests little, little is risked, and to conclude that dropout tendencies are enhanced accordingly." Of course, the observed differences might stem from fewer high-risk students enrolling in the high cost schools in the first place. In any event, the data did not permit the study to reach any firm conclusion on the matter. Moreover, the similarity in the dropout rate at two-year colleges charging between $200 and $499 per year and those charging $500 or more suggest that little improvement in retention rates occurs when fees are raised at community colleges that already charge fees. See, Arthur M. Cohen, "Does Tuition Make a Difference?" Unpublished manuscript.

Disagree. Such an approach would shed very little light on the issues examined in the report.

The report scrupulously avoids either favoring or opposing any of the options it examines.

Disagree. No such implication was intended or made.

Comment	Segment
There should be an adjustment for inflation in the analysis because public university student charges have declined in constant dollars in recent years.	Independent Colleges
The report overstates the enrollment losses that would occur if fees were increased, because it assumes that students would receive no greater financial aid than in 1978-79.	Independent Colleges
The report ignores a number of important realities regarding student financial aid: (1) Federal student aid programs are cost responsive: the greater the amount of unmet need at an institution the more funds it receives from the federal campus-based programs. BEOG grants also increase by one-half the added cost-of-attendance. (2) The Middle Income Student Assistance Act begins this fall to supply BEOG grants to a large segment of students who never before received financial assistance from the BEOG program. (3) Cal Grant A and B awards are also cost responsive, dollar for dollar.	Independent Colleges
Substantial increases in student assistance funds would seem to be an almost certain quid pro quo if tuition were imposed.	Independent Colleges
The enrollment impact of higher fees should be estimated by making state-by-state comparisons between fee levels and participation rates.	Independent Colleges
A number of factors besides the cost of attending college affect the decision to enroll or not enroll; they also affect the choices students make as to which institution to attend.	Independent Colleges

Commission Staff Response

Where appropriate, adjustments for inflation are incorporated into the models used in the report. Commission staff disagrees, however, with the suggestion that the amount of any fee increase should be discounted for projected annual increases in the Consumer Price Index. To do so would be to assume that personal income keeps pace with increases in the CPI and that inflation hurts no one.

Disagree. The report has never assumed that in the event of a fee increase students would receive no greater financial aid than they received in 1978-79.

Disagree. The report has not ignored the student aid programs mentioned here. The federal campus-based programs were not counted among the automatic offsets to higher student charges because of the two-year lag between an increase in unmet need at an institution and the institution's receipt of additional federal student aid funds. The BEOG program, as modified by the Middle Income Student Assistance Act, and the Cal Grant A and B programs were incorporated into the models used in the report from the very outset.

While Commission staff agrees that some portion of the revenue generated by increased student charges probably would be used to provide additional financial aid funds, the amount of money available and the form in which the aid was distributed would depend upon the circumstances surrounding any decision to increase charges. Therefore, staff felt it was prudent to make the enrollment projections in the report on the basis of the provisions of existing financial aid programs, not contingent upon speculation about possible financial aid offsets from programs that do not exist and that might never materialize.

Disagree. The approach suggested here would not yield useful or reliable results.

Agree. This point has been made forcefully in the report already. See, for example, the second full paragraph on page 41 starting with the sentence, "Student charges are only one of the factors that determine who goes to college and they are by no means the most important. . . ."

Comment	Segment
University staff feels that different coefficients should be applied to different segments, and possibly different rates for part-time and full-time students.	University
Should tuition become necessary, the implications should be studied within the context of the specific imperatives--that is, how much money is needed, and what fee levels are required?	State University
While the review of the literature on enrollment declines in the report is instructive, the State University staff does not believe any research indicates what might happen if fees rose proportionately in all public segments--Community Colleges through the University--simultaneously. Would students continue in the same numbers, since there would be no "cheaper" alternatives, or would they not?	State University
More needs to be known about the economic situation of the part-time student and his or her educational objectives. This knowledge would increase the possibility of making assumptions about these students' price responsiveness.	State University
State University staff believes it quite possible that, should fees be increased, then public policy would return a portion in the form of financial aid.	State University
Any substantial increase in fees very likely would be instituted over a period of time. That is, any large fee increase would probably be phased in over several years.	State University
The report assumes that the segments might have to make budget paybacks due to enrollment losses stemming from increased fees. It is doubtful that a payback situation would arise in the State University system, which would revise enrollment projections downward in the event of a fee increase.	State University

Commission Staff Response

Disagree. To a great extent the models used in the report already take segmental variations into account, including differences in their current student charges, in the relative and absolute size of possible fee increases, in the income distribution of undergraduates, in the enrollment patterns of undergraduates (i.e., full-time, part-time, or less than half time), in the distribution of aid recipients under the provisions of existing student aid programs, and in the age distribution of students. It is important in this regard not to confuse differences in enrollment effects with differences in tuition elasticity coefficients.

Agree. As noted on page 79 of the report, "Obviously not all of the possible policy options are examined fully here." The important point is that the data base and the models developed in the report can be used to evaluate the enrollment and revenue implications of any proposal that might be made to alter student charges in the public segments.

Disagree. Most of the studies of the impact of cost on enrollment are based upon across-the-board price changes in all institutions simultaneously. While across-the-board cost increases would maintain the existing price differential between institutions and segments, and would tend to minimize enrollment shifts among public institutions, they would have some effect on the number of students enrolled.

Agree. Learning more about part-time students could further enhance our understanding of their enrollment behavior and objectives. It does not necessarily mean, however, that the attrition among such students would be markedly different from that projected in the report.

Agree. While the models used in the report could accommodate new student financial aid programs, no attempt was made to speculate as to what they might be or how much new aid money might become available if new laws were passed.

Whether or not a substantial increase in fees would be phased in over several years would depend upon the circumstances surrounding any decision to increase fees.

Perhaps. At issue here is not the amount of the budget reductions or paybacks that enrollment losses would produce, but when these reductions (or paybacks) would take place.

Comment	Segment
The report assumes that the segments would be allowed to keep the additional revenues generated by higher student charges, but this may not be the case. The State University feels that the reality would probably be either (1) the State retaining, in effect, all income as an offset to the existing level of expenditures per student, or (2) at best, some kind of compromise through which the segment would receive a portion of the fee receipts.	State University
The staff of the Community College Chancellor's Office feels that policy makers might be misled should the assumed price or tuition-elasticities of enrollment response in the report prove to be seriously underestimated.	Community Colleges
Two studies by the Community College Chancellor's Office suggest that a $100 increase in fees would produce a much greater decline in Community College enrollments than predicted in the report. (The studies cited are a December 1978 questionnaire which asked students what they might do if fees were raised by various amounts, and a 1976 study by the Analytical Studies Unit of college-going rates and student charges, per capita income, etc.).	Community Colleges
The staff of the Community College Chancellor's Office believes that some students would be more adversely affected than others by a fee increase: i.e., females, minority students, students from families earning less than $12,000 per year, students who earn less than $5,000 per year, and part-time students.	Community Colleges
Typical Community College students would be more responsive to cost increases than the typical students in four-year institutions, who are younger and usually enrolled full time.	Community Colleges
Perhaps "net price" should be defined more clearly in the report. Does it mean cost-of-attendance minus student assistance grant funds received? Or does it have to do only with student fees and tuition?	Independent Colleges

Commission Staff Response

Perhaps:

Commission staff agrees that policy makers might be misled if the report seriously overestimated or underestimated the enrollment response of students. Staff feels, however, that the projections contained in the report are reasonably accurate.

Both of the studies cited by the Chancellor's Office contain flaws that bias their estimates of Community College enrollment losses upward. Questionnaires like the one used in December 1978 are notoriously unreliable because they invite exaggerated predictions of dire consequences by students who are unsure of what they might actually do. The 1976 study contains higher estimates of enrollment losses than the Commission report because it, unlike the report, does not take into consideration any of the existing student financial aid programs.

Agree. Commission staff feels the report demonstrates clearly that some students would be affected more adversely than others if student charges were increased.

Agree. This is why a different model was used in the report to assess the price responsiveness of Community College students than was used for students in the public four-year segments. See pages 49, 50, and Appendix A.

The report focuses on "net price increases" rather than "net price" per se. The former term refers to the magnitude of any increase in tuition and required fees minus any additional student assistance grant funds received from existing programs.

Comment	Segment
University staff questions the assumption which would preclude the use of some of the revenue raised by tuition to expand financial aid. [pp. 24-25,43]	University
The assumption on page 43 that "all three segments of public higher education would be considered together and the impact of any proposal on every segment would be weighed" needs to be clarified. The University staff would not want this assumption interpreted to mean that all public segments should employ the same method for setting fees or that all segments would have to respond in the same way should fee increases become necessary.	University
The report suggests a serious impact on access to the State University and the Community Colleges under Options 3 and 4, but the report does not devote sufficient attention to the possible uses and benefits that substantial increases in net revenues would provide.	University
If fee revenues could be used for financial aid (as is done with the University's Educational Fee) and that aid were available for part-time students, enrollment declines might be averted, or certainly moderated well below the levels suggested in the report.	University
University staff does not understand why, under Options 3 and 4, it appears that Cal Grant would no longer offset the total fee increase for full-time, low-income students.	University

Commission Staff Response

Agree. The draft report has been revised, and the final report reflects this view. See, pages 24-25, and 43.

Commission staff would not want this assumption misinterpreted either.

The substantial increases in net revenues for the public segments under Options 3 and 4 are duly noted in the report, but staff felt it would be inappropriate to suggest how the segments should use those revenues.

Agree. A portion of the increased fee revenues might be used to provide additional financial aid. However, the amount of money available for financial aid and the amount available for other purposes would depend on both the size of the fee increase and the percentage of the revenues allocated for each purpose. In turn, the impact on enrollment would depend on the size of the fee increase, the amount set aside for additional financial aid, and the way in which the new aid funds were distributed. Commission staff felt there were too many possible variations for it to speculate on which option might be selected by each segment. Furthermore, neither the State nor the federal student aid programs currently provide any financial aid to students enrolled for less than a half-time load. It is not clear to staff whether or not the University is proposing that the segments do so.

Under all the options tested in the report, the models assumed that the full amount of any fee increase would be offset for current Cal Grant A recipients and for current Cal Grant B renewal students. The reason that the full amount of the fee increases under Options 3 and 4 were not offset for all full-time, low-income students is that many of them do not have Cal Grant awards and the BEOG program offsets no more than half of the increase for such students

TABLE 27

REVENUE IMPACT OF ADOPTING OPTION 4 FOR STUDENT CHARGES
IN THE THREE PUBLIC SEGMENTS

INCREASE IN GROSS REVENUES

Segment	Gross Revenues	Sources of Revenues Paid as Student Fees		
		Students	State	Federal BEOG
University	$11,932,610	$5,322,934	$1,763,876	$4,845,800
State University	$89,708,060	$35,319,455	$6,513,090	$47,875,515
Community Colleges	$243,567,360	$160,832,452	$2,368,640	$80,366,268
TOTAL	$345,208,030	$201,474,841	$10,645,606	$133,087,583

NET REVENUE INCREASE

Segment	Gross Revenues	Budget Reductions		Net Revenue Increase
		Same Year	Following Year	
University	$11,932,610	$ 0	$440,550	$11,492,060
State University	$89,708,060	$39,857,542	$4,997,691	$44,852,827
Community Colleges	$243,567,360	$85,441,572	$14,858,532	$143,267,256
TOTAL	$345,208,030	$125,299,114	$20,296,773	$199,612,143

exact data from the Commission's information system were used wherever possible, the best available data were used where necessary. Certain assumptions had to be made to complete workable models and to secure some of the information needed for certain formulas. The assumptions incorporated into the models are specified in each instance so that technical adjustments or corrections which might later prove necessary could be made. The results reported on the tests of each option in the following sections represent the best possible estimate given the inherent limitations of current knowledge. None of the figures should be accepted uncritically, nor should they be dismissed out of hand. They provide reasonably accurate approximations of the likely enrollment and revenue implications of possible changes in student charges in California public higher education.

TABLE 8

TUITION AND FEES AT THE CALIFORNIA STATE UNIVERSITY AND COLLEGES AND THEIR PUBLIC COMPARISON INSTITUTIONS, 1977-78 AND 1978-79

University or College	Resident Tuition and Fees 1977-78	Resident Tuition and Fees 1978-79	Nonresident Tuition and Fees 1977-78	Nonresident Tuition and Fees 1978-79
Bowling Green State	$ 870	$ 945	$2,070	$2,145
Illinois State University	704	--	1,704	--
Indiana State University	795	840	1,650	1,785
Iowa State University	735	735	1,701	1,701
Miami University (Ohio)	1,020	1,130	2,320	2,530
No. Illinois University	720	800	1,720	1,800
Portland State University	736	795	2,329	2,837
Southern Illinois University	690	690	1,728	1,728
SUNY-Albany	791-941*	791-941	1,241-1,541	1,241-1,541
SUNY-Buffalo College	791-941	791-941	1,241-1,541	1,241-1,541
University of Colorado	800	845	2,600	2,845
University of Hawaii-Manoa	478	478	1,153	1,153
University of Nevada-Reno	660	690	2,160	2,190
University of Oregon	740	789	2,489	2,637
University of Wisconsin-Milwaukee	748	838	2,698	2,972
Virginia Polytechnic Institute and State University	627	790	1,257	1,555
Wayne State University	978-1,065	1,074-1,169	2,646-2,889	2,643-2,882
Western Michigan University	765	765	1,725	1,730
AVERAGE FOR COMPARISON INSTITUTIONS	$ 772	$ 822**	$1,947	$2,059**
AVERAGE FOR CSUC	$ 200	$ 205	$1,766	$1,915

*The hyphenated figures are for lower-division and upper-division students at institutions that have different charges for the level of the student.

**Average based on seventeen rather than eighteen institutions because the figures for one was not available for 1978-79. This probably produces a very slight upward bias to the 1978-79 averages.

Source of Data: State of Washington Council for Postsecondary Education, Tuition and/or Required Fees (January 1979) and calls by Commission staff to each institution.

Table 8 reveals that there is a much greater disparity between the student charges at the nineteen campuses of the State University system and those at its eighteen comparison institutions. The least expensive of the comparison institutions charges resident students more than three times as much as does the most expensive State University campus. For nonresident students, the differential is much narrower. Nevertheless, the charges for resident students at the State University are 75.1 percent lower than the average at the comparison institutions, and for nonresident students 7.0 percent lower. These differences are much more substantial than the ones between the average University of California campus and its public comparison universities.

The California Community Colleges also stand out as exceptions. Table 9 summarizes the average student charges in selected states, although there is often considerable local variation within each

TABLE 9

AVERAGE RESIDENT AND NONRESIDENT STUDENT CHARGES
FOR COMMUNITY COLLEGES IN SELECTED STATES,
1977-78 and 1978-79

State	Residents 1977-78	Residents 1978-79	Nonresidents 1977-78	Nonresidents 1978-79
Arizona	$121	$146	--	$1,594
CALIFORNIA	-0-	-0-	--	1,500
Colorado	360	360	--	1,323
Florida	339	375	--	780
Illinois	418	405	--	2,001
Michigan	436	464	--	729
New York	722	722	$1,394	1,394
Oregon	345	381	--	1,520
Texas	--	120	--	400
Washington	286	306	--	1,188

Source of Data: State of Washington Council for Postsecondary Education, Tuition and/or Required Fees, (January 1979).

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THE PRICE OF ADMISSION

AN EXPLANATION OF THE COMMISSION'S REVISED ENROLLMENT, STUDENT AID, AND REVENUE PROJECTION MODEL

INTRODUCTION

The Education Code charges the California Postsecondary Education Commission with a general responsibility to examine the "impact of various types and levels of student charges on students and on postsecondary educational programs and institutions" as part of its on-going planning efforts.

In order to assess the enrollment effects and revenue implications of various increases in student charges, a model was developed that could be applied to public higher education in California. In developing this model, Commission staff examined all the major state and national studies of student demand and student choice. Relevant findings from the best of these studies were adapted to California's situation. After the preliminary model was developed, it was subjected to an intense, four-month long review by interested student organizations, the staffs of the central offices of the three public segments, the staff of the Association of Independent California Colleges and Universities, the director of the economic research division of the Education Commission of the States, and several economists at the Brookings Institution in Washington, D.C. Various modifications were suggested to Commission staff during this process, and a number were incorporated into a report, The Price of Admission: An Assessment of the Impact of Student Charges on Enrollments and Revenues in California Public Higher Education. Nevertheless, the ultimate responsibility for the models, and the content of the report rests with the Commission and its staff. The report was adopted by the Commission in February 1980.

This report was not written in anticipation of Proposition 9, a ballot initiative which would cut the State's personal income-tax rates by 50 percent. As a result, few of the options tested involved student fee increases of the magnitude that the passage of that measure might entail. Consequently, the original model was modified to simulate the enrollment, revenue, and student aid implications of a wider range of increases in student charges. Before this could be done, answers to a number of additional questions were needed: (1) What would the likely revenue shortfall be for the three public segments?; (2) What portion of the shortfall would be covered by program and budget reductions and what portion would be passed on to students in the form of higher fees?, (3) What would the new fee levels be?; (4) Under the provisions of existing student financial aid programs, what portion of the fee increases would be offset for

needy students?; (5) What would the likely enrollment losses be if only these forms of financial aid were available?; and (6) What levels of additional student aid beyond that supplied by existing programs would be required to ensure access to higher education?

To facilitate more effective analysis of a wider range of policy options, the original enrollment projection model was modified where necessary. All the original variables were retained, but additional elements were added for analyzing graduate and professional student enrollment behavior and for assessing additional student aid needs. These changes were made after consultation with staff from the three public segments, the Department of Finance, and the Office of the Legislative Analyst. As a result, the model now provides a more complete assessment of the enrollment, student aid, and revenue implications of increased student charges.

What follows is a detailed description of all of the major components of the model, the assumptions underlying its estimation procedures, and the changes that have been made since publication of The Price of Admission.

SPECIFIC COMPONENTS OF THE MODEL

Assessing Enrollment and Student Aid Effects

1. The Tuition Elasticity of Enrollment Demand

Tuition elasticity is defined as the percent change in enrollment produced by a 1 percent change in net price It is this measure that enables us to apply the findings from national studies to the distinctive price and enrollment characteristics of California public higher education.

Evaluating the impact of different price levels on enrollments in different kinds of institutions depends on the use of this measure. The model uses the tuition-elasticity concept to assess the enrollment impact at the University of California and the California State University and Colleges.*

*The model uses the tuition-elasticity concept for the University and State University in an equation with the following general form

$$100(\Delta E_i/E_i) = \alpha_i(\Delta C_i/C_i)$$

Where,

$100(\Delta E_i/E_i)$ = The percent change in enrollment for a particular type of student for a given change in student charges for that type of student.

E_i = The current headcount enrollment for that type of student

α_i = The coefficient of tuition elasticity for that type of student.

ΔC_i = The net increase in charges paid by that type of student.

C_i = The current charges paid by that type of student.

Because student charges in the California Community Colleges are essentially zero, and because the results of dividing any equation by zero are undefined, a different kind of equation was required for that segment.

The reader does not have to understand any of the formulas in the model in order to comprehend the assessments of various options that the model makes possible. The formulas are provided only for those who are interested in the specific ways in which the computations are made.

2. The Effect of Family Income on Tuition Elasticity

Almost all the studies examined in researching The Price of Admission concluded that students' responsiveness to changes in student charges varied depending upon family income level. (Graduate students present a special problem and will be discussed in more detail later.) While not all studies agree on the magnitude of the variations among undergraduates, it appears that low-income undergraduates are approximately twice as price responsive as middle-income undergraduates. High-income undergraduates are about two-thirds as responsive as middle-income undergraduates. Therefore, the following coefficients of tuition elasticity are utilized for undergraduates in the model:

TABLE 1

TUITION ELASTICITY COEFFICIENTS BY INCOME LEVEL

Income Level	Coefficient
Low Income (Under $12,000)	-0 436
Middle Income ($12,000 - $24,999)	-0.218
High Income ($25,000 and above)	-0 146

3. Source of Family Income Information For Each Segment

The data on family income are taken from the 1975 Student Resource Survey, published by the California Student Aid Commission. The information is several years old, but more recent data are not yet available. Furthermore, while the sampling techniques used for State University and Community College students have been improved considerably for the Student Resource Survey, now underway, no better or more accurate information on this subject will be available before June or July. Moreover, after adjusting the results of the 1972 Student Resource Survey for changes in the Consumer Price Index,

the results of the 1972 and 1975 Surveys are comparable This suggests either that a consistent bias exists in these two Surveys or that they are reasonably accurate. This report adopted the latter conclusion. It continues to use the 1975 family income data as the best approximation currently available of the actual income distribution within each segment and adjusts the figures for changes in the Consumer Price Index between December 1974 and December 1978. The results are summarized in Table 2. When the results of the new, 1980 Student Resource Survey become available, the income distribution data in the model will be updated.

TABLE 2

PERCENTAGE DISTRIBUTION OF UNDERGRADUATES BY FAMILY INCOME LEVEL AND BY SEGMENT, 1978.

Income Level	University	State University	Community Colleges*
Low Income (Under $12,000)	16.7%	31.2%	38.4%
Middle Income ($12,000-$24,999)	37 3	42.5	38.0
High Income ($25,000 and Above)	46.0	26.3	23.6
Mean Income	$23,965	$18,530	$17,095
Median Income	$23,500	$17,000	$15,500

*Based on full-time students only.
Source of Data: California Student Aid Commission, Student Resource Survey, No. 2 (August 1976), p. 35. Figures adjusted for C.P.I. changes between December 1974 and December 1978.

4. Distinctions Based Upon Student Level and the Addition of Graduate Students to the Model

A major change in the revised model was the introduction of distinctions based on student level. It was evident during the budget planning process that graduate students could not be omitted from any enrollment, student aid, and revenue projection models despite the paucity of empirical data on their price responsiveness, income distribution, financial aid needs, etc. The inclusion of

graduate students and the differentiation among undergraduates explicitly recognizes the possibility of different price increases for students at different academic levels, and facilitates the simulation of the effects that such policies would have. The model includes differentials for lower division undergraduates; upper division undergraduates; master's degree students; Ph.D. degree students, health science professional students (those in medicine, dentistry, and veterinary medicine); and other professional students in the public four-year segments Each of the graduate levels has its own distinctive credit-load patterns and tuition elasticities At present, both across-the-board increases in student charges or any combination of increases by student level can be simulated by the model In each instance, the enrollment, student aid, and revenue implications are assessed for each option.

5. Distinction Between Resident and Nonresident Students in the University and State University

Nonresident, or out-of-state, students are charged the same fees as California students plus a nonresident tuition fee. In the University, nonresident tuition increased from $1,905 per year in 1978-79 to $2,400 in 1979-80. No further increases have been adopted for the coming year, 1980-81 In the State University, nonresident tuition increased from $1,710 in 1978-79 to $1,800 in the current year, and it is scheduled to increase to $2,160 in 1980-81. Any increase in charges for resident students would be added to the increases adopted for nonresident students Consequently, since both the current charge and the size of any future increase would vary between resident and nonresident students, the enrollment effects of such a change would also vary This holds true for both undergraduates and graduate students.

6. Distinctions Between Full-time and Part-time Students For Fee Purposes

The model continues to recognize the existing differences in the credit-load distribution of students in the different segments As noted in The Price of Admission, it is assumed that any increase in student charges in the University would apply to both full- and part-time students. It is also assumed that any increase in the State University would reflect the existing distinction in student charges In other words, students taking six or fewer units would face fee increases that were approximately 80.0 percent of what students taking more than six units would be charged. It is also assumed that Community College students would be charged on some basis that recognized the large number of part-time students in that segment. The model therefore assumes that Community College students taking six or fewer units would be charged 60.0 percent of what those taking more than six units are charged. Of course, at the

undergraduate level, the net price increase faced by students in all three segments also depends on differences in aid eligibility between full- and part-time students.

7. The Middle Income Student Assistance Act (MISAA) and Eligibility For Basic Educational Opportunity Grants (BEOG)

Over the last decade the federal government has dramatically increased its commitment to provide student financial aid. The most recent action was the passage of the Middle Income Student Assistance Act, which took effect in 1979-80. In an effort to provide financial assistance to students from middle-income families, as well as to those from low-income families, Congress modified the way in which parental assets were treated and changed the basis for computing the standard parental contribution. The result was to raise the family income ceilings for aid eligibility. In 1978-79, for example, it was rare for a dependent student from a family of four to receive a BEOG grant if his or her parents' taxable income exceeded $15,000 per year. In 1979-80 under the MISAA, a student from a family of four with an annual income of up to $25,000 could be eligible for at least a minimum BEOG grant of $200.

The situation is different for part-time undergraduates from these same income groups. First, those students taking fewer than six units per term are not eligible for financial aid no matter how low their family income. Second, those taking from six to eleven units are eligible, in theory, for a fraction of what full-time students with comparable family incomes receive. In practice, however, the percentage of part-time undergraduates receiving any BEOG funds has been quite limited.

Congress also provided sufficient funds to raise the maximum BEOG grant from $1,600 to $1,800 per year, or one-half of the cost of attendance, whichever is less. Congress also liberalized the provisions of the law affecting full- and part-time independent (self-supporting) students, and after several last minute complications were overcome, the independent-student provisions went into effect in the 1979-80 academic year as well.

If undergraduate student charges were increased, the additional financial need created would only be offset partially by an increase in BEOG funds. Indeed, even under optimum conditions, the State could not expect that any more than one-half of the additional financial need of full-time undergraduates from low-income families would be offset by BEOG monies, even with full funding for the program. Due to the recent changes in the law, however, most full-time students from middle-income families were eligible for a BEOG grant for the first time in the 1979-80 academic year. For many of them, this would have had the effect of offsetting almost the entire

amount of any increase of up to $200. The implementation effect of MISAA was maintained in the model as a carry-over effect for the 1980-81 academic year as well. In subsequent years, however, the size of the BEOG grants that most middle-income students would receive would not increase appreciably if charges were increased. Even now, students from high-income families would have to pay the entire amount of any increase themselves. Moreover, most part-time undergraduates, regardless of their family income, could not count on much, if any, additional financial aid.

Graduate students could not count on any automatic increases in financial support from the federal government either There are no federal programs comparable to the BEOG entitlement program that would provide financial assistance to graduate and professional students in the event that fees were increased.

The enrollment projection model was designed to take all these eligibility factors into consideration in determining the net cost increases that different kinds of undergraduate and graduate students would face if charges were raised. To do so, the model incorporates the financial aid offsets that the BEOG entitlement program would provide to eligible undergraduates, computes the net price increase students at each of thirty income levels would face, and then calculates the enrollment losses that might occur if no additional financial aid increases beyond those of the BEOG program were provided.

8. California's State Student Aid Programs and Current Cal Grant A and Cal Grant B Recipients

The current Cal Grant A and Cal Grant B programs administered by the California Student Aid Commission assist students in both public and independent institutions. The number of awards is fixed by statute, and the original model in The Price of Admission assumed that only current recipients could count on additional financial aid from this source in the event of increased student charges. In that study it was assumed that Cal Grant A recipients, including those who were among the Community College reserve winners, would have the entire amount of any fee increase offset by the State. New Cal Grant B winners, however, do not receive any money from the State to cover student charges during their first year. Since most of these students are from disadvantaged, low-income families, they would probably qualify for a BEOG grant that would cover approximately one-half of any fee increase during their first year Moreover, the original study assumed these students would have the entire amount of any increase covered by the State after the first year. Table 3 shows the number of Cal Grant A and Cal Grant B recipients currently enrolled in each of the public segments. The figures are broken down by family income level Furthermore, the figures for Cal Grant B

indicate the number of recipients who would be eligible to have a fee increase offset by their grant and the number who would not.

TABLE 3

CURRENT CAL GRANT A AND CAL GRANT B RECIPIENTS
BY FAMILY INCOME AND SEGMENT, 1978-79.

CAL GRANT A

Income Level	University Number	University Percent	CSUC Number	CSUC Percent	CCC Number	CCC Percent
Under $12,000	3,536	29.43%	3,076	36.31%	3,688	100.00%
$12,000-$24,999	7,432	61.85	4,973	58.71	-0-	0.00
$25,000 and up	1,048	8.72	422	4.98	-0-	0 00
TOTAL	12,016		8,471		3,688	

CAL GRANT B

Under $12,000	2,400	98.30%	3,592	97 00%	3,658	98.50%
$12,000-$24,999	42	1.70	111	3 00	56	1.50
$25,000 and up	-0-	0.00	-0-	0.00	-0-	0.00
TOTAL ELIGIBLE	2,442		3,703		3,714	
TOTAL RECIPIENTS	3,427		5,521		7,805	

Source of Data: California Student Aid Commission, Commission Agenda (October 1979). Also based on conversations between California Postsecondary Education Commission staff and Don Hills, Research Director, California Student Aid Commission.

Anticipating the possible passage of Proposition 9, the Department of Finance asked the Student Aid Commission and all other State agencies to prepare contingency budgets reflecting a 30 percent cut in funds Under such circumstances, the assumptions in The Price of Admission about the ability of the Cal Grant programs to increase the grants, even of current recipients, appeared overly optimistic. Consequently, the estimates of the financial aid offsets these programs could provide were revised downward. The model now assumes that currently eligible Cal Grant A and Cal Grant B recipients would not automatically receive any larger grants than at present.

9. Estimates of the Amount of Additional Financial Aid Needed From the State in the Event of a Fee Increase

The projections of financial aid offsets incorporated into the original model were based solely on the provisions of existing student financial aid programs. That is, the model projected the enrollment losses that would occur if only existing undergraduate aid programs and the "automatic aid offsets" of the BEOG program were available to assist needy students The Price of Admission observed that if the State were to provide additional aid money, or if a portion of any fee increase were set aside by each segment to provide additional financial aid for its students, "the enrollment losses would be reduced somewhat from the levels projected here." Yet, while the report noted that "the model could accommodate new student aid programs, no attempt was made to speculate as to what they might be."

Because of the State's commitment to maintaining access and because of the uncertainty over the funding levels for the Cal Grant programs, more precise estimates of additional student aid needs seemed imperative. One of the major improvements in the original model was the development during the budget planning process of a procedure for estimating the total new financial need that any fee increase would create for BEOG-eligible students. BEOG eligibles were selected for two reasons. First, even allowing for the extension of BEOG eligibility as a result of the MISAA, the greatest unmet need would still occur among low-income undergraduates, primarily among those from families with annual incomes under $12,000. Second, the BEOG need analysis system was already incorporated into the model in the computation of net price increases and aid offsets. Thus, after defining the total unmet need among BEOG-eligible undergraduates, the revised model computes the amount that would be offset by the BEOG program if State funds were provided to induce more of the neediest BEOG eligibles to remain enrolled. The additional undergraduate financial aid figures calculated by the model indicate the amount of additional financial aid necessary from the State to offset that portion of the fee increases not covered by federal funds. This is the amount required to assist all needy, BEOG-eligible students carrying more than a half-time load. The model then estimates the amount of attrition among these students that could be prevented if additional State aid dollars were provided. A 2.0 percent slippage is assumed among BEOG eligibles even if all their unmet need were covered.

The financial aid estimates for graduate students are based on the amount of money necessary to permit the two four-year segments to provide financial assistance to 10.0 percent of their full-time graduate students. The size of each grant would be equal to the full amount of any fee increase. This would enable the two segments to

meet the financial aid needs of some of their most needy and most highly qualified graduate students and help to maintain the overall quality of their graduate programs.

The new financial aid estimates are then used by the model to make revised projections of the enrollment losses that might occur if such funds were made available. Because of the federal financial aid funds involved, the provision of additional aid monies by the State reduces the enrollment losses and at the same time generates additional fee income for the segments.

10. The Community College Case

Estimates of the enrollment impact of increased student charges in the Community Colleges are subject to a much higher degree of uncertainty than those for the four-year segments. Both the undergraduate/graduate and the resident/nonresident distinctions are largely irrelevant in this segment. Currently, data on income distribution exist only for full-time students. With the completion of the 1980 Student Resource Survey, however, more comprehensive information will be available Almost all the national studies of the price responsiveness of students focus on traditional undergraduates between the ages of eighteen and twenty-four, but the Community Colleges also enroll large numbers of older students. The existing evidence suggests, moreover, that older students are more price responsive than younger ones, and that low-ability students are more price responsive than high-ability students. Finally, the current tuition-free status of California's Community Colleges makes projections based upon tuition-elasticity coeffecients impossible to compute.

The model used to assess the impact of increased student charges on full-time Community College student enrollment recognizes that there are important similarities between these students and full-time lower division students at the State University. The average credit load of the two groups was almost identical in Fall 1978, the income distribution was quite similar, and the average age was very close.

The model for part-time Community College students is different, however, because these students are quite distinctive. The Commission's model is based on the research of Bishop and Van Dyk on the factors affecting adult enrollment in higher education, particularly in community colleges. Among the variables they identified were tuition or cost, proximity of a two-year college, the existence of an open-door admissions policy, student charges at nearby four-year institutions, veteran's status, occupation, number of children, age, local unemployment rates, and income.

Bishop and Van Dyk used a conditional logit equation to corroborate their findings. Their logit coeffecients for the effect of tuition on enrollments were used in the Commission's model. Because these nonlinear coeffecients could not be adjusted for changes in the Consumer Price Index between 1970 and 1978, the net increases in student charges were adjusted instead Moreover, adjustments were made to reflect differences in the price responsiveness of part-time students from low-, middle-, and high-income families.*

Assessing Revenue Effects

There are five major components to the revenue model· (1) the tuition revenue generated from higher fees if no new financial aid programs are created, (2) the enrollment-related budget reductions that would occur if no new aid were provided, (3) the estimate of the amount of new State aid needed to assist the neediest, BEOG-eligible undergraduates and 10 percent of the full-time graduate students, (4) the net tuition revenue generated from higher student charges if additional State financial aid were provided, and (5) the net enrollment-related budget reductions that would occur if the new aid were provided.

*The equation used here for assessing the enrollment impact of increased charges on part-time Community College students was a logarithmic equation of the following general form.

$$100\Delta E/E = (1-P)\ (e^{\alpha\Delta x} - 1)/[(1-P) + Pe^{\alpha\Delta x}]$$

Where

$100\Delta E/E$ = The percent change in enrollment produced by a given increase in student charges.

P = The participation rate of that particular type of Community College student.

α = The logit coefficient for tuition and fee effects for that particular type of Community College student.

Δx = The net increase in student charges expressed in increments of $100 and adjusted for CPI changes between 1970 and 1978.

e^x = The natural antilog. It raises 2.71828 to the xth power. In this case x equals the value of $\alpha\Delta x$.

1 Estimating the Tuition Revenue That Would be Derived From Increased Student Charges if no New Aid Programs Were Created

The computation of the tuition revenue generated in each segment by an increase in student charges involves not only multiplying the amount of the increase by the number of students remaining to pay it, but subtracting the amount of the current charges paid by those students who leave because of the increased charges *

*For example, the tuition revenue generated in each segment by a $100 increase in student charges can be calculated from the following formulas

$$R_{UC} = \$100(E-E') + \$100(E_{nr}-E_{nr}') - \$724(E') - \$3,124(E_{nr}')$$

$$R_{CSUC} = \$100(E_f-E_f') + \$80(E_p-E_p') + \$360(E_{nr}-E_{nr}') - \$205(E_f') - \$175(E_p') - \$2,005(E_{nr}')$$

$$R_{CCC} = \$100(E_f-E_f') + \$60(E_p-E_p')$$

Where

R = The additional gross revenue generated in the segment designated by the subscript

E = The resident undergraduate enrollment in the University regardless of credit load

E' = The resident undergraduate students in the University who would leave because of an increase in student charges.

E_{nr} = The number of nonresident undergraduate students currently enrolled in that public segment.

E_{nr}' = The number of nonresident undergraduate students who would leave because of the increase in student charges

E_f = The number of resident undergraduates taking more than six units of course work per term

E_f' = The number of resident undergraduates taking more than six units of course work per term who would leave because of the increase in student charges.

E_p = The number of resident undergraduate students taking six units or less per term.

E_p' = The number of resident undergraduate students taking six units or less per term who would leave because of the increase in student charges.

2. Estimating the Enrollment-Related Budget Reductions That Would Occur if no New Aid Were Provided

Enrollment losses are taken into consideration in calculating the tuition revenue that would be generated by increased student charges. However, they enter into the revenue calculations a second time because the State's funding formulas for each segment are enrollment sensitive. The State budget formulas are based on Full-Time Equivalent (FTE) students, not on headcount enrollment. Thus, enrollment-related budget reductions are computed by (1) converting the projected headcount enrollment losses into FTE enrollment losses, and then (2) multiplying the number of FTE lost by the State General Fund expenditure per FTE in each segment The FTE conversions in the model are based on the average credit load of students in each of the credit-load categories at each student level.* The FTE conversions are not made by applying a single FTE conversion factor to all students. The figures used for the State General Fund expenditure per FTE, or ADA in the case of the Community Colleges, are for the incremental, or marginal, rate per FTE. Currently, these are $3,000/FTE for the University, $1,800/FTE for the State University, and $1,275/ADA for the Community Colleges.

3 Estimating the Amount of New State Aid Needed to Assist the Neediest, BEOG-Eligible Undergraduates and to Assist 10 Percent of the Full-Time Graduate Students

The method used to estimate the additional financial aid required was discussed in detail earlier. The new financial aid estimate is used in the model to make revised projections of the enrollment losses that would occur if such funds were made available Because the additional aid money would make it possible for needy, currently enrolled students to remain enrolled, and because of the federal financial aid funds involved at the undergraduate level, the provision of additional aid monies by the State reduces the enrollment losses and at the same time generates additional fee income for the segments In some cases involving the State University, the provision of additional financial aid actually returns more fee revenue to the segment than it costs to provide the aid.

*The credit load categories used in this report are: (1) full-time--twelve units or more per term, (2) part-time--6.1 to 11.9 units per term, and (3) part-time--6.0 units or fewer per term. The average credit load for students in each of these categories also varies by student level.

4. Estimating the Net Tuition Revenue Generated From Higher Student Charges if Additional State Financial Aid Were Provided

The formulas for calculating net tuition revenues with aid are identical to those used for calculating tuition revenue without aid, except that the projected enrollment losses are less and the cost of providing the aid is considered. In other words, the figures for the net tuition revenue raised with aid include the cost of providing that aid as well as the additional fee revenue provided by the extra students retained as a result of the aid program.

5. Estimating the Enrollment-Related Budget Reductions That Would Occur if the New Aid Were Provided

Since only those undergraduates carrying at least a half-time load per term are eligible for financial aid in any aid program, the additional students retained as a result of the new aid would be either full-time or more-than-half-time undergraduates. Further, the new graduate aid program would be directed toward full-time master's and Ph.D students. This means that the net headcount enrollment losses projected by the model would consist primarily of part-time students enrolled for one or, at most, two courses per term. Applying the headcount-to-FTE conversion factors to the net enrollment loss with aid substantially reduces the overall FTE losses, and thus the enrollment-related budget reductions.

A FINAL NOTE ON THE REVISED MODELS

Several other approaches could have been used to investigate the possible impact of increased student charges on enrollment and revenues in California public higher education. It would have been possible to conduct an extensive study using individual student data and the most sophisticated mathematical modeling to measure the effects of price, ability, family income, and other critical variables on student access and choice. The amount of time required and the substantial expense involved for such a study made this option unattractive. Moreover, the lack of significant intrasegmental cost variations and the absence of individual data related to intersegmental eligibility mixes made it unlikely that statistically significant results could have been obtained through standard multiple regression procedures. On the other hand, it would have been possible to despair over the imperfections in the available data and simply apply a single, national-average figure for enrollment losses to California's public institutions. To do so would be to ignore all the important differences in public higher education between California and the rest of the nation. It would also have ignored the important differences in the cost, mission, selectivity, and types of students that exist among the State's public segments of higher education.

The approach used in this model involves neither of these extremes. Rather than attempt to replicate the most sophisticated studies on student demand and choice, the relevant findings from the best national studies were selected for application to California's situation. Not all the data necessary for an assessment of the impact of increased charges on enrollment existed for each public segment in the precise form needed or desired. Moreover, not all types of students had been studied adequately, and information about the price responsiveness of part-time students and certain graduate students was limited.

The imperfections of these data are acknowledged, but the model could not ignore the known differences in the price responsiveness of different kinds of students at different kinds of institutions. Certain assumptions had to be made to complete a workable model and to secure some of the information needed for certain formulas. Widespread consultation with the segments, State agencies, and other interested parties was involved in the modification of the model's assumptions. Moreover, the assumptions incorporated into the model are explicitly specified in each instance so that technical adjustments or corrections can be made later should they prove necessary. Furthermore, a users group has now been created to provide timely access to the model for all interested users, ensure its operational integrity, and facilitate an ongoing, structured process for the development of modifications as the need for them emerges.

Given the inherent limitations of current knowledge, the projections produced by the revised model represent best estimates. No attempt is made to predict attrition due to program cuts, nor does the model presume to predict how people with marginal commitments to completing a degree might behave. Nevertheless, the projections do provide reasonably accurate approximations of the likely enrollment, student aid, and revenue implications of possible increases in student charges within California public higher education

JANUARY 1981

VERSION 2 OF THE COMMISSION'S STUDENT CHARGES SIMULATION MODEL.

There are a number of changes that were made in the Commission's Student Charges Simulation Model when it was updated from Version 1 to Version 2. Other possible changes and revisions will be discussed with the State-level users group in January before developing Version 3 of the model.

The major changes incorporated into Version 2 are as follows:

1. The Fall 1978 enrollment data used in Version 1 was replaced with Fall 1979 enrollment data including information on the number of students enrolled in each segment by student level, residency status, and credit load category.

2. The new version of the model replaced the CPI-adjusted information on the family income distribution of resident undergraduates (based on the 1975 Student Expense and Resourses Survey) with the most recent information on the family income distribution of dependent undergraduates. The new income information used in Version 2 comes from the 1980 Student Expense and Resources Survey just completed by the Student Aid Commission.

3. Version 2 of the model updated all the current fees charged to undergraduate, graduate, and nonresident students. Moreover, it assumes that nonresident students would face the same increases as resident students, PLUS the increases approved by the Trustees and Regents for nonresident tuition in the 1981-82 academic year (i.e., $180 per year in CSUC and $480 per year in UC).

4. Version 2 also incorporates changes that have been made in the federal BEOG program. As a result of Congressional action last year, the size of every student's BEOG grant was reduced by $50. Although the size of the maximum grant was increased from $1800 in 1980-81 to $1900 in 1981-82, the money necessary to fund the larger grants has not yet been appropriated. The manner in which home equity will be treated in determining eligibility has also been changed in a way that is bound to be more favorable to middle-income Californians, but again the money to fund the expanded group of eligible BEOG recipients may not be forthcoming. Version 2 recomputed all the eligibility requirements for undergraduate students at all income levels. The results are summarized for low-, middle-, and high-income students in the simulations.

5. Version 1 of the model was designed to simulate the enrollment, revenue, and student aid effects of increased student charges. Because of the proximity of the enrollment year being examined originally and the passage of the Middle Income Student Assistance Act, the model incorporated what we called a "MISAA carryover effect." That is, the model considered the changes in aid eligibility faced by many middle-income students who prior to MISAA were ineligible for BEOG grants but were now often eligible for considerable grants whether fees were increased or not. As a result,

in computing the net price increase faced by newly eligible BEOG recipients, the full amount of the grant increase they received in shifting from ineligiblity to eligiblity was considered in calculating how much of any fee increase would be offset by their new BEOG grant. MISAA has now been in place for several years and it no longer seems appropriate to continue using this implementation effect in updated versions of the model. Consequently, Version 2 does not contain the carryover effect and since many of the middle income students' grants are not price responsive (that is, they do not increase as charges increase), they now face net price increases that are much larger than they would have been two years ago.

6. Version 2 of the model introduces an "inflation adjustment" that was not included in the same manner in Version 1. The concept is that there is a certain level of fee increase that could be absorbed by a student or his family without having any adverse effect on enrollment behavior. To incorporate such a concept into the model in a plausible fashion required that the inflation adjustment be sensitive to the current level of student charges. That is, in some manner, it needed to reflect the existing differentials in charges among students in the different segments, at different student levels, and with different residency statuses. As a result, Version 2 excludes from the "net price increase" up to 10 percent of the existing fee levels for that student. Ten percent was our current estimate of the inflation increase between the current academic year and the next budget year.

PREFACE

The Education Code charges the Commission with a general responsibility to examine "the impact of various types and levels of student charges on students and on postsecondary educational programs and institutions" as part of its ongoing planning efforts. This report attempts to provide a thorough analysis of the complex issue of student charges in light of the general financial and enrollment constraints facing California public higher education in the 1980s

In order to assess the enrollment effects and revenue implications of various increases in student charges, models were developed that could be applied to public higher education in California The enrollment model distinguishes between resident and nonresident students in each segment. It distinguishes between full-time and part-time students in each segment, and between undergraduates and graduate students in the four-year segments. The model takes account of differences in the price responsiveness of students from families with different incomes by using different tuition-elasticity coefficients for low-, middle- and high-income groups It recognizes possible differences in charges for part-time and full-time students and differences in their eligibility for financial aid. It examines existing financial aid programs, including the Cal Grant programs and the new Middle Income Student Assistance Act, but it does not attempt to speculate about the form new aid programs might take.

The revenue model utilizes many of these same distinctions in estimating the revenue implications of various levels of student charges for the public segments

In developing these models, Commission staff examined all the major state and national studies of student demand and of student choice. Relevant findings from the best of these studies were adapted to California's situation. Not all the data necessary for an assessment of the impact of increased charges on enrollment were available for each public segment in the precise form needed or desired. Moreover, not all types of students have been studied adequately, and information about part-time students and certain graduate students is limited.

The imperfections of these data are acknowledged, but the model could not ignore the known differences in the price responsiveness of different kinds of students at different kinds of institutions. Certain assumptions had to be made to complete workable models and to secure some of the information needed for certain formulas. The assumptions incorporated into the models are explicitly specified in each instance so that technical adjustments or corrections can be made later should they prove necessary.

Given the inherent limitations of current knowledge, the results reported for each option represent best estimates. They provide reasonably accurate approximations of the likely enrollment and revenue implications of possible changes in student charges within California public higher education.

The report was not written in anticipation of Proposition 9. Furthermore, none of the options it tests involves student fee increases of the magnitude that the passage of that measure might entail. Nevertheless, the models developed can be extended to simulate the enrollment and revenue implications of a wide range of possible increases in student charges. To do so, however, requires answers to certain basic questions about the consequences of Proposition 9: (1) What would the likely revenue shortfall for the three public segments be? (2) What portion of that shortfall would be covered by program and budget reductions and what portion would be passed on to students in the form of higher fees? (3) What would the new fee levels be? (4) Under the provisions of existing student financial aid programs, what portion of the fee increases would be offset for needy students? (5) What would the likely enrollment losses be? (6) What level of additional student aid beyond that supplied by existing programs would be required to insure access to higher education? (7) What form should that aid take and what should be the method for distribution?

This report is a technical document, and does not contain policy recommendations. While it attempts to define the issue of student charges, its primary purpose is to present models that can be adapted for future planning and policy analysis

TABLE OF CONTENTS

	Page
Introduction	1
Chapter I: Costs and Benefits of Public Higher Education	3
Public Benefits of Higher Education	3
Individual Benefits of Higher Education	6
Public Costs of Higher Education	9
Individual Costs of Higher Education	15
Chapter II: Methods of Setting Student Fees	22
The Authority to Set Student Fees in California	22
Kinds of Student Fees and Their Use	22
Other Methods for Determining Student Charges	26
The Cost-of-Instruction Method	26
Base Charges on the Level of Student	29
Base Charges on Comparisons with Similar Institutions Elsewhere	30
Base Community College Charges on Credit/Noncredit Distinction	36
Base Student Charges on the Future Earnings of the Student	37
Base Student Charges on the Anticipated Deficits in Segmental Budgets	38
Chapter III: The Effects of Student Charges on Enrollment and Revenue	39
Review of the Literature on the Impact of Price on Enrollment	39
Summary of Findings in Empirical Studies	41
Assumptions Underlying This Report	42
Developing a Model	43
Specific Components of the Model to Assess Enrollment Effects	44
Specific Components of the Model to Assess Revenue Effects	50
A Final Note on the Models	52

TABLE OF CONTENTS (Continued)

	Page
Chapter IV: Testing Possible Policy Options	54
Option 1: Leave Student Charges at Their Current Levels	54
Option 2: Raise Student Charges by $100 Per Year For Full-Time Undergraduates in all Three Public Segments, by $80 for Part-Time Students Taking Six Units or Less Per Term in the State University, and by $60 for Students Taking Six Units or Less in the Community Colleges	54
Option 3: Base Undergraduate Student Charges on a Percentage of the Cost of Instruction in Each Segment by Setting Charges at 16.7 Percent for Community Colleges, 20.0 Percent for the State University, and 25.0 Percent for the University	63
Option 4: Base Student Charges in Each Segment Upon a Comparison With the Student Charges at Comparable Institutions in Other States . .	71
A Final Note on Testing Possible Policy Options	79
Chapter V: Summary	80
The Effect of Increased Student Charges on Enrollment .	80
The Effect of Increased Student Charges on Revenues . .	84
The Issue Facing California	86
Footnotes	88
Bibliography	101

APPENDICES

A - The Community College Enrollment Model

B - Projections of the Impact of a $100 Increase When the Middle Income Student Assistance Act is Fully Implemented

TABLE OF TABLES

Number		Page
1	State Expenditures on the Three Segments of Public Postsecondary Education for Current Operations in Selected Years by Amount and as a Percentage of Total State Expenditures, 1959-1978	10
2	State Expenditures as a Percentage of Total Expenditures by Segment for Selected Years, 1957-58 to 1978-79 (In Millions of Dollars) . . .	12
3	State General Fund Cost of Instruction Per Full-Time Equivalent Student by Level of Instruction and Segment, 1977-78 and 1978-79	13
4	Estimated Total Cost of Instruction Per Full-Time Equivalent Student by Level of Instruction and Segment, 1977-78 and 1978-79	14
5	Required Student Charges for State Residents at Selected University of California Campuses, 1978-79	18
6	Required Student Charges for State Residents at Selected State University Campuses, 1978-79 . . .	18
7	Tuition and Fees at the University of California and Its Public Comparison Institutions, 1977-78 and 1978-79	32
8	Tuition and Fees at the California State University and Colleges and Their Public Comparison Institutions, 1977-78 and 1978-79	33
9	Average Resident and Nonresident Student Charges for Community Colleges in Selected States, 1977-78 and 1978-79	34
10	Average Student Charges by Segment as a Percentage of University Charges, 1978-79	36
11	Tuition Elasticity Coefficients by Income Level .	45
12	Percentage Distribution of Undergraduates by Family Income Level and by Segment, 1978	46

TABLE OF TABLES (Continued)

Number		Page
13	Current Cal Grant A and Cal Grant B Recipients by Family Income and Segment, 1978-79	49
14	Enrollment Impact of a $100 Increase in Student Charges at the University	56
15	Enrollment Impact of a $100 Increase in Student Charges at the State University	57
16	Enrollment Impact of a $100 Increase in Student Charges in the Community Colleges	59
17	Revenue Impact of a $100 Increase in Student Charges in the Three Public Segments	61
18	The Cost of Instruction Per FTE or ADA by Level of Student and by Segment, 1978-79	63
19	Total Charges by Segment Using Cost-of-Instruction Method	64
20	Enrollment Impact of Adopting Option 3 for Student Charges at the University	65
21	Enrollment Impact of Adopting Option 3 for Student Charges at the State University	66
22	Enrollment Impact of Adopting Option 3 for Student Charges in the Community Colleges	67
23	Revenue Impact of Adopting Option 3 for Student Charges in the Three Public Segments	70
24	Enrollment Impact of Adopting Option 4 for Student Charges at the University	73
25	Enrollment Impact of Adopting Option 4 for Student Charges at the State University	74
26	Enrollment Impact of Adopting Option 4 for Student Charges in the Community Colleges	75
27	Revenue Impact of Adopting Option 4 for Student Charges in the Three Public Segments	77

INTRODUCTION

After the passage of Proposition 13 in June 1978, legislators and officials of public higher education in California suddenly were confronted with a radically different budget-making process. The traditional funding formulas were altered and funding was reduced sharply. The University of California announced that increases in student fees would be considered for 1978-79 if General Fund support from the State were curtailed severely The Legislative Analyst briefly considered introducing a proposal to raise student charges by $100 a year at the California State University and Colleges to partially offset budget cuts, but then dismissed the idea. Convinced that the State's long tradition of tuition-free, low-cost public higher education should not be abandoned hastily or without careful consideration of all the implications of such a change, the Director of the Postsecondary Education Commission supported efforts to avoid increases in student charges for 1978-79. In a letter to the Legislature's Conference Committee on the Budget, he argued:

> Increased student charges must be considered as one of several possible sources of additional funding for the long-range financing of postsecondary education. Such charges, however, are certain to cause substantial enrollment shifts and greater demands for student aid. The impact on access and the intersegmental consequences of such changes should be studied carefully prior to adoption of any such increase. 1/

The Legislature subsequently adopted budget control language to discourage any unilateral increases in student charges for 1978-79. In response, University of California President David S Saxon announced in September, "By postponements in hiring, by curtailing some activities and by the use of these very limited reserve funds, we can avoid imposing tuition or an increase in the Educational Fee during 1978-79." 2/ However, he left open the possibility of changes the next year. The Board of Trustees of the California State University and Colleges unanimously approved a resolution in November 1978 stating their philosophical opposition to tuition. They urged that sufficient financial support be provided to maintain adequate access to and the quality of education within the State University system "so as to make the imposition of tuition unnecessary." 3/ The Community College Chancellor's Task Force on Finance began an investigation of various levels of student charges for that system. Each segment, however, appears to be proceeding independently to develop its own plans. Yet, if modifications initiated by one are adopted, they are likely to have a profound impact on the other segments too Indeed, the decisions reached by segmental governing boards and the Legislature will undoubtedly have

a large impact on the State and its system of public higher education for years to come.

The Education Code charges the Commission with a general responsibility to examine "the impact of various types and levels of student charges on students and on postsecondary educational programs and institutions" as a part of its on-going planning efforts. Currently, Commission staff is examining a number of critical issues in higher education, including the issue of student charges. This report is an outgrowth of these efforts. It is based on the belief that a broad, intersegmental perspective is essential for a thorough and balanced analysis of the complex issue of student charges. The report first examines the basic issues associated with student charges and the financing of public higher education. It then uses the Commission's data base and develops models to assess the impact of student charges on undergraduate enrollment in the different segments, on revenues, on student aid needs, and on access to postsecondary education.

This report is designed to provide Commissioners with a complete picture of the complex and controversial issue of student charges. It attempts to promote understanding rather than a particular point of view. Consequently, it neither offers nor constitutes a policy recommendation.

CHAPTER I

COSTS AND BENEFITS OF PUBLIC HIGHER EDUCATION

The value of education to the individual and to society has long been accepted as a basic article of faith by most Californians and led to the creation of a vast, well-financed public school system. Moreover, the desire to make higher education democratically accessible and the recognition of society's need for educated and trained personnel were central considerations underlying the passage of the Morrill Land Grant Act by Congress in 1862, and the decision in this State six years later to establish the University of California. From modest beginnings in the late 1860s, the University has developed into a nine-campus system with 127,881 students in 1978. The California State University and Colleges traces its origin back to the same era, yet it is now an impressive nineteen-campus system educating 306,175 students. The idea of public junior colleges did not originate in California, but the modern community college first developed here. California's current 106 Community Colleges provide postsecondary educational opportunities to more than 1 1 million students and remain national leaders in their field.

Considered as a whole, California's three-tiered system of public higher education represents a singular social and cultural achievement. It has become the most widely respected and imitated model for public higher education in the nation. The magnitude of this educational enterprise and its funding have led to periodic public debates and to reexaminations of its benefits and costs. Attention has often centered on economic and financial considerations, although social and cultural considerations are no less important. That economic and financial aspects of the issue are most susceptible to measurement partially accounts for the emphasis they have received, but the rising costs of public higher education, the competing claims on limited tax resources, and the tax burden have also led students, taxpayers, and their representatives to demand evidence that they are getting their money's worth. Of course, not all the benefits higher education provides to the individual or society can be measured, and those that can be quantified are not necessarily the most important. Nevertheless, the question of public and private benefits deserves serious attention, and most of these benefits can be described, even though not all of them can be measured precisely.

PUBLIC BENEFITS OF HIGHER EDUCATION

Higher education benefits California in at least four ways: economically, socially, politically, and culturally. Clearly, these are interdependent rather than mutually exclusive categories because

higher education is inextricably woven into the entire fabric of our increasingly complex urban-industrial society. Yet, by examining the influence of education on each area separately, its overall importance can be more readily understood.

In a state that was still predominantly agricultural in the nineteenth century, containing relatively few wealthy families and far fewer members of the middle class than today, public higher education provided an opportunity for further education to the relatively small number of sons and daughters of farmers and shopkeepers who completed secondary school. It was argued that a system of low-cost, public higher education would contribute to California's economic growth and development by "providing a supply of educated young people who would become the doctors, lawyers, teachers, and business leaders needed in a developing society." 4/ Later, as industrialization proceeded, the need to train sufficient numbers of engineers, scientists, and technicians also became evident, and the University and State University again assumed a central role in providing that training.

The literature on economic development confirms what these early Californians and their heirs understood intuitively--the increase in human capital is a critical ingredient in determining the pace and character of economic development in an area. Education, of course, is the major source of human capital. Moreover, the investment in higher education affects human capital formation and economic development in at least two ways. First, it is closely analogous to resource development in the most important sense of that term because higher education is a system organized to discover human talent and to cultivate and develop it. Second, through its extensive involvement in both pure and applied research, the State's universities continue to make major contributions to the advancement of knowledge 5/

Today California's economy probably is more highly developed and technologically sophisticated than that of any other state in the nation. The reason so many aerospace, electronics, computer, and research and development firms were founded or chose to locate in California and the reason the State continues to enjoy vigorous economic growth can, in large part, be traced directly to the commanding presence of the large number of colleges and universities in California and to the rich endowment of human resources these institutions have helped to create.

For decades, higher education has been not only a major contributor to socioeconomic advance, but also an integral part of the American dream of success. Participation in higher education has enabled people to rise socially, occupationally, and financially. While this mobility is more properly counted among its benefits to the

individual, access to higher education provides important social benefits. If social classes become rigid and the opportunities for social mobility are denied, society stagnates and becomes unproductive. The level of social tension and conflict also tends to escalate But, by facilitating social mobility, higher education contributes to the continuing vitality of an open society and thus provides a fundamental safeguard for the democratic way of life. 6/

Higher education provides other benefits to society. Research shows that there is far greater individual and social stability among the college educated, including lower rates of family instability, poverty, unemployment, and crime, and far less dependence on costly government social services. It increases the tax revenues that result from the higher lifetime earnings of college graduates. Also cited are increases in participation in civic affairs and charitable organizations. Higher education also contributes to the general increase in the ability of citizens to communicate through the various media. Effective communication of information is necessary for the operation of a market economy and the maintenance of a political democracy. 7/

A democracy demands of its citizens an awareness of the problems that confront their society. Our political institutions are grounded in the belief that the electorate is concerned and intelligent enough to make reasonable, informed decisions on matters of public importance. Yet, as the problems confronting society and the issues facing public officials become more and more complex, the need has increased for more highly educated and trained public servants Our colleges and universities have provided the training, research, and expertise upon which modern government decision making increasingly depends, and they have played a significant role in educating those who hold positions of public trust.

Another benefit of higher education is the more effective preservation and extension of our cultural heritage that it makes possible. By helping to preserve and transmit knowledge of the literary, artistic, and cultural treasures of the past, higher education enriches our esthetic appreciation and understanding. Furthermore, as others have noted,

> The convergence of all types of artists, writers, musicians, performers and critics upon higher education provides opportunities for [the] interchange of ideas and for [the] consequent instructional enrichment of each fine art form. Higher education increases both the number of amateur and professional performing artists and the number of people who patronize them, while raising both groups to ever higher levels of artistic skill and esthetic sensitivity. 8/

INDIVIDUAL BENEFITS OF HIGHER EDUCATION

The most obvious benefit to individuals that higher education provides is the training essential for access to higher paying, higher-status jobs. As the old saying goes, "To get a good job, get a good education." Over the years the character of work has changed, placing increasingly complex demands on workers. In 1890, when most Americans still lived in rural areas or small towns and a majority still worked in agriculture, a "good education" usually consisted of completing elementary school, except for the few who graduated from high school or the even fewer who went on to college. In that year only four out of every one hundred young people between the ages of fourteen and seventeen were enrolled in high school, and only two out of every one hundred who were fifteen to nineteen years old attended college. Today more than 85 percent of the country's fourteen- to seventeen-year-olds are enrolled in high school, but the possession of a high school diploma is no longer the passport to a good job. It has become a minimum requirement for a decent job, not a good one. The complexity of modern industry has made a high school education insufficient for professional and managerial positions, and now almost all the premium jobs are secured by college graduates

It used to be fashionable among human-capital theorists to calculate the dollar value of a college diploma over the course of the recipient's lifetime. Of course, some of the income differential could be attributed to inherent differences in individual ability between graduates and nongraduates. Also, the range of earnings among college graduates was, perhaps, as significant as the fact that their mean or median incomes exceeded those of high school graduates. After allowing for these factors, the Coordinating Council for Higher Education estimated as late as 1969 that, on average, a college degree was worth more than $100,000 in additional earnings over the course of the graduate's lifetime. 9/

The old saying linking a good job to a good education has taken on new meaning in the 1970s As Kenneth Deitch observed:

> On the one hand, the absence of a college degree is, probably more than ever before, a barrier to obtaining one of society's "good" jobs On the other hand, the job market for college graduates is less favorable than it once was. College graduates are more plentiful, relative to the demand for them, than they were before the late 1960s and the earnings of college graduates now exceed the earnings of non-graduates by relatively less than they once did. 10/

Richard Freeman has done more than anyone else to advance this interpretation in two of his books, The Declining Economic Value of

Higher Education and the American Social System, and The Over-educated American. He points out that after a century of vigorous expansion, the "professional/managerial" share of the work force leveled off in the seventies, although the number of college graduates continued to increase As a result, he argues, a "large number of graduates who entered the market in the 1970s were forced into jobs outside the professional and managerial areas," and "many graduates reported that they were employed in positions outside their fields of study." The decline in employment opportunities for college graduates led to lower average incomes and a narrowing of the earnings differential between college graduates and nongraduates. According to Freeman, the average salary of a college graduate was 53 percent more than that of a high school graduate in 1968 and fell to only 35 percent more in 1973. From this he concludes that the proportion of high school graduates who are likely to enroll in college will decline because for many of them "an investment in college will not be worthwhile." 11/

Freeman's viewpoint has been publicized widely, but it is flawed in several important ways. While he used data on the starting salaries of recent college graduates for his calculations, he failed to obtain data on the earnings of recent high school graduates Instead he used the average earnings of all full-time (including experienced) workers as a substitute for the starting salaries of recent high school graduates, and this is likely to overstate the upward trend in their earnings.

Secondly, the average earnings of college graduates show a more rapid and greater progression during their working lifetime than do those of high school graduates. As a result, the earnings differential which already favors college graduates normally widens with age.

Further, Leonard A. Lecht observed that the prospect of workers being unemployed decreases as their level of education increases. Freeman did not adequately take into account the large and apparently widening gap in unemployment between high school and college graduates. The unemployment rates for college graduates twenty-four years of age or under rose from about 2 percent in 1967 to approximately 6 percent in 1975-76, but the rates for high school graduates increased from about 6 percent to between 14 and 16 percent in the same period Lecht also suggests that college graduates may be exposed to fewer occupational accidents and illnesses, and be recipients of more generous fringe benefits. 12/

In short, while it is clear that a 7.5 percent return on the investment in a college education in the early-1970s was lower than the 11 to 13 percent return of the 1960s, the evidence shows that for most graduates it remains a sound investment in strictly financial terms.

Furthermore, although Freeman chooses not to emphasize the point, he recognizes, as have Kenneth Deitch and others, that the narrowed income differential contains a cruel irony for many high school graduates and others who chose not to enroll in higher education. He observes:

> . . with a relative surplus of college graduates, opportunities for nongraduates to attain white-collar positions appear to be diminishing Between 1969 and 1974, college-trained personnel became increasingly important in several major occupations where high school workers had traditionally predominated: sales and managerial work for men, and sales and clerical jobs for women. Estimates of the possibilities of replacing high school workers with college workers as the availability of the latter increases and their wages decrease suggest that this pattern will continue into the future This is not to say that alternatives to the college route to white collar jobs do not exist, but merely that the surplus of graduates is likely to make it more difficult for nongraduates to compete for those jobs than in the past. 13/

To focus primarily upon the greater income to be derived from a college education or the rate of return on investments, moreover, is to ignore other individual benefits of higher education that accrue directly to the recipient. These include personal enrichment, hedging against changes in technology that render certain occupational skills obsolete, and options regarding life style and employment that are not as frequently available to the person with less education. In 1976, among American youths between the ages of sixteen and twenty-four who were not in school, 40.0 percent of the school dropouts and high school graduates were unemployed, compared to 7.1 percent of the college graduates in the same age bracket. In addition to greater job security, higher income, and a more satisfying job, the college graduate is also likely to enjoy "greater effectiveness as a consumer, greater ability in allocating time as well as money, direct enjoyment of the educational process and its related activities, and lifetime enhancement of cultural and other experiences." 14/ Although many of the social benefits and these seemingly intangible individual benefits cannot be measured precisely, they are nonetheless important.

Evaluating the benefits and costs of higher education is exceedingly complex because the benefits of public higher education are not enjoyed by the same generation that pays the costs. As economist Joseph Pechman of the Brookings Institution observed·

> The effect of this type of intergenerational transfer cannot be evaluated by comparing the discounted benefits

of the future generation of earners with the costs incurred by the present generation of persons who pay the taxes to create these benefits. 15/

Instead, the voters and public officials must decide whether an investment in higher education is desirable from a social point of view. This involves balancing the expected public benefits against the costs. Then if the decision to invest in higher education continues to be affirmative, as it has been for more than a century in California, they must decide how the costs should be allocated.

PUBLIC COSTS OF HIGHER EDUCATION

Almost twenty years ago, at the time the 1960 Master Plan was formulated, the California Legislature appropriated a total of approximately $239 million for public higher education including roughly $120 million for the University of California, $86 million for the then State Colleges, and $27 million in State aid to the then junior colleges. 16/ Since that time the State's system of public higher education has expanded significantly, the number of students has increased dramatically, and the budgets have grown correspondingly.

For the 1978-79 fiscal year, the Legislature appropriated in the Budget Act and SB 154, which distributed the State's budget surplus, a total of approximately $2,409,002,000 for public postsecondary education. This amount included $2,343,976,000 for current operations and $65,026,000 for capital outlay. The funds received by the three segments were allocated as follows: The University of California, $767 million for current operations and $24 million for capital outlay; the California State University and Colleges, $691 million for current operations and $24 million for capital outlay; and State support for Community Colleges, $817 million for current operations and $15 million for capital outlay. 17/

To place these amounts in their proper perspective several points must be made. First, while State appropriations for public postsecondary education increased from approximately $239 million in 1959-60 to about $2.4 billion in 1978-79, the size of the total State budget increased in the same period from $2.1 billion to roughly $19.2 billion, including the State budget surplus allocated in 1978-79 under the provisions of SB 154.

Second, the amount of money allocated to the three public segments has increased greatly since 1959-60, but the proportion of the total State budget devoted to their support has increased only slightly--from 11.2 to 12.2 percent. Table 1, however, reveals that the proportion of the State budget allocated to the segments for current

TABLE 1

STATE EXPENDITURES ON THE THREE SEGMENTS OF PUBLIC POSTSECONDARY EDUCATION FOR CURRENT OPERATIONS IN SELECTED YEARS BY AMOUNT AND AS A PERCENTAGE OF TOTAL STATE EXPENDITURES, 1959-1978

Budget Year	Total State Budget (In Millions of Dollars)	University Current Operations		State University Current Operations		Community Colleges Current Operations	
		Amount	Percent	Amount	Percent	Amount	Percent
1959-60	$ 2,085.6	$ 99.4	4.8%	$ 54.9	2.6%	$ 27.0	1.3%
1960-61	2,525.4	121.3	4.8	68.5	2.7	--	--
1969-70	4,586.1	329.6	7.2	285.0	6.2	--	--
1970-71	4,876.2	337.1	6.9	305.1	6.2	--	--
1971-72	4,982.6	337.1	6.8	318.7	6.4	--	--
1974-75	10,276.5	514.6	5.0	481.5	4.7	353.6	3.4
1975-76	11,452.4	585.5	5.1	538.0	4.7	414.3	3.6
1976-77	12,631.7	683.7	5.4	604.8	4.9	464.5	3.7
1977-78	15,014.0	737.5	4.9	672.5	4.5	544.0	3.6
1978-79	$19,200.0[1]	$767.0	4.0%	$691.0	3.6%	$817.0	4.3%

1. Total State expenditures including $4.2 billion in State surplus funds distributed under the provisions of SB 154.

Source of Data: Governor's Budget, 1960-61 to 1979-80.

operations has changed in important ways over the past twenty years, and particularly in the last decade. Capital outlay requirements have fluctuated in predictable ways as the need for new campuses and facilities has changed. Consequently, the proportion of the State budget devoted to current operations provides the best measure of support The percentage of the State's total expenditures devoted to current operations at the University was lower in 1978-79 than when the Master Plan was formulated in 1959. In fact, the University's portion of the State's total expenditures, including the SB 154 funds, was 17.0 percent lower in 1978-79 than in 1959-60. Moreover, the University's share of total expenditures has declined from 7.2 percent to 4.0 percent in the last ten years. The State University's share of General Fund revenues for current operations increased from 2.6 percent of the State's total expenditures in 1959-60 to 3.6 percent in 1978-79, but in the last decade that system's share has also dropped markedly. Only the Community Colleges have received a larger and larger percentage of the State's total budget to finance their operations, but in the past year their local revenues have dropped dramatically as a result of Proposition 13 Consequently, although their current-operations budget, as a percentage of the total State budget, has jumped more than threefold since 1959-60--from 1.3 percent to 4.3 percent--their total budget has not increased between 1977-78 and 1979-80. 18/

Over the last two decades, the total operating and capital outlay budgets of the University and State University increased at a much more rapid rate than the rate of growth in the level of State support. In order to finance the full range of instructional, research, and public service activities expected of modern universities, the University in particular and the State University to a lesser extent have secured other sources of funding. Indeed, as Table 2 shows, State support as a percentage of the total budgets of these two segments has declined substantially. The University of California and its faculty are nationally and internationally recognized, and by the early-1960s they became recipients of major federal grants for contract research. As a result, the State now provides less than one-third of the funds in the University's total budget.

Although the four-year segments are increasingly dependent upon external sources of funds to meet the costs of some of their current operations, all three public segments depend primarily upon the State for the funds needed for instructional programs. These costs include both the direct costs of instruction and a pro rata share of the costs of libraries, maintenance of plant, and other institutional services. They do not include funds for organized research or public service. According to the Coordinating Council's 1974 study, The Cost of Instruction in California Public Higher Education, State General Funds covered approximately 80 percent of

TABLE 2

STATE EXPENDITURES AS A PERCENTAGE OF TOTAL EXPENDITURES BY SEGMENT FOR SELECTED YEARS, 1957-58 TO 1978-79 (IN MILLIONS OF DOLLARS)

Current Operations

Budget Year	University Amount of Funds			State University Amount of Funds			Community Colleges Amount of Funds		
	State	Total	State %	State	Total	State %	State	Total	State %
1957-58	$ 89.5	$ 145.1	61.7%	$ 42.6	$ 54.5	78.2%	$ 22.7	$ 77.0	29.0%
1959-60	99.4	143.7	69.2	54.9	56.0	98.0	--	--	--
1960-61	121.3	169.6	71.5	68.5	70.0	97.5	--	--	--
1964-65	179.7	595.1	30.2	115.6	120.3	96.1	--	--	--
1969-70	329.6	1,032.2	31.9	285.0	356.9	79.8	--	--	--
1970-71	337.1	1,060.5	31.7	305.1	383.8	79.5	--	--	--
1971-72	337.1	1,105.0	30.5	318.7	408.8	78.0	--	--	--
1974-75	514.6	1,647.0	31.2	481.5	689.7	69.8	353.6	1,009.5	35.0
1975-76	585.5	1,875.2	31.2	538.0	775.3	69.4	414.3	1,148.8	36.0
1976-77	683.7	2,192.8	31.2	604.8	879.6	68.8	464.5	1,274.6	36.0
1977-78	737.5	2,380.5	31.0	672.5	955.0	70.4	544.0	1,402.3	38.0
1978-79	$767.0	$2,478.5	30.9	$691.0	$981.1	70.4%	$817.0	$1,245.8	65.0%

Source of Data: Governor's Budget, 1958-59 to 1979-80. These figures are for actual expenditures, not appropriations, as reported in the following year budget.

the total instructional costs in the University and about 93 percent of those in the State University. The current percentages probably fall in the same range. More than half of the State support for the Community Colleges is used to pay for faculty salaries, but there are still no comparable figures readily available on instructional costs in the Community Colleges or on the State's share of those costs. 19/

What does it cost the State to provide instruction to full-time students? The 1979-80 Governor's Budget supplies an answer to that question for undergraduates at the University and State University, but not for students at the Community Colleges. The Budget also contains figures on instructional costs for graduate students in the two four-year segments, but those figures are not strictly comparable. While a comparison of average instructional costs for all students would show a higher average General Fund expenditure at the University, even if high-cost health science programs were excluded, such a comparison would be meaningless Table 3, therefore, summarizes only the State General Fund costs of instruction for full-time undergraduates in the two senior segments. 20/

TABLE 3

STATE GENERAL FUND COST OF INSTRUCTION
PER FULL-TIME EQUIVALENT STUDENT BY LEVEL OF INSTRUCTION
AND SEGMENT, 1977-78 AND 1978-79

Level of Instruction	University		State University	
	1977-78	1978-79	1977-78	1978-79
Lower Division	$2,145	$2,205	$2,291	$2,359
Upper Division	$2,775	$2,820	$2,887	$2,972

Source of Data: 1979-80 Governor's Budget. Computations based on data from pages 948, and 993.

The figures in Table 3 show the cost to the public of educating an undergraduate at the State's public four-year institutions. They reveal that the State spends less in General Fund revenues for the instruction of full-time undergraduates at the University than at the State University. This does not mean, however, that the total cost of instruction for these students is lower at the University. It simply means that the State's taxpayers provide a larger percentage of the total instructional costs and a slightly greater amount of money for instruction per undergraduate at the State University.

Exact figures on the total cost of instruction are not readily available, but estimates can be made using data from the Governor's Budget, the Consumer Price Index, and the 1974 Cost of Instruction Study by the Coordinating Council for Higher Education Assuming that the ratio of State-funded costs of instruction to the total costs of instruction in 1973-74 have remained the same, a reasonable estimate of the total cost of instruction per student can be made for the University and State University in 1977-78. This method appears to provide a slightly better estimate than does projecting the 1973-74 State and total costs forward, using the Consumer Price Index. 21/

TABLE 4

ESTIMATED TOTAL COST OF INSTRUCTION PER FULL-TIME EQUIVALENT STUDENT BY LEVEL OF INSTRUCTION AND SEGMENT, 1977-78 AND 1978-79

Level of Instruction	University 1977-78	University 1978-79	State University 1977-78	State University 1978-79
Lower Division	$2,745	$2,820	$2,475	$2,550
Upper Division	$3,550	$3,610	$3,120	$3,210

Source of Data: 1979-80 Governor's Budget, pp. 948, 993. Computations based on ratio of State general funded cost of instruction to total cost of instruction reported by Coordinating Council of Higher Education in, The Costs of Instruction in California Public Higher Education, 1974.

These figures reveal the expected progression--with slightly higher total costs of instruction at the University--but two points should be noted. First, the differences between the University and State University in total instructional costs at the undergraduate level are not as great as the differences in the fees their students pay. Second, in assessing the cost to the public of providing undergraduate instruction to California residents at public four-year institutions, the cost figures in Table 3 should be used, not those in Table 4.

The ability of the State to support public higher education depends upon three factors: (1) the size of the stream of income from which such support must be drawn; (2) the efficiency of the tax instruments by which this support is realized; and (3) the willingness of Californians to expend funds for this purpose. California ranked fourth among the states in 1978-79 in terms of combined state and local appropriations for higher education on a per capita basis. It should be noted, however, that California has one of the largest

student populations of any state. Thus, while it ranks fourth in combined expenditures per capita, it ranks nineteenth in combined expenditures for higher education per full-time-equivalent student. Most of its students attend public institutions--California ranks thirty-seventh among the states in terms of the percentage of its college and university students enrolled in independent institutions. Furthermore, California ranks near the top among all states in per capita income. When the states are ranked in terms of their combined state and local appropriations for higher education per $1,000 of personal income, California dropped from fourth in 1977-78 to thirteenth in 1978-79. Moreover, California public higher education's share of the total State Budget has not increased appreciably since 1960, except for a few years almost a decade ago The major question confronting the State is not whether it can afford to continue to provide adequate support for higher education, but whether its residents and political leaders are still prepared to do so. 22/

INDIVIDUAL COSTS OF HIGHER EDUCATION

The financial ability of students and their families to contribute to the cost of education should also be considered when evaluating various methods for setting fees. Yet, before that can be done, it is essential to distinguish among various definitions of college costs. One definition, as the Carnegie Commission points out, defines individual cost as the tuition and fees charged each student. A second, defines cost as the out-of-pocket cost to the student or his/her family, including tuition and fees, room and board, books and supplies, and travel and other living costs which may be partially offset by student financial aid. The third definition is based on foregone income--the wages or income given up by the student in order to attend college. 23/

The view that tuition and fees constitute the major financial barrier to a college education is most common in State budgetary discussions, particularly where the level of tuition and related fees is determined directly or indirectly by legislative policy and is seen as affecting access to college. Certainly, this view has become deeply ingrained in California, where tuition-free, low-cost public higher education has long been regarded as a way to make higher education democratically accessible and to provide trained manpower for the State's economy 21/

Indeed, the tuition-free principle can be traced back to the very origins of public higher education in California. Section 14 of the Organic Act of 1868 that established the University of California stated:

> For the time being, an admission fee and rates of tuition, such as the Board of Regents shall deem expedient, may be required to each pupil, except as herein otherwise provided; and as soon as the income of the University shall permit, admission and tuition shall be free to all residents of the state. . .. 25/

Although the University would never become self-supporting as some anticipated and others wished, the Regents abolished the tuition fees three months after the first students arrived on campus in 1869 The tuition-free principle was incorporated later into the 1879 State Constitution and survived unchanged in subsequent years. Indeed, for more than a century the Board of Regents generally have operated in accordance with this principle, and the State has provided adequate levels of financial support. 26/

The Trustees of the State University have also operated on a similar basis for the most part, although the Organic Act which established the first State Normal School in San Francisco in 1862 provided in Section 4 that "all persons . . may be instructed in said school for such rates of tuition as the Board of Trustees may determine." 27/ This statutory authorization for tuition persisted long after this first Normal School was relocated and became San Jose State College. In fact, a "tuition fee" existed in the State Colleges between 1933 and 1953. While it was subsumed under the Materials and Services Fee in 1954, statutory recognition of the tuition concept continues to exist in the Education Code today. 28/

Reflecting upon the State's proud tradition of public higher education, the authors of the 1960 Master Plan observed, "Higher education in California is well regarded in the nation for the quality of its programs and services and the broad range of educational opportunities offered its students." Although they recommended increases in the fees students paid for ancillary services, the authors concluded, "The Survey Team believes that the traditional policy of nearly a century of tuition-free higher education is in the best interests of the State and should be continued." 29/ A recommendation to that effect was included in the Master Plan and adopted by the Legislature.

The remarkable durability of the tuition-free, low-cost principle in California cannot be attributed to a consensus of opinion on the subject throughout the State's long history. The principle has always had its critics, and during brief periods of financial distress even some of its firmest supporters have wavered. For example, during the severe depression of the 1890s some members of the University's Board of Regents recommended imposing tuition on students. In both 1895 and 1899, they were outvoted. The State University's brief experience with tuition, moreover, coincided with

the serious distress and dislocations of the great depression of the 1930s. In more recent years, the tuition-free principle came into question after the defeat of a capital outlay bond issue for higher education by the voters in 1968. Most recently, the subject was reintroduced after the passage of Proposition 13 30/

The Community Colleges were founded as an extension of the K-12 system on a tuition-free basis and have been able to remain largely "free schools " While the governing boards of both four-year segments have attempted generally to adhere to the tuition-free concept, each has developed fairly sizable student charges since 1960. These charges vary substantially between the University and the State University, as Tables 5 and 6 reveal. There are also less marked variations in charges within each segment depending upon the campus and the student's academic level The differences in the Registration Fee at various University of California campuses are likely to be temporary. In 1976, the Regents gave campus Chancellors the option of requesting differential increases between 1977-78 and 1979-80, "the total fee not to exceed $349 and $393 per year, respectively " Two campuses reached the maximum fee level in 1978-79, two more will do so in 1979-80, and four others have requested increases for next year. It seems likely that the remaining fee differentials will be narrowed within the next several years. 31/

The other campus-by-campus differences in student charges stem from variations in the fees students impose on themselves to support a variety of local activities. These variations are likely to continue in both the University and the State University.

There is no question that tuition levels have a major effect on a student's opportunity to obtain a college education. Economist Joseph Pechman of the Brookings Institution argues

> My own view is that a system which provides free, or almost free, access to a public institution of higher learning to all qualified students is the simplest and the most effective method of insuring enrollment of qualified poor and near-poor students 32/

Yet, at the same time, the view that tuition and required fees are <u>the only financial barrier</u> is a narrow one, because even in public institutions tuition and required fees represent only a portion of the cost of education to the student.

The broader view is that the financial barrier to college includes tuition, required fees, and living costs. Ordinarily defined in college catalogs as the estimated cost of attendance, these represent the cost to the student and his family and include tuition and fees, room and board (either living at home, in a dormitory, or

TABLE 5

REQUIRED STUDENT CHARGES FOR STATE RESIDENTS AT SELECTED UNIVERSITY OF CALIFORNIA CAMPUSES, 1978-79

Campus	Registration Fee (Including Health Fee)[1]	Educational Fee	Associated Student and Student Activity	Total Charges Per Year
BERKELEY				
Undergraduate	$393.00	$300.00	$37.50	$730.50
Graduate	393.00	360.00	37.50	790.50
Law School	393.00	360.00	37.50	790.50
DAVIS				
Undergraduate	348.00	300.00	37.50	685.50
Graduate	348.00	360.00	19.50	727.50
Law School	348.00	360.00	15.50	723.50
Medical School	348.00	360.00	10.50	718.50
SAN FRANCISCO				
Undergraduate	393.00	300.00	58.50	751.50
Graduate	393.00	360.00	58.50	811.50
Medical School	393.00	360.00	58.50	811.50
SANTA BARBARA				
Undergraduate	408.00	300.00	66.75	774.75
Graduate	408.00	360.00	34.50	802.50

1. On most campuses the health fee is included as part of the Registration Fee. At Santa Barbara a $60 health fee is charged in addition to a $348 Registration Fee, resulting in the $408 charge cited in this table.

TABLE 6

REQUIRED STUDENT CHARGES FOR STATE RESIDENTS AT SELECTED STATE UNIVERSITY CAMPUSES, 1978-79

Campus	Student Services Fee 0-6 Units	Student Services Fee 6.1 or More	Student Body and Facilities Fees	Total Charges Per Year 0-6 Units	Total Charges Per Year 6.1 or More
Hayward	$116.00	$144.00	$42.50	$158.50	$186.50
Los Angeles	114.00	144.00	56.00	170.00	200.00
San Jose	114.00	144.00	50.00	164.00	194.00
San Luis Obispo	114.00	144.00	74.00	188.00	218.00

off campus), books and supplies, travel, and other living expenses It is this measure of individual cost which is also used in analyzing the need for financial aid and in determining the amounts of grants, work-study opportunities, and loans to be awarded through federal, State, and institutional student aid programs. 33/

There are variations in "typical" student budgets. Costs for students living away from home in dormitories or off campus tend to be higher in urban areas than in smaller towns or cities. Undergraduates who reside at home while attending college generally spend less than those who reside in dormitories or off campus. Indeed, one of the reasons the Master Plan Survey Team recommended the diversion of lower-division students from the then State Colleges and the University to the "readily accessible junior colleges" was "to protect family incomes by permitting more students to live at home while attending college." This pattern of commuting from home is most common at the Community Colleges, but it is also widespread at the State University 34/

All three public segments also have large numbers of single students living off campus, away from home According to guidelines printed by the California Student Aid Commission, the total budget, or out-of-pocket cost, for such a student at a Community College would average about $3,240. A similar student attending the State University would spend an average of $3,475, largely because of the higher student fees. At the University a single student living off campus and away from home could expect to spend from $3,955 at Irvine to $4,010 per year at Berkeley in 1978-79. 35/ For these students, the differences in the cost of education among the public segments can, for the most part, be explained by the differences in student charges and in the cost of living in various communities throughout the State. Furthermore, in all three segments, the major cost to the student and his family in obtaining a college education is the direct, out-of-pocket living expenses they must pay.

A third approach to the question of individual cost adopts a still broader measure, which includes tuition and required fees plus what is called the opportunity cost of college attendance--the wages or income given up by virtue of attending college. This added cost is normally referred to as "foregone earnings." The Carnegie Commission in its study, Who Pays? Who Benefits? Who Should Pay?, explains·

> Although the inclusion of foregone income is appropriate for certain types of analysis of college costs--and it is a very real cost to the student who must give up a job to complete college--for other types of considerations it may not be relevant. For the typical parent who supports a son or daughter through college, the choice may be between

> paying for college costs, or having the son or daughter become an independent economic unit Thus no income to these parents is foregone--they merely would be relieved of subsistence costs if their child did not attend college, and these costs are already included in the estimate of monetary outlays for college attendance.
>
> Similarly, foregone income is not a major factor in the shortrun calculations of costs for many students from relatively affluent families. In these cases, the alternative to entering college may not be an immediate job, but travel, public service, or the enjoyment of leisure time in the final years of maturing into adulthood. But for some students from low-income or from lower-middle-income families, foregone earnings are likely to be viewed as a significant sacrifice . . . . Thus when we consider total economic costs, we find that the barriers to college attendance for young people from low-income families appear relatively more severe than in terms of monetary outlays alone. 36/

The issue of foregone earnings cannot be ignored, but its significance is the subject of continuing debate. Certainly for some poor families who rely upon a son's or daughter's earnings, foregone earnings may represent so large a cost that it actually prevents the prospective student from attending college. For many poor families, as well as most middle-income and well-to-do families, however, the question of foregone earnings is irrelevant. There are various acceptable methods for calculating plausible dollar figures for foregone earnings, but their use is best confined to estimating the private rate of return on an investment in a college education. When trying to determine the appropriate balance between the public cost of providing higher education and the individual cost of securing such an education, the inclusion of foregone earnings in computing individual cost is inappropriate. It is almost impossible to determine for which families foregone earnings represent a genuine cost and for which it does not. Therefore, this study uses required fees plus student living expenses as the best estimate of the individual cost of securing a public higher education.

In summary, there are several aspects of the individual or private cost of higher education which should be noted. Most California Community Colleges charge no fees to regular students, and the statewide average charge is less than ten dollars a year. The average charge for a full-time undergraduate in the University is $724 a year, and in the State University, $205. Overall, the required student fees for California residents at the State's public institutions are among the lowest in the nation--a comparison that will be developed more fully later. However, this is neither an

accident, nor an oversight. Required fees have been kept low for decades because of a conscious decision be generations of State policy makers to do so.

Moreover, the individual cost of a college education includes more than simply the required fees. In fact, the cost for California residents this year will range from about $1,800 a year for a Community College student residing at home and commuting to school to $4,515 a year for an undergraduate at the University of California at Berkeley living away from home These figures, and those cited earlier for students in all three public segments who are living away from home, make it clear that the student's investment in a college education is substantial even under the State's existing "tuition-free, low-cost" policy.

Several conclusions about the current relationship between the public and individual costs of higher education appear warranted, even though there are obvious difficulties inherent in attempting to quantify these costs with great precision. First, in both the University and State University the individual's share of the total cost of an undergraduate education is significantly greater than the public share or subsidy--$3,500 to $4,500 a year spent by the student and his or her family versus $2,200 to $2,900 a year spent by the State The same is probably true for graduate students in these two segments, except for those in some professional programs in the health sciences at the University Generalizations are a bit more hazardous for the Community Colleges, but it appears that the cost to the taxpayer to help provide a Community College education does not exceed the cost to the student Even with the larger number of commuter students in that segment who live at home, there are even more who work part time or full time and are also taxpayers. 37/

Finally, although all this information helps define the existing relationship between the public and individual costs of higher education, it does not resolve the question of what the relationship should be That requires a look at how fees are currently set in California and at the methods used in other states It also requires a careful assessment of the implications of adopting some other approach to setting student charges.

CHAPTER II

METHODS OF SETTING STUDENT FEES

THE AUTHORITY TO SET STUDENT FEES IN CALIFORNIA

In the case of the University of California, the 1879 Constitution and the Revisions of 1918 gave to the Regents "full powers of organization and governance," including the power to set the level of student tuition and fees. The Legislature and Governor can influence the Regents through budget control language and through General Fund appropriations to the University. This happened in 1899 when Governor Gage persuaded the Regents to rescind a tuition fee they had just approved, in 1970 when Governor Reagan "convinced" the Regents to raise student fees, and at other times. The Regents retain the power to make the final decision, but the Legislature and the Governor can, if they choose, severely limit the Regents' options.

The Trustees of the California State University and Colleges have the right to set the level of student fees. However, unlike the University where the revenues from student fees are retained by the Regents, fee revenues from State University students are considered to be a part of the State General Fund. The authority to initiate a fee proposal resides with the Trustees, yet the Legislature would be involved, as well, if any major changes were proposed.

The case of the California Community Colleges is different. Only the Legislature has the power to set permissive fees and determine their maximum levels for all State-funded operations, however, the local governing boards can decide whether or not to impose such fees. There are currently seventeen fees authorized by the Legislature that Community Colleges can charge, but until recently most elected to use local funds instead. Thus, while a local governing board can decide not to impose a fee authorized by the Legislature or to charge less than the maximum level authorized, it cannot impose any fee for State-funded operations that the Legislature has not authorized. Moreover, none of the currently authorized fees in State-supported courses are for instructional purposes. The local boards do retain the authority to set fees for community services and other non-credit courses which do not receive State support.

KINDS OF STUDENT FEES AND THEIR USE

In most states, tuition refers to a charge levied on students to help defray part of the cost of instruction and student services. In California, the policy has been that student charges may be used for purposes complementary to, but not a part of, the instructional

program. That is, student charges have helped to pay the cost of student services, but only rarely have they been used to directly fund instructional programs. None of the three public segments currently charges tuition to students who are California residents, except for those taking community service or extension courses. There is a tuition charge, however, for nonresident students at both the University and the State University. Although waived for some graduate students from other states, the nonresident tuition at the University was $1,905 a year in 1978-79 and increased to $2,400 in 1979-80. At the State University, the nonresident tuition charge was $1,710 this past year, and increased to $1,800 this year.

At the University of California, students presently are charged a Registration Fee, an Educational Fee, and a variety of Student Activity Fees. According to policies adopted by the Regents, income from the Registration Fee "shall continue to be used for services, other than student financial aid, which benefit the student and which are complementary to, but not a part of, the instructional program." Until 1978-79, a small portion of this fee income was spent on instruction and departmental research laboratory costs, but at that time these activities were shifted to General Fund support. A portion of the Registration Fee up until 1977-78 also supported the cost of administering the University's student financial aid programs. When the State refused to allow these costs to be shifted to General Fund support, the Regents decided to support the administration of student financial aid from Educational Fee income. 38/

The University's Educational Fee was established in 1970. Until recently it was used primarily to finance capital outlay projects, although it also helped support various operating programs. In 1976, the Regents adopted the following policy, "Educational Fee income shall be used exclusively for support of student financial aid and related programs." In 1978-79, the income from the Educational Fee, along with balances carried over from prior years, provided $30.5 million for student financial aid, $1.9 million to fund student affirmative action programs, and $4.9 million to cover the costs of financial aid administration. In addition, $5 7 million in Educational Fee revenues were used to partially offset budget cuts imposed by the Legislature and Governor this past year. 39/

The University also charges a variety of Student Activity Fees. The individual campuses can levy such fees, up to the limits adopted by the Regents, to help finance a large number of student programs, student organizations, and the facilities for student activities. Such fees vary from campus to campus, and the income from them is retained by each campus to support its own distinctive mixture of student activities.

In the State University, there are two general kinds of fees students are expected to pay: a Student Services Fee and Student Activity Fees. The Student Services Fee, once called the Materials and Services Fee, corresponds most closely to the Registration Fee at the University. Its primary use is to support certain student services such as counseling, testing, placement, housing, financial aid administration (but not student aid itself), the office of the Dean of Students, and health services. A portion of the Student Services Fee was once used to support instruction. Beginning in 1975, however, the maximum fee was held constant until the General Fund "absorbed the full cost of instructional supplies." Like the University, the small amount of instructional support once provided by Student Services Fees has been largely phased out. Yet, unlike the University, the State University's Student Services Fee varies depending upon whether a student takes more than six units or whether he or she takes less Furthermore, while the University retains the income generated by all its fee charges, the State University campuses retain only the income from their Student Activity Fees The income from the Student Services Fee is considered to be a part of the State General Fund. 40/

The kinds of student fees charged and their uses make California somewhat exceptional. The tradition that students should not pay any of the direct costs of instruction is a striking example, although in many ways it is a natural legacy of the State's long history of tuition-free public higher education. It can be argued, however, that since the major individual benefits students secure from a higher education derive from the instruction they receive, students should assume some of the responsibility to pay for a portion of the cost. Although not necessarily compelling, there are valid arguments for using student charges for the support of instructional and student service expenditures, but not for the support of sponsored research or for public service activities

A second distinctive, though not unique, feature of California's current student fees and their use involves using a portion of these fees to provide financial aid to other students. Students now provide the money for the administration of student financial aid programs on University and State University campuses. Moreover, at the University, students provided, through the Educational Fee, $30.5 million in financial aid for their fellow students in 1978-79. In the same year, the State provided only $11.7 million in financial aid to University students.

From a philosophical perspective, the use of a portion of student fees to provide financial aid for other students has been questioned. In 1969, for example, a report on student charges by the Coordinating Council of Higher Education concluded that the State should provide student financial aid. It argued:

> Equality of economic and social opportunity which may be accomplished in part through equality of educational opportunity, is the basis for the distribution of financial aid to those students unable to afford the cost of education. The provision of equal educational opportunity, which serves to redistribute wealth either among this or future generations, is usually cited as one of the legitimate justifications for government intervention in higher education. Student financial assistance is directed largely to the social, as opposed to private, benefits of education As a consequence, it may be argued that the State rather than certain students and their families, should support such an activity. 41/

Four years later, the Carnegie Commission reached a similar conclusion in Who Pays? Who Benefits? Who Should Pay?

> The basic responsibility for equalizing opportunity should be carried as a public cost, and particularly at the federal level, and not as a cost assessed against individual institutions of higher education or against other students. 42/

Since 1974, the vast expansion of federal student aid programs and the growth of the Cal Grant programs show that "the basic responsibility for equalizing opportunity" is being carried as a public cost, particularly at the federal level. True, University students through the Educational Fee still provide a significant amount of financial aid for their fellow students. Yet, whatever philosophical questions this situation may raise, there are important practical advantages to utilizing a portion of the fees students pay to supplement and complement State and federal student aid programs. This practice is common in independent institutions and in the public institutions in some other states Furthermore, it might be appropriate to extend the practice to all three public segments in the event that student charges were increased, because it would make additional financial aid funds available to precisely those institutions whose students would most need additional assistance

In summary, while the tradition of tuition-free, low-cost public higher education is an old and enduring one in California, the existing student fee policies and practices do not appear to be based upon particularly consistent criteria As one careful student of the subject observed:

> The distinction between "tuition" and fees may not even be relevant The relevant criterion would appear to be whether or not an activity contributes to the private, as

> opposed to the social, returns associated with higher education. Some portion of the private returns should be incorporated in the student charge. Whether the charge is termed "tuition" or "fees" or "tuition and fees" does not seem important. 43/

Since the public and individual benefits of higher education cannot be measured against the public and individual costs with any precision, the most useful approach to trying to resolve this dilemma is to examine other methods of setting student charges that have been or that might be used. At the same time, it is essential to remember that student charges should not be determined in a vacuum The goals which the State hopes to achieve through its system of higher education may need to be reassessed, but those goals should be the starting point for any evaluation of student charges.

OTHER METHODS FOR DETERMINING STUDENT CHARGES

Among the major issues in determining the level of student charges are the following:

1. What share of the cost of education in each type of institution should be borne by students through student charges?

2. What share of the cost should be borne by the other major sources of financial support, especially by the general taxpayer through State and local government support?

3 Should the share of the cost borne by each source be different for different levels of education such as lower division, upper division, and graduate?

Among the most commonly used methods of determining the appropriate level of student charges are those based on the following: (1) a predetermined percentage of the cost of instruction, (2) the level of the student, (3) a comparison with charges at similar institutions in other states, (4) the distinction between credit and noncredit course work in Community Colleges, (5) differences in the future earning potential of students with different majors, or (6) projected budget shortfalls.

The Cost-of-Instruction Method

The cost-of-instruction method is currently used by Colorado, Florida, Kansas, New Hampshire (nonresident students), Oregon, Washington, and Wisconsin. Massachusetts is in the midst of trying to implement this approach for nonresident students, and a number of

other states are considering adopting it for both resident and nonresident students.

This method requires a precise specification of all the components of an institution's budget. At the very least, it should distinguish between instructionally related costs and other costs, such as research and public services. The computation of such costs should include both the direct cost of instruction and a pro rata share of the costs for libraries, maintenance of plant, and other institutional services. This requires fairly uniform accounting procedures at all of a state's public institutions and some agreed-upon procedures for assigning and computing costs. The required consensus is invariably difficult to achieve, even in a state with only a few institutions of public higher education. The problem is that even small technical adjustments in cost accounting procedures can have immense financial implications, particularly in large systems.

As currently practiced, the cost-of-instruction method is really a variety of different methods. Normally, the instructional costs are computed for different student levels. Sometimes the distinction is simply between undergraduates and graduate students. Florida, on the other hand, computes general instructional costs for five different student levels. (1) lower division undergraduate, (2) upper division undergraduate, (3) graduate level, exclusive of thesis/dissertation, (4) graduate level thesis/dissertation, and (5) professional.

The percentage of instructional costs a student is expected to pay varies among states. It often varies by the type of institution the student attends, and almost always differs between residents and nonresidents. For resident undergraduates in public four-year institutions, Florida sets tuition charges at 30.0 percent of the cost of instruction at each student level. Most other states use fewer student levels in their computations and set tuition or fees in their four-year institutions at 25.0 percent of cost. Washington, which has one of the more careful and elaborate procedures for determining costs, originally proposed using a 16 7 percent instructional cost figure for its two-year colleges, 20 0 percent for its state colleges, and 25.0 percent for its state universities. After modification by the Legislature, fees at the state universities were set at approximately 25.0 percent of the cost of instruction, those at the state colleges were set at 80 0 percent of the university level, and those at the public community colleges were set at 67.0 percent of the university level. Most of the states using the cost-of-instruction method make some provision for the schools themselves to set their student activity fees, although maximum limits are often established. 44/

Some states attempt to establish a connection between tuition or fee charges and educational costs without making any rigorous analysis of the cost of instruction. Such efforts normally involve an attempt to separate direct and indirect instructional costs from other expenses, but not always. Occasionally, the procedure involves little more than dividing the institution's total appropriation by the total number of full-time-equivalent students it has enrolled. The deficiencies of this latter approach are obvious, even when an institution does not operate a medical school Fortunately, most of the states have a better approach.

In Illinois, for example, the tuition rate at public four-year institutions varies from 25.8 to 31.2 percent of instructional costs. In Minnesota, the Higher Education Coordinating Board recently approved a proposal to more nearly equalize the percentage of the cost of instruction students pay at the state's different kinds of public institutions. The aim is to narrow current differences among the State University System, the University of Minnesota, the Community College System, and Area Vocational Technical Institutes, so that by the end of the 1979-81 biennium, tuition revenue will cover not less than 25.0 percent nor more than 30.0 percent of instructional costs. Tuition charges will continue to vary because instructional costs vary among the state's different educational systems, but the percentage of the costs of instruction students are expected to pay in Minnesota will be more equitably distributed. In Michigan, students at community colleges are expected to provide 24.0 percent of the revenues needed, but in the past the figure was as high as 33.0 percent. In that state's four-year institutions, students are charged approximately 22.0 percent of the total costs--not just instructional costs. In all these states, the computation of educational costs lacks the precision of Colorado, Washington, and a few others The same could be said of the techniques used in California to determine the level of nonresident student charges at the University and State University. 45/

Ideally, a cost-of-instruction policy would assess each student's charges as a function of the actual costs of his or her education. In practice, however, separate tuition charges for each student would create excessive administrative costs. Moreover, a cost-of-instruction approach based on the student's major or field of study, has other deficiencies First, there is not always any clear-cut relationship between the costs of instruction in a discipline and the future earnings of its graduates. Although the connection may be obvious for doctors in medical school, nursing provides an excellent example of a high-cost instructional program whose graduates do not receive high wages. The adoption of a cost-of-instruction method based on each student's major would discriminate against students who choose careers which offer low financial rewards, such as teaching, the ministry, or homemaking. Such a system tends to

encourage students to choose high-cost fields of instruction only when those fields are likely to lead to large monetary gains. To that extent, this particular approach to cost-of-instruction fee schedules divorces the determination of student-fee levels from decisions about society's needs and the state's goals and objectives for public higher education. 46/

In summary, the cost-of-instruction technique can be a fairly objective method for determining student charges, although determining the percentage of those costs the student should pay is inherently arbitrary. One of the method's virtues is that it more nearly relates student charges to one of the major individual benefits students receive from higher education. Some argue that basing charges on an arbitrary percentage of an ever-increasing cost does not adequately consider the ability of students and their families to pay Others claim that this method would pit students against faculty by appearing to tie faculty salary increases to increases in student charges. While the latter argument is overly simplified, both criticisms illustrate potential problems. Moreover, if the determination of instructional costs is done casually or crudely, the method has little to commend it. There is also the question of timeliness: how often should these costs be recomputed and in what manner? In states with large numbers of public institutions, such as California, even the task of developing suitable accounting procedures and securing agreement on the assignment of costs would be formidable to say the least. The cost-of-instruction method seems to work best in those states with few public postsecondary institutions. 47/

Base Charges on the Level of Student

This approach can be a variation of the cost-of-instruction method, but not all the states that employ it make careful cost calculations. The Carnegie Commission aptly summarized the rationale for this method when it stated, "We believe that tuition should be more nearly proportional to costs, rather than regressive against students at the lower levels." 48/

The assumption underlying this approach is that since the cost of educating students varies with their academic level, the amount they pay should reflect the difference. This does not mean that the students' share of instructional costs--the percentage of the costs they are expected to pay--should increase depending on their level. It does mean that since instructional costs increase, the amount students at advanced undergraduate or graduate levels are expected to pay should increase Some proponents of this method argue that keeping charges lower during the first two years of college facilitates access to postsecondary education because it minimizes

some of the financial risks until students can more accurately assess the likelihood of their successfully completing a degree.

New York State requires students at the same level to pay approximately the same charge whether they attend a two- or four-year institution. At the same time, upper-division undergraduates are expected to pay $150 a year more than lower-division students. Michigan has a similar differential in its public four-year institutions, with upper-division students charged $140 a year more than lower-division students. On the other hand, community college students in that state, who are lower-division students too, are charged only half as much as similar students in the four-year institutions, and there are also variations in charges among the four-year institutions.

Most states, including California, have some differential in the charges paid by undergraduate and graduate students. In most cases, however, the differences are nominal and are not based on computed differences in the cost of instruction. Many states also distinguish between graduate and professional programs and assess different charges for students in medical or law school than for those in a master's or doctoral program Florida, for example, distinguishes among three different types of graduate-level students and calculates costs and charges accordingly. In California, graduate students in State University master's degree programs are charged the same amount as undergraduates. Graduate students at the University are charged $60 a year more than undergraduates, whether they are working toward a master's, a Ph.D., a law degree, or preparing to become a doctor. 49/

The Carnegie Commission recommended that tuition and fees be determined separately for four different levels of student: (1) the Associate degree, (2) Bachelor's and Master's degrees, (3) the Ph.D degree, and (4) other advanced professional degrees. Whether this or some other breakdown is used, and whether charges are based on the cost of instruction at each level or ratios are used, this approach has some advantages. Most notably, it more strongly reflects conscious policy decisions about the goals and educational priorities of a state than does the cost-of-instruction technique, which is mechanical and budget based. 50/

Base Charges on Comparisons with Similar Institutions Elsewhere

Student charges in public postsecondary education vary widely by state and by type of institution For comparisons to be meaningful, therefore, care must be exercised to insure that the appropriate states and institutions are being compared. In general, the level of student charges in the public sector varies with the proportion of

students enrolled in the private sector. Except for Massachusetts and the District of Columbia, public tuition and fees are consistently higher in those states in which the private sector is relatively large and lower in those states in which it is relatively small. This may reflect the effect of prices at public institutions on the public-private enrollment mix; or it may reveal instead the effect a large private sector has on the process by which public tuition is set; or it may result from a combination of both. In any event, the order in which a state's institutions of higher education developed, and its history, traditions, and goals are important determinants of the kinds of public educational institutions a state has and of its current student-charge levels. 51/

The May 29, 1979, issue of The Chronicle of Higher Education provides a useful point of departure for a national comparison because it reports the student charges at over 1,800 colleges and universities throughout the country. The average annual cost of tuition and fees at public, two-year community colleges increased from $389 in 1977-78 to $408 in 1978-79 The national average for student charges in public four-year institutions increased from $621 in 1977-78 to $651 in 1978-79. This year those charges are expected to increase to an average of $680 per year. 52/

The usefulness of these comparisons is limited, however. A careful check of the institutions listed reveals that many of the major public universities are not included. Moreover, the averages presented for four-year institutions do not differentiate between state colleges and state universities. Finally, few states have public, four-year college or university systems that can be compared appropriately with the University of California or the California State University and Colleges.

The College Scholarship Service provides a more complete listing of the public two-year and four-year institutions in every state in its publication, Student Expenses at Postsecondary Institutions, 1978-79 However, since very little can be learned by comparing student charges at McNeese State University in Louisiana or Minot State College in North Dakota with UC, Berkeley, or San Francisco State, national averages or averages for each state serve little purpose in determining what student charges should be. Instead, the list of comparison institutions used in the Postsecondary Education Commission's annual report on faculty salaries provides a more appropriate basis. This list makes it possible to compare student charges in California institutions with those at more nearly analogous public colleges and universities in other states. The results for the University of California's public comparison institutions are presented in Table 7 Those for the California State University and Colleges' comparison institutions are in Table 8 53/

TABLE 7

TUITION AND FEES AT THE UNIVERSITY OF CALIFORNIA
AND ITS PUBLIC COMPARISON INSTITUTIONS
1977-78 AND 1978-79

Institution	Resident Tuition and Fees 1977-78	Resident Tuition and Fees 1978-79	Nonresident Tuition and Fees 1977-78	Nonresident Tuition and Fees 1978-79
SUNY-Buffalo	$791-$941*	$791-$941*	$1,241-$1,541	$1,241-$1,541
U. of Illinois, Champaign-Urbana	814	846	1,986	2,018
U. of Michigan, Ann Arbor	1,008-1,148	1,168-1,308	3,220-3,480	3,468-3,728
U. of Wisconsin, Madison	734	812	2,684	2,946
U of California, Berkeley	710	731	2,615	2,636
AVERAGE FOR COMPARISON INSTITUTIONS	$873	$940	$2,353	$2,488
AVERAGE FOR EIGHT UC CAMPUSES	$710	$724	$2,615	$2,629

*Hyphenated figures are for lower division and upper division students when the institution charges different fees by level of student.

Source of Data: State of Washington Council for Postsecondary Education, Resident and Nonresident, Undergraduate and Graduate Tuition and/or Required Fees: Public Universities, Colleges, and Community Colleges (January 1979), and calls by Commission staff to each institution.

In 1977-78, three of the University's comparison institutions had student charges that were higher than those at the University's most expensive campus--Santa Barbara. The fourth institution had charges similar to the University's for resident undergraduates. For the past academic year, however, the charges for resident undergraduates at all four comparison institutions exceeded those at the University. For nonresident undergraduates, only the University of Michigan at Ann Arbor and the University of Wisconsin at Madison charged as much or more than the University of California. Compared to the other four major, prestige public universities in the country, the average student charges for resident undergraduates at the University of California currently range from 11.0 to 41.0 percent lower. However, the University's charges for nonresident undergraduates average 5.4 percent higher than their comparison institutions, and the University's nonresident tuition and fees increased from $2,629 to $3,124 this year.

TABLE 8

TUITION AND FEES AT THE CALIFORNIA STATE UNIVERSITY AND COLLEGES AND THEIR PUBLIC COMPARISON INSTITUTIONS, 1977-78 AND 1978-79

University or College	Resident Tuition and Fees 1977-78	Resident Tuition and Fees 1978-79	Nonresident Tuition and Fees 1977-78	Nonresident Tuition and Fees 1978-79
Bowling Green State	$ 870	$ 945	$2,070	$2,145
Illinois State University	704	--	1,704	--
Indiana State University	795	840	1,650	1,785
Iowa State University	735	735	1,701	1,701
Miami University (Ohio)	1,020	1,130	2,320	2,530
No. Illinois University	720	800	1,720	1,800
Portland State University	736	795	2,329	2,837
Southern Illinois University	690	690	1,728	1,728
SUNY-Albany	791-941*	791-941	1,241-1,541	1,241-1,541
SUNY-Buffalo College	791-941	791-941	1,241-1,541	1,241-1,541
University of Colorado	800	845	2,600	2,845
University of Hawaii-Manoa	478	478	1,153	1,153
University of Nevada-Reno	660	690	2,160	2,190
University of Oregon	740	789	2,489	2,637
University of Wisconsin-Milwaukee	748	838	2,698	2,972
Virginia Polytechnic Institute and State University	627	790	1,257	1,555
Wayne State University	978-1,065	1,074-1,169	2,646-2,889	2,643-2,882
Western Michigan University	765	765	1,725	1,730
AVERAGE FOR COMPARISON INSTITUTIONS	$ 772	$ 822**	$1,947	$2,059**
AVERAGE FOR CSUC	$ 200	$ 205	$1,766	$1,915

*The hyphenated figures are for lower-division and upper-division students at institutions that have different charges for the level of the student.

**Average based on seventeen rather than eighteen institutions because the figures for one was not available for 1978-79. This probably produces a very slight upward bias to the 1978-79 averages.

Source of Data: State of Washington Council for Postsecondary Education, Tuition and/or Required Fees (January 1979) and calls by Commission staff to each institution.

Table 8 reveals that there is a much greater disparity between the student charges at the nineteen campuses of the State University system and those at its eighteen comparison institutions. The least expensive of the comparison institutions charges resident students more than three times as much as does the most expensive State University campus. For nonresident students, the differential is much narrower. Nevertheless, the charges for resident students at the State University are 75.1 percent lower than the average at the comparison institutions, and for nonresident students 7.0 percent lower. These differences are much more substantial than the ones between the average University of California campus and its public comparison universities.

The California Community Colleges also stand out as exceptions. Table 9 summarizes the average student charges in selected states, although there is often considerable local variation within each

TABLE 9

AVERAGE RESIDENT AND NONRESIDENT STUDENT CHARGES
FOR COMMUNITY COLLEGES IN SELECTED STATES,
1977-78 and 1978-79

State	Residents 1977-78	Residents 1978-79	Nonresidents 1977-78	Nonresidents 1978-79
Arizona	$121	$146	--	$1,594
CALIFORNIA	-0-	-0-	--	1,500
Colorado	360	360	--	1,323
Florida	339	375	--	780
Illinois	418	405	--	2,001
Michigan	436	464	--	729
New York	722	722	$1,394	1,394
Oregon	345	381	--	1,520
Texas	--	120	--	400
Washington	286	306	--	1,188

Source of Data: State of Washington Council for Postsecondary Education, Tuition and/or Required Fees, (January 1979).

state. The figures for Colorado, Florida, Oregon, and Washington are particularly interesting because each of these states attempts to base student charges on a predetermined percentage of the actual costs of instruction. The method of computation varies, as does the percentage of instructional costs students are expected to pay, but in most cases the average charge in these four states is approximately $356 for residents, or about $12 per credit unit for a full-time student. No state, aside from California, provides free community college education to its residents. 54/

Clearly, it is in the Community Colleges and the State University that California's pattern of student charges differs most markedly from that of other states. Table 10 provides a convenient summary of these differences for states that contain University and/or State University comparison institutions or that are included in the community college list in Table 9. The figures express the average student charges at community colleges and state colleges as a percentage of the average charges at a state's major university campus or campuses. The figures are based on total tuition and fees charged to resident undergraduates in 1978-79.

Table 10 reveals that it is usually somewhat less expensive to attend a state college than the major state university in the same state. The range is normally quite narrow, however. Indeed, nowhere else is the cost differential between a state college system and a university system as great as it is in California Of course, the presence of a tuition-free Community College system is a major factor, since State University campuses are the primary transfer points for Community College students In most other states, average student charges in the community colleges are about 33.0 to 45.0 percent of those at the major state university.

This latter point is quite revealing because it illustrates some of the shortcomings inherent in the comparison method. While the method can determine whether differences exist between this state and others with respect to student charges, it can neither explain why these differences exist nor determine whether they should continue. In short, the comparison method can help to determine what other states are doing, but it cannot determine whether California could better achieve its educational objectives by imitating the rest of the country.

TABLE 10

AVERAGE STUDENT CHARGES BY SEGMENT AS A PERCENTAGE OF UNIVERSITY CHARGES, 1978-79

State	Community Colleges Amount	Community Colleges Percent	State Colleges Amount	State Colleges Percent	University Amount
Arizona	$146	26	$ 500	91	$ 550
CALIFORNIA	7	1	205	28	724
Colorado	360	43	580	69	845
Florida	375	53	709	100	709
Illinois	405	48	704	83	846
Indiana	807	93	840	96	870
Iowa	--	--	694	92	750
Michigan	464	37	835	67	1,238*
Minnesota	540	54	608	61	994
New York	722	81	895*	100	895*
Ohio	--	--	1,019	104	975
Texas	120	32	348	92	378
Virginia	300	35	934	110	849
Washington	306	44	618	90	687
Wisconsin	678	83	761	94	812

*This figure represents an average of the lower-division and upper-division charges for resident undergraduates.

Base Community College Charges on Credit/Noncredit Distinction

Charging students for noncredit, continuing education courses in the Community Colleges while maintaining a no-fee or low-fee policy for college transfer and vocational-training courses is another possibility. Community service courses in California are already required to be self supporting, although until last year they were partially subsidized by permissive community service tax overrides in some Community College districts. Making community service courses entirely self supporting would place them on much the same funding basis as extension courses in the University and State University. In the Community Colleges, however, the distinctions

among credit, noncredit, transfer, vocational, and community service courses have become blurred in recent years. Furthermore, some districts such as San Francisco, San Diego, and North Orange have exclusive jurisdiction over all adult education courses, while in other districts the K-12 system offers all such courses To initiate and administer a student charge system based on fuzzy distinctions would lead to serious inequities if it were not preceded by other changes.

Base Student Charges on the Future Earnings of the Student

If the rationale for a tuition policy is based in large part on the future earnings prospects of college graduates, it might also appear desirable to establish differential charges that recognize differences in future earnings. To be implemented, this method would first require an elaborate compilation of the future earnings potential of a wide variety of occupations. While this approach might be more equitable in theory than the flat-rate approaches mentioned earlier, it is not without its serious shortcomings. First, and most fundamental, it is impossible to accurately forecast the earnings potential of the staggering array of occupations that make up the modern economy. Second, even if the future earnings of a wide variety of occupations could be forecast, this method divorces what a student is asked to pay from what he or she is able to pay. Further, basing current charges on students' future earnings potential ignores the fact that many students do not decide on a major until their junior year or later. It also ignores the fact that there is not always a clear connection between students' majors and their future careers. If implemented, it would probably be subject to the kinds of manipulation and deceptive choices of "majors" that have characterized undergraduates at Cornell University for years. 55/

Today the extent to which a college education insures higher future earnings is being debated. College graduates in a number of occupations apparently earn less than some unionized workers in industry and in certain skilled trades. Other college graduates clearly earn more than most nongraduates. If a state wants to try to recapture some of the costs of providing college instruction by a method that accurately and more equitably reflects the actual increased earnings of many of its graduates, then refinements in its income tax system are probably a fairer way to achieve this goal. Furthermore, the graduated income tax, unlike a system of graduated tuition or fees, would not penalize those students who majored in subjects that led to less renumerative, yet socially desirable, careers.

Base Student Charges on the Anticipated Deficits in Segmental Budgets

This approach has little to recommend it, but it is sometimes used. It would establish an unhealthy precedent by divorcing student charges from either the quality of instruction offered or its cost. A major loss in operating revenue by any segment, such as the one possibly facing California's Community Colleges after Proposition 13, would require substantial increases in student charges even though the "cost of instruction" remained unchanged. The same is true of the budgetary cuts imposed on the University and State University during the past year and adopted for this year. An increase in student charges to offset these budget reductions would, in effect, "tax" the students for General Fund revenue by indirectly forcing the imposition of a higher charge to compensate for the lower State appropriations. Moreover, student charges would be increased at the very time that the educational services the student was paying for were cut. Unlike some of the other methods for determining student charges discussed earlier, this approach has little to recommend it beyond simple expediency. 56/

CHAPTER III

THE EFFECTS OF STUDENT CHARGES ON ENROLLMENT AND REVENUE

Thus far, this report has assessed the social and individual benefits of public higher education and examined the social and individual costs. It has reviewed the current levels of student charges in the three public segments, described the ways income from them is used, and evaluated a number of alternative methods for determining student charges. This, however, is only half the story.

Any satisfactory answer to the question of increasing student charges requires a careful assessment of the impact changes would have. This raises a whole host of additional questions. What level of student charges is most reasonable? What impact would different fee levels have on student participation rates? What impact would different fee levels have on the access of various minority and low-income groups to public postsecondary education? How would an increase in student charges affect full-time students? Part-time students? Undergraduates? Graduate students? Professional school students? How would different fee levels affect the distribution of enrollments among the public segments? Between the public and independent segments? What provisions would need to be made to increase financial aid if student charges were increased? What sources of additional aid would be available? How large an enrollment drop would be likely if new charges were imposed and additional aid were not made available? What methods might be used to determine student charges? Finally, what would the implications be of adopting any of the alternative methods for setting fees?

REVIEW OF THE LITERATURE ON THE IMPACT OF PRICE ON ENROLLMENT

What follows is a brief, nontechnical review of existing empirical studies on the impact of price on the demand for higher education It is designed to provide readers with a kind of informed skepticism--that is, leaving them with neither "a blind and unwarranted faith in the accuracy of the numbers nor . . . an equally uninformed disbelief in them." 57/ The discussion will attempt to convey the strengths and limitations of the data and methods used in these studies, as well as to summarize their findings.

Most of the studies that examine the effects of price on student enrollment decisions follow the standard econometric practice of attempting to determine the reasons why students decide to enroll where they do on the basis of information about where they actually enroll. A few of these studies, including a questionnaire used by the California Student Aid Commission, used the straightforward technique of asking students what they would do if prices changed.

Of course, it is difficult to know how honestly students answer such questions, or whether they themselves know how they would actually respond. 58/

A report by Richard Ostheimer in 1953 for the Commission on Financing Higher Education contained what was probably the first econometric study of the demand for higher education. The study estimated the effect on college enrollment of tuition, family income, educational background, and the proximity of colleges and universities. Most of the early work on enrollment demand was based on aggregate enrollment data collected by the federal government. These early studies usually examined either enrollment variations across states in a single year or for the country as a whole over time. The object was "to try to determine how much of the observed enrollment variation could be accounted for statistically by variations in tuition rates and how much by other measurable factors such as income levels." It was assumed that statistical correlations between price and enrollment stemmed from the effect of price on enrollment decisions, and that such correlations would therefore "show how the average student would respond to a change in tuition" or price. 59/

In the last few years, the focus has shifted from aggregate data to data on individual students, and the studies have become more sophisticated. These include a nationwide study of access by John Bishop, and several studies by Stephen Hoenack which focused on enrollment demand at certain public institutions. The primary emphasis was still on the effect of price on a student's decision whether to attend college or not. Although relying on individual student data, the focus of these studies was still on access, not on which institutions students chose to attend and why. 60/

Two well-known studies completed in 1974 investigated the question of student choice using the same kinds of data. The first of these was Roy Radner and Leonard Miller's study for the Carnegie Commission, Demand and Supply in U.S. Higher Education. The second was Meir G. Kohn, Charles F. Manski, and David S. Mundel's study for the Rand Corporation with the forbidding title, "An Empirical Investigation of Factors Which Influence College Going Behavior." 61/

The basic methodology in these studies of student choice can be summarized as follows:

> The studies first try to impute to each student in a sample of students a set of available college-going alternatives, taking into account location, academic ability, and the like. They then gather information about the characteristics of the colleges available to the various students (their cost, selectivity, and so forth) and

> background characteristics of the students and their families. A statistical technique called conditional logit analysis is then used to infer how the characteristics of the colleges and the students interacted to produce the set of college choices the students actually made. In effect, the computer tries out alternative weighting schemes for the factors impinging on the decision process (cost, quality, family income), and selects the scheme that best accounts for the decisions the students made. 62/

Although these particular theoretical models provide the most complete picture yet of the student-choice process and have great promise, they also have certain shortcomings The data demands are enormous and do not come near being met. The cost of a conditional-logit computer run is much greater than the more widely used multiple-regression technique. Finally, in order to make the computations manageable, numerous assumptions about the nature of the student-choice process must be introduced a priori. It is therefore tempting but dangerous "to interpret as empirical findings relationships that are in fact built into the model a priori--such as . . lower price responsiveness among higher income groups." Of course, if the underlying assumptions are correct, and most seem quite plausible, such models can provide a remarkably comprehensive picture of student demand. 63/

Before summarizing the findings of these studies, one final cautionary note is necessary. Student charges are only one of the factors that determine who goes to college, and they are by no means the most important. Studies that incorporate sociological, educational, and economic variables place the importance of cost variations in a somewhat different perspective. The intellectual ability of individuals, their socioeconomic characteristics, their schooling, and that of their parents, have stronger effects on the probability of attending college than costs or financial aid, but, of course, these variables are less easily altered by educators or legislators. Furthermore, the ability of educators to achieve educational or social goals through higher education is limited by the variables that they are able to influence. 64/

Summary of Findings in Empirical Studies

The one universal finding from these studies is that price does affect access Every single study finds a significant negative relationship between the net price faced by students and their probability of attending college. On the question of to what extent enrollment would increase if charges were lowered, or to what extent it would decline if they were raised, there is much less agreement.

Translating the results of these demand studies into a common, comparable format requires standardizing the coefficients for average family income, the average cost of education, age-specific participation rates, and changes in the Consumer Price Index. This was done in 1974 by Gregory Jackson and George Weathersby, who, at that time, offered a "ballpark" estimate of a 2.5 percent change in enrollment for every $100 change in higher education prices. In the same year, Michael McPherson reformulated and revised Jackson and Weathersby's work. He concluded that a $100 decrease in tuition occurring at all colleges simultaneously would lead to about a 1.0 percentage-point increase in the enrollment rate of eighteen- to twenty-four year-olds. Since approximately one-third of this age group is enrolled in postsecondary educational institutions nationally, this is equivalent to a 3.0 percent increase in enrollment. The conclusions of the two studies are actually quite similar. The 1.0 percentage-point, or 3.0 percent, figure is widely accepted as the best estimate of the effect of a $100 decrease on public institution enrollments, although the estimate needs to be adjusted for changes in the Consumer Price Index since 1974. 65/

Because of both its breadth and its simplicity, however, this generalization is dangerous. It obscures important distinctions critical to this analysis. Clearly, the impact of price changes is not the same for all students at all institutions. First, as might be expected, one of the consistent findings in most studies is that individuals from low-income families are more affected by price changes than are individuals from high-income families. Second, students of higher ability are less sensitive to changes in cost than other students. Third, the impact of a $100 increase in costs at an inexpensive school is much greater than it is at a high-tuition institution. Stated differently, the price response is different in independent institutions than in public ones, and it may vary among public institutions as well. Fourth, price changes in public institutions, or in any group of institutions for that matter, could lead to enrollment shifts between institutions--between the public and independent sectors or between segments within the public sphere. All these variables need to be incorporated into any model that attempts to assess the impact of price changes on enrollment 66/

ASSUMPTIONS UNDERLYING THIS REPORT

In developing this report, certain general assumptions were made. These assumptions are enumerated here to clarify the alternatives being tested, and include both basic assumptions and possible options.

- The delineation of functions for each public segment specified in the 1960 Master Plan for Higher Education would continue, and these functions would be maintained.

- While the models can approximate the impact on enrollment and enrollment-driven budgets, they cannot assess the possible impact on the quality of academic programs.

- All three segments of public higher education would be considered together and the impact of any proposal on every segment would be weighed.

- The existing access to public higher education should not be diminished as a consequence of any changes in student charges.

- Providing financial aid for needy students is primarily a public responsibility. That is, most of the additional financial aid funds needed would come from the State and federal governments, although some of the revenues from any fee increase might be used by the institutions involved to provide additional financial aid to their students.

- Insofar as possible, any increase in student charges should not produce significant enrollment shifts among the public segments.

- Any increase in undergraduate charges at the University would continue the existing flat rate which encourages students in that segment to pursue full-time studies.

- Any increase in student charges at the State University would take into account the existing differential in fees charged students taking more than six units and those charged students taking less.

- Any student charges imposed on part-time students in the Community Colleges would be based on some proportion of their credit load in relation to the credit load carried by full-time students.

DEVELOPING A MODEL

In order to assess the enrollment effects and the revenue implications of various student-charge options, a model was developed that could be applied to public higher education in California. The model distinguishes between resident and nonresident students at all academic levels in each segment. It distinguishes between full-time and part-time students in all segments, and between undergraduates and graduate students in the four-year segments. The model adjusts for differences in the price responsiveness of students from families with different income levels by using different tuition-elasticities for low-, middle-,

and high-income groups. It recognizes possible differences in charges between part-time and full-time students and differences in their eligibility for financial aid. It examines the existing financial aid programs, including the Cal Grant programs and the new Middle Income Student Assistance Act (MISAA), and their possible impact on net price changes, but it does not assume there necessarily would be any other automatic increases in the amount of student aid available. It attempts to differentiate between attrition and segmental shifts in enrollment. Finally, the model reflects the different kinds and combinations of students present in each of the public segments in its assessment of the possible enrollment implications of different student charges.

Many of these same distinctions are also used in analyzing the possible revenue implications of various levels of student charges. For each option tested, it assumes that no additional financial aid would be made available from the State and federal governments beyond the Basic Education Opportunity Grants (BEOG), as modified by MISAA, for those who are or would be eligible, and the added assistance current Cal Grant recipients would receive.

Specific Components of the Model to Assess Enrollment Effects

1 The Tuition Elasticity of Enrollment Demand

Tuition elasticity is defined as the percent change in enrollment produced by a 1.0 percent change in net price. It is this measure that enables us to apply the findings from national studies to the distinctive price and enrollment characteristics of California public higher education. Evaluating the impact of different price levels on enrollments in different kinds of institutions depends on the use of this measure. The model uses the tuition-elasticity concept for assessing the enrollment impact on the University and State University *

*The model uses the tuition-elasticity concept for the University and State University in an equation with the following general form

$$100(\Delta E_i/E_i) = \alpha_i(\Delta C_i/C_i)$$

Where

$100(\Delta E_i/E_i)$ = The percent change in enrollment for a particular type of student for a given change in student charges for that type of student

E_i = The current headcount enrollment for that type of student

α_i = The coefficient of tuition elasticity for that type of student.

ΔC_i = The net increase in charges paid by that type of student.

C_i = The current charges paid by that type of student.

Because student charges in the Community Colleges are essentially zero, and because the results of dividing any equation by zero are undefined, a different kind of equation was required for that segment.

The reader does not have to understand any of the formulas in the model in order to comprehend the assessments of various options that are made later. The formulas are provided only for those who are interested in the specific ways in which the computations are made. 67/

2. The Effect of Family Income on Tuition Elasticity

Most of the studies discussed earlier conclude that students' responsiveness to changes in student charges varies depending upon family-income level While not all studies agree on the magnitude of these variations, it appears that low-income students are approximately twice as price responsive as middle-income students. High-income students are about two-thirds as responsive as middle-income students. 68/ Therefore, the following coefficients of tuition elasticity are utilized in the model:

TABLE 11

TUITION ELASTICITY COEFFICIENTS BY INCOME LEVEL

Income Level	Coefficient
Low Income (Under $12,000)	-0.437
Middle Income ($12,000-$24,999)	-0.218
High Income ($25,000 and Above)	-0.146

3. Source of Family Income Information For Each Segment

The data on family income are taken from the 1975 Student Resource Survey published by the California Student Aid Commission. The information is several years old, but more recent data are not available. Furthermore, while the sampling techniques used for State University students and for full-time Community College students could have been improved, no better or more accurate information on this subject exists at the present time. Indeed, after adjusting the results of an earlier Student Aid Commission survey (1972) for changes in the Consumer Price Index, the results of the two surveys are comparable. This suggests either that a consistent bias exists in these two different surveys or that the

surveys are reasonably accurate. This report adopted the latter conclusion. It used the 1975 family-income data as the best approximation available of the actual income distribution within each segment, and adjusted the figures for changes in the Consumer Price Index between December 1974 and December 1978 The results are summarized in the following table. 69/

TABLE 12

PERCENTAGE DISTRIBUTION OF UNDERGRADUATES BY FAMILY INCOME LEVEL AND BY SEGMENT, 1978.

Income Level	University	State University	Community Colleges*
Low Income (Under $12,000)	16.7%	31.2%	38.4%
Middle Income ($12,000-$24,999)	37.3	42.5	38.0
High Income ($25,000 and Above)	46.0	26.3	23.6
Mean Income	$23,965	$18,530	$17,095
Median Income	$23,500	$17,000	$15,500

*Based on full-time students only.
Source of Data: California Student Aid Commission, Student Resource Survey, No. 2 (August 1976), p. 35. Figures adjusted for C.P I. changes between December 1974 and December 1978.

4. Distinction Between Resident and Nonresident Students in the University and State University

Nonresident, or out-of-state, students are charged the same fees as other students plus a nonresident tuition fee. In the University, nonresident tuition increased from $1,905 per year in 1978-79 to $2,400 this year. In the State University, nonresident tuition increased from $1,710 last year to $1,800 this year. Any increase in charges for resident students would be added to the increases already adopted for nonresident students Consequently, since both the current charge and the size of any future increase would vary between resident and nonresident students, the enrollment effects of such a change would also vary.

5. Distinctions Between Full-time and Part-time Students For Fee Purposes

As noted earlier, it is assumed that any increase in student charges in the University would not vary between full- and part-time students. It is also assumed that any increase in the State University would reflect the existing distinction in charges. In other words, students taking six or fewer units would be charged approximately 80.0 percent of what students taking more than six units are charged. It is also assumed that Community College students would be charged on some basis that recognized the large number of part-time students in that segment. The model therefore assumes that Community College students taking six or fewer units would be charged 60.0 percent of what those taking more than six units are charged. Of course, in all three segments the net price increase faced by students also depends on differences in aid eligibility between full- and part-time students.

6. The Middle Income Student Assistance Act (MISAA) and Eligibility For Basic Educational Opportunity Grants (BEOG)

Over the last decade the federal government has dramatically increased its commitment to provide student financial aid. The most recent action was the passage of the Middle Income Student Assistance Act, which takes effect this year. In an effort to provide financial assistance to students from middle-income families, as well as aid to those from low-income families, Congress modified the way parental assets were treated and changed the basis for computing the standard parental contribution The result was to raise the family-income ceiling for aid eligibility. Last year, for example, it was rare for a dependent student from a family of four to receive a BEOG grant if his or her parents' taxable income exceeded $15,000 per year. This year under the MISAA, similar students from families with annual incomes of up to $25,000 could be eligible for at least a minimum BEOG grant of $200.

The situation is different for part-time undergraduate students from these same income groups. First, those students taking fewer than six units per term are not eligible for financial aid no matter how low their family income Second, those taking from six to eleven units are eligible, in theory, for a fraction of what full-time students with comparable family incomes receive. In practice, however, the percentage of part-time undergraduates receiving any BEOG funds has been quite limited

Congress attempted to provide sufficient funds to raise the amount of the maximum BEOG grant from $1,600 to $1,800, or one-half of the cost of attendance, whichever is less. Congress also liberalized the provisions of the law affecting full- and part-time independent (self-supporting) students, and after several last minute compli-

cations were overcome the independent-student provisions were implemented this year as well. 70/

If student charges were increased, the additional financial need created would only be partially offset by an increase in BEOG funds. Indeed, even under optimum conditions, the State could not expect that any more than one-half of the additional financial need of full-time students from low-income families would be offset by BEOG monies, even with full funding of the program. Due to the recent changes in the law, however, most full-time students from middle-income families will become eligible for a BEOG grant for the first time in the 1979-80 academic year For many of them, this will have the effect of offsetting almost the entire amount of any increase of up to $200. Nevertheless, in subsequent years, the size of the BEOG grants that most middle-income students would receive would not increase if charges were increased. Moreover, students from high-income families would have to pay the entire amount of any increase themselves. Most part-time students, regardless of their family's income, could not count on much, if any, additional financial aid 71/

The models used in this study were designed to take all these factors into consideration in order to determine the net cost increases that different kinds of students would face if charges were raised.

7. California's State Student Aid Programs and Current Cal Grant A and Cal Grant B Recipients

The current Cal Grant A and Cal Grant B programs administered by the Student Aid Commission assist students in both public and independent institutions. The number of awards is fixed by statute, and this model assumes that only current recipients could count on aid from this source in the event of an increase in student charges. Cal Grant A recipients, including those who are among the Community College reserve winners, would have the entire amount of any fee increase offset by the State New Cal Grant B winners, however, do not receive any money from the State during their first year to cover student charges. Since most of these students are from disadvantaged, low-income families, they would probably qualify to have approximately one-half of any fee increase covered by a BEOG grant during their first year and the entire amount covered by the State after that. Table 13 shows the number of Cal Grant A and Cal Grant B recipients currently enrolled in each of the public segments. The figures are broken down by family-income level. Moreover, the figures for Cal Grant B indicate the number of recipients who would have a fee increase offset by their grant and the number who would not.

TABLE 13

CURRENT CAL GRANT A AND CAL GRANT B RECIPIENTS
BY FAMILY INCOME AND SEGMENT, 1978-79.

CAL GRANT A

Income Level	University Number	University Percent	CSUC Number	CSUC Percent	CCC Number	CCC Percent
Under $12,000	3,536	29.43%	3,076	36.31%	3,688	100.00%
$12,000-$24,999	7,432	61.85	4,973	58.71	-0-	0.00
$25,000 and up	1,048	8.72	422	4.98	-0-	0.00
TOTAL	12,016		8,471		3,688	

CAL GRANT B

Under $12,000	2,400	98.30%	3,592	97.00%	3,658	98.50%
$12,000-$24,999	42	1.70	111	3.00	56	1.50
$25,000 and up	-0-	0.00	-0-	0.00	-0-	0.00
TOTAL ELIGIBLE	2,442		3,703		3,714	
TOTAL RECIPIENTS	3,427		5,521		7,805	

Source of Data: California Student Aid Commission, Commission Agenda (October 1979). Also based on conversations between California Postsecondary Education Commission staff and Don Hills, Research Director, California Student Aid Commission

8. The Community College Case

Estimates of the enrollment impact of increased student charges in the Community Colleges are subject to a much higher degree of uncertainty than those for the public four-year segments. Both the undergraduate-graduate and the resident-nonresident distinctions are largely irrelevant in this segment. Data on income distribution exist only for full-time students. Almost all the national studies of the price responsiveness of students focus on traditional undergraduates between the ages of eighteen and twenty-four, but the Community Colleges also enroll large numbers of older students. The existing evidence suggests, moreover, that older students are more price responsive than younger ones, and that low-ability students are more price responsive than high-ability students. Finally, the current tuition-free status of California's Community Colleges makes projections based upon tuition-elasticity coefficients impossible to compute. Therefore, an alternative technique for estimating the enrollment effects of changes in student charges has been used. A brief summary of the methodology is provided in Appendix A of this report because it is too complicated to describe in the text 72/

Specific Components of the Model to Assess Revenue Effects

There are four components to the revenue model: (1) the gross revenues derived from higher fees, (2) the net revenues derived from higher fees, (3) the added costs to the State of funding current Cal Grant A and Cal Grant B recipients, and (4) the additional BEOG funds that increased student charges would bring into the State

1. Estimating the Gross Revenue That Would Be Derived From Increased Student Charges

The computation of the gross revenue generated in each segment by an increase in student charges involved not only multiplying the amount of the increase by the number of the students remaining to pay it, but subracting the amount of the current charges paid by those students who leave because of the increased charges.*

*For example, the additional gross revenue generated in each segment by a $100 increase in student charges can be calculated from the following formulas

$$R_{UC} = \$100(E-E') - \$595(E_{nr}-E_{nr}') - \$724(E') - \$2,629(E_{nr}')$$

$$R_{CSUC} = \$100(E_f-E_f') + \$80(E_p-E_p') + \$190(E_{nr}-E_{nr}') - \$205(E_f') - \$175(E_p') - \$1,915(E_{nr}')$$

$$R_{CCC} = \$100(E_f-E_f') + \$60(E_p-E_p')$$

Where

R = The additional gross revenue generated in the segment designated by the subscript

E = The resident undergraduate enrollment in the University regardless of credit load

E' = The resident undergraduate students in the University who would leave because of an increase in student charges

E_{nr} = The number of nonresident undergraduate students currently enrolled in that public segment

E_{nr}' = The number of nonresident undergraduate students who would leave because of the increase in student charges.

E_f = The number of resident undergraduates taking more than six units of course work per term

E_f' = The number of resident undergraduates taking more than six units of course work per term who would leave because of the increase in student charges

E_p = The number of resident undergraduate students taking six units or less per term

E_p' = The number of resident undergraduate students taking six units or less per term who would leave because of the increase in student charges

2. Estimating The Net Revenues Generated By Increased Student Charges

The gross revenue projections developed in the preceding section do not represent the amount of additional revenue each segment would have at its disposal even if all the funds from increased student charges were allocated to the segments. Although enrollment declines are taken into consideration in calculating the additional gross revenues that would be generated by increased student charges, they enter into the calculations a second time because of the State's existing budget formulas. These formulas require that if the enrollment losses--converted now from headcount students to full-time equivalent students (FTE)--exceed 2.0 percent of the segment's current FTE enrollment, the segment would be required to pay back to the State a certain amount per FTE student from its allotted budget. In the case of the Community Colleges, average daily attendance (ADA) is used as the measurement unit rather than FTE. 73/

3 Computing The Amount of Additional State Money Necessary To Fund Current Cal Grant A and B Recipients If Student Charges Were Increased

Although the number of Cal Grant awards currently is limited by statute, the amount of money necessary to fund them would increase if student charges were raised at public institutions. Further, some Community College students would be eligible for these awards if charges were imposed in that segment too The cost to the State for increases in the size of Cal Grants for current recipients can be computed by simply multiplying the number of recipients in each public segment by the amount of any increase in student charges in that segment. The one exception would be new Cal Grant B recipients.

4. Computing The Amount of Additional Federal BEOG Funds That Would Be Made Available To California Students If Student Charges Were Made

The recent changes in federal student aid programs will increase the number of students eligible for BEOG grants this year, the size of the grants received by many students, and the number of federal dollars for student aid coming into California, whether student charges are raised in its public institutions or not. Moreover, there is every indication that Congress will be watching states closely to see that the BEOG funds that were to be used for financing the Middle Income Student Assistance Act are not consumed by states seeking to "capture" these monies by raising student charges at public postsecondary institutions. 74/

If charges were increased, the amount of additional federal BEOG funds that would be available to public institutions would vary with

each segment The critical factor is the number of full-time undergraduates in each of the different income groups within the segment. The eligibility indexes for full-time undergraduates from families with different annual incomes were computed using both the old BEOG formulas and the new ones. To make the calculations more manageable, the indexes were computed for dependent students from four-person families with one child in college, since such students are generally regarded as typical To determine both the number of students eligible for federal financial aid and the amount of aid each would receive if charges were increased, the BEOG eligibility indexes for full-time students, and for part-time students taking more than six units per term, are then compared to the income distribution of such students in each segment. Thirty-four different income groupings are used in the actual computations for each option tested, but the results are then aggregated into three income categories (low, middle, and high) for presentation in the summary tables. It is in this manner that the estimates of additional federal revenue are developed for each public segment under each option.

A Final Note On The Models

Several other approaches could have been used to investigate the possible impact of increased student charges on enrollment and revenues in California public higher education. It would have been possible to conduct an extensive study using individual student data and the most sophisticated mathematical models to measure the effects of price, ability, family income, and other critical variables on student access and choice. The amount of time required and the substantial expense involved for such a study made this option unattractive On the other hand, it would have been possible to despair over the imperfections in the available data and simply apply a single, national-average figure for enrollment losses to California's public institutions. To do so would be to ignore all the important differences in public higher education between California and the rest of the nation It would also have ignored the important differences in the cost, mission, selectivity, and types of students that exist among the State's public segments of higher education.

The approach used in this report involves neither of these extremes. Rather than attempt to replicate the most sophisticated studies on student demand and choice, the relevant findings from the best national studies were selected for application to California's situation. Not all the data necessary for an assessment of the impact of increased charges on enrollment existed for each public segment in the precise form needed or desired. The imperfections in these data could not be ignored, but neither could the models ignore the known differences in the price responsiveness of different kinds of students at different kinds of institutions. Consequently, while

exact data from the Commission's information system were used wherever possible, the best available data were used where necessary. Certain assumptions had to be made to complete workable models and to secure some of the information needed for certain formulas. The assumptions incorporated into the models are specified in each instance so that technical adjustments or corrections which might later prove necessary could be made. The results reported on the tests of each option in the following sections represent the best possible estimate given the inherent limitations of current knowledge. None of the figures should be accepted uncritically, nor should they be dismissed out of hand. They provide reasonably accurate approximations of the likely enrollment and revenue implications of possible changes in student charges in California public higher education.

CHAPTER IV

TESTING POSSIBLE POLICY OPTIONS

This chapter examines the enrollment and revenue implications of various levels of student charges. For each method of setting charges examined, the new fee levels are calculated by segment and the implications of that option are assessed. The effects of increased charges on enrollment, student composition, and segmental revenues are evaluated. Nevertheless, while it is hoped that these tests will help clarify the key questions, they in no way constitute a policy recommendation.

OPTION 1. LEAVE STUDENT CHARGES AT THEIR CURRENT LEVELS.

The decision to maintain the current levels of student charges in all three public segments could affect enrollment, revenues, and educational programs in California public higher education in the long run. If budget reductions of the magnitude faced by the four-year segments for the last two years were to continue to be imposed upon them, it would have a serious impact eventually. Maintaining student charges at their present levels, except for the planned increases in nonresident tuition at the University and State University, would not affect student costs or the current level of demand for student financial aid Therefore, enrollments in the four-year segments are not likely to decline. The question is how long the University and State University can continue to absorb large budget cuts without damage to their educational programs.

The lack of additional funds might prompt the Community Colleges to reduce their course offerings rather than sacrifice their existing programs In 1978-79, the Community Colleges responded to their budget deficits by reducing the number of courses offered, particularly noncredit evening courses for part-time students. The result was a loss of nearly 125,000 students, for an overall enrollment decline of 9.5 percent. Enrollment in credit programs dropped by 6 1 percent, while that in noncredit programs dropped by 29.0 percent Future budget deficits might bring a similar response by Community College officials, but the return to an enrollment sensitive budget formula makes this somewhat unlikely.

OPTION 2. RAISE STUDENT CHARGES BY $100 PER YEAR FOR FULL-TIME UNDERGRADUATES IN ALL THREE PUBLIC SEGMENTS, BY $80 FOR PART-TIME STUDENTS TAKING SIX UNITS OR LESS PER TERM IN THE STATE UNIVERSITY, AND BY $60 FOR STUDENTS TAKING SIX UNITS OR LESS IN THE COMMUNITY COLLEGES.

The purpose of including this option is to spell out the full implications of the models developed earlier. The tables which follow summarize the enrollment and revenue impact of increasing student charges for undergraduates by $100. The figures reveal that BEOG funds would offset one-half of the cost increase for most low-income students enrolled fulltime. The effect of implementing the Middle Income Student Assistance Act this year is quite evident. Its impact on the net cost increase faced by students is particularly pronounced on those from middle-income families, since most of these students are eligible for a BEOG grant for the first time this year. 75/ Current Cal Grant recipients would have the entire amount of any increase offset by the State, except for first-time Cal Grant B winners whose grants do not cover any fee costs during the first year of college. Only a fraction of the potentially eligible part-time students presently receive BEOG support, however, and it is assumed that this situation would not change significantly. 76/ Further, the projections of financial aid offsets incorporated into the model are based solely on the provisions of existing financial aid programs. While the model could accommodate new student aid programs, no attempt was made to speculate as to what they might be.

Table 14 summarizes the impact of student-charge increases on undergraduate enrollment at the University of California. The model projects an overall enrollment decline of 1.42 percent prior to taking current Cal Grant recipients into consideration. Such an attrition rate is quite consistent with what is known about the behavior of high-ability students from middle- and upper-income groups--the predominant type of undergraduate at the University. Moreover, there are 15,443 full-time undergraduates at the University who currently have either a Cal Grant A or a Cal Grant B award. Approximately 14,458 of these grant recipients would have the entire fee increase offset by the State. Thus, there would probably be no drop in the number of full-time undergraduates at the University if student charges were increased by $100 per year, although there would be a possible loss of 232 part-time students. 77/ Despite this, there would be no appreciable change in either the size or the composition of the University's undergraduate student body.

Table 15 shows that the impact of a $100 fee increase on undergraduate enrollment would be greater in the California State University and Colleges, in spite of the provision for a slightly lower increase for students taking six units or less per term. Overall, the projections suggest that the undergraduate, headcount enrollment in the State University would drop by 8,800 students, or by 3 69 percent. The presence of 8,471 Cal Grant A recipients and 3,703 Cal Grant B recipients would help to reduce the attrition among full-time undergraduates, but the attrition among part-time students would be substantial. 78/

TABLE 14

ENROLLMENT IMPACT OF A $100 INCREASE IN STUDENT CHARGES AT THE UNIVERSITY

	Income Level	Percent	Number	Tuition Elasticity	Net Cost Increase	Students Lost Percent	Students Lost Number	Net Loss After Cal Grant Offsets Number	Net Loss After Cal Grant Offsets Percent
Nonresident Undergraduates	High	--	3,891	-0.146	$595	-3.32%	- 129	- 129	-3.32%
Resident Undergraduates									
Full-Time	Low	16.7%	13,595	-0.437	$0-$50	-2.25	- 306	- 0	-0.00
	Middle	37.3	30,365	-0.218	$0	-0.00	- 0	- 0	-0.00
	High	46.0	37,447	-0.146	$100	-2.02	- 756	- 0	-0.00
	TOTAL	--	81,407	--	--	-1.30	-1,062	- 0	-0.00
Part-Time (6.1 - 11.9 Units)	Low	16.7	771	-0.437	$0-$74	-3.50	- 27	- 27	-3.50
	Middle	37.3	1,722	-0.218	$0	-0.00	- 0	- 0	-0.00
	High	46.0	2,123	-0.146	$100	-2.03	- 43	- 43	-2.03
	TOTAL	--	4,616	--	--	-1.52	- 70	- 70	-1.52
Part-Time (6.0 or Less Units)	Low	16.7	175	-0.437	$100	-6.28	- 11	- 11	-6.28
	Middle	37.3	391	-0.218	$100	-3.07	- 12	- 12	-3.07
	High	46.0	481	-0.146	$100	-2.08	- 10	- 10	-2.08
	TOTAL	--	1,047	--	--	-3.15	- 33	- 33	-3.15
Total Undergraduates	Low	--	14,541	-0.437	--	--	--	- 38	-0.26
	Middle	--	32,478	-0.218	--	--	--	- 12	-0.04
	High	--	43,942	-0.146	--	--	--	- 182	-0.42
	TOTAL	--	90,961	--	--	--	--	- 232	-0.26

TABLE 15

ENROLLMENT IMPACT OF A $100 INCREASE IN STUDENT CHARGES AT THE STATE UNIVERSITY

	Income Level	Percent	Number	Tuition Elasticity	Net Cost Increase	Students Lost Percent	Students Lost Number	Net Loss After Cal Grant Offsets Number	Net Loss After Cal Grant Offsets Percent
Nonresident Undergraduates	High	--	8,507	-0.146	$190	-1.45%	- 123	- 123	-1.45%
Resident Undergraduates									
Full-Time	Low	31.2%	50,197	-0.437	$0-$50	-9.49	-4,756	- 0	-0.00
	Middle	42.5	68,376	-0.218	$ 0	-0.00	- 0	- 0	-0.00
	High	26.3	42,313	-0.146	$100	-7.12	-3,013	-2,591	-6.12
	TOTAL	--	160,886	--	--	-4.83	-7,769	-2,591	-1.61
Part-Time (6.1 - 11.9 Units)	Low	31.2	11,088	-0.437	$42-$76	-15.02	-1,665	-1,665	-15.02
	Middle	42.5	15,104	-0.218	$0-$100	- 0.32	- 48	- 48	- 0.32
	High	26.3	9,346	-0.146	$100	- 7.12	- 665	- 665	- 7.12
	TOTAL	--	35,538	--	--	- 6.69	-2,378	-2,378	- 6.69
Part-Time (6.0 or Less Units)	Low	31.2	9,463	-0.437	$ 80	-19.98	-1,891	-1,891	-19.98
	Middle	42.5	12,890	-0.218	$ 80	- 9.97	-1,285	-1,285	- 9.97
	High	26.3	7,976	-0.146	$ 80	- 6.67	- 532	- 532	- 6.67
	TOTAL	--	30,329	--	--	-12.23	-3,708	-3,708	-12.23
Total Undergraduates	Low	--	70,748	-0.437	--	--	--	-3,556	- 5.03
	Middle	--	96,370	-0.218	--	--	--	-1,333	- 1.38
	High	--	68,142	-0.146	--	--	--	-3,911	- 5.74
	TOTAL	--	238,260	--	--	--	--	-8,800	- 3.69

It may appear odd that the enrollment decline would be so much greater in the State University than in the University, but there are a number of factors which may account for this. The current fee structures in the two segments differ markedly, and $100 represents a much greater percentage increase in the State University. Further, despite current student aid programs, low-income students are more price responsive than those from families in the higher-income brackets. Low-income students account for nearly one out of every three undergraduates in the State University, but only about one out of every six in the University. The admission requirements and the characteristics of the students differ between the two segments, and there is likely to be some differential in the future earnings potential of their graduates as well. The possible substitution of two years at a local Community College in the event of a cost increase would be much more likely among lower division commuter students at the State University than among typical lower division students at the University. The greater incidence of part-time students in the State University also makes the higher overall attrition rate in that segment more likely. 79/

Table 16 indicates that the attrition rate in the Community Colleges would be higher than in the other two public segments. Overall enrollment would drop by 5.07 percent, or by more than 58,770 students. The case of the Community Colleges is unique because these schools currently do not charge fees to their regular students. The income distribution among full-time Community College students most closely resembles that in the State University. Not surprisingly, the projected attrition rates for full-time students in both segments are quite similar prior to taking Cal Grant offsets into consideration. Since Cal Grant A awards cover only the recipients' required fees, Community College students currently do not receive these awards. There presently are 3,688 Cal Grant A reserve winners attending Community Colleges; they would presumably have the entire cost of any fee increase covered, as would second year Cal Grant B recipients. With many fewer Cal Grant A winners, and with a much higher percentage of first-year Cal Grant B winners than either of the public four-year segments, the net attrition rate among full-time undergraduates in the Community Colleges would be greater.

Among part-time students, attrition rates in the Community Colleges would be lower than those in the State University, especially for students enrolled for six units or less per term. These lower rates could be attributed, in part, to the lack of educational alternatives for many Community College students, and to the fact that the Community Colleges would still be the least expensive of all postsecondary education alternatives. For vocational students in particular, the only alternative is a much higher-priced proprietary school, and for the others who are not eligible for the University or State University, the only alternative is not to attend college at all

TABLE 16

ENROLLMENT IMPACT OF A $100 INCREASE IN STUDENT CHARGES IN THE COMMUNITY COLLEGES

	Income Level	Percent	Number	Tuition Elasticity	Net Cost Increase	Students Lost Percent	Students Lost Number	Net Loss After Cal Grant Offsets Number	Net Loss After Cal Grant Offsets Percent
Undergraduates									
Full-Time	Low	38.4%	120,249	-0.437	$0-$50	-9.08%	-10,914	-3,568	-2.97%
	Middle	38.0	118,997	-0.218	$0-$100	-0.54	- 639	- 583	-0.49
	High	23.6	73,903	-0.146	$100	-7.12	- 5,262	-5,262	-7.12
	TOTAL	--	313,149	--	--	-5.37	-16,815	-9,413	-3.00
Part-Time (6.1 - 11.9 Units)	Low	38.4	82,838	--	$0-$76	-6.32	- 5,234	- 5,234	-6.32
	Middle	38.0	81,976	--	$0-$100	-2.47	- 2,021	- 2,021	-2.47
	High	23.6	50,911	--	$100	-9.68	- 4,926	- 4,926	-9.68
	TOTAL	--	215,725	--	--	-5.65	-12,181	-12,181	-5.65
Part-Time (6.0 or Less Units)	Low	38.4	242,281	--	$ 60	-5.88	-14,255	-14,255	-5.88
	Middle	38.0	239,756	--	$ 60	-5.88	-14,105	-14,105	-5.88
	High	23.6	148,901	--	$ 60	-5.92	- 8,820	- 8,820	-5.92
	TOTAL	--	630,938	--	--	-5.89	-37,180	-37,180	-5.89
Total Undergraduates	Low	--	445,368	--	--	--	--	-23,057	-5.18
	Middle	--	440,729	--	--	--	--	-16,709	-3.79
	High	--	273,715	--	--	--	--	-19,008	-6.94
	TOTAL	--	1,159,812	--	--	--	--	-58,774	-5.07

Altogether, the figures in these tables indicate that a $100 across-the-board increase in student charges in the three public segments would result in an enrollment decline of more than 67,800 students. Because of the annual cycle of new freshmen and transfer students entering the segments at the start of each year, and others transferring or graduating at the end, this projected enrollment decline is not confined strictly to currently enrolled students. The measures used in this study and others like it assess the quantity of education demanded at a particular price and the impact of price changes on the level of student participation Consequently, the largest component of the enrollment decline would be from attrition; that is, it would be made up of currently enrolled students who decided they would no longer continue The rest of the enrollment loss involves prospective students who might have attended a segment at the current price level but would decline to do so if charges were increased. 80/ Under the option outlined here, middle-income students would be least affected because of the Middle Income Student Assistance Act Part-time students, especially those enrolled for six units or less per term, would be the most adversely affected. Among the segments, the University's enrollment would suffer the smallest losses overall. The State University's enrollment drop would be somewhat higher, and the largest percentage decrease and the largest drop in the number of students enrolled would occur in the Community Colleges. Of course, if a portion of the revenue generated by a $100 fee increase were set aside by each segment to provide additional financial aid for its students, the enrollment losses would be reduced somewhat from the levels projected here.

The revenue implications of an increase in student charges also vary Table 17 shows that the increase in gross revenues from a $100 increase in charges would be $10,521,377 at the University, $20,965,050 at the State University, and $86,353,480 in the Community Colleges. Of this amount, the State would actually provide $3.4 million in the form of larger awards to current Cal Grant A and Cal Grant B recipients enrolled in the three public segments. Nearly $40.2 million would come from the federal government in the form of BEOG grants to both current recipients and those who become eligible this year. The latter group includes large numbers of students from middle-income families who will be eligible for a BEOG grant for the first time because of the Middle Income Student Assistance Act. In fact, approximately one-half of the federal BEOG total represents funds intended to assist middle-income students which would be captured instead by the public segments if they raised their student charges. The largest portion of the increase in student-charge revenues--over $72,263,495--would come directly from students and their families.

The gross revenue figures in Table 17 do not represent the actual amount of additional revenue each segment would have at its disposal,

TABLE 17

REVENUE IMPACT OF A $100 INCREASE IN STUDENT CHARGES
IN THE THREE PUBLIC SEGMENTS

INCREASE IN GROSS REVENUES

Segment	Gross Revenues	Sources of Revenues Paid as Student Fees		
		Students	State	Federal BEOG
University	$10,521,377	$4,987,935	$1,445,880	$4,087,642
State University	$20,965,050	$8,444,084	$1,217,400	$11,303,566
Community Colleges	$86,353,480	$58,831,476	$ 740,200	$26,781,804
TOTAL	$117,839,907	$72,263,495	$3,403,480	$42,173,012

NET REVENUE INCREASE

Segment	Gross Revenues	Budget Reductions		Net Revenue Increase
		Same Year	Following Year	
University	$10,521,377	$ 0	$ 398,275	$10,123,102
State University	$20,965,050	$1,876,937	$4,997,691	$14,090,422
Community Colleges	$86,353,480	$13,027,116	$14,858,532	$58,467,832
TOTAL	$117,839,907	$14,904,053	$20,254,498	$82,681,356

even if all the monies from increased charged were allocated to the segments As noted earlier, whenever the FTE enrollment losses accompanying an increase in charges exceed 2.0 percent of the current FTE enrollment, a segment would incur an immediate reduction in its budget. Furthermore, the segment's budget the following year would be reduced to reflect the entire FTE enrollment loss, not just that portion which exceeded 2.0 percent.

Converting the headcount enrollment losses projected in Tables 14, 15, and 16 into FTE enrollment losses makes it possible to estimate the magnitude of the budget penalties each segment would incur. Although the following estimates are somewhat tentative, it appears that the University would not incur any immediate budget penalty; the 179 FTE enrollment loss it would experience under this option would not exceed 2.0 percent of its current undergraduate FTE enrollment. The following year, however, the University's budget would be reduced by $398,275 to compensate for the enrollment loss. Both the State University and the Community Colleges would experience FTE enrollment losses in excess of the 2.0 percent limit and would face both immediate- and subsequent-year budget reductions. It appears that the State University would face a substantial budget payback or reduction of $1,876,937 in the first year, and an additional budget reduction of $4,997,691 the following year. The Community Colleges would lose $13,027,116 in General Fund revenues in the first year because of the projected 25,032 ADA enrollment loss this option would produce. If the lower enrollment continued, the Community Colleges would experience an additional budget reduction of $14,858,532 in the following year.

The amount of money that each segment would have left to spend on every remaining FTE student would increase slightly if student charges were raised by $100 per year, but the net increase in its total budget would not necessarily offset the reductions mandated by the 1979-80 Budget Act. At the University, the net increase would be approximately $10,521,377 in 1979-80 and $10,123,102 the following year. In the State University, the net change from a $100 increase in student charges would involve a headcount enrollment loss of 8,800 and a net increase in revenues the first year of $19,088,113. The second year, however, the net revenues raised by the higher charges would be $14,090,422 because of the additional budget reductions the enrollment loss would produce. In the Community Colleges the $86,353,480 in additional fee income would be reduced immediately by $13,027,116 in General Fund appropriations. The net revenue increase of $73,326,364 the first year would be reduced to $58,467,832 the following year. At the same time, the overall headcount enrollment loss in the Community Colleges would be 58,774.

It is somewhat difficult to assess the impact of this student-charge option on educational programs. The net revenue increases in the

three public segments would not be large enough to offset the budget cuts each must try to absorb this year. The faculty layoffs and other dislocations that would accompany enrollment declines would also take their toll in the State University and Community Colleges. At the same time, the amount of money that would be available to educate those students who remained would be greater on a per-student basis. Thus, while access would diminish, more money would be available to finance the programs for the remaining undergraduates.

OPTION 3: BASE UNDERGRADUATE STUDENT CHARGES ON A PERCENTAGE OF THE COST OF INSTRUCTION IN EACH SEGMENT BY SETTING CHARGES AT 16.7 PERCENT FOR COMMUNITY COLLEGES, 20.0 PERCENT FOR THE STATE UNIVERSITY, AND 25.0 PERCENT FOR THE UNIVERSITY.

The first step in assessing this option is to determine the approximate cost of instruction for resident undergraduates in each of the three public segments. The figures used here are derived by adjusting the cost-of-instruction figures reported in the Coordinating Council's 1974 report, The Costs of Instruction in California Public Higher Education, for changes in the Consumer Price Index. That report was never intended to provide strict comparability of instructional costs among segments, and the Legislature recently requested the Commission to investigate the feasibility of developing a methodology that would permit more accurate cost-of-instruction comparisons. Certainly a better computation of the costs of instruction would be needed before such a method of setting fees could be even considered. The estimates developed in this report should be regarded as plausible, "ballpark" approximations of the direct and indirect costs of instruction; they are by no means exact Nevertheless, they provide a rough indication of the magnitude of the increases in student charges that the adoption of this method would entail and illustrate the implications of such a change.

TABLE 18

THE COST OF INSTRUCTION PER FTE OR ADA BY LEVEL OF STUDENT AND BY SEGMENT, 1978-79

Segment	Lower Division	Upper Division	Average Undergraduate
University	$3,020	$3,245	$3,145
State University	$2,520	$2,795	$2,695
Community Colleges	$1,560	--	$1,560

Source of Data: Coordinating Council of Higher Education, The Costs of Instruction in California Public Higher Education, 1974. Cost estimates here are adjusted for CPI changes.

The percentages of the costs of instruction assigned to students under this option are similar to those currently used in the State of Washington. The maximum Student Activity Fee would be set at not more than 10.0 percent of a segment's other student charges. Charging students taking six or less units 80.0 percent of what full-time students pay at the State University and 60.0 percent of what they pay in the Community Colleges was used again under this option. The resulting student charges in each segment are summarized in Table 19 81/

TABLE 19

TOTAL CHARGES BY SEGMENT USING COST-OF-INSTRUCTION METHOD

Segment	Average Cost	Instruction Charge	Activity Fee	Total Charges
University	$3,145			
Residents	--	$786	$79	$ 865
Nonresidents	--	786	79	3,265
State University	$2,695			
Residents				
6 units or less	--	$431	$54	$ 485
6.1 units or more	--	539	54	583
Nonresidents	--	539	54	2,383
Community Colleges	$1,560			
6 units or less	--	$156	$26	$ 182
6.1 units or more	--	260	26	286

Under this option, the average student charges for a resident undergraduate at the University would be raised from $724 to $865 per year. The nonresident undergraduate would pay the same $141-per-year increase plus an additional $495 increase in nonresident tuition. In the State University, full-time undergraduates would see their student charges increased from the current $205 per year to $583, and nonresident students would experience an increase from $1,915 to $2,383 per year. In the Community Colleges, students taking more than six units would be charged $286 per year; those taking six or fewer units would pay $182. With no additional student financial aid programs beyond those currently operating, the impact of this option on enrollment would be substantial, especially in the State University and the Community Colleges. The results for all three segments and for the different kinds of students in each are summarized in Tables 20, 21, and 22.

TABLE 20

ENROLLMENT IMPACT OF ADOPTING OPTION 3 FOR STUDENT CHARGES AT THE UNIVERSITY

	Income Level	Percent	Number	Tuition Elasticity	Net Cost Increase	Students Lost Percent	Students Lost Number	Net Loss After Cal Grant Offsets Number	Net Loss After Cal Grant Offsets Percent
Nonresident Undergraduates	High	--	3,891	-0.146	$636	-3.53%	- 137	- 137	-3.53%
Resident Undergraduates									
Full-Time	Low	16.7%	13,595	-0.437	$0-$77	-3.48	- 473	- 0	-0.00
	Middle	37.3	30,365	-0.218	$ 0	-0.00	- 0	- 0	-0.00
	High	46.0	37,447	-0.146	$141	-2.84	-1,063	- 15	-0.04
	TOTAL	--	81,407	--	--	-1.89	-1,536	- 15	-0.02
Part-Time (6.1 - 11.9 Units)	Low	16.7	771	-0.437	$0-$103	-4.80	- 37	- 37	-4.80
	Middle	37.3	1,722	-0.218	$0-$141	-0.29	- 5	- 5	-0.29
	High	46.0	2,123	-0.146	$141	-2.84	- 60	- 60	-2.84
	TOTAL	--	4,616	--	--	-2.21	- 102	- 102	-2.21
Part-Time (6.1 or Less Units)	Low	16.7	175	-0.437	$141	-8.51	- 15	- 15	-8.51
	Middle	37.3	391	-0.218	$141	-4.24	- 16	- 16	-4.24
	High	46.0	481	-0.146	$141	-2.84	- 14	- 14	-2.84
	TOTAL	--	1,047	--	--	-4.30	- 45	- 45	-4.30
Total Undergraduates	Low	--	14,541	-0.437	--	--	--	- 52	-0.36
	Middle	--	32,478	-0.218	--	--	--	- 21	-0.06
	High	--	43,942	-0.146	--	--	--	- 226	-0.51
	TOTAL	--	90,961	--	--	--	--	- 299	-0.33

TABLE 21

ENROLLMENT IMPACT OF ADOPTING OPTION 3 FOR STUDENT CHARGES AT THE STATE UNIVERSITY

	Income Level	Percent	Number	Tuition Elasticity	Net Cost Increase	Students Lost Percent	Students Lost Number	Net Loss After Cal Grant Offsets Number	Net Loss After Cal Grant Offsets Percent
Nonresident Undergraduates	High	--	8,507	-0.146	$468	- 3.57%	- 304	- 304	- 3.57%
Resident Undergraduates									
Full-Time	Low	31.2%	50,197	-0.437	$157-$214	-42.52	-21,342	-14,674	-29.23
	Middle	42.5	68,376	-0.218	$0-$378	- 0.98	- 670	- 0	- 0.00
	High	26.3	42,313	-0.146	$378	-17.23	- 7,290	- 6,868	-16.23
	TOTAL	--	160,886	--	--	-18.21	-29,302	-21,542	-13.39
Part-Time (6.1 - 11.9 Units)	Low	31.2	11,088	-0.437	$262-$292	-47.28	- 5,243	- 5,243	-47.28
	Middle	42.5	15,104	-0.218	$0-$378	- 6.34	- 958	- 958	- 6.34
	High	26.3	9,346	-0.146	$378	-17.23	- 1,610	- 1,610	-17.23
	TOTAL	--	35,538	--	--	-21.98	- 7,811	- 7,811	-21.98
Part-Time (6.0 or Less Units)	Low	31.2	9,463	-0.437	$310	-49.75	- 4,708	- 4,708	-49.75
	Middle	42.5	12,890	-0.218	$310	-24.82	- 3,199	- 3,199	-24.82
	High	26.3	7,976	-0.146	$310	-16.62	- 1,236	- 1,236	-16.62
	TOTAL	--	30,329	--	--	-30.15	- 9,143	- 9,143	-30.15
Total Undergraduates	Low	--	70,748	-0.437	--	--	--	-24,625	-34.81
	Middle	--	96,370	-0.218	--	--	--	- 4,157	- 4.31
	High	--	68,142	-0.146	--	--	--	-10,018	-14.70
	TOTAL	--	238,260	--	--	--	--	-38,800	-16.28

TABLE 22

ENROLLMENT IMPACT OF ADOPTING OPTION 3 FOR STUDENT CHARGES IN THE COMMUNITY COLLEGES

	Income Level	Percent	Number	Tuition Elasticity	Net Cost Increase	Students Lost Percent	Students Lost Number	Net Loss After Cal Grant Offsets Number	Net Loss After Cal Grant Offsets Percent
Undergraduates									
Full-Time	Low	38.4%	120,249	-0.437	$98-$160	-32.11%	-38,658	-31,312	-26.04%
	Middle	38.0	118,997	-0.218	$0-$49	- 0.26	- 310	- 254	- 0.21
	High	23.6	73,903	-0.146	$286	-15.81	-11,684	-11,684	-15.81
	TOTAL	--	313,149	--	--	-16.18	-50,652	-43,250	-13.81
Part-Time (6.1 - 11.9 Units)	Low	38.4	82,838	--	$192-$224	-19.99	-16,557	-16,557	-19.99
	Middle	38.0	81,976	--	$0-$286	- 3.50	- 2,868	- 2,868	- 3.50
	High	23.6	50,911	--	$286	-25.34	-12,899	-12,899	-25.34
	TOTAL	--	215,725	--	--	-14.98	-32,324	-32,324	-14.98
Part-Time (6.0 of Less Units)	Low	38.4	242,281	--	$182	-16.71	-40,492	-40,492	-16.71
	Middle	38.0	239,756	--	$182	-16.71	-40,070	-40,070	-16.71
	High	23.6	148,901	--	$182	-16.81	-25,035	-25,035	-16.81
	TOTAL	--	630,938	--	--	-16.74	-105,597	-105,597	-16.74
Total Undergraduates	Low	--	465,368	--	--	--	--	- 88,361	-18.99
	Middle	--	448,729	--	--	--	--	- 43,192	- 9.62
	High	--	273,715	--	--	--	--	- 49,618	-18.13
	TOTAL	--	1,159,812	--	--	--	--	-181,171	-15.62

Because the increases in student charges under this option would vary widely, the enrollment impact reveals much greater variation among the segments than occurred under Option 2. Table 20 shows that the overall enrollment decline in the University is likely to be very slight--137 nonresident undergraduates and 162 resident students, or an overall enrollment drop of less than 1.0 percent.

The implications of adopting a particular method for determining student charges, however, must be assessed in terms of its impact on all three segments. Thus, while the cost-of-instruction method outlined in this option would have little adverse effect on enrollments in the University, it would have a greater impact on the State University and the Community Colleges.

Table 21 shows that undergraduate headcount enrollment at the State University would plunge by approximately 38,800 students. This is equivalent to approximately one out of every six of its current undergraduates. This would be an enrollment loss nearly equal to the total 1978-79 undergraduate enrollments at the San Diego and Sacramento campuses combined, or more than double the combined undergraduate enrollment at the five smallest State University campuses last year. The resulting undergraduate enrollment would return the State University system to about the size it was more than a decade ago.

The full impact of such a change on individual campuses is almost impossible to gauge. Clearly, those campuses which have been most successful in attracting minority students and students from low-income families would face the most serious enrollment losses. Even with the existing student financial aid programs, it is precisely these groups which would experience the largest percentage declines in enrollment. Those campuses with higher-than-average numbers of part-time students would also be hard hit. When coupled with the continuing shift in the ethnic composition of California's population and the projected decline in the size of the eighteen- to twenty-four-year-old population over the next fifteen years, the total impact of these changes would be enormous. At the very least, the increased charges alone would leave the State University's undergraduate student body both smaller than it is now and with smaller percentages of low-income, minority, and part-time students.

The effect of Option 3 on Community College enrollment is even greater in terms of the number of students affected. Altogether, 15.6 percent of the current Community College enrollment would depart--representing a loss of more than 181,100 students. The lack of reliable data on the income distribution of part-time Community College students makes it difficult to speak with any assurance about the ways in which the increased charges would alter the size and composition of the student body. It appears that more than three-

fourths of all the enrollment losses would occur among part-time students. The composition of the student body would change in even more significant ways, however, because of the projected loss of nearly one out of every four low-income students enrolled full time. Many of these students would be from ethnic minorities. The net effect would be to return Community College enrollments to near their 1973 level. In the process, access to postsecondary education would diminish and certain groups of students and particular colleges would be more seriously affected than others.

The gross revenues produced by the increased student charges outlined in Option 3 vary widely from segment to segment, as Table 23 shows. In the University, $14,164,111 in additional student fee revenue would be raised. Approximately $5,745,084 of this would be from additional federal BEOG funds for eligible students, $2,038,578 from increased State payments to current Cal Grant A and Cal Grant B recipients, and the remaining $6,380,449 directly from students and their families.

In the State University, approximately $66,953,191 in additional student fee revenue would be raised. Federal BEOG funds would increase by $36,443,215 for eligible students, although nearly half of this amount would represent monies the State University would "capture" from middle-income students if it raised fees to coincide with the implementation of the Middle Income Student Assistance Act. 82/ Current Cal Grant recipients would receive an additional $4,601,772 from the State Scholarship Commission. The remaining $25,908,204 would come from students and their families.

In the Community Colleges, the added revenues from Option 3 would amount to $225,255,860. Of this amount, about $70,517,386 would be from additional BEOG funds, $2,116,972 would come from higher State grants to current Cal Grant A and eligible Cal Grant B recipients, and the remaining $152,621,502 from the students who would still be enrolled.

When the headcount enrollment declines projected under this option are converted to FTE students or ADA, its budget implications can be assessed and the net increase in revenues estimated. The FTE enrollment loss projected for the University would not exceed the 2.0 percent leeway permitted in budgeting so there would be no payback required the first year. The loss of 224 FTE undergraduate students, however, would result in a budget cut of $498,400 the following year. The FTE enrollment losses projected for the State University--24,894 FTE students--exceed the 2.0 percent figure by a considerable amount, and that segment would face a first-year budget reduction of $32,835,186, if Option 3 were adopted. Furthermore, there would be an additional budget penalty of $4,997,691 the following year. The Community Colleges would face the largest budget cut since

TABLE 23

REVENUE IMPACT OF ADOPTING OPTION 3 FOR STUDENT CHARGES
IN THE THREE PUBLIC SEGMENTS

INCREASE IN GROSS REVENUES

Segment	Gross Revenues	Sources of Revenues Paid as Student Fees		
		Students	State	Federal BEOG
University	$14,164,111	$6,380,449	$2,038,578	$5,745,084
State University	$66,953,191	$25,908,204	$4,601,772	$36,443,215
Community Colleges	$225,255,860	$152,621,502	$2,116,972	$70,517,386
TOTAL	$306,373,162	$184,910,155	$8,757,322	$112,705,685

NET REVENUE INCREASE

Segment	Gross Revenues	Budget Reductions		Net Revenue Increase
		Same Year	Following Year	
University	$14,164,111	$ 0	$ 498,400	$13,665,771
State University	$66,953,191	$32,835,186	$4,997,691	$29,120,314
Community Colleges	$225,255,860	$80,590,102	$14,858,532	$129,807,226
TOTAL	$306,373,162	$113,425,288	$20,354,623	$172,593,226

enrollment would decrease by about 72,343 ADA. This would produce a first-year payback of more than $80.5 million, and an added second year budget cut of almost $14.9 million.

The enrollment declines under this option would significantly reduce the revenue increases produced by higher student charges. From the standpoint of the public segments, the net revenue gained under this option, assuming again that the revenue from the increased fees would be made available to them, would be fairly substantial. The University would lose less than 1 0 percent of its undergraduate students and gain $13,665,771 in funds. The State University would experience a decline of 16.3 percent, or 38,800 undergraduates, and increase its budget by $29,120,314. The Community Colleges would lose about 181,171 students, or 15.6 percent of current enrollment, and increase net revenues by $129,807,226.

If Option 3 were implemented, the enrollment in the three segments of public higher education would drop by 220,270 undergraduate students, State appropriations for higher education would be cut by $125,022,589, and the segments would realize a net increase in their combined revenues of approximately $172,593,226. The amount of money available for those students who remained would increase by about $160 per FTE undergraduate in the University, $180 per FTE in the State University, and $200 per ADA in the Community Colleges. Enrollment declines of the magnitude projected for this option, however, would require major faculty layoffs in the State University and the Community Colleges. Given existing collective bargaining agreements and tenure arrangements, it seems unlikely that either segment would have the needed flexibility to cope with layoffs on this scale and still preserve essential educational programs and services. The net result, although it is difficult to tell with any certainty, would likely be a decline in the kinds of educational programs the public segments were able to offer to those students who remained.

OPTION 4: BASE STUDENT CHARGES IN EACH SEGMENT UPON A COMPARISON WITH THE STUDENT CHARGES AT COMPARABLE INSTITUTIONS IN OTHER STATES

The data needed for these computations were provided earlier (pp. 30-36) The method used here was to set student charges in each segment at approximately 90.0 percent of the average charges at its public comparison institutions. A 90.0 percent figure was used instead of the full amount because in each instance one or more institutions within each comparison group charged fees that were much higher than all the rest--the University of Michigan in the University comparison list, Wayne State University and Miami University (Ohio) in the State University list, and the community

colleges in New York. The result was that these few institutions greatly increased the averages of student charges above the level generally prevailing in each comparison group.

Adopting this method for setting student charges would require that total student charges at the University be increased by $122 a year from the current average of $724, to $846. Student charges at the State University would be increased from $205 per year to $740 and those in the Community Colleges would be raised to $320 per year. If no additional student aid were provided, the enrollment impact would be quite severe, particularly in the State University and the Community Colleges. The results are summarized for each segment in Tables 24, 25, and 26.

The University is the only segment that would experience almost no enrollment decline. Its undergraduate enrollment would drop by about 265 students overall, although the losses would be greater if it were not for the Cal Grant programs and the implementation this year of the Middle Income Student Assistance Act. All of the projected losses would occur among either part-time students or nonresident undergraduates. Since neither of these groups accounts for a large portion of the University's current enrollment, the impact of this option on undergraduate enrollment would be slight and would not alter the composition of the student body.

The same cannot be said of the effects of Option 4 on the State University's undergraduate enrollment. In this segment, the large increase in student charges would produce effects that existing financial aid programs could not offset.

Without substantial changes in aid programs and increases in aid funds, the number of undergraduates enrolled would drop from 238,260 to 192,199--an enrollment drop of 19.3 percent. Students from low-income families, including many of the minority students who have enrolled in recent years, would be particularly hard hit in spite of assistance from BEOG and other aid programs. The much higher fees outlined under this option would act as a barrier, discouraging similar students from applying in the future. As a result, the percentage of low-income students, and those from low-income families, in the undergraduate student body would drop from 31.2 percent to 22.3 percent Although the number of students from middle-income families would drop by more than 6,300, their proportion of the student body would increase from 42.5 to 46.8 percent because of the even higher attrition rates among other income groups. Both the number of students from high-income families and their representation within the student body would decline. In short, no group of State University undergraduates would be untouched by the adoption of Option 4. Its cumulative impact on enrollment would be devastating.

TABLE 24

ENROLLMENT IMPACT OF ADOPTING OPTION 4 FOR STUDENT CHARGES AT THE UNIVERSITY

	Income Level	Percent	Number	Tuition Elasticity	Net Cost Increase	Students Lost Percent	Students Lost Number	Net Loss After Cal Grant Offsets Number	Net Loss After Cal Grant Offsets Percent
Nonresident Undergraduates	High	--	3,891	-0.146	$617	-3.43%	- 133	- 133	-3.43%
Resident Undergraduates									
Full-Time	Low	16.7%	13,595	-0.437	$0-$72	-3.24	- 440	- 0	-0.00
	Middle	37.3	30,365	-0.218	$ 0	-0.00	- 0	- 0	-0.00
	High	46.0	37,447	-0.146	$122	-2.46	- 921	- 0	-0.00
	TOTAL	--	81,407	---	--	-1.67	-1,361	- 0	-0.00
Part-Time (6.1 - 11.9 Units)	Low	16.7	771	-0.437	$0-$96	-4.80	- 37	- 37	-4.80
	Middle	37.3	1,722	-0.218	$0-$122	-0.23	- 4	- 4	-0.23
	High	46.0	2,123	-0.146	$122	-2.46	- 52	- 52	-2.46
	TOTAL	--	4,616	--	--	-2.01	- 93	- 93	-2.01
Part-Time (6.0 or Less Units)	Low	16.7	175	-0.437	$122	-7.36	- 13	- 13	-7.36
	Middle	37.3	391	-0.218	$122	-3.67	- 14	- 14	-3.67
	High	46.0	481	-0.146	$122	-2.46	- 12	- 12	-2.46
	TOTAL	--	1,047	--	--	-3.72	- 39	- 39	-3.72
Total Undergraduates	Low	--	14,541	-0.437	--	--	--	- 50	-0.34
	Middle	--	32,478	-0.218	--	--	--	- 18	-0.06
	High	--	43,942	-0.146	--	--	--	- 197	-0.45
	TOTAL	--	90,961	--	--	--	--	- 265	-0.29

TABLE 25

ENROLLMENT IMPACT OF ADOPTING OPTION 4 FOR STUDENT CHARGES AT THE STATE UNIVERSITY

	Income Level	Percent	Number	Tuition Elasticity	Net Cost Increase	Students Lost Percent	Students Lost Number	Net Loss After Cal Grant Offsets Number	Net Loss After Cal Grant Offsets Percent
Nonresident Undergraduates	High	--	8,507	-0.146	$625	-4.76%	- 405	- 405	-4.76%
Resident Undergraduates									
Full-Time	Low	31.2%	50,197	-0.437	$228-$285	-46.79	-23,488	-16,820	-33.51
	Middle	42.5	68,376	-0.218	$0-$146	- 3.65	- 2,495	- 0	- 0.00
	High	26.3	42,313	-0.146	$535	-20.02	- 8,471	- 8,049	-19.02
	TOTAL	--	160,886	--	--	-21.42	-34,454	-24,869	-15.46
Part-Time (6.1 - 11.9 Units)	Low	31.2	11,088	-0.437	$381-$411	-52.95	- 5,871	- 5,871	-52.95
	Middle	42.5	15,104	-0.218	$0-$535	-18.75	- 2,832	- 2,832	-18.75
	High	26.3	9,346	-0.146	$535	-20.02	- 1,871	- 1,871	-20.02
	TOTAL	--	35,538	--	--	-29.75	-10,574	-10,574	-29.75
Part-Time (6.0 of Less Units)	Low	31.2	9,463	-0.437	$415	-55.08	- 5,212	- 5,212	-55.08
	Middle	42.5	12,890	-0.218	$415	-27.43	- 3,536	- 3,536	-27.43
	High	26.3	7,976	-0.146	$415	-18.37	- 1,465	- 1,465	-18.37
	TOTAL	--	30,329	--	--	-33.67	-10,213	-10,213	-33.67
Total Undergraduates	Low	--	70,748	-0.437	--	--	--	-27,903	-39.44
	Middle	--	96,370	-0.218	--	--	--	- 6,368	- 6.61
	High	--	68,142	-0.146	--	--	--	-11,790	-17.30
	TOTAL	--	238,260	--	--	--	--	-46,061	-19.33

TABLE 26

ENROLLMENT IMPACT OF ADOPTING OPTION 4 FOR STUDENT CHARGES IN THE COMMUNITY COLLEGES

	Income Level	Percent	Number	Tuition Elasticity	Net Cost Increase	Students Lost Percent	Students Lost Number	Net Loss After Cal Grant Offsets Number	Net Loss After Cal Grant Offsets Percent
Undergraduates									
Full-Time	Low	38.4%	120,249	-0.437	$0-$170	-33.15%	-39,861	-32,515	-27.04%
	Middle	38.0	118,997	-0.218	$0-$56	- 0.25	- 302	- 246	- 2.07
	High	23.6	73,903	-0.146	$320	-16.30	-12,046	-12,046	-16.30
	TOTAL	--	313,249	--	--	-17.53	-54,909	-44,807	-14.30
Part-Time (6.1 - 11.9 Units)	Low	38.4	82,838	--	$194-$246	-21.51	-17,817	-17,817	-21.51
	Middle	38.0	81,976	--	$0-$320	- 3.73	- 3,056	- 3,056	- 3.73
	High	23.6	50,911	--	$320	-27.79	-14,149	-14,149	-27.79
	TOTAL	--	215,725	--	--	-16.23	-35,022	-35,022	-16.23
Part-Time (6.0 or Less Units)	Low	38.4	242,281	--	$192	-17.54	-42,504	-42,504	-17.54
	Middle	38.0	239,756	--	$192	-17.54	-42,061	-42,061	-17.54
	High	23.6	148,901	--	$192	-17.71	-26,368	-26,368	-17.71
	TOTAL	--	630,938	--	--	-17.58	-110,933	-110,933	-17.58
Total Undergraduates	Low	--	445,368	--	--	--	--	- 92,836	-20.84
	Middle	--	440,729	--	--	--	--	- 45,363	-10.29
	High	--	273,715	--	--	--	--	- 52,563	-19.20
	TOTAL	--	1,159,812	--	--	--	--	-190,762	-16.45

The Community Colleges would experience an enrollment loss of 190,762 students, or a drop of 16.4 percent. Overall enrollment would return to approximately the level it was in the early 1970s. Hardest hit would be full-time students from low-income families These students tend to be the most sensitive to cost increases, and the projections suggest that more than one out of every four would be likely to leave Moreover, high student fees tend to discourage low-income students from even applying to college; at the time most students send for applications they are aware of how much a particular college costs to attend, but generally unaware of how much, if any, financial aid they might be eligible to receive. 83/

Part-time Community College students taking six or fewer units also would be seriously affected. These part-time students would not be eligible to have any of the increased costs offset by financial aid, although their fees would increase by less than would those of full-time or other part-time students. The next highest attrition rate in the Community Colleges would occur among part-time students taking more than six units. They would be charged the full $320 increase. While they would be eligible for some BEOG assistance, it would offset only a part of the higher costs.

Of the four options examined thus far, this one would have the greatest negative effect on enrollments in public higher education. Altogether, the three public segments would experience an enrollment decline of more than 237,000 undergraduate students--70,214 full time and 166,874 part time. The resulting total undergraduate enrollment of 1,251,945 students would be 15.9 percent below the Fall 1978 level. Existing State and federal student aid programs are not equipped to cope with fee increases of this magnitude in a single year, and could not prevent the significant decline in educational opportunities projected here. Indeed, if it were not for the recent implementation of the Middle Income Student Assistance Act, the enrollment losses would be even more substantial than projected. Although minority students and those from low-income families would be most seriously affected, so, too, would tens of thousands of other students from middle- and upper-income families If some of the revenue generated by the higher fees were set aside by each segment to provide financial aid for its students, the enrollment losses would be reduced somewhat for students enrolled at least half time. It would have little, or no, effect in reducing the projected losses among those taking six units or less.

The revenue produced by the increased student charges outlined in Option 4 would be much greater than under the other options. The University would raise $11,932,612 in additional student-fee revenue. Approximately $4,845,800 of this would come from additional BEOG funds for eligible students, $1,763,876 from increased State payments to current Cal Grant recipients, and the

TABLE 27

REVENUE IMPACT OF ADOPTING OPTION 4 FOR STUDENT CHARGES
IN THE THREE PUBLIC SEGMENTS

INCREASE IN GROSS REVENUES

Segment	Gross Revenues	Sources of Revenues Paid as Student Fees		
		Students	State	Federal BEOG
University	$11,932,610	$5,322,934	$1,763,876	$4,845,800
State University	$89,708,060	$35,319,455	$6,513,090	$47,875,515
Community Colleges	$243,567,360	$160,832,452	$2,368,640	$80,366,268
TOTAL	$345,208,030	$201,474,841	$10,645,606	$133,087,583

NET REVENUE INCREASE

Segment	Gross Revenues	Budget Reductions		Net Revenue Increase
		Same Year	Following Year	
University	$11,932,610	$ 0	$440,550	$11,492,060
State University	$89,708,060	$39,857,542	$4,997,691	$44,852,827
Community Colleges	$243,567,360	$85,441,572	$14,858,532	$143,267,256
TOTAL	$345,208,030	$125,299,114	$20,296,773	$199,612,143

remaining $5,322,934 directly from students and their families. In the State University, $89,708,060 in additional student-fee revenue would be raised. BEOG funds would increase by $47,875,515 for eligible students, current Cal Grant recipients would receive an additional $6,513,090, and the remaining $35,319,455 would come directly from students and their families. In the Community Colleges, the added revenues from Option 4 would amount to $243,567,360. About $80,366,268 would come from additional BEOG funds, $2,368,640 would come from State grants to current eligible Cal Grant A and Cal Grant B recipients, and the remaining $160,832,452 directly from students who would still be enrolled.

The enrollment-related budget cuts under this option would be substantial for the State University and the Community Colleges, where the enrollment losses would be greatest. As Table 27 shows, there would be no first-year budget payback for the University, although the loss of 198 FTE students would produce a second-year budget cut of $440,550. The State University's enrollment decline under this option would exceed by 30,218 FTE students the 3,789 leeway allowed under State budget formulas. This would produce a first-year budget cut of $39,857,542, and a second-year reduction of an additional $14,858,532. The Community Colleges, statewide, would lose 76,698 ADA beyond the 2.0 percent limit This would involve a budget payback of $85,441,572 the first year, and $20,296,773 the following year These budget cuts, however, would not be distributed evenly because those Community Colleges with above-average enrollments of part-time or low-income students would realize less additional income from higher student charges and would face the largest budget cuts from enrollment losses as well. Furthermore, not all Community Colleges would pay the same incremental rate for enrollment losses or receive the same amount per ADA from the State under the provisions of the new financing law for the Community Colleges (AB 8)

The net revenue the segments would receive under Option 4 would be quite substantial, so would the enrollment losses that would occur The University would be the exception It would receive $11,492,060 in additional funds and lose only 132 resident part-time students and 133 nonresident students The State University, after subtracting the budget cuts of $44,855,233 from the $89,708,060 in increased student-charge revenues, would realize a net increase in revenues of $44,852,827 At the same time, it would lose more than 46,000 undergraduate students in the process The Community Colleges collectively would receive a net increase in funds of $143,267,256. While such an aggregate figure is certainly significant, it amounts to an average revenue increase of less than $1.4 million per Community College. The enrollment losses produced by Option 4 would amount to 190,762 students in the Community Colleges, or an average loss of about 1,800 students per college.

The effects of Option 4 on public higher education would probably be somewhat more serious than those of Option 3. Again, although there would be more money available to educate those students who remained, there would be substantially fewer undergraduates still enrolled. Further, under existing budget formulas, the enrollment losses would trigger large-scale faculty layoffs at the State University and the Community Colleges For example, the present faculty staffing ratios would require the layoff of more than 1,900 regular faculty if the State University were to lose the 34,007 FTE students projected here. Clearly, no segment could count on normal faculty attrition to cover layoffs of this magnitude. Relying on attrition, moreover, is often a haphazard and ineffectual way of reducing faculty. Tenure and collective bargaining agreements would also limit the segments' flexibility in coping with faculty reductions. Recently hired, untenured faculty members would probably be among the first to go This would jeopardize not only the efforts all segments have been making to increase the representation of women and minorities on their faculties, but also their ability to insure that an adequate number of faculty were available to staff all major departments.

A FINAL NOTE ON TESTING POSSIBLE POLICY OPTIONS

Obviously not all of the possible policy options are examined fully here. Across-the-board increases, other than the $100-per-year figure used in Option 2, could have been tested. Some states use percentages of the cost of instruction that differ from those used in Option 3. Some charge a flat 25.0 percent of the cost of instruction for all their public segments. Others charge a flat 25.0 percent, but compute the different instructional costs for lower division, upper division, graduate, and advanced professional students. They then charge students at each level a different amount. The implications of this latter option need to be explored further to determine its possible effects on graduate and professional students in public higher education.

The important point here is that the models developed in this report can be used to evaluate the enrollment and revenue implications of any proposal to alter student charges in the public segments. Indeed, Commission staff intends to use them for that purpose. The options presented were designed to clarify the key issues and to illustrate the effects of increased student charges on enrollment, revenue, and public higher education.

CHAPTER V

SUMMARY

The current financial problems confronting public higher education have led some people to suggest that higher student charges might be "a solution." In response to earlier suggestions by the four year segments that it might be necessary to increase charges, the Director of the Postsecondary Education Commission supported efforts to prevent increases in student charges last year. Although he argued at that time that "increased student charges must be considered as one of several possible sources of additional funding for the long-range financing of postsecondary education," he urged that "the impact on access and the intersegmental consequences of such changes should be studied carefully" before taking any action. This report is an outgrowth of those perceptions. It does not constitute a policy recommendation. It does attempt to provide a thorough, balanced analysis of the complex and controversial issue of student charges.

THE EFFECT OF INCREASED STUDENT CHARGES ON ENROLLMENT

The primary focus of this report has been upon the impact of increased student charges on undergraduate enrollments and segmental revenues. The rates of participation in postsecondary education in California are among the highest in the nation, and student charges in the State's public institutions are among the lowest. As the projections in this report show, however, any appreciable increase in student charges would reduce enrollments in all three public segments and thereby diminish educational opportunity in California. In general, the greater the increase in student charges, the greater the decrease in enrollment. The University would be least affected, the State University would experience the greatest percentage decreases in enrollment in most cases, and the Community Colleges would lose the largest number of students.

While any option that raised student charges would reduce enrollments somewhat, those that increased charges substantially would also significantly alter the composition of undergraduates attending public higher education. Despite the extensive student financial aid programs already in existence, the adoption of large fee increases would substantially reduce the enrollment of students from low-income families, particularly at the State University and in the Community Colleges. There would also be a sizeable reduction in the number of part-time students in these segments.

The full magnitude of the enrollment dislocations produced by higher charges would be greater than these figures show. With an

across-the-board increase such as in Option 2, enrollment shifts among the public segments are likely to be quite minimal. With widely different cost increases among segments such as those outlined in Options 3 and 4, however, there are likely to be enrollment shifts among segments as well as enrollment losses within each segment. Since such shifts are extremely difficult to measure directly, most national studies have either sidestepped the issue by positing across-the-board changes in fee levels or have confined their analysis of enrollment shifts to the degree of substitution between the public and private sectors. The model used in this report attempts to predict the net changes in student demand for higher education produced by changes in the net cost. As a result, the enrollment losses cited in each case are the net changes in that segment which result from a particular increase in student charges. They reflect the effects of enrollment shifts as well as losses, but cannot measure the magnitude of the shifts directly.

Within the public sector, the State University's enrollment is probably more subject to shifts than that of the University or the Community Colleges. According to a recent University study, Beyond High School Graduation: Who Goes to College?, approximately 25.0 percent of the University-eligible high-school graduates in the class of 1975 attended the State University. Program, location, and cost were the most frequently cited reasons for their choice. Location overlaps with cost by permitting students to commute to school from home and thereby reduce costs. Price changes would not eliminate such savings. Nor would they likely change the decisions of those University-eligible students who chose a particular State University campus because of its program. Nevertheless, any option that greatly reduced the student charge differential between the University and State University might prompt some of the University eligibles currently enrolled in the State University to attend the University instead. By the same token, approximately 48.0 percent of the State-University-eligible graduates in the class of 1975 enrolled first in a Community College Although Community College charges would increase under most of the options reviewed here, the cost of attendance would still be lower than at the State University. Thus, any major increase in student charges at the State University would be likely to reinforce the current tendency for large numbers of State-University-eligible students to attend Community Colleges for their lower division work Higher charges would also reduce the potential pool of Community College transfers to the State University. It seems unlikely that enrollment shifts in the opposite directions would be sufficient to offset these trends. This explains, in part, why in most of the options tested in this report, the percentage decreases in enrollment were greatest in the State University. Moreover, the evidence here confirms the conclusion advanced in a recent report by the American Association of State Colleges and Universities that state college enrollments "are

acutely sensitive to the ability of students to pay the costs of college attendance." 84/

Few estimates exist as to the degree of substitution, or the magnitude of enrollment shifts, between the public and independent sectors of higher education. The most widely accepted figure is that one-half of the additional students who would enroll in public higher education if charges there were reduced would have otherwise enrolled in independent institutions. If the situation were reversed, however, the opposite would not necessarily be true. While some of the students currently enrolled in public higher education might choose to enroll in independent institutions if charges were raised in the public sector, it is almost impossible to estimate how many students might be involved. Given the limitations of the models used here, those students shifting to independent institutions were counted among the enrollment losses in the public segments, but not identified separately.

Because of the substantial cost differences between public and independent colleges and universities in California, two kinds of students would most likely be involved in enrollment shifts from public to independent institutions in the event of a cost increase. The first would be those from high-income families. These are generally students who do not qualify for aid even at the most expensive independent colleges and universities, but who are still somewhat sensitive to price. If student charges at public institutions increased markedly, some of them might enroll at an independent institution instead. This group probably includes many of those who were counted among the enrollment losses at the University in the discussion of the policy options.

The second kind of students are those from families with low enough incomes to qualify for financial aid, including current Cal Grant recipients and those now eligible under the provisions of the Middle Income Student Assistance Act Qualifying for student aid depends upon one's family income and the cost of the institution selected. The amount of aid received under the Cal Grant programs would vary with the cost of the institution selected by the student. However, the size of the BEOG grants most middle-income students will be eligible to receive under the Middle Income Student Assistance Act will not change with the cost of the institution once the act is fully implemented Students from families with very low incomes often qualify for at least some financial aid at all public and independent institutions. Others would qualify for aid only if they were to attend an expensive school. Indeed, several national studies suggest that it is actually less expensive for students from families earning less than $19,000 per year to attend an expensive independent institution than a much less expensive public college or university. 85/

Current Cal Grant recipients provide an interesting example. In testing various options earlier, the increased cost to the State was computed for the added expense that higher student charges would impose on it to fund the grants of current Cal Grant recipients These computations assumed that the current recipients would not be among those students who might shift from one segment to another or from a public to an independent institution. If fee increases in the public sector were to prompt a significant number of Cal Grant recipients to enroll in an independent college or university, the costs to the State student aid programs would increase even more. For example, in 1978-79, the average Cal Grant A recipient received $200 per year at the State University, $633 per year at the University, and $2,391 at independent institutions. These grants are limited to not more than the full amount of tuition and fees or $3,000 per year, whichever is lower. Under Option 4 with the highest student charges, University students eligible for the maximum Cal Grant A would receive $846 if they stayed at the University, but $3,000 if they enrolled in an expensive independent institution instead. 86/

The kinds of undergraduate enrollment losses that would accompany any large increase in student charges in the public sector would reduce educational opportunity in California and exacerbate another emerging problem. Because of the drop in the birth rate nearly two decades ago, the 18-24 age group, which has traditionally comprised the largest portion of the undergraduate student body, is declining. Department of Finance projections indicate that enrollments in all three public segments are likely to decline over the next decade. This trend is projected to reach bottom in about 1993, when undergraduate enrollment levels in the four-year segments are expected to be approximately 15 0 percent below their current levels. Even now some University and State University campuses are operating below their full capacity. That situation is not likely to improve in the immediate future whether additional student fees are charged or not. But the enrollment losses that higher student charges would produce would further compound the layoffs and dislocations public institutions already face because of unfavorable demographic trends. For example, in the State University the adoption of Option 4 would reduce the current undergraduate participation rate by about 19.0 percent. When combined with the projected demographic changes occurring in the State, this would produce by 1993 an undergraduate enrollment in the State University that would be approximately 33.0 percent below the current level 87/

Along with their responsibility to provide high quality undergraduate instruction, the University and State University both provide graduate instruction through the Master's degree level. Since Master's degree students at the State University are charged

the same amount as undergraduates, and those in the University are charged a nominal $20 per quarter more than undergraduates, both groups of students would be affected directly by any increase in undergraduate charges. The impact of increased student fees on Master's degree students is virtually unknown. The enrollment of such students in both segments would probably drop if student charges were increased, but the enrollment losses might not be as great as those among undergraduates. While the likely impact on enrollment cannot be ignored, there are unfortunately no empirical studies at present which would enable us to determine just how great the enrollment losses would be among Master's degree students

The University has the primary responsibility in California public higher education for educating and training doctoral (Ph.D) and advanced professional students. Very little is known presently about the likely response of such students to higher costs. A study done on the price responsiveness of doctoral students at the University of Minnesota suggests that the enrollment impact of higher fees would be quite small. Given existing fellowships and research assistantships, and the surplus of qualified applicants to spaces available, modest increases in students charges for doctoral students were not expected to decrease enrollments or diminish the quality of the students. Although the situation at the University of California might in some ways be similar, it is not clear whether the enrollment impact would be. 88/

The available evidence, though certainly incomplete, also suggests that higher student charges for advanced professional students, particularly those in medical and dental school, are not likely to produce major changes in the number enrolled. The availability of loans for most such students, the large surplus pool of highly qualified applicants, and the high salaries these graduates can command make it likely that any changes in enrollment would be quite small. Nevertheless, while the number and quality of such students would probably not change, the ethnic and income composition of the group might. The paucity of evidence about the likely responses of advanced graduate and professional students to increased student fees would suggest caution at the very least.

THE EFFECT OF INCREASED STUDENT CHARGES ON REVENUES

The gross revenue increases that would be produced by higher student charges vary from segment to segment and from option to option. Generally, the greater the increase in student charges, the greater the increase in gross revenue produced.

As noted earlier, however, gross revenues are not an accurate measure of the amount of additional revenue a segment would receive if

student charges were increased. Because enrollment losses also vary directly with the amount of any increase in charges, the size of the enrollment-related budget paybacks and budget cuts would increase as charges increased, although none of the options tested here actually reaches the point of diminishing returns. In any event, large increases in student charges and gross revenues generally result in more modest increases in net revenues and in substantial decreases in enrollments.

None of the options tested in this report would greatly reduce undergraduate enrollment in the University, nor would any of them produce sufficient net revenue increases to offset the $16.7 million reduction required of the University by the 1979-80 Budget Act. Two of the options tested would produce sufficiently large net revenue increases to more than offset the $17.0 million in cuts mandated for the State University in the Budget Act. But, at the same time, the adoption of one or the other of these options would reduce the State University's undergraduate enrollment by between 38,800 and 46,061 students. Option 2 would increase the total State- and locally funded operating budget of the Community Colleges by approximately 4.9 percent. At the other extreme, Option 4 would increase their total operating budget by 12.1 percent. Nevertheless, the adoption of either of these options would simultaneously reduce Community College headcount enrollment by 58,774 to 190,762 students, respectively.

Increased student charges would result in additional federal BEOG funds going to California undergraduates. Most of this increase, however, would occur anyway because of the implementation this year of the Middle Income Student Assistance Act for dependent students. In fact, nearly half of the additional BEOG funds cited in Tables 17, 23, and 27 represent monies that Congress intended for newly eligible students from middle-income families, which would be captured instead by the public segments if they were to raise their student charges. Moreover, once the new Middle Income Student Assistance Act is fully implemented, the size of the grants most middle-income students received would not increase markedly if fees were increased. The result would be somewhat higher rates of attrition among undergraduates in the public segments than projected here.

It would cost the State more money to fund the Cal Grant programs if student charges were increased. The added costs of funding Cal Grant A and Cal Grant B recipients at public institutions would range from $3.4 million under Option 2 to $10.6 million under Option 4. If enrollment shifts from public to independent institutions occurred as a result of higher charges in public institutions, the costs to the State would increase even more.

After subtracting the added costs of the Cal Grant programs from the enrollment-related budget paybacks and budget cuts that would accompany any fee increase, the result would represent the reduced level of State support for public higher education, or the savings to the taxpayer. In effect, the only savings the State itself would achieve if student charges were increased would be the direct result of fewer students being able to attend a public college or university.

THE ISSUE FACING CALIFORNIA

The central issue in determining the level of student charges is what share of the cost of education should be borne by students and what share should be borne by the general taxpayer through State and local support. No simple formula will resolve this issue, and any attempt to do so which ignores its human dimensions is unsatisfactory. A more effective approach to the issue is to determine the current balance between student support and State and local support and to assess the consequences of shifting that balance.

For more than a century, California has maintained a tradition of providing "tuition-free, low cost" public higher education. Nevertheless, the University and State University have raised their student charges from time to time during this period, most notably in the early 1970s. The higher charges at the University that stemmed from the imposition of the Educational Fee in the early seventies may have forced some students to change their educational plans, prompting them either to attend a less expensive institution or to not attend at all. The use of some of the increased fee revenues to provide financial aid to needy students probably helped to minimize these dislocations. In any event, the impact of higher charges was largely obscured at that time because of the ever-increasing number of 18- to 24-year olds in the State's population and the burgeoning enrollments at public colleges and universities.

As this report makes clear, student charges, undergraduate enrollments, and segmental revenues are inextricably linked. Student charges in California's public institutions are currently among the lowest in the nation and its rates of participation in public higher education among the highest. Increased student charges would produce greater revenues but lower undergraduate enrollments. Existing student aid programs would reduce some of the enrollment losses that higher charges would cause, but they could not eliminate them. Indeed, the trade off between increased segmental revenues through higher charges and diminished educational opportunities as a result of lower enrollments creates a profound dilemma for public policy makers. The resolution of this dilemma should be based on a clear understanding of the goals the State hopes

to achieve through its system of public higher education and a recognition of the purposes these institutions are intended to serve.

FOOTNOTES

1/ Letter from Patrick M. Callan, Director of the California Postsecondary Education Commission, to the Chairman and Members of the Joint Legislative Conference Committee on the Budget, June 28, 1978.

2/ "UC Avoids Tuition for 1978-79," San Francisco Chronicle, September 15, 1978

3/ "Trustees Fight CSUC Tuition Cost," The Sacramento Bee, November 30, 1978

4/ Carnegie Commission on Higher Education, Higher Education: Who Pays? Who Benefits? Who Should Pay? (New York· McGraw-Hill, 1973), p 100

5/ Coordinating Council for Higher Education [CCHE], An Evaluation of the Tuition Free Principle in California Public Higher Education, Number 1019 (May 1965), p. 12.

6/ Ibid., p. 11; American Association of State Colleges and Universities [AASCU], Low Tuition Fact Book: 8 Basic Facts About Tuition and Educational Opportunity (Washington, D.C.: American Association of State Colleges and Universities, 1976), p. 2, and Richard Freeman, The Declining Economic Value of Higher Education and the American Social System (Aspen: Aspen Institute for Humanistic Studies, 1976), p. 1.

7/ AASCU, Tuition Fact Book, p 2; and Coordinating Council for Higher Education, Student Charges, Number 1035 (December 1969), pp. 8, 9

8/ CCHE, An Evaluation of the Tuition Free Principle, p. 12; and Carnegie Commission, Who Pays?, pp. 2, 3.

9/ J. Edward Sanders and Hans C. Palmer, The Financial Barriers to Higher Education in California (Claremont: Pomona College, 1965), pp. 90, 91; and CCHE, Student Charges, p. 8.

10/ Kenneth M. Deitch, "Financial Aid. A Resource for Improving Educational Opportunities," (Sloan Commission on Government and Higher Education, March 1978), p. 35.

11/ Richard Freeman, The Overeducated American (New York. Academic Press, 1976), p. 184; and Freeman, The Declining Economic Value of Higher Education, pp. 4, 5, 7, and 8.

12/ Leonard A. Lecht, "Grading the College Diploma," Across the College Board, Vol XIV, No. 4 (The Conference Board Magazine, April 1977)

13/ Deitch, "Financial Aid," p 35; and Freeman, The Declining Economic Value of Higher Education, p. 13. Quote is from Freeman.

14/ Carnegie Commission, Who Pays?, pp. 2, 3

15/ Joseph A. Pechman, "The Distributional Effects of Public Higher Education in California," Journal of Human Resources (Summer 1970), pp 368, 369

16/ Master Plan Survey Team, A Master Plan for Higher Education in California, 1960-1975 (Sacramento: California State Department of Education, 1960), p. 146.

17/ 1979-80 Governor's Budget.

18/ Summary based on information presented in Table 1 which includes data for selected fiscal years between 1959-60 and 1979-80. These data come from the Governor's Budgets during this period and represent the actual expenditures reported in the following year's budget summary.

19/ Coordinating Council for Higher Education, The Costs of Instruction in California Public Higher Education, Council Report 74-1 (February 1974), pp. 67, 75.

20/ 1979-80 Governor's Budget, pp. 948, 993.

21/ CCHE, The Costs of Instruction, pp. 67, 75.

22/ 1960 Master Plan, pp. 182, 183; CCHE, Student Charges, p. 16; and State of Washington Council for Postsecondary Education, Financial Support of Higher Education in Washington 1978-79: A National Comparison, Report No. 79-11 (May 1979), pp. 5, 7, 9, 11, and 13. Figures cited are from the Washington report.

23/ Carnegie Commission, Who Pays?, pp. 20, 21.

24/ W. Lee Hansen, "An Examination of Financial Barriers to College Attendance," in Trends in Postsecondary Education (Washington, D.C.: U.S. Department of Health, Education, and Welfare, 1970), p. 32; CCHE, An Evaluation of the Tuition Free Principle, p. 37; and Pechman, "The Distributional Effects of Public Higher Education," p. 369.

25/ Chapter 244, Statutes of 1868, p 254.

26/ William Ferrier, Origin and Development of the University of California (Berkeley: Sather Gate Book Shop, 1930). Though quite dated, this is a useful summary of the early history of the University. See, also, CCHE, An Evaluation of the Tuition Free Principle, pp. 7-9.

27/ Chapter 347, Statutes of 1862.

28/ CCHE, An Evaluation of the Tuition Free Principle, p. 9.

29/ 1960 Master Plan, pp. 172, 173.

30/ CCHE, An Evaluation of the Tuition Free Principle, pp. 7-10.

31/ University of California, 1979-80 Budget for Current Operations and for Capital Improvements and 1979-82 Capital Improvement Program (Berkeley: Systemwide Administration, September 1978), pp. 60, 61.

32/ Pechman, "The Distributional Effects of Public Higher Education," pp. 369, 370.

33/ Carnegie Commission, Who Pays?, pp. 20, 21; and Hansen, "Barriers to College Attendance," p. 32.

34/ 1960 Master Plan, p 169; California Student Aid Commission [CSAC], "Compilation of 1978 College Cost Data," pp. 1, 3; California Student Aid Commission, "Information Concerning 1979-80 Comparative Student Expense Budgets;" and California Student Aid Commission, Student Resource Survey, Number 2 (Sacramento: California Student Aid Commission, August 1976), pp. 20, 21.

35/ CSAC, "Compilation of 1978 College Cost Data," pp. 1, 3.

36/ Carnegie Commission, Who Pays? pp. 51, 52.

37/ CCHE, An Evaluation of the Tuition Free Principle, p. 23; CCHE, Student Charges, pp. 11, 12; and the National Commission on the Financing of Postsecondary Education, Financing Postsecondary Education in the United States (Washington, D.C.: U.S. Government Printing Office, December 1973), pp. 67-77.

38/ University of California, 1979-80 Budget for Current Operations, pp. 60-61.

39/ Ibid., pp. 57-59

40/ California State University and Colleges, Support Budget, 1979-80 (Long Beach: Office of the Chancellor, 1978), pp. 60-62.

41/ CCHE, Student Charges, p. 4.

42/ Carnegie Commission, Who Pays?, p 7.

43/ CCHE, Student Charges, p. 13.

44/ State of Washington Council for Postsecondary Education [CPE], Policy Recommendations: A System of Establishing Tuition and Fees as a Proportion of Educational Costs (Olympia· Washington Council for Postsecondary Education, May 1976), especially Chapter V on "Tuition and Fees Compared to Cost in Other States," pp. 19-21, and Appendix B. See also, State of Washington CPE, Cost Data Reporting Manual for the 1976-77 Higher Education Unit Expenditures Study (Olympia: December 5, 1977). This manual provides an excellent example of the complexity of assigning expenditures to particular cost categories in order to determine the direct and indirect costs of instruction Finally, see, State of Washington CPE, Tuition and Fees Policy Recommendations (Olympia: November 1978); and Southern Regional Education Board [SREB], "Tuition Policy in Public Higher Education," No. 27 in a series on Financing Higher Education (Atlanta SREB, 1976)

45/ Minnesota Higher Education Coordinating Board [MHECB], Mhecb report, Vol. IV, No. 6 (September 1978), pp. 1, 5, and 6; and MHECB, Mhecb report, Vol. IV, No. 7 (October 1978), pp. 1, 3, and 4. See also, California State University and Colleges, "Report of the Project Team on Out-of-State Tuition," Mimeographed (Long Beach: Chancellor's Office, March 21, 1979).

46/ Stephen A. Hoenack and William C. Weiler, "Cost-Related Tuition Policies and University Enrollments," Journal of Human Resources, X (Summer 1975), pp 332, 333.

47/ SREB, "Tuition Policy," pp. 2, 3; Hoenack and Weiler, "Cost-Related Tuition Policies," pp 333, 334; and William D. Hyde, Jr., "The Effect of Tuition and Financial Aid on Access and Choice in Postsecondary Education," Paper No. 1 in Papers in Education Finance (Denver. Education Commission of the States, January 1978).

48/ Carnegie Commission, Who Pays?, p 12.

49/ State of Washington CPE, Resident and Nonresident Undergraduate and Graduate Tuition and/or Required Fees: Public Universities, Colleges and State Universities, and Community Colleges (Olympia January 1979), pp. 25-31.

50/ Carnegie Commission, Who Pays?, p. 12

51/ Deitch, "Financial Aid," p. 11; Susan C. Nelson, "Financial Trends and Issues," in David W. Breneman and Chester E. Finn, Jr , editors, Public Policy and Private Higher Education (Washington, D.C.: The Brookings Institution, 1978), p. 93; Michael S. McPherson, "The Demand for Higher Education," in Breneman and Finn, ed., Public Policy and Private Higher Education, p. 179.

52/ "Tuition and Fees at More than 1,800 Colleges," The Chronicle of Higher Education, May 29, 1979, pp. 7-11.

53/ Elizabeth W. Suchar, Stephen H. Ivens, and Edmund C. Jacobson, Student Expenses at Postsecondary Institutions 1978-79 (New York: College Entrance Examination Board, 1978). The data presented in Tables 7 and 8 were obtained from State of Washington CPE, Tuition and Required Fees (January 1979) and calls by CPEC staff to each institution.

54/ State of Washington CPE, Tuition and Required Fees (January 1979), pp. 21-23.

55/ CCHE, An Evaluation of the Tuition Free Principle, pp. 7, 34, and 35; and Sanders and Palmer, The Financial Barriers to Higher Education, pp. 90, 91

56/ CCHE, An Evaluation of the Tuition Free Principle, p. 36, and Higher Education Daily, October 18, 1978; November 29, 1978; and January 4, 1979.

57/ McPherson, "The Demand for Higher Education," p. 174.

58/ Three of the best summaries of the literature on student choice and the demand for higher education are: McPherson, "The Demand for Higher Education," pp. 174-196; Gregory A. Jackson and George B Weathersby, "Individual Demand for Higher Education: A Review and Analysis of Recent Empirical Studies," The Journal of Higher Education, Vol. XLVI, No. 6 (November/December 1975), pp. 623-651; and Hyde, "The Effect of Tuition and Financial Aid on Access and Choice in Postsecondary Education," pp 4-41.

59/ For some of the more important of these studies, see, for example, Robert Campbell and B. Siegel, "The Demand for Higher Education in the United States, 1919-1964," American Economic Review, 57 (June 1967), pp. 482-494; Arthur Corrazzini, Dennis Dugan, and Henry Grabowski, "Determinants and Distributional Aspects of Enrollment in U.S. Higher Education," Journal of Human Resources, 7 (Winter 1972), pp. 39-59; Joseph Hight, "The Demand for Higher Education in the U.S. 1927-1972: The Public and Private Institutions," Journal of Human Resources, 10, No 4 (Fall 1975), pp 512-520; Thomas D. Hopkins, "Higher Education Enrollment Demand," Economic Inquiry, 12 (March 1974), pp 53-65; and Sam Peltzman, "The Effect of Government Subsidies-in-Kind on Private Expenditures: The Case of Higher Education," Journal of Political Economy, 81 (January/February 1973), pp. 1-27. Quote is from McPherson, "The Demand for Higher Education," pp. 176, 177.

60/ John Bishop, "Income, Ability, and the Demand for Higher Education," Mimeographed (Madison. Institute for Research on Poverty, University of Wisconsin, November 1975); Stephen A. Hoenack, "Private Demand for Higher Education in California" (Unpublished Ph.D. dissertation, University of California, 1967); and Stephen A. Hoenack and William C. Weiler, "Cost-Related Tuition Policies and University Enrollments," pp. 332-360.

61/ Roy Radner and Leonard S. Miller, Demand and Supply in U.S. Higher Education (New York: Carnegie Commission on Higher Education published by McGraw-Hill, 1975); Radner and Miller, Demand and Supply in United States Higher Education: A Technical Supplement (New York: McGraw-Hill, 1975); and Meir Kohn, Charles Manski, and David Mundel, "An Empirical Investigation of Factors Which Influence College Going Behavior (Santa Monica: Rand Corporation, 1974)

62/ McPherson, "The Demand for Higher Education," pp. 176, 177. The econometrically based technique of logit analysis is essentially a marriage of regression and discriminant analysis that focuses on how the various independent variables affect the probability of some action or state. For another example of how conditional logit analysis can be used to evaluate public policy alternatives, see, James E. Bruno and Ira Nelken, "An Empirical Analysis on Propensity for Teachers to Strike," Educational Administration Quarterly, Vol. 11, No. 2 (Spring 1975), pp 66-85.

63/ McPherson, "The Demand for Higher Education," pp. 176-180. For a more recent example of the use of a logit model and a somewhat different set of variables, see, John Bishop, "The Effect of

Public Policies on the Demand for Higher Education," The Journal of Human Resources, XII, No. 3 (Fall 1977), pp. 285-307. Another methodological approach that attempts to predict student choice among institutions, but does not deal with the way price changes affect the decision to attend or drop out, has been advanced by Stephen Carroll and Daniel Relles. See, Stephen J. Carroll and Daniel A. Relles, A Bayesian Model of Choice Among Higher Education Institutions (Santa Monica: The Rand Corporation, 1976).

64/ Hyde, "The Effect of Tuition and Financial Aid," pp. 16, 48; William D. Hyde, Jr., "The Effect of Tuition and Financial Aid on Access and Choice in Postsecondary Education," in William D. Hyde, ed., Issues in Postsecondary Education Finance· Summaries of Six Issues (Denver. Education Commission of the States, June 1978), pp. 28-36; and Humphrey Doermann, "The Future Market for College Education," in A Role for Marketing in College Admissions (New York: College Entrance Examination Board, 1976).

65/ Hyde, "The Effect of Tuition and Financial Aid," p. 44; Jackson and Weathersby, "Individual Demand for Higher Education," pp. 643-650; and McPherson, "The Demand for Higher Education," pp. 180-186.

66/ Hyde, "The Effect of Tuition and Financial Aid on Access and Choice," pp. 29, 31; Hyde, "The Effect of Tuition and Financial Aid," pp. 44, 45; Jackson and Weathersby, "Individual Demand for Higher Education," p. 647; Radner and Miller, Demand and Supply in U.S. Higher Education, pp. 35-73; Bishop, "The Effect of Public Policies on Demand," pp. 288-294; The National Commission on the Financing of Postsecondary Education, Financing Postsecondary Education in the United States, p. 256; and Bishop, "Income, Ability, and the Demand for Higher Education," pp 323-375.

67/ The general finding that a $100 cost increase would produce a 1.0 percentage point decrease in enrollment would be equivalent to a tuition elasticity coefficient of -0.3 in 1974. Adjusting this for changes in the Consumer Price Index between 1974 and 1978 produces a tuition elasticity coefficient of -0.218.

68/ This generalization is based on the differences in the magnitude of the enrollment responses of low-, middle-, and high-income students to cost increases found in a number of the studies. See, for example, Radner and Miller, Demand and Supply in U.S. Higher Education, p 64; Bishop, "Income, Ability, and the Demand for Higher Education," and Daryl E. Carlson, "Student Price Response Coefficients for Grants, Loans, Work-

Study Aid, and Tuition Changes: An Analysis of Student Surveys" (Davis: Department of Agricultural Economics, University of California, Davis, unpublished manuscript, November 1974).

69/ CSAC, Student Resource Survey, Number 2, p. 35; California Student Aid Commission, Student Resource Survey (Sacramento: California Student Aid Commission, 1972). The income categories are initially readjusted for changes in the Consumer Price Index between December 1974 and December 1978, and the results are carefully plotted by cumulative percentages for each segment. The income categories used in this report--$0 to $11,999 for low income; $12,000 to $24,999 for middle income, and $25,000 and above for high income--are then readjusted mathematically and the percentages recomputed.

70/ Patricia Smith and Laura Kent, eds , The Impact of the Basic Grant Program on the States (Washington, D.C.: Policy Analysis Service, American Council on Education, August 1977). Unfortunately, their report does not reflect the changes in the basic grant program that came about as a result of the passage of the Middle Income Student Assistance Act. Two excellent, if somewhat hypothetical, discussions of the likely impact of that Act are available. See, Congressional Budget Office, Federal Assistance for Postsecondary Education: Options for Fiscal Year 1979 (Washington, D.C.: Congressional Budget Office, Congress of the United States, May 1978); and William D. Hyde, "Student Financial Aid Proposals and the Middle Income 'Squeeze'. Tax Credits or Expansion of Basic Grants," Paper No. 14 in William D Hyde, Papers in Education Finance (Denver: Education Commission of the States, June 1978). Other essential materials for any attempt to estimate the possible implications of this Act on California students include. College Scholarship Service of the College Board, CSS Need Analysis. Theory and Computation Procedures for the 1979-80 FAF (New York: College Entrance Examination Board, 1979); Office of Education, Bureau of Student Financial Assistance, Department of Health, Education, and Welfare, 1979-80 Determination of Eligibility Index: Basic Educational Opportunity Grant Program (Washington, D.C.: Government Printing Office, 1979); and OE, BSFA, Payment Schedule 1979-80 Basic Educational Opportunity Grant Program (Washington, D.C.: Government Printing Office, 1979) The Middle Income Student Asssitance Act also increased the funding for the College Work Study Program and removed the family-income ceiling for participation in the Guaranteed Student Loan Program. Both of these measures are likely to assist students faced with higher costs for attending college, but it was not possible to factor either of these changes into the model. Moreover, the available evidence suggests that neither loans nor work study have the

same impact in offsetting higher charges as a grant of the same size. See, Carlson, "Student Price Response Coefficients for Grants, Loans, and Work-Study Aid."

71/ "Notes from the Deputy Commissioner," May BSFA Bulletin 79 (Washington, D.C.: Office of Education, May 1979), pp. 1-5. In May it appeared that the provisions of MISAA for independent students would be implemented this year, too, largely because of pressure from Congress Since that time, however, several obstacles have developed. It does not appear that there will be enough time to implement these provisions prior to the start of the fall term. The 1979-80 payment schedule, moreover, makes it clear that for almost all students in the middle-income group--be they dependent or independent--the amount of the basic grant for those who attend an institution charging $350 or more per year would not increase if student fees were increased.

72/ Only one study deals specifically with the kinds of older, part-time students the California Community Colleges attract in such great numbers, although its focus is national. See, John Bishop and Jane Van Dyk, "Can Adults be Hooked on College: Some Determinants of Adult College Attendance," Journal of Higher Education, XLVIII (January/February 1977), pp. 39-62. The Community College model for enrollment responses to cost increases that was used in this report is based on a modification of the Bishop and Van Dyk findings and formulas. For an excellent discussion of the many difficulties inherent in trying to apply the studies that focus on traditional, 18- to 24-year-old students' responses to cost increases to the case of the California Community College, see, Susan C. Nelson, "Community College Finance in California: Equity Implications in the Aftermath of Proposition 13," Mimeographed (Washington, D.C.: prepared for the Chancellor's Office of the California Community Colleges, February 1979), especially pp. 28-35. City University of New York [CUNY] increased the tuition in its two- and four-year colleges from $0 to $700 between 1975 and 1976. Simultaneous changes in admissions standards, State financial aid policy, the end of veterans' benefits, and other factors, however, make it virtually impossible to determine what portion of the enrollment losses in CUNY were the result of increased charges and what portion of the losses stemmed from other factors. See, Office of Program and Policy Research, Application and Enrollment of CUNY Freshmen: Fall 1975 versus Fall 1976 (New York: The City University of New York, November 1977); and Office of Program and Policy Research, The City University of New York Data and Issues (New York: CUNY, December 1977). Another oft-cited study of an experiment involving several two-year colleges in Wisconsin contains numerous caveats about how tentative the findings are. The experiment

has since ended and while the inverse relationship between fees and enrollments was clearly established, the original study and a follow-up study simply reinforce the magnitude of the Community College enrollment responses projected by the models used in this report. See, "Experiment in Low Fees, 1973-74. Preliminary Report" (Madison: University of Wisconsin, 1974); and American Association of State Colleges and Universities, "Wisconsin Low Tuition Experiment Ends: Tuitions Up, Enrollments Down," (Washington, D.C.: AASCU Special Report, August 1977).

73/ The budget penalties for enrollment losses in the public segments make them more sensitive financially to enrollment losses than independent colleges and universities. If an independent institution loses a student, it simply loses the tuition and fee income that student would have provided. If a public institution loses a student for whatever reason, it loses not only the fees the student was paying but has its budget reduced the following year by an incremental amount set in the State budget formulas. This second financial penalty for enrollment losses makes the calculation of the net revenues produced in the public sector by increased charges significantly different from similar calculations in the independent sector. As a result, it has often been overlooked in casual discussions of the possible implications of higher charges in public higher education.

74/ See, for example, "Ford Warns of Misuse of Expanded Student Aid Program," Higher Education Daily, November 28, 1978. The article refers to a speech by Representative William Ford, Chairman of the House Postsecondary Education Subcommittee He warned, "If people begin capturing the federal aid, we will end up not doing a thing to improve educational opportunity for Americans."

75/ Once the new Middle Income Student Assistance Act is fully implemented, most full-time students from middle-income families would not have their grants increased at all if fees were increased. This would eventually mean that most middle-income students would have to pay the entire amount of any future fee increase themselves This year and probably next year, however, most middle-income students will experience a change from being ineligible for BEOG assistance last year to being eligible for a grant this year. Therefore, the model assumes that for most of these students the entire cost of a $100 fee increase would be offset in the shortrun by the shift in their eligibility from no grant last year to a grant of $200 or more this year.

76/ Since some of these part-time students may be self-supporting and thus ineligible this year to take advantage of the more liberal independent student provisions of the Middle Income Student Assistance Act, and since many other part-time students fail to receive financial assistance for a variety of reasons, the payment schedule for one-half time students was used in computing the portion of the increased charges that would be offset by a BEOG grant.

77/ Since the Cal Grant programs require the student to enroll full-time, the offsets referred to in these tables apply only to full-time undergraduates. These offsets are calculated by taking the number of current Cal Grant A recipients in each income group and the number of eligible Cal Grant B recipients in each income group and subtracting the projected number of students lost in that income group from the number of grant recipients in that group. Since the figures refer to currently enrolled Cal Grant recipients, the maximum possible offset is to reduce the projected enrollment losses to zero. It would be incorrect to assume from this, however, that the enrollment losses in the University would remain negligible no matter how much fees might be increased

78/ The Cal Grant offsets for the State University were computed in the same manner as for the University. The smaller number of Cal Grant A and eligible Cal Grant B recipients currently enrolled in the State University, however, means that these programs as currently constituted could not entirely offset the projected enrollment losses among full-time students in that segment.

79/ Age was not used as a separate independent variable in this report, although most of the data used in constructing the model for the four-year segments was derived from studies of traditional 18- to 24-year-old undergraduates Treating the price responsiveness of older students as if it were the same as for younger ones with similar credit loads posed no real problem in the case of the University because it has so few older undergraduates enrolled. Moreover, the Bishop and Van Dyk study, which applies mainly to Community Colleges, concluded that the enrollment of older students--those over 25 years of age--is more responsive to cost increases than is the enrollment of younger students. Since the Bishop and Van Dyk findings were used to develop the model used in this report for part-time Community College students, it did not seem necessary to identify age as a separate independent variable in their case. In the State University, though, there are many older students enrolled. Applying the coefficients developed by Bishop and Van Dyk for Community College students to older State

University students did not seem appropriate, however Further, it appears that a major reason for the greater price responsiveness of older students is that they also tend to be predominantly part-time students and, thus, do not qualify for much, if any, financial aid. Consequently, it was assumed in constructing the model that the effects of students' ages on their responsiveness to cost increases would already be reflected by variations in the enrollment responsiveness of students with different credit loads--an independent variable already being used in the model.

80/ There is reason to believe that juniors and seniors would be less likely to leave college than first-time freshmen or sophomores if student charges were increased. Hoenack's study of the enrollment responsiveness of University of Minnesota students to cost increases, concluded that lower-division students were more responsive to increases than upper-division students. This does not mean, however, that upper-division students are not responsive to cost increases, or that their price response coefficients can be set equal to zero. Moreover, Hoenack's findings have not been replicated by other studies in a manner that would permit the use of different price response coefficients for lower- and upper-division students as well as for students with different family incomes. Finally, because of the cycle of students graduating and new freshmen entering each year, it would only be a matter of a few years before the greater price responsiveness of lower-division students would be reflected in lower overall enrollments. Under the circumstances, the model developed for this report utilized the adjusted price response coefficients for undergraduate students as a whole See, Hoenack and Weiler, "Cost-Related Tuition Policies and University Enrollments," pp. 332-360.

81/ See, State of Washington CPE, Tuition and Fees Policy. In contrast to the option outlined here, Washington sets student activity fee ceilings at not more than 20.0 percent of the other charges.

82/ As noted earlier, once the Middle Income Student Assistance Act is fully implemented, the amount of the grants for most middle-income students would not increase if fees increased. Under those circumstances, less of the increased fee revenue the institutions received would come from BEOG funds and more from the students themselves. The result would be even more substantial enrollment losses than projected here.

83/ Jackson and Weathersby, "Individual Demand for Higher Education," pp. 649-650; Gregory A. Jackson, "Financial Aid and Student Enrollment," Journal of Higher Education 49 (1978), pp.

548-574; Hyde, "The Effect of Tuition and Financial Aid," pp. 36-42; and Daryl E. Carlson, A Flow of Funds Model for Assessing the Impact of Alternative Student Aid Programs (Stanford: Stanford Research Institute, 1975), pp. 62, 63.

84/ American Association of State Colleges and Universities' report cited in Higher Education Daily, August 8, 1979.

85/ McPherson, "The Demand for Higher Education," pp. 168-171; Kenneth M. Deitch, "Pricing and Financial Aid in American Higher Education: Some Interactions," (Sloan Commission on Government and Higher Education, August 14, 1978), pp. 53-57.

86/ 1979-80 Governor's Budget, p. 1043.

87/ Population Research Unit, Department of Finance, Population Projections for California Counties 1975-2020 With Age/Sex Detail to 2000 Series E-150 (Sacramento: Department of Finance, December 1977). See also, Patrick M. Callan, California Postsecondary Education: Challenges and Constraints (Sacramento: California Postsecondary Education Commission, 1979), pp. 1-6.

88/ Hoenack and Weiler, "Cost-Related Tuition Policies and University Enrollments," pp 346-349.

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APPENDICES

Appendix A - The Community College Enrollment Model

Appendix B - Projections of the Impact of a $100 Increase When the Middle Income Student Assistance Act is Fully Implemented

APPENDIX A

THE COMMUNITY COLLEGE ENROLLMENT MODEL

The model to assess the impact of increased student charges on full-time Community College student enrollment recognizes that there are important similarities between these students and full-time lower division students at the State University. The average credit load of the two groups of students was almost identical in Fall 1978, the income distribution was quite similar, and the average ages were very close.

The model for part-time Community College students was different, however, because these students are quite distinctive. The model was based on the research of Bishop and Van Dyk on the factors affecting adult enrollment in higher education, particularly in Community Colleges. Among the variables they identified were tuition or cost, proximity of a two-year college, the existence of an open-door admissions policy, student charges at nearby four-year institutions, veteran's status, occupation, number of children, age, local unemployment rates, and income.

Bishop and Van Dyk used a conditional logit equation to corroborate their findings. Their logit coefficients for the effect of tuition on enrollments were used in this report. Because these nonlinear coefficients could not be adjusted for changes in the Consumer Price Index between 1970 and 1978, the net increases in student charges tested in the various Options in this report were adjusted instead. The equation used here for assessing the enrollment impact of increased charges on part-time Community College students was a logarithmic equation of the following general form:

$$100\Delta E/E = (1-P)(e^{\alpha\Delta x} - 1)/[(1-P) + Pe^{\alpha\Delta x}]$$

Where:

$100\Delta E/E$ = The percentage change in enrollment produced by a given increase in student charges.

P = The participation rate of that particular type of Community College student.

α = The logit coefficient for tuition and fee effects.

Δx = The net increase in student charges expressed in increments of $100 and adjusted for CPI changes between 1970 and 1978.

e^x = The natural antilog. It raises 2.71828 to the xth power. In this case x equals the value of $\alpha\Delta x$.

APPENDIX B

PROJECTIONS OF THE IMPACT OF A $100 INCREASE WHEN THE MIDDLE INCOME STUDENT ASSISTANCE ACT IS FULLY IMPLEMENTED

As noted on several occasions in the text of this report, the enrollment and revenue effects of an increase in student charges would be different if the increase occurred after the Middle Income Student Assistance Act was fully implemented. Tables A, B, and C project the enrollment impact of a $100 across-the-board increase occurring after all the components of MISAA have been implemented. All the assumptions built into the models used to test Options 2 through 4 were used here, except for the assumptions about the way the MISAA would affect the net price faced by students. Table D shows the revenue effects.

TABLE A

ENROLLMENT IMPACT OF A $100 INCREASE IN STUDENT CHARGES AT THE UNIVERSITY

	Income Level	Percent	Number	Tuition Elasticity	Net Cost Increase	Students Lost Percent	Students Lost Number	Net Loss After Cal Grant Offsets Number	Net Loss After Cal Grant Offsets Percent
Nonresident Undergraduates	High	--	3,891	-0.146	$595	-3.32%	- 129	- 129	-3.32%
Resident Undergraduates									
Full-Time	Low	16.7%	13,595	-0.437	$50	-3.02	- 410	- 0	-0.00
	Middle	37.3	30,365	-0.218	$50-$100	-2.80	- 849	- 0	-0.00
	High	46.0	37,447	-0.146	$100	-2.02	- 756	- 0	-0.00
	TOTAL	--	81,407	--	--	-2.48	-2,015	- 0	-0.00
Part-Time (6.1 - 11.9 Units)	Low	16.7	771	-0.437	$74	-4.47	- 34	- 34	-4.47
	Middle	37.3	1,722	-0.218	$74-$100	-2.90	- 50	- 50	-2.90
	High	46.0	2,123	-0.146	$100	-2.02	- 43	- 43	-2.02
	TOTAL	--	4,616	--	--	-2.75	- 127	- 127	-2.75
Part-Time (6.0 of Less Units)	Low	16.7	175	-0.437	$100	-6.28	- 11	- 11	-6.28
	Middle	37.3	391	-0.218	$100	-3.07	- 12	- 12	-3.07
	High	46.0	481	-0.146	$100	-2.08	- 10	- 10	-2.08
	TOTAL	--	1,046	--	--	-3.15	- 33	- 33	-3.15
Total Undergraduates	Low	--	14,541	-0.437	--	--	--	- 45	-0.31
	Middle	--	32,478	-0.218	--	--	--	- 62	-0.19
	High	--	43,942	-0.146	--	--	--	- 182	-0.41
	TOTAL	--	90,961	--	--	--	--	- 289	-0.32

TABLE B

ENROLLMENT IMPACT OF A $100 INCREASE IN STUDENT CHARGES AT THE STATE UNIVERSITY

	Income Level	Percent	Number	Tuition Elasticity	Net Price Increase	Students Lost Percent	Students Lost Number	Net Loss After Cal Grant Offsets Number	Net Loss After Cal Grant Offsets Percent
Nonresident Undergraduates	High	--	8,507	-0.146	$190	-1.45%	- 123	- 123	-1.45%
Resident Undergraduates									
Full-Time	Low	31.2%	50,197	-0.437	$50	-10.66	-5,351	- 0	-0.00
	Middle	42.5	68,376	-0.218	$24-$50	- 4.03	-2,755	- 0	-0.00
	High	26.3	42,313	-0.146	$100	- 7.12	-3,013	-2,591	-6.12
	TOTAL	--	160,886	--	--	- 5.54	-8,918	-2,591	-1.61
Part-Time (6.1 - 11.9 Units)	Low	31.2	11,088	-0.437	$76	-16.20	-1,796	-1,796	-16.20
	Middle	42.5	15,104	-0.218	$70-$100	- 7.66	-1,157	-1,157	- 7.66
	High	26.3	9,346	-0.146	$100	- 7.12	- 665	- 665	- 7.12
	TOTAL	--	35,538	--	--	-10.18	-3,618	-3,618	-10.18
Part-Time (6.0 or Less Units)	Low	31.2	9,463	-0.437	$80	-19.98	-1,891	-1,891	-19.98
	Middle	42.5	12,890	-0.218	$80	- 9.97	-1,285	-1,285	- 9.97
	High	26.3	7,976	-0.146	$80	- 6.67	- 532	- 532	- 6.67
	TOTAL	--	30,329	--	--	-12.23	-3,708	-3,708	-12.23
Total Undergraduates	Low	--	70,748	-0.437	--	--	--	-3,687	-5.21
	Middle	--	96,370	-0.218	--	--	--	-2,442	-2.53
	High	--	68,142	-0.146	--	--	--	-3,911	-5.74
	TOTAL	--	238,260	--	--	--	--	-10,040	-4.21

TABLE [illegible]

[illegible]

	Income Level	Percent	Number	Tuition Elasticity	Net Tax Increase	Student Percent	Total Number	Net Loss Cal Grant Number	Net Loss Cal Grant Percent
Nonresident Undergraduates	[illegible]								
Resident Undergraduates									
Full-Time	[illegible]								
Part-Time (Q.1 - 11.9 Units)	[illegible]								
Total Undergraduate	[illegible]								

TABLE C

ENROLLMENT IMPACT OF A $100 INCREASE IN STUDENT CHARGES IN THE COMMUNITY COLLEGES

	Income Level	Percent	Number	Tuition Elasticity	Net Cost Increase	Students Lost Percent	Students Lost Number	Net Loss After Cal Grant Offsets Number	Net Loss After Cal Grant Offsets Percent
Undergraduates									
Full-Time	Low	38.4%	120,249	-0.437	$50	-10.66	-12,817	- 5,471	- 4.55
	Middle	38.0	118,997	-0.218	$0-$100	- 2.50	- 2,981	- 2,925	- 2.46
	High	23.6	73,903	-0.146	$100	- 7.12	- 5,262	- 5,262	- 7.12
	TOTAL	--	313,149	--	--	- 6.72	-21,060	-13,658	- 4.36
Part-Time (6.1 - 11.9 Units)	Low	38.4	82,838	--	$76	- 7.43	- 6,159	- 6,159	- 7.43
	Middle	38.0	81,976	--	$50-$100	- 6.48	- 5,314	- 5,314	- 6.48
	High	23.6	50,911	--	$100	- 9.68	- 4,926	- 4,926	- 9.68
	TOTAL	--	215,725	--	--	- 7.60	-16,399	-16,399	- 7.60
Part-Time (6.0 or Less Units)	Low	38.4	242,281	--	$60	- 5.88	-14,255	-14,255	- 5.88
	Middle	38.0	239,756	--	$60	- 5.88	-14,105	-14,105	- 5.88
	High	23.6	148,901	--	$60	- 5.92	- 8,820	- 8,820	- 5.92
	TOTAL	--	630,938	--	--	- 5.89	-37,180	-37,180	- 5.89
Total Undergraduates	Low	--	445,369	--	--	--	--	-25,885	- 5.81
	Middle	--	440,729	--	--	--	--	-22,344	- 5.07
	High	--	273,715	--	--	--	--	-19,008	- 6.94
	TOTAL	--	1,159,812	--	--	--	--	-67,237	- 5.80

TABLE [illegible]

[illegible]

Income Level	Percent	Number	[illegible] Portion Of Income	[illegible]	Number	[illegible]	[illegible] After [illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

TABLE D

REVENUE IMPACT OF A $100 INCREASE IN STUDENT CHARGES
IN ALL THREE PUBLIC SEGMENTS

INCREASE IN GROSS REVENUES

Seqment	Gross Revenues	Sources of Revenues Paid as Student Fees		
		Students	State	Federal BEOG
University	$10,474,409	$8,108,117	$1,445,880	$ 920,412
State University	$20,586,850	$12,000,000	$1,217,400	$7,369,450
Community Colleges	$85,507,180	$59,799,194	$ 740,200	$24,967,786
TOTAL	$116,568,439	$79,907,311	$3,403,480	$33,259,648

NET REVENUE INCREASE

Seqment	Gross Revenues	Budget Reductions		Net Revenue Increase
		Same Year	Following Year	
University	$10,474,409	$ 0	$ 476,150	$ 9,998,259
State University	$20,586,850	$2,882,015	$4,997,691	$12,707,144
Community Colleges	$85,507,180	$20,395,580	$14,858,532	$50,253,068
TOTAL	$116,568,439	$23,277,595	$20,332,373	$63,958,471