

**THE UNIVERSITY OF CALIFORNIA OFFICE OF THE PRESIDENT
STUDENT ACADEMIC SERVICES**

OCCASIONAL PAPER SERIES

Occasional Paper 1

**ESTIMATING THE EFFECTS OF FEE INCREASES ON THE DEMAND
FOR ENROLLMENT BY NEW CALIFORNIA RESIDENT FRESHMEN:**

An Exploratory Analysis



Student Academic Services
Dennis J. Galligani, Assistant Vice President Student Affairs and Services
300 Lakeside Drive, 17th Floor
Oakland, California 94612-3550
(510) 987-9554

Dario J. Caloss Jr.: Principal Administrative Analyst

Judy Lee: Principal Administrative Analyst

Director, University Outreach: Margaret Heisel

Director, Student Affairs and Services: Susanna Castillo-Robson

Senior Admissions Analyst: Elizabeth Tamayo

Executive Summary

Undergraduate fees at the University of California have increased sharply over the last three years. This has prompted concerns regarding the effects of these increases on undergraduate enrollment. This study was undertaken in an effort to better understand the relationship between price (including fees) and enrollment demand among new California freshmen. The study covers the period from Fall 1990 to Fall 1992

Summary of Findings

New freshmen demand for enrollment at the University of California is relatively inelastic, that is, increases in total costs over the last three years have resulted in only a very marginal decline in demand. Nevertheless, the University of California has experienced both a measurable “softening” of demand and a redistribution of demand among the campuses. The University experienced a shift in demand away from campuses located outside the state’s major metropolitan areas (Davis, Santa Barbara, and Santa Cruz) that was partially offset by a shift in demand to campuses located within metropolitan areas. Demand increased most sharply for those campuses within the Los Angeles area. These findings suggest that both increases in price as well as the recession were important factors affecting demand.

Increase in Price and the Effects of Recession

The cost of attending the University of California, which include fees, room and board, supplies, transportation and other related costs, increased relative to the average disposable personal income (DPI) of Californians in 1992. In 1990-91, the total costs to attend the University of California equaled 54.0% of Californian’s average DPI. Over the past 15 years, the total costs to attend the University ranged from between 48% to 54% of DPI. By 1992-93, when adjusted for inflation, total costs had risen to equal 61.5% of average DPI. The total costs to attend the University in 1992-93 reached their all time high relative to the average DPI of Californians.

At the same time that total costs to attend the University were increasing relative to Californians’ ability to pay, the state became mired in a severe recession. The recession left many Californians out of work and shook the confidence of many others. The unemployment rate in California increased from just over 5% in mid-1990 to near 10% by mid-1992. During this same time period, the Index of Consumer Confidence plummeted to historic lows. Within the state, the recession was

concentrated in the Southern California. Nearly 10% of all jobs lost in the nation in the current recession were located in the four counties of Los Angeles, San Bernadino, Riverside, and Orange.

As a result of increasing costs and the effects of recession, some new freshmen appear to be more likely to opt for those University of California campuses that are closer to their homes. There are real savings associated with attending campuses that are closer to a student's home, especially if the student lives at home. The magnitude of these savings is enough to off-set, in large part, the increase in relative costs described above. There are other economies associated with attending a local campus which are described in more detail in the report. Among these are the generally greater availability of employment locally and in major metropolitan areas, as well as some students' need to work in family-owned businesses.

It is impossible given the limitations of this study to assess accurately the relative contribution increased costs and the recession made to the observed changes in demand. However, it is the opinion of the authors that the recession played a much greater role in affecting demand than is generally believed. Whatever the relative share increasing costs or the recession played in affecting demand, it is important to acknowledge the important effect of both.

Specific Findings

1. The University has experienced a decline in demand as measured by three indicia of demand:
 - a. A decline in both the absolute number of SAT scores sent to the University of California by California test takers and a decline in the relative proportion of California test takers who designate the University as a recipient of their test scores;
 - b. A decline in both the absolute number of California residents who applied for admission to the University as well as a decline in the proportion of California high school graduates who applied; and,
 - c. A decline in the rate at which admitted applicants accept the University's offer to enroll.
2. The magnitude of the decline in demand, while difficult to calculate and subject to the influence of intervening factors unrelated to price, appears to be substantial.

The University received between 400 and 600 fewer applications from California High School graduates in Fall 1992 than might have been expected had the ratio between University applicants and High School graduates remained at levels in existence prior to Fall 1992. In addition, fewer admitted students accepted the University's offer to enroll. The University should have enrolled between 700 and 1,500 more new freshmen than it did.

3. The overall relationship between price and demand is both complex and highly inelastic. Increases in the total costs of attending the University of California, of which fees account for only 20%-25%, do not appear to be the sole factor affecting demand. As noted above, the total costs of attending the University of California have increased relative to Californians' ability to pay, however, this alone is not the only factor affecting demand.
4. The measured decline in demand appears to be closely related to the economic recession in California. The greatest increase in fees, imposed for Fall 1991, did not have a marked adverse effect on any of the indicia of demand. The sharpest decline in demand occurred in Fall 1992, during the depth of the recession.
5. One factor contributing to the price inelasticity is the costs of other options. The total costs of attending high quality alternative institutions, both public and private, increased during the period under review. Costs at private institutions increased at rates lower than those recorded at the University of California, however, their absolute increases were in almost all instances greater than those at the University.
6. The decrease in demand was experienced across all ethnic groups. Since the focus of this study was not specifically on differential effects we can neither confirm or rule out the existence of any such effects.
7. Changes in demand were experienced differentially across the eight general campuses of the University. The shift in patterns of application and enrollment was most pronounced at Davis, Santa Barbara, and Santa Cruz, the three campuses most heavily dependent on students from outside their immediate communities.

8. A portion of the decline in demand experienced by the University of California may be attributed to factors unrelated to price or the general state of the economy. For example, the decline in the number of California high school graduates taking the SAT may be a result of a change in the high school population rather than a response to economic factors.

9. Changes in application and enrollment rates may be influenced by campus and University actions unrelated to economic factors. Some of the measured declines in campus enrollment rates are associated with changes in institutional admission behavior. Primary among these has been an increase in the number of positive admission offers per applicant. Changes in outreach programs may also have affected application patterns. Finally, the University's policy of increasing need based aid most certainly helped to mitigate a portion of the observable price elasticity.

Table of Contents

Introduction	01
The Scope of the Report	02
Study Goals	02
A Review of Previous Studies into the Relationship Between Fees and Demand	03
Major Findings of the Study	04
Outline of the Report	05
Chapter One: Some Preliminary Thoughts and Observations on factors Affecting Undergraduate Demand at the University of California: An Econometric Context	07
Chapter Findings	08
Fees and the Total Costs of Attending the University of California	09
Total Costs Relative to the California CPI	11
Controlling for Inflation	13
Total Costs Compared to Ability to Pay	15
Costs at Comparable Institutions	17
Individual Options for Reducing Costs	20
The Opportunity Costs of a College Education	22
Cost Discounting with Financial Aid	24
Some Notes on the California Recession	25
Conclusion	28
Chapter Two: Identifying Changes in Aspirational Demand	29
Chapter Findings	30
The Change in SAT Scores Received at the University	31
Fall 1992: Observable Change	33
Change in the Proportion of Students Taking the SAT	34
Conclusion	36

Chapter Three: Identifying Changes in Demand During the Application Phase	38
Chapter Findings	39
Changes in University Application-Rates	40
Changes in Application-Rates by Ethnicity	43
Changes in Application-Rates Across Campuses	45
Change in Application-Rates by Ethnicity and Across Campuses	48
Conclusion	54
Chapter Four: Identifying Changes in Demand with University Enrollment-Rates	56
Chapter Findings	57
Enrollment-Rates as Indicators of Demand	57
Enrollment-Rates Reconsidered	60
Changing Campus Enrollment-Rates by Academic Index	64
The Enrollment-Rate at Berkeley	65
The Enrollment-Rate at Davis	66
The Enrollment-Rate at Irvine	66
The Enrollment-Rate at Los Angeles	67
The Enrollment-Rate at Riverside	67
The Enrollment-Rate at San Diego	68
The Enrollment-Rate at Santa Barbara	68
The Enrollment-Rate at Santa Cruz	68
Conclusion	85
Chapter Five: Projecting the Absolute Decline in Demand	86
Expected Enrollment-Rates	87
Chapter Six: Concluding Remarks	92
Discussion	93
The Need for Additional Analysis	94

Introduction

Paying for college is a central concern for the average California family. The recession, together with rising costs at both private and public institutions of higher education have caused many people to question the affordability of college. A national poll conducted in 1991 showed that 87 percent of Americans believe rising college costs will soon put college out of reach for most people.¹ The public's concerns are not unwarranted. The costs of attending public and private institutions have increased in recent years. The average costs of attending public institutions in the United States increased by 109% from 1980 to 1990. The average costs at private institutions over this same period increased by 146%. In the last two years, the average costs of public institutions have increased at a substantially greater rate. Nationally, the costs of attending public institutions rose by 12% in 1991 and 10% in 1992.² At the University of California, fees increased by 210% from 1980-81 to 1989-90 while total costs (including fees) increased by 186% (see Table 3-2).

Over the last decade, the costs of attending college in the United States, (tuition, fees, room, and board) increased at a rate greater than inflation, family incomes, and many other indices used to measure the ability of families and students to pay for college.³ The average costs of attendance at all institutions rose at more than twice the rate of inflation between 1980 and 1990. In 1980, college costs represented 14 percent of the median family income, but by 1990 average costs represented 18 percent of median family income.⁴ At the University of California, the total costs of attendance rose from 47.4% of disposable personal income (DPI) in 1980-81 to 61.5% in 1992-93. The increases in costs outpaced the California consumer price index for every year from 1980-81 through 1992-93. Even when calculated in constant dollars, the costs of attending the University of California rose 11.6% in 1991-92 and 4.9% in 1992-93.

¹ The Gallup Organization, *Attitudes About Colleges*, 1991 (Washington, D.C.: Council for the Advancement and Support of Education, October 1991).

² "Tuition Costs at Public Colleges is Up 10% This Year, College Board Study Finds," *The Chronicle of Higher Education*, October 21, 1992, p. A36.

³ Hauptman, Arthur M. *The College Tuition Spiral* (New York: The College Board and the American Council on Education, 1990.), p. 5.

⁴ See Gillespie, D. A. and Carlson, N. *Trends in Student Aid: 1963 to 1983* (New York: The College Board, 1983), p. 20. Gladieux, L.E. and Knapp, L. G. *Trends in Student Aid: 1982 to 1992* (New York: The College Board, 1992). Halstead, K. *Higher Education Tuition* (Washington, D.C.: Research Associates of Washington, April 1989).

The increased costs of attending the University of California have engendered a number of questions and assertions regarding the effects such increases have had on undergraduate enrollment. According to legislative testimony and numerous press reports, recent increases in fees at the University of California have been the cause of real hardship for students. There have been many accounts within the popular press of students who choose not to apply to, or enroll at, the University, or who drop out of their studies because of recent changes in the fees. Media headlines and stories range from accounts of how fee increases slow efforts to turn the economy around because they prevent people from getting education and job training to bald statements that fees shut students out of college.⁵

The Scope of the Report

This report analyzes the extent to which recent increases in fees are associated with changes in enrollment demand at the University of California. The report focuses on the last three years, 1990 to 1992, the years when fees were substantially increased at the University of California. This endeavor is limited strictly to the relationship between increased costs and undergraduate demand. It does not examine the direct effect increased costs may have on families or individuals. No doubt the two are closely related. However, such analysis is beyond the scope of this report. Studies into the direct effects upon individuals would complement the analysis undertaken here.

Study Goals

The project was undertaken with two goals in mind. The first was to determine both the direction and magnitude of changes in enrollment demand that have occurred since Fall 1990. Three indicia of demand were developed. They include:

1. The absolute number of SAT scores sent to the University by California test takers and the University's relative proportion of all SAT scores sent to colleges and universities by California test takers;
2. The absolute number of California residents who applied for admission to the University and the number of California applicants for admission expressed as a proportion of California high school graduates; and,
3. The rate at which admitted applicants accept the University's offer to enroll.

⁵ See *Los Angeles Times*, January 14, 1993 and *San Jose Mercury News*, January 18, 1993.

The second goal of the report was to determine, if possible, the relationship between increasing fee levels and measured change in demand. A significant portion of the measured change in application and enrollment rates can be attributed to institutional actions or external changes affecting the University irrespective of changes in fee levels. This report attempts to isolate many of these factors in order to get a more accurate assessment of any change in demand resulting from changes in fees.

This is an exploratory study only. It poses some hypotheses, synthesizes disparate information sources, organizes information in ways that promote a better understanding of causal relationships, and draws some preliminary conclusions. It does not attempt to prove causal relationships between price and enrollment demand at the University of California, nor does it presume to describe completely the complex forces of student choice and enrollment management. This study should be viewed as the first step in a larger effort to better understand the relationship between University costs and the effect upon enrollment.

A Review of Previous Studies into the Relationship Between Fees and Demand

In the last eighteen months, Student Academic Services has undertaken two other studies of the effects increasing fees have had on new undergraduate enrollment.⁶ The first, which examined the effect of fee increases on overall application and enrollment trends for new freshmen and transfers, found no clear relationship between increasing fees and enrollment demand. It was noted that there was evidence of a declining enrollment rate and that the decline was more pronounced among underrepresented student groups and varied across campuses. No relationship was found between parental income and the declining enrollment rate. The second study concentrated on the effect of increasing levels of nonresident tuition on undergraduate enrollment demand. It concluded that fee increases on the average of 15% to 20% above the 1991-92 levels (\$400) could be sustainable for five to ten years without having a significant effect on enrollment. A one-year increase of up to \$1,000 (44%) was determined to be unlikely to impact enrollment adversely.⁷

⁶ See "The Impact of Fee Increases on Undergraduate Applications and Enrollment at the University of California." Student Academic Services, Research and Operations, Office of the President, University of California. No date. "Funding Gap." Student Academic Services, Student Financial Support, Office of the President, University of California. May 1992.

⁷ "Funding Gap", p. 7.

These earlier works provide several valuable lessons.

1. It is important to differentiate between changes in enrollment rates that are a product of changes in admission selectivity from those changes in the enrollment rate that are the result of changes in student demand.
2. Changes in enrollment rates can also be affected by increasing the average number of positive admission offers received by each applicant.
3. Change in systemwide application and enrollment rates can obscure significant and meaningful changes in these measures at the campus level.
4. Analysis of changes in demand, such as a change in total applicants, must look not only at the change in the absolute number of applicants, but also include the change relative to the number of high school graduates.
5. Any attempt to systematically examine the relationship between enrollment and fees must take into account the potential effects of macroeconomic factors such as unemployment, consumer confidence, and recession.
6. Any examination of the relationship between price and demand should include in the calculation of price, the total costs of attendance rather than focus exclusively on fees.
7. Changes in costs must be measured in proportion to measures of ability to pay for college.

Major Findings of this Study

The University has experienced declines in both application rates and enrollment rates since 1990. These declines were most pronounced in Fall 1992. However, increased fees imposed for Fall 1991 and Fall 1992 do not, in and of themselves, appear to have produced an adverse effect on either application rates or on enrollment rates. The decline in both application rates and enrollment rates appear to be more closely associated with the overall economic recession in California than with the increases in fees.

This is not to say there are no interaction effects between higher fees and an economy in recession. The two certainly are related. Given the way California public postsecondary institutions are funded, increases in fees are levied generally in times of economic distress. Recent budget cutting strategies at the University have included, in addition to fee increases, reductions in staff and faculty, as well as reductions and streamlining of other programs and services. All these may

impact the student experience, and may, in combination, produce a decline in enrollment demand.

The second major finding of this study is a shift in patterns of application and enrollment. The recession produced differential effects on enrollment rates across the eight general education campuses. Enrollment demand, as measured by application rates and enrollment rates, shifted away from those campuses outside major metropolitan areas. Davis, Santa Barbara, and Santa Cruz, the three campuses most heavily dependent on students from outside their immediate geographic areas, experienced the sharpest declines in demand. It appears that while some students may have decided to forgo study at the University of California because of rising costs and recession, other students have opted to attend UC campuses closer to home.

Outline of the Report

This report is divided into six chapters. Chapter one is a review some of the factors found by economists to affect demand for higher education. We will examine the potential effect these factors might have on demand for the University of California. The chapter begins by describing the increase in costs to attend the University, including not only fees, but the total costs associated with attending the University of California. In order to do this, we will examine the increase in costs within the context of the California consumer price index (CPI) to appraise the magnitude of the change in constant dollars. Following this, the total costs of attending the University will be examined within the context of the consumers' ability to pay. In this case, the change in costs will be described relative to disposable personal income (DPI). We then will examine the substitute options (attending other public or private institutions) available in higher education to determine if attending other institutions might be a viable option for cost-conscious consumers. Finally, we will examine unemployment rates and measures of consumer confidence in California in order to better understand the temporal relationship between the recession and the likelihood of observing changes in demand for enrollment at the University of California.

In chapter two, we will begin to explore measures of demand. In this chapter we examine the *aspirational* stage of the admission process. Aspirational demand refers to the stage of the application process in which students aspire for college. Aspirational demand will be measured in three ways: the change in the absolute number of scores received by the University from test-takers (system-wide and by campus); the percentage change in scores received by the University relative to the number of individuals who completed the SAT; and the number of SAT scores received by the University as a proportion of all colleges and universities designated by SAT-takers to be score recipients (system-wide and by campus).

Chapter three will focus on the *application* stage of the admission process. In this chapter we will examine the change in the absolute number of applicants who applied to the University, expressed both as a percentage of high school graduates and as a percentage of SAT-takers. We also will undertake a cursory examination of any change in the application patterns across campuses to determine, as we suggested earlier, if students, in an effort to reduce their costs, are applying to campuses nearer their homes. Finally, we will examine the change in applications across ethnic groups.

In chapter four we examine the final stage of the application and admission process, the *enrollment* stage. Here we examine the behavior of applicants who have been admitted to the University to determine if there has been a discernible decline in their propensity to accept the University's offer to enroll. The measure of demand we will examine is the enrollment rate, that is, the proportion of admitted applicants who actually enroll at the University. We will look at the enrollment rate across campuses while controlling for the academic ability of applicants.

In chapter five, we will attempt to estimate the magnitude of the decline in demand by projecting what the Fall 1992 enrollment of new freshmen should have been had the enrollment-rate at the University not fallen.

Finally, in chapter six, we will offer some observations and draw some conclusions from our findings. We also will offer some suggestions for further research into the effects of fee increases on undergraduate student enrollment.

Economic Factors Affecting Demand

Econometric models dealing with the relationship between price and demand for higher education typically include five factors: the change in price, usually expressed in constant dollars; the price of

substitute options; opportunity costs of attendance or non-attendance; measures of general economic conditions such as unemployment and consumer confidence; and cost discounting defined in terms of financial aid.⁸ In this section, we will examine each of these factors in an attempt to establish the broad economic parameters which shape demand for enrollment at the University of California. Specifically, we will compare the increase in undergraduate fees with the increase in the total costs of attending the University of California. Examine the increase in costs within the context of the California CPI to appraise the magnitude of the change in constant dollars. The total costs of attending the University will be compared to the measure of disposable personal income in order to compare the change in costs relative to a measure of ability to pay. We will then examine the substitute options and opportunity costs associated with enrollment. Finally, we will examine unemployment rates and consumer confidence in California in order to better understand the temporal relationship between the recession and observable changes in demand.

A number of conclusions can be drawn from this section.

- The total costs of attending the University of California, measured in constant dollars, rose much less dramatically over the last three years than a simple examination of fees suggests.
- The costs of attending the University began to rise in 1990-91, before the imposition of large fee increases in 1991-92 and again in 1992-93. A relatively rapid increase in the other costs associated with attending the University in 1990-91 accounts for this.
- The magnitude of the increases in total costs measured in constant dollars, were approximately equal for 1990-91 (5.9%) and 1992-93 (4.9%). Only in 1991-92 did the total costs increase dramatically jumping by 11.6%.
- The total costs of attending the University consumed a greater proportion of disposable income than in previous years. Throughout the 1980s, total costs equaled between 50% and 55% of disposable income. Costs increased to 60.7% in 1991-92 leveling off at 61.5% in 1992-93.
- The costs of attending highly selective private institutions have been rising, making enrollment shifts away from the University of California to these institutions unlikely. When measured in terms of absolute dollars, the increases at highly selective institutions over the last three years have been greater than the increases at the University.

⁸ There are a number of excellent reviews of studies and methodologies. Among them see Chisholm, M. and Cohen, B. "A Review and Introduction to Higher Education Price Response Studies." Boulder, Colorado: National Center for Higher Education Management, 1982. 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*. Sacramento: California Postsecondary Education Commission, 1980. Carlson, D., Farmer, J. and Weathersby, G. *A Framework for Analyzing Postsecondary Education Financing Policies*. Washington, D.C.: Government Printing Office, 1974. Cohn, E. and Morgan, J.M. "The Demand for Higher Education: Additional Evidence." In *1978 Proceedings of the Social Statistics Section*, American Statistical Association, pp. 669-674. Washington, D.C.: American Statistical Association, 1978b. Dresch, S. "A Critique of Planning Models for Postsecondary Education: Current Feasibility, Potential Relevance, and a Prospectus for Future Research." *Journal of Higher Education* 46 (1975): 245-286. Hyde, W., Jr. "The Effect of Tuition and Financial Aid on Access and Choice in Postsecondary Education." In *Issues in Postsecondary Education Finance*, pp. 28-36. Edited by W.D. Hyde, Jr. Denver: Education Commission of the States, 1978. Jackson, G.A. and Weathersby, G.B. "Individual Demand for Higher Education: A Review and Analysis of Recent Empirical Studies." *Journal of Higher Education* 46 (1975): 623-652. McPherson, D. "The Demand for Higher Education." In *Public Policy and Private Education*, pp. 143-196. Edited by D.W. Breneman and C.E. Field. Washington, D.C.: The Brookings Institution, 1978.

- The opportunity costs associated with not attending college remain great and are increasing. Rising opportunity costs should contribute to overall demand inelasticity.
- The recession in California was of significant magnitude to affect demand.
- The University’s policies on financial aid effectively reduced much of the demand elasticity that would have been expected given the change in price and effect of the recession.

Fees and the Total Costs of Attending the University of California

A major problem associated with uncovering the effect of fee increases on new freshmen demand involves correctly assessing the magnitude of the increase in costs. Most discussions have focused, on the increase in fees with little or no discussion of the actual change in costs or the change in individual's ability to pay for these increases. The cost function one selects determines the final assessment of the magnitude of change, and hence, the relationship between cost and demand.

In the last two years, fees charged to undergraduate students at the University of California have increased markedly. University wide fees, which include Registration fees and Educational fees, increased by \$148 or 10.0% in 1990-91, \$650 or 40.0% in 1991-92, and again by \$550 or 24.2% in 1992-93 (see Table 1-1). Total fees, University wide fees plus campus miscellaneous fees, increased by 11.4% in 1990-91, 36.6% in 1991-92, and 22.1% in 1992-93. A number of points should be borne in mind regarding these increases.

First, these increases came following a decade of relatively constant fee levels. Fees at the University of California increased by an average of 4.3% per year from 1982-83, the year of the last major increase in fees, to 1990-91. Second, while the increase in fees for 1991-92 and 1992-93 are large when measured in terms of percentage change on a small base, the actual increase in fees, \$148 in 1990-91, \$650 in 1991-92, and \$550 in 1992-93, is less imposing. This second point is particularly important if one hopes to uncover a relationship between fees and demand. Third, the University increased student fees in response to sharp reductions in state appropriations for higher education.

TABLE 1-1 Undergraduate Fees at the University of California: 1978-79 to 1992-93

Academic Year	Total Registration & Education Fees	Change in University Fees	Campus Miscellaneous Fees(a)	Total Fees Miscellaneous and University(a)	Change in Total Fees
1978-79	\$671	N/A	\$49	\$720	N/A
1979-80	\$685	2.1%	\$51	\$736	2.2%
1980-81	\$719	5.0%	\$57	\$776	5.4%
1981-82	\$938	30.5%	\$59	\$997	28.5%
1982-83	\$1,235	31.7%	\$65	\$1,300	30.4%
1983-84	\$1,315	6.5%	\$72	\$1,387	6.7%
1984-85	\$1,245	-5.3%	\$79	\$1,324	-4.5%
1985-86	\$1,245	0.0%	\$81	\$1,326	0.2%
1986-87	\$1,245	0.0%	\$100	\$1,345	1.4%
1987-88	\$1,374	10.4%	\$118	\$1,492	10.9%
1988-89	\$1,434	4.4%	\$120	\$1,554	4.2%
1989-90	\$1,476	2.9%	\$158	\$1,634	5.1%

1990-91	\$1,624	10.0%	\$196	\$1,820	11.4%
1991-92	\$2,274	40.0%	\$212	\$2,486	36.6%
1992-93	\$2,824	24.2%	\$212	\$3,036	22.1%

(a) Represents the average of fees charged by the nine campuses.

Note 1: The 1981-82 Education Fee total includes a one-time \$25 Spring Quarter surcharge.

Note 2: The 1982-83 Education Fee total includes a one-time \$100 dollar Spring Quarter surcharge.

Increases in fees do not necessarily result in simple linear reductions in undergraduate demand. In 1981 and 1982, University fees increased by 28.5% and 30.4% (see Table 1-1). Interestingly, undergraduate demand at the University did not suffer during these years and it actually increased in the ensuing years.⁹ This demonstrates the complex relationship between fee levels and overall demand. Other economic and sociological factors play important roles in the decision to attend the University of California. We will explore some of these other economic factors in the remainder of this section.

Fees and Total Costs

Fees account for only a portion of the costs of attending the University. At the University of California, fees comprise between 20% to 25% of the total costs associated with attendance. While fees have increased substantially over the past three years, the other costs associated with University attendance have increased at a much lower rate. For this reason, it is important to assess changes in the total costs of attending the University of California rather than focusing exclusively on fees. The total costs of attending the University of California include expenses associated with transportation, books and supplies, miscellaneous expenses as well as room and board. These other expenses account for approximately 75% to 80% of the total costs of attending the University.

While total fees increased by 36.6% from 1990-91 to 1991-92, total costs of attending the University increased by 11.6%. Similarly, from 1991-92 to 1992-93 total fees increased by 22.1% compared to an increase of 8.4% in total costs (see Table 1-2). It is interesting to note that in 1990-91 when total undergraduate fees increased by 11.4%, the total costs of attending the University of California rose by 10.0%, an increase comparable to that in both 1991-92 and 1992-93, years when fees increased at a more dramatic rate. When viewed from this perspective, it is clear that to focus on increases in fees can lead to a distorted picture of the true change in costs. It is also clear that the increases in total costs to attend the University of California have increased at a rate much lower than the increase in fees.

Once again, it is interesting to note that in 1981 and 1982, total costs of attending the University increased by 14.3% and 10.0% respectively. These increases were comparable to the increases recorded in 1990 and 1991. As noted earlier, the increases in 1991 and 1982 were not associated with any decline in undergraduate demand.

Table 1-2 Change in the Total Costs of Attending the University of California: 1980-81 to 1992-93

Academic Year	Total Fees	Change in Fees	Other Expenses(a)	Total Costs Fees plus Expenses	Change in Cost
---------------	------------	----------------	-------------------	--------------------------------	----------------

⁹ A study by the University's Office of Budget and University relations found the University experienced a 10% increase in undergraduate applications for Fall 1984. The study attributed the increase in demand to student's increased concerns about the cost and quality of higher education options in California. See "Undergraduate Demand for the University of California 1984." Office of the President, University of California, Analysis Group, Budget and University Relations. October 1984.

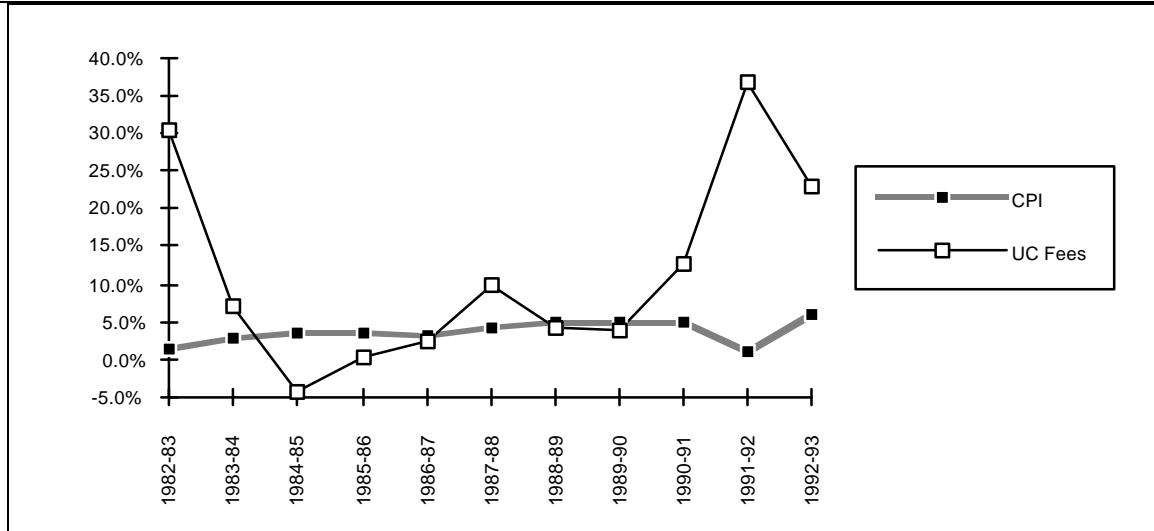
1980-81	\$776	N/A	\$3,694	\$4,470	N/A
1981-82	\$997	28.5%	\$4,111	\$5,108	14.3%
1982-83	\$1,300	30.4%	\$4,320	\$5,620	10.0%
1983-84	\$1,387	6.7%	\$4,678	\$6,065	7.9%
1984-85	\$1,324	-4.5%	\$4,939	\$6,263	3.3%
1985-86	\$1,326	0.2%	\$5,238	\$6,564	4.8%
1986-87	\$1,345	1.4%	\$5,622	\$6,967	6.1%
1987-88	\$1,492	10.9%	\$5,940	\$7,432	6.7%
1988-89	\$1,554	4.2%	\$6,324	\$7,878	6.0%
1989-90	\$1,634	5.1%	\$6,717	\$8,351	6.0%
1990-91	\$1,820	11.4%	\$7,362	\$9,182	10.0%
1991-92	\$2,486	36.6%	\$7,758	\$10,244	11.6%
1992-93	\$3,036	22.1%	\$8,066	\$11,102	8.4%

(a) Represents an average for all students attending.

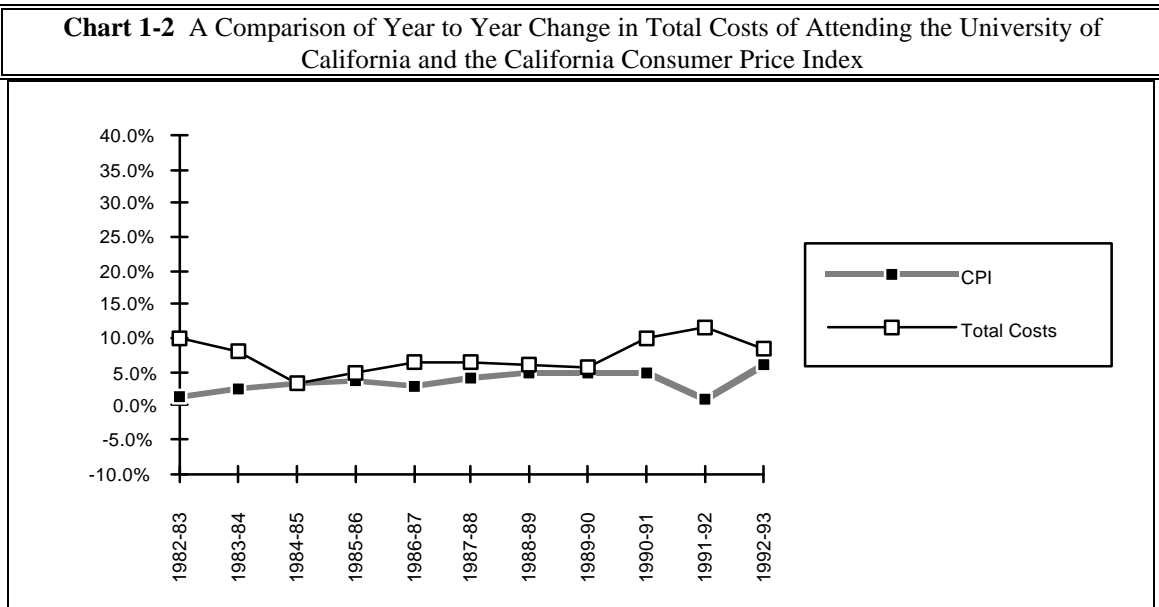
Total Costs Relative to CPI

Both the increase in University undergraduate fees and the increase in total costs of attending the University of California relative to the California Consumer Price Index (CPI) are displayed in Graph 1-1 and Graph 1-2. The rapid increase in student fees, displayed as a year-to-year percentage change, most especially in 1991-92, appears dramatic relative to the small change in the CPI (Graph 1-1). Student fees rose by 11.4% in 1990-91, 36.6% in 1991-92, and 22.1% in 1992-93. During the period under review, the California CPI has been increasing at a fairly steady rate. The CPI increased at approximately 5 percent per year from 1984-85 to 1990-91. During the time period displayed in the graph, student fees at the University of California fluctuated quite dramatically. It is interesting to note that fees actually decreased by 5.3 percent in 1984-85.

Graph 1-1 A Comparison of Year to Year Change in University of California Fees (Actual Dollars) and Change in the California Consumer Price Index: 1982-83 to 1992-93



When the change in total costs, rather than just student fees, is examined relative to the CPI, the increase in total costs relative to the CPI is much less dramatic (see Graph 1-2). Total costs increased at yearly rates somewhat comparable to the yearly increases in the CPI. In six of the eleven years displayed (1984-85 to 1989-90), the yearly increase in the CPI and the yearly increase in total costs closely tracked each other. It is the "other costs" associated with attending the University of California, and reflected in the CPI, that increased at a fairly constant rate that held total costs to yearly increases of 10.0% in 1990-91, 11.6% in 1991-92, and 8.4% in 1992-93. Note that in 1991-92, the rate of increase in the CPI slowed dramatically, thus holding down total costs in a year when fees increased by 36.6%..



Controlling for Inflation

The increase in total costs to attend the University of California are even less dramatic when calculated in constant dollars adjusted to account for changes in the California Consumer Price Index. The constant dollar increase in the total costs of attending the University rose by 5.9% in 1990-91, 11.6% in 1991-92, and 4.9% in 1992-93 (see Table 1-3). The increase in total costs, as measured in constant dollars, was greater in 1990-91 than in 1992-93 even though University undergraduate fees rose more sharply in 1992-93. When described in relative terms, the increase in costs for 1990-91 and 1992-93 seem moderate. If there is an observable relationship between total costs and new enrollment demand, it should be most pronounced in Fall 1992 when the largest increase in costs occurred.

Table 1-3 Change in the Total Costs of Attending the University of California: Actual Dollars and Constant Dollars 1980-81 to 1992-93

Academic Year	Total Costs(a) (Actual Dollars)	Change in Total Costs (Actual Dollars)	Total Costs(a) (Constant Dollars)	Change in Total Costs (Constant Dollars)
1980-81	\$4,470	N/A	\$5,481	N/A
1981-82	\$5,108	14.3%	\$5,725	4.5%
1982-83	\$5,620	10.0%	\$6,196	8.2%
1983-84	\$6,065	7.9%	\$6,554	5.8%
1984-85	\$6,263	3.3%	\$6,594	0.6%
1985-86	\$6,564	4.8%	\$6,721	1.9%
1986-87	\$6,967	6.1%	\$6,967	3.7%
1987-88	\$7,432	6.7%	\$7,198	3.3%
1988-89	\$7,878	6.0%	\$7,351	2.1%
1989-90	\$8,351	6.0%	\$7,503	2.1%
1990-91	\$9,182	10.0%	\$7,946	5.9%
1991-92	\$10,244	11.6%	\$8,872	11.6%
1992-93	\$11,102	8.4%	\$9,304	4.9%

(a) Represents an average for all students attending.

Note 1: "Constant Dollars" equals 1987 dollars using California CPI deflator.

The information in the previous tables points to the fact that 1991-92 represents a year in which the total costs of attending the University of California increased substantially. Total fees rose by 36.6% pushing the total cost figure for 1991-92 up 11.6% over the comparable cost figure for 1990-91. Even when measured in constant dollars, the increase in cost for 1991-92 (11.6%) represents the single greatest one-year increase in costs in the last fifteen years. Interestingly, the increase in total cost for 1990-91 (10.0%), not deflated to constant dollars, was only slightly lower than recorded in 1991-92, even though fees rose by only 11.4%. In constant dollar terms, the increase in total costs for 1990-91 and 1992-93 were roughly equal and represented approximately half the increase recorded in 1991-92.

The pattern of increase in total costs suggests that if demand is responsive to rising costs, the sharpest decline in demand should occur in or following 1991-92. The information also suggests that a slight decline in demand might occur as early as 1990-91, given the increase in nominal costs for that year. However, in constant dollars, the increase in 1990-91 is not much greater than the increases recorded in previous years, especially in the early 1980s when overall demand for enrollment was increasing.

This raises a very interesting question, given that costs rose almost as sharply in the early 1980s and enrollment demand increased during this period, what should one expect to find a decrease in demand in the last few years? The answer may have to do not so much with the absolute or relative change in costs, but is more closely related to a change in the ability of individuals to pay for those costs. In order to examine this effect, let us turn our attention to the increase in costs relative to Californian's ability to pay.

Costs Compared to Ability to Pay

To say the total costs of attending the University of California have increased only moderately for two of the last three years is not to suggest this has not affected demand by students at the margin. Nor is it to suggest that these increases have not imposed real hardships upon many others. One way to place these increases in context is to investigate total costs relative to an individual's ability to pay. One such measure of ability to pay is disposable personal income (DPI).¹⁰ Since a significant portion of the costs to pay for college is financed from an individual's annual income, an increase in total costs relative to DPI demonstrates the real effect of a family's (diminishing) ability to meet the costs of attending the University of California.

In 1989-90, the annual total costs of attending the University of California equaled 51.9% of DPI, as measured in constant 1987 dollars. Throughout the early 1980's and up until 1990-91, the total costs of attending the University of California ranged from a low of 47.4% of DPI in 1980-81 to a high of 54.2% in 1983-84 (see Table 1-4). In 1991-92, both fees and the total costs of attending the University of California began to increase as a percent of DPI. Both fees and total costs consumed a much greater proportion of DPI in 1991-92 than in any previous year since 1980-81. In 1991-92, fees rose to 14.7% of DPI from 10.7% in the previous year. Total costs jumped even more dramatically from 54.0% in 1990-91 to 60.7% of DPI in 1991-92. In 1992-93, fees and total costs increased less dramatically but still consumed a slightly greater proportion of DPI. Fees equaled 16.8% of DPI in 1992-93 while total costs increased to 61.5% of DPI.

¹⁰ Disposable personal income is defined as personal income less any payments to federal, state, local governments or foreign governments. It is a standard measure used by economists to measure an individual's ability to purchase products and services.

Table 1-4 University of California Undergraduate Fees and Total Costs in Relation to Disposable Personal Income: 1980-81 to 1992-93

Academic Year	Disposable Personal Income per Capita 1987 Dollars	Total Undergraduate Fees 1987 Dollars	Total Costs 1987 Dollars	Total Fees as a percent of per Capita DPI 1987 Dollars	Total Costs as a percent of per Capita DPI 1987 Dollars
1980-81	\$12,005	\$988	\$5,693	8.2%	47.4%
1981-82	\$12,156	\$1,147	\$5,874	9.4%	48.3%
1982-83	\$12,146	\$1,473	\$6,369	12.1%	52.4%
1983-84	\$12,349	\$1,532	\$6,698	12.4%	54.2%
1984-85	\$13,029	\$1,413	\$6,683	10.8%	51.3%
1985-86	\$13,258	\$1,366	\$6,760	10.3%	51.0%
1986-87	\$13,552	\$1,345	\$6,967	9.9%	51.4%
1987-88	\$13,545	\$1,433	\$7,139	10.6%	52.7%
1988-89	\$13,890	\$1,424	\$7,221	10.3%	52.0%
1989-90	\$14,030	\$1,428	\$7,296	10.2%	52.0%
1990-91	\$14,154	\$1,515	\$7,641	10.7%	54.0%
1991-92	\$13,897	\$2,046	\$8,432	14.7%	60.7%
1992-93	\$14,036	\$2,359	\$8,627	16.8%	61.5%

(a) Represents the average of fees charged by the nine campuses.

Note 1: DPI figures from "Economic Report of the President to Congress,"

February 25, 1992. Table B-25.

Note 2: The 1992-93 DPI drawn from data in the Survey of Current Business, July 1992, Table 2.1, p. 27.

It is clear that not only did costs rise sharply in 1991-92, but the increase absorbed a much larger share of Californian's disposable personal income. While constant dollar costs of university attendance rose nearly as dramatically in the early 1980s as they have in the early 1990s, those earlier costs increases did not consume a greater proportion of disposable personal income. Total costs throughout the 1980s, even in the early years of sharp cost increases, consumed roughly a constant 50% of disposable personal income. In 1992-92, costs rose dramatically, but more importantly, consumed a much larger share of personal disposable income.

It should also be pointed out that Americans are saving less today than they did only ten years ago. In 1981, savings in the United States represented 9% of disposable personal income. By 1991, the rate decreased by almost half, representing only 5%¹¹. Not only are UC costs consuming a greater proportion of DPI, but families ability to finance college, as measured by the savings rate relative to DPI, suggests Californians are less able to finance those costs from their savings.

The increase in total costs relative to disposable personal income, especially in 1991-92, suggests that if there is a relationship between price and demand, the effects should be most pronounced in 1991-92 or thereafter. There are however a number of factors at work to mitigate the effects of price increases on demand. The four most important are the costs of comparable institutions, actions taken by students to reduce their costs, the high utility placed on college education, and the University's policy of increasing financial aid to needy students.

Costs at Comparable Institutions

Given that the costs of attending the University of California consume a greater proportion of Californian's disposable personal income, what factors might mitigate an expected decline in demand? there are two primary factors: the costs of substitute options and opportunity costs on not attending college. Lets us begin by examining the costs of substitute institutions.

While the total costs of attending the University of California have increased, the costs of alternative college options have also been increasing. The costs of attending the most prestigious private colleges and universities remain much higher than the costs to attend the University of California (see Table 1-5). While in recent years the costs of attending selective private colleges and universities have increased at a much lower rate than those at the University of California, both the absolute increase was greater than at the University of California and the total cost for these private institutions remains significantly higher. From 1990 to 1993, the costs of attending Stanford and living on-campus increased by 18.7% (\$3,920) to \$24,919; Pepperdine increased by 18.8% (\$3,892) to \$24,630; and Claremont-McKenna increased by 20.4% (\$3,800) to \$22,450. During this same time period, costs at the University of California increased by 30.8% (\$2,680) to \$11,383.

¹¹ See Council of Economic Advisors, *Economic Indicators*, January 1992 (Washington, D.C.: U.S. Government Printing Office, 1992).

Table 1-5 A Comparison of Costs at Selective Private Institutions and the University of California: 1990 to 1993

Institution		1990	1991	1992	1993	Change in Dollars 1990-93	Percent Change 1990-93
Brown	Tuition/Fee	\$14,920	\$15,871	\$16,860	\$18,002	\$3,082	20.7%
	Total Res.	\$21,315	\$22,665	\$23,630	\$25,130	\$3,815	17.9%
	Total Home	\$18,400	\$19,391	\$20,431	\$21,737	\$3,337	18.1%
Claremont McKenna	Tuition/Fee	\$12,900	\$13,850	\$14,810	\$15,620	\$2,720	21.1%
	Total Res.	\$18,650	\$19,990	\$21,290	\$22,450	\$3,800	20.4%
	Total Home	\$14,100	N/A	N/A	\$19,720	\$5,620	39.9%
Dartmouth	Tuition/Fee	\$14,445	\$15,372	\$16,335	\$17,334	\$2,889	20.0%
	Total Res.	\$20,705	\$21,866	\$22,995	\$24,297	\$3,592	17.3%
	Total Home	N/A	N/A	N/A	N/A	N/A	N/A
Harvard	Tuition/Fee	\$14,560	\$15,530	\$15,530	\$17,674	\$3,114	21.4%
	Total Res.	\$21,250	\$22,510	\$22,510	\$25,250	\$4,000	18.8%
	Total Home	N/A	N/A	N/A	N/A	N/A	N/A
Howard	Tuition/Fee	\$5,328	\$5,905	\$6,405	\$7,005	\$1,677	31.5%
	Total Res.	\$11,475	\$12,090	\$12,690	\$13,655	\$2,180	19.0%
	Total Home	\$10,612	\$11,177	\$11,677	\$12,322	\$1,710	16.1%
M.I.T.	Tuition/Fee	\$14,500	\$15,600	\$16,900	\$18,000	\$3,500	24.1%
	Total Res.	\$21,580	\$22,945	\$24,530	\$26,150	\$4,570	21.2%
	Total Home	\$18,395	\$19,495	\$21,560	\$20,755	\$2,360	12.8%
Occidental	Tuition/Fee	\$13,044	\$13,965	\$14,784	\$15,525	\$2,481	19.0%
	Total Res.	\$19,334	\$20,506	\$21,682	\$22,601	\$3,267	16.9%
	Total Home	N/A	\$17,505	\$18,825	\$19,566	N/A	N/A
Pepperdine	Tuition/Fee	\$13,210	\$14,310	\$15,230	\$16,260	\$3,050	23.1%
	Total Res.	\$20,738	\$22,058	\$23,420	\$24,630	\$3,892	18.8%
	Total Home	\$18,524	\$19,624	\$20,656	\$21,686	\$3,162	17.1%
Princeton	Tuition/Fee	\$14,390	\$15,440	\$16,570	\$17,750	\$3,360	23.3%
	Total Res.	\$21,320	\$22,750	\$24,370	\$25,850	\$4,530	21.2%
	Total Home	N/A	N/A	N/A	N/A	N/A	N/A
Stanford	Tuition/Fee	\$13,569	\$14,280	\$15,102	\$16,536	\$2,967	21.9%
	Total Res.	\$20,999	\$22,045	\$23,261	\$24,919	\$3,920	18.7%
	Total Home	N/A	N/A	N/A	N/A	N/A	N/A
Yale	Tuition/Fee	\$14,000	\$15,180	\$16,300	\$17,500	\$3,500	25.0%
	Total Res.	\$21,280	\$22,900	\$24,454	\$26,088	\$4,808	22.6%
	Total Home	N/A	N/A	N/A	N/A	N/A	N/A
U.C.	Tuition/Fee	\$1,634	\$1,820	\$2,486	\$3,036	\$1,402	85.8%
	Total Res.	\$8,703	\$9,504	\$10,619	\$11,383	\$2,680	30.8%
	Total Home	\$5,660	\$6,317	\$7,128	\$7,852	\$2,192	38.7%

Total Res.=Campus residents (tuition, fees, books & supplies, room & board, transportation, other costs)

TotalHome=Students living at home (tuition, fees, books & supplies, board, transportation, other costs)

Source: The College Cost Book, The College Board

In 1990, the average total costs of attending the University of California for students residing in either on-campus or off-campus housing equaled \$8,703. This represented 66.2% of the \$13,142 average total cost for all private colleges in the western United States (see Table 3-6). By 1993, average cost at the

University of California rose to \$11,383 while the average for western publics rose to \$15,781. Costs of attending the University of California represented 72.1% of the average costs for all private colleges in the west, up slightly from the 66.2% in 1990.

The total costs of attending the University of California relative to public colleges and universities in the west while higher, remained relatively constant from 1990 to 1993 (see Table 1-6). A slight narrowing of the gap between the average costs for public institutions in the west and the University of California took place from 1990 to 1993. In 1990, the average cost of attending a public college or university in the western United States was \$5,811. The total costs for the University of California (\$8,703) were 49.8% higher than other publics. In 1993, the average cost of attending a public college or university increased to \$7,802 while costs at UC increased to \$11,383. The total cost of attending the University of California is now 45.9% higher than other public colleges.

Table 1-6 A Comparison of Average Costs at Public and Private Institutions in the Western United States and the University of California: 1990 to 1993

Institution		1990	1991	1992	1993	Change in Dollars 1990-93	Percent Change 1990-93
U.C.	Tuition/Fee	\$1,634	\$1,820	\$2,486	\$3,036	\$1,402	85.8%
	Total Res.	\$8,703	\$9,504	\$10,619	\$11,383	\$2,680	30.8%
	Total Home	\$5,660	\$6,317	\$7,128	\$7,852	\$2,192	38.7%
Avg. Public in West	Total Res.	\$5,811	\$7,706	\$7,592	\$7,802	\$1,991	34.3%
	Total Home	\$4,908	\$5,140	\$5,294	\$5,294	\$386	7.9%
Avg. Private in West	Total Res.	\$13,142	\$14,681	\$15,781	\$15,781	\$2,639	20.1%
	Total Home	\$11,020	\$12,003	\$12,857	\$12,857	\$1,837	16.7%

Total Res.=Campus residents (tuition, fees, books & supplies, room & board, transportation, other costs)

TotalHome=Students living at home (tuition, fees, books & supplies, board, transportation, other costs)

Source: The College Cost Book, The College Board

While there is an absolute difference in price between the University of California and other public institutions in the west, one might expect only a marginal exodus from UC to the other public institutions. Two factors may account for this. First, there is a great deal of difference in perceived prestige between the University of California and the California State system. While some CSU programs are quite competitive with UC programs, the majority of programs are viewed by consumers, whether rightly or wrongly, as inferior. The marginal savings accrued by attending CSU can only be purchased at a loss of perceived prestige. Second, the budget cuts at CSU have resulted in a severe reduction in class offerings and additional confusion over departmental and program closings. To date, there have been no wholesale cancellation of classes or programs at the University of California. The program reductions undertaken at CSU tend to reduce the tradeoff between the utility of substitution and the savings accrued by switching from UC to CSU.

Individual Choices to Reduce Costs

Whether individuals decide to forgo college or adopt some cost savings option is dependent on the individuals economic situation, expectations regarding the college experience, and the total opportunity costs placed on attendance. Many students find ways to reduce their costs by trading-off short-term "quality of life" measures for long-term goals. For example, three students may live in a two bedroom apartment where earlier only two students lived. For new freshmen, an immediate, and significant costs savings can be gained by opting to live at home rather than living in an on-campus dormitory or off-campus apartment.

Total costs of attending the University of California are markedly different for students who live at home versus those who live in on-campus housing or in off-campus housing. The total estimated budgeted costs of attending the University of California in 1992-93 extends along a range of \$3,707, from a low of \$7,852 for students who live at home and commute to class, to \$11,383 for students living on-campus and \$11,559 for students living off-campus, with \$11,102 as the average or all students (see Table 1-7)

Table 1-7 Different Costs of Attending the University of California for Students Living On-Campus, Off-Campus and at Home: 1992-93

	Actual Dollars	Constant Dollars 1987 Dollars
Commuter Students	\$7,852	\$6,101

On-Campus Students	\$11,383	\$8,845
Off-Campus Students	\$11,559	\$8,982
Average All Students	\$11,102	\$8,627

With such a large range of cost options, new students faced with rising costs and a limited ability to pay those costs, can off-set all or a substantial portion of the increase in total costs by altering their campus choice rather than opting not to attend the University of California. This is especially true for new students who have not yet entered the University of California. By selecting a campus closer to home and living at home, new students can reduce their total costs of attending the University.

In 1990-91 the costs for students living at home equaled \$5,660. By 1992-93, their costs increased to \$7,852. The total increase in costs for a student attending the University of California and living at home between 1990-91 and 1992-93 equaled \$2,192 ($\$7,852 - \$5,660 = \$2,192$). At the same time, the average costs for students living on-campus and off-campus increased by \$2,680, from \$8,703 in 1990-91 to \$11,383 in 1992-93 (see Table 3-6). A student who opted to live at home in 1992-93 rather than live on-campus could save \$3,531 ($\$11,383 - \$7,852 = \$3,531$). The savings that would accrue to a student who selected to live at home for the first year rather than live on-campus would more than off-set the increase in costs since 1990-91. The \$2,192 increase in total costs from 1990-91 to 1992-93 for students living at home could be easily off-set by the \$3,531 saved by a student who changed his or her plans and deciding to live at home rather than in on-campus housing. The total net savings of such a strategy would equal \$1,339 ($\$3,531 - \$2,192 = \$1,339$). In fact, as will be demonstrated in the following section, the shift in patterns of enrollment at individual campuses seems to indicate that students are undertaking such a strategy, even while continuing to choose to attend the University.

Another form of cost discounting that undergraduates might employ is to complete more units per term and graduating in less time than they might otherwise have done. The majority of fees assessed students at UC are not set in relation to the number of credit units attempted. The "package pricing" formula employed by the University makes fees insensitive to the number of courses a student takes. It is possible for students to take more units to offset, in all or in part, the marginal increase in fees.

Not all students will be able to use this strategy. The proportion of undergraduates working while attending the University of California has remained fairly constant since 1982-83. In 1982-83, 58.6% of undergraduates were employed. In 1991-92, 58.4% reported they were employed.¹² While a relatively stable proportion of undergraduates are working while attending classes, the number of hours they spend at work is increasing. In 1981-82, the median hours per week undergraduates spent at work equaled 15.1. By 1991-92, the median had increased to 17.6.¹³ It is quite possible that increased costs will force some undergraduates to extend their time to graduation due to increased time spent at work while encouraging others to graduate more rapidly.

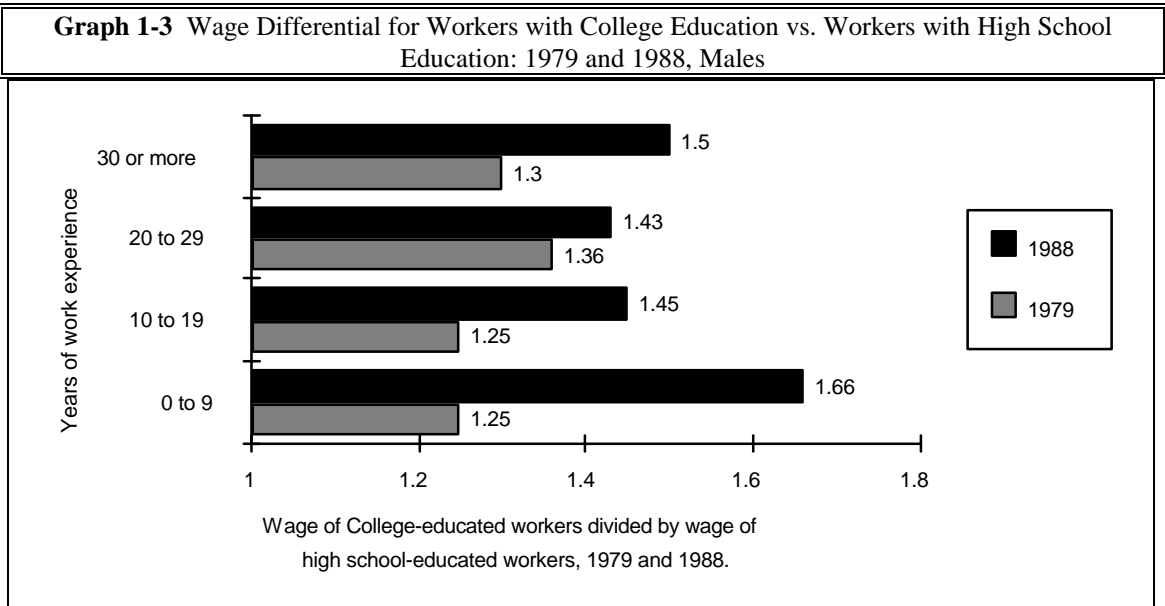
¹²See Table C on page 116 of "Student Expenses and Resources Survey 1991-92." University of California, Office of the President, Student Academic Services, November 1992. The percentage of undergraduates who reported holding a job while attending the University actually increased to as high as 61.5% in 1988-89. A portion of the decline since that time can be attributed to a higher proportion of Asian American students in the population. Asian American undergraduates are less likely to be employed while attending the University than their counterparts. It is also probable that the impact of the recession may be causing student employment rates to decline.

¹³ Ibid.

The Opportunity Costs of a College Education

Opportunity costs refer to the costs associated with foregoing the purchase of a certain product. Generally speaking, the opportunity costs attributed to a college education are taken to be quite high. In spite of rising costs for higher education, families and students have continued to demonstrate a willingness to pay for higher education. The perceived or actual returns on their investment in higher education appear to be great enough to make the investment worthwhile.¹⁴

The value of a college education, expressed in terms of wage differentials between workers with a college education and those with only a high school education, was recently confirmed in a study of the wage gap.¹⁵ Comparing the ratio of wages for male and female workers with a college education versus those with a high school education, Bound and Johnson found that the gap between wages for college-educated workers and high school-educated workers widened between 1979 and 1988 (see Graph 1-3 and 1-4). The spread was particularly wide for young workers. College-educated males with less than 10 years of job experience, earned 25 percent more than their high school-educated counterparts in 1979 (see Graph 1-3). By 1978, college-educated males earned 66 percent more. The gap for females grew as well. In 1979, college-educated females with less than 10 years of job experience earned 37 percent more than their high school-educated counterparts (see Graph 1-4). By 1988, the college-educated females earned 61% more.

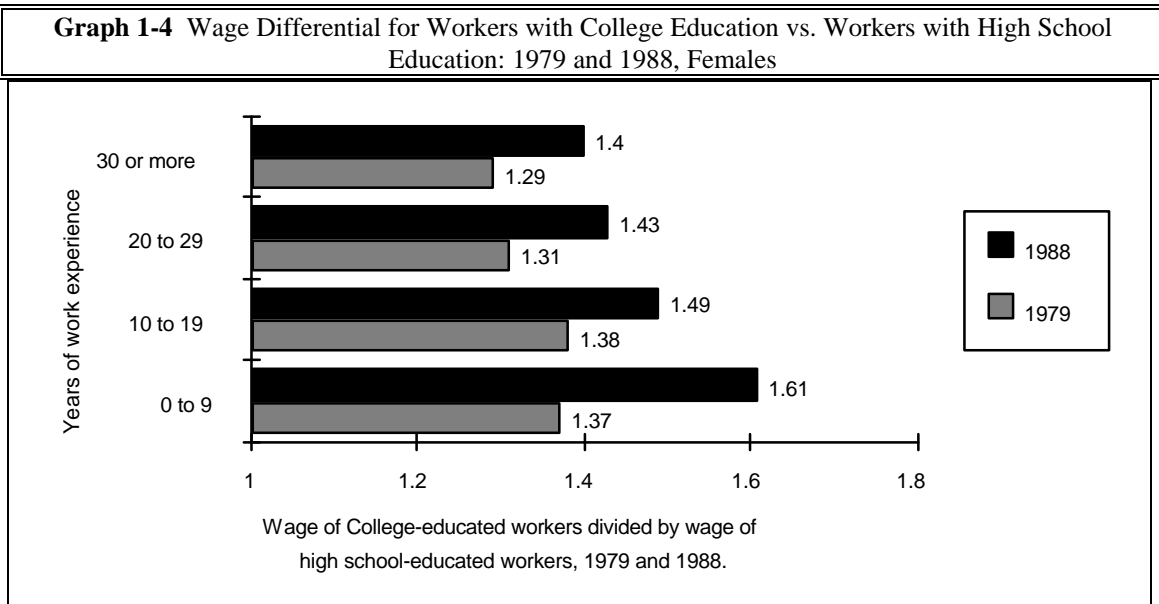


The increasing wage gap between college-educated individuals and individuals with only a high school education or less points to the high opportunity costs associated with foregoing a college degree. This suggests that even in the face of higher costs of attending the University of California, parents and students will continue to pursue a college degree. Rather than not opting for college, students will either

¹⁴Poll data gathered on the value of a college education is worthwhile has steadily been increasing. A 1978 Gallup Poll showed that 35 percent of Americans believed a college education was very important. In 1985, a second Gallup Poll revealed that this number had grown to 65 percent. This translates into a willingness to pay the increasing costs of college because of the fundamental belief that higher education will later "pay for itself" in earnings, opportunity, and prestige. See National Association of College and University Business Officers, "Tuition Pricing and Policy" p. 22

¹⁵ Bound, J and Johnson, G. "Changes in the Structure of Wages in the 1980s: An Evaluation of Alternative Explanations." *American Economic Review*, 82 (June): 371-392.

select substitutes for the University of California or find ways to reduce their overall costs by accepting some degradation in their standard of living or in their quality of life.



Cost Discounting: Increases in Financial Aid

The final factor mitigating the effects of increasing costs on enrollment demand is financial aid. Financial aid is a form of “cost discounting.” It has been found to be an important factor affecting overall demand. The average award per undergraduate aid recipient at the University of California has been increasing faster than inflation. The average award, in constant 1991-92 dollars, increased by 33% from \$4,085 in 1980-81 to \$5,436 in 1991-92.¹⁶ The total amount of aid granted to undergraduates at the University of California, in constant 1991-92 dollars, increased from \$213.3 million in 1980-81 to \$302.1 million in 1991-92.

Financial aid has gone to a fairly large segment of the University’s undergraduate population. In 1991-92, 44% of the undergraduates (55,577) received \$302 million in financial support. Most of this support (87%) was awarded on the basis of need. Approximately six in ten (59%) of need-based aid recipients came from families with incomes of less than \$30,000. In addition, low-income, dependent, needy undergraduate students are more likely to receive grant support and less likely to borrow than are moderate-income and high-income students. Even families not classified as needy are seeking additional aid. Families are resorting more often to nonneed-based loans as a source of funding to cover their expected increased contribution toward the cost of education.

Both the University and the State of California have significantly increased funding for financial aid. The University’s contribution to financial aid awards for undergraduates nearly doubled from 1980-81 to 1991-92. In 1980-81, the University contributed \$33.6 million to aid (1991-92 dollars). This sum was increased to \$66.7 million in 1991-92. The amount of aid undergraduates at the University of California received from the State of California increased from \$21.0 million in 1980-81 to \$55.3 million in 1991-92. In 1990-91 and in 1991-92, the State’s Cal-Grant awards to undergraduates at the University of California covered the full amount of resident fees.

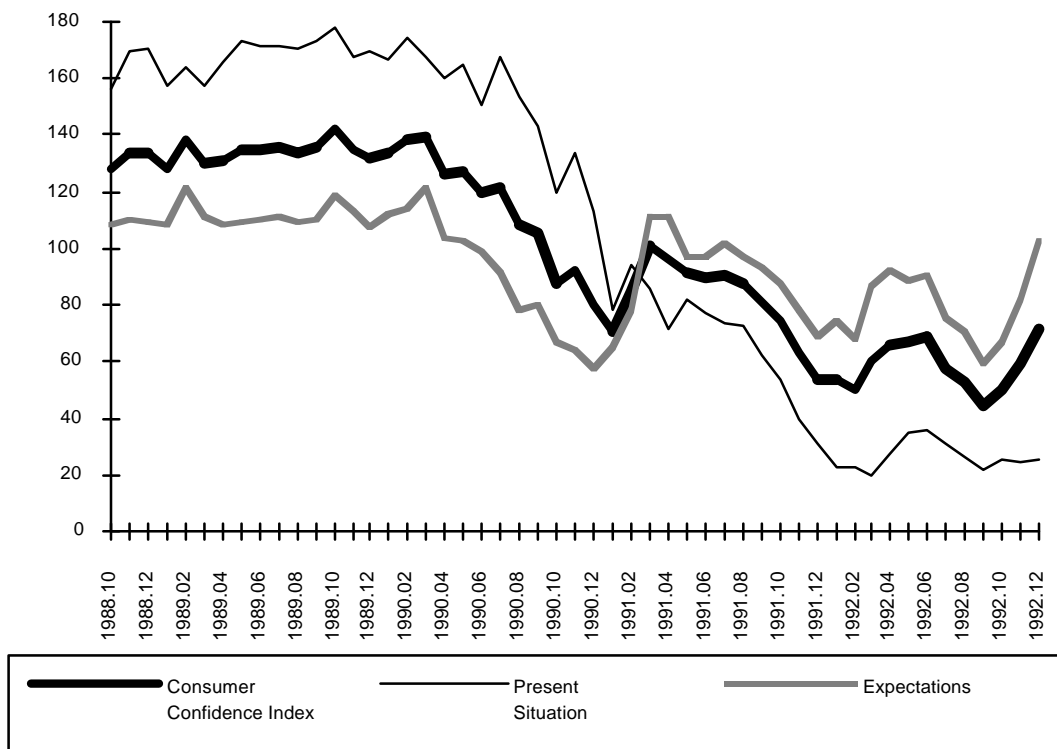
¹⁶ All figures in this section have been taken from “Report on Student Financial Aid 1991-92,” University of California, Office of the President, Student Academic Services. March 1993 (in press).

The California Recession

Undergraduate demand for enrollment at the University of California may have been influenced by the recession. The nature of the relationship between recessionary factors such as the unemployment rate or consumer confidence and enrollment demand is neither simple nor linear. To the degree that it is possible, students and their families can be expected to employ strategies for offsetting the impact of the recession. Some of these strategies, for example, foregoing a major purchase such as a new car, would not express itself in any meaningful measure of enrollment demand. Given the high opportunity costs of not attending college and the limited substitution options, we might expect that families would adopt strategies allowing their children to attend college.

Nevertheless, we should expect a recession as deep, broad, and long-lasting as the current one to have some effect upon demand. An important part of identifying the effect lies in understanding the timing of the recession relative to the timing of decisions to apply to and enroll in the University. While the direct answer to the changes in demand will be explored in the subsequent sections, let us take some time to discuss the timing of the recession relative to the timing of the admission and enrollment process.

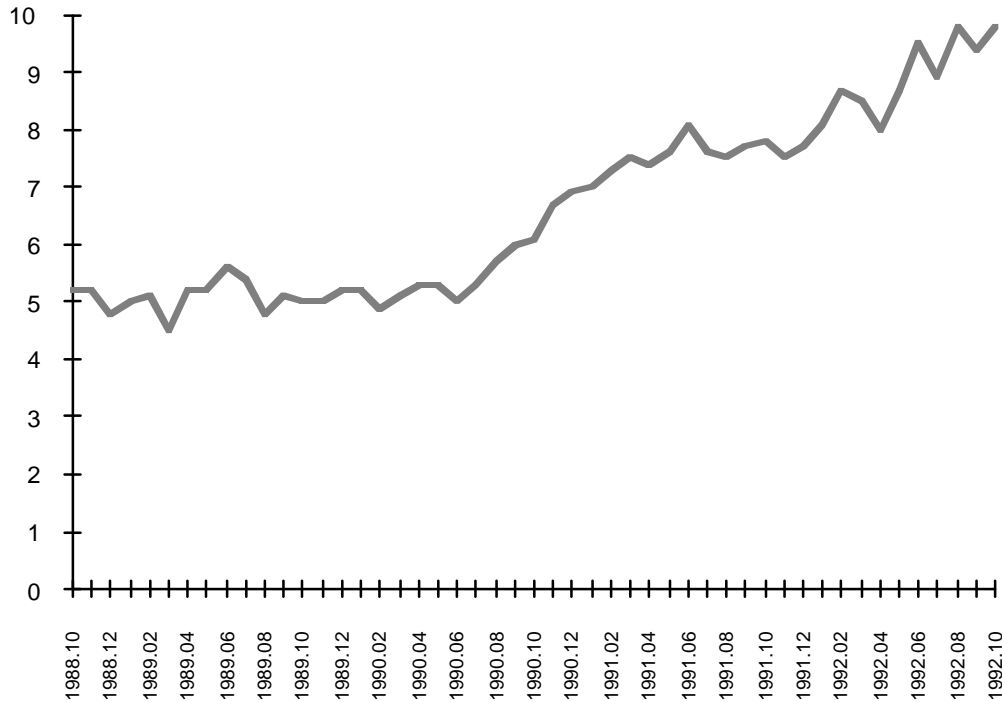
Graph 1-5 The Conference Board’s Index of Consumer Confidence, Present Situation, and Expectations About the Future: Pacific Region October 1988 to December 1992



The point at which an economy enters into recession is not always clear and the point at which it affects

consumers is less clear.¹⁷ Two indicators of recession directly related to consumer experiences consumer confidence and the unemployment rate (see Graphs 1-5 and 1-6). Consumer confidence began to fall in early part of 1990 (see Graph 1-5). By late 1990 it seemed to be bottoming out and actually rose for the first four months of 1991. Following this short rebound, consumer confidence began a long slide to historic low levels in early 1992. By the end of 1992, consumer confidence was climbing back to levels equal to those at the onset of the economy’s decline.

Graph 1-6 California Unemployment Rate: October 1988 to October 1992



Unemployment in California, constant at around 5% through 1989 and early 1990 began to sharply increase in the summer of 1990. In August of 1990 the unemployment rate had reached 6%, by the end of the year it stood at nearly 7%. Unemployment continued to rise, with some downward modulations, through October 1992, the final date displayed on the graph.

There are many reasons why one would not expect the recession to have an immediate impact on enrollment demand. First, there is a long lead time associated with the application and enrollment process. Students who hoped to enroll in the University in Fall 1991, had to file for admission in November 1990, 11 months prior to Fall Quarter 1991. Given that the recession was just beginning, consumer confidence was starting to decline and unemployment was starting to rise, one could not reasonably expect such factors to have any measurable impact on demand in Fall 1991. Even by November 1991, the open admission filing period for Fall 1992, the recession, as measured by unemployment and consumer confidence, had not yet reached its full fury. In addition, the recession was just over a year in duration. However, by November 1992, the open admission filing period for Fall 1993,

¹⁷ Strictly speaking, a recession is most often defined as two consecutive quarters in which real Gross National Product (GNP) grows at a negative rate. See National Bureau of Economic Research.

the recession was an acknowledged force curtailing overall demand for products in California. We would expect that the greatest impact of the recession on enrollment demand to occur in Fall 1993.

Conclusion

In this section we have examined a number of economic factors associated with enrollment demand. We have demonstrated that the total costs of attending the University increased relative to Californian's ability to pay. The total costs of attending the University increased from 52.0% of disposable personal income in 1989-90 to 61.5% in 1992-93. While this potentially could have a significant effect on demand, there are many factors which tend to mitigate any decline in demand. Among the most significant factors are the high opportunity costs associated with not attending college; the relatively expensive private alternatives; the increased availability of financial aid and the targeting of that aid to needy students. Finally, we have demonstrated that while we can expect the recession to affect demand, we must take into consideration the timing of the recession relative to the timing of the admission cycle.

Aspirational Demand

The first point at which to measure changes in demand for enrollment is at what is known as the Aspirational phase of college choice. It is during this phase of the college selection process when students must first declare their intent to attend or not attend college. It is also at this point when students decide on the type of college or university they will attend, that is, whether their choice range includes selective colleges that require the completion of standardized tests.

An individual's decision to take the SAT test and to designate a set of institutions to be recipients of his or her scores, is one of the first indications of an individual's college preference. It is also a tangible indicator of the individual's educational aspirations. Sociological models of college choice specify a variety of social and individual factors that influence an individual's career and educational aspirations.¹⁸ An individual's decision to enter college and the set of colleges from among which an individual selects, is the product of a complex interaction between aspirations and real-world constraints. A change in the number of individuals who designate the University of California as a recipient of their scores can be indicative of either a change in aspirations or a change in real-world constraints. For example, a change in the number of high school graduates pursuing a college education or a change in the number of individuals striving to attend the University of California could be indicative of a change in aspirations. A change in the cost of attending college, or a particular institution, is an example of a change in real-world constraints.

For those who do decide to apply to selective colleges and universities, the completion of the SAT and the designation of campuses to receive the test results, is the first indication of the individual's intent to enroll.

¹⁸ See Bayer, A.E. "Marriage Plans and Educational Aspiration." *American Journal of Sociology*, 75 (1969): 230-244. Bordua, D.J. "Educational Aspiration and Parental Stress." *Social Forces*, 38 (1960): 262-269. Boyle, R.P. "The Effect of the High School on Students' Aspirations." *American Sociological Review*, 31 (1966): 628-639. Britain, C.V. "Adolescent Choices and Parent-Peer Cross Pressures." *American Sociological Review*, 28 (1963): 385-391. Haller, A.O., and Buttersworth, C.E. "Peer Influences on Levels of Occupational and Educational Aspiration." *Social Forces*, 38 (1960): 289-295. Jencks, C. and Brown, M. "Effects of High Schools on Their Students." *Harvard Educational Review*, 45 (1975): 273-324. McDill, E.L. and Coleman, J.S. "Family and Peer Influences in College Plans of High School Students." *Sociology of Education*, 38 (1965): 112-126. Meyer, J.W. "High School Effects on College Intentions." *American Journal of Sociology*, 76 (1970): 59-70. Sewell, W. and Armer, M. "Neighborhood Context and College Plans." *American Sociological Review*, 31 (1966): 159-168. Sewell, W.H. and Shah, V.P. "Social Class, Parental Encouragement, and Educational Aspirations." *Journal of Sociology*, 73 (1968): 559-572

Any inquiry of the relationship between price and demand should include an examination of changes in both the number and patterns of test scores received by an institution.

Aspirational demand will be measured in three ways: the change in the absolute number of scores received by the University from test takers (system wide and by campus); the percentage change in scores received by the University relative to the number of individuals who completed the SAT; and the number of SAT scores received by the University as a proportion of all colleges and universities designated by SAT takers to be score recipients (system wide and by campus). When possible, the three measures will be examined by campus and by ethnicity.

By examining the change in the number of SAT scores sent to the University, the pattern of change across campuses, and the timing of the change relative to the imposition of fees and the onset of the recession, it is possible to observe the differential effects two real-world constraints, fee increases and recession, have on SAT scores received by the University.

There are five important observations that can be drawn from the data regarding changes in the receipt of SAT scores by the University:

- The increase in price (including fees) seems to have only a marginal, if any, effect on the absolute number of SAT scores received by the University.
- The recession appears to more closely parallel changes in SAT scores received than do increases in costs, although the late announcement of fee increases for Fall 1991 could have produced a delayed effect not felt until Fall 1992.
- There appears to be a change in overall individual aspirations to attend college in general and the University of California in particular, that are independent of either increasing costs or the recession. The decline in demand, as measured by SAT scores received, was concentrated at those campuses outside major metropolitan areas and beyond daily commuting distance from the Los Angeles area. The campuses most severely affected were Davis, Santa Barbara, and Santa Cruz. Those campuses within major metropolitan areas but beyond the Los Angeles area (Berkeley and San Diego) experienced much smaller declines in demand.
- The change in aspirations or real-world constraints affect individuals from all ethnic groups. The ratio between the number of California high school graduates and SAT takers decreased in 1992 across all ethnic groups. The decline was most pronounced among Chicanos and Latinos (Hispanics).
- There is a reordering of popularity among the UC campuses that predates the increase in costs or the recession, yet appears to be heightened by the two.

SAT Scores Received by the University

Let us begin by examining the change in the number of SAT scores received by the University between Fall 1990 and Fall 1992. While the greatest increase in fees and total costs at the University of California occurred between Fall 1990 to Fall 1991, the University actually experienced an increase in the number of SAT scores that were received. In fact, the University's increase was slightly greater than the increase in the total number of Californians who completed the SAT (see Table 2-1). The University of California received an additional 4,088 scores, increasing from 184,327 in 1990 to 188,415 in 1991. This represented a 2.2% increase in scores received. During the same time period, the number of individuals who completed the SAT increased as well. The number of Californians who completed the SAT increased by 2,139 from 112,577 in 1990 to 114,577 in 1991. This represented an increase of 1.9%. The number of

scores received by the University increased at a slightly better rate than the overall increase in California SAT takers.

No pattern of changes in SAT scores received among the various campuses appears indicative of a response to increasing costs between 1990 and 1991. In Fall 1991, all but two campuses, Los Angeles and Santa Barbara, experienced an increase in the number of test scores they received. The decline from 1990 to 1991 at Los Angeles was marginal (-84/-0.3%), while at Santa Barbara the decline was more pronounced (-812/-2.9%).¹⁹ The increases at Irvine (637/3.1%) and Davis (2,128/9.9%) were quite substantial. Taken together, the differences are probably indicative of changing demand caused by secular forces related to overall campus visibility and appeal.

During this time period there was a slight increase in the proportion of SAT takers who designated the University as a recipient for their test scores (see Table 2-2). Between 1990 and 1991 there was some change in the relative portion of scores received by the various campuses. Five campuses increased their relative share of SAT scores from test takers in the state while three, Santa Barbara, San Diego and Los Angeles, decreased their share. It should be pointed out that at the time when most of the students were taking their tests to accompany their application for admission to the University in Fall 1991, the announcement to raise fees had not been made.

**Table 2-1 SAT Scores Received at the University of California by Campus:
1990 to 1992**

Campus	Score	Reports	Received	Change	Change	Change	Change
	1990 Number	1991 Number	1992 Number	90 to 91 Number	90 to 91 Percent	91 to 92 Number	91 to 92 Percent
Berkeley	25,577	26,113	26,090	536	2.1%	-23	-0.1%
Davis	21,415	23,543	22,827	2,128	9.9%	-716	-3.0%
Irvine	20,555	21,192	22,054	637	3.1%	862	4.1%
Los Angeles	33,016	32,932	33,829	-84	-0.3%	897	2.7%
Riverside	13,657	13,934	14,157	277	2.0%	223	1.6%
San Diego	27,534	27,997	27,635	463	1.7%	-362	-1.3%
Santa Barbara	28,046	27,234	25,634	-812	-2.9%	-1,600	-5.9%
Santa Cruz	14,527	15,470	14,675	943	6.5%	-795	-5.1%
Total UC	184,327	188,415	186,901	4,088	2.2%	-1,514	-0.8%
Total Sat Takers in California	112,577	114,716	116,806	2,139	1.9%	2,090	1.8%

A very different pattern occurred between 1991 and 1992 when total costs and fees increased less dramatically than had occurred between Fall 1990 and Fall 1991. From 1991 to 1992, the absolute number of SAT scores received by the University decreased while at the same time the number of individuals taking the SAT increased. The University's share of test scores also decreased during this period. In 1992, the total number of SAT scores sent to the University of California decreased by 1,514 (-0.8%) from 188,415 in 1991 to 186,901 in 1992. During this same time period, the total number of individuals who completed the SAT increased by 2,090 (1.8%) from 114,716 in 1991 to 116,806 in 1992 (see Table 2-1).

¹⁹ The increase registered at Santa Cruz appears to be the result of a return to near normalcy following the sharp downturn in applications received following the Loma Prieta earthquake of October 1989.

Five campuses recorded a decline in the number of SAT scores they received between 1991 and 1992 while three, Irvine, Los Angeles, and Riverside recorded increases. The decrease at Davis (-716/-3.0%), Santa Barbara (-1,600/-5.9%), and Santa Cruz (-795/-5.1%) were the most substantial. The increases at Irvine (862/4.1%) and Los Angeles (897/2.7%) were equally substantial. Such changes are consistent with an explanation which asserts that in response to the recession and/or increases in costs, marginal applicants began to shift to campuses that were closer to home and away from those campuses heavily dependent on attracting students from outside their immediate region.

In Fall 1992, every campus, with the exception of Irvine and Los Angeles, experienced a decline in their relative share of California SAT scores (see Table 2-2). Two possible explanations can account for this. First, the change could be in response to the imposition of fees from the previous year and the anticipation that fees would increase again. The second explanation is that the recession was producing the effect. The unemployment rate in California increased while consumer confidence declined during the time period when most students take the tests (see Graph 1-5 and 1-6).

Table 2-2 University of California Campus Shares of SAT Scores Sent by California Students Who Took SAT: 1990 to 1991

Campus	Percentage Share			Percentage Point Change	Percentage Point Change
	1990	1991	1992	90 to 91	91 to 92
Berkeley	22.72%	22.76%	22.34%	0.04%	-0.43%
Davis	19.02%	20.52%	19.54%	1.50%	-0.98%
Irvine	18.26%	18.47%	18.88%	0.21%	0.41%
Los Angeles	29.33%	28.71%	28.96%	-0.62%	0.25%
Riverside	12.13%	12.15%	12.12%	0.02%	-0.03%
San Diego	24.46%	24.41%	23.66%	-0.05%	-0.75%
Santa Barbara	24.91%	23.74%	21.95%	-1.17%	-1.79%
Santa Cruz	12.90%	13.49%	12.56%	0.58%	-0.92%
Total UC	163.73%	164.24%	160.01%	0.51%	-4.23%

If the changes in SAT scores received by the University of California are a result of changing aspirations regarding the attendance of college, a pattern of declining participation in taking the test should be observable. The absolute number of Californians who took the SAT increased in both 1991 and 1992 (see Table 2-3). In 1991 the total number of test takers increased by 2,132 (1.9%) over the total for 1990. Again in 1992, the total increased by 2,090 (1.8%) over the total for 1991. All ethnic groups, with the exception of American Indians and Whites, registered increases in the absolute number of test takers between 1990 and 1991. In 1992, all ethnic groups, with the single exception of Whites, had more test takers than in 1991.

TABLE 2-3 California SAT Takers by Ethnic Group: 1990 to 1992

Ethnic	SAT Takers			Change	Change	Change	Change
	1990	1991	1992	90 to 91	90 to 91	91 to 92	91 to 92

Group	Number	Number	Number	Number	Percent	Number	Percent
American Indian	1,321	1,157	1,187	-164	-12.4%	30	2.6%
Asian American	22,847	24,229	24,608	1,382	6.0%	379	1.6%
Black	7,105	7,401	7,682	296	4.2%	281	3.8%
Hispanic	16,592	18,163	19,229	1,571	9.5%	1,066	5.9%
White	53,788	52,467	52,272	-1,321	-2.5%	-195	-0.4%
Other	3,022	3,415	3,820	393	13.0%	405	11.9%
No response	7,902	7,884	8,008	-18	-0.2%	124	1.6%
Total	112,577	114,716	116,806	2,139	1.9%	2,090	1.8%

While the absolute number of test takers increased in both 1990 and 1991, when viewed as a percentage of California high school graduates, a different picture emerges. The ratio of California high school graduates to test takers increased from 0.4764 in 1990 to 0.4899 in 1991 (see Table 2-4). The ratio increased for all ethnic groups with the exception of American Indians. In 1992, a different pattern emerged. The ratio of California high school graduates to test takers decreased from 0.4899 in 1991 to 0.4730 in 1992. The ratio fell across all ethnic groups. Even though the absolute number of test takers increased among many ethnic groups, that number, as a proportion of high school graduates, represented a decline.

It seems plausible to conclude that the relative decline in test takers as a proportion of high school graduates between 1991 and 1992, is a response to the deepening recession in California. The increase in fees at the University of California alone could not be expected to influence such mass behavior on such a large scale. It is possible that the recession together with a general increase in costs at institutions of higher education in California, may have been responsible for the decline. But University of California fees alone, could hardly have had such a broad effect.

TABLE 2-4 Ratio of California SAT Takers to California High School Graduates by Ethnic Group: 1990 to 1992

Ethnic Group	SAT Takers			Change 90 to 91 Percent	Change 91 to 92 Percent
	1990 Ratio	1991 Ratio	1992 Ratio		
American Indian	0.7004	0.5794	0.5610	-0.1211	-0.0184
Asian American	0.7244	0.7660	0.7338	0.0416	-0.0321
Black	0.4069	0.4323	0.4272	0.0254	-0.0051
Hispanic	0.3008	0.3066	0.2845	0.0058	-0.0221
White	0.4172	0.4270	0.4212	0.0098	-0.0059
Total	0.4764	0.4899	0.4730	0.0135	-0.0169

Note 1: 1992 HS Graduates based on estimate.

Note 2: Filipino included with Asian.

Note 3: Other, No response and Pacific Islander included in total.

Conclusion

A number of conclusions regarding the question at hand seem in order. First, there appears to be a drop-off in Aspirational demand to attend selective institutions of higher education as evidenced by the decline in SAT test takers relative to high school graduates. The decline was most pronounced in Fall 1992. In Fall 1992, the number of SAT scores received by the University declined in both absolute terms and relative to the number of individuals who completed the SAT. No such overall decline took place in Fall 1991, although two campuses, Davis and Santa Barbara, did experience declines in Fall 1991.

Second, the decrease in scores received that occurred in Fall 1992 was not evenly distributed across campuses. The pattern of decline in SAT scores received by the University of California indicates a shift in demand away from those campuses outside major metropolitan areas to those campuses within metropolitan areas. The three campuses in the Los Angeles area actually experienced an increase in the number of scores received in Fall 1992. The other five campuses experienced declines in Fall 1992, although only three experienced declines of more than 2 percent (Davis, Santa Barbara, and Santa Cruz).

Third, the absolute number of Californians taking the SAT increased in both 1991 and 1992. The number of individuals within all ethnic groups taking the test also increased, with the exception of American Indians in 1991 and Whites in 1991 and 1992. Yet when these numbers are looked at relative to the number of high school graduates in the state, the ration of test takers to high school graduates decreased across all ethnic groups in 1992, although Chicanos and Latinos experienced the greatest decline.

Fourth, given the widespread relative decline in test takers, it does not seem plausible that increases in costs at the University of California was the sole or primary cause for the decline in demand, although it may have played some part.

Fifth, the timing and nature of the decline in scores received by the University suggests recessionary factors played a very large role.

University Application Rates

It is during the application phase of the admission process that students most closely consider their options, excluding some as unfeasible and including others to be recipients of their applications. The literature on student choice suggests that three factors dominate this phase of the selection process: geography, information, and the exclusionary criteria developed by each individual.²⁰ Two of these factors, geography and the exclusionary criteria, involve considerations of cost and ability to pay. Geography introduces differences in costs related to travel, residence costs, and supplemental tuition costs for out-of-state students.²¹ The exclusionary criteria developed by students depend to a large degree, on their financial resources. Research in this area concludes that the effects of price on demand should be

²⁰ Jackson, G.A. "Public Efficiency and Private Choice in Higher Education," *Educational Evaluation and Policy Analysis*. 4 (1982): 237-247.

²¹ Anderson, C.A., Bowman, M.J., and Tinto, V. *Where Colleges are and Who Attends*. (New York: McGraw-Hill, 1972). Carroll, S.J., Morj, M., Relles, A., and Weinschrott, D.J. *The Enrollment Effects of Federal Student Aid Policies*. (Santa Monica: Rand, 1977). Hoenack, S.A. "The Efficient Allocation of Subsidies to College Students," *American Economic Review*, 61(1971): 302-311. Jackson, G.A. "Financial Aid and Student Enrollment," *Journal of Higher Education*. 49 (1978): 548-571. Jackson, G.A. "How Students Pay for College: Temporal and Individual Variation," *Higher Education* 9 (1980): 619-632. Kohn, M.G., Manski, C.F. and Mundel, D.S. "An Empirical Investigation of Factors Which Influence College-Going Behavior," *Annals of Economic and Social Measurement* 5 (1976): 79-88. Trent, J.W. and Medsker, L.L. *Beyond High School*. (New York: Jossey-Bass, 1968). Tuckman, H.P. Local Colleges and the Demand for Higher Education: The Enrollment Inducing Effects of Location." *American Journal of Economics and Sociology*, 32 (1973): 257-268.

most pronounced at this stage of the admission process.

In this section, we will examine the change in the absolute number of applicants who applied to the University and we will examine the change as expressed both as a percentage of high school graduates and as a percentage of SAT takers. We will also undertake a cursory examination of any change in the application patterns across campuses to determine, as we suggested earlier, if students, in an effort to reduce their costs, are applying to campuses nearer their homes. Finally, we will examine the change in applications across ethnic groups.

Five important findings can be found in this section. They are:

- While the University experienced a slight increase in the number of applicants from Fall 1991 to Fall 1992, the relative proportion of high school graduates applying decreased from 17.2% in 1991 to 16.5% in 1992 (see Table 3-1).
- The number of applicants to the University relative to the number of students who took the SAT in California decreased from 1990 to 1991 (see Table 3-2). This decline was consistent across all ethnic groups with the exception of Asian Americans.
- Between 1991 and 1992, the University experienced a decline in applicants relative to high school graduates across all ethnic groups, with the exception of African Americans (see Table 3-3). Among African Americans, both the absolute number of applicants and their relative proportion increased from 1990 to 1991. The absolute number of Chicano/Latino and Asian American applicants increase from 1991 to 1992, but the proportion of high school graduates who applied to the University decreased.
- The sharpest single-year decline in applicants, from 1991 to 1992, occurred at those campuses located outside the state's two major metropolitan areas (see Table 3-4). Those campuses within the San Francisco and Los Angeles metropolitan areas experienced an increase in the absolute number of applications they received. The campuses in the Los Angeles area experienced an increase in the number of applications they received expressed both in absolute terms as well as relative to the number of high school graduates.
- While the University experienced an overall shift in demand from 1991 to 1992 towards its campuses located in major metropolitan areas, the pattern of demand shift varied somewhat across ethnic groups. Los Angeles, Irvine, Berkeley, and San Diego experienced distinguishable increases in demand among African American applicants (see Table 3-6). Among Chicano/Latino applicants, there was a discernible surge in demand at Irvine and Los Angeles (see Table 3-7). Demand from Asian American applicants increased at Irvine, Los Angeles, Riverside, San Diego and Berkeley (see Table 3-8). The demand among White applicants shifted toward Berkeley, Los Angeles, Riverside and Berkeley and at the same time away from Santa Cruz, Davis, and Santa Barbara (see Table 3-9).

University Application Rates

The high school graduate to University application rate is one relative measure of enrollment demand for the University of California. An increase in the number of individuals who apply for admission to the University of California relative to the number of high school graduates causes the application rate to increase and therefore, represents an increase in demand. A decline in the number of individuals who apply for admission relative to the number of high school graduates reduces the application rate and represents a decline in demand.

The SAT taker to University application rate is the second relative measure of demand. An increase in the SAT taker to University application rate, like an increase in the high school graduate to University application rate, represents a increase in demand. A fall in the rate, represents a decline in demand.

The absolute number of freshmen applicants who applied to the University increased in Fall 1991 and Fall 1992 following a decline in Fall 1990. The total number of California resident applicants who applied for admission to the University decreased by 1,942 (-4.7%) in Fall 1990 from the total received in Fall 1989 (see Table 3-1). In Fall 1990 the University received 39,518 applications compared to 41,460 in Fall 1989. In Fall 1991, freshmen applications increased by 710 (1.8%) over the number received in Fall 1990. The total number of applicants increased again in Fall 1992 by 437 (1.1%) over the number received in Fall 1991.

The increase in freshmen applicants for two of the three years obscures the fact that when measured relative to the number of high school graduates, the proportion of graduates who applied to the University decreased in Fall 1990 and again in Fall 1992 (see Table 3-1). The proportion of high school graduates dropped to 16.7% in 1990 from 16.9% in who applied in 1989. The absolute decline in applicants for Fall 1990 was not simply a function of a smaller class of high school graduates. It represented a proportional decline in high school graduates applying to the University.

Table 3-1 California Resident Freshmen Applicants to the University of California and California Public High School Graduates: 1989 to 1992

	Fall 1989	Fall 1990	Fall 1991	Fall 1992
Freshmen Applicants	41,460	39,518	40,228	40,665
1 Yr. Change Number		-1,942	710	437
1 Yr. Change Percent		-4.7%	1.8%	1.1%
High School Graduates	244,629	236,291	234,164	246,965
Applicants as Percent of High School Graduates	16.9%	16.7%	17.2%	16.5%

The proportion of high school graduates declined again in 1992 falling to 16.5%. This proportional decline came at a time when the actual number of applicants increased from the previous year. However, the rate of increase in applicants did not keep pace with the increase in the number of high school graduates. Only in 1991 did both the number and proportion of applicants increase.

It is interesting to note that the total costs of attending the University of California increased most sharply in Fall 1991, the year when both the number and proportion of applicants increased. This seeming contradiction can be explained by examining the timing of the decision to apply within the context of the recession and the announcement to increase fees. Keep in mind that applications for admission to Fall term are filed in November of the preceding year. The economic down turn in California was just beginning in the late summer and early fall of 1990. It was still too early for recessionary factors to affect application rates.

By Fall 1992 the situation changed. The recession was in full force by November 1991, the time when Fall 1992 applications are filed. Also, students and parents were fully aware of the increased fees levied the previous year and, perhaps, were expecting fees to rise again. Taken together, the onset of the recession, the increase in fees, and the prospect of ever increasing fees in the wake of California's budget

crisis, may have resulted in the decline in the proportion of high school graduates who applied to the University of California in Fall 1992.²²

The number of applicants the University received, relative to the number of California students taking the SAT, has been declining since 1989 (see Table 3-2). Given that SAT's are taken by students anywhere from ten to eighteen months prior to the beginning of a given quarter, we must look at the recession and the increase in cost to attend UC relative to this time sequence. The recession in California was well underway by January 1991. California's unemployment rate had climbed to just over 7% from 5% just six months earlier. Consumer confidence had also plummeted by this time. The index of consumer confidence fell dramatically in the twelve month period from January 1990 to January 1991. It fell from the high 130's in January 1990 down to the high 70's by January of 1991.

The ratio of SAT takers to high school graduates was also changing. In 1989, the number of students taking the SAT in California equaled 47.2% of the state's 244,629 high school graduates. That ratio rose to 47.6% in 1990 and 49.0% in 1991. In 1992, the ratio dropped back to 47.3%, perhaps indicating a decline student's aspirations to attend selective colleges and universities. Not only was the University's share of SAT takers down, but the proportion of high school graduates taking the SAT, had also decreased. While the number of individuals taking the SAT rose in 1992 relative to 1991, the increase did not keep pace with the increase in the number of high school graduates.

Table 3-2 California Resident Freshmen Applicants to the University of California and California SAT Takers: 1989 to 1992

	Fall 1989	Fall 1990	Fall 1991	Fall 1992
Freshmen Applicants	41460	39518	40228	40665
1 Yr. Change Number		-1942	710	437
1 Yr. Change Percent		-4.7%	1.8%	1.1%
California SAT Takers	115,552	112,577	114,716	116,806
Applicants as Percent of SAT Takers	35.9%	35.1%	35.1%	34.8%

Given the decline in UC applicants relative to SAT takers, it appears the recession was more important than increases in college costs when it came to reducing the ratio between high school graduates and SAT takers. The decline in University applicants relative to SAT takers may also have been greatly influenced by recessionary factors. Increasing costs of attendance may have also contributed to this decline, but it seems unlikely the costs operated in isolation from the recessionary factors.

Application Rates by Ethnicity

Underlying the changes in both the absolute number of freshmen applicants and the relative proportional decline in applicants, are changes affecting the application rate among various ethnic groups. Among all ethnic groups, with the exception of African Americans, Fall 1992 witnessed a smaller proportion of high school graduates applying to the University than in Fall 1991 (see Table 3-3).

²² There are certainly other factors which could explain part of this decline. For example, an increase in then proportion of immigrants among the class of high school graduates could push University of California application rates down.

A relatively stable proportion of African American high school graduates have applied to the University of California since 1990. The number of African American applicants increased by 125 (6.7%) in Fall 1992 over Fall 1991. The absolute increase for Fall 1992 reflects an increase in the number of African American high school graduates. The stability in the number of African American applicants over the last three years does not diminish the fact that both in absolute and proportional terms, African American applicants have decreased since 1989. The University received applications from 246 fewer African American applicants in 1992 than it received in 1989. This represents a decrease of 11.2%. In addition, a smaller proportion of African American high school graduates applied to the University in 1992 (10.8%) than in 1989 (11.8%). The only ethnic groups whose application rate is less than that recorded by African American students are Chicanos and Latinos.

American Indian, Filipino American, and White applicants decreased both in the absolute number who applied and as a proportion of high school graduates. The decline was most pronounced for American Indian applicants.²³ American Indian applicants decreased by 59 from Fall 1991 to Fall 1992. This represented a decline of 15.8%. The ratio of American Indian high school graduates to applicants fell from 18.7% in Fall 1991 to 14.8% in Fall 1992. While the number of Asian American applicants increased by 463 (4.8%) in Fall 1992, Asian American applicants as a proportion of high school graduates dropped from 36.4% to 35.7%. White and Filipino applicants remained fairly constant from 1991 to 1992, although the proportion of high school graduates among both groups who applied to the University decreased slightly.

The proportion of Chicano and Latino high school graduates who applied to the University of California has declined from 10.2% in 1989 to 8.3% in 1992. This proportional decline has occurred while the absolute number of applicants increased from Fall 1989 to Fall 1992 by 338 or 6.4%. The decline in the proportion of Chicano and Latino high school graduates who applied to the University is pronounced and troublesome. It could be indicative of recessionary factors as well as increases in costs. However, it could also be caused by factors unrelated to costs.

Table 3-3 California Resident Freshmen Applicants to the University of California and California SAT Takers by Ethnic Group: 1989 to 1992

Ethnic Group	Number Percent SAT Takers	Fall 1989	Fall 1990	Fall 1991	Fall 1992	Change 89 to 92
American Indian	Number	334	333	373	314	-20
	Percent SAT Takers	17.7%	25.2%	32.2%	26.5%	8.8%
African American	Number	2,191	1,884	1,820	1,945	-246
	Percent SAT Takers	30.0%	26.5%	24.6%	25.3%	-4.7%
Chicano/Latino	Number	5,273	5,317	5,539	5,611	338
	Percent SAT Takers	33.9%	32.0%	30.5%	29.2%	-4.7%
Asian American	Number	9,788	10,279	11,231	11,693	1,905
	Percent SAT Takers	46.0%	45.0%	46.4%	47.5%	1.5%
White	Number	22,307	19,885	19,423	19,218	-3,089
	Percent SAT Takers	37.9%	37.0%	37.0%	36.8%	-1.1%
Total	Number	41,460	39,518	40,228	40,665	-795

²³ A new definition of status to be considered an American Indian may have affected the counts.

Percent SAT Takers	35.9%	35.1%	35.1%	34.8%	-1.1%
--------------------	-------	-------	-------	-------	-------

Note 1: Total includes unknown and other.

Note 2: Percent for Chicano/Latino calculated from total Hispanic SAT takers.

Note 3: Asian American includes Filipino American.

Application Rates Across Campuses

A changing pattern of campus choice seems to emerge in Fall 1992. The nature of the pattern suggests a slight but discernible movement away from campuses located outside the two major metropolitan areas of the state to campuses located within the metropolitan areas. The most pronounced shift to the metropolitan campuses occurs in 1992.

The primary beneficiaries of the shift were Irvine, Riverside, and Los Angeles (see Table 3-4). Irvine’s count of total applications increased by 1,062, or 7.7% in 1992 over the number received in 1991. At the same time, Irvine’s share of high school graduates increased by 0.1 percentage points, increasing from 5.9% to 6.0%. At Riverside, applications in 1992 increased by 6.5% (596) while their share of high school graduates remained fairly constant.²⁴ Application at Los Angeles increased by 5.0% (961). Los Angeles’ relative share of high school graduates also remained constant.

Both Berkeley and San Diego experienced an absolute increase in applications, however applications did not keep pace with the increasing number of high school graduates in the state. At Berkeley, applications were up by 642 (4.0%) while at San Diego, applications increased by 388 (2.3%). Berkeley’s share of high school graduates dropped by 0.1 percentage points moving from 6.8% to 6.7%. San Diego’s share of high school graduates fell by 0.2 percentage points from 7.2% to 7.0%. The proportional decline in high school graduates applying at Berkeley and San Diego may reflect a drop in applicants from the Los Angeles area. Approximately 45% of the state’s high school graduates are from the counties of Los Angeles, Riverside, San Bernadino and Orange. It is in these counties that the recession hit hardest. It may be that both Berkeley and San Diego experienced some decline in applicants from these counties relative to the number of high school graduates from them.²⁵

Table 3-4 California Resident Freshmen Applicants to the University of California and California Public High School Graduates by Campus: 1989 to 1992

Campus	Number Percent HS Grads	Fall 1989	Fall 1990	Fall 1991	Fall 1992	Change 91 to 92
Berkeley	Number	16,262	15,713	15,954	16,596	642
	Percent HS Grads	6.6%	6.6%	6.8%	6.7%	-0.1%
Davis	Number	13,824	14,188	15,327	15,088	-239
	Percent HS Grads	5.7%	6.0%	6.5%	6.1%	-0.4%
Irvine	Number	13,578	12,887	13,717	14,779	1,062
	Percent HS Grads	5.6%	5.5%	5.9%	6.0%	0.1%

²⁴ Due to rounding, the measured change in the percentage of high school graduates who applied appears to have increased at Riverside from 3.9% to 4.0%. The real change, as measured in the last column, correctly shows less than a 0.1 percentage point change.

²⁵ Data on high school graduates by county for 1992 had not been released by the Department of Finance by the time this report was concluded.

Los Angeles	Number	20,277	19,025	19,205	20,166	961
	Percent HS Grads	8.3%	8.1%	8.2%	8.2%	0.0%
Riverside	Number	9,662	9,584	9,161	9,757	596
	Percent HS Grads	3.9%	4.1%	3.9%	4.0%	0.0%
San Diego	Number	16,674	16,912	16,920	17,308	388
	Percent HS Grads	6.8%	7.2%	7.2%	7.0%	-0.2%
Santa Barbara	Number	17,813	17,057	16,269	15,790	-479
	Percent HS Grads	7.3%	7.2%	6.9%	6.4%	-0.6%
Santa Cruz	Number	10,023	8,871	9,698	9,404	-294
	Percent HS Grads	4.1%	3.8%	4.1%	3.8%	-0.3%
Total	Number (duplicated)	118,113	114,237	116,251	118,888	2,637
	Number (unduplicated)	41,460	39,518	40,228	40,665	437
	Percent HS Grads	16.9%	16.7%	17.2%	16.5%	-0.7%

Note 1: Total includes unknown and other.

Note 2: Percent for Chicano/Latino calculated from Hispanic total.

The three campuses located outside the state's two major metropolitan areas, Davis, Santa Barbara, and Santa Cruz, registered both absolute declines in applicants and declines in the proportion of high school graduates applying for admission. At Davis, applications fell by 239 (4.0%) while the campus' share of high school graduates dropped 0.4 percentage points from 6.5% to 6.1%. Santa Barbara's applications declined by 479 (2.9%) and the proportion of high school graduates applying fell by 0.6 percentage points from 6.9% to 6.4%. Applications at Santa Cruz dropped by 294 (3.0%) and the campus' share of high school graduates fell 0.3 percentage points from 4.1% to 3.8%.

It should be noted that other factors affecting the number of applications a campus receives are also discernible. Santa Barbara was experiencing a decline in applications prior to both the period of rising prices and the onset of the recession. At Santa Cruz, applications fell dramatically in 1990 following the Loma Prieta earthquake of 1989. One would expect these "other" factors to contribute to the change observed in 1992. However, while noting the existence of such factors, it is beyond the scope of this analysis to estimate their effects.

Change in Demand By Ethnicity Across Campuses

In order to examine the change in demand among members of different ethnic groups across campuses, let us look at the information contained in Table 3-4 in a different way. We will look at the change in applications received from 1991 to 1992 at each of the campuses and calculate a ratio between the change in the absolute number of applicants (unduplicated system wide) and the change in the number of applications received at each campus. This ratio demonstrates the magnitude of the change in demand at the campus relative to the change in demand at the University as a whole. The larger the ratio at each campus, the greater the change in demand at the campus relative to that for the University as a whole. Let's begin by examining the information in Table 3-5.

We see in Table 3-5 that in Fall 1992, the University of California received applications from 437 more applicants than in Fall 1991. The information also shows that Irvine received 1,062 more applications in 1992 than in 1991. The ratio between the change in applicants to the entire University (437) and change in

applications received at Irvine, equals 2.43. In other words, applications at Irvine increased at a rate 2.43 times faster than the increase in applicants. During the same time period, applications at Santa Barbara fell at a rate nearly equal to the increase in applicants to the system. In this table, a negative ratio indicates campus demand changed inversely to the system wide figure. A positive ratio indicates campus demand changed in proportion to the change in system wide demand. The data in Table 3-5 has been sorted and displayed so that comparisons between campuses is made easier.

Five of the eight campuses have positive ratios indicating that demand, as measured by application received, increased as did the overall number of applicants to the system. Three campuses experienced declines in demand. The increase in demand at Irvine, or any other campus, could be the result of the increased number of applicants or a result of a fixed number of applicants either expanding the number of applications they file or, keeping the number of applications they file constant and simply reordering their selections. No doubt all these factors are affecting the data below. However, when the number of applicants to the system increases, a decline in applications, like what occurred at Davis, Santa Cruz, and Santa Barbara, can only be the result of applicants either filing fewer applications or reordering their selections and excluding these campuses.

Table 3-5 Change in California Freshmen Applicants Fall 1991 to Fall 1992: All Applicants
--

Campus	Change in Number	Ratio of Change
System Wide	437	
Irvine	1,062	2.43
Los Angeles	961	2.20
Berkeley	642	1.47
Riverside	596	1.36
San Diego	388	0.89
Davis	-239	-0.55
Santa Cruz	-294	-0.67
Santa Barbara	-479	-1.10

Note: Total Includes Unknown.

We can use the ratio of campus applications to system wide applicants to measure the direction and magnitude of changes in demand across ethnic groups. Table 3-6 contains data for Africa American applicants. The number of African American applicants at the University increased by 125 from Fall 1991 to Fall 1992. During this same time period, five campuses recorded increases in applications from African Americans while three experienced decreases. The ratio of change indicates that Los Angeles, Irvine, Berkeley, San Diego, and Davis were the beneficiaries of the increase in demand. Riverside and Santa Barbara experienced little change while at Santa Cruz, demand was marginally lower.

Table 3-6 Change in California Freshmen Applicants Fall 1991 to Fall 1992: African American Applicants

Campus	Change in Number	Ratio of Change
System Wide	125	
Los Angeles	136	1.09
Irvine	89	0.71
Berkeley	87	0.70
San Diego	85	0.68
Davis	40	0.32
Riverside	-1	-0.01
Santa Barbara	-5	-0.04
Santa Cruz	-15	-0.12

The changing pattern of demand among Chicano/Latino applicants was quite pronounced. Overall, the University received applications from 72 more applicants in Fall 1992 than were received in Fall 1991. At five of the campuses, applications from Chicano/Latino students increased over the previous year (see Table 3-7). The magnitude of the change, as measured by the ratio, was most pronounced at Irvine and Los Angeles. Applications at Irvine increased at a rate just over 3.5 times greater than the absolute increase in Chicano/Latino applicants to the system. At Los Angeles, the rate 1.7 time greater. Declines in demand were most pronounced at Davis and Santa Cruz.

Table 3-7 Change in California Freshmen Applicants Fall 1991 to Fall 1992: Chicano/Latino Applicants
--

Campus	Change in Number	Ratio of Change
System Wide	72	
Irvine	255	3.54
Los Angeles	124	1.72
Berkeley	38	0.53
Riverside	22	0.31
Santa Barbara	22	0.31
San Diego	-19	-0.26
Santa Cruz	-33	-0.46
Davis	-38	-0.53

The number of Asian American applicants to the University increased by 463 from Fall 1991 to Fall 1992 (see Table 3-8). While each campus received more applications from Asian Americans in Fall 1992, the ratio of change indicates that five campuses, Irvine, Los Angeles, Riverside, San Diego, and Berkeley were the greatest beneficiaries of the change. It is clear that demand among Asian American applicants, while up overall, did not increase proportionally at all campuses. Campuses located in major metropolitan areas witnessed a disproportionate increase in demand relative to campuses located outside the metropolitan areas.

Table 3-8 Change in California Freshmen Applicants Fall 1991 to Fall 1992: Asian American Applicants

Campus	Change in Number	Ratio of Change
System Wide	463	
Irvine	514	1.11
Los Angeles	489	1.06
Riverside	397	0.86
San Diego	301	0.65
Berkeley	276	0.60
Davis	74	0.16
Santa Barbara	60	0.13
Santa Cruz	56	0.12

The shift in demand among White applicants reveals an interesting situation. Overall, 205 fewer applicants filed applications for admission with the University of California in Fall 1992 than in Fall 1991 (see Table 3-9). Interestingly, four campuses, Berkeley, Los Angeles, Riverside, and Irvine received more applications from white applicants than in the previous year. Santa Cruz, Davis, and Santa Barbara received fewer application, with Santa Barbara experiencing a drop in applications just over two times greater than the overall system wide decline. A notable change in demand among White applicants seems to be taking place. As we have seen earlier, there is a shift toward campuses located in the metropolitan areas and away from campuses located outside these areas.

Table 3-9 Change in California Freshmen Applicants Fall 1991 to Fall 1992: White Applicants
--

Campus	Change in Number	Ratio of Change
System Wide	-205	
Berkeley	215	-1.05
Los Angeles	156	-0.76
Riverside	124	-0.60
Irvine	112	-0.55
San Diego	-14	0.56
Santa Cruz	-231	1.13
Davis	-300	1.46
Santa Barbara	-443	2.16

Changes in demand among American Indian and Filipino American applicants is difficult to assess given their small numbers. American Indian applicants decreased by 59 from fall 1991 to Fall 1992 while the number of Filipino American applicants remained virtually unchanged (see Table 3-10 and 3-11). However, at least among Filipino American applicants, there appears to be a shift taking place toward campuses in metropolitan areas. Santa Barbara, Davis, and Santa Cruz, experienced a decline in Filipino American applicants. It is a puzzle as to why Berkeley also experienced a decrease, unless the regional factor is more closely aligned with a north-south split than a metropolitan-suburban split.

Table 3-10 Change in California Freshmen Applicants Fall 1991 to Fall 1992: American Indian Applicants

Campus	Change in Number	Ratio of Change
System Wide	-59	
San Diego	-3	0.05
Berkeley	-6	0.10
Irvine	-9	0.15
Davis	-18	0.31
Los Angeles	-24	0.41
Riverside	-24	0.41
Santa Barbara	-36	0.61
Santa Cruz	-37	0.63

Table 3-11 Change in California Freshmen Applicants Fall 1991 to Fall 1992: Filipino American Applicants

Campus	Change in Number	Ratio of Change
System Wide	-1	
Irvine	91	-91.00
San Diego	76	-76.00
Riverside	50	-50.00
Los Angeles	7	-7.00
Berkeley	-17	17.00
Santa Barbara	-23	23.00
Santa Cruz	-28	28.00
Davis	-40	40.00

Conclusion

This cursory examination of change in demand, as measured by change in applications, suggests the recession and cost increases had two primary effects on applications. First, there was a decline in applicants to the University relative to both the number of high school graduates and the number of students taking the SAT. The decline relative to high school graduates was most pronounced in Fall 1992. The decline relative to SAT takers was most pronounced in Fall 1991. The declines were consistent across all ethnic groups with the exception of African Americans relative to high school graduates and Asian Americans relative to SAT takers. Given the timing of these changes in demand relative to high school graduates and SAT takers, the cause of the change appears to be more closely related to recessionary figures than increases in costs of attending the University. The further test of this hypothesis should clarify this relationship.

Second, the decline in demand was not consistent across campuses. Those campuses located in major

metropolitan areas generally experienced an increase in demand from Fall 1990 to Fall 1991 while those outside these areas, primarily Davis, Santa Barbara, and Santa Cruz, did not. This regional shift in demand was fairly consistent across ethnic groups. Given the nature of the shift in demand, it appears we may be witnessing a strategy on the part of students to minimize the adverse effects of increased costs and recession by selecting campuses nearer to their homes. A final confirmation of this hypothesis awaits the release in late March of actual high school graduation counts by county. When these figures are released, it will be possible to compare application rates by county at each of the University's campuses.

In addition to these primary effects, there were other changes in demand taking place. In general, while the number of Student Affirmative Action (SAA) applicants increased in Fall 1990 and Fall 1991, the proportion of high school graduates from among these groups applying to the University of California decreased. The relative decline in applicants was most pronounced among Chicano and Latino applicants. The decline in Chicano and Latino applicants is understandable, if as suggested earlier, the recession has played a significant role in shaping demand. The brunt of the current recession has been borne by the four counties in the Los Angeles area. Given the high concentration of potential Chicano and Latino applicants from this area, one might expect a disproportional effect upon their application rates.