

**UNDERGRADUATE PERSISTENCE AND GRADUATION AT THE
UNIVERSITY OF CALIFORNIA**

Part II

A Review of Persistence and Graduation of Undergraduate Students
Who Entered the University of California From Fall 1983 to Fall 1992

UNIVERSITY OF CALIFORNIA
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Preface

This is the second part of a three part report on undergraduate persistence and graduation at the University of California. It consists of an overview of the context within which persistence rates, graduation rates, and time to degree should be understood. It includes a description of the factors that are known to affect persistence, graduation, and time to degree and includes a discussion of the limitations associated with using these measures as indicators of institutional effectiveness. By using current University data, we will examine the effect of academic preparation on graduation rates and time to degree. Drawing upon historic University documents, this section will examine the concept of normal time to degree in order to determine the extent to which popular expectations regarding time to degree are founded (or not founded) in the historical record. Going back to 1907, we will trace the increase in undergraduate graduation rates as well as the increase in time to degree that occurred at the University of California and attempt to identify the causes for the change. Finally, we will review the results from recent student surveys into the reasons students extend their time to degree .

Acknowledgments

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Introduction

Persistence to graduation and the time required by undergraduate students to complete their degree are widely used measures of institutional effectiveness. Recently, increased public scrutiny of colleges and universities and calls for outcome measures of accountability within higher education have thrust these measures into the forefront of political debate. In order to fully appreciate the significance and meaning of these measures it is necessary to develop a framework within which they may be properly understood.

Persistence to graduation and time to degree are a function of four discreet, but interacting factors. They consist of the following:

1. Specific institutional policies relating to such things as the undergraduate curriculum;
2. Student-level variables associated with the student's goals, attributes, background as well as the student's career and personal choices;
3. Macro historical events such as economic recessions or changes in employment opportunities; and
4. The priorities of public policy as established by the State and federal governments.

Each factor affects persistence, graduation, and time to degree and, in turn, each exerts some influence on the other factors. By isolating and examining how these four factors affect persistence, graduation, and time to degree, we get a more accurate picture of the way in which these measures change and develop a deeper appreciation for the causes which induce change. As we shall demonstrate, persistence rates, graduation rates, and time to degree are the result of the complex interaction of these four factors.

In the following pages we will examine the effects these factors have had on persistence to graduation and time to degree at the University of California. We will also identify the inherent limitations associated with using these measures as indicators of educational outcomes and hence, institutional effectiveness. We will begin by articulating why these measures are important. This will be followed by a brief review of student-level variables that are known to affect undergraduate persistence to graduation and time to degree. These variables will be grouped into three categories: the student's personal goals and attributes, the degree to which the student is integrated into the campus social and academic communities, and the academic and social skills the student brings with him or her to college. Drawing on University data, we will then examine the effect of academic preparation on graduation rates and time to degree at the University of California. We will also examine the concept of normal time to degree by reviewing the findings from previous University studies into the subject. Our purpose for doing this is twofold: to

determine the extent to which popular expectations that students should graduate in four years are founded in the historic record and to identify the effect macro historical developments have on these measures. Finally, we will examine the results from recent surveys of University of California graduates into the reasons they extended their time to degree as well as their overall levels of satisfaction with selected aspects of their undergraduate education. In doing this, we hope to illuminate the extent to which the extension of time to degree is the result of the student's personal choice.

I. Why Are These Measures Important?

Persistence to graduation as well as the time required to complete a baccalaureate degree are widely used measures within higher education. But why are they afforded such importance? Why should we be concerned with the proportion of entering students who complete their degree or care how long it takes them to do so? One could argue that a major function of colleges and universities is to certify the proficiency of students within particular disciplines. Certification involves the establishment of academic standards which, in turn, necessarily leads to the need to distinguish between the highly competent and the merely competent. Therefore, we should not expect colleges and universities to graduate all students who enroll. Following this line of reasoning, one might question the standards of a college or university that graduated all its students. Indeed there are institutions that take great pride in their rigorous application of standards and offer as proof of those standards, the relatively low frequency of persistence to graduation.¹

Not all colleges and universities take such a harsh Darwinian approach to undergraduate education, although, to varying degrees, all expect to lose some students due to the enforcement of academic standards. The question then becomes this: What proportion of entering students should be expected to complete their baccalaureate degree? There is no single answer to this question, although one might offer as a simple response, as many as possible.² In fact, most colleges and universities do make an effort to graduate as many students as possible. One way colleges and universities attempt to achieve this is through the use of admission screening. Through the use of highly selective admission criteria, institutions such as the University of California attempt to identify those applicants who are most likely to successfully complete their studies. The proof of the merits of this approach can be found in the fact that students at highly selective colleges and universities do graduate in higher numbers and complete their degree requirements in less time than students at less selective institutions. Nevertheless, no admission system is perfect. There will always be some students who will meet the minimum standards for admission, but for various reasons, will either be unable or unwilling to meet the institution's minimum standards for graduation.

¹The U.S. military academies are examples of this line of reasoning as are many colleges and universities with open admission policies.

²Not all follow this line of reasoning. Some colleges and universities place more emphasis on access rather than educational efficiency. By applying less restrictive admission standards, these institutions offer access to students with a broad range of academic experiences. In effect, these institutions offer a large number of students the opportunity to demonstrate their ability. However, the institutions are willing to bear the associated cost of lower graduation rates as large numbers of marginal students either withdraw or are dismissed.

The goal of graduating as many students as possible is in itself laudable, but is there any other reason why this should be the goal of colleges and universities? The answer to this question is yes and it is arrived at by applying a simple cost-benefit model to undergraduate education. At the University of California, the costs of providing undergraduate education are primarily borne by the State and the student. The State incurs costs through the provision of funds to the University based upon the number of students enrolled and the number of units they undertake. Students incur costs through the payment of fees, the purchase of books, supplies, the expenses associated with housing, and deferred personal earnings while enrolled. The benefits of higher education are shared by both the State and the student. Among other things, college graduates support the economic development of the State and return greater amounts of revenue through the payment of taxes. For the individual, a college education results in higher lifetime earnings. In this simple model, nonpersistence to graduation or the extension of time to degree generally increases the costs of higher education for both the State and the student. The purpose of admission standards at the University of California is to minimize, for both the State and the student, the costs associated with nonpersistence or the extension of time to degree. By restricting admission to applicants who are most likely to persist to graduation and do so in an expeditious manner, the University of California effectively reduces the cost of a college degree. In this respect, the calculation of persistence and graduation rates as well as time to degree are important measures that can be used to calculate for both the State and the student the return on investment in higher education .

One might conclude that students who do not complete their studies or students who require a longer time to complete their degree raise the costs and therefore reduce the return on investment in higher education. But is this statement valid? There are many reasons why some students leave an institution before earning their degree and just as many reasons why some students take more time than others to complete their degree. Research into persistence and graduation has demonstrated that in many instances both nonpersistence or the extension of time to degree may represent, from the perspective of the student, positive developments. Even from the perspective of the State, the extension of time to degree may not represent additional costs. For example, if students extend their time to degree by attending summer session they, not the State, bear the added costs of instruction. Similarly, the added cost to the State of a student who marginally extends his or her time to degree by carrying fewer than fifteen units per term may not be particularly large given the State's allocation formula which allocates funds on the basis of full-time enrolled students (FTE).

II. The Inherent Limitations of Using Persistence and Graduation Rates to Assess Educational Outcomes

While persistence to graduation and time to degree are important measures, they are often ascribed significance and meaning beyond that which they should carry. There are two qualities which make persistence and graduation rates such widely used measures of institutional effectiveness. First, they are fairly easy to calculate and compile. Second, they allow for comparability, both over time and across institutions. However, there are two problems with using persistence and graduation rates as measures of institutional effectiveness. First, persistence and graduation rates are merely indicators of institutional effectiveness. They do not, in and of themselves, represent the desired outcomes of undergraduate education. Second, persistence and graduation are almost always viewed as positive outcomes while withdrawal or transfer from a four-year institution are viewed as negative outcomes. However, such a simplified view does not hold up under careful scrutiny. Withdrawal or transfer often represents a positive outcome for both the student and the institution.

Persistence and graduation are not the ends of undergraduate education, they are merely convenient measures of the desired outcomes. Institutions of higher education are expected to instill and develop a number of qualities in students. There are at least seven outcomes which could be used to assess educational outcomes. They include:

1. Grades and Learning
2. Personality Development
3. Intellectual Development
4. Social Development
5. Aesthetic-Cultural Development
6. Moral and Philosophical Development
7. Motivational and Aspirational Development

Because the measurement of these outcomes is extremely difficult, persistence and graduation rates serve as expedient substitutes. But, as noted above, persistence and graduation are not the goals of higher education, they are merely surrogate measures. It is assumed that if the goals of higher education are being met, this should be reflected in measurements of persistence and graduation. But, as we shall describe below, this is at best only a tenuous assumption based upon an imprecise understanding of the factors that affect persistence and graduation.

Often we compound the error of assuming persistence and graduation rates are valid indicators of other desired educational outcomes by viewing persistence and graduation in positive terms while viewing withdrawal and transfer negatively. The emotive values assigned to these terms are often in conflict with the values assigned to them by students. Students may understand withdrawal as a positive step either toward attaining their goals or establishing their identity. Numerous studies have found that withdrawal may be a positive step towards forming an identity, establishing one's own priorities, and meeting developmental needs such as independence from parents and self-responsibility.³ Transfer from one institution to another also may be viewed as a positive development by students who are interested in pursuing a course of study not offered at the college or university where they are presently enrolled. Numerous cases have demonstrated it to be beneficial for a student to either withdraw or transfer from college.⁴

³ Frank R. Timmons. "Freshman Withdrawal from College: A Positive Step Toward Identity Formation? A Follow-Up Study." *Journal of Youth and Adolescence* 7 (1978): 159-173.

⁴ Hess C. Haagen. *Venturing Beyond the Campus: Students Who Leave College*. (Middletown, Conn.: Wesleyan University Press, 1977). Even "upward bound" programs have recognized that the student who leaves school in order to think things through or to weigh whether or not he really wants a college education is making an attempt at mature decision-making.

III. Student-Level Factors Known to Affect Persistence and Graduation

To fully understand persistence to graduation, withdrawal, and time to degree one should be aware of the role the student's goals, motives, and abilities play in the decision to persist or withdraw. A sound appreciation for these variables will allow us to both better understand their role as causal agents and enable us to better determine whether withdrawal and transfer, from the perspective of the student or the institution, represents a positive or negative development.

A great number of goals characterize the intentions of entering students, some of which may not be compatible with the goals of the University. There are always some students whose educational goals are more limited than those of the University. Other students may come to find that higher education in general or that offered at the University of California is not for them. Studies have shown that a number of students give little serious thought to their choice of institution. Finally, it should be remembered that a surprisingly large percentage of students entering college have little clear notion of why they are there. The process of goal clarification will invariably lead some of these students to withdraw from higher education altogether or transfer to an institution or program which more closely matches their aspirations. To label such withdrawal as failure is to deny the importance of intellectual and emotional maturation. A key point to keep in mind when examining persistence and withdrawal is that not all attrition should be viewed as institutional failure.

There are three antecedent attributes which have been found to determine the individual's propensity to persist: family background, individual attributes, and pre-college schooling. It has been demonstrated that students whose parents are more highly educated are themselves more likely to remain in college than are students whose parents have low levels of educational achievement. It has also been found that students who have clearly established goals and whose goals are more concrete in nature are more likely to persist than students who lack such clearly defined goals and aspirations. Finally, students with more developed academic skills are more likely to persist in college than are students with lower levels of academic skills. In a national study into the predictors of dropout from higher education it was found that the most "dropout-prone" freshmen are those with poor academic records in high school, low aspirations, poor study habits, relatively uneducated parents, and small town backgrounds.⁵

⁵ Alexander Astin. *Preventing Students from Dropping Out*. (San Francisco: Jossey-Bass, 1975).

The educational achievement of parents and the pre-college schooling of students are examples of attributes found to be good predictors of college persistence. However, of the many attributes associated with voluntary withdrawal from college, the two most important prove to be intentions or goals and commitments or motivations. Intentions and goals are typically formed prior to college entry. They reflect the educational and occupational goals that lead students to invest in a particular form of higher education. Commitments or motivations indicate the degree to which individuals are willing to commit themselves to achieving their goals as opposed to alternative investments of time and energy. Numerous studies have unequivocally proven that students who are highly motivated to finish college seem to do so in spite of limitations in their ability or adverse circumstances. It has been noted that:

Student motivational factors may be considered the *sine qua non* of persistence, and therefore the most important target for persistence research. However, they may be considered so obviously related to persistence as to make research on the relationship trivial. With the exception of those who do not have the requisite ability, students continue in college because they choose to do so and drop out because they choose to do so, for reasons that may or may not be accurately assessed. For a student with the requisite ability, even involuntary withdrawal due to low grades is really voluntary: a result of the student's choice not to do the work that is necessary to obtain sufficiently high grades.⁶

One special form of commitment particularly relevant to persistence analysis is that of institutional commitment. Completing a degree program at a particular college requires a commitment on the part of the student to obtaining a degree at that institution as opposed to another institution. Some students enter college with a firmly established institutional commitment, others do not. Those who do enter college with a strong institutional commitment may do so because attendance there is necessary to achieve their personal or occupational goals.⁷ For many however, institutional commitment either develops or does not develop. Institutional commitment is largely the result of the student's experiences at an institution following entry. For students with little institutional commitment, withdrawal is not due to a lack of goal commitment as much as it is due to the absence of institutional commitment. These departures are more reflective of experiences following entry than of events or predisposition's prior to entry.

Colleges are composed of academic and social communities with their own characteristic patterns of interaction and norms of behavior. Achieving membership in college involves participating in its academic and social communities. Withdrawal from college is often due to the failure to become integrated into either sphere. Experiences which promote the student's social and intellectual integration

⁶ Ramist, L. *College Student Attrition and Retention*. (New York: College Board, 1981).

⁷One reason independent institutions to have higher persistence and graduation rates than public colleges and universities is due to higher levels of institutional commitment among students entering independent institutions.

into the college community are likely to strengthen commitment and therefore reinforce persistence.⁸ The absence of integrative interactions will lead students to disassociate themselves from the social and academic communities which comprise college life and eventually withdraw. Failure to become integrated and establish competent membership in either the social or academic life of the campus arises from two interrelated, yet distinct phenomenon: personal incongruency or individual isolation.

Personal congruency involves the match or fit between the needs, interests, and skills of the individual and those of the communities which make-up the institution. This applies to the formal climate of the classroom as well as the day-to-day interactions among students, faculty, and staff. Incongruency may arise when students perceive the academic or intellectual demands of the institution as being either too difficult or too easy. Thus the observance that voluntary withdrawal is often related to the lack of adequate academic support and that it is sometimes directly related to high individual ability and academic boredom. Withdrawal may also occur when students, having found the academic or intellectual climate of the institution not to their preferences, choose not to seek out intellectual membership. Such withdrawals often involve some of the more intellectually demanding students whose commitment to the intrinsic rewards of college attendance are high.

A similar incongruency may apply to the social community of a university, however, social incongruency is more likely to be the result of differences in social values and preferences than of excessive or insufficient social demands imposed by the community. The more diverse and numerous the social communities on campus, the more likely is it that different students will find a social niche within the institution. The more socially homogeneous the campus, the more likely is it that mismatches will occur. The intellectual climate of the university, can in a similar way, give rise to matches and mismatches. Thus, the findings among studies of successful retention programs for disadvantaged and other minority students that program success is very much a function of there being a "critical mass" of similar students on campus.

A sense of isolation may arise when there is insufficient day-to-day personal interaction between students and other people on campus. In such cases, students are unable to establish the personal bonds that promote community membership. Students who might otherwise establish membership are unable to do so because the institution has not provided the appropriate and necessary support for individual integration into the intellectual and social surroundings. Frequent contact with faculty outside the classroom appears to be one of the most important forms of interaction influencing student persistence.

⁸An example of the University's efforts in the area of building community on campus can be found in University of California, Student Academic Services, *A Declaration of Community: Report of the Universitywide Campus Community Task Force*. 1993.

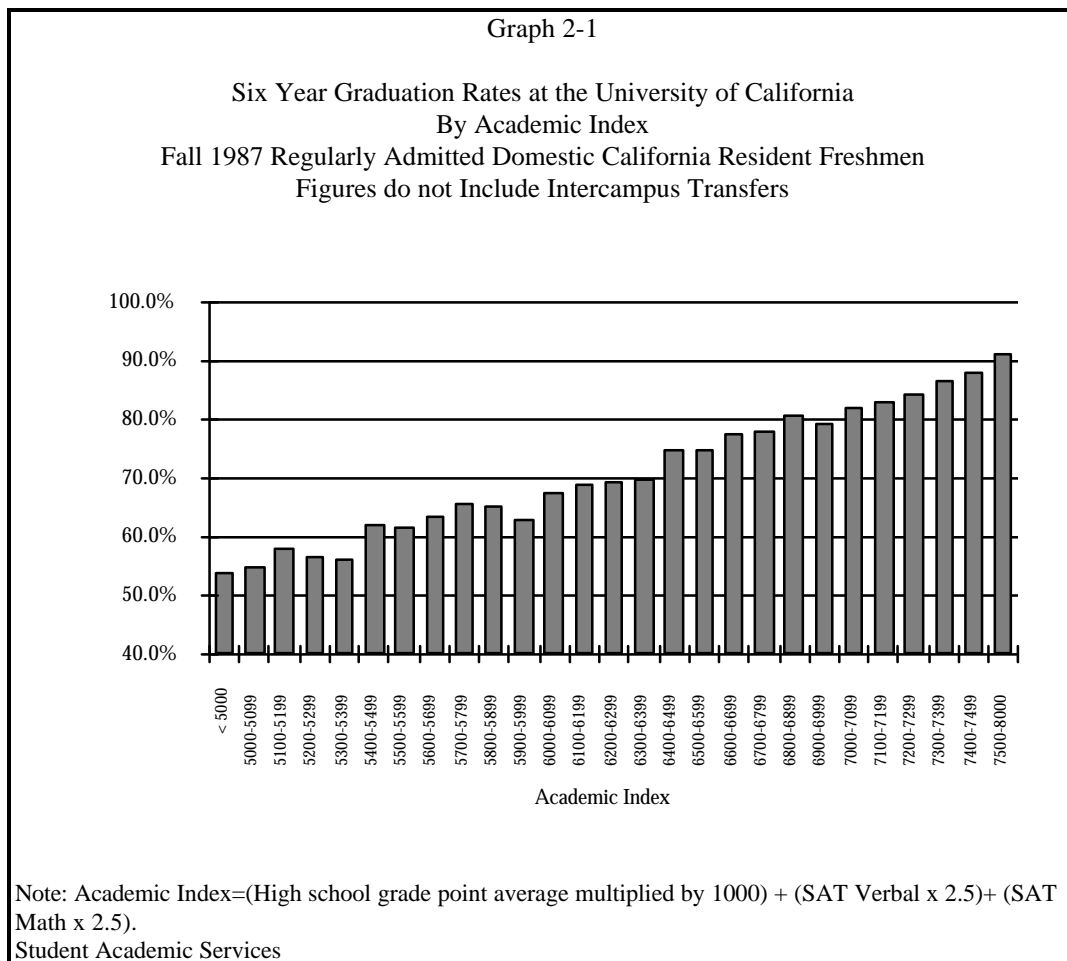
Membership in one of the social communities made up of peers is another important element in student persistence. Of the two forms of integration, academic integration has proven to be more important than social integration. This is especially true among the more academically able members of the student body. Although frequent and rewarding contacts with other students may offset a lack of contact with the faculty and at least partially integrate students into the university, such contacts do not promote the same degree of intellectual development as do interactions with faculty.

As has been shown, individual drive and motivation as well as social and academic integration are important factors in the process of individual goal attainment within higher education. Nevertheless, some individuals are just not sufficiently committed to completing their education or not willing to put forth the effort to attain that goal. Their withdrawal is more the result of not caring than of not being able to meet the demands of university level work.⁹ Nevertheless, some individuals who gain entry into the nation's colleges and universities do not possess the full range of intellectual and social skills which are necessary to succeed. While the University of California's eligibility requirements together with campus admission standards are intended to identify students who are adequately prepared for University level work, the information upon which admission decisions are based as well as the methods available for screening are simply not precise enough to correctly identify all such students. In addition, even though the University draws from among the top 12.5% of high school graduates, there is enough variation in ability within this population so that there are measurable differences in performance between those at the top and bottom of the eligible pool. While there is very little discernible difference in the academic ability and preparation of students who meet the University's minimum eligibility requirements, what little difference there is, can result in a measurable difference in the grades students earn in University courses.

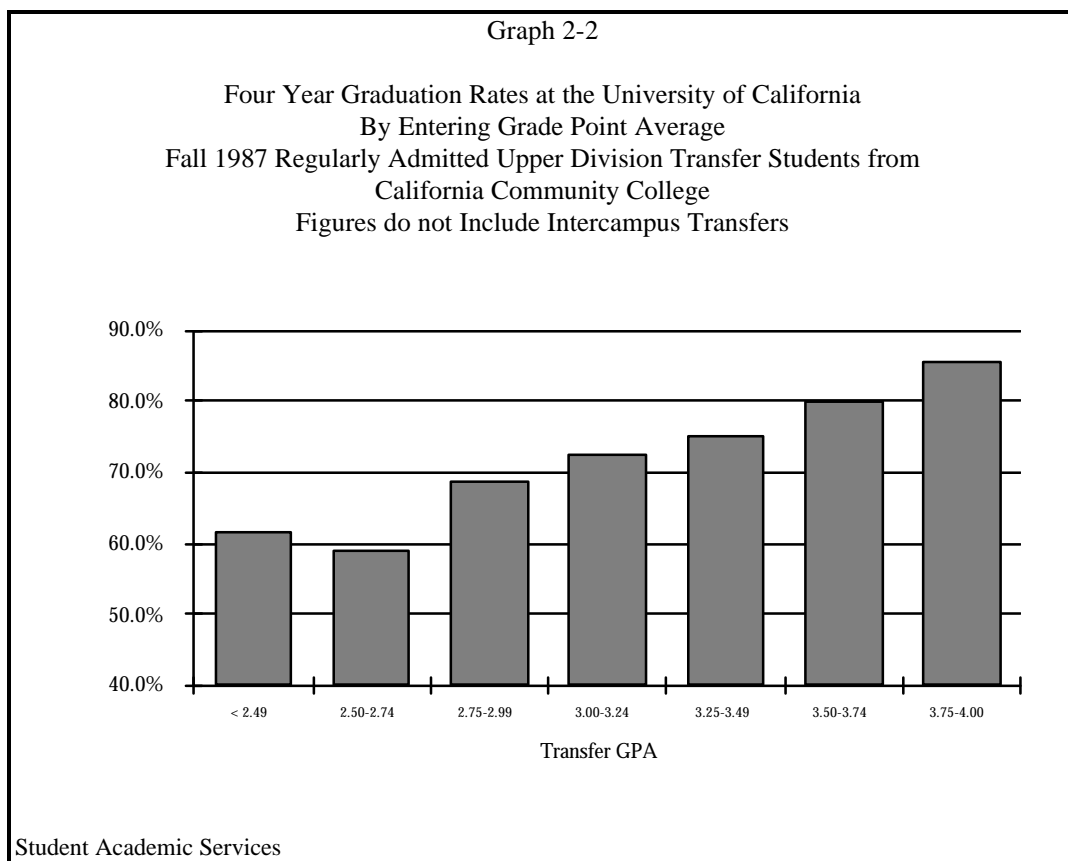
The academic standards of the University of California are very demanding and even small differences in academic ability and preparation can adversely affect academic performance. Students with lower levels of academic preparation or less developed academic skills may find it more difficult to keep up with other students in their class whose skills are more fully developed or whose level of academic preparation is greater. In some instances, these students may find themselves in a situation where, despite their best efforts, they fall further and further behind until they are placed on academic probation and eventually subject to academic dismissal. Others, prior to academic dismissal, may opt to transfer to another institution where their academic abilities are more closely aligned with those of their fellow students.

⁹ See J.R. Hackman and W.S. Dysinger. "Commitment to College as a Factor in Student Attrition." *Sociology of Education* 43 (1970): 311-324.

The effect of academic ability and preparation on the likelihood and timing of graduation from the University of California is contained in Table 2-1, Graph 2-1, and Table 2-2. Graph 2-1 displays graduation rates arrayed by academic index scores for eligible freshmen who entered the University in Fall 1987. The academic index is calculated from the student's high school grade point average and scores on the required SAT tests. The academic index is an approximate measure of a student's overall academic skill and preparation. In general, students with greater academic skills and higher levels of academic preparation score higher on the academic index than students with lesser skills and lower levels of preparation. As the graph makes clear, students with higher scores on the academic index are more likely to graduate than are students with lower scores on the index. The graduation rates extend from a high of better than 90% for students with academic index scores greater than 7500 to graduation rates that range between 54% and 58% for students with index scores below 5400.



A similar relationship between an entering measure of academic preparation and the likelihood of graduation holds for students who transfer to the University of California from one of California's Community Colleges (see Graph 2-2). Students who earn higher grade point averages (GPA) while enrolled at California's Community Colleges are more likely to graduate from the University than are transfer students whose GPA's are lower. The graduation rate for Community College transfer students extends from a high of 85.7% for those entering the University with Community College GPA's of 3.75 or higher to 59.8% for those entering with GPA's between 2.50 and 2.74.



Freshmen with higher scores on the academic index as well as advanced standing transfer students with higher entering GPA's also tend to graduate in less time than students with lower academic index scores or lower GPA's (see Table 2-1 and Table 2-2). Between one-third and one-half of regularly admitted freshmen who entered the University of California in Fall 1987 with academic index scores greater than 6600 graduated within four years compared to fewer than one-fifth of entering freshmen with academic index scores below 5700 (see Table 2-1). A similar relationship between entering GPA and time to degree

holds for transfer students as well. Better than one-third of upper division transfer students from California's Community Colleges with GPA's greater than 3.25 graduated within two years of entering the University compared to between one-fourth and one-fifth of transfer students with Community College GPA's below 3.25 (see Table 2-2).

Table 2-1

Four, Five and Six Year Graduation Rates at the University of California
By Academic Index
Fall 1987 Regularly Admitted Domestic California Resident Freshmen
Figures do not Include Intercampus Transfers

Academic Index	Number of Entering Students	Graduation Rates (%)					
		Four Year		Five Year		Six Year	
		Number	Percent	Number	Percent	Number	Percent
7500-8000	398	212	53.3%	343	86.2%	363	91.2%
7400-7499	359	180	50.1%	293	81.6%	316	88.0%
7300-7399	452	209	46.2%	371	82.1%	392	86.7%
7200-7299	610	248	40.7%	468	76.7%	515	84.4%
7100-7199	741	274	37.0%	568	76.7%	616	83.1%
7000-7099	877	323	36.8%	660	75.3%	723	82.4%
6900-6999	1,013	337	33.3%	726	71.7%	804	79.4%
6800-6899	1,037	361	34.8%	758	73.1%	841	81.1%
6700-6799	1,165	377	32.4%	832	71.4%	913	78.4%
6600-6699	1,158	373	32.2%	798	68.9%	898	77.5%
6500-6599	1,238	356	28.8%	832	67.2%	927	74.9%
6400-6499	1,192	348	29.2%	807	67.7%	896	75.2%
6300-6399	1,191	342	28.7%	740	62.1%	833	69.9%
6200-6299	1,172	324	27.6%	712	60.8%	813	69.4%
6100-6199	1,135	311	27.4%	688	60.6%	785	69.2%
6000-6099	1,049	293	27.9%	621	59.2%	711	67.8%
5900-5999	892	196	22.0%	493	55.3%	565	63.3%
5800-5899	847	186	22.0%	460	54.3%	553	65.3%
5700-5799	778	176	22.6%	437	56.2%	513	65.9%
5600-5699	684	125	18.3%	360	52.6%	436	63.7%
5500-5599	584	114	19.5%	297	50.9%	362	62.0%
5400-5499	504	101	20.0%	259	51.4%	313	62.1%
5300-5399	344	62	18.0%	158	45.9%	194	56.4%
5200-5299	242	34	14.0%	114	47.1%	137	56.6%
5100-5199	212	26	12.3%	93	43.9%	123	58.0%
5000-5099	126	19	15.1%	57	45.2%	69	54.8%
Less than 5000	543	97	17.9%	237	43.6%	294	54.1%
Total	20,543	6,004	29.2%	13,182	64.2%	14,905	72.6%

Note: Academic Index=(A-F GPA * 1000)+(SAT verbal *2.5)+(SAT math *2.5).
Student Academic Services

Table 2-2

Two, Three and Four Year Graduation Rates at the University of California
By Entering GPA
Fall 1987 Regularly Admitted Upper Division Transfer Students from
California's Community Colleges
Figures do no Include Intercampus Transfers

Transfer GPA	Number of Entering Students	Graduation Rates (%)					
		Two Year		Three Year		Four Year	
		Number	Percent	Number	Percent	Number	Percent
3.75-4.00	377	158	41.9%	301	79.8%	323	85.7%
3.50-3.74	502	169	33.7%	376	74.9%	402	80.1%
3.25-3.49	597	203	34.0%	406	68.0%	450	75.4%
3.00-3.24	557	139	25.0%	377	67.7%	404	72.5%
2.75-2.99	517	113	21.9%	301	58.2%	356	68.9%
2.50-2.74	337	70	20.8%	184	54.6%	199	59.1%
< 2.50	237	60	25.3%	132	55.7%	146	61.6%
Total	3,124	912	29.2%	2,077	66.5%	2,280	73.0%

Note: Transfer GPA equals GPA earned in courses completed at Community College.
Student Academic Services

Not only are freshmen with higher academic index scores and transfer students with higher entering GPA's more likely to graduate and more likely to graduate in less time than their counterparts with lower index scores and GPA's, they are less likely to withdraw from the University in academic difficulty. Table 2-3 and Table 2-4 display the proportion of freshmen and advanced standing California Community College transfer students who withdrew from the University in academic difficulty at any time during their academic career prior to completing their degree.¹⁰ Five percent of all regularly admitted freshmen who entered the University in Fall 1987 withdrew in academic difficulty (see Table 2-3). Among students with academic index scores above 6700, 1.8% withdrew in academic difficulty while among students with index scores below 5600, 13.0% withdrew in academic difficulty. A similar relationship holds for regularly admitted transfer students (see Table 2-4). Fewer than six percent of transfer students with GPA's above 3.0 withdrew from the University in academic difficulty compared to 9.3% with GPA's between 2.75 and 2.99 and 16.6% with GPA's between 2.50 and 2.74.

While academic ability is an important factor, most studies into attrition indicate that social skills can be equally important to persistence. Social skills enable the individual to locate, interact with, and make use of the resources made available on university campuses. Historically, persistence and graduation have

¹⁰Academic difficulty is defined as a UC cumulative grade point average less than 2.0.

been viewed as predominantly related to academic dimensions.¹¹ Mounting evidence however suggests that noncognitive variables are as important or more important to the academic success of students than are the traditional academic dimensions.¹² Some researchers have even developed the hypothesis that the noncognitive dimensions are more important than the traditional academic measures to the academic success of minority students.¹³ One study found that noncognitive variables were more predictive of grade point average for Whites and African American students than SAT scores and also highly predictive of African American student persistence.¹⁴

Table 2-3

Students Withdrawing in Academic Difficulty from the University of California
By Academic Index
Fall 1987 Regularly Admitted Domestic California Resident Freshmen
Percent of Students from Fall 1987 Cohort Who Withdrew in Academic Difficulty
Before Completing Their Degree
Figures do not include Intercampus Transfers

Academic Index	Number of Entering Students	Withdrew in Academic Difficulty	
		Number	Percent
6700-8000	6,652	122	1.8%
5600-6699	11,336	571	5.0%
0-5599	2,555	332	13.0%
Total	20,543	1,025	5.0%

Note: Academic Index=(A-F GPA * 1000)+(SAT verbal * 2.5)+(SAT math * 2.5).
Student Academic Services

¹¹ See T.J. Pantages and C.F. Credon. "Studies of College Attrition: 1950-1975." *Review of Educational Research* 48 (1978): 49-101.

¹² There are a number of studies which point to this. See A. Astin. *Financial Aid and Student Persistence*. (Los Angeles: Higher Education Research Institute, 1975). C.J. Gelso and D. Powell. "Academic Adjustment and Persistence and Students with Marginal Academic Potential." *Journal of Counseling Psychology* 14 (1967): 478-481. S. Messick. "Potential Uses of Noncognitive Measurement in Education." *Journal of Educational Psychology* 71 (1979): 281-292. R.B. Nelson, T.B. Scott, and W.A. Bryan. "Precollege Characteristics and Early College Experiences as Predictors of Freshman Year Performance." *Journal of College Student Personnel* 25 (1984): 50-54.

¹³ See W.E. Sedlacek and G.C. Brooks. *Racism in American Education: A Model for Change*. (Chicago: Nelson-Hall, 1976).

¹⁴ T. Tracy and W.E. Sedlacek. "Noncognitive Variables in Predicting Academic Success by Race." *Measurement and Evaluation in Guidance* 16 (1984): 171-178. The authors advanced eight noncognitive dimensions as important to academic success: A positive self-concept as related to expectations for the coming year; realistic self-appraisal, especially regarding academic abilities; an understanding of racism (both personal and institutional) and an ability to deal with it; an ability to work toward long-term goals rather than toward more important short-term ones; availability of people supportive of academic goals; successful leadership experience in either organized or informal groups; demonstrated community service indicated by involvement in local community or church activities during the years before college; academic familiarity, defined as the extent to which a student's extracurricular activities and interests relate to formal academic subjects.

Table 2 -4

Students Withdrawing from the University of California in Academic Difficulty
By Entering Grade Point Average
Fall 1987 Regularly Admitted Upper Division Transfer Students from
California Community College
Percent of Students from Fall 1987 Cohort Who Withdrew in Academic Difficulty
Before Completing Their Degree
Figures do not Include Intercampus transfers

Transfer GPA	Number of Entering Students	Withdrew in Academic Difficulty	
		Number	Percent
3.75-4.00	377	2	0.5%
3.50-3.74	502	16	3.2%
3.25-3.49	597	28	4.7%
3.00-3.24	557	30	5.4%
2.75-2.99	517	48	9.3%
2.50-2.74	337	56	16.6%
< 2.50	237	28	11.8%
Total	3,124	208	6.7%

Note: Transfer GPA equals GPA in courses completed at Community College.
Student Academic Services

IV. The Undergraduate Curriculum and Normal Time to Degree

Evaluations of time to degree must necessarily start with the idea of the "normal" time within which undergraduates should be expected to complete their studies. It is widely and generally accepted among many outside of higher education that four years or twelve quarters (8 semesters) is the normal time it should take undergraduates to complete a baccalaureate degree. However, a review of the historical record, at both UC and other American colleges and universities, fails to substantiate such an expectation. The historical record does demonstrate that American colleges and universities have established a four-year "curricula time" to degree, but the normal time required by undergraduates to earn a degree, that is, the average or median time it actually takes undergraduates to complete their studies has for most of this century exceeded four years. The historical record also demonstrates that social and economic developments have had major effects on undergraduate attendance and matriculation patterns.

At various times throughout this century and for different reasons, the University of California has examined the question of time to degree. These studies have consistently found that four years is not the normal time required by undergraduates to earn a degree. During the Great Depression, University interest in the question was motivated by a concern over the "added" expense the State might be incurring to enroll undergraduates for more than eight semesters. In 1934, a University of California study into undergraduate time to degree noted the following:

As a matter of actual fact and in its consequence to the student, there is no such thing as a four year curriculum for the majority of students in the University of California at Berkeley. Some remain in attendance less than three months, others over five years. Half of the students in an entering class leave the University without graduating; the other half receive bachelor degrees, but not all at the same time. Less than one-third of those who receive bachelor degrees spend only four years or the equivalent of eight semesters in residence; more than two-thirds are over-resident. This is an exceedingly high degree of over-residence compared to 1908, and it appears to be due immediately to the limited study programs which students undertake and complete in the regular semesters.¹⁵

The study found that an increase in time to degree had occurred and that it most likely took place between 1919 and 1925. After 1925, time to degree at the University leveled-off and remained fairly constant. The study also went on to conclude that students, and not the State, were incurring most of the added costs of increased time to degree because rather than attend additional semesters, where instruction was

¹⁵University of California, Office of the Registrar. *The Rapid Withdrawal and Over-Residence of Students*. Berkeley California, January 1934. p.1.

provided free, and extend their graduation date, students were opting to bear the costs of their instruction by attending summer terms. The State was actually saving money compared to the period 1919-1925 because of the increase in summer attendance. It appears that students adopted a cost saving strategy by opting to incur some limited additional costs through summer attendance in return for savings accrued by not having to pay the expenses associated with attendance during the longer regular sessions.

Another study conducted in 1955 examined the persistence and achievement of freshmen who entered the University of California in Fall 1948 and Fall 1949. Among the reasons for this study was the continuation of the Selective Service and its policy of deferring college students only if they were making "normal progress". This required the University to have information available on such things as study-list loads, withdrawal, re-entry, and semester lapse prior to the award of a degree. Among other things, this study concluded the following:

Various findings in this report and data in the Dean's offices raise the question as to whether [four years/eight semesters] is an acceptable social definition of normal progress. Many students must take less than the expected semester load because of necessary outside employment and home responsibility, and many others are obliged to absent themselves for one or more semesters for similar reasons. A University of Minnesota study...indicates that in the total group of students receiving degrees, Spring, 1951, only 31% had earned the degree in four enrolled years or less. The other 69% had taken more than four years. The norm, obviously, was greater than four years. What a similar California study would show is not known, but it is likely from related data in this report, that the results would not be very different from those at Minnesota. As knotty as the problem would prove to be, it would seem advisable to undertake to develop a new definition of normal progress for application to students even though the existing quantitative definition continues to apply to curricula.¹⁶

In 1958 the University again looked into the question of undergraduate time to degree by examining the records of students who graduated from the University in June 1957. This study found that the average time required by new freshmen to complete their undergraduate degree was 8.3 regular terms (12.5 quarters) while for transfer students the average was 4.9 semesters (7.4 quarters). In addition, 21.1% of graduates withdrew from the University at least once during the period from first entrance to graduation. The study went on to note that whereas 85% of females completed their degree requirements in four years or less, only 67% of males did so. The study was noteworthy for its attempt to determine if time to degree had changed over time. By comparing data from the graduating classes of 1936-37 and 1946-47 with data from graduates of 1957, the study found time to degree had risen slightly from 1936-37. In 1957, 19% of freshmen required more than four years to graduate. By comparison, in 1936-37 only 16% of freshmen

¹⁶University of California, Office of Relations with Schools. *The Native Student Study: An Inquiry into the Persistence and Achievement of Two Complete Classes Entering the University of California Directly from California High Schools, Fall 1948 and Fall 1949*. Berkeley, California, September 1955. p. 34.

required more that for years to graduate whereas in 1946-47, 31% of freshmen required more than four years. The authors of the study noted that World War II had a marked impact on the increase in time recorded in 1946-47. In addition, the continuing effects of the Great Depression may have contributed to the slightly more rapid time to degree reported in 1936-37. The study went on to conclude the following:

A casual observation that everyone who works or studies at the campus invariably makes is that "some students stay forever." This observation would seem to be verified at first glance...[The data] indicate...that some students take a long time to complete their studies due to frequent or lengthy absences or to extended studies...[A] much larger portion of the male students than the female students were compelled for one reason or another to extend their studies past the usual four year period. A completely academic reason that some males took more than four years is that their curricula [science, architecture, and engineering] demanded it.¹⁷

A study into undergraduate attrition undertaken in 1968 compared the performance of new freshmen who entered the University in Fall 1955 with those who entered in Fall 1960. The report found that of the 3,298 freshmen who entered the University in Fall 1960, 54% (1,781) had graduated within seven years after their initial entrance. Of those who graduated, 1,088 or 61% graduated in four years or less. The remainder (39%) required more than four years to complete their degree.¹⁸ The study also identified a great degree of variability in time to degree from one institution to another. For example, among freshmen who entered the University of Georgia in 1955, over three-quarters (79%) graduated within four years while among freshmen who entered the University of Utah in 1952, just over half (52%) graduated in four years. At none of the institutions included in the study did the average time to degree equal four years.

As these studies demonstrate, four years is, and has for most of this century, not been the normal or average time required by undergraduates to complete their baccalaureate degree. Fewer than half of the undergraduates who graduate today from America's colleges and universities do so in four years.¹⁹ How, or more importantly, why does this misperception between the real and the ideal persist? The answer to this question can be found by tracing the evolution of the modern American university, and more

¹⁷University of California, Office of the Registrar. June 1957 Graduating Class University of California at Berkeley: A Statistical Survey. Berkeley, May 1958. p. 12.

¹⁸University of California, Office of Institutional Research. *Student Performance and Attrition at the University of California, Berkeley: A Follow-up of the Entering Freshmen Classes of Fall 1955 and Fall 1960*. Berkeley, January 1968. p. 34.

¹⁹The NCAA reports graduation rates for all students enrolled at NCAA Division I institutions. The data on graduation are gathered from each of the campuses and used to compile the NCAA's annual report on graduation. The six year graduation rate for all students at NCAA Division I institutions was 53%. See NCAA 1991-92 Graduation Report. National Collegiate Athletic Association.

importantly, the evolution of the baccalaureate degree from a system based primarily upon the concept of residency to one based on the concept of academic proficiency.

Table 2-5 contains graduation rates for selected years at the University of California from 1907 to the present. As the data in the table indicate, a 50% graduation rate was the norm at the University of California until the late 1960's when graduation rates began to increase. Beginning around 1967, graduation rates increased to the high fifty percent range. At Los Angeles, 57.6% of freshmen who entered in 1967 graduated within six years. This rate remained fairly constant until the middle to late 1970's when they began to increase once again. By 1978, the six year graduation rate at Berkeley had reached 65.6% while at Los Angeles the six year graduation rate increased to 62.2%. Across the system, the graduation rate settled at the mid sixty percent range. The inclusion of intercampus transfer students into the measure of graduation rates helped push the rates up to the low seventy percent range by the mid 1980's. Today, the six year graduation rate at the University of California stands at 75.3%. The inclusion of intercampus transfers in the early 1980's certainly helped to push the University's six year graduation rate upward. However, since that time the number of students transferring between campuses has been greatly reduced. In effect, graduation rates have risen during a period when the inclusion of intercampus transfer students in the calculation is making a smaller contribution to the measure of graduation rates.²⁰

²⁰Both the number and proportion of undergraduate students who transfer between campuses within the UC system is decreasing. As a result, the inclusion of intercampus transfer students into the graduation figures for the 1987 cohort increased the six year graduation rates by only 2.8 percentage points. The six year graduation rate for regularly admitted freshmen, not including ICT students, equaled 72.5%. In comparison, for the 1983 cohort of new regularly admitted freshmen, the inclusion of ICT students in the calculation of the six year graduation rate increased the total by 5.0 percentage points (67.4% without ICTs to 72.4% with ICTs).

Table 2-5

Four, Five and Six Year Graduation Rates of Freshmen at the University of California
Selected Years: 1907 to the Present

Campus	Entering Year	Graduation Rate (%)		
		Four Year	Five Year	Six Year
Berkeley	1907	39.6%	48.8%	50.8%
	1928	N/A	N/A	50.0%
	1949	40.0%	N/A	N/A
	1951	35.6%	N/A	N/A
	1955	37.4%	50.7%	52.0%
	1960	38.3%	50.3%	51.0%
	1978	32.0%	61.6%	65.6%
Los Angeles	1949	28.1%	N/A	N/A
	1951	27.6%	N/A	46.6%
	1967	40.1%	55.1%	57.6%
	1968	41.3%	56.4%	58.6%
	1969	38.8%	52.4%	55.3%
	1970	40.2%	55.4%	58.3%
	1971	35.5%	53.2%	55.6%
	1972	34.7%	52.7%	55.2%
	1973	32.7%	53.7%	57.0%
	1974	31.2%	53.2%	56.5%
	1975	30.6%	53.7%	57.0%
	1976	28.9%	53.7%	57.4%
	1977	32.1%	57.1%	60.9%
1978	29.6%	57.9%	62.2%	
All UC	1979	30.0%	58.5%	63.0%
	1980	28.4%	59.4%	N/A
	1981	27.0%	N/A	N/A
	1982	30.5%	59.4%	64.5%
All UC (Including ICT)	1983	31.2%	66.0%	72.2%
	1984	30.7%	67.1%	73.4%
	1985	32.2%	68.0%	72.9%
	1986	34.4%	65.5%	74.2%
	1987	30.1%	66.6%	75.3%

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V. Residency Versus Proficiency

Higher education in the United States prior to the Civil War was characterized by the existence of small colleges with denominational and religious orientations. American higher education was dominated by the all-encompassing collegiate tradition with its fixed curriculum and limited course offerings. At the heart of the collegiate tradition was the idea of residency. The goal of higher education under this tradition was to turn out moral and socially well-rounded graduates. The college afforded a safe environment that eased the liberation from home and facilitated the assumption of adulthood. It involved more than just the classroom experience. It included time for social and other extracurricular activities. The college curriculum was designed to impart to students discipline, morals, culture, and, to a lesser degree, history, mathematics, literature and science. Students were required only to demonstrate a marginal level of proficiency in academic courses in order to earn a baccalaureate degree. Academic proficiency was of secondary concern under the old collegiate tradition. The collegiate tradition has been described thusly:

The collegiate [tradition] is the notion that a curriculum, a library, a faculty, and students are not enough to make a college. It is the adherence to the residential scheme of things. It is respectful of quiet rural settings, dependent on dormitories, committed to dining halls, permeated by paternalism...Adherents of the collegiate way became ecstatic over the beneficial influence which classmates exerted on one another, over the superiority of the college community as an agency of education over mere studies. They pointed with satisfaction to the extracurriculum, to the whole range of social life and development, to the benefits of religious influence and orientation. Until finally, what had been a rationale for a seventeenth-century English college became in the nineteenth-century American college a prop for low academic standards and a rationale for a de-emphasis on intellectual values.²¹

A reaction to the low academic standards of the collegiate tradition began to surface in the United States in the 1860s and continued into the early 20th Century. The emergence of the comprehensive university, strongly influenced by German universities, placed a new emphasis on academic standards and scholarship. The comprehensive university slowly replaced the traditional and academically weak curriculum of the older collegiate system, including its ideal of residency, with the modern concept of the open curriculum. In doing so, the old collegiate ideal of an undergraduate education based on the

²¹Rudolph, Fredrick. *The American College and University: A History*. (New York: Alfred A. Knopf, 1962). pp. 87 and 89.

foundation of residency slowly passed into obscurity, replaced by a system based on the concept of academic proficiency.²²

In contrast to the collegiate curriculum, the open curriculum offered students a broad range of courses and majors, but most importantly, the open curriculum relied on the elective principle, permitting students to select their courses and area of study. The comprehensive university, with its open curriculum, placed a premium on the demonstration of subject proficiency for the confirmation of a baccalaureate degree. In effect, the open curriculum de-coupled the baccalaureate degree from the residential tradition of the old collegiate system with its four-year time-to-degree. Initially, the number of courses required to earn a baccalaureate degree under the open curriculum was set in such a way that a student could reasonably expect to complete the requirements within four years, however, the relationship between the actual time needed by students to earn a degree and the demonstration of academic proficiency was not unyieldingly fixed. As noted earlier, the award of a baccalaureate degree was now increasingly coming to be based on the demonstration of a minimum academic proficiency, not simply upon residency.

The forces of change sweeping through American higher education were felt at the University of California. At the University of California, the transition from the older collegiate tradition to the modern idea of the comprehensive university made a significant advance in 1902 when the undergraduate curriculum underwent a major reorganization. Prior to 1902, the undergraduate curriculum at the University was fairly rigid, limited, and fixed. There were few opportunities for students to take elective courses and the few electives that students were permitted to take were constrained within a small universe of acceptable courses. The curriculum was spelled out across all courses of instruction for every term, of which there were eight. In 1902, under the stewardship of President Wheeler, the following changes to the undergraduate curriculum were adopted:

1. The number of majors was greatly expanded beyond the rather small number of "courses of instruction" available to students prior to the reorganization.
2. Unit values for courses were standardized.
3. The number of units required for a degree was standardized across majors and set at 125.
4. The undergraduate curricula was now segmented into prescribed courses (59 units), group electives (24 units), and free electives (42 units).

²²An example of the academic weakness of the old collegiate system is provided by Fredrick Rudolph. He notes that "A Harvard study at the turn of the century showed that the average undergraduate studied thirteen hours a week, an average considerably dependent on freshmen who had not yet learned how not to study." Fredrick Rudolph, *op. cit.* p. 289.

5. A sharper separation was established between work of the first two years (lower division) and that of the last two years (upper division). The separation was marked by an informal certificate of preparation for advanced work which became the *sine qua non* of admission to the upper division.
6. A reduction in the total units annual prescribed for students to 45 units.
7. A requirement that students spend not less than two years in residence at the upper division following the award of the certificate of preparation for advanced work.
8. A reduction, for the last two years, in the minimum and maximum number of units of work per week students were permitted to undertake to 13 and 16 respectively

Requiring undergraduates to spend at least two years in residence at the upper division together with the establishment of a maximum course load of 16 units were attempts to insure that undergraduates would continue to be exposed of the benefits that were believed to flow from four years in residence at the University. Supporters of the collegiate system were concerned that under the new open curriculum, students would graduate in less than four years and lose the benefits associated with residency. As a result, the move to the open curriculum maintained a *de facto* four year minimum residency while simultaneously removing the relatively inflexible four year ceiling imposed by the rigid collegiate system.

The reorganization of the curriculum at the University of California decoupled the baccalaureate degree from the residential tradition of the old collegiate system and hence broke the link between the actual and the curricula time to degree. More importantly perhaps, the reorganization of the curriculum inevitably led to a demise of expectations that students would and should complete their degree in four years. Since then, the University has witnessed an increase in time to degree. Historical developments too, including such things as economic depressions, demographic changes in the student body, and war have also led to an extension of time to degree. Each of these events had a ratchet-like effect on time to degree. During each event, time to degree increased, but following the cessation of the event, time to degree never returned to the interval it was prior to the event. And, as noted earlier, the extension and improvement of University programs designed to increase persistence and graduation may have also contributed to an increase in time to degree, while at the same time increasing overall graduation rates.

VI. Reasons UC Students Extend Their Time to Degree

As noted earlier, a number of factors affect undergraduate persistence, graduation and time to degree. Demographic and economic factors, individual levels of maturity, motivation and physical and mental health, as well as academic ability and preparation have all been identified as significant factors affecting

persistence and time to degree. In addition, while nonpersistence or the extension of time to degree are popularly viewed as negative outcomes, they are not always viewed this way by students. A slower pace to graduation may be viewed as positive from the perspective of the individual student if it reflects sound educational goals. For example, a student may view extra time as positive if that time is used to pursue curricular breadth or if the time is used to travel, participate in an internship, or work to either pay for college expenses or gain experience in the workplace. Periodic surveys conducted at the University of California consistently demonstrate that individual choice, personal problems, and economic circumstances are among the more important reasons cited by students for extending the time required for them to earn their baccalaureate degree.

The results of a systemwide survey into the factors which caused undergraduate students to extend their time to degree is contained in Table 2-6. Among the more important reasons cited by students were taking an extra course for personal interest (65.9%), needing to work in order to support themselves (59.2%), changing their major (59.4%), and attempting or completing a reduced courseload (51.3%). Among the nineteen factors identified, only three, the need for better advising (47.3%), trouble getting major requirements (35.2%), and trouble getting general education requirements (11.3%) can reasonably be described as "institutional impediments." The study concluded by noting that undergraduate students can successfully complete their undergraduate curriculum at the University of California within four years provided the student:

1. Completed some university courses before entering the University of California.
2. Felt well-prepared academically for University coursework.
3. Did not change major.
4. Did not repeat a course.
5. Did not fail a course.
6. Completed the minimum number of units required to be "full-time."
7. Experienced no financial difficulty or did not have to slow matriculation to work.
8. Experienced no personal health or marital/family problems.
9. Attempted only courses required for graduation.

In a more recent study at Berkeley, recent recipients of a baccalaureate degree were asked if they had interrupted their academic career for one term or longer. The results are contained in Table 2-7. Only one in five of those surveyed indicated they had interrupted their academic career for one term or more. Those who indicated an interruption of one term or more were then queried about the reasons for the interruption. Fewer than 2% of these respondents indicated institutional factors as reasons for the interruption (administrative bungling and course not offered). The more important reasons cited by

students were working to earn money for school (33.9%), a lack of academic or personal direction (31.3%), personal problems (31.3%), and stress (29.6%).

Table 2-6

Reasons Cited by Undergraduate Students at the University of California for Extending Their Time to Degree Beyond Four Years

Rank	Reasons for Taking More than Four Years to Graduate	Index of Importance (1)	Percent of Respondents Citing as Factor (2)
1	Took extra course for personal interest	1.40	65.9%
2	Need to work in order to support self	1.32	59.2%
3	Changed major	1.30	59.4%
4	Attempted of completed reduced workload	1.13	51.3%
5	Needed better advising	0.97	47.3%
6	Stress	0.82	37.9%
7	Repeating coursework	0.73	46.0%
8	Took time off to work	0.58	24.3%
9	Ran out of money	0.56	25.9%
10	Trouble getting major requirements	0.55	35.2%
11	Family/marital problems	0.51	24.5%
12	Participated in internship	0.43	24.8%
13	Double major	0.38	16.9%
14	Athletic activity	0.38	16.2%
15	Personal health problems	0.35	18.5%
16	Took time off to travel	0.26	14.5%
17	Had to take remedial coursework	0.18	13.9%
18	Trouble getting General Education requirements	0.16	11.3%
19	Lack of child care	0.04	2.1%

(1) To facilitate comparisons of the relative importance of each reason, an index of importance was computed by multiplying the number of respondents citing a particular reason by the following weights: "not a factor"=0; "slight influence" =1; "important" =2; "very important" =3;.

(2) Percent of respondents citing reason as important or very important.

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Table 2-7

Reasons Cited by 1991-92 Recipients of Baccalaureate Degrees for Interrupting
Their Academic Career for One Term or Longer
University of California, Berkeley

Rank	Reasons	Percent of Respondents Citing as Factor
1	Work to earn money for school	33.9%
2	Lack of academic, career and personal direction	31.3%
3	Personal problems/family responsibility/pregnancy	31.3%
4	Burnout/stress	29.6%
5	Wanted to get work experience	22.6%
6	Financial problems	20.0%
7	Just needed a break	18.3%
8	Participated in Education Abroad Program	18.3%
9	Illness/health-related problems	15.7%
10	Travel	12.2%
11	Internship	12.2%
12	Academic dismissal/probation	10.4%
13	Other	8.7%
14	Administrative bungling	1.7%
15	Course(s) needed not offered	1.7%

Source: Office of Student Research, University of California Berkeley. June 1994

Note: Respondents were asked the following question: "While attending Berkeley, did you interrupt your academic career for a term or longer, excluding summer?" Response: 79.3% "no"; 20.7% "yes" (N=561). The percentages displayed in the above table are based on a follow-up question to those who responded yes (N=116). These students were asked to mark all reasons that applied to them.

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A similar question asked recent graduates of Berkeley who took longer than the "normal" time to graduate to identify the reasons which accounted for the delay in completing their degree. The results are contained in Table 2-8. Of the eleven factors, only three, poor or inadequate advising (20.9%), couldn't get required course in my major (7.5%), and couldn't get course outside my major (7.5%), were institutional in nature. Only the first of these three factors (inadequate advising) was cited by a notable proportion of the respondents. The more important factors identified by students were related to personal problems and personal choice. Among the more important factors were needing to work during school year (39.8%), desire to maintain balance in life (37.0%), changing major or academic interest (26.0%), academic difficulty (26.0%), and taking time to decide major or academic focus (22.4%). The results from this more recent survey of Berkeley degree recipients substantially corroborates the findings from the systemwide survey described earlier.

Table 2-8

Reasons Cited by 1991-92 Recipients of Baccalaureate Degrees for Taking Longer than Normally Expected to Graduate
University of California, Berkeley

Rank	Reasons	Percent of Respondents Citing as Factor
1	Had to work to earn money during school year	39.8%
2	Wanted to maintain a balance in my life-not kill myself	37.0%
3	Changed my major or my academic interest	26.0%
4	Academic difficulty-repeating course	26.0%
5	Took a long time to decide on a major or academic focus	22.4%
6	Received poor or inadequate advising or guidance	20.9%
7	Wanted to take extra time near the end to improve gpa, resume, etc., for graduate of professional school/employment	18.5%
8	Co-curricular activities (athletics, band, ASUC, etc.)	16.4%
9	Didn't want to enter job market in recession, poor job prospects	10.2%
10	Couldn't get required courses in my major	7.5%
11	Couldn't get required courses outside my major	7.5%

Source: Office of Student Research, University of California, Berkeley. June 1994
 Note: Respondents were asked the following question: "If you entered Cal as a freshmen and it took you longer than four years to graduate or if you entered as a transfer and it took longer than expected, what slowed you down?" Respondents were asked to mark all that apply. Percentages based upon 254 respondents who answered the question.
 Student Academic Services

It is broadly acknowledged that individuals are willing to endure inconvenience and undergo hardship in order to attain an important personal goal, and that the more important the goal, the greater the level of inconvenience and hardship the individual is willing to endure. Certainly the attainment of a college degree is an important personal goal for students. The survey results described earlier point out that students are indeed willing to persevere in the face of personal, economic, and other hardships. The surveys also point out that among the barriers faced by students, institutional impediments are few, and for the most part, are of lesser importance. This is not to say the University is unconcerned with institutional impediments. The University has made every effort to identify and address all institutional impediments and will continue to do so in the future. However, it must be acknowledged that even with the complete removal of all institutional impediments, students would still be confronted with significant personal, economic, and other significant obstacles to the attainment of a baccalaureate degree. As long as these obstacles remain, there will always be some level of nonpersistence and some extension of time to degree beyond four years.

So far, we have concentrated on the impediments which confront students. However, there are also number of positive institutional experiences which encourage students to persist to graduation. Surveys of graduates from the University of California consistently find that they were generally satisfied with their experiences at the University. For example, the same recent study of Berkeley graduates found that large proportions were somewhat or very satisfied with various components of the academic program (see Table 2-9).

Table 2-9

Satisfaction of 1991-92 Baccalaureate Recipients with Selected Experiences at Berkeley

Rank	Aspect of Undergraduate Experience	Dissatisfied		Satisfied	
		Very	Somewhat	Somewhat	Very
1	Quality of faculty teaching	2.3%	9.6%	49.5%	38.6%
2	Overall experience in major	3.2%	9.3%	40.7%	46.8%
3	Accessibility of major of choice	7.6%	11.7%	32.1%	48.6%
4	Quality of GSI teaching (TA)	2.9%	18.2%	49.4%	29.5%
5	Quality of student life	4.5%	23.8%	43.6%	28.0%
6	Availability of required courses in major	10.2%	21.9%	31.7%	36.2%
7	Opportunity for independent study/research	9.7%	23.4%	34.1%	32.7%
8	Campus tutoring/academic support services	12.4%	26.0%	38.0%	23.6%
9	Availability of courses outside major	12.4%	30.0%	37.1%	20.5%
10	Quality of academic advising	23.3%	34.1%	29.8%	12.8%

Source: Office of Student Research, University of California, Berkeley. June 1994.
 Note: Respondents were asked the following question: "Looking back on your experiences at Berkeley, please indicate the extent to which you were satisfied with each item."
 Student Academic Services

Very large proportions of respondents to the Berkeley survey were somewhat or very satisfied with the quality of faculty teaching (88.1%), their overall experience in their major (87.5%), the accessibility of their major of choice (80.7%), the quality of graduate teaching assistants (78.9%), the availability of required courses in their major (67.9%), and opportunities for independent study and research (66.8%). Large proportions of Berkeley graduates were also somewhat or very satisfied with the overall quality of student life on campus (71.6%) as well as with tutoring and with academic support programs (61.6%). The only area in which a majority of Berkeley graduates indicated dissatisfaction was with academic advising. Over one-half (57.4%) were somewhat or very dissatisfied with the academic advising they received. Even so, better than four out of ten indicated satisfaction with the quality of the academic advising they received. This finding supports the finding reported earlier that 20.9% of graduates who required longer than the normal time to graduate identified inadequate academic advising as one of the factors contributing to their slower pace.

Conclusion

As this brief review demonstrates, persistence, withdrawal, graduation, and time to degree are affected by a complex interaction of factors. Just as some of the factors which over the course of the century helped push persistence and graduation rates at the University of California upward are unrelated to University actions, so too are many of the forces which helped extend the average time to degree from 12.5 quarters to 13.4 quarters beyond the ability of the University to influence or control. For example, historic trends which have reduced the availability of high paying blue collar jobs and increased the wage differential between college-educated individuals and individuals with a high school education or less, undoubtedly induced a greater number of students to persist to graduation.²³ And, as noted earlier, increased competition among students for admission to the best graduate and professional schools helped cause an increase in time to degree. As a result, the usefulness of persistence rates, graduation rates, and time to degree as valid and reliable indicators of educational outcomes and institutional effectiveness is greatly abridged.

Persistence, graduation and time to degree at the University of California must also be understood within the context of the goals and priorities of public policy. For many years, beginning with the adoption of the Master Plan in California up until relatively recently, access to higher education and completion of a baccalaureate degree were among the more important goals of higher education in California. During this era of relative prosperity in California, the added costs associated with extending the time it took students to attain their degree were deemed acceptable provided improvements were made in both access to higher education and completion of the baccalaureate degree. The University of California reacted to these public policy priorities by establishing extensive outreach programs designed to increase the participation of nontraditional students in the University. Outreach efforts for nontraditional students often involve providing access for students with marginal academic records. As demonstrated earlier, students with marginal academic records are in greater risk of not completing their degree or requiring a longer time to do so. In response, the University greatly extended support programs designed to keep students enrolled and progressing toward their degree. As noted earlier, these programs were highly successful in achieving their aims, but at the expense of contributing to an increase in time to degree.

²³For a description of the wage differential based on levels of education see Bound, J. and Johnson, G. "Changes in the Structure of Wages in the 1980s: An Evaluation of Alternative Explanations." *American Economic Review*, 82 (June) 1992: 371-392.

Our purpose in undertaking this brief review of the historical, institutional, student, and policy factors that have affected persistence to graduation and time to degree has not been to identify all the causes for the noted changes.²⁴ Rather our purpose has been to demonstrate the complex nature of these measures and underscore the need to use caution when either drawing conclusions from them or seeking to initiate a change in them. Conclusions regarding institutional effectiveness drawn from measures of persistence to graduation and time to degree must recognize the influence of factors that are beyond the ability individual institutions to affect. These measures respond to the complex interaction of historical events, student decisions, institutional policies, and public policy initiatives. As a result, colleges and universities find these measures difficult to influence or change. This is not to say that institutions cannot affect change in these measures. Changes in institutional policies, such as the reorganization of the curriculum at the University of California in 1902, can have profound effects on these measures. But changes in institutional policies must strike a balance between some desired change in these measures with the needs of students, society, and the requisites of academic standards and pedagogy. As noted earlier, these measures are not the ends of higher education, they are merely surrogate and imperfect measures of the appropriate ends. The reasoned pursuit of the requisites of higher education together with the needs of society should drive change in these measures. An isolated desire to affect these measures should not drive change in the ends of higher education.

²⁴There are a number of other developments which we have not discussed which most certainly have affected these measures over the course of this century. For example, changes in funding levels for K-12 education in California as well as direct State and Federal spending on colleges and universities have long-term effects on higher education in general and these measures in particular. State and Federal policies relating to the type and amount of financial aid available to students certainly produces change in these measures as do such things as interest rates, the globalization of the economy, and changes in the type and availability of employment opportunities for college graduates. Institutional factors such as the upward compression of grades (grade inflation) may have encouraged more students to continue to graduation.

Appendix**Notes to Accompany Table 2-5**

- Note 1: Graduation rates for individual campuses prior to 1982 do not include intercampus transfer (ICT) students with the exception of Berkeley's figures for 1949 which do include ICTs. The comparable four year graduation rates, including ICTs for the class of 1949 at Davis are 32.3%, UCLA 37.7%, and UCSB 28.1%. The all UC four year graduation rate for 1949, including ICTs, was 41.0%. Source: "The Native Student Study," Berkeley, 1955.
- Note 2: Graduation rates for Berkeley's class of 1907 is based upon a sample of all students who entered Berkeley in Fall 1907. The sample of new students did not include "Limited", "Special", or "At-Large" students. The sample included all regular students within the Colleges of Social Science, College of Natural Science, and the College of Letters. The sample contained 57% of all new freshmen who entered the University in 1907. The information was derived from registration and graduation information contained in the University's "Register" for the years 1907-08, 1909-10, 1910-11, 1911-12, and 1912-13. Excluded from the sample were students in professional colleges such as the College of Medicine and the College of Mining.
- Note 3: Graduation rates for 1948 and 1955 were taken directly from "The Native Student Study: An Inquiry Into the Persistence and Achievement of Two Complete Classes Entering the University of California Directly from California High Schools, Fall 1948 and Fall 1949," University of California, Berkeley, Office of Relations With Schools, September 1955.
- Note 4: Additional graduation and persistence information from 1955 to 1960 were taken from "Student Performance and Attrition at the University of California, Berkeley: A Follow-Up of the Entering Freshmen Class of Fall 1955 and Fall 1960." University of California, Berkeley, Office of Institutional Research, January 1968.
- Note 5: Graduation rates at UCLA from 1967 through 1971 include all new freshmen who enrolled in fall quarter of the designated year.
- Note 6: Graduation rates at UCLA from 1972 through 1982 include only regularly admitted domestic students who entered in the designated fall quarter.
- Note 7: All UC graduation rates from 1979 through 1981 were taken from :Persistence and Graduation Rates for Regular and Special Action Freshmen,: University of California, Office of the President, Admissions and Outreach Services, May 1987. The figures reported here include only regularly admitted students.
- Note 8: UCLA graduation rates for 1967 through 1982 were provided by UCLA's Office of Academic Planning and Budget.