Appendix B: An Analysis of Graduation Rates at The University of Texas at Austin

The purpose of this appendix is to present an overview of some of the data that were reviewed by the task force when deciding their recommendations. Because the task force wanted a broad view of graduation rates over time, the effects of student characteristics and behaviors on graduation rates, and the effects of financial aid on timely graduation, multiple data resources were necessary. Pulling together these disparate sources of data was a time-consuming effort that required the cooperation of multiple offices on campus, including the Office of Student Financial Services, the Office of Information Management Analysis, and Liberal Arts Instructional Technology Services. Some data were obtained from publicly available records whereas others took extensive work simply to compile for analysis. In short, putting together the separate sources of data was a major undertaking.

Most of the analysis in the appendix is based on student records and financial aid data pulled for first-time-in-college (FTIC) students in the 2004 entering cohort. Because definitions used by federal agencies to calculate graduation rates are based on FTIC students, only those students were used in the analysis. Even though transfer students were ignored in these analyses, they nonetheless make up an important part of the student population and deserve similar attention in terms of data analysis and interpretation. However, given time constraints, such an analysis was not possible here and so should be conducted in the future.

The appendix is divided into five sections, each of which examines the graduation rate issue from a different perspective.

SECTION 1. GRADUATION RATE HISTORY

This section examines graduate rates over time to determine whether rates have increased or decreased over the past two decades. The section also examines whether sources of change can be identified.

SECTION 2. DEGREE COMPLETION IN THE 2004 COHORT

This section examines one cohort, FTIC students entering in 2004. The findings show how the cohort progressed over time in terms of graduation and attrition.

SECTION 3. PREDICTORS OF GRADUATION

Analyses in this section again rely on student record data for the 2004 FTIC cohort but focus on how factors such as background characteristics, major switching, and hours taken affect overall and four-year graduation rates.

SECTION 4. FINANCIAL AID AND GRADUATION RATES

Drawing on data provided by the Office of Student Financial Services and combining it with student records data, this section examines whether different types of financial aid affect graduation rates. The section also seeks to determine overall levels of financial aid provided to students with different outcome statuses.

SECTION 5. STUDENT SATISFACTION AND TIME USE.

The final section of the report relies on a different data set, the Student Experience in the Research University (SERU) survey. Although the data in the SERU survey are quite extensive, a very small subset is used in these analyses. These data are primarily used to determine how satisfied students are with different aspects of the university and whether those satisfaction levels are useful for understanding graduation rates. Time-use data from the SERU survey are also examined to determine overall levels of paid work and other types of behavior among students.

SECTION 1. GRADUATION RATE HISTORY

The four-year graduation rate at UT Austin now hovers around 50-52%. That rate stands in contrast to four-year graduation rates of over 60 or 70% at many of our peer universities around the US. Given this low relative rate, President Powers set forth the goal of achieving a 70% four-year graduation rate within five years. Indeed, his naming of this task force was done with the intention of helping the university reach the 70% goal within five years.

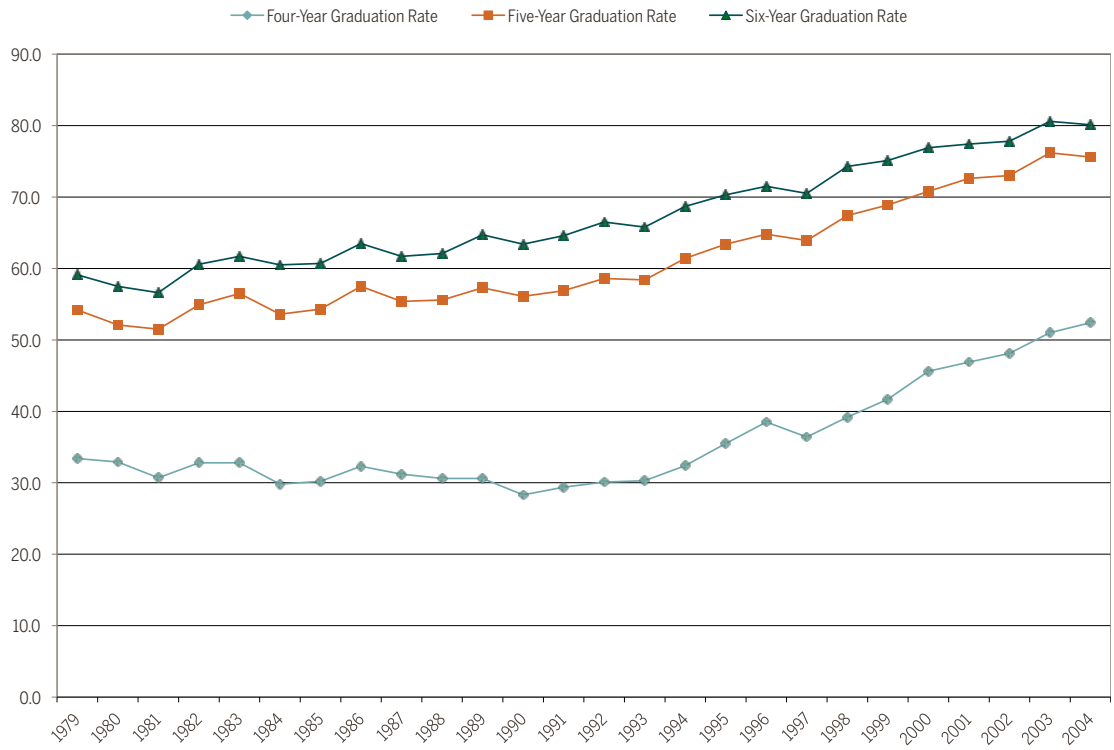
CURRENT GRADUATION RATES IN HISTORICAL PERSPECTIVE

What is less commonly understood, however, is the progress UT Austin has made over the past thirty years in improving its graduation rates. The Office of Information Management and Analyses (IMA) publishes yearly statistical handbooks that provide information on many aspects of the university, including its graduation rates. Some of these handbooks are posted on the office's website and go back to 1975-76. Using these posted handbooks, and getting additional information from IMA to fill gaps in the posted figures, it is possible to create a chart of four, five- and six-year graduation rates spanning the 1979-2004 cohorts. The initial findings from this review of the handbooks are shown in Figure 1.1.

A quick review of the chart reveals an obvious trend: in general, overall graduation rates, as measured by the six-year graduation rate, have been on the rise at UT Austin since 1979. This rise has not been uniform, but it is nonetheless consistent with only a few years of downward trend. Overall, during the past three decades the six-year rate has risen about 20 percentage points, from 60% for the 1979 cohort to 80% for the 2004 cohort. The five-year graduation rate closely parallels the six-year rate. The four-year rate, however, differs in significant ways. From 1979 to 1993, the four-year graduation rate remained essentially flat, even in the face of increases in six-year graduation rates. That difference

in trends suggests that the overall gains in overall graduation rates seen in the 1980s were less due to moving students through faster (i.e., throughput) and more due to decreasing attrition. Attrition is driven by students dropping out or being dismissed; thus the higher graduation rates in the 1980s are largely due to less of those outcomes. In 1993, four-year graduation rates began to rise, and those rates have been going up consistently over the past decade. To put the current four-year rate of 50% in perspective, the same rate in 1992 was only 30%. Thus, it is true that UT Austin's four-year graduation rate is somewhat lower than its peers, but it has consistently improved over time, especially starting in the early 1990s.

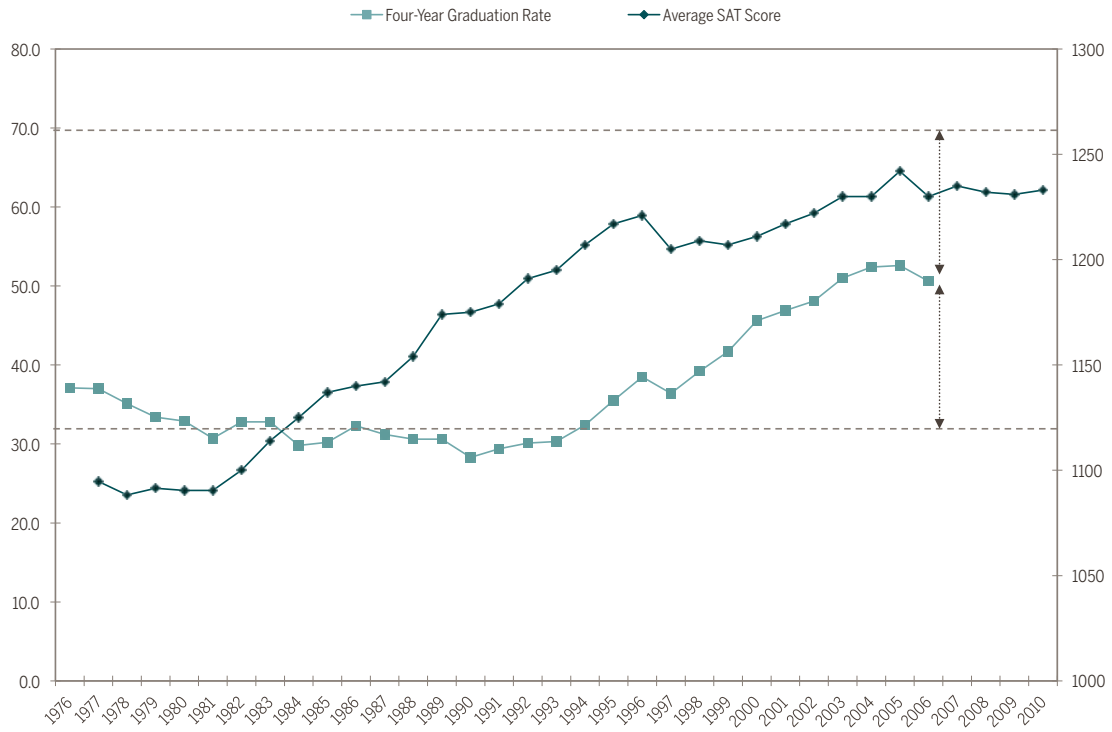
Figure 1.1 Graduation Rates among FTIC Students, 1979 - 2004 Entering Cohorts.



THE DRIVING FORCE OF SAT SCORES ON FOUR-YEAR GRADUATION RATES

What happened in the early 1990s that started driving the four-year graduation rate upward? Figure 1.2 attempts to answer this question by showing the four-year graduation rate along with average SAT score for each entering FTIC cohort. SAT scores are useful for this purpose given the common understanding that those scores are, at an institutional level, very strong predictors of overall graduation rates. Like the graduation rate data, SAT score data were also obtained from IMA records. Gaps in the posted data were filled by requests to IMA. Re-centering of SAT scores was performed, as needed, to ensure uniformity in those scores over time.

Figure 1.2 Four-Year Graduation Rates & Average SAT Scores among FTIC Students, 1975-2010 Entering Cohorts



The figure shows that in the late 1970s and early 1980s, average SAT scores were essentially flat and hovered just below 1100. Beginning in the mid-1980s, SAT scores began to rise and kept doing so, with some exceptions, until 2005. Since 2005, SAT scores again have been essentially flat, hovering around 1230. In contrast, four-year graduation rates were either flat or declined throughout the 1980s and early 1990s until about 1993. But something peculiar happened at that moment: starting in 1993, four-year graduation rates began to closely mirror the movements of SAT scores. Indeed, every year that SAT scores increased, so did the four-year graduation rate. In the two years (i.e., 1997 and 2006) that SAT scores decreased, four-year graduation rates decreased as well. We would expect that the four-year graduation rate would have mirrored SAT scores throughout the study period, but it was only during 1993 and later that such a pattern appeared.

So what happened in 1993 that fundamentally changed the university and allowed higher SAT scores to translate into higher four-year graduation rates? The discovery of this finding prompted a great deal of thought and discussion, but one possibility rose to the top and remains the most likely explanation. As many of the more experienced advisors know, 1993 was the year that professional advising took hold on campus. Before that year, students could see advisors, but usually those visits were limited to degree checks and other regulatory activities. In contrast, in 1993 advisors were being hired in departments to assist students with registration, course selection, and a variety of other issues. The appearance of advisors on campus and the fundamental change in the nature of four-year graduation rates is no simple coincidence. Rather, the finding is clear: professional advising changed this university for the better and has allowed the relatively high four-year graduation rates that it currently enjoys.

But, the figure also paints a somewhat more disheartening picture. Much of the rise in graduation rates over the past 15 years has been largely due to SAT scores. Indeed, the correlation between SAT scores

and four-year graduation rates since 1990 is about 0.89, suggesting an extremely high association between the two factors. Although this finding in itself is not problematic, what is worrisome is the fact that SAT scores have flattened over the last several years. Thus, we can predict that if the pattern over the past 15 years holds, four-year graduation rates will also flatten over the next several years. Increases in those rates in the face of flat SAT scores, especially to the level of 70%, will require fundamental change in the university. Half-measures simply will not allow the university to reach its goal.

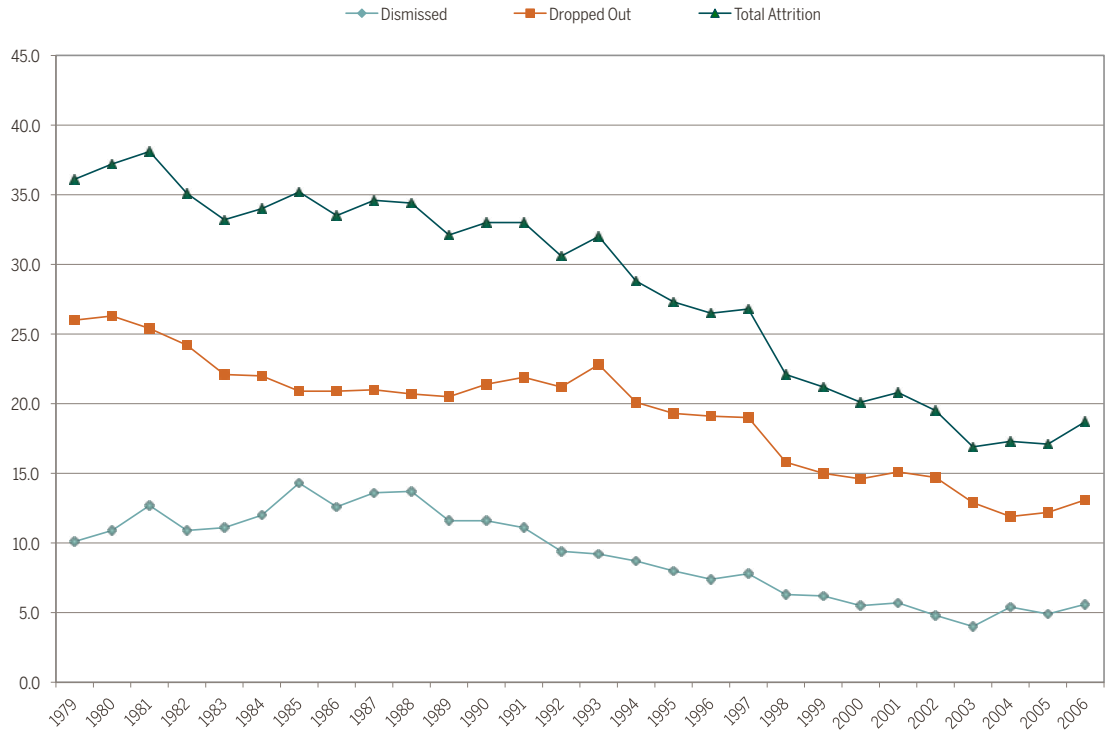
ATTRITION'S ROLE IN GRADUATION RATES

There are two primary ways to improve the four-year graduation rate. One is to increase throughput; that is, have the students who will eventually graduate do so more quickly. Increasing throughput aims to move many of the students who would graduate in five or six years into the four-year graduation rate category. Doing so will likely free up resources for other students as the smaller number of five- and six-year graduates will mean more seats in classes and more access to advisors and faculty. The other method of improving the four-year rate is to decrease attrition. Right now, students attrit either through dropping out of the university or being dismissed, mostly for academic reasons. By lowering these forms of attrition, the university can move more students into graduation, and likely, into graduating in four years. But because many students will be dismissed or drop out in their first or second years, increasing graduation rates through decreases in attrition will actually mean more resources are necessary for the current cohorts. Currently the university staffing of courses and other student services inherently assumes a certain amount of attrition. If that attrition were to disappear, more students would be on campus, and more resources would be necessary.

In short, increasing four-year graduation rates has the potential to free up resources, but in reality, it is almost certainly the case that it will not happen even if the four-year graduation rate increases. A vast majority of students who do not graduate in four years do so in five, so for every student who graduates in four, the university only "saves" about a year of resources. In contrast, for every student saved from attrition, the university will need an extra two or three years of resources, depending on the timing of the attrition. If the rate is increased evenly by decreasing attrition and increasing throughput, then, on balance, the university will actually require more resources over time to educate the same incoming cohort sizes. This difference between throughput and attrition is both fundamental to understanding what needs to be done to change graduation rates but also to understanding the consequences of those changes.

The next figure, Figure 1.3, examines attrition over time to see how the university has improved on these measures. From the first two figures we know that, by definition, because overall graduation rates have gone up, attrition has decreased. But, without the information shown in Figure 1.3, it is unclear how the decrease has occurred.

Figure 1.3 Average Attrition Rates among FTIC Students, 1979-2006 Entering Cohorts.



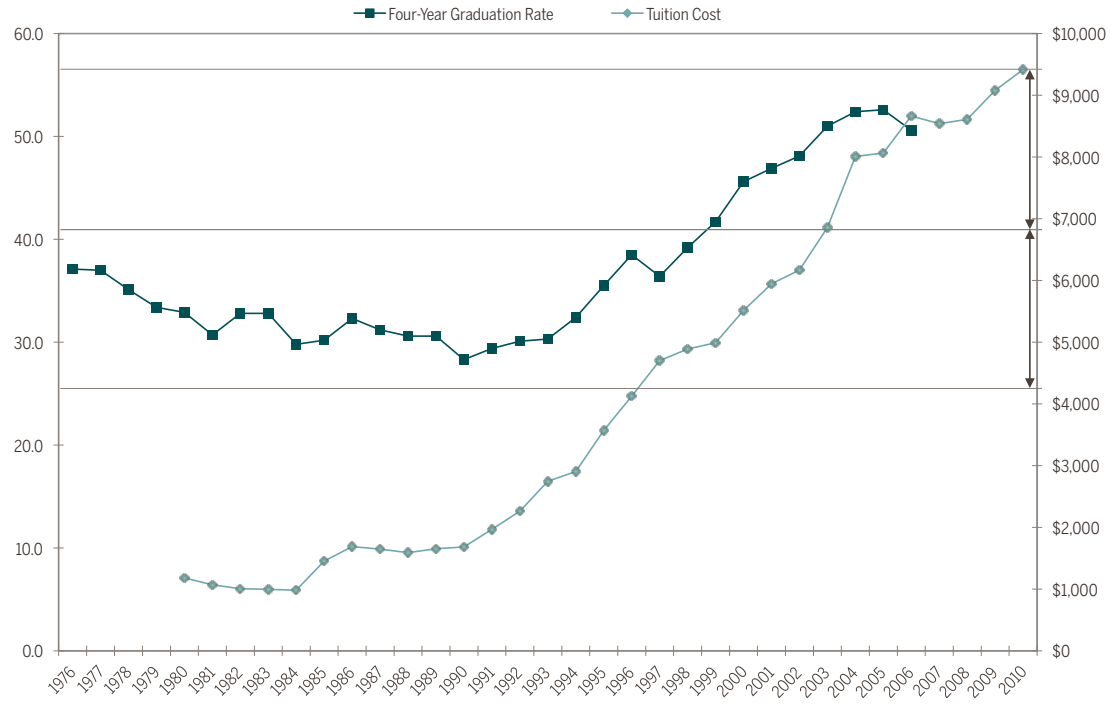
According to the figure, total attrition has dropped from about 36% in 1979 to 18% in 2006, basically being cut in half over that time. Historically students dropping out has been the major source of attrition, and although it has varied over time, about two-thirds of attrition has been due to that source. Currently, about 13% of our students attrit due to dropping out while 5% are dismissed. These findings should be celebrated by the university as they show that UT Austin has done a good job of reducing attrition over the past two decades. But from the perspective of increasing graduation rates, they also provide some warning. These two attrition rates cannot go below zero, and every point closer to zero they get, the more resource-intensive the next point is likely to be. Consequently, the 5% dismissal rate shown in the figure indicates that reducing dismissal levels even more will be both difficult and costly given their current close proximity to zero. Rates of dropping out are somewhat higher. Thus reducing those levels in an effort to boost graduation rates would likely be less resource-intensive. Regardless of where the effort is placed on attrition, given the already relatively low rates of those outcomes, reducing them will likely be difficult and costly, but of the two, solving the drop-out problem may yield the greatest results for the lowest cost.

TUITION AND GRADUATION RATES

Another method of examining trends in graduation rates is to compare them to underlying tuition costs. There is some speculation that tuition costs might actually drive graduation rates lower by placing an increasing burden on students and their families. Observers of higher education in Texas and around the nation know that tuition costs have been steadily increasing at UT Austin and most other public universities around the US. If it were the case that higher tuition costs lead to lower graduation rates, then we should see, over time, those rates falling. But, as the previous figures have shown, the opposite has

occurred: in the face of rising tuition, graduation rates have risen as well. Figure 1.4 further sheds light on these patterns by showing four-year graduation rates and tuition costs at UT Austin in 2010 dollars.

Figure 1.4 Four-Year Graduation Rates and Average Tuition Costs in 2010 Dollars, 1976-2010.



The findings in Figure 1.4 show that throughout the late 1970s and 1980s, four-year graduation rates were either flat or decreasing in general. In contrast, tuition costs, measured in 2010 dollars, were decreasing through the beginning of the 1980s, experienced a jump in the middle of the decade, leveled off again into the early 1990s. In the early 1990s, both the four-year graduation rate and tuition costs began to move together in an upward direction. Given the likely correspondence between tuition costs, selectivity in the student body, levels of college preparedness, and other factors, it is unclear whether rising tuition costs have a positive effect on graduation rates or whether higher tuition costs lead to more selectivity in the student body. It could also be the case that higher tuition costs encourage students to graduate in a more timely manner because of the increased additional costs of staying more than four years. Likewise, more investment in students' educations, via higher tuition costs, may make them more committed to receiving a degree. Clearly more research needs to be done on the issue to better understand the correlation of trends shown in Figure 1.4, but even with this brief examination, there seems to be little evidence that higher tuition costs lead to lower graduation rates.

Another useful finding on the figure concerns the deregulation of tuition. In 2003, the Texas Legislature allowed the university to set its own tuition, and, as shown in the figure, tuition experienced a significant jump in the following year. After that point, however, tuition increases have been relatively modest. The arrows in the chart show the distance in tuition covered since deregulation and then the same distance before deregulation. They show that the rise in tuition from 1996 to 2003 was about the same as 2003 to 2010. In other words, tuition has increased about as much since deregulation as it had before that change in policy over a seven-year period of time. Looking back to the years before 1996, the figure shows that the university significantly increased tuition over a five-year span. In contrast, since 2005, tuition costs have not risen nearly as much, and as the university moves forward in time, it

is likely that they will continue to rise only incrementally if at all. Assuming that trend holds true, then five years from now it will almost certainly be true that tuition costs rose at a much higher rate in the years leading up to deregulation than in the years following it.

A CLOSER LOOK AT TRENDS IN GRADUATION AND ATTRITION

It is useful to examine other trends in these outcomes as they suggest patterns that appear in the first or second year of a cohort that will be played out over subsequent years. The patterns in the early years are also important as they provide a baseline for what is even possible in terms of graduation rates in the latter years of a cohort's time at UT Austin. The figures shown in Table 1.1 provide a breakdown of graduation, attrition, and continuation for up to 10 years across the 2000-06 FTIC cohorts.

Table 1.1 Student Flow among FTIC Students, 2000-2006 Entering Cohorts.

	1 Year	2 Years	3 Years	4 Years	5 Years	6 Years	7 Years	8 Years	9 Years	10 Years
FALL 2000										
% Graduated	0.0%	0.1%	3.6%	**45.6%**	70.8%	**76.9%**	78.8%	79.8%	80.5%	80.9%
% Continuing	92.0%	85.8%	79.8%	**34.2%**	7.9%	**2.9%**	1.5%	1.0%	0.7%	0.5%
% Dismissed	2.3%	3.8%	4.7%	**5.5%**	6.0%	**5.9%**	5.8%	5.8%	5.8%	5.7%
% Dropped Out	5.7%	10.4%	11.8%	**14.8%**	15.4%	**14.3%**	13.9%	13.4%	13.1%	12.8%
FALL 2001										
% Graduated	0.0%	0.2%	4.0%	**46.9%**	72.5%	**77.4%**	79.1%	80.1%	80.8%	--
% Continuing	91.0%	84.9%	78.4%	**32.5%**	6.7%	**2.4%**	1.4%	1.0%	0.7%	--
% Dismissed	3.0%	4.2%	5.1%	**5.7%**	6.1%	**6.1%**	6.0%	5.8%	5.7%	--
% Dropped Out	6.0%	10.7%	12.6%	**14.9%**	14.7%	**14.2%**	13.5%	13.1%	12.8%	--
FALL 2002										
% Graduated	0.0%	0.2%	4.1%	**48.0%**	72.9%	**77.8%**	79.8%	80.8%	--	--
% Continuing	91.8%	85.2%	78.8%	**32.3%**	6.8%	**3.0%**	1.2%	0.7%	--	--
% Dismissed	2.4%	3.7%	4.6%	**5.3%**	5.6%	**5.6%**	5.6%	5.5%	--	--
% Dropped Out	5.8%	11.0%	12.4%	**14.3%**	14.7%	**13.6%**	13.4%	13.0%	--	--
FALL 2003										
% Graduated	0.0%	0.1%	4.3%	**50.9%**	76.2%	**80.6%**	82.1%	--	--	--
% Continuing	93.2%	86.9%	81.0%	**31.9%**	6.0%	**2.3%**	1.2%	--	--	--
% Dismissed	1.9%	3.1%	3.8%	**4.3%**	4.7%	**4.7%**	4.8%	--	--	--
% Dropped Out	4.9%	9.9%	10.9%	**12.9%**	13.2%	**12.4%**	11.9%	--	--	--
FALL 2004										
% Graduated	0.0%	0.1%	4.0%	**52.4%**	75.6%	**80.1%**	--	--	--	--
% Continuing	93.1%	86.9%	81.6%	**30.3%**	6.4%	**2.2%**	--	--	--	--
% Dismissed	2.4%	4.0%	4.7%	**5.3%**	5.8%	**5.8%**	--	--	--	--
% Dropped Out	4.4%	9.0%	9.7%	**12.0%**	12.2%	**11.8%**	--	--	--	--
FALL 2005										
% Graduated	0.0%	0.1%	4.1%	**52.6%**	76.5%	--	--	--	--	--

	1 Year	2 Years	3 Years	4 Years	5 Years	6 Years	7 Years	8 Years	9 Years	10 Years
% Continuing	92.5%	87.6%	81.4%	**30.3%**	6.0%	--	--	--	--	--
% Dismissed	2.3%	3.6%	4.3%	**4.9%**	5.0%	--	--	--	--	--
% Dropped Out	5.1%	8.7%	10.2%	**12.1%**	12.5%	--	--	--	--	--
FALL 2006										
% Graduated	0.0%	0.1%	3.7%	**50.6%**	--	--	--	--	--	--
% Continuing	91.9%	86.9%	81.0%	**30.7%**	--	--	--	--	--	--
% Dismissed	2.8%	4.0%	4.8%	**5.6%**	--	--	--	--	--	--
% Dropped Out	5.3%	9.0%	10.5%	**13.1%**	--	--	--	--	--	--
% Dismissed	2.8%	4.0%	4.8%	**5.6%**	--	--	--	--	--	--
% Dropped Out	5.3%	9.0%	10.5%	**13.1%**	--	--	--	--	--	--

The first important statistic on the table is shown in the first year column. The continuing entry in that column is what is commonly referred to as the first-year retention rate. The goal of all universities is to achieve a high first-year retention rate given that timely graduation is predicated on staying past that first year. According to the findings in the table, the first-year retention rate for the last several years has hovered around 92%. One way of increasing the four-year graduation rate would be to increase that retention rate figure, possibly taking it above 95%. A majority of the attrition during that first year is due to students dropping out. Thus to increase retention, the university would need to find ways to avoid that specific outcome.

Another important result coming from this table is found by comparing graduation, continuation and attrition in the fourth and sixth years. Comparing these years, one sees that the percentage of students having dropped out and been dismissed is very similar over time. These are not necessarily all the same students within a given cohort, but the overlap is no doubt extremely large. More importantly, their comparability shows that the majority of students who graduate in five or six years rather than four are not coming from the attrition categories; rather, they are coming from students who were continuing in the fourth year and simply graduated later. Put another way, if these patterns hold, by the fourth year it is fairly easy to predict, with some accuracy, what the six-year graduation rate will be.

Finally, the table shows that although the six-year rate is, for the most part, the total graduation rate, some students do continue to graduate after the sixth year. Across the cohorts for which we have more than six years of data, it appears that the graduation rate rises two percentage points in the seventh year and then another two points across years eight, nine, and ten. Thus, based on the six-year graduation rate, we can fairly accurately predict the total graduation rate.

GRADUATION BY SEMESTER

As shown in the previous table, graduation is most common in the fourth and fifth years, with the majority of graduations in the fourth. For the past several cohorts, the fifth-year rate is above 70%, and for the 2003 and 2004 cohorts, it was well above 70% at about 76%. Those figures suggest that to meet a four-year graduation rate of 70%, the university would simply need to find a way to shave a single year off of the educational experience of many of the five-year graduates to achieve the goal. The reality

is that for many of the five-year graduates, the university has to reduce their time-to-degree by only a single semester to have them hit the four-year mark. Table 1.2 shows how graduation rates vary by semester in an effort to understand just how much change would be necessary to hit the 70% threshold.

Table 1.2 Graduation Rates by Year and Semester Graduated among FTIC Students, 1998-2006 Entering Cohorts.

	1998	1999	2000	2001	2002	2003	2004	2005	2006
Cohort Size	6,597	6,925	7,559	7,208	7,845	6,485	6,750	6,791	7,369
After 4 Years									
Number	2,577	2,886	3,444	3,383	3,769	3,300	3,540	3,572	3,731
Percentage	39.1%	41.7%	45.6%	46.9%	48.0%	50.9%	52.4%	52.6%	50.6%
Plus Additional Semester									
Number	3,381	3,705	4,331	4,211	4,674	4,033	4,303	4,338	4,482
Percentage	51.3%	53.5%	57.3%	58.4%	59.6%	62.2%	63.7%	63.9%	60.8%
Plus Two Semesters									
Number	4,199	4,541	5,113	5,054	5,523	4,803	4,986	5,052	5,312
Percentage	63.7%	65.6%	67.6%	70.1%	70.4%	74.1%	73.9%	74.4%	72.1%
After 5 Years									
Number	4,430	4,772	5,351	5,226	5,720	4,941	5,105	5,193	--
Percentage	67.2%	68.9%	70.8%	72.5%	72.9%	76.2%	75.6%	76.5%	--
Plus Additional Semester									
Number	4,651	4,956	5,567	5,391	5,887	5,062	5,242	5,337	--
Percentage	70.5%	71.6%	73.6%	74.8%	75.0%	78.1%	77.7%	78.6%	--
Plus Two Semesters									
Number	4,811	5,127	5,742	5,521	6,049	5,187	5,363	5,459	--
Percentage	72.9%	74.0%	76.0%	76.6%	77.1%	80.0%	79.5%	80.4%	--
After 6 Years									
Number	4,880	5,195	5,810	5,576	6,100	5,225	5,410	--	--
Percentage	74.0%	75.0%	76.9%	77.4%	77.8%	80.6%	80.1%	--	--

Fourth-year graduation is calculated based on the number of students who have graduated before the fall of the fifth year after matriculation and includes the summer in the fourth year. Consequently, for the 2004 FTIC cohort, fourth-year graduates are those who finished before the fall of 2008. According to Table 1.2, we see that the four-year graduation rate is 52.4% among the 6,750 FTIC students entering with that cohort. The next item in that column reflects fourth-year graduation plus an additional semester, ie., for the 2004 cohort, graduating in fall 2008. That number is 63.7%, substantially closer to the 70% goal. Adding another semester yields a graduation rate of 73.9%. In short, for UT Austin to hit a graduation rate of 70% in four years, it would need to lower the time-to-degree a single semester for about 800 students and two semesters for another 400. From that perspective, the task of achieving a 70% four-year graduation rate is much less daunting. Meeting that goal does not mean reducing time-to-degree by two years for a large number of students; rather, it means reducing it by a single semester for many and then two semesters for a few hundred more. Cohorts since 2004 have shown

similar patterns, suggesting that reaching the goal does mean reducing time-to-degree by a small amount for many students.

SECTION 2: DEGREE COMPLETION IN THE 2004 COHORT

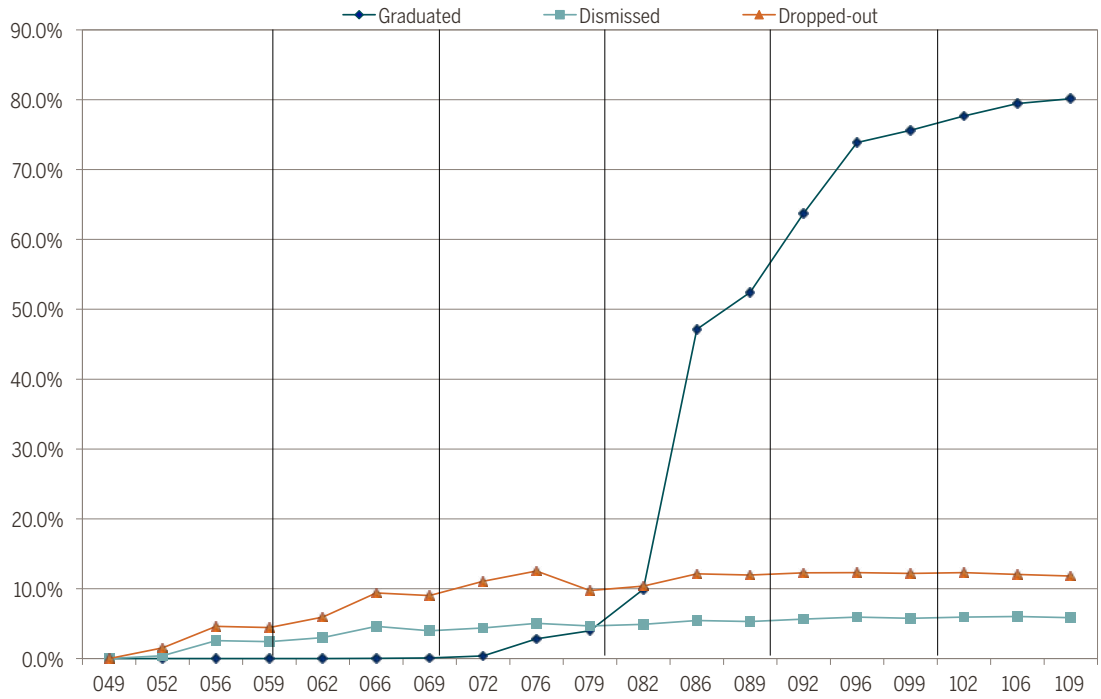
This section begins to focus directly on the 2004 FTIC cohort. This cohort was chosen for study because it is the most recently available cohort that is also able to provide at least six years of data. Numerous elements of data were pulled from students' records to compile the data set. The data included incoming characteristics, such as credit-by-exam, SAT scores, high school rank, and parental information. It also included majors, hours completed, hours attempted, GPAs, and a variety of other factors for each semester over the six-year period. The final data set included over 40 such variables from the 6,750 students in the cohort measured over 19 semesters. This data set allowed for a very fine-grained examination of the factors that lead to graduation rates and attrition. Although the findings from the data may not perfectly reflect what would be found if other cohorts were used, it is no doubt indicative of patterns in other cohorts.

Yet, there are two issues with these data that do not reflect current incoming cohorts. First, the data set contains students who were admitted in the Summer Freshman Class (SFC) and counted as FTIC students. The SFC program no longer exists, thus the data are incomparable on that point to current cohorts. Second, the 2004 cohort began before the formation of the School of Undergraduate Studies. Most of the students in more recent cohorts who began in Undergraduate Studies likely were similar to some of those who started in the Colleges of Liberal Arts and Natural Sciences (the two cascade colleges) in this data set. Nevertheless, even with these two differences, it is likely that the data are useful for helping us understand graduation rates.

PROGRESSION OVER TIME OF THE 2004 COHORT

The first part of the analysis of the 2004 cohort, as discussed in this section, provides an overview of the progression of the cohort over time and by college. Figure 2.1 shows graduation and attrition rates for the cohort over a six-year period. Semesters are labeled according to university convention: the first four digits are the year, the final is the semester (9 = fall; 2 = spring, 6 = summer). The points in the chart are read to reflect the status as of that semester, thus the event in question actually happened in the previous semester. For example, to find the four-year graduation rate, one would locate the graduation rate line in the chart and reference it against the value for '089' (i.e., fall, 2008). The largest jump in the chart on the graduation rate occurs for 086, meaning students who graduated in spring, 2008. There is a small upward trend for summer 2008 and then two larger ones for fall 2008 and spring 2009.

Figure 2.1 Graduation and Attrition Rates over Time for the 2004 FTIC Cohort.



Per the attrition lines, the chart shows that most of the attrition happens in the first two years. By the end of the second year, about 10% of the cohort has dropped out, and few more drop out after that point in time. Likewise, a vast majority of the dismissed students have achieved that status by the end of the second year; after that point, the trend line for dismissals is essentially flat.

If this pattern is true for other cohorts, it leads to two conclusions. First, as shown in the previous section, increasing throughput in a way that meaningfully boosts four-year graduation rates means cutting a semester or two off of time-to-degree for a few hundred students. Second, if the university is to improve graduation rates by reducing attrition, it must focus on the first two years and especially the first year. The most efficacious efforts will likely involve focusing on the prevention of attrition rather than on helping those who have left or been dismissed go on to graduate. Indeed, according to findings not shown here, the data reveal that of the students who are dismissed once, only about 10% go on to eventually graduate. Put another way, practically speaking, once a student is dismissed, the likelihood of eventual graduation is small. Thus, the university should put most of its effort in preventing that first dismissal.

GRADUATION AND ATTRITION OUTCOMES BY COLLEGE

The next portion of the analysis breaks up the 2004 cohort by starting college. The first part of this work is shown in Table 2.1. The table shows the number and percentage of students entering each college, attrition and graduation rates by college, and the percentages graduating in the same college or a different one by the four-year mark.

Table 2.1 Graduation Rates and Attrition by Starting College among FTIC Students, 2004 Cohort.

	Cohort Composition		Six-Year Status among Non-Graduates			Graduated			Finishing College for Four-year Graduates	
	#	%	Enrolled	Dismissed	Dropped	4 years	5 years	6 years	Different	Same
Business	776	11.5%	0.8%	3.0%	4.1%	61.7%	28.4%	2.1%	4.5%	57.2%
Education	248	3.7%	1.2%	3.6%	9.7%	56.5%	25.0%	4.0%	12.5%	44.0%
Engineering	1,246	18.5%	3.0%	8.1%	12.5%	38.9%	31.6%	5.8%	9.3%	29.6%
Fine Arts	208	3.1%	1.9%	6.3%	13.0%	53.8%	20.7%	4.3%	14.9%	38.9%
Architecture	50	0.7%	0.0%	2.0%	2.0%	36.0%	44.0%	16.0%	20.0%	16.0%
Communication	469	6.9%	1.3%	2.6%	9.6%	70.4%	14.1%	2.1%	9.0%	61.4%
Natural Sciences	1,747	25.9%	3.4%	6.7%	14.0%	47.6%	22.1%	6.2%	17.5%	30.1%
Liberal Arts	1,863	27.6%	1.6%	5.7%	12.9%	57.8%	18.3%	3.7%	18.6%	39.2%
Nursing	112	1.7%	2.7%	8.0%	18.8%	45.5%	24.1%	0.9%	17.0%	28.6%
Social Work	31	0.5%	0.0%	6.5%	19.4%	58.1%	12.9%	3.2%	12.9%	45.2%

The findings show that the modal starting college for this cohort was Liberal Arts with 27.6% of the entering students. Natural Sciences was a close second with 25.9% of the students, and Engineering was third with 18.5%. The colleges with the smallest incoming cohorts were Social Work (0.5%), Architecture (0.7%), and Nursing (1.7%).

Based on the sixth-year status values, rates of dropping out and dismissal varied widely among colleges. Architecture recorded the lowest attrition rates at 2% dropping out and 2% being dismissed. Business recorded similarly low levels of attrition. In contrast, Nursing and Engineering recorded relatively high levels of dismissal at about 8%. Drop-outs were most frequent in Nursing and Social Work, both at about 19%. Although the attrition rates are high for these colleges, because their entering cohort sizes are relatively small, combined they comprised only 2.2% of the total entering cohort, their overall attrition levels have a small effect on the graduation rate for the cohort as a whole.

The next panel in the table shows four-, five- and six-year graduation rates by college. The highest four-year graduation rate occurs in Communication; indeed, their rate, 70.4%, already matches the four-year graduation rate goal set forth by the President. The next highest four-year graduation rate occurs for Business at 61.7%. The Business rate is actually substantially higher if their five-year Master in Professional Accounting (MPA) program is removed from the calculation. The lowest four-year rates occur in Architecture (36.0%) and Engineering (38.9%). Because of Architecture's small size, its low four-year rate has little bearing on the overall cohort rate; however, Engineering's relatively large size means that its low rate has a substantial effect on the overall graduation rate.

The final panel examines four-year graduates but differentiates by whether students starting in a particular college graduated in that same college or in another. Like their overall high graduation rates, Business and Communication have few students who enter those colleges yet graduate elsewhere. In contrast, several other colleges, including Liberal Arts and Natural Sciences, matriculate relatively large groups who graduate in four years in other colleges. Given the status of those two colleges as the cascading colleges for this cohort, it is not surprising that some students who start there will finish elsewhere.

INCOMING STUDENT CHARACTERISTICS BY COLLEGE

The next table, Table 2.2, continues the examination of students by college but instead shows student-entering characteristics by college. The examined characteristics include high school percentage ranking, entering course credit through credit-by-exam and transfer work, and SAT scores. All of these measures are thought to predict student success, including graduation rates, and might help explain the differences between colleges shown in Table 2.1

Table 2.2 Incoming Student Characteristics by Starting College among FTIC Students, 2004 Cohort.

	High School Percentage Rank				Incoming Credits		SAT Scores						
	.01 – 5	5.01 – 10	10.01 – 15	15.01 +	CBE	Trans.	Avg.	< 1000	1000 – 1099	1100 – 1199	1200 – 1299	1300 – 1399	1400 +
Business	81.1%	11.6%	1.5%	0.6%	13.0	6.2	1277	4.8%	7.5%	14.8%	22.4%	27.2%	23.3%
Education	14.9%	25.0%	14.5%	37.9%	3.4	4.5	1123	16.9%	22.2%	28.2%	25.8%	6.0%	0.8%
Engineering	37.5%	26.2%	12.0%	15.9%	10.8	5.4	1279	5.0%	6.9%	16.2%	21.5%	27.0%	23.4%
Fine Arts	17.8%	13.9%	15.9%	35.6%	6.3	3.6	1218	4.3%	9.1%	33.7%	24.0%	20.2%	8.7%
Architecture	54.0%	12.0%	14.0%	6.0%	9.6	4.3	1360	0.0%	0.0%	0.0%	30.0%	36.0%	34.0%
Communication	45.0%	31.3%	6.0%	8.5%	8.2	5.9	1217	6.8%	11.7%	23.0%	26.2%	22.2%	10.0%
Natural Sci	34.1%	30.2%	14.4%	14.3%	6.6	6.0	1219	9.2%	11.6%	19.5%	26.4%	20.5%	12.7%
Liberal Arts	19.0%	34.2%	16.6%	20.4%	8.8	4.2	1201	10.9%	12.0%	22.0%	25.7%	19.8%	9.7%
Nursing	55.4%	42.0%	1.8%	0.0%	3.5	6.6	1060	33.9%	20.5%	27.7%	12.5%	4.5%	0.9%
Social Work	6.5%	54.8%	16.1%	16.1%	4.1	2.8	1109	22.6%	16.1%	38.7%	12.9%	9.7%	0.0%

The first panel of the table shows the percentages of students matriculating into each college by high school percentage rank. The panel shows, for example, for the students entering Business, 81% were ranked among the top 5% in their high school class, the largest such accumulation of high ranking students in the university. Architecture and Nursing also matriculate a high percentage of their students from the top 5% of high school classes. In contrast, fewer than 20% of the entering classes of Education, Fine Arts, Liberal Arts, and Social Work are from this pool of highly ranked students. Those same colleges tend also to enroll the largest numbers of students who are ranked 15% or below in their high school graduating classes.

The next two columns of Table 2.2 show incoming course credit through credit-by-exam (CBE) and transfer work from other colleges and dual-enrollment. CBE credit is highest in Business, Engineering, and Architecture. Transfer credit is more evenly distributed across colleges, though students in Social Work and Fine Arts report relatively low numbers. Combining these two types of credits shows that, for example, the typical student entering the Business school starts with about 19 hours of course credit before a single class is taken at UT Austin. At the other end of the spectrum, students starting with Social Work begin with only about seven hours of credit on average.

The final panel of the table breaks down average SAT scores by college. As was the case for high school rank, students with the highest SAT scores clustered in Business, Engineering, and Architecture. The

lowest SAT scores were recorded for Education, Nursing, and Social Work, again patterns similar to those found for high school rank.

Comparing the patterns in Table 2.2 to those in 2.1, we find unsurprising results. The colleges enrolling students with the highest class ranks, SAT scores, and incoming course credit, tend, on average, to also be the colleges with the lowest drop-out and dismissal rates. Engineering, however, does not follow this pattern: Its students report relatively high incoming scores, but its attrition rate is about 20.6%. That attrition rate makes it similar to or higher than other schools with lower incoming scores, such as Education and Liberal Arts.

Four-year graduation rates do not track as closely on incoming scores. Indeed, the college with the highest four-year graduation rate, Communication, has a lower average SAT score and high school rank than several other colleges that have lower four-year rates. Some of this difference is no doubt due to the five-year programs in two of the colleges, Business and Architecture, which sets back their four-year graduation rate. If it were the case that Business were to modify its MPA program so that four-year graduation was possible, and Architecture modified its degree plans to accommodate the same goal, it is likely that both schools would significantly increase their four-year graduation rates and perhaps surpass those for Communication.

TOTALING THE COST OF EXCESS TIME-TO-DEGREE

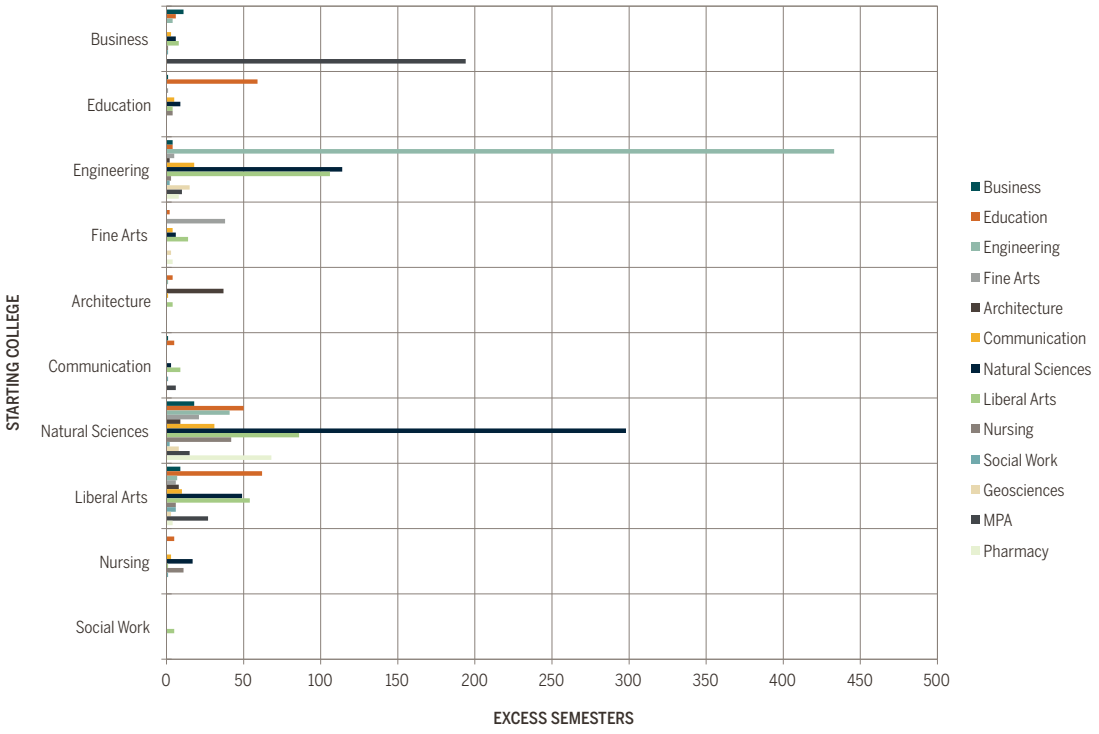
As noted earlier, longer time-to-degree in some colleges does not have a large effect on the overall four-year graduation rate due to the small size of the incoming cohorts for those colleges. In contrast, other colleges with large incoming cohorts and long time-to-degree have a large impact on the overall rate. To quantify these differences by colleges, a simple score was created that counts the number of excess long semesters above eight that each student in that college took to graduate. These excess semesters were then summed across all students in the college to determine how many excess semesters were contributed by all students in the college. Higher scores on this count indicate larger negative effects on the university-wide four-year graduation rate. Thus, they provide, in a sense, a snapshot of where the most problems in the four-year graduation rate are occurring.

But to perform such an analysis correctly, we must also distinguish between where students started and ended their careers at UT Austin. Many students switch colleges, and it is likely that these switches add extra semesters to time-to-degree. An analysis that simply examined only starting or finishing college would ignore this meaningful complexity that likely leads to longer time-to-degree.

The findings in Figure 2.2 show the results of this analysis. Starting colleges are listed on the left side of the chart, and the bars represent the finishing colleges. The length of the bar indicates the excess number of semesters, above eight, that students took to graduate in that starting-finishing college pattern. For example, the top college in the chart, Business, shows very small bars for all college combinations, except one, the Business-MPA combination. Students following this path contributed almost 200 total semesters to the overall excess number of semesters for the university. In Education, the largest contributor were students who started and finished in Education, but comparatively speaking, those students as a whole contributed few excess semesters with a total under 50. The next college, Engineering, shows the largest contribution to excess semesters. Students who started and finished in Engineering contributed about 440 excess semesters, far above any other college combination in the university. Students who switched out of Engineering and finished in Natural Sciences and Liberal

Arts also contributed more excess semesters than almost any other combination in the university. The combination that provided the second-most excessive hours was starting and finishing in Natural Sciences, with an excess of about 300 semesters. Students switching out of Natural Sciences into other colleges also contributed more than many other combinations across the university. It is important to note one finding for Communication: Even though it is not shown in the figure, some of the bars for that college are negative. Those negative values indicate that many students in those combinations took fewer than eight semesters to graduate and drove their excess below zero.

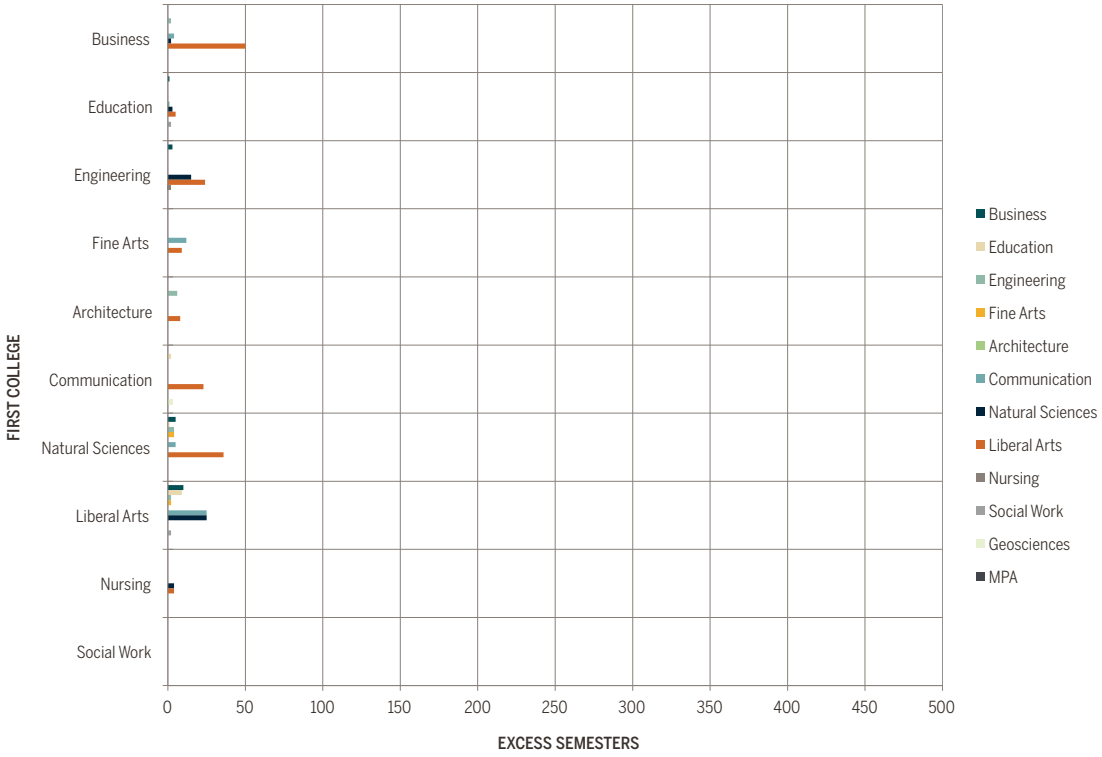
Figure 2.2 Excess Semsters above Four-Year Graduation among Single and Double Majors by Starting and Finishing College, 2004 FTIC Cohort. (Total semesters = 2,122)



Across the university a total of 2,122 excess semesters were generated by all of these patterns. If these excess semesters are multiplied by tuition costs for each college, that number translates into more than $10 million in excess tuition paid to complete degrees. Most of those excess semesters did not come from students changing schools; rather, they came from students who started and finished in the same colleges. It may be the case that changing schools increases time-to-degree, but those small increases, combined with the relatively small number of students who make those switches, means that college changers have a smaller impact on the overall number of excess semesters.

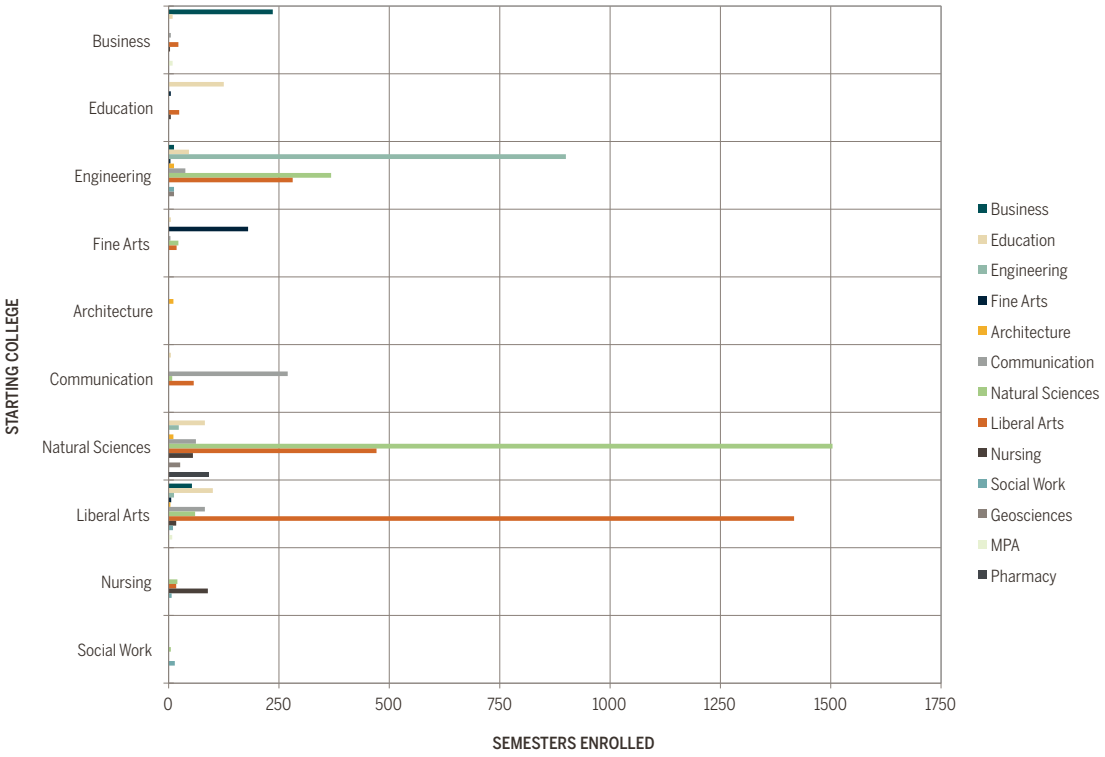
Figure 2.2 examined only excessive semesters for students with single and double-majors. Dual degree students were excluded from that figure but are shown on their own in Figure 2.3. The bars in this figure are set to the same scale as those in Figure 2.2. The colleges listed on the left side and in the bars are the two colleges making up the dual-degree upon graduation. The findings from this figure are readily apparent: Although dual-degrees may increase time-to-degree, because few students pursue them, they contribute a very small part to the overall number of excess semesters for the university. Efforts meant to boost four-year rates in total might benefit from improving time-to-degree among these students, but as the figure shows, the potential gain is very small for any given dual degree combination.

Figure 2.3 Excess Semesters above Four-Year Graduation among Dual Degree Students by College Combination, 2004 FTIC Cohort. (Total semesters = 314)



The previous two figures examined the issue of throughput, that is, how much extra time students took to graduate. Figure 2.4 examines a different issue, the number of semesters that were completed among students who had not finished a degree by the end of the sixth year. As noted previously, some of these students, perhaps up to 4% of all students, will go on to receive a degree. But a vast majority of them will not, meaning that from the perspective of UT Austin, these are semesters used that did not contribute to the graduation rate in a positive way. As was the case with Figure 2.2, colleges shown on the left are the starting college, and the bars are the last college in which students were enrolled.

Figure 2.4 Semesters Completed among Single and Double Majors who did not Graduate within Six Years by College Combination, 2004 FTIC Cohort. (Total semesters = 6,954)



The patterns in Figure 2.4 are similar to those in 2.2 but vary in some very meaningful ways. First, the students who contributed the most to the "lost" semesters were students who started and finished in Natural Sciences. The second largest contributors were students starting and finishing in Liberal Arts. Students in Engineering, and those switching from Natural Sciences to Liberal Arts, also contributed relatively high numbers. In total, 6,954 of these semesters were recorded by this cohort, which translates into a tuition cost of over $33 million.

An examination of both Figures 2.2 and 2.4 show where, from the college perspective, work is needed. For Engineering and Natural Sciences, both attrition and throughput are issues that contribute heavily to overall time-to-degree for the university. For Liberal Arts, the driving issue is attrition. For other colleges, such as Communication, throughput is not an issue at all, but strides could be made in attrition.

In sum, these figures show that across the university, the drive to increase four-year rates may vary based on the underlying needs of the college. Communication, for example, may not benefit much from efforts to increase throughput, but they could benefit from efforts to reduce attrition. Liberal Arts clearly needs to focus efforts on attrition but cannot completely neglect throughput issues. Finally, the results indicate that without substantial reductions in these figures for Natural Sciences and Engineering, it is unlikely that the university as a whole will see dramatic increases in the four-year graduation rate.

SECTION 3: PREDICTORS OF GRADUATION

The previous section of the report showed that graduation rates, time-to-degree, patterns of attrition, and other factors varied substantially across colleges. A look at incoming ranks, scores, and course credit revealed some patterns, but they were not large and not always consistent. Thus, to better understand overall rates in four-year graduation and other outcomes, it is necessary to look at individual level data to find the predictors of those outcomes. This section of the report attempts to accomplish that goal by again relying on the student record data for the 2004 FTIC cohort.

The section begins by looking at relationships between potential predictors and outcomes without adjustments for other predictors. These analyses give a first glance at how predictors are related and reveal findings that are commonly assumed to be true by many. As the section progresses, the work becomes more complex and ends with an analysis that combines all potential predictors into a single model. In those models one can see whether commonly assumed factors, such as first generation status or SAT scores, continue to predict success even in the presence of hours taken per semester and other factors.

Some of the measures used in this section are counts of activities undertaken over the first four years of students' careers. Because the goal of much of the analysis is to predict four-year graduation, to make meaningful comparisons between students, all students in the analysis must be exposed to that same window of time for behaviors to take place. Thus, even for five- and six-year graduates, in some of the analyses only the first four years of their time at UT Austin are used. Similarly, students who finished in fewer than four years are excluded from analysis because they did not have that potential four-year window of opportunity. In the places where the sample is modified to account for this four-year window, the text makes note of the procedure.

BACKGROUND FACTORS AND GRADUATION OUTCOMES

The section begins by looking at the association between demographic characteristics and graduation outcomes. Other literature has pointed to the importance of factors such as parental education and Pell grant eligibility as important predictors of graduation and attrition. The first table, Table 3.1, examines these two factors along with race/ethnicity and sex.

According to the findings in Table 3.1, attrition and graduation rates vary substantially by race/ethnicity. Among all groups, attrition tends to be lowest, and four-year graduation rates the highest, among Asian and White students. In contrast, attrition is highest and four-year rates are lowest among Black and Hispanic students. The differences between the sexes also appear: In general, women have lower attrition rates and shorter time-to-degree. Indeed, the percentage of women graduating in four years is over 10 percentage points higher than men graduating in that same number of years. Women also constitute a larger portion of the cohort, a trend reflected at many other universities around the US.

Table 3.1 Average Graduation and Attrition Rates by Demographic Characteristics.

	Cohort Composition		6-Year Status			Graduated		
	#	%	Enrolled	Dismissed	Dropped	4 years	5 years	6 years
Race/Ethnicity								
American Indian	29	0.4%	3.4%	0.0%	10.3%	41.4%	31.0%	13.8%
Asian	1,239	18.4%	2.1%	3.6%	10.3%	54.7%	25.3%	4.1%
Black	307	4.5%	2.9%	13.7%	17.6%	39.1%	23.5%	3.3%
Foreign	128	1.9%	3.9%	5.5%	15.6%	43.8%	28.9%	2.3%
Hispanic	1,143	16.9%	2.5%	11.5%	14.9%	40.1%	24.9%	6.1%
White	3,887	57.6%	2.0%	4.4%	10.9%	56.8%	21.7%	4.3%
Sex								
Female	3,695	54.7%	1.9%	4.3%	11.1%	57.2%	21.5%	4.0%
Male	3,055	45.3%	2.6%	7.7%	12.7%	46.7%	25.2%	5.1%
Parents' Education								
No college	668	9.9%	2.7%	12.7%	17.1%	38.5%	23.7%	5.4%
Some college/no degree	1,194	17.7%	3.1%	9.1%	16.1%	42.7%	23.7%	5.3%
One 4-year+ degree	1,646	24.4%	3.1%	6.7%	12.2%	50.8%	22.5%	4.7%
Two 4-year+ degrees	3,242	48.0%	1.3%	2.7%	9.0%	59.7%	23.3%	3.9%
Pell Eligibility								
Pell eligible	1,311	19.4%	3.5%	10.6%	14.6%	39.1%	25.6%	6.5%
Not Pell eligible	2,346	34.8%	1.8%	5.1%	10.9%	57.2%	21.3%	3.7%
No financial aid application	3,093	45.8%	1.9%	4.4%	11.3%	54.5%	23.6%	4.3%

Two factors that are often considered important predictors of student outcomes show expected patterns here. According to the rows for parental education, students whose parents had no college experience (i.e., first-generation college students) had the highest attrition rates at almost 30% and the lowest four-year graduation rate at about 39%. In contrast, students whose parents both have four-year degrees report a 60% four-year graduation rate. Previous speculation over the association between graduation and parental education has focused on the first-generation effect, that is, the relatively low graduation rate among first-generation students. But this table shows that even students who are not first-generation are still disadvantaged in terms of graduation rates if their parents did not both earn at least a four-year degree. Indeed, students whose parents have some college, but no degree, are much more analogous to first-generation students than they are to students whose parents have at least a four-year degree.

The Pell eligibility findings are also not unexpected. Eligibility for Pell grants is based on the expected financial contribution to students' educations that can be made by their families (EFC). These estimates are based on financial aid applications made to the Office of Student Financial Services, and for the 2004 cohort, Pell eligibility in the first year required an EFC of less than $3,850, a very low amount. Students whose families could contribute more, even marginally so, are not considered Pell eligible. Thus, the Pell eligibility category itself is a somewhat arbitrary dividing line of family financial contributions that might overlook important differences in the abilities of families to help their students. In addition, for students who did not complete the financial aid application, Pell eligibility cannot be determined;

consequently, it is almost certainly the case that some students who are actually Pell eligible are not recorded as such due to the application requirement.

In this table, a distinction is made between students who met the Pell eligibility criterion, those who completed the financial aid application but were not eligible, and those who did not complete the application. The results show that students who were eligible reported the highest attrition rate at about 25% and lowest four-year graduation rate at about 39%. Those who filled out the forms but were not eligible had the best outcomes, and those who did not complete the forms fell between the two. The latter finding might reflect the students with very low EFC levels but who did not complete the application and thus were not coded as Pell eligible.

The next table, Table 3.2, examines the academic characteristics of the incoming students. The table includes an examination of SAT scores, credit-by-exam hours, transfer hours, high school class rank, and mode of admission. Given previous research and the likely relationship between college readiness, as indicated by these scores, and college success, it is likely that most are strong predictors of graduation rates.

As expected, students with higher incoming SAT scores had lower attrition rates and shorter time-to-degrees. The difference in four-year graduation rates between those with the highest and lowest scores was about 32 percentage points. Put another way, those with the highest scores were about twice as likely to graduate in four years as those with the lowest.

Similar patterns are shown for credit-by-exam. Those with no hours of incoming CBE had a 35% four-year rate compared to a 72% rate for those with 31 or more hours of CBE. This gap is actually wider than the SAT gap, perhaps because of what CBE represents. Much of the CBE hours are based on AP courses taken in high school. Passing the courses and tests needed to claim credit are difficult and likely indicative of student ability. But the availability of these courses across the state varies widely and may reflect the underlying characteristics of the high schools from which students graduated. Thus, to have high levels of CBE, students must both perform well and attend the kind of schools that provide the opportunity to complete a large variety of AP courses. Students with low CBE hours likely did not have access to those courses or could not complete them at the level needed to pass the exams that grant credit.

High levels of incoming CBE also means more than just strong college preparedness: It gives those students a firm advantage over students with little or no such credit. Registration at UT Austin is based on number of hours completed such that students with more hours get to register ahead of those with fewer hours. Consequently, in a given incoming class, registration priority will vary across students based on the amount of CBE, and transfer work, that they claim. It is common to hear stories of students starting at UT Austin in their first year and immediately claiming sophomore, or even junior, status due to incoming course credit. These credits put those students at a great advantage in terms of readiness, but because of UT's registration policies, it doubles that advantage through the priority registration system.

It is not surprising then that students with high levels of transfer work at matriculation also have higher four-year rates. In contrast to CBE, however, the rate for the highest group is only about 12 percentage points higher than the lowest group, a substantially smaller gap than that shown for CBE. Moreover, high levels of CBE provide significant protection against attrition, especially in terms of dismissal, but transfer hours do not show the same value. Indeed, those with the most hours have similar or higher attrition rates than many groups below them.

Table 3.2 Average Graduation and Attrition Rates by Academic Background Factors.

	Cohort Composition		Six-Year Status			Graduated		
	#	%	Enrolled	Dismissed	Dropped	4 years	5 years	6 years
SAT Score								
< 1000	591	8.8%	2.9%	15.6%	19.6%	32.0%	23.5%	6.4%
1000 - 1099	727	10.8%	2.8%	8.7%	15.7%	44.6%	24.1%	4.3%
1100 - 1199	1,359	20.1%	2.2%	5.8%	15.3%	49.0%	23.8%	3.9%
1200 - 1299	1,651	24.5%	2.4%	4.5%	10.7%	54.7%	23.0%	4.7%
1300 - 1399	1,462	21.7%	1.9%	3.2%	8.5%	57.8%	24.0%	4.5%
1400 +	960	14.2%	1.5%	4.0%	5.9%	63.9%	20.6%	4.2%
Initial CBE hours								
0 hours	1,360	20.1%	3.1%	11.9%	21.8%	34.9%	22.6%	5.7%
1 - 6 hours	1,356	20.1%	2.7%	7.4%	12.4%	46.2%	26.8%	4.6%
7 - 9 hours	553	8.2%	1.8%	5.8%	10.5%	57.1%	21.5%	3.3%
10 - 15 hours	852	12.6%	3.2%	4.7%	8.7%	53.6%	24.8%	5.0%
16 - 21 hours	986	14.6%	1.5%	4.0%	11.4%	53.7%	24.4%	5.1%
22 - 30 hours	895	13.3%	1.5%	1.8%	5.9%	67.4%	20.3%	3.1%
31+ hours	748	11.1%	0.8%	0.5%	4.8%	71.5%	18.9%	3.5%
Initial Transfer Hours								
0 hours	3,823	56.6%	2.3%	7.0%	12.9%	49.3%	23.9%	4.6%
1 - 6 hours	1,130	16.7%	3.3%	3.7%	9.0%	54.1%	25.8%	4.2%
7 - 9 hours	374	5.5%	1.6%	5.1%	8.6%	54.8%	24.3%	5.6%
10 - 15 hours	745	11.0%	1.1%	5.0%	12.1%	57.9%	20.3%	3.8%
16 - 21 hours	353	5.2%	1.4%	5.7%	11.0%	57.5%	19.0%	5.4%
22 - 30 hours	208	3.1%	1.9%	2.9%	12.0%	64.9%	13.9%	4.3%
31+ hours	116	1.7%	0.9%	3.4%	12.1%	61.2%	19.0%	3.4%
HS % Class Rank								
0 - 2%	1,054	15.6%	1.9%	2.9%	7.2%	65.3%	19.3%	3.4%
2.01 - 5%	1,368	20.3%	1.5%	5.0%	11.5%	54.6%	23.7%	3.6%
5.01 - 7%	816	12.1%	2.9%	5.0%	13.7%	51.8%	19.9%	6.6%
7.01 - 10%	1,074	15.9%	2.1%	8.1%	12.8%	45.8%	26.4%	4.7%
10.01 - 15%	832	12.3%	1.9%	7.1%	13.9%	48.3%	23.9%	4.8%
15.01 - 30%	835	12.4%	3.6%	7.9%	12.1%	46.8%	24.4%	5.1%
30.01% +	213	3.2%	3.3%	11.3%	20.2%	33.3%	26.8%	5.2%
No Rank	558	8.3%	1.4%	3.0%	9.7%	58.4%	23.7%	3.8%
Mode of Admission								
Out-of-State	410	6.1%	1.7%	3.4%	14.6%	52.7%	25.6%	2.0%
Summer Freshman	707	10.5%	2.5%	5.2%	12.6%	54.9%	19.5%	5.2%
Texas High School	5,633	83.5%	2.2%	6.1%	11.5%	52.1%	23.5%	4.6%

Turning to class rank, it appears there is an almost monotonic decrease in four-year graduation rates as class rank gets worse. Students graduating in the top of their class are almost twice as likely to graduate in four years as students graduating in the 30th percentile range or lower. Attrition is fairly even across all ranks, though it is lowest among the best ranked and highest among the worst. Those who report no class rank, largely because they graduated from private high schools with no ranking system or were home-schooled, were most similar to the highest ranking graduates in terms of attrition and time-to-degree.

The final portion of the table shows outcomes based on mode of admission. These findings show that attrition does not differ greatly by mode. In terms of four-year graduation rates, students in the summer freshman class performed marginally better than the other two groups.

FIRST-YEAR PERFORMANCE AND GRADUATION OUTCOMES

As shown in Section 1, the first-year retention rate over the past several years is about 92%. A substantial amount of attrition also happens after the second year, after that overall attrition tends to flatten out. Given these patterns it is likely that what happens to students in their first year on campus is an important portent of eventual graduation and time-to-degree. Table 3.3 attempts to quantify these effects by examining the relationship between grades in the first year and graduation outcomes.

In this table the analyses reveal the largest gaps in graduation and attrition rates. Of those who earned a zero GPA in the first semester, 66% left the university and only 6% went on to graduate in four years. Students who make a zero GPA in the first semester are automatically dismissed for the spring but can return the following fall to resume classes. As such, it is possible to recover from such a GPA, but it rarely happens in a timely way. Similarly, students with a GPA below 2.0 showed both very high rates of attrition and low rates of four-year graduation. As GPA in the first semester climbed, outcomes became much better. Of those with the highest GPAs of 3.51 or higher, only 5.5% were lost due to attrition and 68% graduated in four years. These results show that every level of GPA below 3.51 is at a higher risk for both attrition and graduating after four years compared to those with the highest GPAs. But, most importantly it shows that those with GPAs below 2.5 are at especially high risk.

The next portion of the table shows changes in GPA between the first and second semesters. In essence, this analysis asks whether change itself, over and above the underlying GPA, can affect outcomes. Students who earned a zero GPA either in the first or second semester are included as a separate category as many zero GPAs are due to students not completing coursework but also not withdrawing from the university. The results show that students whose GPAs were consistent across the two semesters had the best outcomes; in contrast, those whose GPAs either rose or fell over one point were at a much higher risk for attrition and longer time-to-degree. Of the two ends of the spectrum, those who saw a decrease of more than one point were by far at the greatest risk.

The third part of the table simply sums the number of hours of F earned by students in the first semester. Those who earned no Fs during that time reported a 56% four-year graduation rate, which is four points higher than the university as a whole. In contrast, students who received any Fs were much more likely to be lost or graduate after four years. To this point in the analysis, these findings represent the strongest predictors of graduation outcomes. They show, in no uncertain terms, that what happens in the first year is an incredibly powerful predictor of eventual outcomes. They further demonstrate that any attempt to raise four-year graduation rates must include programs to boost performance in the first year and to help students who perform poorly during that time.

Table 3.3 Average Graduation and Attrition Rates by First-year Performance.

	Cohort Composition		Six-Year Status			Graduated		
	#	%	Enrolled	Dismissed	Dropped	4 years	5 years	6 years
First Semester GPA								
0.00	99	1.5%	10.1%	33.3%	32.3%	6.1%	10.1%	8.1%
0.01 – 2.00	813	12.0%	3.6%	28.3%	23.0%	19.3%	19.1%	6.8%
2.01 – 2.50	764	11.3%	2.7%	9.6%	18.5%	37.0%	25.8%	6.4%
2.51 – 3.00	1,356	20.1%	2.6%	2.7%	13.3%	51.2%	25.9%	4.4%
3.01 – 3.50	1,558	23.1%	1.4%	1.0%	9.3%	59.8%	24.7%	3.7%
3.51+	2,160	32.0%	1.5%	0.3%	5.2%	68.0%	21.6%	3.5%
First-Second Difference								
Decreased over 1 point	94	1.4%	5.3%	11.7%	18.1%	23.4%	30.9%	10.6%
Decreased 1 point	422	6.3%	5.9%	5.5%	15.2%	37.2%	30.1%	6.2%
Decreased .5 points	1,202	17.8%	2.1%	4.8%	12.0%	50.7%	25.6%	4.7%
Stayed the same	2,907	43.1%	1.7%	5.6%	8.4%	59.0%	21.3%	4.0%
Increased .5 points	1,227	18.2%	1.4%	3.2%	10.3%	57.0%	24.8%	3.4%
Increased 1 point	473	7.0%	2.1%	1.7%	11.2%	57.5%	21.6%	5.9%
Increased over 1 point	135	2.0%	0.7%	1.5%	14.1%	39.3%	37.8%	6.7%
0 GPA either semester	290	4.3%	5.9%	30.7%	45.2%	4.1%	8.3%	5.9%
First Semester F's								
None	6,171	91.4%	2.1%	3.1%	10.7%	55.9%	23.9%	4.3%
1 – 3 hours	264	3.9%	3.0%	24.2%	27.3%	19.3%	17.0%	9.1%
4 – 6 hours	200	3.0%	4.0%	32.5%	22.0%	16.5%	19.0%	6.0%
7+ hours	115	1.7%	3.5%	66.1%	16.5%	6.1%	7.0%	0.9%

HOURS COMPLETED AND TIME-TO-DEGREE

A great deal of discussion about time-to-degree revolves around hours completed by students. Previous university task forces have examined this issue and have pointed to the fact that many students graduate with more hours than is necessary to actually graduate. Others have argued that students are taking too few hours per semester, and that by boosting those totals, students will graduate more quickly.

Is it the case that many students graduate with too many hours, or is it true that by boosting hours per semester the university can improve timely graduation? Table 3.4 begins to look at this issue by examining the hours taken and other characteristics of students who graduated in four, five, and six years. In reading this table it is important to note that the values on the left side of the table are not predicting rates of graduation, as was shown in the previous tables in the section. Rather, this table shows values of hours taken and other factors based on the number of years it took to graduate.

Table 3.4 Characteristics of Graduating Students by Number of Years Needed to Graduate.[1]

	Among Those who Graduated in...		
	4 years	5 years	6 years
Long Semesters Completed with...			
0 hours	0.1	0.2	0.6
11 or fewer hours	0.7	1.0	1.9
12 hours	2.3	2.1	1.8
13 hours	1.1	1.2	1.0
14 hours	1.1	1.2	1.0
15 hours	1.8	1.4	1.0
16 or more hours	1.0	0.9	0.7
Cumulative Hours			
Total hours completed	140.7	135.5	122.6
UT Austin hours completed-long semesters	106.4	102.5	90.5
Pre-fall admission hours	0.9	0.8	1.1
Total summer hours	4.5	6.6	6.7
Credit-by-exam hours	15.9	12.6	11.4
Transfer hours	13.0	13.0	12.8
Any Hours Completed			
Summer hours	52.5%	66.5%	67.2%
Credit-by-exam hours	86.1%	79.4%	71.8%
Transfer hours	83.1%	83.1%	77.0%
Final Degree Status			
Dual degree	9.4%	11.0%	12.5%
Double major	10.7%	6.9%	9.8%
Single major	79.9%	82.1%	77.7%
Hours Per Semester			
Fall-1st year	13.4	12.8	12.2
Spring-1st year	13.8	13.2	12.3
Fall-2nd year	13.7	13.0	11.2
Spring-2nd year	13.6	12.8	10.9
Fall-3rd year	13.5	12.7	11.0
Spring-3rd year	13.0	12.4	11.0
Fall-4th year	13.1	12.7	10.9
Spring-4th year	11.8	12.4	10.7
Hours per Semester w/out < 12 hours			
Fall-1st year	13.9	13.7	14.1
Spring-1st year	14.3	14.2	14.2
Fall-2nd year	14.3	14.1	13.8
Spring-2nd year	14.2	14.1	14.1
Fall-3rd year	14.1	14.0	14.9
Spring-3rd year	13.8	13.9	15.1
Fall-4th year	13.7	13.9	14.2
Spring-4th year	13.4	13.5	14.2

Notes: [1] Only students graduating in four or more years were included.

The first part of the table shows the number of semesters completed with different numbers of hours. These counts are made only in the first four years and exclude students who graduated in fewer than four years. By limiting the count and sample in this way the table is able to provide consistent comparisons among the three graduation groups. The figures show that among four-year graduates, the average student completed 2.3 semesters with 12 hours. In comparison, those graduating in five years took 2.1, and those in six took 1.8. Put another way, four-year graduates, on average, finished with more semesters at 12 hours than the groups that took longer to graduate. They also took more semesters with 15 and 16 or more hours completed. Four-year graduates finished fewer semesters with one to 11 hours and zero hours (i.e., did not enroll or withdrew). Based on these numbers the case can be made that students can take 12 hours per semester and still graduate on time, but taking fewer or not enrolling at all can contribute heavily to time-to-degree.

The next part of the table shows total cumulative hours by the end of the fourth year. Four-year graduates have amassed, on average, about 141 hours by that point. In contrast, five-year graduates have accumulated only five fewer hours at 136. For most majors on campus, that number of hours is sufficient to graduate in four years; consequently, it is unclear why many of the students who took five years to graduate did not do so in four given that they had enough hours to do so at that point. For all three groups, UT Austin hours completed during long semesters made up the majority of all hours completed. Yet, for no group was the number of UT Austin long-semester hours enough, on average, to permit graduation in any major on campus. The lowest number of hours required on campus is 120, which means that for the typical four-year graduate, CBE, transfer or summer hours would be needed to finish by that point. The four-year graduates do bring in a substantial number of those extra hours: Between CBE and transfer credit, four-year graduates accumulated 29 hours of credit, more than most students complete in two long semesters of UT coursework. Those graduating in five or six years also built up large numbers of CBE and transfer work, though the total were not as high as those for the four-year graduates.

Summer hours completed were higher in the five- and six-year graduates, and according to the next part of the table, the likelihood of finishing any summer work was higher in those groups as well. In contrast, the likelihood of having any CBE or transfer credit was lower in the five- and six-year groups.

In terms of degree patterns, it appears that dual degree status decreases time-to-degree, but having a double major does not. Among those graduating in four years, 9.4% were dual-degree compared to 11% in the five-year graduates and 12.5% in the six-year ones. The differences in these groups certainly are not large and probably do not play a major role in time-to-degree for the university as a whole. The findings also show that students double majoring are more common in the four-year graduate group than the others, suggesting that having two majors does not hinder timely graduation. Two important issues should be noted about these figures. First, most of the students who complete two majors are in Liberal Arts. Some colleges do not allow double majoring except for certain majors, but Liberal Arts has no such rules. Second, most of the dual degree students also have Liberal Arts as one of their colleges. The outcome of these two patterns is that Liberal Arts has a smaller percentage of students with a single major than any other college in the university. Finally, it must be noted that the data only allowed counting two majors; students who had more than two majors were counted as having only two. It could and probably is the case that having three, four, or five or majors slows time to graduation, but the number of students with those high numbers of majors is likely small and contributing little to the overall graduation rate.

The final part of the table examines the number of hours taken over the course of students' four years at UT Austin. In the first two of these panels, the table shows that students graduating in four years consistently complete more hours than students in the other groups. However, as the final panel shows, if students completing fewer than 12 hours are removed, the number of hours completed across groups looks very similar. This finding suggests that reducing the number of students who complete fewer than 12 hours will be an important part of increasing the four-year graduation rate. Students finishing few hours can stem from a number of sources, such as registering part-time, failing classes, dropping classes, or withdrawing entirely for the semester. Correcting the problem would require addressing each of these sources, and the solutions to those problems may differ across them.

Table 3.5 re-examines the issue of number of hours completed per semester in a slightly different way. The table shows graduation rates based on the number of semesters in which a specific number of hours were completed. These findings show that certain numbers of hours, when taken across multiple semesters, can severely hinder time-to-degree.

Table 3.5 Time-to-degree by Semesters Completed with Specific Numbers of Hours.[1]

	Cohort Composition		Graduated		
	#	%	4 years	5 years	6 years
0 Hours Completed					
0 Semesters	4,134	87.2%	64.1%	30.8%	5.0%
1 Semester	476	10.0%	42.2%	47.5%	10.3%
2 Semesters	102	2.2%	17.6%	54.9%	27.5%
3 Semesters	14	0.3%	7.1%	42.9%	50.0%
4+ Semesters	15	0.3%	0.0%	13.3%	86.7%
1 - 11 Hours Completed					
0 Semesters	2,246	47.4%	64.5%	31.7%	3.8%
1 Semester	1,468	31.0%	66.1%	30.0%	3.9%
2 Semesters	646	13.6%	52.6%	36.5%	10.8%
3 Semesters	217	4.6%	36.4%	47.9%	15.7%
4+ Semesters	164	3.5%	19.5%	45.1%	35.4%
12 Hours Completed					
0 Semesters	824	17.4%	56.6%	35.9%	7.5%
1 Semester	1,081	22.8%	59.6%	32.7%	7.8%
2 Semesters	1,063	22.4%	58.2%	34.8%	7.0%
3 Semesters	747	15.8%	62.9%	32.0%	5.1%
4+ Semesters	1,026	21.6%	65.5%	29.9%	4.6%
13 Hours Completed					
0 Semesters	1,742	36.7%	61.8%	30.5%	7.7%
1 Semester	1,521	32.1%	62.4%	31.8%	5.8%
2 Semesters	908	19.2%	56.8%	37.8%	5.4%
3 Semesters	410	8.6%	58.0%	36.1%	5.9%
4+ Semesters	160	3.4%	57.5%	36.3%	6.3%

	Cohort Composition		Graduated		
	#	%	4 years	5 years	6 years
14 Hours Completed					
0 Semesters	1,661	35.0%	61.3%	31.2%	7.5%
1 Semester	1,606	33.9%	62.5%	31.3%	6.2%
2 Semesters	977	20.6%	57.9%	36.6%	5.4%
3 Semesters	337	7.1%	58.8%	35.0%	6.2%
4+ Semesters	160	3.4%	53.1%	42.5%	4.4%
15 Hours Completed					
0 Semesters	1,094	23.1%	49.6%	38.6%	11.8%
1 Semester	1,379	29.1%	58.3%	34.5%	7.2%
2 Semesters	1,183	25.0%	63.9%	31.9%	4.2%
3 Semesters	662	14.0%	67.5%	29.9%	2.6%
4+ Semesters	423	8.9%	75.9%	21.7%	2.4%
16+ Hours Completed					
0 Semesters	2,331	49.2%	56.5%	35.1%	8.4%
1 Semester	1,243	26.2%	63.6%	31.5%	4.9%
2 Semesters	616	13.0%	65.3%	31.3%	3.4%
3 Semesters	293	6.2%	65.9%	30.0%	4.1%
4+ Semesters	258	5.4%	65.1%	28.7%	6.2%

Notes: [1] Only students graduating in four or more years were included.

As discussed above, completing fewer than 12 hours in a semester is a large barrier to timely graduation, and doing so over several semesters virtually guarantees delays in graduation. Looking at the first panel of students completing zero hours, of those who never completed zero hours, 64% graduated in four years. Note that this is not the four-year graduation rate for that group because only students who graduated are in the analysis. Rather, it shows that students never missing a semester are most likely to graduate at the four-year mark. In contrast, virtually no students who complete two or more semesters with no hours are able to finish in four years.

The situation is not as bad for students completing one to 11 hours, but the trend is nevertheless there. Students finishing zero or one semesters with one to 11 hours were most likely to graduate in the four-year group. Those finishing two semesters with one to 11 hours still were most likely to graduate in four years, but beyond that number, the four-year graduates drop significantly. In general, the data show that students can complete one semester or so with fewer than 12 hours and still graduate on time, but too many more such semesters will cause delay.

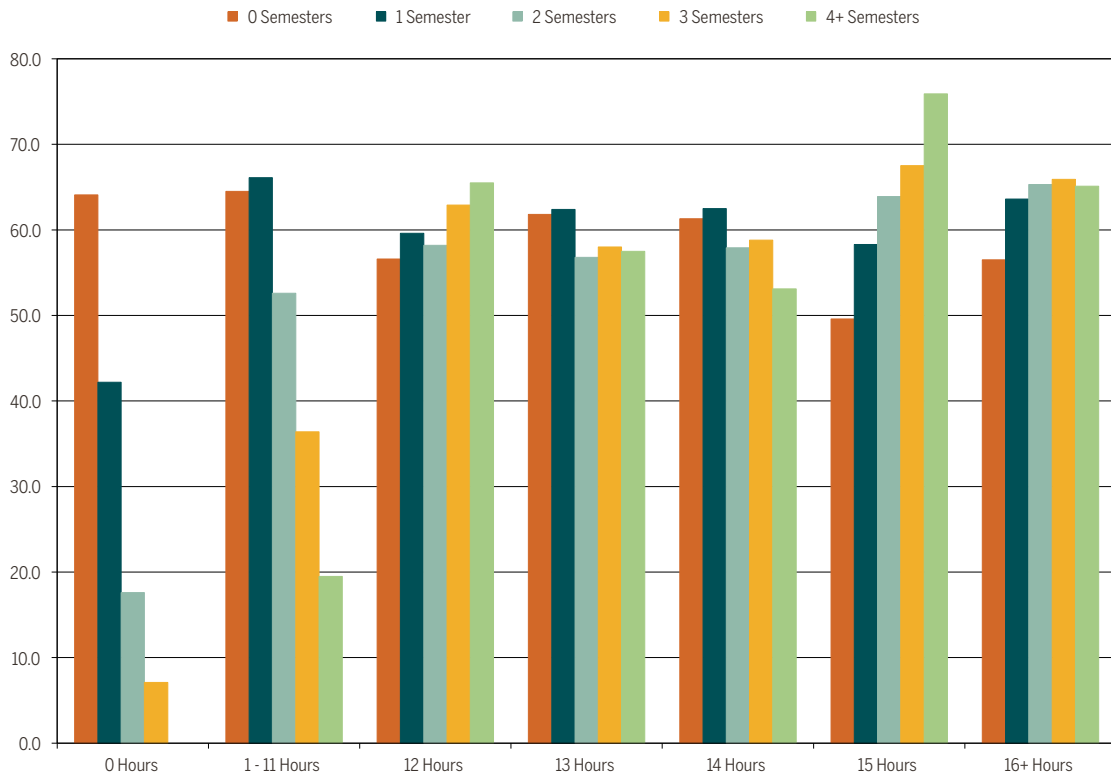
Contrary to speculation about hours and time to graduation, many who completed four or more semesters with 12 hours still graduated in four years. Given the findings in the previous table, it is easy to see how this pattern is possible: Many of the four-year graduates leave with CBE and transfer course credit, meaning that the number of hours students need to complete during long semesters at UT Austin is typically far below 120. Students can meet the hours needed by taking multiple semesters with 12 hours and then a few with more.

Interestingly, completing more semesters with 13-14 hours actually drives down the likelihood of graduating in four years. It is unclear why this would be the case, and after much discussion among task force members and others, no readily evident answer appears. It could be the case that the kinds of courses that lead students to complete 13 or 14 hours are four-and five-hour classes or those with attached lab sections. It is unclear why those kinds of courses would pose barriers to graduation, but it is a question that deserves further research.

The table further makes clear that students completing more semesters with 15 hours stand the best chances of graduating in four years. Only about half of the students who finish no semesters with 15 hours are able to graduate in four years, but those who finish four or more semesters with that number are very likely to graduate in that time.

Figure 3.1 reproduces all of these numbers for the four-year graduation rate, and it is in this figure that one can easily see the beneficial effect that taking 15 hours has on the likelihood of graduating in four years. The figure also shows the devastating effect that completing fewer than 12 hours can have on the chances of graduating in four years.

Figure 3.1 Four-year Graduation Rate by Numbers of Semesters Completed with Specific Numbers of Hours.



The next table, Table 3.6, further extends this analysis by looking at the number of semesters completed with 12 hours among four-year graduates by degree status and college. The analyses in this table are necessary because it may be the case that taking 12 hours in some colleges can be beneficial for timely graduation, but in other colleges completing that courseload is a serious barrier to graduation. It is important to note that the percentages shown here are not four-year graduation rates as they only reflect the students graduating in four years out of students who graduated in four, five, or six years.

Table 3.6 Numbers of Semesters with Twelve Hours Completed among Four-Year Graduates.[1]

		Percent of Four-year Graduates Completing 12 Hours in...				
	% Graduated in 4 years	0 Semesters	1 Semester	2 Semesters	3 Semesters	4+ Semesters
Final Degree Status						
Double major	69.1%	14.6%	19.5%	24.4%	19.2%	22.4%
Dual degree	56.3%	27.4%	27.0%	20.4%	14.8%	10.4%
Single major	60.1%	15.1%	22.3%	21.3%	16.2%	25.1%
Different college	48.9%	10.5%	17.6%	22.2%	20.1%	29.5%
Final Colleges						
Business	75.5%	10.4%	20.4%	24.6%	22.0%	22.8%
Education	53.6%	5.3%	14.1%	17.1%	21.2%	42.4%
Engineering	51.0%	40.2%	37.9%	16.6%	4.2%	1.1%
Fine Arts	61.1%	25.0%	19.8%	16.7%	14.6%	24.0%
Architecture	13.5%	0.0%	20.0%	60.0%	20.0%	0.0%
Communication	70.6%	7.2%	11.0%	16.0%	19.2%	46.6%
Natural Sciences	58.5%	27.1%	30.6%	24.6%	10.8%	6.9%
Liberal Arts	64.4%	13.1%	20.9%	23.3%	18.8%	23.9%
Nursing	49.0%	6.4%	40.4%	23.4%	21.3%	8.5%
Social Work	51.3%	20.0%	10.0%	25.0%	15.0%	30.0%
Geosciences	40.7%	27.3%	36.4%	27.3%	0.0%	9.1%
Graduate Business	7.1%	27.3%	36.4%	36.4%	0.0%	0.0%

Notes: [1] Only students graduating in four or more years were included.

The first panel shows that students taking one or two majors in the same college could complete several semesters with 12 hours and still graduate in four years. However, students who were seeking a dual degree were much less likely to finish three or more semesters with 12 hours and still graduate in four years.

The table shows very different patterns across the university when students are sorted by their finishing colleges. Many students, almost a majority, in Education and Communication were able to complete four or more semesters with 12 hours and still finish in four years. In stark contrast, almost no students in Engineering, and no students in Architecture, were able to complete four or more semesters with 12 hours and graduate in four years. Engineering students who stood the greatest odds of graduating in four years either completed one semester or less with 12 hours; any more semesters than that severely limited the chances of timely graduation.

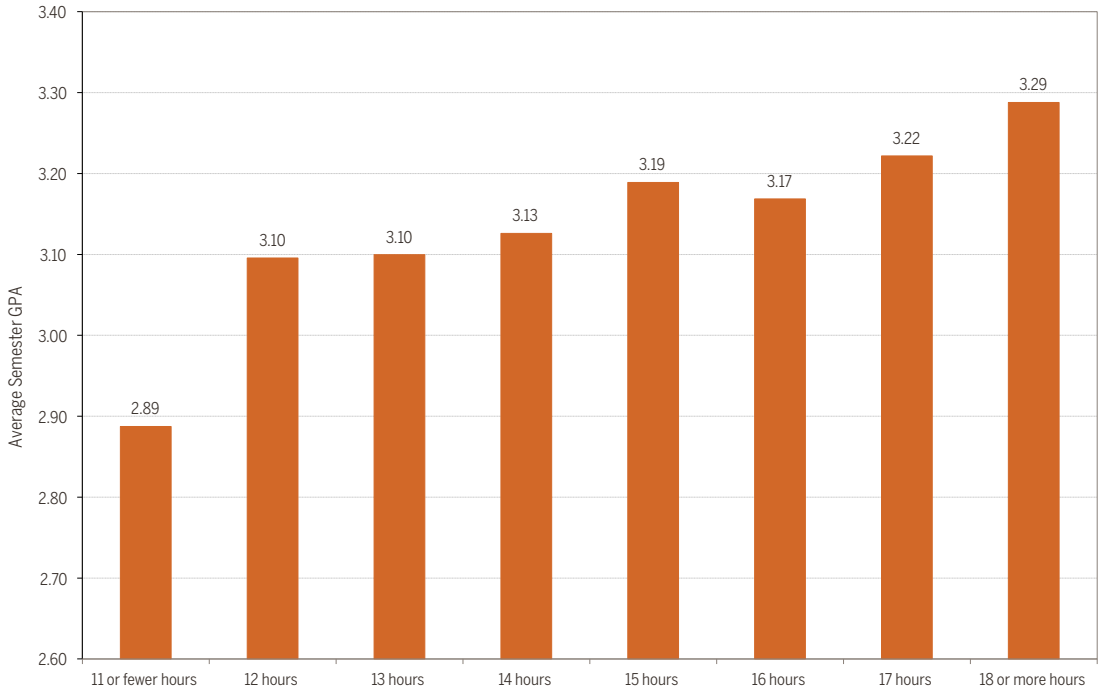
HOURS TAKEN AND GPA

The findings from Tables 3.5 and 3.6 show the value of completing 15 hours for timely graduation, although students in some colleges can still finish multiple semesters with 12 hours and graduate

on time. When advisors and other professionals around campus discuss these issues, they know, at some level, that taking more hours likely speeds time to graduation. However, the problem they cite in encouraging students to take more hours is a fear that taking those hours might reduce GPAs and so hurt students who want to pursue post-graduate education or other opportunities that require a strong GPA. These concerns are understandable, but are they valid? That is, is it the case that students who take more hours are less likely to make good grades?

Answering this question is fairly complicated and requires multiple waves of data to examine. Fortunately, the student records data set used here provides the necessary information to answer the question. To do so, GPAs in a given semester were regressed on hours undertaken for that semester and a host of other factors, including overall GPA as of the previous semester, demographic characteristics, initial academic characteristics (e.g., SAT score), and starting college. This analysis was done repeatedly for every long semester past the first over the first four years (a total of 7 times). Fall semesters used GPAs from the previous spring rather than summer GPAs, even if those were available. The results of the seven models were averaged to achieve a single score reflecting the average GPA of students taking different numbers of hours. In short, this modeling strategy was meant to determine, net of a host of factors that would predict the number of hours taken and GPA during a given semester, whether the number of hours taken in that semester actually led to a higher or lower GPA. The findings from this analysis are shown in Figure 3.2.

Figure 3.2 Average Semester GPA by Number of Hours Undertaken in that Semester.



The figure shows that, in general, as the number of hours taken increases, so too does the GPA obtained for that semester. Differences between 12 to 14 hours are minimal but increase noticeably for students taking 17 or more hours. The clear danger area occurs among students taking fewer than 12 hours. It is important to note that these hours are not hours completed, they are hours taken. As such, the average

for the 11 or fewer category does not just reflect students who failed courses and did not receive credit for them. Rather, it reflects students who registered for 11 or fewer hours.

The findings from this table are well in line with research on campus integration and academic success. A long history of scholarship has argued that students who are the most socially and academically integrated into campus life will also perform the best. Taking more hours is able to increase integration because it means more time needed to be spent on campus and in doing all of the work associated with the academic side of the university. Students taking fewer hours have more free time and are able to find ways to more easily disengage from campus life in any number of ways. Some students will simply spend more time off-campus or travel home more frequently. Others may use the time to participate in extracurricular activities off of campus or work more hours in paid employment. Others may succumb to the lure of online communities and in so doing displace the communities that should be created on campus. Regardless of the consequence, students taking fewer hours will find more ways to spend those hours, and many of the options available will disengage them from campus. It is no surprise then that students who take the most hours are also more likely to be engaged in campus life and so are the best performers. In short, encouraging students to take fewer hours is likely doing them no favors. At worst, taking more hours will mean a similar GPA to fewer hours. At best, it will be a higher GPA, more integration, shorter time-to-degree, and ultimately more success overall.

CHANGING MAJORS AND GRADUATION OUTCOMES

Many students at UT Austin change their majors at least once before they graduate from the university. The findings in Section 2 showed that some patterns of switching colleges can lead to delays in graduation that contribute substantially to longer time-to-degree, but those figures did not show the actual effect of changing a major or the timing of the change.

Table 3.7 attempts to explain the effects of switching majors on time-to-degree. The findings in the table reflect students who graduated in four or more years and examine how changing colleges and majors affected falling into different graduation years.

The first panel of the table examines whether switching colleges slows time-to-degree. The majority of students (67%) do not switch colleges before graduation, and among them, over 66% graduate in four years. In contrast, among the students who switch colleges, only 49% graduate in four years. This difference suggests that changing colleges can slow time-to-degree. Similarly, the next panel provides a finding consistent with those in earlier tables: Taking a double major does not slow time-to-degree, but pursuing a dual degree seems to do so.

The next part of the table examines the number of major changes students undertook before graduation and how those numbers led to time-to-degree. A minority of students, 37.4%, did not change their major before graduating. Among those, about 65% graduated in four years. More students, 43.7%, changed their majors once, either within their college or across colleges, and among those, 61.3% graduated in four years. The number for the students who switched once is similar to those who never switched, but beyond that first switch, the likelihood of graduation falls dramatically. Only 49% of those who switched majors two or three times were able to graduate in four years. Those who switched four times were even less likely to graduate in four years, but that number composed a very small part of the overall cohort and has little effect on the overall rate.

Table 3.7 Time-to-degree by Changes in Major and College.[1]

	Cohort Composition		Graduated		
	#	%	4 years	5 years	6 years
Switching Colleges					
Same college	3,175	67.0%	66.3%	28.4%	5.3%
Different college	1,566	33.0%	48.9%	42.3%	8.8%
Final Degree Status					
Double major	446	9.4%	69.1%	24.2%	6.7%
Dual degree	480	10.1%	56.3%	35.8%	7.9%
Single major	3,815	80.5%	60.1%	33.7%	6.2%
Number of Changes					
No change	1,773	37.4%	65.5%	29.4%	5.1%
1 change	2,072	43.7%	61.3%	32.2%	6.5%
2 changes	736	15.5%	49.3%	41.7%	9.0%
3 changes	143	3.0%	49.7%	42.0%	8.4%
4 changes	17	0.4%	35.3%	47.1%	17.6%
Last Major Change					
No change	1,773	37.4%	65.5%	29.4%	5.1%
2nd long semester	312	6.6%	67.3%	27.9%	4.8%
3rd long semester	699	14.7%	67.4%	30.0%	2.6%
4th long semester	649	13.7%	66.3%	30.2%	3.5%
5th long semester	592	12.5%	52.5%	38.0%	9.5%
6th long semester	329	6.9%	48.0%	41.9%	10.0%
7th long semester	248	5.2%	37.5%	45.2%	17.3%
8th long semester	139	2.9%	26.6%	54.0%	19.4%
Second major/degree added					
None added	3,848	81.2%	59.6%	33.8%	6.5%
1st long semester	126	2.7%	62.7%	29.4%	7.9%
2nd long semester	51	1.1%	76.5%	17.6%	5.9%
3rd long semester	168	3.5%	72.0%	25.6%	2.4%
4th long semester	141	3.0%	69.5%	25.5%	5.0%
5th long semester	172	3.6%	61.0%	34.3%	4.7%
6th long semester	103	2.2%	64.1%	29.1%	6.8%
7th long semester	92	1.9%	59.8%	30.4%	9.8%
8th long semester	40	0.8%	32.5%	55.0%	12.5%

Notes: [1] Only students graduating in four or more years were included.

Although the number of changes appears to be important, the timing of the change seems much more so. The next part of the table examines the last time that students switched majors and the likelihood of graduating in differing numbers of years. Again, about 65.5% of students with no major change graduated in four years. Among those who switched for the last time in the second long semester, the number graduating in four years is actually higher at 67.3%. A similar finding is shown for switching for

the last time in the third or fourth long semesters. But, after that point, switching majors precipitously drops the likelihood of graduating in four years. The findings from this part of the table make a very important point: Switching majors is, in itself, not a barrier to timely graduation so long as it is done by the end of the fourth long semester. Switches after that, however, do reduce the odds of graduating in four years.

The final part of the table examines the effects of the timing of adding a second major or degree. The findings show that such an addition, in general, does not greatly reduce the odds of graduating in four semesters, but that adding one after the fourth semester can reduce the odds by a small degree. Adding a second major or degree in the eighth semester, however, does substantially reduce the odds of graduating in the fourth year.

Table 3.8 examines the same issue but based on students graduating at different points in time. That is, it shows the percentage of students graduating in, for example, four years who had differing numbers of major changes and timing of the last change. Among four-year graduates, about 40% had no major change compared to 33% of five-year graduates and 30% of six-year ones. Each of the three graduating groups reported similar percentages with one change, but the five- and six-year groups had higher percentages of students with two or three changes. In terms of the timing of the changes, the findings indicate that among four-year graduates, changes after the fourth semester were relatively uncommon. In contrast, they were somewhat more common in the five-year graduates and much more common in the six-year ones. In sum, as the table before it showed, switching majors can be done without lengthening time-to-degree, but it should be done within the first four long semesters.

Table 3.8 Changes in Major Among Students Graduating at Different Times.[1]

	Among Those who Graduated in...		
	4 years	5 years	6 years
Number of Changes			
No change	40.4%	33.4%	29.5%
1 change	44.2%	42.7%	43.9%
2 changes	12.6%	19.6%	21.6%
3+ changes	2.7%	4.3%	4.9%
Last Major Change			
2nd long semester	7.3%	5.6%	4.9%
3rd long semester	16.4%	13.4%	5.9%
4th long semester	15.0%	12.5%	7.5%
5th long semester	10.8%	14.4%	18.4%
6th long semester	5.5%	8.8%	10.8%
7th long semester	3.2%	7.2%	14.1%
8th long semester	1.3%	4.8%	8.9%

Notes: [1] Only students graduating in four or more years were included.

NET EFFECTS OF PREDICTORS ON FOUR-YEAR GRADUATION RATES

To this point, the analyses have revealed a number of factors that predict four-year graduation rates. Yet, as discussed at the beginning of the section, because most of these analyses were done in isolation without controls for other factors, primary drivers of four-year graduation are unclear. The final part of this section is meant to address this issue by regressing four-year graduation on all of the predictors among students who graduated in four, five, or six years. In these models, the findings indicate whether net of all other factors, variables predict a larger or smaller likelihood of graduating in four years versus graduating in five or six. The table reports two values for each variable, an odds-ratio and chi-square. The odds-ratio shows higher or lower odds of graduating in four years based on that characteristic. The chi-square value provides an indicator of the strength of the relationship compared to the underlying error associated with it. On the odds-ratios, values farther away from one indicate larger effects, and on the chi-squares, higher values indicate stronger ones. The findings from the models are shown in Table 3.9.

In the first model, four-year graduation is regressed only on the background demographic factors. Of those factors, the ones showing larger chi-square values, indicating stronger effects, include sex, Hispanic ethnicity (compared to White), parents having some college education (compared to having two four-year degrees), and being eligible for Pell grants (compared to students who did not submit an application). Of these, the strongest effect occurs for sex and shows that women are about 40% (OR: 1.40) more likely than men to graduate in four years (compared to graduating in five or six years). The second most powerful effect, Hispanic ethnicity, shows an odds-ratio of .66, indicating that Hispanic students are about 34% less likely to graduate in four years than White students. The bottom of the table reports various model fit statistics, which are general indications of how well the model resembles what appears to be true in the data. The primary such measure here is pseudo R^2, which ranges from 0 to 1 and shows a very poor model fit with a value of .03. In other words, these background factors, issues that many people raise when discussing graduation rates, actually tell us very little about graduation rates. Of them, the most important predictor is sex.

The next model includes academic background factors such as SAT score, initial credit-by-exam, high school class rank, and mode of admission. Of those factors, both initial CBE and high school class ranks have stronger effects on four-year graduation. The odds-ratio for CBE shows that for every hour of credit claimed, the odds of graduating in four years increase by 2% (OR: 1.02). The odds-ratios for all high school rank categories are below one, meaning that every level of class rank below the top rank is less likely to graduate in four years. Although the effect is somewhat weaker, students entering in the summer freshman class were about 32% more likely to graduate in four years compared to students from Texas high schools not entering through the SFC program. The pseudo R^2 for this model is .06, indicating that even though several effects were substantial, the model is still a poor fit to the data.

Model 3 adds only two variables, first semester GPA and changes in GPA between the first and second semester. The latter measure is coded by subtracting second semester GPA from first, meaning that higher scores reflect higher GPAs in the second semester than in the first. This variable was coded in multiple ways to test for a U-shaped effect that would allow for effects based on both positive and negative differences set against static GPAs. However, all of these tests revealed that the simple subtraction of second semester from first yielded the largest results. The findings in this model reveal the strongest effects to this point. First semester GPA produces a chi-square value of 145.3 and an odds-ratio of 1.99. The latter indicates that each point of GPA increases the odds of graduating in four years by about 100%. Similarly, the large chi-square and positive odds-ratio for GPA change shows that each point of GPA increase from the first to

second semester increases the odds of graduating in four years by 75%. These two factors alone lead to an additional five points in pseudo R^2 and significantly improve the fit of the model.

Table 3.9 Estimated Net Effects of Background Characteristics and Other Factors on Four-year Graduation (n = 4,741)[12]

	Model 1		Model 2		Model 3		Model 4		Model 5	
	OR	X^2	OR	X^2	OR	X^2	OR	X^2	OR	X^2
Background Factors										
Female	1.40	30.85	1.43	32.17	1.31	16.86	1.26	10.42	1.26	8.22
Race/Ethnicity (REF: White)										
Asian	1.00	.00	.90	1.57	.92	1.05	1.05	.33	.98	.03
Black	.87	.82	.98	.01	1.02	.01	1.01	.00	1.02	.01
Foreign	.79	.94	.75	1.38	.71	1.79	.69	1.93	.65	2.11
Hispanic	.66	20.18	.65	20.54	.71	12.54	.72	9.92	.76	5.59
Parents' Education (REF: Two 4-year+ degrees)										
No college	.81	2.87	.87	1.24	.96	.12	.96	.09	1.05	.09
Some college	.75	9.58	.81	4.69	.85	2.53	.89	1.27	.89	1.00
One 4-year+ degree	.86	3.87	.93	.94	.96	.32	.95	.33	.97	.10
Pell Grant Eligibility (REF: No application)										
Eligible	.82	5.05	.79	6.12	.81	4.94	.78	5.95	.83	2.90
Not eligible	1.14	3.44	1.06	.58	1.07	.67	1.08	.82	1.04	.15
Acad Background Factors										
SAT Score	--	--	1.00	1.51	1.00	1.46	1.00	.26	1.00	2.79
Initial Credit-by-Exam	--	--	1.02	27.14	1.01	14.89	1.02	26.34	1.03	58.32
Initial Transfer Hours	--	--	1.01	6.62	1.01	6.02	1.01	11.49	1.03	26.61
High School Class Rank (REF: ≤ 2%)	--	--								
Rank 2.01 - 5%	--	--	.72	10.18	.81	3.94	.76	5.70	.69	8.28
Rank 5.01 - 7%	--	--	.73	6.98	.87	1.26	.70	7.19	.71	5.54
Rank 7.01 - 10%	--	--	.57	26.08	.70	9.80	.59	18.20	.62	12.10
Rank 10.01 - 15%	--	--	.57	20.89	.74	5.65	.63	11.50	.64	9.20
Rank 15.01 - 30%	--	--	.51	27.44	.74	5.29	.67	8.11	.66	7.24
Rank 30.01%+	--	--	.41	19.58	.63	5.04	.53	8.44	.56	5.84
No Rank	--	--	.61	11.58	.78	2.73	.66	6.78	.68	4.96
Mode of Admission (REF: Texas high school)	--	--								
Summer freshman class	--	--	1.32	5.22	1.38	6.54	1.19	1.72	1.32	3.64
Out-of-state student	--	--	1.10	.43	.98	.03	1.00	.00	1.01	.00
First Year Performance										
First semester GPA	--	--	--	--	1.99	145.28	2.47	210.93	1.49	26.59
GPA change	--	--	--	--	1.75	97.96	1.99	132.13	1.49	32.60
Final Primary College (REF: Liberal Arts)										
Business	--	--	--	--	--	--	.93	.35	.88	.80

	Model 1		Model 2		Model 3		Model 4		Model 5	
	OR	X^2	OR	X^2	OR	X^2	OR	X^2	OR	X^2
Education	--	--	--	--	--	--	.64	9.62	.36	37.99
Engineering	--	--	--	--	--	--	.36	80.21	.18	137.10
Fine Arts	--	--	--	--	--	--	.50	13.65	.32	29.35
Architecture	--	--	--	--	--	--	.04	41.98	.02	58.92
Natural Sciences	--	--	--	--	--	--	.58	30.07	.50	31.60
Communication	--	--	--	--	--	--	1.08	.47	1.18	1.44
Nursing	--	--	--	--	--	--	.28	30.58	.22	35.88
Social Work	--	--	--	--	--	--	.56	2.79	.48	3.64
Geosciences	--	--	--	--	--	--	.30	7.91	.36	4.79
BBA + MPA	--	--	--	--	--	--	.01	177.25	.01	173.37
Patterns upon Graduation										
Degree Status (REF: Single major)										
Double-major	--	--	--	--	--	--	--	--	.74	4.11
Dual degree	--	--	--	--	--	--	--	--	.28	82.15
Changed colleges	--	--	--	--	--	--	--	--	.66	17.41
Total hours failed	--	--	--	--	--	--	--	--	.88	66.04
Summer hours transferred	--	--	--	--	--	--	--	--	1.03	16.87
Summer hours at UT	--	--	--	--	--	--	--	--	1.00	.01
Number of semesters completed (REF: 15 hours)										
0 hours	--	--	--	--	--	--	--	--	.29	168.38
1 - 11 hours	--	--	--	--	--	--	--	--	.79	21.84
12 hours	--	--	--	--	--	--	--	--	.86	13.90
13 hours	--	--	--	--	--	--	--	--	.82	23.08
14 hours	--	--	--	--	--	--	--	--	.77	39.45
16+ hours	--	--	--	--	--	--	--	--	.97	.56
Last semester of major switch (REF: None)										
Second long semester	--	--	--	--	--	--	--	--	.90	.44
Third long semester	--	--	--	--	--	--	--	--	.93	.29
Fourth long semester	--	--	--	--	--	--	--	--	.75	4.57
Fifth long semester	--	--	--	--	--	--	--	--	.46	31.57
Sixth long semester	--	--	--	--	--	--	--	--	.39	35.78
Seventh long semester	--	--	--	--	--	--	--	--	.33	37.42
Eighth long semester	--	--	--	--	--	--	--	--	.21	39.12
Intercept	.43		.22		-1.29		-1.64		.98	
Likelihood Ratio / df	107.99 / 10		221.54 / 22		399.47 / 24		935.36 / 35		1617.43 / 54	
△ Likelihood Ratio / df	--		113.55 / 12		177.93 / 2		535.89 / 11		682.07 / 19	
Pseudo R^2	.03		.06		.11		.24		.39	

Notes: [1] Only students graduating in four or more years were included.

[2] Odds-ratios and chi-square statistics from multivariate logistic regression models are reported.

The next model includes measures of final primary college with Liberal Arts serving as the reference. Odds-ratios above one here indicate that students finishing in that college are more likely to graduate in four years compared to students finishing in Liberal Arts. Odds-ratios below one mean that students in those colleges are less likely to finish in four than Liberal Arts students. The largest chi-square values here accrue to Engineering and the BBA+MPA program. The odds-ratios for both are substantially below zero and indicate that students in those programs are much less likely to graduate in four years compared to Liberal Arts students. Across every college, except two, students are less likely to graduate in four years compared to Liberal Arts. The small chi-square for Business indicates that their rate of four-year graduation is roughly the same; the positive odds-ratio coupled with small chi-square for Communication indicates students in that college may be slightly more likely to graduate in four years, but the effect is not strong. But, in general, the findings show that even for controlling for a host of background factors and first-year performance, the colleges and programs previously shown to have longer time-to-degrees still produce those outcomes. The addition of the college variables substantially increases the Pseudo R^2 of the model to .24.

The final panel of the model adds behaviors while at UT Austin, including hours taken, degree status, changes in major, summer hours, and other factors. In terms of degree status, the findings show that dual degree seekers are much less likely to graduate in four years than single majors. Students who changed colleges are also less likely to graduate in four years, though the effect is not as large as the dual-degree one. Failing coursework is a major hindrance to timely graduation, as one would expect for a variety of reasons. The strongest effect for this model occurs in the section on hours completed. Here the findings show that the strongest effect occurs for the number of semesters in which zero hours were completed. Each such semester completed lowered the odds of finishing in four years by over 70% compared to students who took 15 hours. Completing between one and 11 hours reduces the odds by about 20%. All other categories reduce the odds compared to the 15 hour group except for those taking 16 or more hours. The odds-ratio and chi-square for that variable are very small and indicate similar outcomes compared to the 15 hour group. The timing of major changes indicates that switching majors in the second or third semester is virtually identical to no switches, and switching in the fourth semester marginally decreases the odds of finishing in four years. However, switches in the fifth long semester or after substantially decrease the odds of graduating in four years. The line for switching majors is clear-cut based on these findings: Making the change in the fourth semester or earlier generally presents no problems, but after that point in time, switches reduce the odds of finishing in four years.

With these measures in the model, the pseudo R^2 again climbs, this time to .39. That number indicates that the final model is not nearly a perfect fit of the data, but that it is fairly strong. Comparing across models, we see the biggest changes in model fit tend to occur for the variables measured after students arrive at UT Austin. Looking just at the final model and reflecting back on the demographic and academic background factors, we see that sex remains a predictor though not as strong. Hispanic ethnicity lost much of its strength, as did Pell eligibility and parents' education. Credit-by-exam actually became a stronger effect and in the final model is one of the more important predictors of four-year graduation. The college from which a student graduates remains a powerful predictor in the final model. In sum, these findings show that to increase our graduation rates, the campus should focus on issues that we largely control and less on the background factors that are commonly raised in discussions of this topic.

NET EFFECTS OF PREDICTORS ON GRADUATION

The final part of this section examines the contribution of background factors and first-year performance on any graduation. The previous model was really a model of throughput, i.e., among those who graduated, the factors that predicted graduating more quickly. This model addresses attrition, the other potential source for increasing the four-year graduation rate. The analyses in this model are carried out similarly to those in the model above but include all students and compare those who graduated by the end of six years to those who did not. Data on hours taken and major switching cannot be used because some students dropped out or were dismissed in the first and second years, making reasonable comparisons difficult. The findings for this analysis are shown in Table 3.10.

Table 3.10 Estimated Net Effects of Background Characteristics and Other Factors on Graduation among All Students (n = 6,750).[1]

	Model 1		Model 2		Model 3		Model 4	
	OR	X^2	OR	X^2	OR	X^2	OR	X^2
Background Factors								
Female	1.52	44.61	1.63	54.06	1.29	12.78	1.28	10.28
Race/Ethnicity (REF: White)								
Asian	1.22	4.80	1.05	.25	1.05	.20	1.11	.96
Black	.52	24.03	.75	3.86	.85	1.13	.88	.67
Foreign	1.09	.17	.96	.03	.84	.44	.84	.44
Hispanic	.71	15.84	.77	8.13	1.02	.06	1.05	.20
Parents' Education (REF: Two 4-year+ degrees)								
No college	.36	79.61	.45	44.15	.54	23.28	.54	21.98
Some college	.41	94.07	.50	51.26	.59	26.71	.59	25.22
One 4-year+ degree	.55	55.92	.63	30.21	.69	16.64	.70	16.17
Pell Grant Eligibility (REF: No application)								
Eligible	1.03	.12	.95	.29	.97	.10	.98	.06
Not eligible	1.18	4.73	.99	.01	.99	.01	1.00	.00
Academic Background Factors								
SAT Score	--	--	1.00	33.65	1.00	1.35	1.00	1.14
Initial Credit-by-Exam	--	--	1.04	74.78	1.03	34.43	1.02	29.31
Initial Transfer Hours	--	--	1.02	19.02	1.02	13.44	1.02	13.60
High School Class Rank (REF: ≤ 2%)	--	--						
Rank 2.01 - 5%	--	--	.77	4.59	1.00	.00	1.03	.07
Rank 5.01 - 7%	--	--	.63	11.54	.89	.65	1.08	.26
Rank 7.01 - 10%	--	--	.64	12.69	1.04	.08	1.24	2.40
Rank 10.01 - 15%	--	--	.53	22.20	.87	.91	1.03	.04
Rank 15.01 - 30%	--	--	.46	30.66	.84	1.28	.98	.03
Rank 30.01%+	--	--	.32	35.44	.76	1.72	.90	.26
No Rank	--	--	.69	4.26	1.17	.68	1.35	2.34
Mode of Admission (REF: Texas high school)	--	--						

	Model 1		Model 2		Model 3		Model 4	
	OR	X^2	OR	X^2	OR	X^2	OR	X^2
Summer freshman class	--	--	1.06	.19	1.33	4.53	1.46	7.14
Out-of-state student	--	--	.85	1.16	.71	4.32	.72	3.91
First Year Performance								
First semester GPA	--	--	--	--	2.84	566.11	2.88	553.62
Starting College (REF: Liberal Arts)								
Business	--	--	--	--	--	--	2.35	26.14
Education	--	--	--	--	--	--	2.08	11.87
Engineering	--	--	--	--	--	--	.95	.19
Fine Arts	--	--	--	--	--	--	.70	3.04
Architecture	--	--	--	--	--	--	5.34	4.47
Natural Sciences	--	--	--	--	--	--	.81	4.77
Communication	--	--	--	--	--	--	.98	.02
Nursing	--	--	--	--	--	--	.76	1.23
Social Work	--	--	--	--	--	--	.79	.25
Intercept		1.64		-.12		-1.94		-2.12
Likelihood Ratio / df		314.73 / 10		616.43 / 22		1282.85 / 23		1360.13 / 32
△ Likelihood Ratio / df		--		301.70 / 12		666.42 / 1		77.28 / 9
Pseudo R^2		.07		.14		.27		.29

Notes: [1] Odds-ratios and chi-square statistics from multivariate logistic regression models are reported.

The first column of the table shows the effects only for demographic factors, the second adds academic background characteristics, the third adds first semester GPA, and the final one includes starting college. An examination of the final model reveals that the single most important predictor of graduation is first semester GPA. This variable is far and away the strongest effect in the model and dwarfs all other effects. It shows that every point increase in first semester GPA improves the odds of graduating by 188%. Other strong effects are produced by parental education, credit-by-exam and transfer work, and starting in Business or Education. Sex also shows a relatively strong effect, not as strong as CBE and parents' education, but substantially stronger than race/ethnicity, Pell eligibility, and high school rank. These findings reinforce those shown in the previous table: Much focus should be placed on the first-year experience as the GPA in that first semester largely determines who will graduate and who will not. All other considerations seem secondary compared to that central issue.

SECTION 4: FINANCIAL AID AND GRADUATION RATES

Discussions of the four-year graduation rate often include mentions of the role that financial aid plays in producing timely graduation. On one hand, it is argued that when financial aid is paid out in ways that provide incentives to timely graduation, students will in fact be more likely to graduate in four years. Others argue, however, that one source of financial aid, student loans, tends to burden students and can increase time-to-degree.

Another conversation in this domain focuses on the cost of graduation beyond the fourth year to students, their families and the taxpayers that support the university. By definition it is true that, on average, students who graduate in more than four years will incur more cost than students who finish in four. But, it is unclear how much extra it costs them to stay longer and whether those extra costs are borne through additional loans or other forms of financial aid. In general, making the case that four-year graduation rates are important partly relies on the premise that taking longer to graduate is costly both in terms of what the students must pay and what the university must use in resources to support them.

The goal of this section is to examine, in a brief way, the role that financial aid plays in timely graduation and the cost of excessive time-to-degree. Data for this section were provided for the 2004 FTIC cohort by the Office of Student Financial Services (OSFS). Once the data were provided they were vetted by the task force and then combined with the student records data. This combination of sources allowed the task force to examine financial aid, including loans, over time and in conjunction with time-to-graduation and all of the other factors discussed in Section 3. To the knowledge of the task force, no study of this kind has been conducted on campus over the past several years. And this study, in itself, is only a brief examination into myriad issues that are entailed with the distribution of financial aid on a campus as large as UT Austin. As such, this examination should only be seen as the first step of a larger investigation of these issues that is needed by the campus.

FINANCIAL AID AWARDS BY GRADUATION OUTCOMES

The first two questions asked of the financial aid were fairly basic: How much financial aid goes to students with different graduation outcomes? Does the university provide the most aid to students who go on to graduate, or does much of it go to students who never receive a diploma? The first table in the section, Table 4.1, addresses these questions by looking at the distribution of financial aid over six years by graduation outcome.

Table 4.1 Financial Aid Awarded to all Students over Six Years.

	Total	Student Loans			Grants and Scholarships			Federal Work-Study		
	Students	Per student	Total Aid	Any Aid	Per student	Total Aid	Any Aid	Per student	Total Aid	Any Aid
Continuing	149	$31,832	$2,864,841	60.4%	$25,382	$2,360,546	62.4%	$3,498	$52,477	10.1%
Dismissed	394	$12,842	$3,030,747	59.9%	$13,741	$3,586,446	66.2%	$1,760	$68,627	9.9%
Dropped	797	$15,568	$6,118,110	49.3%	$15,891	$7,357,354	58.1%	$2,800	$170,773	7.7%
Grad 4 years	3,540	$19,112	$28,476,961	42.1%	$18,124	$41,322,706	64.4%	$4,347	$1,138,820	7.4%
Grad 5 years	1,565	$24,568	$18,327,483	47.7%	$23,147	$23,285,705	64.3%	$4,716	$716,789	9.7%
Grad 6 years	305	$31,991	$5,502,467	56.4%	$28,148	$5,939,148	69.2%	$4,552	$132,018	9.5%
Total	**6,750**	**$20,569**	**$64,320,608**	**46.3%**	**$19,437**	**$83,851,905**	**63.9%**	**$4,085**	**$2,279,503**	**8.3%**
Among non-graduates	**1,340**	**$16,709**	**$12,013,698**	**53.7%**	**$16,284**	**$13,304,346**	**61.0%**	**$2,538**	**$291,876**	**8.6%**
Among graduates	**5,410**	**$21,722**	**$52,306,910**	**44.5%**	**$20,174**	**$70,547,559**	**64.6%**	**$4,487**	**$1,987,626**	**8.2%**
Percentage to graduates	--	--	**81.3%**	--	--	**84.1%**	--	--	**87.2%**	--

The first main panel in the table shows the distribution of subsidized and unsubsidized student loans, the second of scholarships and need-based grants, and the third of federal work-study awards. The scholarship values reported here only reflect those administered by OSFS and do not include scholarships that may have been awarded directly by colleges or other organizations.

According to the totals near the bottom of the table, the 2004 FTIC cohort took out approximately $64 million in student loans, was awarded almost $84 million in grants and scholarships, and over $2.2 million in federal work-study funds. In terms of loans, $52 million was taken out by graduates, representing about 81% of all loans made to this cohort. $70 million of grants and scholarships went to graduates and a vast majority, $2 million, of the work-study funds went to graduates. These figures show that across categories, in general, financial aid funds go primarily to graduates. Given that the six-year graduation rate in this cohort is about 80%, the financial aid funds disproportionately go to graduates, especially for grants and scholarships and work-study.

Looking specifically at graduates, about 42% of four-year graduates took out any student loans compared to 48% of five-year graduates and 56% of six-year ones. Among four-year graduates who took out loans, the average amount was $19,112. The amounts taken by other graduates were higher, but they also had the extra years of schooling to fund. In terms of grants and scholarships, all three graduation categories were similarly likely to have received awards, and as was the case for loans, average amounts among those receiving any funds were higher for the fifth and sixth year graduates. Work-study awards were relatively uncommon across all graduation groups, and the average amounts received by each group were very similar.

Table 4.2 is similar to 4.1 in layout but only examines the financial aid awarded during the first four years. The goal of this table is to see whether patterns of financial aid differ during the window of time that all graduates share. It shows that even during this time, four-year graduates were the least likely to take out loans, though the amount they received during that time were very similar to those who went on to graduate in five or six years. The four-year graduates were about as likely to receive grants and scholarships during that time, though the amounts they received on average were somewhat less than the other groups. And again, in terms of work-study, the amounts were very similar. This table shows that, in general, four-year graduates do not differ significantly in terms of financial aid awarded during the first four years except that they were somewhat less likely to take any student loans. But even on that measure, the differences were not large: Between fourth and fifth, the difference was 3.5 percentage points, and between fourth and sixth, it was about 10 percentage points.

In the next table the results show the amount of financial aid accumulated in the fifth and sixth years. Four-year graduates have zero values in this table because they had graduated by that time and received no additional aid. Looking at the totals shown in Table 4.3, students accumulated about $8.9 million in student loans in the latter two years. Of that total, about $6.2 million went to students who would go on to graduate. About $5.7 million in grants and scholarships were disbursed, most again going to graduates. Very little work-study funding was provided during this period of time.

Table 4.2 Financial Aid Awarded to all Students over the First Four Years.

	Total	Student Loans			Grants and Scholarships			Federal Work-Study		
	Students	Per student	Total Aid	Any Aid	Per student	Total Aid	Any Aid	Per student	Total Aid	Any Aid
Continuing	149	$18,313	$1,519,999	55.7%	$20,039	$1,683,268	56.4%	$3,098	$40,270	8.7%
Dismissed	394	$11,526	$2,697,102	59.4%	$13,186	$3,441,428	66.2%	$1,719	$67,043	9.9%
Dropped	797	$13,194	$5,132,550	48.8%	$14,833	$6,778,853	57.3%	$2,625	$157,491	7.5%
Grad 4 years	3,540	$19,112	$28,476,961	42.1%	$18,124	$41,322,706	64.4%	$4,347	$1,138,820	7.4%
Grad 5 years	1,565	$20,228	$14,402,622	45.5%	$20,726	$20,435,846	63.0%	$4,403	$656,094	9.5%
Grad 6 years	305	$20,358	$3,216,543	51.8%	$22,543	$4,486,113	65.2%	$4,123	$107,194	8.5%
Total	**6,750**	**$18,084**	**$55,445,777**	**45.4%**	**$18,315**	**$78,148,215**	**63.2%**	**$3,947**	**$2,166,912**	**8.1%**
Among non-graduates	**1,340**	**$13,243**	**$9,349,651**	**52.7%**	**$14,842**	**$11,903,549**	**59.9%**	**$2,364**	**$264,805**	**8.4%**
Among graduates	**5,410**	**$19,532**	**$46,096,126**	**43.6%**	**$19,118**	**$66,244,665**	**64.0%**	**$4,353**	**$1,902,107**	**8.1%**
Percentage to graduates	--	--	**83.1%**	--	--	**84.8%**	--	--	**87.8%**	--

Table 4.3 Financial Aid Awarded to all Students in the Fifth and Sixth Years.

	Total	Excess Student Loans			Excess Grants and Scholarships			Excess Federal Work-Study		
	Students	Per student	Total Aid	Any Aid	Per student	Total Aid	Any Aid	Per student	Total Aid	Any Aid
Continuing	149	$17,695	$1,344,842	51.0%	$9,030	$677,278	50.3%	$2,441	$12,207	3.4%
Dismissed	394	$9,268	$333,645	9.1%	$5,578	$145,018	6.6%	$1,584	$1,584	0.3%
Dropped	797	$11,874	$985,560	10.4%	$7,417	$578,501	9.8%	$2,656	$13,282	0.6%
Grad 4 years	3,540	$0	$0	0.0%	$0	$0	0.0%	$0	$0	0.0%
Grad 5 years	1,565	$7,241	$3,924,861	34.6%	$4,974	$2,849,858	36.6%	$1,958	$60,695	2.0%
Grad 6 years	305	$15,874	$2,285,924	47.2%	$10,021	$1,453,035	47.5%	$2,758	$24,824	3.0%
Total	**6,750**	**$10,074**	**$8,874,831**	**13.1%**	**$6,359**	**$5,703,690**	**13.3%**	**$2,208**	**$112,591**	**0.8%**
Among non-graduates	**1,340**	**$13,662**	**$2,664,047**	**14.6%**	**$7,826**	**$1,400,797**	**13.4%**	**$2,461**	**$27,072**	**0.8%**
Among graduates	**5,410**	**$9,054**	**$6,210,785**	**12.7%**	**$5,993**	**$4,302,893**	**13.3%**	**$2,138**	**$85,519**	**0.7%**
Percentage to graduates	--	--	**70.0%**	--	--	**75.4%**	--	--	**76.0%**	--

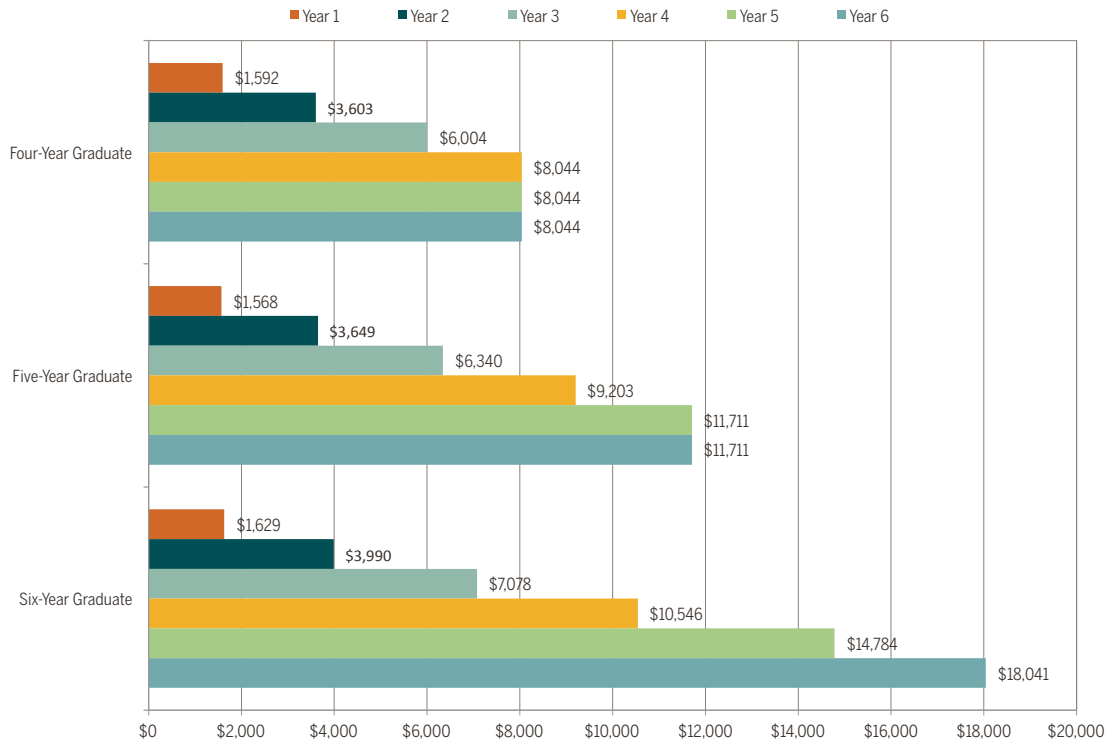
Among students who graduated in five years, 34.6% took on new debt during the fifth year at an average amount of $7,241. Among six-year graduates, 47.2% took on new debt during those two years for an average amount of $15,874. Five-year graduates who received grants and scholarships during this time received an average of $4,974 compared to the $10,021 received by six-year graduates. These findings make that clear taking additional years to graduate leads to higher student loan burdens and the provision of resources that could go to students in later cohorts who have a chance to graduate in four years. Put another way, these findings show the cost of excess years of graduation in terms of the

resources that students and families must pay to receive the diploma. They also show the costs the university bears, in financial aid terms, to support these excess years.

STUDENT LOANS OVER TIME

Given the high volume of discussion of the role of student loans on timely graduation, it is worth exploring further the role that those loans seem to play in these processes. Figure 4.1 provides a breakdown of cumulative student loans among all students (including those who received no loans) by graduation year. The goal of this figure is to determine whether there are very different patterns in loan distribution over time for students graduating in different years. It could be the case that five and six-year graduates do, in fact, take on substantially more loan debt earlier in their careers in a way that creates burden later. Alternatively, similar patterns across graduation categories would suggest that loans do not play a substantial role in generating time-to-degree.

Figure 4.1 Average Student Loan Levels among All Students by Graduation Year.

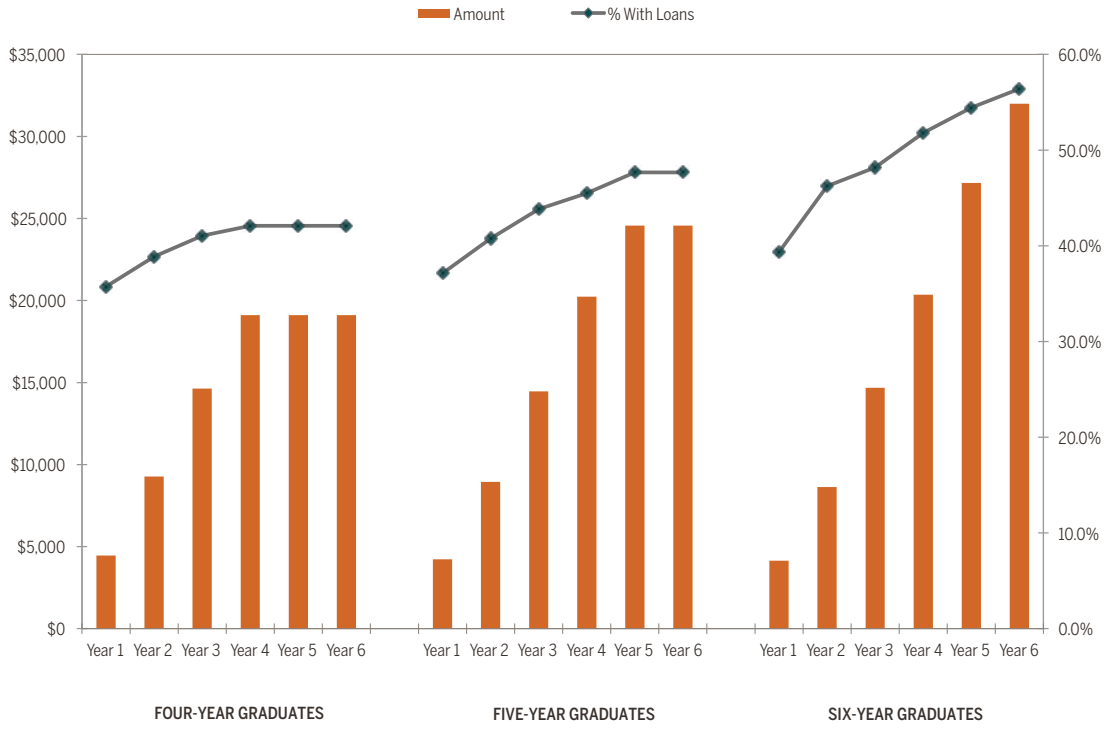


According to the figure, all graduates, regardless of endpoint, took out about $1,600 in loans by the end of the first year. This figure includes all students, even those with no loans, so the number only among students with loans will be somewhat higher. By the end of the second year, the averages for four-and five-year graduates were similar at $3,600 but were somewhat higher for six-year graduates at $3,990. In the third year, debt among four-year graduates grew to about $6,000 on average, compared to $6,340 for five-year and $7,078 for six-year graduates, again, fairly similar totals. By the end of the fourth year, the numbers start to diverge, with four-year graduates having the least debt at $8,044 on average and six-year graduates having $10,546. This difference of $2,500 over four years

is substantial, but most of the difference occurred in years three and four. Excessive burden, were it to occur and have a lasting effect, would likely occur in the first or second years, but the data do not support such a finding. It is also noteworthy that the real differences between four-year graduates and the other groups occur in the fifth and sixth years when the later graduates are still building debt but the four-year ones are finished. Again, this finding points more to the importance of finishing in four years than debt early in students' careers being a burden to timely graduation.

The next figure, Figure 4.2, provides a similar analysis but provides lines indicating the percentage of students with any cumulative loan debt at that point in time and bars representing the average amount of debt among those who hold it. In the first two years the findings reveal very similar patterns across all three graduation groups. In terms of the average amount taken, all three groups are also similar across all of the first four years. However, in terms of the percentage of students taking on any debt, the number tends to climb least rapidly among the four-year graduates and most rapidly among the six-year ones. But again, the major differences really appear after the end of the fourth year, when five-and six-year graduates continue to take on debt, but four-year graduates are finished with their educations.

Figure 4.2 Average Amount of Loans among Students with Loans over Time and by Graduation Year.



Another issue to keep in mind when reading these figures is the underlying size of each group. The four-year graduate group is by far the largest, with over 3,000 students. The six-year group is substantially smaller at a little over 300 students. Thus, even if that group reports a 50% debt rate by the end of year four, that is only about 150 students. By way of comparison, the 40% debt rate among the four-year graduates represents approximately 1,400 students. Given that both groups have about the same amount of debt at that point in time (close to $20,000), something else must be happening that would allow the 1,400 to graduate in four years but the 150 to wait an additional two years to do so. It almost certainly cannot be the accumulated debt, though it could be difficult personal situations of which the

accumulated debt is an indicator. Whatever the case, the findings do not support the idea that student loan debt increases time-to-degree.

NET EFFECTS OF FINANCIAL AID ON GRADUATION OUTCOMES

The final test of the effects of financial aid comes in the context of the multivariate logistic regression model discussed in Section 4. For this test, measures of financial aid are added to the final models shown in Tables 3.9 and 3.10. As shown in Table 4.4, the first test examines the effect of receiving any aid, and the amount of aid, on any graduation. The second model examines the effects of the same factors on four-year graduation among students who graduated. Again, these variables were added to the final models shown in the previous section, though, in the interests of space, only the effects for the financial aid variables are shown.

Table 4.4 Net Effects of Financial Aid Factors on Any Graduation and Four-year Graduation.[1]

	Any Graduation (n = 6,750)		**4-Year Graduate (n = 4,741)**	
	OR	**X^2**	**OR**	**X^2**
Any Aid				
Student Loans	.71	6.55	1.17	1.22
Grants	.76	4.07	1.04	.09
Scholarships	1.06	.39	.86	2.53
Work-study	.72	.83	1.49	3.14
Total Amount				
Student Loans	1.04	3.65	1.00	.60
Grants	.97	1.97	.99	2.26
Scholarships	1.04	3.34	1.01	8.24
Work-study	1.50	3.62	.98	.22
Intercept	-2.08		.98	
Likelihood Ratio / df	1393.77 / 40		1637.35 / 62	
△ Likelihood Ratio / df	33.64 / 8		19.92 / 8	
Pseudo R^2	.30		.40	

Notes: [1] Odds-ratios and chi-square statistics from multivariate logistic regression models are reported.

In terms of any graduation, the model shows that taking any student loans or any grants decreases the odds of graduation, though the effects are not strong. Assuming that loans are taken, higher amounts lead to a greater likelihood of graduation. Higher amounts of work-study and scholarship aid also increase the likelihood of graduation, but only marginally so. In terms of time-to-degree, no financial aid variable has a non-marginal effect except for the amount of scholarships received. In that case, higher amounts of scholarships increase the odds of graduating in four years. Compared to the findings in Tables 3.9 and 3.10, these results suggest that financial aid plays a marginal role in predicting graduation outcomes.

It is important to note that these findings do not imply that financial aid is not necessary; rather, it shows that financial aid on this campus, as distributed, basically allows students with need to pursue their educations in much the same way as students without that need. If the financial aid were to go away, it is likely that the effects of factors such as family background and other measures of socioeconomic status would skyrocket because the field is no longer being made level through the provision of financial aid. More importantly, many students currently on campups would simple be unable to attend without financial aid. Clearly aid plays an important role in the lives of students, but in terms of timely graduation, other factors are more important. Nevertheless, as mentioned at the outset of this section, much more research is needed on this topic. The data from OSFS and student records are rich in complexity, and the brief analysis reported here cannot begin to do justice to the nuances they contain.

SECTION 5: STUDENT SATISFACTION AND TIME USE

Although the analyses in the section above have shed a great deal of light on the processes that drive graduation and time-to-degree, they have also left open significant questions. Of these remaining questions, perhaps the most important involves differences among colleges. That is, as shown in Section 3, even after adjustments for college preparedness, background factors, hours taken, switching majors, and many other measures, some colleges still produce graduates more quickly than others. Some of these differences are easily explained. For example, the MPA program in Business is a five-year degree, thus students in the program will find it extremely difficult, if not impossible, to graduate in four years. Similarly, although the bachelor's degree in Architecture is, ostensibly, a four-year degree, the fact that it requires at least 167 hours of coursework to complete means that few students can actually finish it in four years.

However, in other colleges, questions remain. Why is it, for example, that students in Engineering and Natural Sciences have relatively lengthy time-to-degrees? In general, the number of hours required to receive a degree in Engineering is about 130, not much more than degrees in other colleges, such as Liberal Arts and Communication. Part of the answer may lie in these differences in hours requirements, but given the small gaps, it is unlikely that much of the explanation resides there.

Another possible explanation is the availability of courses needed to graduate. In discussions with advisors and students around campus, one of the commonly cited reasons for delays in graduation are a lack of courses that fulfill degree requirements. In some cases, the courses are nested within a sequence such that if a particular course cannot be taken, it delays completion of the entire sequence.

The data used in the sections above doesn't shed any light on this issue. It contains hours taken, GPA and many other factors, but it does not address courses taken or the availability of courses. Indeed, collecting such information, in general, would be a difficult undertaking but is necessary for helping answer this question. Until such data are made available, it is possible to rely on the Student Experience in the Research University (SERU) data for hints as to whether course availability is an issue.

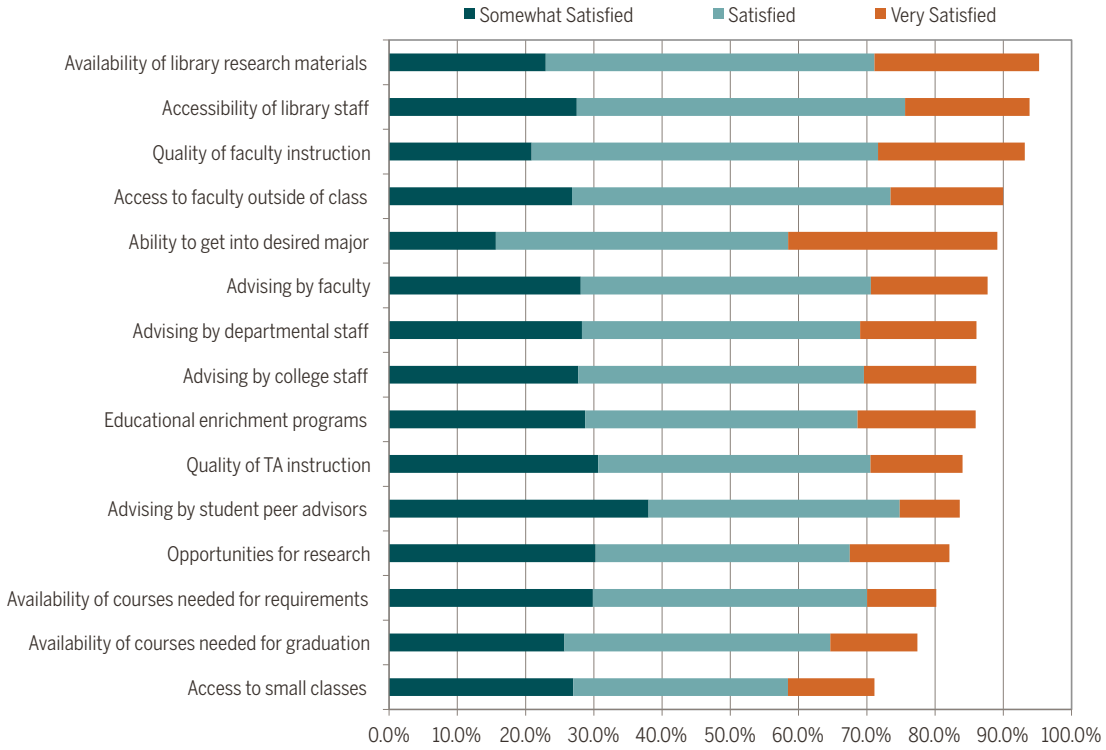
The SERU survey is a yearly project conducted at UT Austin in conjunction with several other public research universities around the US. The online survey contains hundreds of questions related to student experiences on campus and has been widely used by researchers around the country to better understand how students navigate research universities. At UT, the survey is conducted by staff in the Division of Student Affairs along with collaborative effort from faculty, staff and students across

the university. The last wave of the survey was conducted in spring 2011 and was administered to all undergraduate students on campus. Response rates for the survey varied by college but in general were 35-50%. The final data set yielded over 11,500 useable responses.

STUDENT SATISFACTION

The SERU survey asked students a number of questions related to their satisfaction with various aspects of the university. In total, there were 15 of these items, and for each, students could report that they were very dissatisfied, dissatisfied, somewhat dissatisfied, somewhat satisfied, satisfied, or very satisfied. Figure 5.1 shows the 15 aspects of the university that students rated. The bars in the chart indicate overall levels of satisfaction, but only those who answered on the satisfied side of the scale are shown. Items are ordered based on overall satisfaction, with the items garnering the most satisfaction at the top of the chart and those with the least at the bottom.

Figure 5.1 Students' Satisfaction with Various Aspects of the University.

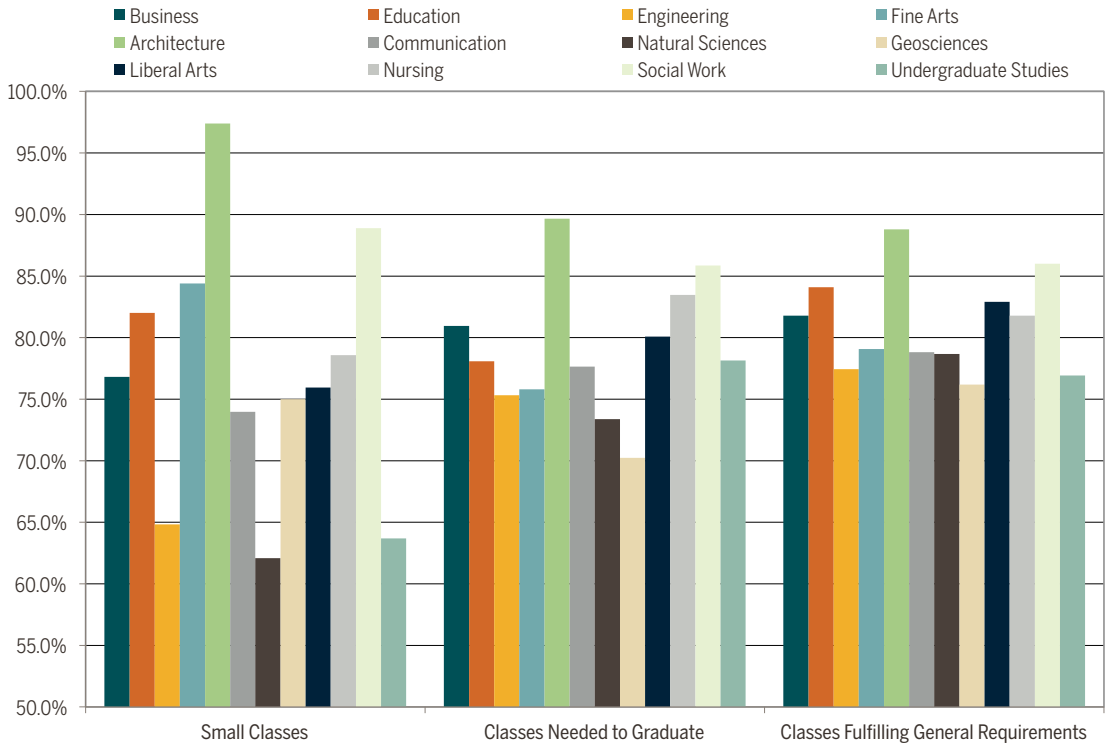


According to the figure, students report the highest satisfaction levels with the university libraries. Indeed, for both of the library measures, about 95% of students report somewhat satisfied or better for these items. Students are also extremely satisfied with the quality of faculty instruction: Overall, about 93% of students reported being somewhat satisfied or better with that aspect of the campus. Students were also very satisfied with access to faculty outside of class and their ability to get into a desired major. Falling farther on the list were issues such as advising, the quality of TA instruction, and opportunities for research. But even for all of these issues, overall satisfaction levels were over 80% across the university.

However, the bottom of the list is made up of the issues that might be driving the differences in colleges observed above. That is, of all the items on the list, students were least satisfied with the "availability of courses for general education or breadth requirements" (80% satisfied), "availability of courses needed for graduation" (77% satisfied), and "access to small classes" (71% satisfied). Although these items are not meant to measure the lack of needed courses per se, the fact that students are the least satisfied with them is a strong indication that problems in this domain exist on campus.

The next figure, Figure 5.2, further explores this issue by examining satisfaction with course availability by college. If it is the case that delays in graduation in colleges such as Engineering and Natural Sciences are due to course availability issues, then the findings should reveal that students in those colleges are in fact less satisfied with availability of courses.

Figure 5.2 Student Satisfaction with Course Access by College.



Because of the number of colleges around campus, Figure 5.2 is necessarily complicated. Nevertheless, some findings readily stand out. For example, in satisfaction with access to small classes, students in Engineering, Natural Sciences and Undergraduate Studies report less satisfaction than all other colleges. In terms of classes needed to graduate, the differences are not as strong but are similar: Students in Engineering, Natural Sciences and Geosciences report the lowest satisfaction levels. In terms of courses that fulfill general requirements, all colleges cluster fairly evenly, but again, the same colleges tend to report the lowest levels of satisfaction. Given these findings, it is possible that the differences observed in previous sections might be due to course availability or the sequencing of courses needed to graduate. The SERU data have provided some important insight into the issue, but much more work is needed on the topic.

Although not shown in the figure, the task force also examined satisfaction with students' ability to get into desired majors. Across the university the satisfaction with this item is very high, almost 90%.

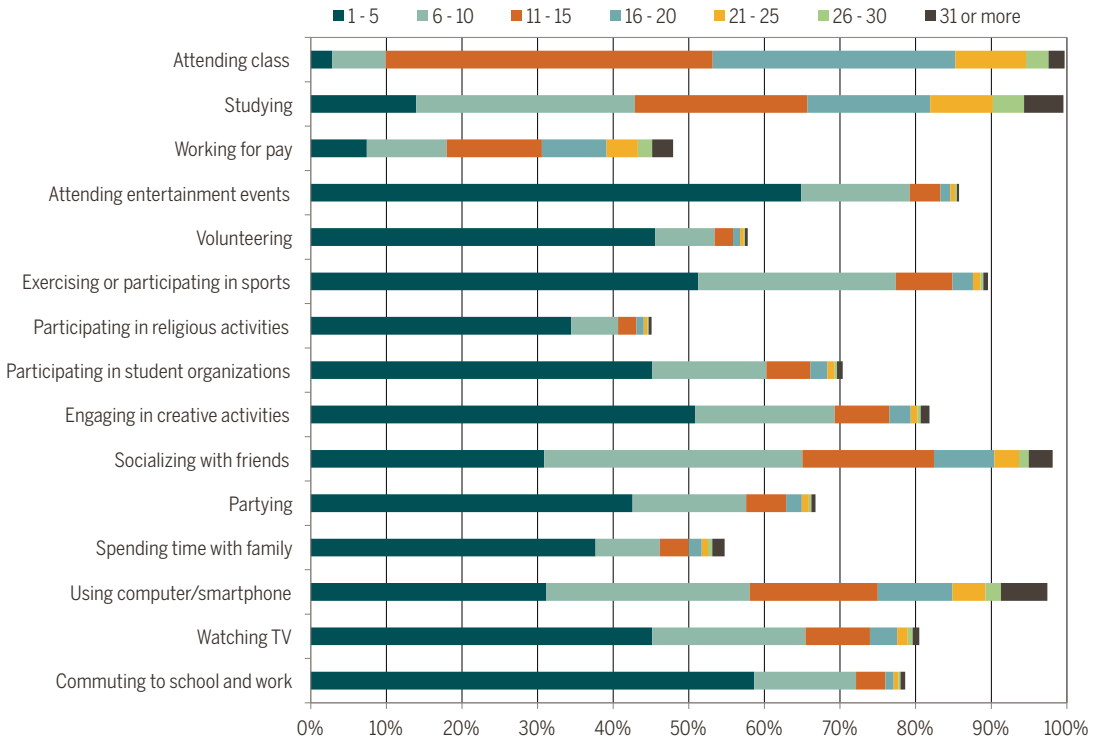
However, by college the satisfaction levels vary widely. In the colleges of Business and Architecture, satisfaction levels are the highest at over 95%. Other colleges, including Education, Engineering, Fine Arts, Communication, Geosciences and Social Work all report satisfaction levels of 90% or higher. For the remaining colleges, satisfaction levels are somewhat lower and in the range from 85 to 88%. The one college that falls below this number is Undergraduate Studies: For students in that college, satisfaction with ability to get their desired major is at the bottom, with 60%. As noted in Section 2, attrition levels are relatively high in Liberal Arts and Natural Sciences, and part of the reason might lie in students' inability to get the majors they want. If this factor is a significant predictor of attrition, then it portends problems with retention for students entering Undergraduate Studies. Clearly, this work is brief and speculative. Thus much more research is needed to understand the role that the ability to get a desired major plays in overall attrition levels.

TIME USE

In discussions with advisors and students, one commonly cited reason for students taking fewer than 15 hours per semester is a lack of time to study or otherwise prepare for a large number of courses. Some members of the campus community have remarked that many students engage in paid employment, and the hours required of those jobs make it difficult to complete 15 hours or more. Throughout the task force's discussion with members of campus, this time availability issue continued to be raised as a source of concern.

But is it really the case that students lack the time to take a large number of classes? Similarly, are students working so many hours in paid employment that they cannot take 15 hours a semester on a regular basis? Again, the SERU data provide some clues as to the time availability of students on campus. In the survey, students were asked, "How many hours do you spend in a typical week (7 days) on the following activities?" Possible response categories included 0, 1-5, 6-10, 11-15, 16-20, 21-25, 26-30, and more than 30. For the purposes of this analysis, midpoints were coded for all categories, with the top category being coded as 33 hours. The activities included in the survey are shown in Figure 5.3.

Figure 5.3 Breakdown of Hours Spent in a Typical Week on Various Activities.

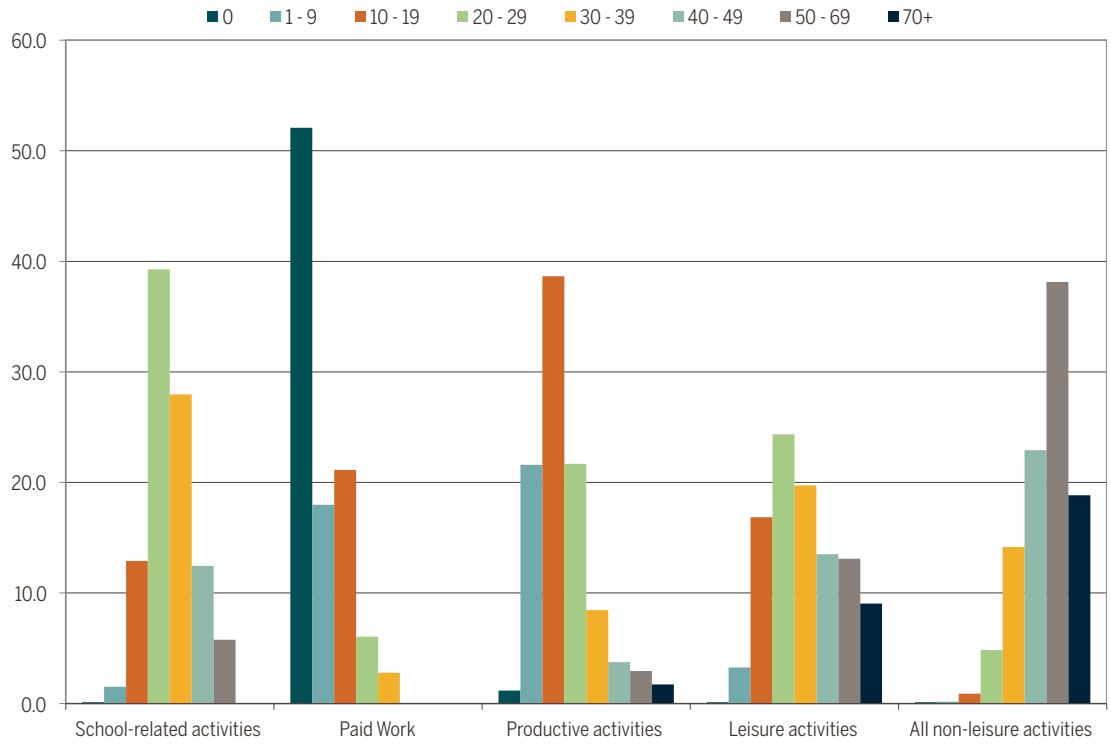


Students reporting zero hours are not shown on the figure. Thus the length of the bar is an indication of the percentage of students who engaged in any level of the activity. The colored bands show the percentages of students who engaged in the activity at different amounts of time. The longest bars are shown for time spent attending class, studying, socializing with friends, and "using the computer or smart phone for non-academic purposes (games, shopping, e-mail/instant messaging, etc.)." For each of the academic items, about 100% of students spent time on the activities; for the other two the percentages were over 95%. Other common activities included exercising, watching TV and attending entertainment events ("movies, concerts, sports or other entertainment events"). In contrast, the least common activities were paid work, participating in religious activities and spending time with family.

Given concerns about paid employment, the low level of activity in that domain is especially noteworthy: as the figure shows, only about 48% of students reported any paid work. Among all students, about 31% work one to 15 hours a week, 9% work 16 to 20 hours a week, 4% work 21 to 25 hours a week and about 5% work 26 hours or more a week. In short, paid work is common on campus, but a minority of students engages in the activity in a typical week. Working large numbers of hours, however, is fairly rare.

To better understand the role of paid employment in students' time use, it is important to look at it in comparison with other activities. Figure 5.4 performs this task by aggregating hours according to general types of activity. School-related activities include attending class and studying; paid work makes up its own category; productive activities include volunteering, exercise, engaging in creative activities, participating in student organizations, and participating in religious activities; and leisure activities include the remaining items.

Figure 5.4 Hours Spent in a Typical Week on Various Activities by Broad Category.



Unlike the previous figure, this one includes students who spent no time on the activity. Of all categories of effort, the one with the highest level of no activity was paid work. In contrast, every other category had significant levels of engagement across all students. In terms of productive activities, the modal category, at about 40%, was engaging in those activities about 10 to 19 hours per week. Twenty to 29 hours a week of productive activity also was commonly cited by students. After that, more hours were much less common.

In contrast to productive forms of behavior, students spent a great deal more time in leisure activities. The modal category for this type of behavior was again 10 to 19 hours per week, but levels of engaging in these activities were relatively high across all more time-intensive categories. Indeed, about 20% of students in the survey reported spending 50 hours or more in leisure activities in a typical week. Juxtaposing time spent in leisure activities against paid work shows even greater differences.

In sum, these findings do not support the argument that students lack the time to take more coursework. It is true that many students work, but over half do not, and among those who do, the vast majority work fewer than 20 hours a week. In contrast, students engage in very high levels of leisure activities. This time could be repurposed to focus on classes and other academic work and still leave plenty of time for paid work, productive activities, and some leisure pursuit. It is important to further note that many of these activities are not associated with campus life. Thus, as students spend more time engaging in them, they spend less time behaving in ways that integrate them into campus life. As previous research has shown, campus integration is crucial to the success of students; consequently, it is important for the university to find ways to reduce the time spent on leisure activities and redirect it toward the behaviors that better integrate students into campus life.