

Trends in FTIACs Time-to-degree at Oakland University



Taeko Yokoyama
Reuben Ternes
July 2015

Summary

The trend of students taking longer to complete their degrees has been a concern at OU as well as nationally for at least the last two decades. In 1987, OIRA, published a report “OU as a Five Year School”, which focused on the increasing time-to-degree. In 2001, OIRA, reporting on students who graduated between 1995 and 2000, found that time-to-degree had continued to increase. Another finding in the 2001 report was that there were substantial differences by major and school.

For the current study, eight years of degree files were combined to create a file containing records for 8,640 FTIACs (First-Time In Any College) students, who graduated between summer 2005 and spring 2013. During this period, average time-to-degree showed some improvement over the previous report, ranging from 4.96 to 5.28.

Graduation Year	Number of Graduates	Avg Time to Degree
1995-1996	265	5.80
1997-1998	657	5.70
1999-2000	647	5.50
2000-2001	431	5.40
2001-2002	808	5.25
2002-2003	867	5.21
2003-2004	973	5.19
2004-2005	942	5.00
2005-2006	963	4.96
2006-2007	925	5.17
2007-2008	999	5.17
2008-2009	1005	5.14
2009-2010	1035	5.08
2010-2011	1169	5.28
2011-2012	1219	5.10
2012-2013	1325	5.09

Where graduation rates measure the percent of incoming students (FTIACs) that graduate within 4, 5, 6 or more years, time-to-degree starts with the students who have graduated and goes back to determine the length of time between when they entered and when they graduated.

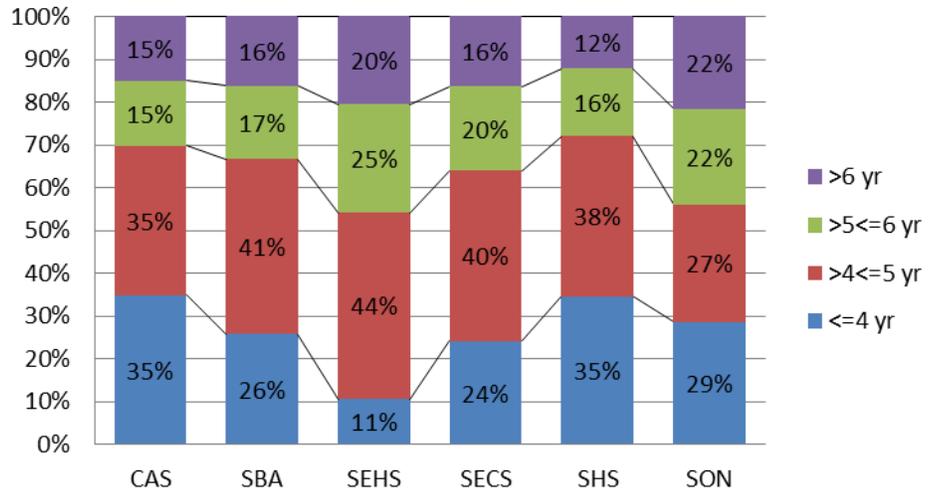
Of the FTIACs who graduated between summer 2005 and spring 2013, 28% finished in four years. Another 37% graduated in more than four but within five years. An additional 18% had taken between five and six years and 17% had taken more than six years to complete their degrees.

On average, 65%

of the students in this study graduated within five years, compared to 60% in 1995-2000 and 79% in 1981-82. Looking at the data by School/College, about 35% of Health Science (SHS),

35% Arts and Sciences (CAS), and 29% Nursing (SON) students graduated within four years. Among the remaining schools, the rate ranged from 11% in SEHS (Education and Human Services) to 26% in SBA (Business Administration).

Figure1: FTIACs



Student workloads. Student course load has been a subject of concern at OU since at least the mid-1970's. The 1987 report showed a decrease in average credits enrolled at every class level between Fall 1981 and Fall 1985, and that trend continued to around 1997, when we began to see a turn-around in average credits enrolled (Table 2). This change is due to the efforts of the New Student Program Office, and now the first Year advising center (FYAC), advisers, and others to encourage students to enroll in a true "full-time" schedule of at least four 4-credit courses in the first semester, and to achieve sophomore standing (28 credits) by the end of their first year.

Table 2: Average Credit Hours

	2013	2011	2009	2007	2005	2003	2001	1999	1997	1995	1990	1985
Freshman	14.5	14.1	13.7	13.5	13.3	13.0	12.8	12.7	12.4	11.8	12.3	12.5
Sophomore	13.3	12.9	12.8	12.6	12.5	12.3	12.2	11.9	11.1	11.1	11.4	11.5
Junior	12.3	12.3	12.1	11.8	12.2	12.1	11.9	11.1	10.4	10.5	10.9	10.6
Senior	11.7	11.6	11.7	11.6	11.7	11.6	11.3	11.0	10.7	10.6	10.9	10.9

Table 3 shows a clear relationship between workload and time-to-degree. Students who graduated in 4 or less years averaged 14.4 credits per term (well above the current average of 13), while average credits for those who took longer than six years was 10.3.

Table 3: Average Credits Enrolled

		CAS	SBA	SEHS	SECS	SHS	SON	UP	Total
Time to Graduate	<=4	14.5	14.3	14.2	14.9	14.4	14.1	14.3	14.4
	>4<=5	13.0	13.0	14.0	13.4	12.8	12.2	12.2	13.1
	>5<=6	11.9	11.8	12.9	12.2	11.9	11.3	11.2	12.0
	>6	10.4	9.8	11.3	10.6	10.6	10.1	9.5	10.3
	Total	12.9	12.6	13.2	13.1	12.9	12.1	11.1	12.8

Total Credits earned. The 1987 study hypothesized that increases in total credits earned were a major contributor to the lengthening time-to-degree. The average credits earned by graduates was 133 in 1982, 137 in 1987, and 139.5 in the 2001 study. The average in this study was 140.3 credits. While most

OU degrees require

124 -128 credits,

some degrees such

as Biomedical

Diagnostic &

Therapeutic

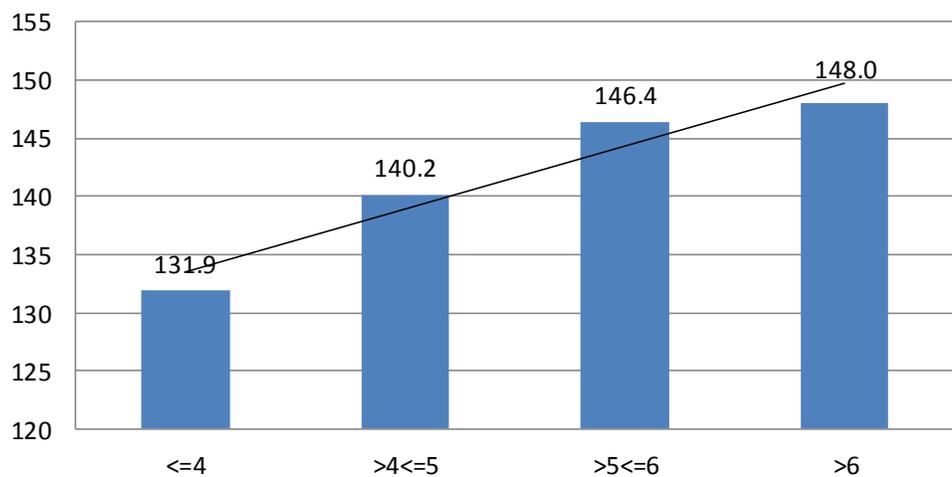
Sciences require

136 credits, while

degrees in education require 130-160 credits (music education can go to 165), which helps to

explain the longer time-to-degree for SEHS majors. However, while students who take more

Figure 2: Average Total Credits Earned

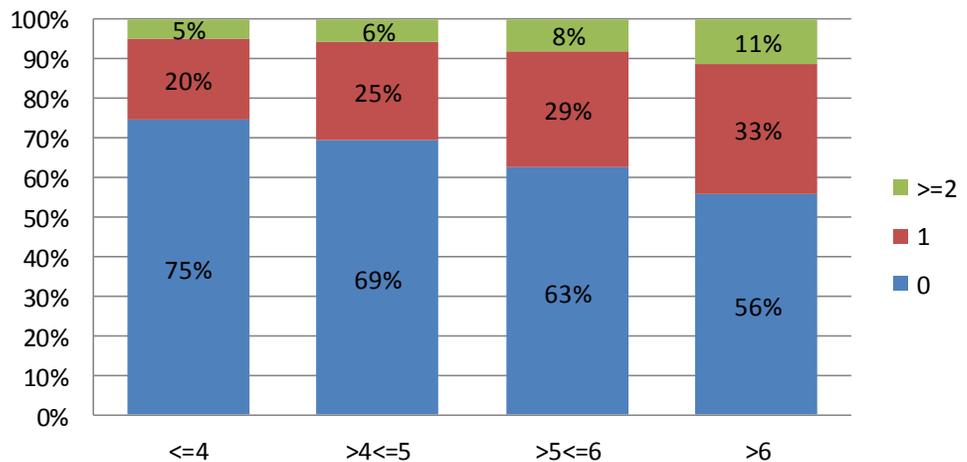


than four years to graduate tend to earn more credits, those who take the longest will not necessarily have earned the most credits.

Major Changes. Multiple changes of major are often hypothesized to be a factor in students extending their time in college. Overall, 67% of the FTIAC students in the study never changed their major, and 7% changed two or more times. 44% of those who took longer than six years changed more than

once - although only 11% changed more than twice. The mean number of major changes ranges from .33 for the four-year graduates to .61 for the over six-year graduates

Figure 3: Major Changes



Academic performance. GPA at the end of the first term was used to stand in for academic ability. The mean first-term GPA of students who graduated within five years was 3.26, while for those taking longer, it was 2.89.

Table 4 shows average GPA at the time of graduation by schools. Graduation GPA also shows linear relationship with the length of time-to-degree.

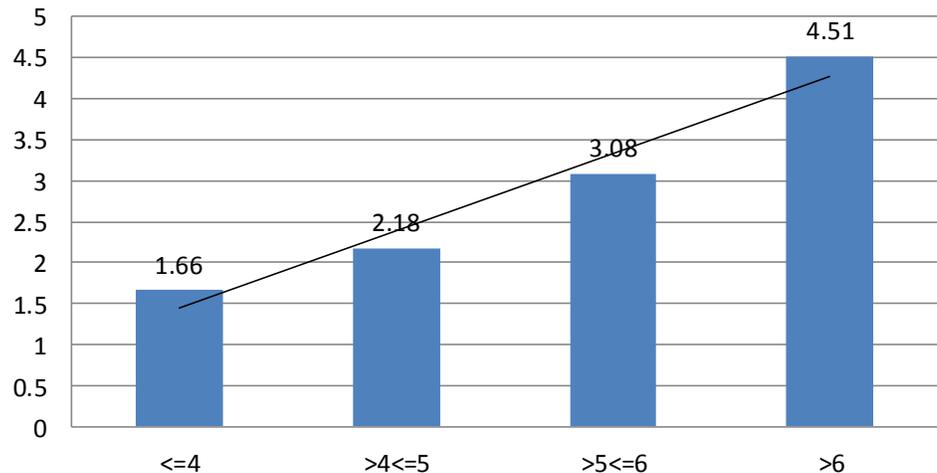
Table 4: Average GPA at Time of Graduation

		CAS	SBA	SEHS	SECS	SHS	SON	UP	Total
Time to Graduate	<=4	3.41	3.35	3.55	3.45	3.52	3.56	3.27	3.43
	>4<=5	3.26	3.19	3.55	3.28	3.32	3.43	3.01	3.30
	>5<=6	3.08	3.01	3.45	3.02	3.15	3.39	2.83	3.16
	>6	2.97	2.97	3.29	2.95	3.06	3.20	2.88	3.04
	Total	3.24	3.16	3.47	3.21	3.33	3.41	2.95	3.27

Repeat courses. Frequent mention is made at OU of the seeming frequency of repeating courses and our data does show that repeating courses is associated with taking longer to graduate. 76% of those students who graduated “on-time” repeated no courses, while only 21% of those who

went beyond six years had no repeats and some had more than ten. The mean number of repeats for the 4-year graduates was 1.66, while for those taking more than six years it was 4.51.

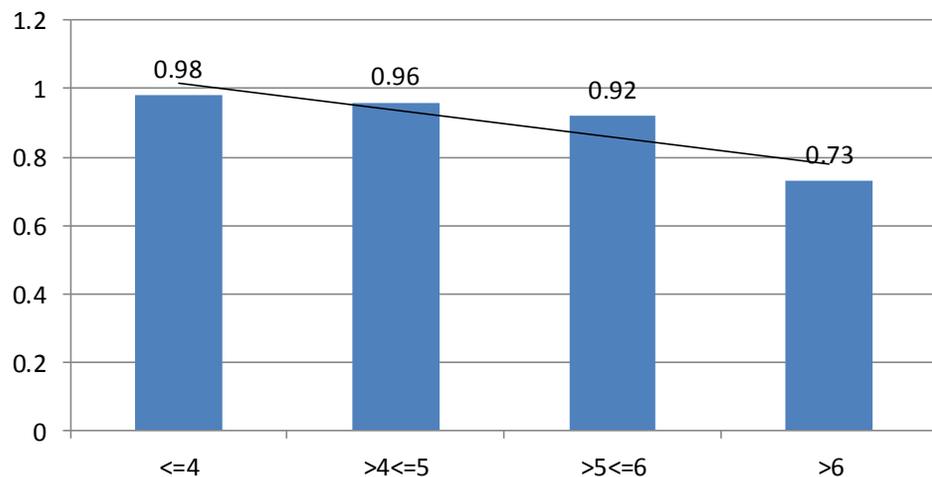
Figure4: Average Number of Repeated Classes



Patterns of attendance. Visual examination of the raw attendance data indicated that students who graduate

within four to five years rarely stop out. Students who took more than five years showed

Figure5: Attendance Ratio



somewhat more uneven attendance, and those who took more than six years showed long breaks and sporadic in-and-out attendance. In order to quantify these patterns, we calculated an “attendance ratio”, the ratio of the number of terms (fall and winter) actually attended over the number of terms between the students’ entry to OU and graduation term (Figure 5).

Complex interactions of factors. The next stage of this exploratory study employed linear regression to investigate the relationships between several important variables and time-to-degree. We included the following variables: gender, minority (yes/no), 1st term GPA, GPA at Graduation, attendance ratio, average credit hours, number of major changes, the number of repeated courses, and the student’s area of study. We also limited the data to students that graduated in 6 years or less¹.

Table 5 below shows the results of this regression model. The coefficients listed in Table 5 are directly interpretable to the time to degree in years. For example, the regression model suggests that increasing one’s average term credits by one unit, say from 15 to 16, would reduce their expected time to degree by 0.209 years. (Positive coefficients increase time to degree while negative coefficients reduce time to degree).

We included in our model a dummy variable for each area of study. This allows us to gauge the impact that a particular area might have on time to degree, above and beyond any of the other variables in the model. In our other exploratory analyses, Art & Humanities were associated with basically no increase or decrease to time to degree, so we use it as a reference category here to avoid multicollinearity issues.

¹ 6 Years is a somewhat arbitrary cut-off. OIRA also ran data on students that graduated in 8 years or less, and found very similar results.

**Table 5: Regression results for FTIAC time to degree,
for students graduating in 6 years or less**

Variable	Coefficient	Std. Error	Std. Coefficient	t-value	Significance
(Constant)	9.256				
Attendance Ratio	-1.706	.085	-.179	-20.117	.000
Average Term Credits	-.209	.004	-.464	-49.357	.000
First Term GPA	-.023	.015	-.017	-1.493	.135
GPA at Graduation	-.161	.026	-.077	-6.236	.000
Number of Repeated Courses	.096	.005	.217	21.309	.000
Total Major Changes	.094	.011	.080	8.868	.000
Gender (1=male)	.100	.015	.064	6.710	.000
Minority (1=minority)	-.020	.025	-.007	-.778	.436
University Programs	-.211	.048	-.040	-4.381	.000
Math & Sciences	-.131	.027	-.047	-4.802	.000
Social Sciences	-.225	.022	-.103	-10.159	.000
Business	-.070	.021	-.036	-3.349	.001
Education & Human Services	.391	.024	.171	16.254	.000
Engineering & Computer Science	.072	.030	.023	2.369	.018
Health Sciences	-.037	.026	-.014	-1.396	.163
Nursing	.171	.029	.057	5.812	.000
Art & Humanities	0	Reference Category (No Impact on Time to Degree)			

Almost all of the variables in the model were statistically significant (see the right hand most column). There were three exceptions. First term GPA, minority status, and graduating from a health science discipline. Each of these variables showed relationships with time to degree that were statistically indistinguishable from zero. Additionally, they all have very small coefficients, which suggests that even if a larger sample was obtained, the impact of these three variables would remain small, perhaps trivially so.

The largest coefficient is the attendance ratio. This ratio is simply the number of semesters the student attended divided by the number of semesters it took the student to graduate. Its predictive strength is not that surprising of a finding, since one would expect students that take semesters off to take longer to graduate. For most students, taking one semester off will result in a decrease in this ratio by around a tenth of a point or so. In turn, that

would increase time to degree by around 0.17 years. (It may seem like taking a semester off should increase time to degree more, but the ratio includes only fall and winter terms. Students taking summer terms are then able to 'catch up' for potential missed terms, mitigating the impact of a missed semester).

Average Term Credits has a relatively large contribution to the final model. For each additional average term credit a student takes over their academic career, it reduces their time to degree by almost a quarter of a year.

The total number of repeated courses is also an important factor in how long it takes students to graduate. Each repeated course leads to an increase in time to degree by about one-tenth of a year.

The total number of major changes is also related to time to degree. However, the relationship is probably not as strong as many would intuitively expect. Changing one's major only increases time to degree by about a tenth of a year – similar to repeating a single course. The most likely explanation here is that the majority of major changes are done by students in a way that minimizes the time it takes them to graduate. Most of the students in the dataset had very few major changes, and the majority of students didn't change their major at all. While changing your major certainly can lengthen time to degree, many students are clearly finding ways to change their major that doesn't appreciably increase their time to degree.

Finally, GPA at graduation is also related to time to degree, with higher grades being associated with lower time to degree. But, after accounting for repeats, the relationship is relatively modest.

The regression model also suggests that men take slightly longer to graduate than women do, after holding the other variables constant. While statistically significant, the impact here is also relatively modest.

Many readers may find the contribution of the individual areas of study to be of interest as well. University Programs, Math & Sciences, Social Sciences, and Business are all associated with lower time to degree. Education, Engineering, and Nursing are all associated with a higher time to degree.

Education students, by far, seem to take the longest to graduate. Students within the STEP program (essentially a 5 year degree program) are *not* included in the SEHS category. (They are included in their respective Arts/Humanities or Science/Math area). This means that the education area is composed mostly of HRD and elementary education students. Elementary education, in particular, is essentially a 5-year degree. Depending upon the student's selected concentrations, the minimum credits required to graduate can be from 132 to 159.

The data also shows that nursing students take longer to graduate. OIRA expects that the time to degree for nursing students will drop in the coming years, but historical data was strongly impacted by an old admissions policy which guaranteed nursing students entry into the program if they met certain requirements. This policy was partially responsible for creating a large 'back-log' of students that waited to get into the nursing program, sometimes for years. Admission into the nursing program is now competitive, and this should bring graduation times down.

Engineering students have a bit longer time to degree than other programs as well, but its impact is lower than some might expect. (Remember, the model is correcting for things like academic ability and the number of courses students repeat). Not only do engineering majors typically have a large number of long prerequisite chains, but they also have an incredibly complicated schedule that has very few degrees of freedom for students – all of which may be contributing to the increase in students' time to degree.

Other STEM disciplines fared better, with science and mathematics majors graduating faster than their engineering peers. Social science students fared the best, graduating a quarter of a year earlier, on average, than other students. University Programs, which is primarily composed of BIS students, tend to also graduate students at a faster pace, probably due partially to the ability of students to design their own curriculum.

Appendix A: Variables in Time to Degree Analysis

Composition of Divisions of College of Arts and Science

Arts & Humanities	Art History English History International Studies Linguistics Modern Language Music, Theater and Dance Philosophy Communication
Science & Math	Biology Chemistry Mathematics Physics
Social Science	Political Science Psychology Journalism Anthropology Sociology

Appendix B: Time to degree by School/College

		Graduated within this number of years								Total
		<=4	%	>4<=5	%	>5<=6	%	>6	%	
CAS	Arts & Humanities	639	31%	724	36%	341	17%	333	16%	2037
	Math & Science	242	36%	232	35%	94	14%	97	15%	665
	Social Science	451	40%	376	34%	147	13%	144	13%	1118
	Total	1332	35%	1332	35%	582	15%	574	15%	3820
SBA		411	26%	648	41%	270	17%	258	16%	1587
SEHS		117	11%	479	44%	279	25%	225	20%	1100
SECS		132	25%	214	40%	105	20%	87	16%	538
SHS		242	34%	265	38%	111	16%	87	12%	705
SON		177	29%	169	27%	138	22%	133	22%	617
Independent Major		1	25%	1	25%	1	25%	1	25%	4
General Studies		37	14%	60	22%	49	18%	123	46%	269
TOTAL		2449	28%	3168	37%	1535	18%	1488	17%	8640