What affects time to graduation for 2010-2011 bachelor's graduates who took all of their courses at Boise State?

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This study looks at the amount of time bachelor's degree recipients took to obtain their degree using a variety of information which could be expected to impact time to graduation. The study is based on the 888 bachelor's degree graduates from 2010-11 who took all of their credits at Boise State and who received a degree other than a Bachelor of Applied Science (BAS) or Bachelor of General Studies (BGS).

Two measures of time were employed in the study. "Time to graduation" was measured using elapsed time in years starting with the date of the opening term of the students' first undergraduate enrollment and ending with their graduation date. "Terms to graduation" was a count of the number of regular terms of enrollment (fall or spring) starting with the graduate's first term of undergraduate enrollment and ending with the graduation term.

The measures included in the study that were believed to impact time to graduation were:

- Total cumulative credits earned, under the hypothesis that more credits would be related to more time to graduation
- Cumulative GPA, hypothesizing that higher GPAs would be related to less time to graduation
- Percent of term enrollments that were full-time (12 credits or more), hypothesizing that more full-time enrollments would relate to less time to graduation
- Percent of term enrollments that were consecutive, i.e., without a break in terms, hypothesizing that more consecutive enrollments would relate to less time to graduation
- Number of academic plans the student "tried out," hypothesizing that more academic plans would relate to more time to graduation
- Number of fields the student earned a degree in (e.g., double major in psychology and math), hypothesizing that more fields would relate to more time to degree
- Whether one or more of the degrees earned was a STEM degree (Science, Technology, Engineering, Math), hypothesizing that STEM degrees would be related to more time to graduation

Most measures were useful in predicting time to graduation, whether measured by years or terms. The strongest relationships were with percent of terms that were consecutive, percent of terms that were full-time, cumulative credits, and cumulative GPA. The type of degree (STEM or non-STEM) was the only variable that was consistently non-significant. The model predicting the number of terms to graduation was stronger than the model predicting number of

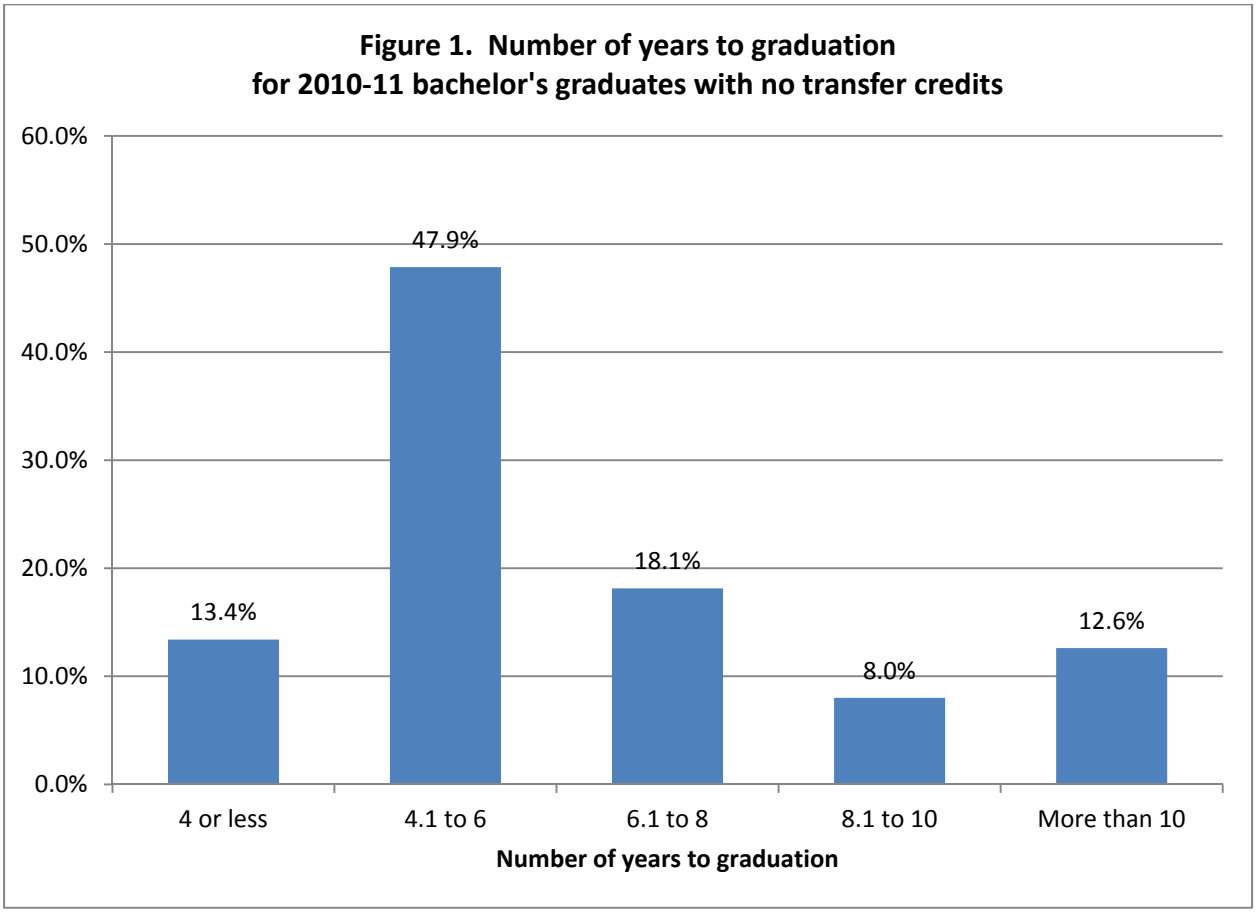
years to graduation (R^2=.71 vs. R^2=.49). The hypothesized directionality of the relationships (e.g., more credits was related to more time to graduation) was upheld in all cases except for number of fields where students earned degrees.

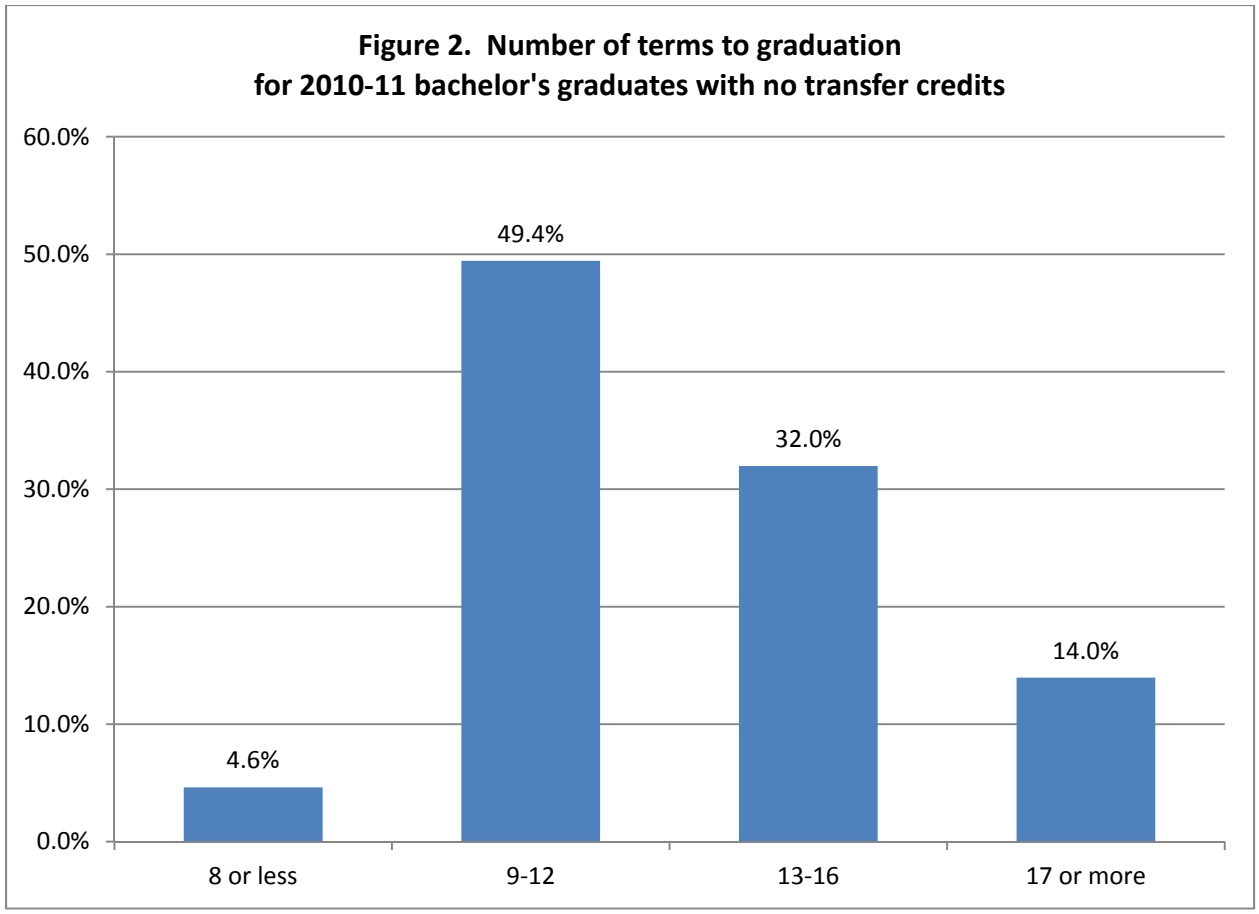
Description of variables included in the study

Measuring time to graduation

For the group included in this study, 13.4% took four years or less to graduate and 61.3% took six years or less. The mean number of years was 7.0, while the median was 5.8. The minimum number of years was 2.3 and the maximum was 42.8. See Figure 1 below for further details.

Only 4.6% of the graduates took eight (8) terms or less to graduate (which would be the equivalent to four years if students enrolled consecutively for both fall and spring terms). The mean number of terms was 12.99 and the median was 12. The minimum number of terms was 7 and the maximum was 31. Compared to 61% who graduated in six years, 54% took 12 terms or less. For details, see Figure 2 below.





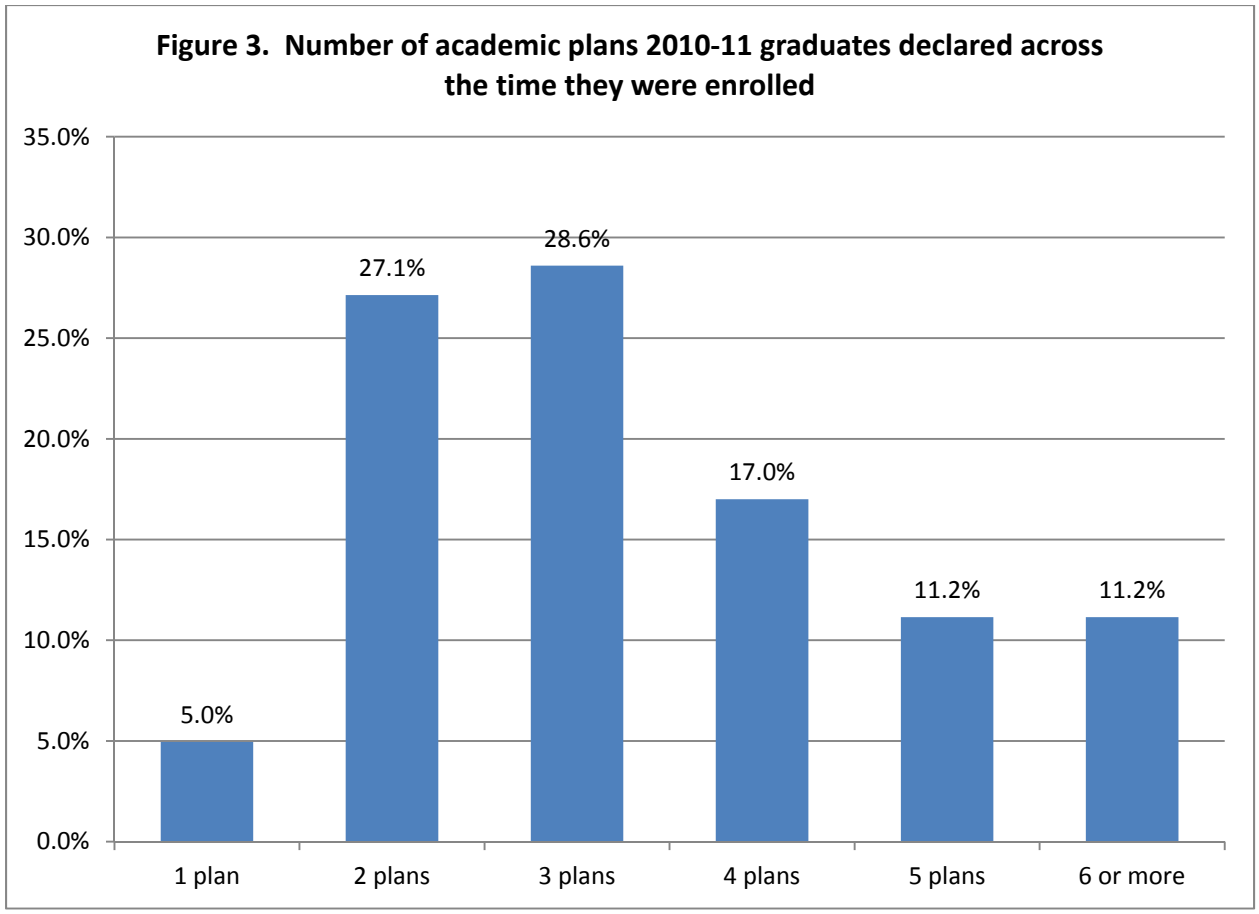
Variables potentially impacting time to graduation

Only 5% of the graduates had one plan listed, as shown by Figure 3 below. The number of plans, however, may be falsely inflated in this analysis because students could use the Degree Audit system to "try out" a variety of majors, all of which were recorded in the PeopleSoft system.

Unlike number of majors, students typically received a degree in only one subject area. When multiple majors from the same academic department are eliminated, 95% of the graduates had only one degree. Most (86%) were non-STEM degrees.

The remaining variables used in the analysis are shown in Table 1 below. Note that the mean number of credits (142) is related to about one additional semester beyond the 128 credits required; the median, however, is closer to the minimum of 128 credits required of 2010-11 graduates. Most students had cumulative GPAs that were well into the 3.0 range.

A large majority of graduates attended full-time for most of their semesters. However, only 36% were full-time for *all* of their semesters of enrollment. The percent of terms with full-time enrollment was calculated by taking the number of terms of enrollment and checking to see if the student had registered for at least 12 credits each term.



The percent of enrollments that were consecutive was based on looking at each term and checking to see if they were enrolled in following regular term. For example, a student enrolled for fall 2005, again for spring 2006, and again for fall 2006 would be counted as having a two consecutive enrollments. However, if a student enrolled for fall 2005 and didn't return until fall 2007, that would be a non-consecutive enrollment. The amount of elapsed time between terms didn't figure into the calculations. A student who dropped out for one year before returning would be counted similarly to one who left for five years before returning. One interesting finding from these data is that it appears that graduating students are quite consistent in their enrollments. The data show, in fact, that 72% of the graduates had enrolled consecutively *every* semester from their first enrollment to their graduation.

Table 1. Descriptive statistics for credits, GPA, and patterns of enrollments

Variable	Mean	Median	Standard Deviation	Minimum	Maximum
Total cumulative credits	142.28	136.00	16.73	128	227
Cumulative GPA	3.20	3.22	0.39	2.14	4.00
Percent of terms with full-time enrollment	81.44	88.88	22.34	0.0	100.0
Percent of term enrollments that were consecutive	96.41	100	6.56	62.5	100.0

Predicting time to graduation

Predicting time to graduation using years

All of the above variables were included in a regression analysis to predict years to graduation. The model accounted for almost 50% of the variability in years to graduation (R^2=.49) and was statistically significant, $F_{(7,880)}$=121.07, p<.0001. The contribution of each variable to the prediction is shown in Table 2 below. The variables are ordered from the highest to the lowest contribution in predicting years to graduation.

"Percentage of consecutive terms enrolled" was most predictive of graduation with "Percentage of full-time terms" second in the model. Both of these variables were more important than total cumulative credits, the third significant variable in the equation. Cumulative GPA was significantly related to time to graduation. The remaining variables (number of degrees, whether the degree was from a STEM major, and number of academic plans) were not statistically significant, though number of degrees approached significance (p=.06).

The relationships were generally as expected. As noted by the negative sign associated with the parameter estimate, fewer consecutive terms, fewer full-time terms, and lower GPAs were related to more years to graduation. More cumulative credits also were related to more time to graduation.

Table 2. Model to predict years to graduation

Variable	Parameter estimate (b)	Standard error	t-value	Significance level	Standardized estimate (β)[1]
Intercept	**38.46**	**2.15**	**17.88**	**<.0001**	**0.00**
Percent of consecutive terms	**-32.89**	**1.89**	**-17.38**	**<.0001**	**-0.46**
Percent of FT terms	**-6.72**	**0.56**	**-12.10**	**<.0001**	**-0.32**
Total cumulative credits	**0.07**	**0.07**	**9.02**	**<.0001**	**0.23**
Cumulative GPA	**-0.73**	**0.29**	**-2.50**	**0.0125**	**-0.06**
Number of degrees	*-0.99*	*0.53*	*-1.86*	*0.0634*	*-0.05*
STEM degree	*-0.30*	*0.34*	*-0.88*	*0.3812*	*-0.02*
Number of academic plans	*-0.03*	*0.06*	*-0.53*	*0.5981*	*-0.01*

Predicting time to graduation using number of terms of enrollment

When the same set of variables was employed to predict the number of terms to graduation, the model provided an even better fit, changing from 49% of the variance accounted for by the set to predictor variables to 71%, $F_{(7,880)}$=304.52, p<.0001. Table 3 below provides the details of the

[1] The difference between the parameter estimate (b) and the standardized estimate (β) is that β is the weight assigned to each variable after the variables have been standardized so that direct comparisons of size are possible.

model. Again, the predictor variables are ordered from high to low based on the contribution they made to predicting number of terms to graduation.

Table 3. Model to predict number of terms to graduation

Variable	Parameter estimate (ь)	Standard error	t-value	Significance level	Standardized estimate (β)
Intercept	**21.81**	**1.29**	**16.93**	**<.0001**	**0.00**
Percent of FT terms	**-10.51**	**0.33**	**-31.58**	**<.0001**	**-0.63**
Total cumulative credits	**0.09**	**0.004**	**20.59**	**<.0001**	**0.40**
Cumulative GPA	**-2.06**	**0.18**	**-11.74**	**<.0001**	**-0.22**
Percent of consecutive terms	**-6.24**	**1.13**	**-5.51**	**<.0001**	**-0.11**
Number of academic plans	**0.09**	**0.04**	**2.61**	**0.0091**	**0.05**
Number of degrees	**-0.64**	**0.32**	**-2.01**	**0.0450**	**-0.04**
STEM degree	*0.10*	*0.20*	*0.48*	*0.6347*	*0.01*

Note that the order that the variables contribute to the prediction is somewhat different when "number of terms" is being predicted rather than "number of years." In this case, the percentage of full-time terms was the most important variable followed number of cumulative credits. Additional variables that were significant for this model but not for the years-to-graduation model included number of academic plans and number of degrees received. Graduating with the STEM degree remained unrelated to number of terms to graduation.

The relationships generally remained as expected with more full-time terms, more consecutive terms of enrollment, and higher cumulative GPAs related to fewer terms to graduation. Also as expected, more cumulative credits and more academic plans were related to more terms to graduation. An unexpected finding was that students receiving more than one degree had **fewer** terms to graduation.

Summary

This study was based on 888 students who received a bachelor's degree in 2010-11 and who received all of their credits from Boise State. While only a few (13.4%) graduated in four years or less, a majority (61.3%) graduated within six years. Compared to the 61% who graduated within six years, when number of terms of enrollment was used as the measure of elapsed time, only 54% graduated within 12 terms (two terms per year X 6 years = 12 terms). Graduates earned an average of 142 credits with a cumulative GPA of 3.2.

Almost all students (95%) declared more than one plan over the course of their academic career, though almost all received a degree in only one subject area. While most attended full-time for most of their semesters, only 36% always enrolled full-time. However, 72% of the graduates had enrolled consecutively for every semester they were enrolled.

When predicting number of years to graduation, attending every consecutive term was most important in reducing number of years to graduation, followed by percentage of full-time terms. Other significant variables included total credits and cumulative GPA.

When predicting number of terms to graduation, the variable of greatest importance was the percentage of terms that were full-time followed by number of credits accrued. Cumulative GPA, percent of consecutive terms, and number of academic plans and degrees were also significant predictors. Only graduating with a STEM major was not a significant predictor. The model for predicting terms to graduation compared to years to graduation provided a better fit for the data (R^2=.71 vs. R^2=.49).

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