

Leading Indicators: A follow-up focusing on math, composition, and credit completion in the first year

Recent analysis by Institutional Research indicated that independent of one another, completion of 30 credits, completion of a college level math, and completion of a college level composition course in a student’s first academic year increased the odds of retention and graduation. Further analysis was required to bring those results into focus. That additional analysis indicates that, after controlling for demographic and academic preparation variables, when compared to students who complete 24-29 credits (including both a math and a composition course):

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Students who complete 30 or more credits, including math and composition, within their first academic year have 67% higher odds of retention and 76% higher odds of graduation;

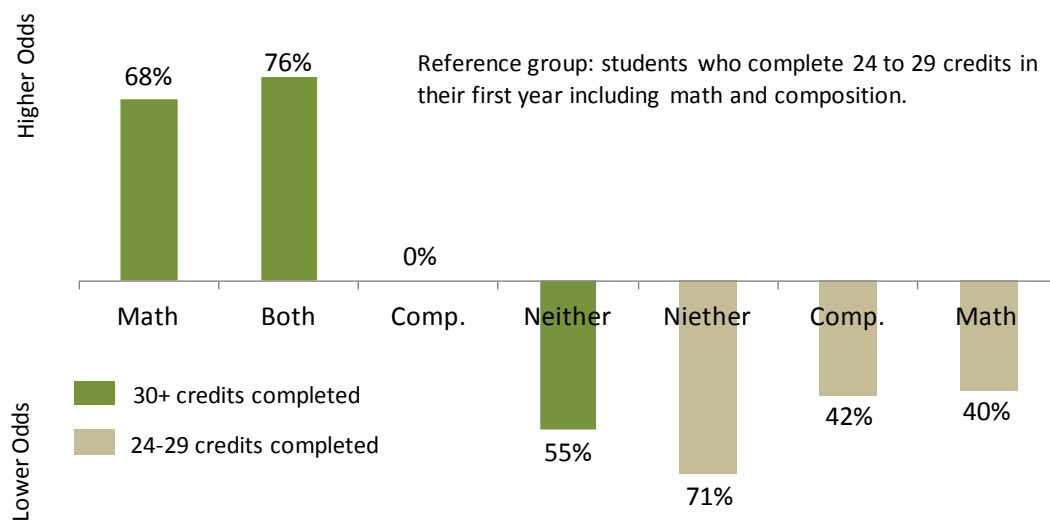
Students who complete 30 or more credits, including math but not composition, within their first academic year have 36% higher odds of retention and 68% higher odds of graduation;
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Students who complete 24 to 29 credits but do not complete either gateway course within their first academic year have 69% lower odds of retention and 71% lower odds of graduation;

Students who complete 30 credits without including math and composition have 52% lower odds of retention and 45% lower odds of graduation compared to students who complete both gateway courses within 24-29 total completed credits indicating that the total completed credits is less important than completing both gateway courses.

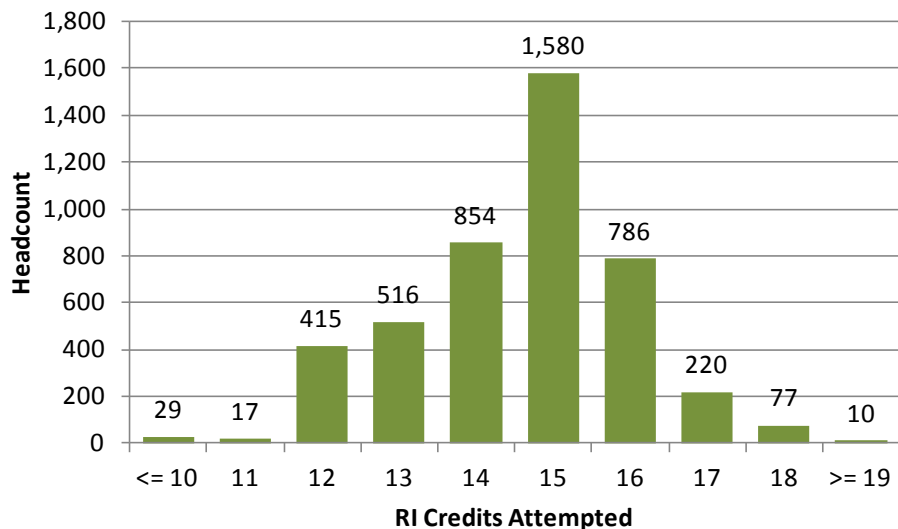
While the aforementioned results vary in magnitude by demographic subgroup, the relationships remain constant. Chart 1 displays the relative odds for graduation graphically. Appendix A provides the detailed tables by total and demographic subgroup (first-generation, Pell Grant recipient, large unmet need, minority status).

Chart 1. Relative Odds of Six-Year Graduation



When interpreting the potential impact of advising students to attempt 30 credits in the first academic year, it is important to understand what the current credit hour distribution is for new freshman. Chart 2 displays that distribution for fall 2011. There were 1,785 full-time freshmen who were not on track to complete 30 credits in the first year.

Chart 2. New Freshman Credit Hour Distribution



Another consideration is what the waitlist count ended at for CO150 last fall. At census, there were 158 students on the CO150 waitlists that were not enrolled in any section of the course. Of those, 114 were freshman; 38 were sophomores. With steady-state capacity and an expected increase in enrollment there would likely be more on the waitlist next fall.

General Conclusions:

Completing a math and a composition course in a student's first academic year is highly positively associated with increased odds of retention and graduation. Students who can complete at least 30 credits in the first year and include in those credits a math and a composition course have the highest odds of success. While there are many advising, budgetary, and logistical considerations in creating more sections of CO150 it may be a worthwhile investment of resources. Additionally, identification of students who delay completing their first math course may be important for intervention services.

Appendix

Table 1.

Demographic and Academic Control Variables (All Students)				
	Freshman Retention (37,241)	Four Year Graduation (24,081)	Five Year Graduation (19,690)	Six Year Graduation (15,599)
Asian (white)	1.25	0.79	0.79	NS
Black (white)	1.42	NS	NS	NS
Hispanic/Latino (white)	NS	0.86	0.84	NS
Other (white)	NS	0.80	0.87	NS
Female (male)	0.94	1.96	1.38	1.16
Nonresident (resident)	0.67	0.87	0.77	0.75
Pell (Non-Pell)	NS	0.80	0.84	0.86
First Generation (Non-First Generation)	0.76	0.86	0.78	0.74
Large Unmet Need	0.60	0.82	0.70	0.74
Index	1.03	1.05	1.04	1.04

Note: Statistical significance is tested at the .05 level.

Table 2.

First Year Credit Completion and Composition/Math Completion (All Students)					
		Freshman Retention	4-Year Graduation	5-Year Graduation	6-Year Graduation
24-29 credits	Composition, no math	0.56	0.57	0.57	0.58
	Math, no composition	0.54	0.53	0.56	0.60
	Neither	0.32	0.20	0.25	0.29
30+ credits	Composition, no math	NS	1.18	NS	NS
	Math, no composition	1.36	1.27	1.48	1.68
	Both	1.67	1.92	1.79	1.76
	Neither	0.52	0.56	0.43	0.45

Note: All odds are in comparison to students who complete 24-29 credits including a gateway math and a gateway composition course.

Table 3.

Demographic and Academic Control Variables (First Generation Students)				
	Freshman Retention (9,728)	Four Year Graduation (6,573)	Five Year Graduation (5,456)	Six Year Graduation (4,332)
Asian (white)	1.69	0.67	NS	NS
Black (white)	NS	NS	NS	NS
Hispanic/Latino (white)	NS	NS	NS	NS
Other (white)	NS	NS	NS	NS
Female (male)	0.89	2.13	1.39	1.18
Nonresident (resident)	0.70	0.80	0.76	0.75
Pell (Non-Pell)	1.13	0.82	0.83	NS
First Generation (Non-First Generation)				
Large Unmet Need	0.55	0.75	0.65	0.71
Index	1.03	1.06	1.05	1.04

Note: Statistical significance is tested at the .05 level.

Table 4.

First Year Credit Completion and Composition/Math Completion (First Generation Students)					
		Freshman Retention	4-Year Graduation	5-Year Graduation	6-Year Graduation
24-29 credits	Composition, no math	0.63	0.56	0.63	0.64
	Math, no composition	0.59	0.58	0.59	0.58
	Neither	0.24	0.16	0.24	0.22
30+ credits	Composition, no math	NS	NS	NS	NS
	Math, no composition	1.56	1.58	1.56	NS
	Both	2.08	1.97	2.08	2.05
	Neither	NS	NS	NS	NS

Note: All odds are in comparison to students who complete 24-29 credits including a gateway math and a gateway composition course.

Table 5.

Demographic and Academic Control Variables (Pell Grant Recipients)				
	Freshman Retention (5,760)	Four Year Graduation (3,370)	Five Year Graduation (2,750)	Six Year Graduation (2,215)
Asian (white)	2.09	NS	NS	NS
Black (white)	NS	NS	NS	NS
Hispanic/Latino (white)	NS	0.74	0.72	NS
Other (white)	NS	NS	0.61	NS
Female (male)	NS	2.01	1.52	1.36
Nonresident (resident)	0.66	NS	NS	NS
Pell (Non-Pell)				
First Generation (Non-First Generation)	0.83	NS	0.77	0.77
Large Unmet Need	0.41	0.81	0.64	0.69
Index	1.03	1.05	1.04	1.04

Note: Statistical significance is tested at the .05 level.

Table 6.

First Year Credit Completion and Composition/Math Completion (Pell Grant Recipients)					
		Freshman Retention	4-Year Graduation	5-Year Graduation	6-Year Graduation
24-29 credits	Composition, no math	0.60	0.48	0.62	0.58
	Math, no composition	0.56	0.55	0.57	0.60
	Neither	0.36	0.14	0.24	0.29
30+ credits	Composition, no math	NS	NS	NS	NS
	Math, no composition	NS	NS	NS	1.68
	Both	1.74	1.80	2.14	1.76
	Neither	NS	NS	NS	NS

Note: All odds are in comparison to students who complete 24-29 credits including a gateway math and a gateway composition course.

Table 7.

Demographic and Academic Control Variables (Large Unmet Need)				
	Freshman Retention (5,954)	Four Year Graduation (3,320)	Five Year Graduation (2,558)	Six Year Graduation (1,904)
Asian (white)	1.70	NS	NS	NS
Black (white)	NS	NS	NS	NS
Hispanic/Latino (white)	NS	NS	NS	NS
Other (white)	NS	NS	NS	NS
Female (male)	NS	2.06	1.53	1.29
Nonresident (resident)	0.65	0.80	0.70	0.74
Pell (Non-Pell)	0.77	0.83	0.79	NS
First Generation (Non-First Generation)	0.74	0.75	0.70	0.71
Large Unmet Need				
Index	1.02	1.05	1.04	1.03

Note: Statistical significance is tested at the .05 level.

Table 8.

First Year Credit Completion and Composition/Math Completion (Large Unmet Need)					
		Freshman Retention	4-Year Graduation	5-Year Graduation	6-Year Graduation
24-29 credits	Composition, no math	0.63	0.67	0.59	0.55
	Math, no composition	0.64	0.46	0.60	NS
	Neither	0.52	0.19	0.27	0.24
30+ credits	Composition, no math	NS	NS	NS	NS
	Math, no composition	NS	NS	NS	NS
	Both	2.03	2.33	2.18	1.98
	Neither	NS	NS	NS	NS

Note: All odds are in comparison to students who complete 24-29 credits including a gateway math and a gateway composition course.

Table 9.

Demographic and Academic Control Variables (Minority)				
	Freshman Retention (5,273)	Four Year Graduation (3,268)	Five Year Graduation (2,627)	Six Year Graduation (2,029)
Asian (white)				
Black (white)				
Hispanic/Latino (white)				
Other (white)				
Female (male)	NS	1.86	1.37	1.26
Nonresident (resident)	0.75	NS	NS	0.75
Pell (Non-Pell)	NS	0.81	NS	NS
First Generation (Non-First Generation)	0.84	0.83	NS	NS
Large Unmet Need	0.47	NS	0.73	0.76
Index	1.03	1.05	1.04	1.03

Note: Statistical significance is tested at the .05 level.

Table 10.

First Year Credit Completion and Composition/Math Completion (Minority)					
		Freshman Retention	4-Year Graduation	5-Year Graduation	6-Year Graduation
24-29 credits	Composition, no math	0.55	0.54	0.55	0.56
	Math, no composition	0.48	0.55	0.61	0.47
	Neither	0.34	0.13	0.20	0.17
30+ credits	Composition, no math	NS	NS	NS	NS
	Math, no composition	NS	NS	NS	NS
	Both	1.67	1.80	1.87	1.64
	Neither	0.47	NS	NS	NS

Note: All odds are in comparison to students who complete 24-29 credits including a gateway math and a gateway composition course.