

CO Challenge Programs' First-Year Outcomes

The purpose of this report is to examine first-year student success outcomes for those who participate in Colorado Challenge programs (Alliance, Daniels Fund, and Denver Scholarship Foundation) to expected outcomes for non-participants with similar demographics and index score.

First-Year Outcomes

Four measures of first-year progress towards degree are selected as outcome objectives¹:

- ✚ Second-fall retention
- ✚ Completion of math and composition in the first year
- ✚ Obtaining sophomore status by the second fall semester (among students who start as freshmen)
- ✚ First-year cumulative GPA

Demographics

The demographics of CO Challenge program participants are dramatically different than CSU's overall population. Table 1 displays the demographic characteristics and average index score by CO Challenge program and for CSU's overall freshman cohorts. Program participation is determined by scholarship receipt in students' first semester at CSU among students who started as new or transfer students in FA11-FA13.

Table 1.

FA11 through FA13 CO Challenge Cohort Demographics by Scholarship Group

	First Generation	Pell Recipient	Minority	Female	Resident	Transfer	Average Index
Alliance (190)	73%	67%	66%	58%	100%	2%	113
Daniels Fund (91)	76%	91%	49%	51%	93%	10%	117
Denver Scholarship Foundation (198)	71%	88%	82%	63%	100%	4%	108
CSU Freshman Cohorts (13,241)	25%	23%	20%	55%	75%		115

As shown in table 1, the proportion of CO challenge program participants with first generation, Pell recipient or minority status is considerably higher than CSU's overall proportional representation. The average index of Alliance and Denver Scholarship Foundation students is lower than CSU's overall average, but the average index of Daniels Fund students is higher. Therefore, the reference level to measure the outcome objectives must be appropriately adjusted to reflect the population that each CO Challenge program serves. Comparing CO Challenge programs to CSU's overall success rates is inappropriate because this fails to account for the demographics of the population.

¹ Prior work at CSU indicates that all four of the outcome objectives are first-year success indicators that are strongly correlated with degree completion.

Methodology

Multivariate regression models are run on the FA11-FA13 full-time, first-time freshman cohorts to determine the predicted probability (or predicted GPA) of success for students with characteristics similar to students in each of the three CO Challenge programs.

The regression models assume the following student characteristics for the programs’ reference levels:

- ✚ Alliance: First generation, Pell recipient, Minority, Female, CO resident, and an index of 113
- ✚ Daniels Fund: First generation, Pell recipient, Non-Minority, Female, CO resident, and an index of 117
- ✚ DSF: First generation, Pell recipient, Minority, Female, CO resident, and an index of 108

The regression coefficients and model fit statistics for each of the four regression models are in Appendix E.

Retention to Second-Fall

Table 2 displays the observed overall (across all three cohorts) second-fall retention rate for each of the CO challenge programs compared to their respective reference level. The retention rate and cohort size for each fall cohort is available in Appendix A.

Table 2.

FA11-FA13 CO Challenge Second-Fall Retention Rate Compared to Reference Rate¹

	Program Rate	Reference Rate	PP Difference
Alliance	84.2%	80.9%	3.27
Daniels Fund	93.4%	80.9%	12.46
Denver Scholarship Foundation	80.3%	78.8%	1.49

¹The reference rate is the predicted probability of being retained for students with the assumed characteristics

As shown in table 2, all scholarship programs have a retention rate that exceeds what would be expected for these students based on their demographics/index score. For instance, the overall retention rate for Alliance students from the FA11, FA12, and FA13 cohorts is 84.2%, which is 3.27 percentage points higher than the reference rate of 80.9%. Similarly, the Denver Scholarship Foundation has an overall rate of 80.3%, which is 1.49 percentage points higher than the reference rate of 78.8%. Daniels Fund students, who have an overall retention rate that is 12.46 percentage points higher than their reference rate, are considerably outperforming what might be expected of students with similar demographics/index score.

Math and Composition Completion in First-Year

Table 3 displays the observed overall (across all three cohorts) math and composition first-year completion rate for each of the CO challenge programs compared to their respective reference level. The math and / or composition completion rate for each cohort is available in Appendix B.

Table 3.

FA11-FA13 CO Challenge Math and Composition Completion Rate Compared to Reference Rate¹

	Program Rate	Reference Rate	PP Difference
Alliance	80.0%	79.8%	0.22
Daniels Fund	80.2%	83.0%	-2.82
Denver Scholarship Foundation	80.3%	78.5%	1.85

¹The reference rate is the predicted first-year math and composition completion rate for students with the assumed characteristics

As shown in table 3, all scholarship programs have a first-year math and composition completion rate of about 80%. This completion rate is slightly higher than would be expected for Denver Scholarship Foundation students, slightly lower than what would be expected for Daniels Fund students, and approximately what would be expected for Alliance students. There is opportunity to increase the math and composition completion rate in future CO Challenge cohorts.

Sophomore Status by Second-Fall

Table 4 displays the observed overall (across all three cohorts) percent of students who achieve sophomore status by the start of their second-fall semester for each of the CO challenge programs compared to their respective reference level. The percent of each cohort with sophomore status by their second-fall semester is available in Appendix C.

Table 4.

FA11-FA13 CO Challenge¹ Sophomore Status Rate Compared to Reference Rate²

	Program Rate	Reference Rate	PP Difference
Alliance	63.6%	61.4%	2.20
Daniels Fund	85.4%	66.1%	19.23
Denver Scholarship Foundation	55.0%	51.9%	3.06

¹Only CO Challenge students who start as new freshmen (excludes transfer) are included in this outcome

² The reference rate is the predicted sophomore status rate for students with the assumed characteristics

As shown in table 4, all scholarship programs have a second-fall sophomore status rate that exceeds what would be expected for the students based on their demographics and index score. For instance, 63.6% of Alliance students who start as new freshmen obtain sophomore status by the start of their second fall semester. This rate is 2.2 percentage points higher than the rate that is predicted for students with similar demographics/index. Similarly Daniels Fund students obtain sophomore status at a rate that is 19.23 percentage points higher than predicted and Denver Scholarship Foundation students obtain sophomore status at a rate that is 3.06 percentage points higher than predicted.

First-Year Cumulative GPA

Table 5 displays the observed average (across all three cohorts) cumulative GPA for each of the CO challenge programs compared to their respective reference level. The average cumulative GPA for each cohort is available in Appendix D.

Table 5.

FA11-FA13 CO Challenge First Year Cumulative GPA Compared to Reference GPA¹

	Program Participants' GPA	Reference GPA	Difference
Alliance	2.82	2.93	-0.10
Daniels Fund	3.07	3.06	0.01
Denver Scholarship Foundation	2.80	2.80	-0.01

¹The reference GPA is the first-year predicted GPA for students with the assumed characteristics

The first-year cumulative GPA is approximately what would be expected for both Daniels Fund (.01 grade points higher) and Denver Scholarship Foundation (.01 grade points lower) students. However, Alliance students have an average first-year cumulative GPA that is .1 grade points lower than what would be expected for students with comparable characteristics. Similar to math and composition completion, there is an opportunity to increase first-year GPA among the CO Challenge population.

Conclusions

This study uses four first-year outcome objectives that have been shown, at CSU, to be strongly correlated with eventual degree attainment. The observed outcomes for each of the three CO Challenge programs are compared to a reference outcome level based on what could be expected for students with an assumed set of similar characteristics using multivariate regression models. Because the demographics of CO challenge students are so different than CSU’s overall cohort, it is important to compare program participants to the predicted reference level rather than CSU’s overall success levels.

In general, CO Challenge students are performing at or above what would be expected of students with similar demographics and index. In terms of second-fall retention and obtaining sophomore status by the second-fall, all programs exceed the level of success that is predicted for program participants. It is noteworthy that Daniels Fund students considerably exceed their reference level for these two outcomes. However, there are opportunities to improve on the program’s impact when examining outcome measures of first-year cumulative GPA and math and composition completion. For instance, Daniels Fund students are completing math and composition in the first-year at a rate that is about 2 percentage points lower than what would be expected and Alliance students have a first-year cumulative GPA that is .1 grade points lower than what would be expected.

Appendix A: Second-Fall Retention

The table below displays the cohort size and second-fall retention rate for CO Challenge programs in FA11, FA12, and FA13.

FA11 through FA13 CO Challenge Cohorts' Second-Fall Retention Rates

	FA11		FA12		FA13	
	Cohort Size	Retention Rate	Cohort Size	Retention Rate	Cohort Size	Retention Rate
Alliance	73	84%	56	77%	61	92%
Daniels Fund	34	94%	29	90%	28	96%
Denver Scholarship Foundation	69	78%	65	77%	64	86%

Please note that the headcount is not unduplicated. If a student received two of the three scholarships he/she is counted in both groups

A summary of findings are as follows:

- ✚ Across all three programs, the retention rate in FA13 is higher than FA12 but the FA12 rate is lower than FA11. Interestingly, CSU’s overall retention rate increased from FA11 to FA12 and decreased from FA12 to FA13.
- ✚ Across all three cohorts, Daniels Fund has the highest retention rates and Denver Scholarship Foundation has the lowest retention rates. Considering the average index of each program, these retention trends are not surprising.
- ✚ Please note that the volatility in rates across cohorts is due to the smaller sample size. For instance, when cohort sizes are less than 100 a change of one student is equivalent to a one percentage point change.

Appendix B: First-Year Math and / or Composition Completion

The table below displays the percent of each program’s cohort that completed at least one credit of math or composition as well as both math and composition.

Percent of CO Challenge Cohort with at least one Credit of Math and/or Composition Earned in the First Year

	FA11			FA12			FA13		
	Math	Comp	Both	Math	Comp	Both	Math	Comp	Both
Alliance	89%	82%	79%	79%	79%	73%	90%	93%	87%
Daniels Fund	97%	88%	85%	93%	79%	72%	86%	96%	82%
Denver Scholarship Foundation	90%	84%	80%	88%	94%	83%	80%	94%	78%

A summary of findings are as follows:

- ✚ Among Alliance students, the percent of the cohort that complete math and / or composition increased in FA13 compared to both FA11 and FA12. The percent of the Alliance cohort that complete both math and composition is higher than the other two scholarship programs in FA13 but lower than the other two scholarship programs in FA11.
- ✚ Among Daniels Fund students, the percent of the cohort that complete both math and composition is highest in FA11 and lowest in FA12. The highest percentage (for any program) of composition completion is in FA13.
- ✚ Among Denver Scholarship Foundation students, the percent of the cohort that complete both math and composition is highest in FA12 and lowest in FA13. The proportion of the cohort completing math has decreased each year and the percent of the cohort completing composition has increased each year.

Appendix C: Sophomore Status by Second-Fall

The table below displays the percent of each program’s cohort that obtain sophomore status by the start of the second-fall semester. Please note that this analysis excludes the small number of transfer students in each of the scholarship groups.

Percent of CO Challenge Cohort with Sophomore Status by Second-Fall

	FA11	FA12	FA13
Alliance	59%	61%	72%
Daniels Fund	93%	82%	79%
Denver Scholarship Foundation	49%	51%	65%

A summary of findings are as follows:

- ✚ Among Alliance and Denver Scholarship Foundation students, the percent of the cohort that reach sophomore status increases from FA11 to FA13.
- ✚ Daniels Fund is the only program to have a decrease in the percent of the cohort obtaining sophomore status by the start of their second-fall semester.
- ✚ Across all three cohort years, Daniels Fund has the highest rate of completing a freshmen credit load in the first year and Denver Scholarship Foundation has the lowest rate. These results aren’t surprising considering the demographics and index of students in these programs.

Appendix D: First-Year Cumulative GPA

The table below displays the average first-year cumulative GPA for students in each of the three CO Challenge scholarship programs.

First Year Cumulative GPA for CO Challenge Cohort

	FA11	FA12	FA13
Alliance	2.83	2.70	2.91
Daniels Fund	3.04	3.15	3.02
Denver Scholarship Foundation	2.62	2.86	2.90

A summary of findings are as follows:

- ✚ Among Alliance students, the first-year cumulative GPA is highest in FA13 and lowest in FA12.
- ✚ Among Daniels Fund students, the first-year cumulative GPA is highest in FA12 and lowest in FA13.
- ✚ Among Denver Scholarship Foundation students, the first-year cumulative GPA is highest in FA13 and lowest in FA11.
- ✚ Across all three cohorts, the first-year cumulative GPA is highest for Daniels Fund Students. The lowest first-year cumulative GPA alternates between Alliance and Denver Scholarship Foundation students across the three cohorts.

Appendix E: Multivariate Regression Results

The table below displays the regression coefficients that are used to obtain the reference level for each objective outcome across the three CO Challenge scholarship program populations.

Multivariate Regression Results: Reference Levels for Objective Outcomes				
	Retained ¹	Math and Comp ²	Sophomore Status ³	GPA ⁴
	Regression Coefficients ⁵			
CO Resident	0.450*	0.337*	0.384*	0.051*
Minority	0.106	-0.151*	0.107*	-0.034*
Female	-0.067	0.117*	0.221*	0.204*
Index	0.027*	0.016*	0.078*	0.025*
First Generation	-0.446*	-0.278*	-0.225*	-0.058*
Pell Recipient	-0.238*	-0.170*	-0.144*	-0.022
Observations ⁶	13,078	13,078	13,078	11,225
Model Degrees Freedom	6	6	6	6
R ^{2,7}	0.0273	0.014	0.1222	0.2332

¹Logistic regression model with second-fall retention as the dependent variable.

²Logistic regression model with first-year math and composition completion as the dependent variable.

³Logistic regression model with obtaining sophomore status at the start of second-fall as the dependent variable.

⁴Linear regression model with first-year cumulative GPA as the dependent variable.

⁵* $p < .05$

⁶Includes new full-time freshmen who started in FA11, FA12, & FA13. Only includes students who persisted to second-fall for the model predicting GPA.

⁷A pseudo R² for the logistic regression models.