



A Matter of Degrees: Engaging Practices, Engaging Students

***High-Impact Practices for Community
College Student Engagement***

Methodology Supplement

Introduction

Center reporting prior to the 2013 national report, “A Matter of Degrees: Engaging Practices, Engaging Students High Impact Practices for Community College Student Engagement,” focused primarily on descriptive statistics of students and faculty behaviors (frequencies and means). The goal of these analyses was to identify areas of strengths and areas to strengthen for improved student engagement and student outcomes. The questions in the 2013 national report are more complex and require more advanced statistics to examine the relationships between practices and student engagement. Starting in 2011, the Center began investigating 13 practices identified in the literature as promising practices, or potentially high-impact practices. (See Table 1 below for a list of these practices.) In the 2012 national report, we examined the characteristics of students and faculty participating in these practices as well as the number of colleges that offer these different practices. For those results, please see [A Matter of Degrees: Promising Practices for Community College Student Success \(A First Look\)](#).

Table 1. Thirteen Promising Practices (in the order presented in the national report)

Academic goal setting and planning	Learning community	Registration before classes begin
Orientation	Experiential learning beyond the classroom	Class attendance
Accelerated or fast-track developmental education	Tutoring	Alert and intervention
First-year experience	Supplemental instruction	
Student success course	Assessment and placement	

In the 2013 report, we take the analysis to the next step by investigating the relationships between student participation in these practices and benchmark scores. The goal of this research is to identify which of these 13 practices might be considered high-impact with respect to benchmark scores. Analysis of covariance (ANCOVA) is used to investigate the differences in benchmark scores between students who did and did not participate in these practices. ANCOVA is designed to evaluate differences on a single dependent variable between groups after removing the effects of covariates known to be associated with the dependent variable. A covariate is a variable that is known to have a relationship with the dependent variable (benchmark scores, in this report). For example, we often see that students participating in developmental education courses tend to have higher benchmark scores perhaps because those courses are designed to incorporate elements that lead to higher engagement. Therefore, to see if participation in a student success course, for example, is related to higher engagement, we want to control for (or covary out the effect of) whether a student is classified

as a developmental student so that the student’s developmental status does not overly influence the relationship between participation in a student success course and benchmark scores.

Analysis of covariance serves as a statistical matching procedure and is useful in analyses like those conducted for this report where assignment to experimental groups is not possible but groups occur naturally in the data. ANCOVA adjusts group means to what they would be if all respondents had the exact same values on the covariates. By statistically removing the effects of covariates, ANCOVA addresses the question of whether mean differences on the dependent variable between groups is likely to have occurred by chance. However, it is critical to remember that ANCOVA results have no implication of causality (Tabachnick and Fidell, 2007).

Data Sources

The data used in the analyses for the national report are taken from the *CCSSE* and *SENSE* student surveys, the *CCFSSE* faculty survey, and the *CCIS* institutional survey. With the exception of the Student Characteristics section of the report which uses all respondents in the 2012 three-year cohorts for *CCSSE* and *SENSE*, results in this report are based on 2012 administration of each survey from United States colleges. Table 2 shows the number of respondents in 2012 for each of the surveys.

Table 2. Number of respondents for 2012 survey administration

Survey	Number of Respondents
<i>CCSSE</i>	176,881
<i>CCFSSE</i>	11,818
<i>SENSE</i> (Entering students only)	58,649
<i>CCIS</i> (Number of responses varied considerably by item)	441

Methods

As noted above, this report uses analysis of covariance to test the relationships between participation in the promising practices and the *CCSSE* and *SENSE* benchmark scores. Analysis of covariance is a method that allows one to test for statistical differences between group means while taking into account, or controlling for, the variability in a dependent variable due to covariates, or sources of variability other than the independent variable(s) of interest. These additional sources of variability (covariates) can mask the relationship between the independent variable – participation in a promising practice – and the dependent variable - benchmark scores. By removing the effect of the covariates on the variability of the dependent

variable, we are able to say with more confidence, that the remaining explainable variability in the dependent variable scores is likely to be attributable to the independent variable.

The analyses reported in the 2013 national report were conducted using PROC GLM in SAS (SAS Institute, Inc., 2013). Two options were included in PROC GLM to aid in interpretation of the output: the EFFECTSIZE option on the MODEL statement and the LSMEANS statement. Details of these options and their interpretation will be discussed shortly. First, the issue of missing data should be briefly noted: a close look at the results in the national report reveals that each of the ANCOVA models reported is based on a different number of observations. This fluctuation is due to missing data resulting from differences in the number of valid responses for each of the variables in the model. If a student did not respond to any of the variables used in a given model, they were excluded from the analysis.

The EFFECTSIZE option (currently an experimental option in SAS 9.3) on the PROC GLM Model statement adds measures of effect size to the statistical output. Whereas the *F test* statistic indicates whether the mean difference between two groups might be "real" or occurs by chance, the effect size indicates how much variation in the dependent variable is explained by the independent variable after removing variation due to the covariates in the model. The analyses conducted for this report include the independent variables (promising practices) and multiple covariates, therefore, the effect size measure used is *partial eta-squared* ($partial-\eta^2$). Under these conditions (multiple explanatory variables), *partial eta-squared* represents the variance in the dependent variable explained by participation in the promising practice after excluding the variance explained by the covariates.

In addition to the standard MODEL statement in GLM which specifies the dependent variable (benchmark scores), the independent variable (participation in the promising practice), and the covariates, we also requested that PROC GLM estimate the least squares means (LS-means) for the dependent variable. LS-means are also referred to as *predicted population margins* or *estimated marginal means*. Unlike a standard or algebraic mean, LSMEANS estimates the mean of the dependent variable for each group of the independent variable (e.g., participation in a promising practice) so that they equal what we would have been observed if both participants and non-participants had the same average values on each of the covariates. It is the LS-Means that we graph in the main report. We used the default setting for LSMEANS in PROC GLM for our covariates which means that the estimated benchmark means do not reference a

specific subgroup, but rather apply to the "average" student in terms of these particular covariates. Because our focus is on the differences between participants and non-participants in the various practices, the objective of the covariates is to remove associated variation, or noise in the relationship between participation in a practice and the benchmark score that might be caused by population subgroup membership.

Almost all analyses conducted in preparation for this report yielded statistically significant results. However, from a practical perspective, minute differences between groups, even though they might be statistically significant are not always practically significant or useful to college administrators for making decisions. As such, we defined a decision rule for including results in the national report. To be included, a model had to explain over 3% of the variance in the dependent variable ($R^2 > .030$) and the variance explained by the promising practice had to be at least 1% (*partial- η^2* greater than or equal to .010). Results meeting these criteria were considered to reflect a "notable difference" in benchmark scores between participants and non-participants in the promising practices. These notable differences, in turn, are considered to be large enough to inform policy discussions at the campus level.

Limitations

It is important to remember that ANCOVA model does not imply causal relationships. The model simply demonstrates group differences in the dependent variable based on variations in the independent variables and covariates included in the model. So, while results may allow us to posit that there is a relationship between group membership and variation in the dependent variable, we *cannot* conclude that being a participant in a promising practice *causes* a higher benchmark score). Causality requires a temporal component which ANCOVA does not accommodate.

A further limitation to note regards scope: the report concludes that 12 of the 13 promising practices are high-impact practices; however, it must be noted that these are high-impact with respect to engagement benchmark scores as measured by *CCSSE* and *SENSE*. Further analysis of student outcome data based on student unit record data (transcripts) is necessary to be able to conclude that these practices are high impact with respect to student success and completion. This analysis will be the focus of the Center's third nation report to be released in August 2014.

Additional Model Results Details

In the sidebar "A Note on Methodology" on page 3 of the national report we noted that the difference in mean benchmark scores between the students who participated and those who did not participate in a promising practice had to meet a minimum criterion to be considered a "notable difference" and thereby be eligible for inclusion in the national report. The criteria were that the overall model R^2 had to exceed 0.03 and the variance explained by the promising practice had to be at least 1% after controlling for the covariates. The following section will present the statistics for each of the models presented in the main report. The results are excerpted from the SAS PROC GLM output.

For additional questions, please contact Mike Bohlig at Bohlig@cccse.org.

Academic Goal Setting and Planning

CCSSE Benchmark: Academic challenge

Overall Model: $F(7,72424) = 677.36, p < .0001. R^2 = .0614 (N=72,432)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Academic goal setting & planning	1	628051.9076	628051.9076	1098.17	<.0001
Enrollment Status	1	207931.6411	207931.6411	363.58	<.0001
Developmental Status	1	232964.2633	232964.2633	407.35	<.0001
Generation Status	1	8934.0931	8934.0931	15.62	<.0001
Credits Earned	1	405977.1143	405977.1143	709.87	<.0001
Enrollment status x Developmental status	1	8810.5285	8810.5285	15.41	<.0001
Credits earned x Enrollment status	1	56.3004	56.3004	0.1	0.7537

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Academic goal setting & planning	0.0149	0.0149

Least Squares Means:

	LS-Means
Yes, received help with developing an academic plan	54.7
No, no help with academic plan, or not yet (student still in first term)	48.8

Interpretation: Students who reported that an advisor helped them develop an academic plan before the end of their first term have, on average, higher adjusted academic challenge benchmark scores than those who say that an advisor has not help them develop a plan.

CCSSE Benchmark: Student-faculty interaction

Overall Model: $F(7,72416) = 860.84, p < .0001. R^2 = .0768 (N=72,424)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Academic goal setting & planning	1	1124074.566	1124074.566	1894.21	<.0001
Enrollment Status	1	108989.747	108989.747	183.66	<.0001
Developmental Status	1	191361.082	191361.082	322.47	<.0001
Generation Status	1	20753.71	20753.71	34.97	<.0001
Credits Earned	1	570305.372	570305.372	961.04	<.0001
Enrollment status x Developmental status	1	146.717	146.717	0.25	0.619
Credits earned x Enrollment status	1	12030.292	12030.292	20.27	<.0001

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Academic goal setting & planning	0.0255	0.0255

Least Squares Means:

	LS-Means
Yes, received help with developing an academic plan	55.5
No, no help with academic plan, or not yet (student still in first term)	47.5

Interpretation: Students who reported that an advisor helped them develop an academic plan before the end of their first term have, on average, higher adjusted student-faculty interaction benchmark scores than those who say that an advisor did not help them develop a plan.

SENSE Benchmark: Early Connections

Overall Model: $F(5,57822) = 2176.68, p < .0001. R^2 = .1584 (N=57,828)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Academic goal setting & planning	1	5272955.537	5272955.537	9839.73	<.0001
Enrollment Status	1	161243.343	161243.343	300.89	<.0001
Developmental Status	1	157026.418	157026.418	293.02	<.0001
Generation Status	1	34055.668	34055.668	63.55	<.0001
Enrollment status x Developmental status	1	2998.418	2998.418	5.60	0.0180

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Academic goal setting & planning	0.1454	0.1454

Least Squares Means:

	LS-Means
Agree/Strongly agree an advisor helped me to set academic goals & create a plan to achieve them	61.9
Strongly Disagree/Disagree/Neutral: An advisor helped me to set academic goals and create a plan to achieve them	42.6

Interpretation: Entering students who reported that they agree or strongly agree that an advisor helped them to set academic goals and to create a plan to achieve them have, on average, higher adjusted early connections benchmark scores than those who disagreed with or were neutral about whether they received assistance.

SENSE Benchmark: Effective track to college readiness

Overall Model: $F(5,57809) = 2149.11, p < .0001. R^2 = .1567 (N=57,815)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Academic goal setting & planning	1	972203.425	972203.425	1837.81	<.0001
Enrollment Status	1	19022.724	19022.724	35.96	<.0001
Developmental Status	1	3180541.172	3180541.172	6012.34	<.0001
Generation Status	1	67517.098	67517.098	127.63	<.0001
Enrollment status x Developmental status	1	934.822	934.822	1.77	0.1837

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Academic goal setting & planning	.0308	.0308

Least Squares Means:

	LS-Means
Agree/Strongly agree an advisor helped me to set academic goals & create a plan to achieve them	52.6
Strongly Disagree/Disagree/Neutral: An advisor helped me to set academic goals and create a plan to achieve them	44.3

Interpretation: Entering students who reported that they agree or strongly agree that an advisor helped them to set academic goals and to create a plan to achieve them have, on average, higher adjusted effective track to college readiness benchmark scores than those who disagreed with or were neutral about whether they received assistance.

SENSE Benchmark: Engaged learning

Overall Model: $F(5,57820) = 594.16, p < .0001. R^2 = .0489 (N=57,826)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Academic goal setting & planning	1	958215.4550	958215.4550	1505.51	<.0001
Enrollment Status	1	430583.7925	430583.7925	676.52	<.0001
Developmental Status	1	284643.0487	284643.0487	447.22	<.0001
Generation Status	1	21217.0145	21217.0145	33.34	<.0001
Enrollment status x Developmental status	1	127.5340	127.5340	0.20	0.6544

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Academic goal setting & planning	.0254	.0254

Least Squares Means:

	LS-Means
Agree/Strongly agree an advisor helped me to set academic goals & create a plan to achieve them	54.3
Strongly Disagree/Disagree/Neutral: An advisor helped me to set academic goals and create a plan to achieve them	46.0

Interpretation: Entering students who reported that they agree or strongly agree that an advisor helped them to set academic goals and to create a plan to achieve them have, on average, higher adjusted engaged learning benchmark scores than those who disagreed with or were neutral about whether they received assistance.

SENSE Benchmark: Academic and social support network

Overall Model: $F(5,57804) = 669.89, p < .0001. R^2 = .0548 (N=57,810)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Academic goal setting & planning	1	1844919.065	1844919.065	3092.73	<.0001
Enrollment Status	1	111424.234	111424.234	186.79	<.0001
Developmental Status	1	77.205	77.205	0.13	0.7190
Generation Status	1	12571.998	12571.998	21.08	<.0001
Enrollment status x Developmental status	1	1029.177	1029.177	1.73	0.1890

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Academic goal setting & planning	.0508	.0508

Least Squares Means:

	LS-Means
Agree/Strongly agree an advisor helped me to set academic goals & create a plan to achieve them	57.4
Strongly Disagree/Disagree/Neutral: An advisor helped me to set academic goals and create a plan to achieve them	45.9

Interpretation: Entering students who reported that they agree or strongly agree that an advisor helped them to set academic goals and to create a plan to achieve them have, on average, higher adjusted academic and social support network benchmark scores than those who disagreed with or were neutral about whether they received assistance.

Orientation

CCSSE Benchmark: Support for learners

Overall Model: $F(7,118147) = 1010.93, p < .0001. R^2 = .0565 (N=118155)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Attended any Orientation	1	1213884.753	1213884.753	2103.38	<.0001
Enrollment Status	1	111887.650	111887.650	193.88	<.0001
Developmental Status	1	1093438.614	1093438.614	1894.68	<.0001
Generation Status	1	284787.207	284787.207	493.47	<.0001
Credits Earned	1	33456.652	33456.652	57.97	<.0001
Enrollment status x Developmental status	1	2029.184	2029.184	3.52	0.0608
Credits earned x Enrollment status	1	20.619	20.619	0.04	0.8501

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Attended any Orientation	.0175	.0175

Least Squares Means:

	LS-Means
Yes, attended any orientation	53.6
No, did not attend any orientation	46.9

Interpretation: Students who reported that they participated in any type of orientation (on campus, online, or enrolled in orientation as a course during their first semester), have, on average, higher adjusted support for learners benchmark scores than those who report that they did not participate in any orientation or were unaware that the college offered an orientation.

Accelerated or Fast-Track Developmental Education

CCSSE Benchmark: Support for learners

Overall Model: $F(7,73000) = 581.92, p < .0001. R^2 = .0529 (N^*=73,008)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Took 1 or more Accelerated Dev Ed courses	1	463989.5465	463989.5465	788.49	<.0001
Enrollment Status	1	108878.8798	108878.8798	185.03	<.0001
Developmental Status	1	719353.7532	719353.7532	1222.46	<.0001
Generation Status	1	224114.4614	224114.4614	380.86	<.0001
Credits Earned	1	40634.6673	40634.6673	69.05	<.0001
Enrollment status x Developmental status	1	6409.6346	6409.6346	10.89	0.0010
Credits earned x Enrollment status	1	248.4054	248.4054	0.42	0.5159

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Took 1 or more Accelerated or Fast-track Developmental Education	.0107	.0107

Least Squares Means:

	LS-Means
Yes, participated in an accelerated or fast-track developmental education course	57.1
No, did not participate in an accelerated or fast-track developmental education course	50.0

Interpretation: Among developmental students, students who report participating in accelerated or fast-track developmental education have, on average, higher adjusted support for learners benchmark scores than those who report that they did not participate in an accelerated or fast-track developmental education course.

NOTE: * Non-developmental education students were excluded from this analysis.

SENSE Benchmark: Engaged learning

Overall Model: $F(5,49385) = 362.73, p < .0001. R^2 = .0354 (N^*=49,391)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Took 1 or more Accelerated Dev Ed courses	1	374351.8231	374351.8231	585.44	<.0001
Enrollment Status	1	398383.2334	398383.2334	623.03	<.0001
Developmental Status	1	165188.1323	165188.1323	258.34	<.0001
Generation Status	1	13285.0261	13285.0261	20.78	<.0001
Enrollment status x Developmental status	1	1722.9258	1722.9258	2.69	0.1007

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Took 1 or more Accelerated or Fast-track Developmental Education	.0117	.0117

Least Squares Means:

	LS-Means
Yes, participated in an accelerated or fast-track developmental education course	54.5
No, did not participate in an accelerated or fast-track developmental education course	47.8

Interpretation: Among developmental students, entering students who report participating in accelerated or fast-track developmental education have, on average, higher adjusted engaged learning benchmark scores than those who report that they did not participate in an accelerated or fast-track developmental education course.

NOTE: * Non-developmental education students were excluded from this analysis.

First Year Experience

CCSSE Benchmark: Support for learners

Overall Model: $F(7,115451) = 1067.54, p < .0001. R^2 = .0608 (N=115,459)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in FYE	1	1448094.777	1448094.777	2520.73	<.0001
Enrollment Status	1	128014.359	128014.359	222.84	<.0001
Developmental Status	1	1050728.591	1050728.591	1829.02	<.0001
Generation Status	1	296057.072	296057.072	515.35	<.0001
Credits Earned	1	46909.080	46909.080	81.66	<.0001
Enrollment status x Developmental status	1	5941.256	5941.256	10.34	0.0013
Credits earned x Enrollment status	1	358.746	358.746	0.62	0.4294

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in First- year experience	.0214	.0214

Least Squares Means:

	LS-Means
Yes, participated in a first-year experience program	57.2
No, did not participate in a first-year experience program	49.0

Interpretation: Students who report participating in a first-year experience program have, on average, higher adjusted support for learners benchmark scores than those who do not.

SENSE Benchmark: Early connections

Overall Model: $F(5,49549) = 374.76, p < .0001. R^2 = .0364 (N=49,555)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in FYE	1	741157.9394	741157.9394	1167.62	<.0001
Enrollment Status	1	139085.3331	139085.3331	219.11	<.0001
Developmental Status	1	137978.1713	137978.1713	217.37	<.0001
Generation Status	1	21923.6762	21923.6762	34.54	<.0001
Enrollment status x Developmental status	1	4576.1599	4576.1599	7.21	0.0073

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in First-year experience	.0230	.0230

Least Squares Means:

	LS-Means
Yes, participated in a first-year experience program	56.9
No, did not participate in a first-year experience program	48.4

Interpretation: Entering students who report participating in a first-year experience program have, on average, higher adjusted early connections benchmark scores than those who report that they did not.

SENSE Benchmark: Effective track to college readiness

Overall Model: $F(5,49560) = 1592.13, p < .0001. R^2 = .1384 (N=49,566)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in FYE	1	315386.794	315386.794	585.61	<.0001
Enrollment Status	1	13609.797	13609.797	25.27	<.0001
Developmental Status	1	2662989.919	2662989.919	4944.67	<.0001
Generation Status	1	51467.097	51467.097	95.56	<.0001
Enrollment status x Developmental status	1	2965.814	2965.814	5.51	0.0189

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in First-year experience	.0117	.0117

Least Squares Means:

	LS-Means
Yes, participated in a first-year experience program	51.8
No, did not participate in a first-year experience program	46.2

Interpretation: Entering students who report participating in a first-year experience program have, on average, higher adjusted effective track to college readiness benchmark scores than those who report that they did not.

SENSE Benchmark: Engaged learning

Overall Model: $F(5,49569) = 391.29, p < .0001. R^2 = .0380 (N=49,575)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in FYE	1	465760.7007	465760.7007	728.81	<.0001
Enrollment Status	1	356410.0511	356410.0511	557.70	<.0001
Developmental Status	1	210253.7727	210253.7727	329.00	<.0001
Generation Status	1	10794.2391	10794.2391	16.89	<.0001
Enrollment status x Developmental status	1	502.0515	502.0515	0.79	0.3754

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in First-year experience	.0145	.0145

Least Squares Means:

	LS-Means
Yes, participated in a first-year experience program	54.1
No, did not participate in a first-year experience program	47.3

Interpretation: Entering students who report participating in a first-year experience program have, on average, higher adjusted engaged learning benchmark scores than those who report that they did not.

Student Success Course

CCSSE Benchmark: Support for learners

Overall Model: $F(7,114684) = 983.04, p < .0001. R^2 = .0566 (N=174,345)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Student Success Course	1	1134844.536	1134844.536	1965.67	<.0001
Enrollment Status	1	133451.470	133451.470	231.15	<.0001
Developmental Status	1	987653.561	987653.561	1710.72	<.0001
Generation Status	1	276009.589	276009.589	478.08	<.0001
Credits Earned	1	60317.612	60317.612	104.48	<.0001
Enrollment status x Developmental status	1	9632.168	9632.168	16.68	<.0001
Credits earned x Enrollment status	1	122.465	122.465	0.21	0.6451

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Student Success Course	.0169	.0168

Least Squares Means:

	LS-Means
Enrolled in student success course during first term	57.5
Did not enrolled in student success course during first term	49.40

Interpretation: Students who report enrolling in a student success course during their first term have, on average, higher adjusted support for learners benchmark scores than those who report that they did not.

SENSE Benchmark: Effective track to college readiness

Overall Model: $F(5,56245) = 1839.23, p < .0001. R^2 = .1405 (N=56,251)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Student Success Course	1	346286.648	346286.648	638.29	<.0001
Enrollment Status	1	16258.865	16258.865	29.97	<.0001
Developmental Status	1	2977808.545	2977808.545	5488.79	<.0001
Generation Status	1	65687.098	65687.098	121.08	<.0001
Enrollment status x Developmental status	1	2664.372	2664.372	4.91	0.0267

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Student Success Course	0.0112	0.0112

Least Squares Means:

	LS-Means
Enrolled in student success course during first term	51.7
Did not enrolled in student success course during first term	46.2

Interpretation: Entering students who report enrolling in a student success course during their first term have, on average, higher adjusted effective track to college readiness benchmark scores than those who report that they did not.

SENSE Benchmark: Engaged learning

Overall Model: $F(5,56248) = 414.38, p < .0001. R^2 = .0355 (N=56,254)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Student Success Course	1	401719.6551	401719.6551	623.39	<.0001
Enrollment Status	1	388072.1316	388072.1316	602.21	<.0001
Developmental Status	1	248796.6844	248796.6844	386.09	<.0001
Generation Status	1	20163.7084	20163.7084	31.29	<.0001
Enrollment status x Developmental status	1	991.0601	991.0601	1.54	0.2149

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Student Success Course	0.0110	0.0109

Least Squares Means:

	LS-Means
Enrolled in student success course during first term	53.8
Did not enrolled in student success course during first term	47.9

Interpretation: Entering students who report enrolling in a student success course during their first term have, on average, higher adjusted engaged learning benchmark scores than those who report that they did not.

Learning Community

CCSSE Benchmark: Active and collaborative learning

Overall Model: $F(7,114620) = 1354.62, p < .0001. R^2 = .0764 (N=174,345)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Learning Community	1	936606.817	936606.817	1605.95	<.0001
Enrollment Status	1	208206.018	208206.018	357.00	<.0001
Developmental Status	1	85085.298	85085.298	145.89	<.0001
Generation Status	1	19543.840	19543.840	33.51	<.0001
Credits Earned	1	1826351.621	1826351.621	3131.54	<.0001
Enrollment status x Developmental status	1	1320.876	1320.876	2.26	0.1323
Credits earned x Enrollment status	1	24377.270	24377.270	41.80	<.0001

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Learning Community	0.0138	0.0138

Least Squares Means:

	LS-Means
Participated in an organized learning community during first term	59.1
Did not participate in an organized learning community during first term	50.1

Interpretation: Students who report participating in an organized learning community during their first term have, on average, higher adjusted active and collaborative learning benchmark scores than those who report that they did not.

CCSSE Benchmark: Student-faculty interaction

Overall Model: $F(7,114609) = 1091.18, p < .0001. R^2 = .0625 (N=114,617)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Learning Community	1	824720.138	824720.138	1385.37	<.0001
Enrollment Status	1	209000.038	209000.038	351.08	<.0001
Developmental Status	1	292813.501	292813.501	491.87	<.0001
Generation Status	1	10611.114	10611.114	17.82	<.0001
Credits Earned	1	1294138.882	1294138.882	2173.90	<.0001
Enrollment status x Developmental status	1	4356.946	4356.946	7.32	0.0068
Credits earned x Enrollment status	1	8582.681	8582.681	14.42	0.0001

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Learning Community	0.0119	0.0119

Least Squares Means:

	LS-Means
Participated in an organized learning community during first term	59.0
Did not participate in an organized learning community during first term	50.5

Interpretation: Students who report participating in an organized learning community during their first term have, on average, higher student-faculty interaction benchmark scores than those who report that they did not.

CCSSE Benchmark: Support for learners

Overall Model: $F(7,114585) = 953.88, p < .0001. R^2 = 0.551. (N=114,593)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Learning Community	1	1043799.800	1043799.800	1805.58	<.0001
Enrollment Status	1	154815.029	154815.029	267.80	<.0001
Developmental Status	1	1123351.576	1123351.576	1943.18	<.0001
Generation Status	1	307154.248	307154.248	531.32	<.0001
Credits Earned	1	54347.360	54347.360	94.01	<.0001
Enrollment status x Developmental status	1	7722.084	7722.084	13.36	0.0003
Credits earned x Enrollment status	1	956.963	956.963	1.66	0.1982

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Learning Community	0.0155	0.0155

Least Squares Means:

	LS-Means
Participated in an organized learning community during first term	59.4
Did not participate in an organized learning community during first term	49.9

Interpretation: Students who report participating in an organized learning community during their first term have, on average, higher support for learners benchmark scores than those who report that they did not.

SENSE Benchmark: Engaged Learning

Overall Model: $F(5,55767) = 411.20, p < .0001. R^2 = .0356 (N=55,773)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Learning Community	1	401690.7462	401690.7462	624.35	<.0001
Enrollment Status	1	432527.4801	432527.4801	672.28	<.0001
Developmental Status	1	292584.4843	292584.4843	454.77	<.0001
Generation Status	1	18621.5090	18621.5090	28.94	<.0001
Enrollment status x Developmental status	1	488.7230	488.7230	0.76	0.3834

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Learning Community	0.0111	0.0111

Least Squares Means:

	LS-Means
Participated in an organized learning community during first term	61.48
Did not participate in an organized learning community during first term	48.91

Interpretation: Entering students who report participating in an organized learning community during their first term have, on average, higher engaged learning benchmark scores than those who report that they did not.

Experiential Learning Beyond the Classroom

CCSSE Benchmark: Active and collaborative learning

Overall Model: $F(7,129217) = 1644.27, p < .0001. R^2 = .0827 (N=129,225)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Experiential Learning	1	1682644.265	1682644.265	2879.33	<.0001
Enrollment Status	1	264240.355	264240.355	452.17	<.0001
Developmental Status	1	199536.871	199536.871	341.45	<.0001
Generation Status	1	12914.287	12914.287	22.10	<.0001
Credits Earned	1	1360442.650	1360442.650	2327.98	<.0001
Enrollment status x Developmental status	1	500.059	500.059	0.86	0.3549
Credits earned x Enrollment status	1	21962.190	21962.190	37.58	<.0001

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Experiential Learning	0.0218	0.0218

Least Squares Means:

	LS-Means
Have done an internship, field experience, co-op experience or clinical assignment	59.3
Have not done an internship, field experience, co-op experience or clinical assignment	49.6

Interpretation: Students who report participating in experiential learning beyond the classroom have, on average, higher adjusted active and collaborative learning benchmark scores than those who report that they did not participate in such a program.

CCSSE Benchmark: Academic challenge

Overall Model: $F(7,129218) = 1209.68, p < .0001. R^2 = .0615 (N=129,226)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Experiential Learning	1	1183472.020	1183472.020	2083.23	<.0001
Enrollment Status	1	440630.263	440630.263	775.63	<.0001
Developmental Status	1	490390.943	490390.943	863.22	<.0001
Generation Status	1	35880.669	35880.669	63.16	<.0001
Credits Earned	1	614075.504	614075.504	1080.94	<.0001
Enrollment status x Developmental status	1	21506.456	21506.456	37.86	<.0001
Credits earned x Enrollment status	1	2223.765	2223.765	3.91	0.0479

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Experiential Learning	0.0159	0.0159

Least Squares Means:

	LS-Means
Have done an internship, field experience, co-op experience or clinical assignment	58.4
Have not done an internship, field experience, co-op experience or clinical assignment	50.2

Interpretation: Students who report participating in experiential learning beyond the classroom have, on average, higher adjusted academic challenge benchmark scores than those who report that they did not participate in such a program.

CCSSE Benchmark: Student-faculty interaction

Overall Model: $F(7,129202) = 1256.34, p < .0001. R^2 = .0637 (N=129,210)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Experiential Learning	1	1072800.128	1072800.128	1794.47	<.0001
Enrollment Status	1	270264.798	270264.798	452.07	<.0001
Developmental Status	1	483841.895	483841.895	809.32	<.0001
Generation Status	1	6292.519	6292.519	10.53	0.0012
Credits Earned	1	986659.480	986659.480	1650.38	<.0001
Enrollment status x Developmental status	1	3609.051	3609.051	6.04	0.0140
Credits earned x Enrollment status	1	6503.460	6503.460	10.88	0.0010

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Experiential Learning	0.0137	0.0137

Least Squares Means:

	LS-Means
Have done an internship, field experience, co-op experience or clinical assignment	58.0
Have not done an internship, field experience, co-op experience or clinical assignment	50.2

Interpretation: Students who report participating in experiential learning beyond the classroom have, on average, higher adjusted student-faculty interaction benchmark scores than those who report that they did not participate in such a program.

Tutoring

CCSSE Benchmark: Active and collaborative learning

Overall Model: $F(7,73670) = 901.60, p < .0001. R^2 = .0789 (N=73,678)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Tutoring	1	699107.760	699107.760	1190.30	<.0001
Enrollment Status	1	149265.629	149265.629	254.14	<.0001
Developmental Status	1	54104.566	54104.566	92.12	<.0001
Generation Status	1	23598.921	23598.921	40.18	<.0001
Credits Earned	1	1064792.679	1064792.679	1812.92	<.0001
Enrollment status x Developmental status	1	1901.633	1901.633	3.24	0.0720
Credits earned x Enrollment status	1	16423.664	16423.664	27.96	<.0001

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Tutoring	0.0159	0.0159

Least Squares Means:

	LS-Means
Participated in tutoring at least once during the current academic year	56.0
Never participated in tutoring during the current academic year	49.0

Interpretation: Students who report participating in tutoring during the current year have, on average, higher adjusted active and collaborative learning benchmark scores than those who report that they never participated.

CCSSE Benchmark: Student effort

Overall Model: $F(7,73671) = 1237.86, p < .0001. R^2 = .1052 (N=73,679)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Tutoring	1	2010490.795	2010490.795	3639.63	<.0001
Enrollment Status	1	240758.831	240758.831	435.85	<.0001
Developmental Status	1	729962.580	729962.580	1321.46	<.0001
Generation Status	1	117864.843	117864.843	213.37	<.0001
Credits Earned	1	117822.895	117822.895	213.30	<.0001
Enrollment status x Developmental status	1	1731.939	1731.939	3.14	0.0766
Credits earned x Enrollment status	1	2415.443	2415.443	4.37	0.0365

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Tutoring	0.0471	0.0471

Least Squares Means:

	LS-Means
Participated in tutoring at least once during the current academic year	59.2
Never participated in tutoring during the current academic year	47.3

Interpretation: Students who report participating in tutoring during the current year have, on average, higher adjusted student effort benchmark scores than those who report that they never participated.

CCSSE Benchmark: Student-faculty interaction

Overall Model: $F(7,43663) = 726.26, p < .0001. R^2 = .0646 (N=73,671)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Tutoring	1	584326.8303	584326.8303	969.90	<.0001
Enrollment Status	1	134045.2566	134045.2566	222.50	<.0001
Developmental Status	1	168857.5147	168857.5147	280.28	<.0001
Generation Status	1	19307.8590	19307.8590	32.05	<.0001
Credits Earned	1	765350.2261	765350.2261	1270.37	<.0001
Enrollment status x Developmental status	1	970.1418	970.1418	1.61	0.2045
Credits earned x Enrollment status	1	9531.9629	9531.9629	15.82	<.0001

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Tutoring	0.0130	0.0130

Least Squares Means:

	LS-Means
Participated in tutoring at least once during the current academic year	56.1
Never participated in tutoring during the current academic year	49.7

Interpretation: Students who report participating in tutoring during the current year have, on average, higher adjusted student-faculty interaction benchmark scores than those who report that they never participated.

CCSSE Benchmark: Support for learners

Overall Model: $F(7,73651) = 580.57, p < .0001. R^2 = .0523 (N=73,659)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Tutoring	1	460184.6886	460184.6886	782.39	<.0001
Enrollment Status	1	107938.4693	107938.4693	183.51	<.0001
Developmental Status	1	713428.2978	713428.2978	1212.95	<.0001
Generation Status	1	215596.3544	215596.3544	366.55	<.0001
Credits Earned	1	31679.8822	31679.8822	53.86	<.0001
Enrollment status x Developmental status	1	3961.0153	3961.0153	6.73	0.0095
Credits earned x Enrollment status	1	138.6293	138.6293	0.24	0.6273

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Tutoring	0.0105	0.0105

Least Squares Means:

	LS-Means
Participated in tutoring at least once during the current academic year	55.4
Never participated in tutoring during the current academic year	49.7

Interpretation: Students who report participating in tutoring during the current year have, on average, higher adjusted support for learners benchmark scores than those who report that they never participated.

Supplemental Instruction

CCSSE Benchmark: Active and collaborative learning

Overall Model: $F(7,73647) = 1023.49, p < .0001. R^2 = .0887 (N=73,655)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Supplemental Instruction	1	1154648.967	1154648.967	1986.41	<.0001
Enrollment Status	1	153760.333	153760.333	264.52	<.0001
Developmental Status	1	60294.333	60294.333	103.73	<.0001
Generation Status	1	15516.863	15516.863	26.69	<.0001
Credits Earned	1	1039670.967	1039670.967	1788.60	<.0001
Enrollment status x Developmental status	1	1981.260	1981.260	3.41	0.0649
Credits earned x Enrollment status	1	14578.763	14578.763	25.08	<.0001

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Supplemental Instruction	0.0263	0.0262

Least Squares Means:

	LS-Means
Participated in supplemental instruction/supplemental learning at least once during the current academic year.	58.8
Never participated in supplemental instruction/supplemental learning during the current academic year.	48.9

Interpretation: Students who report participating in supplemental instruction at least once during the current academic year have, on average, higher adjusted active and collaborative learning benchmark scores than those who report that they did not.

CCSSE Benchmark: Student effort

Overall Model: $F(7,73648) = 927.36, p < .0001. R^2 = .0810 (N=73,656)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Supplemental Instruction	1	900062.9289	900062.9289	1585.76	<.0001
Enrollment Status	1	268982.4802	268982.4802	473.90	<.0001
Developmental Status	1	914586.5814	914586.5814	1611.35	<.0001
Generation Status	1	149717.5327	149717.5327	263.78	<.0001
Credits Earned	1	129882.3396	129882.3396	228.83	<.0001
Enrollment status x Developmental status	1	1655.2978	1655.2978	2.92	0.0877
Credits earned x Enrollment status	1	3638.7717	3638.7717	6.41	0.0113

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Supplemental Instruction	0.0211	0.0211

Least Squares Means:

	LS-Means
Participated in supplemental instruction/supplemental learning at least once during the current academic year.	57.4
Never participated in supplemental instruction/supplemental learning during the current academic year.	48.7

Interpretation: Students who report participating in supplemental instruction at least once during the current academic year have, on average, higher adjusted student effort benchmark scores than those who report that they did not.

CCSSE Benchmark: Academic challenge

Overall Model: $F(7,73648) = 636.89, p < .0001. R^2 = .0571 (N=73,656)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Supplemental Instruction	1	450217.7304	450217.7304	782.05	<.0001
Enrollment Status	1	242350.3084	242350.3084	420.97	<.0001
Developmental Status	1	228298.8415	228298.8415	396.57	<.0001
Generation Status	1	14615.9176	14615.9176	25.39	<.0001
Credits Earned	1	534106.6615	534106.6615	927.77	<.0001
Enrollment status x Developmental status	1	12359.2072	12359.2072	21.47	<.0001
Credits earned x Enrollment status	1	653.8000	653.8000	1.14	0.2866

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Supplemental Instruction	0.0105	0.0105

Least Squares Means:

	LS-Means
Participated in supplemental instruction/supplemental learning at least once during the current academic year.	56.46
Never participated in supplemental instruction/supplemental learning during the current academic year.	50.29

Interpretation: Students who report participating in supplemental instruction at least once during the current academic year have, on average, higher adjusted academic challenge benchmark scores than those who report that they did not.

CCSSE Benchmark: Student-faculty interaction

Overall Model: $F(7,73640) = 869.85, p < .0001. R^2 = .0764 (N=73,648)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Supplemental Instruction	1	1143607.580	1143607.580	1921.21	<.0001
Enrollment Status	1	136643.283	136643.283	229.55	<.0001
Developmental Status	1	175052.760	175052.760	294.08	<.0001
Generation Status	1	12921.500	12921.500	21.71	<.0001
Credits Earned	1	741435.651	741435.651	1245.58	<.0001
Enrollment status x Developmental status	1	1069.011	1069.011	1.80	0.1802
Credits earned x Enrollment status	1	8023.628	8023.628	13.48	0.0002

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Supplemental Instruction	0.0254	0.0254

Least Squares Means:

	LS-Means
Participated in supplemental instruction/supplemental learning at least once during the current academic year.	59.3
Never participated in supplemental instruction/supplemental learning during the current academic year.	49.4

Interpretation: Students who report participating in supplemental instruction at least once during the current academic year have, on average, higher adjusted student-faculty interaction benchmark scores than those who report that they did not.

CCSSE Benchmark: Support for learners

Overall Model: $F(7,73628) = 588.15, p < .0001. R^2 = .0530 (N=73,636)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Supplemental Instruction	1	486754.9362	486754.9362	827.88	<.0001
Enrollment Status	1	113192.7031	113192.7031	192.52	<.0001
Developmental Status	1	765132.6214	765132.6214	1301.35	<.0001
Generation Status	1	237603.1868	237603.1868	404.12	<.0001
Credits Earned	1	31366.9081	31366.9081	53.35	<.0001
Enrollment status x Developmental status	1	4049.6964	4049.6964	6.89	0.0087
Credits earned x Enrollment status	1	335.3525	335.3525	0.57	0.4501

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Supplemental Instruction	0.0111	0.0111

Least Squares Means:

	LS-Means
Participated in supplemental instruction/supplemental learning at least once during the current academic year.	56.3
Never participated in supplemental instruction/supplemental learning during the current academic year.	49.9

Interpretation: Students who report participating in supplemental instruction at least once during the current academic year have, on average, higher adjusted support for learners benchmark scores than those who report that they did not.

SENSE Benchmark: Early connections

Overall Model: $F(5,58134) = 387.37, p < .0001. R^2 = .0322 (N=58,140)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Participated in Supplemental Instruction	1	673559.0505	673559.0505	1059.54	<.0001
Enrollment Status	1	194501.8496	194501.8496	305.96	<.0001
Developmental Status	1	195246.2772	195246.2772	307.13	<.0001
Generation Status	1	32873.8458	32873.8458	51.71	<.0001
Enrollment status x Developmental status	1	6301.9340	6301.9340	9.91	0.0016

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Participated in Supplemental Instruction	0.0179	0.0179

Least Squares Means:

	LS-Means
Participated in supplemental instruction/supplemental learning at least once during the first three weeks of my first term	55.6
Never participated in supplemental instruction/supplemental learning at least once during the first three weeks of my first term	48.2

Interpretation: Entering students who report participating in supplemental instruction at least once during the first three weeks of their first term at this college have, on average, higher adjusted early connections benchmark scores than those who report that they did not.

Assessment and Placement

Lead time for testing

CCSSE Benchmark: Support for learners

Overall Model: $F(7,56314) = 373.75$, $p < .0001$. $R^2 = .0444$ ($N^*=56,322$)

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Aware placement test req'd > 1 mo. Before test	1	458336.3953	458336.3953	771.76	<.0001
Enrollment Status	1	62520.5759	62520.5759	105.27	<.0001
Developmental Status	1	444720.9507	444720.9507	748.83	<.0001
Generation Status	1	176010.4237	176010.4237	296.37	<.0001
Credits Earned	1	5708.3365	5708.3365	9.61	0.0019
Enrollment status x Developmental status	1	347.7602	347.7602	0.59	0.4441
Credits earned x Enrollment status	1	196.8421	196.8421	0.33	0.5648

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Aware placement test req'd > 1 mo. Before test	0.0135	0.0135

Least Squares Means:

	LS-Means
Became aware that placement test was required more than a month before taking the test	54.7
Became aware that placement test was required a month or less before taking the test	48.9

Interpretation: Students who report learning they had to take a placement test more than one month before taking the test have, on average, higher adjusted support for learners benchmark scores than those who report learning they had to take a placement test one month or less before taking the test.

NOTE: * Students who reported that they did not take a placement test were excluded from this analysis.

Test preparation

CCSSE Benchmark: Student-faculty interaction

Overall Model: $F(7,55205) = 488.58, p < .0001. R^2 = .0583 (N^*=55,213)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Prepared for placement test	1	514213.5942	514213.5942	841.87	<.0001
Enrollment Status	1	91719.4538	91719.4538	150.16	<.0001
Developmental Status	1	133612.4054	133612.4054	218.75	<.0001
Generation Status	1	9344.6913	9344.6913	15.30	<.0001
Credits Earned	1	546336.7354	546336.7354	894.47	<.0001
Enrollment status x Developmental status	1	306.8753	306.8753	0.50	0.4784
Credits earned x Enrollment status	1	5711.6525	5711.6525	9.35	0.0022

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Prepared for placement test	0.0150	0.0150

Least Squares Means:

	LS-Means
Before enrolling at this college, student prepared for placement test	56.1
Before enrolling at this college, student did not prepared for placement test	49.7

Interpretation: Among students who took a placement test, students who report preparing for the college's placement test have, on average, higher adjusted student-faculty interaction benchmark scores than those who report that they did not prepare for the test.

NOTE: * Students who reported that they did not take a placement test were excluded from this analysis.

CCSSE Benchmark: Support for learners

Overall Model: $F(7,55201) = 435.77, p < .0001. R^2 = .0524 (N^*=55,209)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Prepared for placement test	1	685862.8020	685862.8020	1163.28	<.0001
Enrollment Status	1	67849.8410	67849.8410	115.08	<.0001
Developmental Status	1	395362.3506	395362.3506	670.57	<.0001
Generation Status	1	192875.1918	192875.1918	327.13	<.0001
Credits Earned	1	12206.8174	12206.8174	20.70	<.0001
Enrollment status x Developmental status	1	28.2088	28.2088	0.05	0.8269
Credits earned x Enrollment status	1	960.2915	960.2915	1.63	0.2019

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Prepared for placement test	0.0206	0.0206

Least Squares Means:

	LS-Means
Before enrolling at this college, student prepared for placement test	57.0
Before enrolling at this college, student did not prepared for placement test	49.6

Interpretation: Among students who took a placement test, students who report preparing for the college's placement test have, on average, higher adjusted support for learners benchmark scores than those who report that they did not prepare for the test.

NOTE: * Students who reported that they did not take a placement test were excluded from this analysis.

Testing in High School

SENSE Benchmark: Effective track to college readiness

Overall Model: $F(5,49321) = 1668.46, p < .0001. R^2 = .1447 (N=49,327)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Took placement test in high school	1	515454.694	515454.694	967.98	<.0001
Enrollment Status	1	15017.556	15017.556	28.20	<.0001
Developmental Status	1	2712309.019	2712309.019	5093.51	<.0001
Generation Status	1	65599.886	65599.886	123.19	<.0001
Enrollment status x Developmental status	1	2988.766	2988.766	5.61	0.0178

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Took placement test in high school	0.0192	0.0192

Least Squares Means:

	LS-Means
Took the college's placement test while in high school	52.1
Did not completed the college's placement test while in high school	45.4

Interpretation: Entering students who report completing the college's placement test while in high school have, on average, higher adjusted effective track to college readiness benchmark scores than those who report that they did not take the placement test in high school.

Test preparation

SENSE Benchmark: Engaged learning

Overall Model: $F(5,40457) = 318.59, p < .0001. R^2 = .0379 (N^*=40,463)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Prepared for placement test	1	461063.4448	461063.4448	714.12	<.0001
Enrollment Status	1	320240.0255	320240.0255	496.01	<.0001
Developmental Status	1	144663.3474	144663.3474	224.06	<.0001
Generation Status	1	6561.5649	6561.5649	10.16	0.0014
Enrollment status x Developmental status	1	642.6977	642.6977	1.00	0.3184

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Prepared for placement test	0.0173	0.0173

Least Squares Means:

	LS-Means
Before enrolling, prepared for the college's placement test	54.0
Before enrolling, did not prepare for the college's placement test	47.1

Interpretation: Among students who took a placement test, entering students who report preparing for the test have, on average, higher adjusted engaged learning benchmark scores than those who report that they did not prepare for the placement test.

NOTE: * Students who reported that they did not take a placement test were excluded from this analysis.

Class Attendance

CCSSE Benchmark: Student effort

Overall Model: $F(7,74969) = 819.06, p < .0001. R^2 = .0710 (N=74,977)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Attendance policy explained by all instructors	1	433396.150	433396.150	754.82	<.0001
Enrollment Status	1	324827.707	324827.707	565.74	<.0001
Developmental Status	1	1092979.636	1092979.636	1903.59	<.0001
Generation Status	1	123350.569	123350.569	214.83	<.0001
Credits Earned	1	153008.177	153008.177	266.49	<.0001
Enrollment status x Developmental status	1	2870.971	2870.971	5.00	0.0253
Credits earned x Enrollment status	1	3895.929	3895.929	6.79	0.0092

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Attendance policy explained by all instructors	0.0100	0.0100

Least Squares Means:

	LS-Means
ALL of my instructors clearly explained a class attendance policy and specified how many classes I could miss without penalty	51.7
Only some or none of my instructors clearly explained a class attendance policy and specified how many classes I could miss without penalty	46.2

Interpretation: Students who report that ALL of their instructors clearly explained a class attendance policy and specified how many classes they could miss without penalty have, on average, higher adjusted student effort benchmark scores than those who report that only some or none of their instructors explained an attendance policy.

CCSSE Benchmark: Academic challenge

Overall Model: $F(7,74969) = 761.35, p < .0001. R^2 = .0664 (N=74,977)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Attendance policy explained by all instructors	1	873586.0128	873586.0128	1530.89	<.0001
Enrollment Status	1	295154.6357	295154.6357	517.23	<.0001
Developmental Status	1	283419.0431	283419.0431	496.67	<.0001
Generation Status	1	3778.0732	3778.0732	6.62	0.0101
Credits Earned	1	557022.6354	557022.6354	976.14	<.0001
Enrollment status x Developmental status	1	16475.1744	16475.1744	28.87	<.0001
Credits earned x Enrollment status	1	707.2406	707.2406	1.24	0.2656

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Attendance policy explained by all instructors	0.0200	0.0200

Least Squares Means:

	LS-Means
ALL of my instructors clearly explained a class attendance policy and specified how many classes I could miss without penalty	53.34
Only some or none of my instructors clearly explained a class attendance policy and specified how many classes I could miss without penalty	45.45

Interpretation: Students who report that ALL of their instructors clearly explained a class attendance policy and specified how many classes they could miss without penalty have, on average, higher adjusted academic challenge benchmark scores than those who report that only some or none of their instructors explained an attendance policy.

CCSSE Benchmark: Support for learners

Overall Model: $F(7,74947) = 808.18, p < .0001. R^2 = .0702 (N=74,955)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Attendance policy explained by all instructors	1	1299262.690	1299262.690	2248.02	<.0001
Enrollment Status	1	149897.242	149897.242	259.36	<.0001
Developmental Status	1	869707.957	869707.957	1504.79	<.0001
Generation Status	1	177247.510	177247.510	306.68	<.0001
Credits Earned	1	30825.679	30825.679	53.34	<.0001
Enrollment status x Developmental status	1	6550.277	6550.277	11.33	0.0008
Credits earned x Enrollment status	1	214.172	214.172	0.37	0.5427

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Attendance policy explained by all instructors	0.0291	0.0291

Least Squares Means:

	LS-Means
ALL of my instructors clearly explained a class attendance policy and specified how many classes I could miss without penalty	53.3
Only some or none of my instructors clearly explained a class attendance policy and specified how many classes I could miss without penalty	43.7

Interpretation: Students who report that ALL of their instructors clearly explained a class attendance policy and specified how many classes they could miss without penalty have, on average, higher adjusted support for learners benchmark scores than those who report that only some or none of their instructors explained an attendance policy.

SENSE Benchmark: Early connections

Overall Model: $F(5,49816) = 346.85, p < .0001. R^2 = .0336 (N=49,822)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Attendance policy explained by all instructors	1	652401.4303	652401.4303	1026.15	<.0001
Enrollment Status	1	221589.2361	221589.2361	348.54	<.0001
Developmental Status	1	174900.8989	174900.8989	275.10	<.0001
Generation Status	1	24184.1909	24184.1909	38.04	<.0001
Enrollment status x Developmental status	1	5095.5443	5095.5443	8.01	0.0046

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Attendance policy explained by all instructors	0.0202	0.0202

Least Squares Means:

	LS-Means
ALL of my instructors clearly explained a class attendance policy and specified how many classes I could miss without penalty	52.8
Only some or none of my instructors clearly explained a class attendance policy and specified how many classes I could miss without penalty	44.4

Interpretation: Students who report that ALL of their instructors clearly explained a class attendance policy and specified how many classes they could miss without penalty have, on average, higher adjusted early connections benchmark scores than those who report that only some or none of their instructors explained an attendance policy.

SENSE Benchmark: High expectations and aspirations

Overall Model: $F(5,49839) = 412.57, p < .0001. R^2 = .0397 (N=49,845)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Attendance policy explained by all instructors	1	1236394.374	1236394.374	2011.26	<.0001
Enrollment Status	1	4407.855	4407.855	7.17	0.0074
Developmental Status	1	488.714	488.714	0.79	0.3726
Generation Status	1	6682.444	6682.444	10.87	0.0010
Enrollment status x Developmental status	1	411.364	411.364	0.67	0.4133

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Attendance policy explained by all instructors	0.0388	0.0388

Least Squares Means:

	LS-Means
ALL of my instructors clearly explained a class attendance policy and specified how many classes I could miss without penalty.	53.8
Only some or none of my instructors clearly explained a class attendance policy and specified how many classes I could miss without penalty.	42.3

Interpretation: Entering students who report that ALL of their instructors clearly explained a class attendance policy and specified how many classes they could miss without penalty have, on average, higher adjusted high expectations and aspirations benchmark scores than those who report that only some or none of their instructors explained an attendance policy.

SENSE Benchmark: Effective track to college readiness

Overall Model: $F(5,49829) = 1655.88, p < .0001. R^2 = .1425 (N=49,835)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Attendance policy explained by all instructors	1	467425.823	467425.823	875.72	<.0001
Enrollment Status	1	35015.636	35015.636	65.60	<.0001
Developmental Status	1	2738780.317	2738780.317	5131.11	<.0001
Generation Status	1	53617.796	53617.796	100.45	<.0001
Enrollment status x Developmental status	1	3667.337	3667.337	6.87	0.0088

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Attendance policy explained by all instructors	0.0173	0.0172

Least Squares Means:

	LS-Means
ALL of my instructors clearly explained a class attendance policy and specified how many classes I could miss without penalty	49.48
Only some or none of my instructors clearly explained a class attendance policy and specified how many classes I could miss without penalty	42.39

Interpretation: Entering students who report that ALL of their instructors clearly explained a class attendance policy and specified how many classes they could miss without penalty have, on average, higher adjusted effective track to college readiness benchmark scores than those who report that only some or none of their instructors explained an attendance policy.

SENSE Benchmark: Academic and social support

Overall Model: $F(5,49507) = 575.42, p < .0001 R^2 = .0549 (N=49,513)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Attendance policy explained by all instructors	1	1568431.210	1568431.210	2669.89	<.0001
Enrollment Status	1	153918.505	153918.505	262.01	<.0001
Developmental Status	1	2.962	2.962	0.01	0.9434
Generation Status	1	6671.713	6671.713	11.36	0.0008
Enrollment status x Developmental status	1	2999.121	2999.121	5.11	0.0239

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Attendance policy explained by all instructors	0.0512	0.0511

Least Squares Means:

	LS-Means
ALL of my instructors clearly explained a class attendance policy and specified how many classes I could miss without penalty	54.49
Only some or none of my instructors clearly explained a class attendance policy and specified how many classes I could miss without penalty	41.46

Interpretation: Entering students who report that ALL of their instructors clearly explained a class attendance policy and specified how many classes they could miss without penalty have, on average, higher adjusted academic and social support benchmark scores than those who report that only some or none of their instructors explained an attendance policy.

Alert and Intervention

CCSSE Benchmark: Active and collaborative learning

Overall Model: $F(7,46269) = 531.44, p < .0001. R^2 = .0744 (N^*=46,277)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Someone contacts me if I'm struggling	1	477893.5290	477893.5290	788.77	<.0001
Enrollment Status	1	73044.1601	73044.1601	120.56	<.0001
Developmental Status	1	77854.5140	77854.5140	128.50	<.0001
Generation Status	1	12858.0334	12858.0334	21.22	<.0001
Credits Earned	1	662049.8335	662049.8335	1092.72	<.0001
Enrollment status x Developmental status	1	1937.9235	1937.9235	3.20	0.0737
Credits earned x Enrollment status	1	10204.9574	10204.9574	16.84	<.0001

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Someone contacts me if I'm struggling	0.0168	0.0167

Least Squares Means:

	LS-Means
Someone at this college contacts me if I am struggling with my studies	56.3
No one at this college contacts me if I am struggling with my studies	48.9

Interpretation: Among students who report that they are struggling, those who report that someone at the college contacts them if they are struggling with their studies to help them get the assistance they need have, on average, higher adjusted active and collaborative learning benchmark scores than those who do not report that someone contacts them.

NOTE: * Students who did not indicate that they were struggling academically were excluded from this analysis.

CCSSE Benchmark: Student effort

Overall Model: $F(7,46270) = 479.82, p < .0001. R^2 = .0677 (N^*=46,278)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Someone contacts me if I'm struggling	1	354911.0190	354911.0190	612.13	<.0001
Enrollment Status	1	131014.2021	131014.2021	225.97	<.0001
Developmental Status	1	622973.2351	622973.2351	1074.48	<.0001
Generation Status	1	89740.9489	89740.9489	154.78	<.0001
Credits Earned	1	93327.5729	93327.5729	160.97	<.0001
Enrollment status x Developmental status	1	1178.8781	1178.8781	2.03	0.1539
Credits earned x Enrollment status	1	2063.7747	2063.7747	3.56	0.0592

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Someone contacts me if I'm struggling	0.0131	0.0130

Least Squares Means:

	LS-Means
Someone at this college contacts me if I am struggling with my studies	55.7
No one at this college contacts me if I am struggling with my studies	49.3

Interpretation: Among entering students who report that they are struggling, those who report that someone at the college contacts them if they are struggling with their studies to help them get the assistance they need have, on average, higher adjusted student effort benchmark scores than those who do not report that someone contacts them.

NOTE: * Students who did not indicate that they were struggling academically were excluded from this analysis.

CCSSE Benchmark: Academic challenge

Overall Model: $F(7,46270) = 350.78, p < .0001. R^2 = .0504 (N^*=46,278)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Someone contacts me if I'm struggling	1	332637.0767	332637.0767	577.18	<.0001
Enrollment Status	1	96903.5419	96903.5419	168.14	<.0001
Developmental Status	1	143623.9248	143623.9248	249.21	<.0001
Generation Status	1	4617.5087	4617.5087	8.01	0.0046
Credits Earned	1	308045.1942	308045.1942	534.51	<.0001
Enrollment status x Developmental status	1	3203.4923	3203.4923	5.56	0.0184
Credits earned x Enrollment status	1	6.6149	6.6149	0.01	0.9147

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Someone contacts me if I'm struggling	0.0123	0.0123

Least Squares Means:

	LS-Means
Someone at this college contacts me if I am struggling with my studies	56.3
No one at this college contacts me if I am struggling with my studies	50.1

Interpretation: Among entering students who report that they are struggling, those who report that someone at the college contacts them if they are struggling with their studies to help them get the assistance they need have, on average, higher adjusted academic challenge benchmark scores than those who do not report that someone contacts them.

NOTE: * Students who did not indicate that they were struggling academically were excluded from this analysis.

CCSSE Benchmark: Student-faculty interaction

Overall Model: $F(7,46263) = 549.97, p < .0001. R^2 = .0768 (N^*=46,271)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Someone contacts me if I'm struggling	1	946330.4567	946330.4567	1539.98	<.0001
Enrollment Status	1	62857.6557	62857.6557	102.29	<.0001
Developmental Status	1	146874.5664	146874.5664	239.01	<.0001
Generation Status	1	15457.5262	15457.5262	25.15	<.0001
Credits Earned	1	478073.0808	478073.0808	777.98	<.0001
Enrollment status x Developmental status	1	572.5629	572.5629	0.93	0.3344
Credits earned x Enrollment status	1	3649.2367	3649.2367	5.94	0.0148

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Someone contacts me if I'm struggling	0.0322	0.0322

Least Squares Means:

	LS-Means
Someone at this college contacts me if I am struggling with my studies	59.7
No one at this college contacts me if I am struggling with my studies	49.3

Interpretation: Among students who report that they are struggling, those who report that someone at the college contacts them if they are struggling with their studies to help them get the assistance they need have, on average, higher adjusted student-faculty interaction benchmark scores than those who do not report that someone contacts them.

NOTE: * Students who did not indicate that they were struggling academically were excluded from this analysis.

CCSSE Benchmark: Support for learners

Overall Model: $F(7,46259) = 848.21, p < .0001. R^2 = .1138 (N^*=46,267)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Someone contacts me if I'm struggling	1	2267566.576	2267566.576	3904.44	<.0001
Enrollment Status	1	41105.481	41105.481	70.78	<.0001
Developmental Status	1	446516.929	446516.929	768.84	<.0001
Generation Status	1	157363.696	157363.696	270.96	<.0001
Credits Earned	1	21021.104	21021.104	36.20	<.0001
Enrollment status x Developmental status	1	31.711	31.711	0.05	0.8152
Credits earned x Enrollment status	1	1112.330	1112.330	1.92	0.1644

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Someone contacts me if I'm struggling	0.0778	0.0778

Least Squares Means:

	LS-Means
Someone at this college contacts me if I am struggling with my studies	63.2
No one at this college contacts me if I am struggling with my studies	47.0

Interpretation: Among students who report that they are struggling, those who report that someone at the college contacts them if they are struggling with their studies to help them get the assistance they need have, on average, higher adjusted support for learners benchmark scores than those who do not report that someone contacts them.

NOTE: * Students who did not indicate that they were struggling academically were excluded from this analysis.

SENSE Benchmark: Early connections

Overall Model: $F(5,27919) = 863.14, p < .0001. R^2 = .1339 (N^*=27,925)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Someone contacts me if I'm struggling	1	2279086.409	2279086.409	3807.41	<.0001
Enrollment Status	1	54641.734	54641.734	91.28	<.0001
Developmental Status	1	95724.044	95724.044	159.92	<.0001
Generation Status	1	14176.950	14176.950	23.68	<.0001
Enrollment status x Developmental status	1	479.603	479.603	0.80	0.3707

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Someone contacts me if I'm struggling	0.1200	0.1200

Least Squares Means:

	LS-Means
Someone at this college contacts me if I am struggling with my studies	63.9
No one at this college contacts me if I am struggling with my studies	44.7

Interpretation: Among entering students who report that they are struggling, those who report that someone at the college contacts them if they are struggling with their studies to help them get the assistance they need have, on average, higher early connections benchmark scores than those who do not report that someone contacts them.

NOTE: * Students who did not indicate that they were struggling academically were excluded from this analysis.

SENSE Benchmark: Clear academic plan and pathway

Overall Model: $F(5,27727) = 509.52, p < .0001. R^2 = .0841 (N^*=27,733)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Someone contacts me if I'm struggling	1	1447720.678	1447720.678	2360.93	<.0001
Enrollment Status	1	15873.642	15873.642	25.89	<.0001
Developmental Status	1	36323.875	36323.875	59.24	<.0001
Generation Status	1	710.950	710.950	1.16	0.2816
Enrollment status x Developmental status	1	371.276	371.276	0.61	0.4365

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Someone contacts me if I'm struggling	0.0785	0.0784

Least Squares Means:

	LS-Means
Someone at this college contacts me if I am struggling with my studies	61.1
No one at this college contacts me if I am struggling with my studies	45.7

Interpretation: Among entering students who report that they are struggling, those who report that someone at the college contacts them if they are struggling with their studies to help them get the assistance they need have, on average, higher clear academic plan and pathway benchmark scores than those who do not report that someone contacts them.

NOTE: * Students who did not indicate that they were struggling academically were excluded from this analysis.

SENSE Benchmark: Effective track to college readiness

Overall Model: $F(5,27925) = 836.71, p < .0001. R^2 = .1303 (N^*=27,931)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Someone contacts me if I'm struggling	1	405025.193	405025.193	806.32	<.0001
Enrollment Status	1	2219.276	2219.276	4.42	0.0356
Developmental Status	1	1068271.982	1068271.982	2126.72	<.0001
Generation Status	1	14192.384	14192.384	28.25	<.0001
Enrollment status x Developmental status	1	695.038	695.038	1.38	0.2395

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Someone contacts me if I'm struggling	0.0281	0.0280

Least Squares Means:

	LS-Means
Someone at this college contacts me if I am struggling with my studies	54.6
No one at this college contacts me if I am struggling with my studies	46.5

Interpretation: Among entering students who report that they are struggling, those who report that someone at the college contacts them if they are struggling with their studies to help them get the assistance they need have, on average, higher effective track to college readiness benchmark scores than those who do not report that someone contacts them.

NOTE: * Students who did not indicate that they were struggling academically were excluded from this analysis.

SENSE Benchmark: Academic and social support network

Overall Model: $F(5,27729) = 244.49, p < .0001. R^2 = .0422 (N^*=27,735)$

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Someone contacts me if I'm struggling	1	687404.1499	687404.1499	1094.03	<.0001
Enrollment Status	1	45420.6812	45420.6812	72.29	<.0001
Developmental Status	1	3964.4764	3964.4764	6.31	0.0120
Generation Status	1	4183.6393	4183.6393	6.66	0.0099
Enrollment status x Developmental status	1	745.9097	745.9097	1.19	0.2759

Source	Partial Variation Accounted For	
	Partial Eta-Square	Partial Omega-Square
Someone contacts me if I'm struggling	0.0380	0.0379

Least Squares Means:

	LS-Means
Someone at this college contacts me if I am struggling with my studies	56.5
No one at this college contacts me if I am struggling with my studies	45.9

Interpretation: Among entering students who report that they are struggling, those who report that someone at the college contacts them if they are struggling with their studies to help them get the assistance they need have, on average, higher academic and social support network benchmark scores than those who do not report that someone contacts them.

NOTE: * Students who did not indicate that they were struggling academically were excluded from this analysis.