Second-year Transformational Experience Program Graduation Rates

2015-2016 Cohort

Four-Year Graduation Rates

Center for the Study of Student Life

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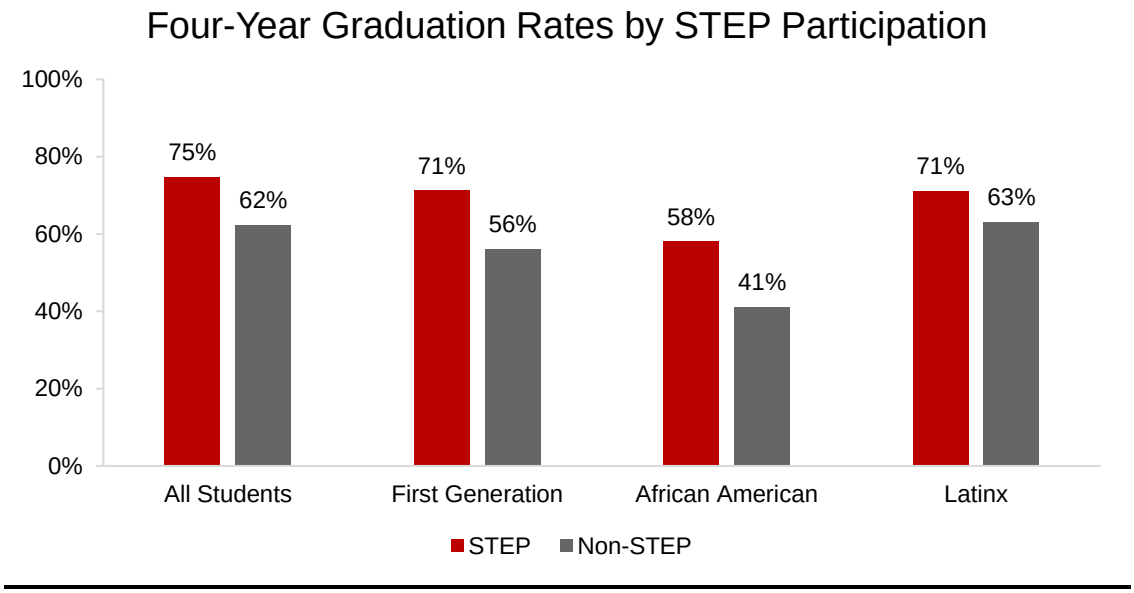
The Ohio State University

EXECUTIVE SUMMARY

This report examines the four-year graduation rates of students in the Second-year Transformational Experience Program (STEP) at The Ohio State University. This report examines graduation rates of students who participated in (STEP) during the 2015-2016 academic year compared to students who were eligible but did not participate in STEP.

- **74.7%** of students who participated in STEP graduated in four years, compared to **62.3%** of students who did not participate in STEP.
- Compared to students who were not in STEP, **STEP students were 1.3 times more likely to graduate in four years** based on logistic regression models.
- Propensity score matching methods, which estimate the effect of participating in STEP versus not after matching students based on demographic background and academic performance (i.e., first-year GPA), find that the **predicted average treatment effect of participating in STEP on graduation rates is 5.3%.**
- First generation and African American students who participated in STEP had statistically significantly higher four-year graduation rates than their peers who were not in STEP.
- Among students who had a 3.0 GPA or higher in their first year, those who were in STEP graduated at higher rates than those not in STEP.



$+p < .1$, $*p < .05$, $**p < .01$, $***p < .001$

DATA

Data for this study come from two sources:

1. *Participation in STEP*: Participation in STEP is based on students who completed Autumn semester of STEP during the 2015-2016 academic year. 2015-2016 was during one of the three pilot years of STEP. There were a total of 1,377 students in STEP during that year; these students started as new first-year students on the Columbus campus in Autumn 2014.

2. *Student education records*: Information on cumulative GPA at the end of the first year, student academic or demographic characteristics (gender, race/ethnicity, first generation status) and four-year graduation rates are from the Student Information System.

To calculate graduation rates, this report examines the cohort of new first-year students on the Columbus campus at The Ohio State University during Autumn 2014 (N = 7,024). Among this Autumn 2014 first-year cohort, we calculated the percentage that graduated by Spring 2018, which is a four-year graduation rate. In prior analyses of STEP student retention rates, data from the College Student Inventory (CSI; Ruffalo Noel Levitz, 2017) were used; however, these data were not available for the cohort of first-year students in 2014-2015. Because we are unable to control or match students on motivational factors, results should be interpreted cautiously.

METHODOLOGY

To determine if there is a relationship between participation in STEP and graduation, three analytic strategies were used. First, descriptive statistics examined the association between STEP and graduation using chi-square tests of independence. Second, to examine the predictors of the outcome variable, a logistic regression analysis was used. Third, because students may self-select into STEP, propensity score matching was used to estimate the effects of participating in STEP on four-year graduation rates. It is not possible to randomly assign students to participate in STEP and it is thus challenging to determine the true effects of the program since students who participate may be markedly different than students who do not participate. There may also be unobserved characteristics that effect retention that are correlated with STEP participation (i.e., known as endogeneity).

Quasi-experimental methods, such as propensity score matching (hereafter, PSM), control for selection bias and endogeneity. PSM is used to estimate the probability of a student being assigned or participating in a “treatment” (STEP), given a set of observed and measured characteristics. Propensity scores are used to reduce selection bias by producing estimated effects for groups that are similar on all observed characteristics but different in whether they participated in STEP or not. Stated differently, propensity scores are used to estimate the probability that a student will participate in STEP given observed characteristics; then the student is matched to a similar student who chose not to participate in STEP. Because PSM is based on logit or probit models, all outcome variables must be dichotomous. For more information on this method, see Dehejia & Wahba (2002) and Caliendo & Kopeinig (2008).

+p < .1, *p < .05, **p < .01, ***p < .001

DEMOGRAPHICS

Table 1: Demographics of Second-year Students Eligible for STEP (2015-2016; *N* = 7,024)

	Total *N*	*N* in STEP	% in STEP	Graduation Rate, in STEP	Graduation Rate, Not in STEP
All Students	7,024	1,377	19.6%	74.7%	62.3%
Male	3,515	547	15.6%	67.8%	54.5%
Female	3,509	830	23.7%	79.2%	70.9%
Demographic Background					
First Generation	1,391	236	17.0%	71.2%	55.8%
Male	635	86	13.5%	58.1%	45.9%
Female	756	150	19.8%	78.7%	64.7%
African American	268	89	33.2%	58.4%	41.3%
Male	97	24	24.7%	37.5%	26.0%
Female	171	65	38.0%	66.2%	51.9%
Latinx	260	59	22.7%	71.2%	63.2%
Male	106	18	17.0%	61.1%	51.1%
Female	154	41	26.6%	75.6%	72.6%
International Student	564	15	2.7%	73.3%	63.4%
Male	303	5	1.7%	40.0%	53.7%
Female	261	10	3.8%	90.0%	74.9%
Honors/Scholars Status					
Honors	1,034	331	32.0%	78.0%	74.4%
Scholars	1,516	499	32.9%	76.2%	66.6%
Honors & Scholars	1	0	0.0%	0%	100%
Non-Honors & Scholars	4,473	547	12.2%	71.3%	59.0%
First-Year GPA[1]					
0.00 - 1.99	400	25	6.3%	24.0%	8.0%
2.00 - 2.49	573	64	11.2%	43.8%	32.6%
2.50 – 2.99	1,329	234	17.6%	58.1%	52.7%
3.00 – 3.49	2,172	454	20.9%	74.7%	68.1%
3.50 – 4.00	2,547	600	23.6%	86.5%	80.8%

[1]First-year GPA includes the cumulative GPA from Autumn 2014 and Spring 2015; three students were not enrolled during Spring 2015 and therefore did not have a full first-year cumulative GPA. The total *N* for GPA = 7,021.

$+p < .1$, $*p < .05$, $**p < .01$, $***p < .001$

Results from Chi-Square Analyses

The following tables presents the descriptive retention rates of students by demographic background.

Table 2: Graduation Rates by Demographics and Gender

	All Students	Male	Female
All Students			
STEP Participant	74.7% (*n* = 1,377)	67.8% (*n* = 547)	79.2% (*n* = 830)
Non-STEP Participant	62.3% (*n* = 3,516)	54.5% (*n* = 2,968)	70.9% (*n* = 2,679)
Pearson X^2	74.43***	33.47***	21.92***
First Generation Students			
STEP Participant	71.2% (*n* = 236)	58.1% (*n* = 86)	78.7% (*n* = 150)
Non-STEP Participant	55.8% (*n* = 1,155)	45.9% (*n* = 549)	64.7% (*n* = 606)
Pearson X^2	19.20***	4.46*	10.71**
Non-First Generation Students			
STEP Participant	75.4% (*n* = 1,141)	69.6% (*n* = 461)	79.3% (*n* = 680)
Non-STEP Participant	63.9% (*n* = 4,492)	56.4% (*n* = 2,419)	72.7% (*n* = 2,073)
Pearson X^2	53.23***	27.81***	11.57**
African American Students			
STEP Participant	58.4% (*n* = 89)	37.5% (*n* = 24)	66.2% (*n* = 65)
Non-STEP Participant	41.3% (*n* = 179)	26.0% (*n* = 73)	51.9% (*n* = 106)
Pearson X^2	6.97**	1.16	3.35+
Latinx Students			
STEP Participant	71.2% (*n* = 59)	61.1% (*n* = 18)	75.6% (*n* = 41)
Non-STEP Participant	63.2% (*n* = 201)	51.1% (*n* = 88)	72.6% (*n* = 113)
Pearson X^2	1.28	0.60	0.14
International Students			
STEP Participant	73.3% (*n* = 15)	40.0% (*n* = 5)	90.0% (*n* = 10)
Non-STEP Participant	63.4% (*n* = 549)	53.7% (*n* = 298)	74.9% (*n* = 251)
Pearson X^2	0.62	0.37	1.18

Note. *N* represents total number of students in each group; not the *N* graduated.

+$p < .1$, *$p < .05$, **$p < .01$, ***$p < .001$

Table 3. Graduation Rates by Honors and Scholars Status

	Honors	Scholars	In Both Honors & Scholars	Non-Honors & Non-Scholars	*Honors v. Non-Honors/Non Scholars X^2*	*Scholars v. Non-Honors/Non Scholars X^2*
STEP Participant	78.0%	76.2%	0.0%	71.3 %	4.71*	3.17
Non-STEP Participant	74.4%	66.6%	100.0%	59.0%	59.84***	19.54***
Pearson X^2	1.53	14.57***	--	30.55***		

Note. There was only one student who was in both Honors & Scholars, and this student was not in STEP.

Table 4: Graduation Rates by First-year GPA

	STEP	Non-STEP	Pearson X^2
First-year Cumulative GPA			
0.00 - 1.99	24.0% (*n* = 25)	8.0% (*n* = 375)	7.33**
2.00 - 2.49	43.8% (*n* = 64)	32.6% (*n* = 509)	3.15+
2.50 – 2.99	58.1% (*n* = 234)	52.7% (*n* = 1,095)	2.28
3.00 – 3.49	74.7% (*n* = 454)	68.1% (*n* = 1,718)	7.30**
3.50 – 4.00	86.5% (*n* = 600)	80.8% (*n* = 1,947)	10.19**
Mean GPA* **	3.33	3.12	

Note. *N* represents total number of students in each group; not the *N* graduated.

+*p* < .1, **p* < .05, ***p* < .01, ****p* < .001

Results from a Logistic Regression

The following table presents a logistic regression examining the relationship between STEP participation, student demographic characteristics and first-year GPA on graduation. Results demonstrate that being in STEP is associated with significantly higher graduation rates after controlling for gender, race/ethnicity, first generation status, honors/scholars status and first-year GPA.

Compared to students who are not in STEP, STEP students are **1.3** times more likely to graduate within four years.

Table 5: Results of Logistic Regression Predicting Graduation (*N* = 7,020)

	Odds Ratio	Coefficient	Standard Error	*Z* statistic
STEP	1.30	0.26	0.08	3.40**
Female	1.82	0.60	0.06	10.59***
Honors/Scholars Status (ref. Non-Honors/Scholars)				
Honors	1.18	0.16	0.09	1.82+
Scholars	1.20	0.18	0.07	2.49*
Race/Ethnicity (ref. White)				
African American	0.55	-0.61	0.14	-4.25***
Latinx	0.97	-0.03	0.15	-0.23
Asian	0.93	-0.07	0.11	-0.64
International student	1.02	0.02	0.11	0.21
Other race/ethnicity	0.85	-0.16	0.12	-1.31
First Generation Status	0.86	-0.14	0.07	-2.10*
First-year GPA	4.29	1.46	0.05	28.03***
Intercept	0.01	-4.27	0.17	-25.57

Results from Propensity Score Matching

Propensity score matching models with average treatment effect on the treated were run using both an unmatched logit model and nearest neighbor matching techniques using the covariates presented in the table above. In all models, the effects of STEP participation on graduation were statistically significant. The predicted average treatment effect of participating in STEP based on the nearest neighbor matching model with an exact match on race is **5.2%.** This is the smallest coefficient found across the three models, and therefore, the most conservative estimate.

Table 6: Robustness of PSM Estimates,
Average Treatment Effect on the Treated (*n* = 7,021)

	Difference	*SE*
Logit Model	0.052	.018**
Nearest Neighbor Matching	0.073	.018***
Nearest Neighbor Matching, Exact Match on Race	0.064	.021**

+$p < .1$, *$p < .05$, **$p < .01$, ***$p < .001$

REFERENCES

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$+p < .1$, $*p < .05$, $**p < .01$, $***p < .001$