



SLiCE Participation and Persistence

Executive Summary

This report summarizes the findings from a brief analysis investigating the correlation between SLiCE program participation and student persistence to 2nd fall, 3rd fall, and 4th fall terms. The analysis only pertains to full-time undergraduate summer or fall starts in cohorts FA16 – FA20. Each persistence outcome only focuses on the three most recent cohorts for which we have available data, and we look at the relationship between SLiCE participation and persistence separately for New and Transfer students. This analysis is purely *correlational* in nature and does not attempt to make any causal inferences.

We find that, even after controlling for underlying student demographics and student's prior spring cumulative CSU GPA, participating in a SLiCE program is associated with a slightly higher persistence rate among New students. New students who participate in at least one SLiCE program in a given academic year, once accounting for student demographics and achievement, have a 1.4 – 2.8 percentage point (PP) higher persistence rate to subsequent fall compared to students who do not participate in a SLiCE program that academic year. Among Transfer students, we observe a positive association between SLiCE participation in students' third year and 4th fall persistence of about 5 PP, once controlling for student characteristics. We find no differences in estimated persistence rates by SLiCE program intensity, meaning that there are no differences between students who participate in one SLiCE program and those who participate in two or more in a given year.

Methods

SLiCE participation data is structured at the academic year level rather than at the term level. Practically, that means that we compare subsequent fall persistence outcomes between those students who had no SLiCE participation the academic year prior (in neither FA nor SP) to those students who participated in a SLiCE offering at least once the year prior (in either FA and/or SP). For example, we compare 2nd fall persistence rates between students who participated in at least one SLiCE program in 1st FA and/or 1st SP to those students who did not participate in SLiCE in either term. We do not distinguish between SLiCE program type (please consult [Appendix Table A1](#) for a list of the SLiCE programs offered in AY2016-17 through AY2020-21).

To ensure that we are drawing the most apt comparison between SLiCE participants and non-participants, we restrict our samples for each persistence outcome (i.e., 2nd fall persistence, 3rd fall persistence, 4th fall persistence) to only those students who were enrolled up through the prior spring's end of term (EOT). This means that all students included in the 2nd fall persistence comparison groups are enrolled up through SP1 EOT, all students in the 3rd fall persistence comparison groups are enrolled up through SP2 EOT, etc. Conditioning on prior spring EOT enrollment ensures that we are comparing students – both SLiCE participants and non-participants – who would have had the same opportunity to engage in SLiCE programming because they were enrolled for the same duration.¹

While we show the gap in persistence rates between SLiCE participants and non-participants on their own, we also show what the gap would be if we controlled for student's underlying demographic and academic achievement characteristics as well. This is important because the types of students who participate in SLiCE don't always reflect those of CSU overall, and some of these characteristics are more/less correlated with

¹ Conditioning on prior spring EOT enrollment also means that persistence numbers in this report are higher than those reported on [CSU's IR Interactive Webpage](#).

subsequent persistence on their own. We want to account for these relationships to better isolate the unique association between SLiCE and persistence. Still, we cannot account fully for all aspects of a student that would correlate with both SLiCE participation and persistence (e.g., motivation) so these associations are not causal.

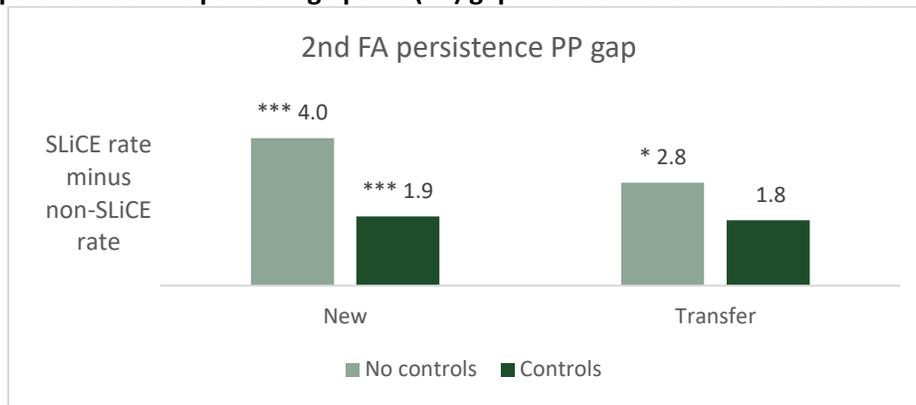
Findings

2nd Fall Persistence

After accounting for student-level demographics and achievement measures, we find that New students who participate in at least one SLiCE program in their first academic year (AY1) have a 2nd fall persistence rate that is 1.9 PP higher than that of non-SLiCE participants. This roughly 2 PP gap is statistically significant at the 1% level. After accounting for student-level metrics among the Transfer sample, however, we find no statistically significant difference in 2nd fall persistence rates between SLiCE and non-SLiCE students.

Figure 1 illustrates the 2nd fall persistence PP gaps between SLiCE and non-SLiCE students with and without controls for both New and Transfer students, separately. The “controls” are listed in Table 1 (from Female down through 1st SP Cum CSU GPA).

Figure 1: 2nd fall persistence rate percentage point (PP) gap between SLiCE and non-SLiCE



Notes: Statistical significance at *** p<0.01, ** p<0.05, * p<0.1. Controls include all the variables in Table 1.

Table 1: Characteristics of students in 2nd fall persistence outcome groups

	<i>New Students</i>		<i>Transfer Students</i>	
	No SLiCE in AY1	SLiCE in AY1	No SLiCE in AY1	SLiCE in AY1
<i>N</i>	11,795	2,037	3,033	410
2nd fall persistence	89.9%	93.8%	90.9%	93.7%
Female	53.8%	72.4%	48.8%	65.9%
Pell	20.1%	22.1%	29.7%	37.6%
First Gen	22.0%	22.3%	32.9%	40.5%
CO Resident	64.7%	62.5%	72.6%	66.1%
Racially Minoritized	27.8%	30.2%	24.1%	30.0%
HS/Transfer GPA	3.67	3.84	3.21	3.34
HS/Transfer GPA Missing	0.1%	0.1%	0.1%	0.0%
1st SP Cum CSU GPA	3.09	3.33	3.08	3.23

Notes: Cohorts included in the 2nd fall persistence calculations are FA18, FA19, and FA20. Students enrolled up through SP1 EOT.

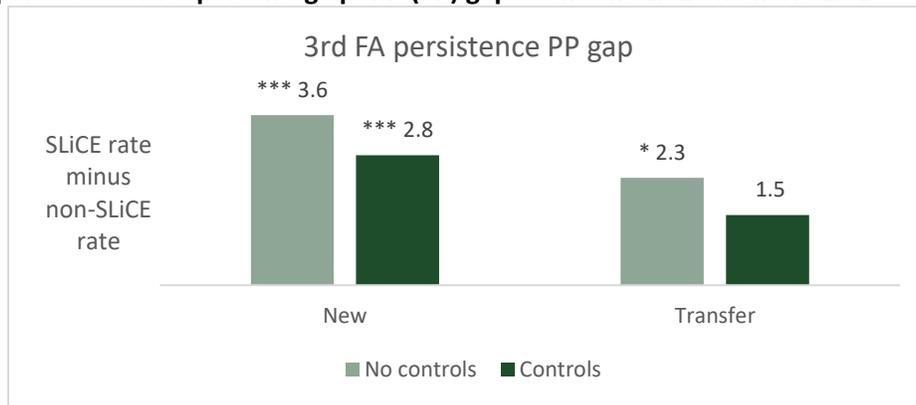
We also explore whether the gaps in 2nd fall persistence rates between SLiCE participants and non-participants vary by the “intensity” of a student’s SLiCE experience – how many unique SLiCE programs a student participated in within AY1.² We find no differences in the PP gap between students who participated in 1 SLiCE program in AY1 and those who participated in 2+ SLiCE programs. [Appendix Table A2](#) shows frequency tables for how many unique programs SLiCE students participated in for AY1, AY2, and AY3, separately.

3rd Fall Persistence

After controlling for student level measures, we find that New students who participate in at least one SLiCE program in their second academic year (AY2) have a 3rd fall persistence rate that is 2.8 PP higher than that of non-SLiCE participants. This roughly 3 PP gap is statistically significant at the 1% level. Once again, we find no statistically significant difference in 3rd fall persistence rates between SLiCE and non-SLiCE Transfer students.

Figure 2 illustrates the 3rd fall persistence PP gaps between SLiCE and non-SLiCE students with and without controls for both New and Transfer students, separately. Controls are listed in Table 2.

Figure 2: 3rd fall persistence rate percentage point (PP) gap between SLiCE and non-SLiCE



Notes: Statistical significance at *** p<0.01, ** p<0.05, * p<0.1. Controls include all the variables in Table 2.

Table 2: Characteristics of students in 3rd fall persistence outcome groups

	<i>New Students</i>		<i>Transfer Students</i>	
	No SLiCE in AY2	SLiCE in AY2	No SLiCE in AY2	SLiCE in AY2
<i>N</i>	10,319	1,990	2,755	463
3rd fall persistence	93.1%	96.7%	91.7%	94.0%
Female	53.9%	66.5%	48.9%	54.4%
Pell	18.1%	26.9%	28.5%	40.0%
First Gen	19.8%	27.2%	33.1%	41.9%
CO Resident	65.0%	67.8%	72.1%	70.6%
Racially Minoritized	25.1%	34.4%	21.9%	31.5%
HS/Transfer GPA	3.68	3.78	3.21	3.32
HS/Transfer GPA Missing	0.1%	0.1%	0.1%	0.0%
2nd SP Cum CSU GPA	3.14	3.24	3.12	3.21

Notes: Cohorts included in the 3rd fall persistence calculations are FA17, FA18, and FA19. Students enrolled up through SP2 EOT.

² Please note that we measure intensity as a count of *unique* SLiCE program experiences within the same academic year. That means if a student participated in the same SLiCE program in both FA1 and SP1, we only count this program as one singular, unique program for AY1.

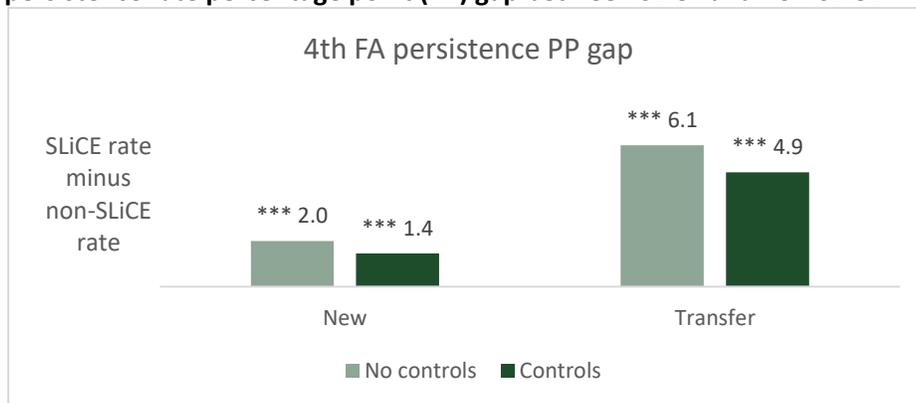
As with 2nd fall persistence, we examine whether the intensity of a student’s SLiCE experience matters and find no difference in the PP gap by whether a student participated in 1 SLiCE program or 2+ programs in AY2. We also explore whether it’s SLiCE participation in AY2 that matters, specifically, or whether cumulative SLiCE participation in or before AY2 better predicts 3rd fall persistence rates. The PP gap between SLiCE and non-SLiCE participants is approximately the same when we account for cumulative SLiCE behavior.

4th Fall Persistence

After controlling for student level measures, we find that New students who participate in at least one SLiCE program in their third academic year (AY3) have a 4th fall persistence rate that is 1.4 PP higher than that of non-SLiCE participants. This gap is statistically significant at the 1% level. Unlike with previous persistence outcomes, we do observe a 4.9 PP gap in 4th fall persistence rates between Transfer SLiCE and non-SLiCE students, once accounting for student-level controls. This gap is statistically significant at the 1% level as well. While substantial in magnitude, it is important to keep in mind the relatively small number of Transfer students included in Table 3 below. As a result, this estimated association is less precisely measured and will likely fluctuate in size, even with small shifts in student behavior.

Figure 3 illustrates the 4th fall persistence PP gaps between SLiCE and non-SLiCE students with and without controls for both New and Transfer students, separately. Controls are listed in Table 3.

Figure 3: 4th fall persistence rate percentage point (PP) gap between SLiCE and non-SLiCE



Notes: Statistical significance at *** p<0.01, ** p<0.05, * p<0.1. Controls include all the variables in Table 3.

Table 3: Characteristics of students in 4th fall persistence outcome groups

	New Students		Transfer Students	
	No SLiCE in AY3	SLiCE in AY3	No SLiCE in AY3	SLiCE in AY3
<i>N</i>	8,742	2,315	1,683	307
4 th fall persistence	95.6%	97.5%	89.1%	95.1%
Female	54.0%	65.1%	45.0%	56.0%
Pell	16.9%	27.0%	29.1%	41.7%
First Gen	18.9%	26.4%	29.7%	40.1%
CO Resident	66.3%	70.2%	73.1%	71.7%
Racially Minoritized	23.1%	34.6%	21.3%	33.6%
HS/Transfer GPA	3.67	3.77	3.18	3.26
HS/Transfer GPA Missing	0.1%	0.1%	0.1%	0.3%
3 rd SP Cum CSU GPA	3.15	3.25	3.01	3.10

Notes: Cohorts included in the 4th fall persistence calculations are FA16, FA17, and FA18. Students enrolled up through SP3 EOT.

We do examine whether the intensity of a student’s SLiCE experience matters and find no difference in the PP gap by whether a student participated in 1 SLiCE program or 2+ programs in AY3. We also explore whether it’s SLiCE participation in AY3 that matters, specifically, or whether cumulative SLiCE participation in or before AY3 better predicts 4th fall persistence rates. The PP gap between SLiCE and non-SLiCE participants is approximately the same for New students when we account for cumulative SLiCE behavior.

However, the PP gap shrinks and becomes non-statistically meaningful between Transfer SLiCE and non-SLiCE participants when we measure SLiCE experience cumulatively across AY1, AY2, and AY3. Because the sample of Transfer students for the 4th fall persistence outcome is fairly small, even slight shifts in student headcounts (in this case more students being considered to have participated in SLiCE in or before AY3) results in substantive changes in the estimated association between SLiCE participation and 4th fall persistence.

Conclusion

Overall, we find that SLiCE participation, even once accounting for a basic set of student demographics and achievement measures, is associated with a slight positive and statistically significant boost to subsequent fall persistence among New students by 1.4 – 2.8 PP. The estimated association is largest (nearly 3 PP) for SLiCE participation in AY2 and 3rd fall persistence, and shrinks in half (less than 1.5 PP) for SLiCE participation in AY3 and 4th fall persistence. These data suggest that SLiCE programming could serve as a “tier 3” support option for the student success strategy of supporting a larger proportion of first-time students. This is a promising option because of SLiCE’s ability to track student participation.

In contrast, we only observe a positive and statistically significant association between SLiCE participation and persistence among the Transfer population when it comes to AY3 behavior and 4th fall persistence (of about 5 PP). The small Transfer sample size makes this estimate less precise; however, the overall relationship may speak to the power of SLiCE participation among Transfer students who enroll long enough to stay up through their third academic year. Future work should more deeply explore the importance of timing when it comes to student engagement and persistence outcomes – both in SLiCE and in other campus program offerings.

It is important to reiterate that the associations measured in this report show only correlations between SLiCE participation and subsequent persistence and not any estimated “effect” or “impact” of SLiCE participation. Although we do control for a handful of variables that are likely correlated with both SLiCE participation and persistence to better isolate the association between SLiCE and persistence on its own, we cannot fully account for all factors that relate to a student’s desire or ability to participate in SLiCE programming and that may also relate to their persistence at CSU. SLiCE students are likely to differ from their peers in many unobservable ways that we cannot fully capture in a basic regression analysis.

As more cohorts of SLiCE participants are added in the future, we will update this analysis to show the correlation between SLiCE participation and graduation outcomes. We will also explore other quantitative approaches that may better approximate a *causal* relationship between SLiCE and student success measures.

Appendix

Table A1: List of SLiCE programs by group offered in AY2016-17 through AY2020-21

Basic Needs	Rams Against Hunger - Pantry
	Rams Against Hunger - Recovery
	Rams Against Hunger - Swipes
Community Engagement	Alternative Break
	C.A.N.S. Around The Oval
	CSUnity
	SLiCE Adaptive Swim
Involvement	TGIF
	Involvement
Leadership	Student Organizations
	ACT
	ASCSU
	Campus Step Up
	Circle of Change
	LeaderShape
	NCSL
	President's Leadership Program
	Public Achievement
	REAL Experience
SLiCE Staff	SHAPE
	SSJTI
	Applicants
	Staff

Table A2: Headcount and share of students participating in unique number of SLiCE programs by AY

# of programs	AY1 participation				AY2 participation				
	New		Transfer		# of programs	New		Transfer	
	Hdct	%	Hdct	%		Hdct	%	Hdct	%
1	1,892	92.9%	350	85.4%	1	1,685	84.7%	388	83.8%
2	127	6.2%	48	11.7%	2	245	12.3%	68	14.7%
3	13	0.6%	8	2.0%	3	48	2.4%	6	1.3%
4	4	0.2%	3	0.7%	4	8	0.4%	1	0.2%
6	1	0.0%	1	0.2%	5	2	0.1%	0	0.0%
Total	2,037	100.0%	410	100.0%	6	2	0.1%	0	0.0%
					Total	1,990	100.0%	463	100.0%
# of programs	AY3 participation								
	New		Transfer						
	Hdct	%	Hdct	%					
1	1,834	79.2%	249	81.1%					
2	384	16.6%	45	14.7%					
3	72	3.1%	13	4.2%					
4	16	0.7%	0	0.0%					
5	7	0.3%	0	0.0%					
6	1	0.0%	0	0.0%					
7	1	0.0%	0	0.0%					
Total	2,315	100.0%	307	100.0%					