Coyote First STEP 2016
Report #2

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EXECUTIVE SUMMARY

2016 Cohort

- Ninety-one percent of the latest CFS cohort in 2016 in comparison to 94% of last year's 2015 cohort were successful in reducing their developmental math requirements.
- Fifty-nine percent of the latest CFS cohort in 2016 in comparison to 66% of the previous 2015 cohort were ready for GE math by the fall quarter.
- Nine percent of the latest CFS cohort in 2016 in comparison to 6% of last year's 2015 cohort did not progress in math.
- Sense of connectedness generally increased for CFS participants in both 2015 and 2016 cohorts by the end of the program. For the 2016 cohort, almost all areas appeared to move in the positive direction except for items measuring student engagement and diversity.
- The magnitude of change in connectedness was greater for the 2015 cohort than it was for the 2016 cohort. Areas showing little or no change for the 2016 cohort centered on connectedness to peers, faculty, and staff.
- When students took the CIRP Freshmen Survey, CFS participants scored higher on Civic Engagement than non-CFS participants while non-CFS participants had scored higher on Academic Self-Concept than CFS participants.
- CFS participants improved their confidence in mathematics abilities and ability to handle difficult obstacles pertaining to math.
- CFS included nineteen co-curricular events with nearly 1,500 attendees. The majority (58%) of the events were educational workshops, while others were intended to foster student engagement and relationship building (e.g., dances, movie nights). Due to limited data collection, in-depth analyses of student participation, feedback, and learning outcomes are not available.
- Open-ended responses indicated that CFS participants thought the CFS program was beneficial to them in terms of engagement and college-life experience, improved skills in math, connectedness, campus familiarity, and other positive experiences.

2015 Cohort: One Year Later

- Sixty-eight percent of the 2015 CFS cohort completed their GE math requirement during their first year while 32% did not.
- CFS 2015 participants attempted and passed more college-level units and were more likely to attempt and pass their GE math requirement during their first year than FYS remediated through traditional pathways.
- CFS students fared just as well as their non-CFS, GE-Ready peers in passing the GE-level math.
- Retention rate into the second year for the 2015 CFS cohort was 85%; 84% for non-CFS, GE-Ready peers.
- Math confidence and sense of connectedness to CSUSB faculty, staff, and peers remained positive in general but declined as their first year progressed.

PART I. Coyote First STEP 2016

SUMMARY

The purpose of this study was to provide results about the summer 2016 implementation of Coyote First STEP, or Student Transition Enhancement Program. The program, which is part of the initiative to increase college readiness and graduation rates, includes an Early Start math class with peer tutor support, an introduction to college-level writing, and a myriad of co-curricular activities and workshops. Coyote First STEP (CFS) is designed to ensure students are on a solid footing for timely graduation by reducing developmental course requirements, enhancing social connections among students, and forging a sense of belonging at CSUSB.

Similar to last year's findings, preliminary findings indicate Coyote First STEP 2016:

1. Reduced developmental course requirements;
2. Enhanced students' sense of engagement and self-awareness;
3. Increased students' sense of confidence and ability in mathematics.

PROGRAM OVERVIEW

First implemented in 2015, Coyote First STEP is a 2 session, -4 week summer residential program designed to provide both academic instruction and co-curricular experiences for those students in need of developmental math as indicated by their Entry Level Mathematics (ELM) scores. Satisfying Executive Order 1048, which mandates that all students who do not demonstrate proficiency in English or math participate in an Early Start Program in order to matriculate in the fall, CFS is based primarily on CSUSB's successful Intensive Mathematics Program (IMP).

The Intensive Math Program (IMP) was conceived over ten years ago by math faculty members as a way to reduce the need for developmental coursework by delivering meaningful instruction to advance students toward college-readiness in mathematics. The self-select program was available for a modest fee to incoming students and yielded strong results. Building upon this mathematics curriculum and national data supporting the summer bridge model, IMP was offered as an alternative to the basic Early Start Math (ESM) courses and eventually became the expanded Coyote First STEP program. In CFS, students attend an extended lecture-discussion by a math faculty member on a specific math concept. Following lunch, students then met for guided and independent practice specifically designed to reinforce the morning's concept in smaller groups led by peer tutors. CFS program-level learning outcomes for the math component are:

1. Students will demonstrate an understanding and apply fundamental concepts, operations, and relations.
2. Students will correctly apply mathematics properties and definitions.
3. Students will calculate efficiently, flexibly, and with appropriate accuracy.

In addition to instruction in math, those students who score within a particular range on the English Placement Test (EPT) also participate in Early Start English (ESE) as a part of their CFS experience. Designed to support students' transition from high school to college, ESE 98 invites students to reflect upon their past reading and writing experiences and introduces them to the various types of reading and writing they will encounter in college. The main goal of ESE 98 is not to provide developmental English

instruction to students, but rather to support them in making an informed decision with regard to their stretch First-Year Composition courses.

The final and unique component of Coyote First STEP is the intentionally designed co-curricular programming. Ranging from developmental to social in nature, these co-curricular program elements allow CSUSB to create for students some of fundamental structures essential to student success, including students' readiness and transition, sense of belonging, institutional affinity, and resiliency. Co-curricular program-level outcomes for CFS 2016 stated that students would:

1. Develop connections with and social support amongst peers, staff, and faculty.
2. Explore academic-related skills and identify various campus resources for academic success, overall health, well-being, and social support.
3. Understand how curricular and co-curricular engagement and social involvement impacts their experiences at CSUSB.

2016 Program Changes

Informed by observational data and feedback from Coyote First STEP 2015, several changes were implemented in the program in 2016.

a) Perhaps the largest logistical change to the program in 2016 was the integration of SOAR, or Student Orientation, Advising, and Registration, into the CFS experience. In summer 2015, students who participated in CFS were required to schedule an additional and separate (overnight) orientation stay on campus to fulfill their SOAR requirement. In 2016, however, students who participated in CFS fulfilled their SOAR requirement through a model in which SOAR programming was infused into the overall CFS co-curricular and evening programming. This change allowed CFS students to meet their SOAR obligation without needing to plan for a second stay on campus at a later date.
b) Another change was the decision to disallow students from first session to enroll in second session to continue their math progression. As students enrolled in second CFS session were not afforded the same opportunity as those students enrolled in the first CFS session students, this was deemed inequitable and the practice was not continued in 2016. Instead, all students were provided the chance to advance as far as possible within one CFS session.
c) Unlike the previous summer, students were not required to live on campus over the weekend during CFS 2016, as this placed undue planning, staffing, and fiscal strain on the program in 2015. Instead, those students who needed to remain on campus over the weekend during the program were able to request to do so. In total, 41 such requests were received from students expressing a hardship if not allowed to reside on campus during the course of CFS, and 40 were granted. (An additional 10 students requested and were approved to stay on campus the weekend of August 20, as the Blue Cut Fire impeded their ability to go home.)
d) Those students who were exempt from Early Start English (ESE) were not required to take ESE 98 as part of CFS as students were last summer.
e) In addition to the preexisting, co-curricular activities offered as part of the 2015 and 2016 CFS sessions, students were also provided the opportunity to engage in various faculty-led co-curricular activities such as:

Computer Coding
This two-part workshop for groups of thirty female CFS students during session one (June 26-July 21) helped students learn about coding as a language and use coding to program Arduinos to perform certain tasks.
Facilitated by: Professor Liliana Gallegos

Production, Photography, Poetry and Film (PPPAF)
In PPPAF, students learned the basics of combining photography, poetry, and film. Students worked in teams to make their own productions and present their multifarious prose performance.
Facilitated by: Alex Avila

Computer coding and PPPAF workshops were offered to all CFS students in the evenings. Creative dance and theater workshops were specifically offered for students who were unsuccessful in their CFS math course and who remained on campus while they fulfilled their Early Start English requirement.

Creative Dance Workshop
This workshop focused on the methods used to create dance. Students experienced the art of choreography while learning the specific forms and techniques applied to various dance styles. The workshop culminated in a small informal sharing of students' work.
Facilitated by: Leslie Bryan

Theatre Exploration
This workshop introduced the theatre experience through improvisation, text study, and movement. Participants expressed themselves in many ways working alone and in groups. Skills in using language, self-expression and creativity are important for everyone.
Facilitated by: Professor Kathryn Ervin

COST

Total cost of CFS 2016 was approximately $2.2 million. Fifty percent of the cost was paid by the Chancellor's Office, 40% was paid from campus discretionary funds, 9% by area school districts, and 1% by student fees.

CSUSB INCOMING FIRST-YEAR STUDENTS

In fall 2016, 2,791 first-year students (FYS) entered CSUSB, 93% of whom were California residents. The number of incoming first-year students this year reflects a slight decrease from the previous fall of 3,005 first-year students; 94% of whom were California residents.

The CFS participant characteristics in fall 2016 remained similar to fall 2015. More specifically, higher proportions of female, Hispanic, African American, Pell recipient and first-generation college students participated in the program than their relevant comparison groups (e.g., male, other ethnic groups, etc.). On the other hand, lower proportions of White and Asian students participated in CFS than other

ethnic groups. No notable difference was found on CFS participation between the local and non-local students.

	2015						2016					
	CFS Participants		Non-CFS		All FYS		CFS Participants		Non-CFS		All FYS	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Gender												
Female	1020	69%	789	52%	1809	60%	1002	70%	704	52%	1706	61%
Male	458	31%	738	48%	1196	40%	437	30%	648	48%	1085	39%
Total	1478	100%	1527	100%	3005	100%	1439	100%	1352	100%	2791	100%
Ethnicity												
White	78	5%	163	11%	241	8%	62	4%	145	11%	207	7%
African American	83	6%	51	3%	134	5%	102	7%	59	4%	161	6%
Native American	2	0.1%	5	0.3%	7	0.2%	2	0.1%	2	0.1%	4	0.1%
Asian	70	5%	112	7%	182	6%	45	3%	75	6%	120	4%
Native Hawaiian/ PI	3	0.2%	2	0.1%	5	0.2%	0	0.0%	1	0.1%	1	0.0%
Two or More Races	27	2%	51	3%	78	3%	28	2%	39	3%	67	2%
Hispanic	1146	78%	995	65%	2141	71%	1123	78%	859	64%	1982	71%
Unknown	21	1%	33	2%	54	2%	34	2%	34	3%	68	2%
Non-Resident	48	3%	115	8%	163	5%	43	3%	138	10%	181	7%
Total	1478	100%	1527	100%	3005	100%	1439	100%	1352	100%	2791	100%
Pell												
Recipient	1073	73%	937	61%	2010	67%	1051	73%	791	59%	1842	66%
Non-Recipient	405	27%	590	39%	995	33%	388	27%	561	42%	949	34%
Total	1478	100%	1527	100%	3005	100%	1439	100%	1352	100%	2791	100%
Local/Non-Local												
Local	1177	80%	1234	81%	2411	80%	1179	82%	1070	79%	2249	81%
Non-Local	301	20%	293	19%	594	20%	260	18%	282	21%	542	19%
Total	1478	100%	1527	100%	3005	100%	1439	100%	1352	100%	2791	100%
1st Gen (Parents No College)												
Yes	871	59%	794	52%	1665	55%	837	58%	662	49%	1499	54%
No	607	41%	733	48%	1340	45%	602	42%	690	51%	1292	46%
Total	1478	100%	1527	100%	3005	100%	1439	100%	1352	100%	2791	100%
1st Gen (Parents No Bachelors)												
Yes	1236	84%	1177	77%	2413	80%	1220	85%	1013	75%	2233	80%
No	242	16%	350	23%	592	20%	219	15%	339	25%	558	20%
Total	1478	100%	1527	100%	3005	100%	1439	100%	1352	100%	2791	100%

RESULTS

I. Reduction in Developmental Mathematics Requirements

Of the 1,488 CFS participants, 1,439 enrolled in fall 2016. Twenty-one CFS participants were identified

as not requiring developmental math (e.g., SAT exempt, EAP exempt) and another three were not tested. These 24 students were excluded from the analysis. Therefore, the following analysis included 1,415 fall 2016 enrolled CFS students. While the CSU Enrollment files allow for three quarters of developmental math, students may actually require four quarters. For the purposes of this report, ELM scores of 18 or lower were counted as four quarters of developmental math.

Of the 1,415 CFS participants enrolled for fall 2016, 838 (59%) achieved GE math-ready status, 455 (32%) reduced by one level but did not fully satisfy developmental math requirements, 1 (< 0.1%) reduced by two levels but did not fully satisfy developmental math requirements, and 119 (9%) did not reduce their developmental math requirements (i.e., Report in Progress (RP) only). Overall, CFS reduced the number of seats in developmental math courses needed by these students from 2,954 to 1,130. This is equivalent to a reduction of 1,824 seats, or about 40 to 45 course sections, in precollege-level mathematics courses.

2016 Pre-CFS Developmental Math Status		**2016 Post-CFS Developmental Math Status**					
		1 Qtr.	**2 Qtrs.**	**3 Qtrs.**	**4 Qtrs.**	**GE Ready**	
1 Qtr.	342	26	0	0	0	316	92%
2 Qtrs.	675	79	75	0	0	521	77%
3 Qtrs.	330	1	310	18	0	1	0.03%
4 Qtrs.	68	2	0	66	0	0	0%
Total	1,415	108	385	84	0	838	59%

Last year, of the 1,431 CFS 2015 participants, 947 (66%) achieved GE math-ready status, 337 (24%) reduced by one level but did not become fully satisfy developmental math requirements, 56 (4%) reduced by two levels but did not fully satisfy developmental math requirements, and 91 (6%) did not reduce their developmental math requirements (i.e., RP only).

2015 Pre-CFS Developmental Math Status		**2015 Post-CFS Developmental Math Status**					
		1 Qtr.	**2 Qtrs.**	**3 Qtrs.**	**4 Qtrs.**	**GE Ready**	
1 Qtr.	431	35	0	0	0	396	92%
2 Qtrs.	605	118	25	0	0	462	76%
3 Qtrs.	331	37	179	26	0	89	27%
4 Qtrs.	64	0	19	40	5	0	0%
Total	1,431	190	223	66	5	947	66%

In terms of overall developmental math course pass rate, CFS 2016 had a pass rate of 92%, with 2,225 passing credits earned out 2,412 attempts. ESM075A saw the highest pass rate of 97%, and ESM091 the lowest with 91%.

CFS 2016 Course	Count	Credit (CR)	Did not Pass (RP)	% CR	% RP
ESM075A	67	65	2	97%	3%
ESM075B	339	321	18	95%	5%
ESM081	1,052	970	81	92%	8%
ESM091	954	869	85	91%	9%
Total	2,412	2,225	186	92%	8%

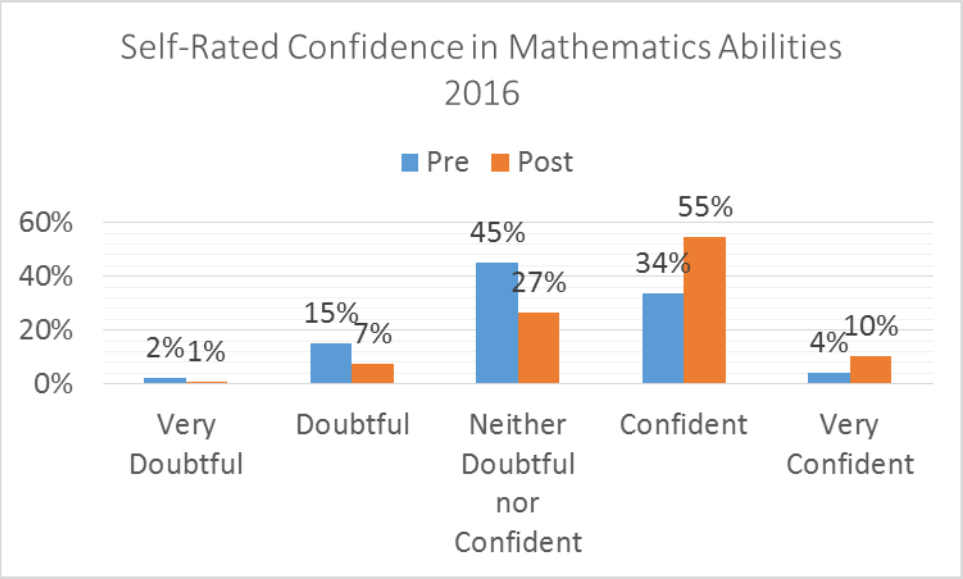
Last year in 2015, the overall developmental math course pass rate for CFS was 93%, with 2,584 passing credits earned out of 2,780 attempts. ESM081 saw the highest pass rate of 97%, and ESM091 the lowest with 89%.

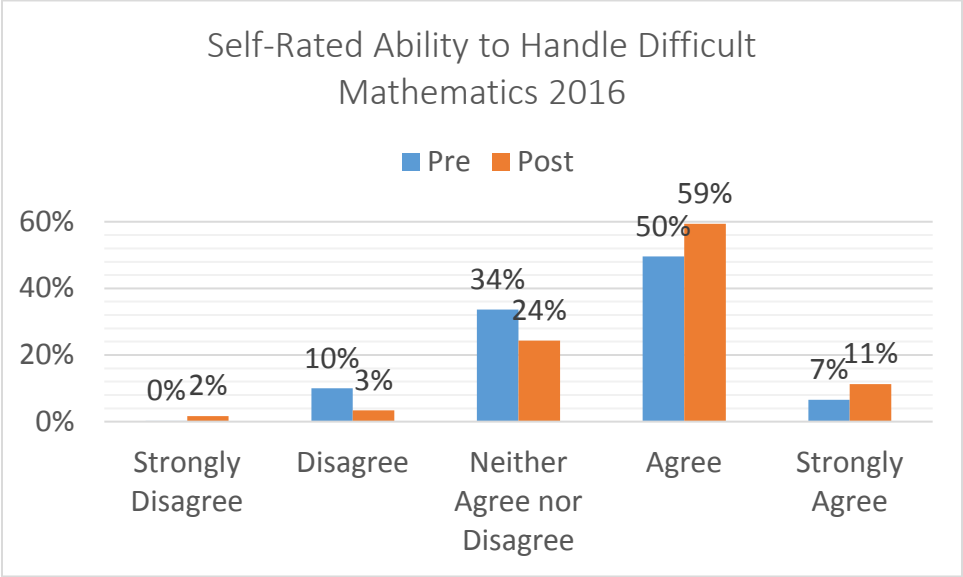
CFS 2015 Course	Count	Credit/ Pass (CR)	Did not Pass (RP)	% CR	% RP
ESM075A	68	61	7	90%	10%
ESM075B	375	343	32	91%	9%
ESM081	1,217	1,181	36	97%	3%
ESM091	1,120	999	121	89%	11%
Total	2,780	2,584	196	93%	7%

In summary, 59% of CFS 2016 participants enrolled in fall 2016 were made GE math-ready while 32% reduced one level but did not fully satisfy developmental math. In comparison, 66% of CFS 2015 participants enrolled in fall 2015 were made GE math-ready while 28% reduced at least one level but did not fully satisfy developmental math. In total, 91% of CFS 2016 students and 94% of CFS 2015 students were successful in reducing their developmental math requirements.

II. Increased Sense of Confidence and Ability in Mathematics Abilities

Analysis of the pre- and post-surveys suggests CFS also improved students' perception of their mathematics abilities. Paired sample *t* tests indicate CFS significantly improved students' confidence in their mathematics abilities ($t(470) = 11.95$, $p < .001$, $d = .54$, $r = .26$) and ability to handle difficult obstacles they may experience in math ($t(468) = 5.612$, $p < .001$, $d = .29$, $r = .15$). Results from the 2015 pre- and post-surveys were analogous to 2016 where students' self-rated mathematics ability (t (900) = 29.81, $p < .001$, $d = 1.09$, $r = .48$) and ability to handle difficult mathematics obstacles (t (899) = 15.23, $p < .001$, $d = .63$, $r = .30$) increased significantly at the end of CFS.





III. Co-curricular Experience, Student Engagement and Self-Awareness

Co-curricular learning outcomes of CFS related to students' engagement, self-awareness, and mathematics abilities were examined by analyzing the results of pre- and post-CFS surveys using paired sample *t* tests. Our preliminary analysis included 476 (32%) of the 1,488 CFS 2016 participants and 934 (62%) of the 1,517 CFS 2015 participants, as these students completed both the pre- and post-surveys at the start of their session and the post-CFS survey at the conclusion of their session.

Overall, as anticipated, results indicate that CFS participants responded more positively to the co-curricular questions after the summer session. For 2015 participants, all areas appear to be moving in the positive direction and almost all areas except one indicated statistically significant positive changes. For 2016 participants, almost all areas appear to be moving in the positive direction except for items measuring student engagement ("joining a fraternity or sorority" and "play club, intramural, or

recreational sports") and items measuring diversity ("learning about people from different backgrounds is a very important part of my college education" and "I am comfortable in a setting with people who exhibit different beliefs or values from my own").

When comparing the magnitude of differences between 2015 and 2016 shown in the last column, statistically significant changes were observed in questions of connectedness to peers, faculty, and staff. This means that the magnitude of change was greater in 2015 than it was for 2016. It is possible that this decrease in connectedness may be a result of the housing requirement change from 2015 to 2016. During the CFS 2015 program, students who attended the first session were required to live on campus for the entirety of their session. In 2016, students were only required to live on campus during the week and had to leave campus on the weekends in both sessions. Requiring students to remain on campus during the weekend with no organized school activities could have provided enhanced opportunities for students to freely and informally connect with peers, faculty, and staff.

2015 & 2016 CFS Pre- and Post-Survey Co-Curricular Mean Difference Results

Question	2015 Pre	2015 Post	2015 Diff.	2016 Pre	2016 Post	2016 Diff.	2016 - 2015 Diff. Mean Diff.	Cohen's d	r
Please rate the extent to which you agree with the following statements:									
I am satisfied with my experience at CSUSB thus far.	4.10	4.45	0.35*	4.18	4.37	0.19*	-0.16*	-0.17	-0.08
I feel I belong at this campus.	4.03	4.35	0.32*	3.99	4.17	0.17*	-0.14*	-0.11	-0.06
I feel connected to my CSUSB peers.	3.70	4.27	0.56*	3.76	3.88	0.12*	-0.45*	-0.44	-0.21
I feel connected to CSUSB faculty.	3.68	4.10	0.42*	3.68	3.70	0.02	-0.40*	-0.40	-0.19
I feel connected to CSUSB staff.	3.68	4.06	0.38*	3.66	3.69	0.03	-0.35*	-0.35	-0.17
I am looking forward to my Coyote First STEP experience.	4.19	4.47	0.28*	4.27	4.36	0.09*	-0.19*	-0.14	-0.07
What is your best guess as to the chances that you will:									
Join a fraternity or sorority	3.10	3.24	0.14*	2.84	2.75	-0.09*	-0.23*	-0.21	-0.10
Play club, intramural, or recreational sports	3.48	3.64	0.17*	3.45	3.44	-0.01	-0.17*	-0.17	-0.08
Participate in volunteer or community service work	3.98	4.25	0.27*	4.00	4.08	0.08*	-0.19*	-0.23	-0.11
Seek academic advising	4.34	4.56	0.22*	4.27	4.59	0.32*	0.10*	0.12	0.06
Communicate regularly with your professors	4.54	4.62	0.09	4.37	4.58	0.21*	0.13*	0.08	0.04
Socialize with someone of another racial/ethnic group	4.57	4.66	0.09*	4.55	4.62	0.07	-0.02	-0.03	-0.02
Discuss course content with students outside of class	4.40	4.59	0.20*	4.36	4.56	0.19*	0.01	-0.01	0.00
Work on a professor's research project	4.20	4.36	0.16*	4.18	4.18	0.00	-0.16*	-0.18	-0.09
To what extent do you agree with the following statements?									
I enjoy having discussions with people whose ideas and values are different from my own.	3.93	4.14	0.20*	4.01	4.06	0.05	-0.15*	-0.18	-0.09
Contact with individuals whose background is different from my own is an essential part of my college education.	4.09	4.22	0.14*	4.09	4.11	0.01	-0.12	-0.08	-0.04
Learning about people from different backgrounds is a very important part of my college education.	4.06	4.22	0.16*	4.12	4.05	-0.07*	-0.23*	-0.28	-0.14
I am comfortable in a setting with people who exhibit different beliefs or values from my own.	4.03	4.25	0.22*	4.16	4.15	-0.01	-0.23*	-0.27	-0.13

Note. 2016 CFS first session students were not included because the pre-survey was not administered.

2016 - 2015 Diff. = 2016 Difference - 2015 Difference
*p < .05.

To further examine CFS's impact on students' engagement and self-awareness, results from UCLA's Cooperative Institutional Research Program (CIRP) Freshman Survey were compared between CFS students (*n*=1,164) and non-CFS students (*n*=794). The CIRP Freshmen Survey was given to students during their first SOAR workshop. For CFS participants, the first SOAR workshop occurred during the first week of their CFS session.

Independent sample *t*-tests were conducted between CFS and non-CFS students to determine differences in CIRP constructs. According to UCLA's CIRP, constructs are scored using Item Response Theory to derive a maximum likelihood score estimate based on the pattern of the person's responses to the entire set of construct questions or to a sub-set of the questions that were answered.

Results indicate significant differences between the Academic Self-Concept and Civic Engagement constructs when comparing CFS and non-CFS students. More specifically, non-CFS students had a higher Academic Self-Concept construct score than CFS participants. On the other hand, CFS participants had a higher Civic Engagement construct score compared to non-CFS students. The CIRP Freshmen Survey was not administered in 2015 therefore no data are available for reporting.

2016 FYS CIRP Construct Scores

Construct	Mean Score				
	CFS	Non-CFS	Difference	Cohen's d	r
Habits of Mind	45.86	46.13	-0.27	-0.03	-0.02
Academic Self-Concept	44.91	49.21	-4.30***	-0.55	-0.27
Social Self-Concept	48.31	47.80	0.51	0.06	0.03
Pluralistic Orientation	48.00	48.38	-0.38	-0.04	-0.02
Social Agency	51.27	50.75	0.52	0.06	0.03
Civic Engagement	50.80	49.93	0.87*	0.11	0.05
College Reputation Orientation	46.49	46.57	-0.07	-0.01	0.00
Likelihood of College Involvement	46.69	46.42	0.28	0.04	0.02
Science Self-Efficacy	44.55	47.32	-2.77***	-0.29	-0.15
Science Self-Identity	48.04	50.56	-2.51***	-0.29	-0.15

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

Student Feedback on the Overall Coyote First STEP Experience

In the CFS post-survey, students in 2015 and 2016 were asked a series of three open-ended questions regarding their experience with CFS. A thematic analysis of the qualitative data collected from 1,010 students in 2016 and 1,496 in 2015 who completed these questions indicated several overarching or prevailing themes for each of the three questions.

When asked if they felt as though CFS was beneficial to them, students' responses were generally favorable. The top themes that emerged through students' responses included engagement and college-life experience (also the most frequent theme in 2015); improved skills in math (3rd most frequent in 2015); connectedness to peers, faculty, and staff (2nd most frequent in 2015); beneficial

review of math (7th most frequent in 2015); opportunity to make academic progress (5th most frequent in 2015); familiarity with campus (4th most frequent in 2015); and an overall appreciation for the program. Only six comments mentioned having a negative overall experience in response to this question; in 2015, there were 43 negative comments in response to the same question.

Do you feel as though CFS was beneficial to you?	
Theme	**Count***
Engagement and college-life experience	297
Improved skills in math	246
Connectedness to peers, faculty, and staff	187
Review of math beneficial	181
Opportunity to make academic progress	175
Familiarity with campus	156
Appreciation for program, general	138
Negative experience, overall	6

**Count indicates the total number of times theme appeared in students' responses.*

When asked if they would recommend the CFS program to students, students' responses were, again, generally favorable. Top themes that emerged through students' responses included overall appreciation for the program; engagement and college-life experience (most frequent theme in 2015); connectedness to peers, faculty, and staff (3rd most frequent in 2015); familiarity with campus (6th most frequent in 2015); and the opportunity to make academic progress (4th most frequent in 2015). Thirteen negative comments were noted in response to this question; 61 negative responses were noted in 2015.

Would you recommend Coyote First Step to future students?	
Theme	**Count***
Appreciation for program, general	252
Engagement and college-life experience	233
Connectedness to peers, faculty, and staff	182
Familiarity with campus	151
Opportunity to make academic progress	134
Improved skills in math	100
Fun	70
Review of math beneficial	40
Level of support from instructors and tutors	32
Negative experience, overall	13

**Count indicates the total number of times theme appeared in students' responses.*

Students were also asked what aspect of the program they would change. The most recurring response indicated that students would change nothing about the program. ("Changing nothing" was the fourth most frequent theme that appeared following CFS 2015.) Other themes that emerged included food/dining options (most frequent for 2015); days/schedule being too full (2nd most frequent for 2015); a decrease in the amount of time spent with tutors (6th most frequent in 2015); and the addition of

more co-curricular activities (not a theme in 2015).

What aspects of the program would you change?	
Theme	**Count***
Would change nothing about the program	358
Food/dining options	174
Days/schedule too full	119
Decrease time spent with tutors	61
Add more co-curricular activities	47
Mandatory nature of events and meetings	27
Allow students to leave campus	13

**Count indicates the total number of times theme appeared in students' responses.*

CONCLUSIONS

Results indicate that CFS 2016 was successful in reducing developmental math requirements, increasing students' mathematics self-efficacy, and fostering a sense of connectedness between participants and their peers at least in the beginning of their first academic year.

PART II. Coyote First STEP 2015: One Year Later

SUMMARY

The purpose of this study was to examine outcomes one year later for the Coyote First STEP (CFS) fall 2015 cohort. Specific outcomes, including retention into the second year, comparisons in GPA, and unit completion between students traditionally made GE-ready and those made GE-ready through CFS, were explored. Additionally, students' feelings of connectedness, participation, and math confidence were analyzed.

Findings indicate:

1. CFS 2015 participants were more likely to attempt and pass their GE math requirement during their first year, and attempted and passed more units towards their degree compared to fall 2011 first-year students (FYS)
2. There were no significant differences between CFS GE-Made Ready and GE-Ready FYS in their first-year units attempted, units completed, and GPA for fall 2015
3. Retention into the second year for CFS was 85%. Non-CFS participants was 84%
4. Math confidence generally continued for CFS 2015 participants, though there was a decline in the degree to which students felt confident by the end of their first year
5. Students' feelings of connectedness to faculty, staff, and peers declined during their first year

RESULTS

I. First Year General Education Math Outcomes

To recap, there were 3,005 first-year students in Fall 2015, 1,517 of whom participated in summer CFS 2015 and 1,478 enrolled in the fall 2015 term. Of the 1,478 students, 1,215 (82%) attempted their GE math requirement during their first year, of whom 1,008 (83%) passed the GE math requirement. This means that 32% (470 of the 1,478 students) of the summer CFS 2015 participants were unable to complete any GE math requirement during the first year as mandated by the CSU Chancellor's Office. As of winter 2017 (1.3 years later), 168 of this cohort had not finished their GE math requirement but were enrolled in a GE-level math course with 101 (60%) of them passing.

Retention rate into the second year for CFS participants at 85% appears to be similar to those who came in as first-year students (FYS) at the same time but did not require developmental math at 84%.

	Enrolled	Attempted GE Math		GE Math Passed		Retention to Second Year		Did not complete GE Math	
Group	Count	Count	%	Count	%	Count	%	Count	%
CFS Participants	1,478	1,215	82%	1,008	83%	1,260	85%	470	32%
Non-CFS	1,527	1,321	87%	1,183	90%	1,281	84%	344	23%
Total	3,005	2,536	84%	2,191	86%	2,541	85%	814	27%

To examine the effectiveness of CFS developmental math, case-control matching was conducted to compare students of similar academic and demographic backgrounds and independent sample *t*-tests were used to measure significant differences between two groups.

The first comparison examined fall 2015 CFS participants with fall 2011 first-year students who were remediated through traditional pathways. Fall 2011 was the last FYS cohort who did not receive any summer developmental math (excluded a small group of IMP and COMMIT students) prior to the beginning of the fall term. CFS 2015 participants and fall 2011 were matched on gender, ethnicity, Pell status, first generation status, and ELM score with zero tolerance, meaning CFS 2015 participants were matched perfectly with fall 2011 FYS. Case-control matching resulted in a sample of 1,314 students with 657 from each group. Independent *t*-tests indicate that, on average, CFS 2015 participants attempted and passed more units towards their degree and were more likely to attempt and pass their GE math requirement during their first year than the fall 2011 FYS remediated through traditional pathways.

T-test for Matched Samples Fall 2015 CFS Participants and Fall 2011 FYS	Mean		t	df	p-value	Mean Difference	Cohen's d	r
	Fall 2015	Fall 2011						
1st Yr Units Attempted	39.7	39.9	-0.593	1310	0.553	-0.259	-0.03	-0.01
1st Yr Units Passed	34.1	34.5	-0.685	1310	0.494	-0.429	-0.04	-0.02
Prop. of 1st Yr Units Passed	0.83	0.84	-0.812	1310	0.417	-0.01	-0.05	-0.02
1st Yr Units to Degree Attempted	37.2	31.9	11.721	1300	< .001	5.334***	0.64	0.31
1st Yr Units to Degree Passed	32.4	27.9	7.456	1270	< .001	4.457***	0.42	0.20
Prop. of 1st Yr Units to Degree Passed	0.84	0.85	-1.043	1309	0.297	-0.013	-0.04	-0.02
1st Yr GPA	2.45	2.41	0.794	1309	0.427	0.037	0.05	0.02
Prop. of GE Math Attempted	0.84	0.48	14.766	1206	< .001	0.358***	0.82	0.38
Prop. of GE Math Passed	0.69	0.37	12.174	1310	< .001	0.318***	0.68	0.32
N	657	657						

Mean Difference = (Fall 2015) - (Fall 2011)

* α = .05, ** α = .01, *** α <.001

The second comparison examined CFS 2015 participants who were fully remediated (GE-Made Ready) with fall 2015 FYS who did not require any developmental math (GE-Ready). Two rounds of case-control matching resulted in a sample of 1,390 students with 695 students from each group. The first round of case-control matching used a zero-tolerance level for gender, ethnicity, Pell-status, first-gen status, and high school GPA. The second round used the same conditions but allowed for a 0.05 tolerance level on high school GPA.

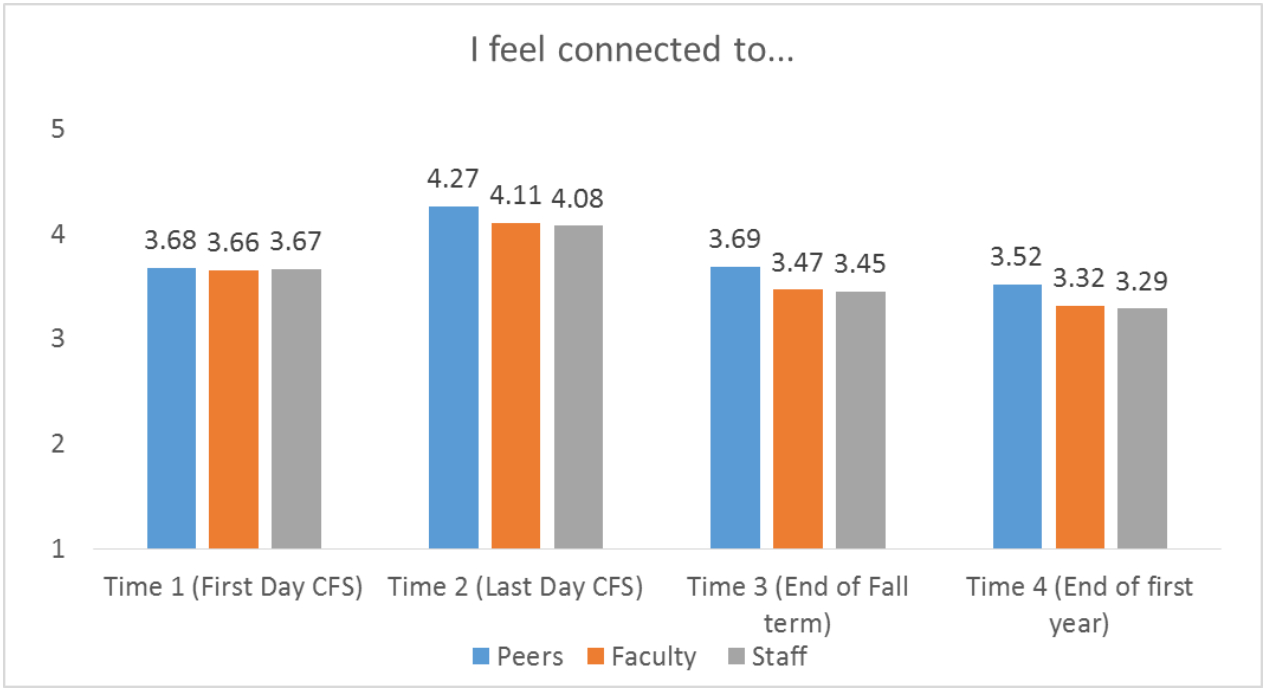
When comparing the two groups after controlling for academic and demographic attributes, a significant difference was found for the percentage of GE math requirement attempted during their first year. Students made GE math ready through CFS were more likely to attempt their GE math requirement compared to GE-Ready FYS although no difference was found between the two groups in passing the GE math requirement. Taken collectively, data indicate that those GE-Made Ready students appear similar to GE-Ready students in most academic outcomes except GE-Made Ready students are more likely to attempt a GE Math requirement than their GE-Ready counterparts.

T-test for Matched Samples Fall 2015 GE-Made Ready (CFS) and GE-Ready	Mean GE-Made Ready	Mean GE-Ready	t	df	p-value	Mean Difference	Cohen's d	r
1st Yr Units Attempted	39.9	40.5	-1.353	1388	0.176	-0.54	-0.08	-0.04
1st Yr Units Passed	35.6	36.0	-0.736	1388	0.462	-0.429	-0.04	-0.02
Prop. of 1st Yr Units Passed	0.87	0.87	-0.002	1388	0.999	0	0.00	0.00
1st Yr Units to Degree Attempted	39.8	40.2	-1.075	1388	0.283	-0.429	-0.05	-0.03
1st Yr Units to Degree Passed	35.5	35.8	-0.58	1388	0.562	-0.337	-0.03	-0.01
Prop. of 1st Yr Units to Degree Passed	0.87	0.87	-0.05	1388	0.96	-0.001	0.00	0.00
1st Yr GPA	2.60	2.66	-1.412	1379	0.158	-0.059	-0.08	-0.04
Prop. of GE Math Attempted	0.98	0.94	3.284	1185	< .001	0.035***	0.20	0.10
Prop. of GE Math Passed	0.85	0.84	0.816	1388	0.415	0.016	0.03	0.01
N	695	695						

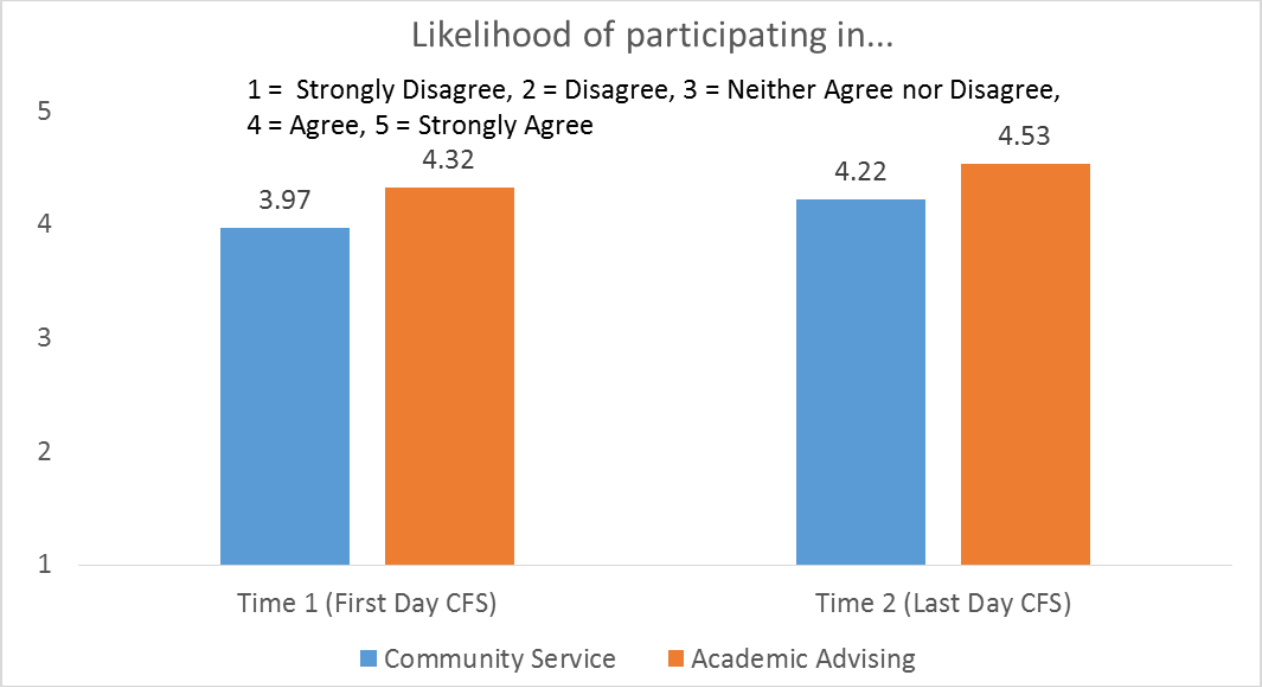
Mean Difference = (GE-Made-Ready) - (GE-Ready)
Excludes GE-Ready students that completed GE Math requirement prior to entry
* α = .05, ** α = .01, *** α <.001

II. Co-curricular Experience and Student Engagement

Surveys were administered four times throughout the first year: 1) first day at the start of CFS, 2) last day of CFS, 3) end of fall term, and 4) end of first year in spring. Responses to CFS participants' connectedness to staff, faculty, and peers were measured. On average, CFS participants' connectedness increased at the conclusion of the CFS program at time 2 but decreased at time 3 and 4 to a level lower than the start of CFS.



The CFS surveys asked participants what their likelihood of participating in community service and seeking academic advising was; these surveys indicated students were more likely to participate in community service and seek academic advising following CFS. Surveys administered at time 3 and 4 followed up on these questions to measure students' actual levels of participation. The results of these two surveys indicate that, though the majority of CFS participants believed they were likely to participate in community service and advising, only 15-16% actually engaged in community service and half received academic advising.

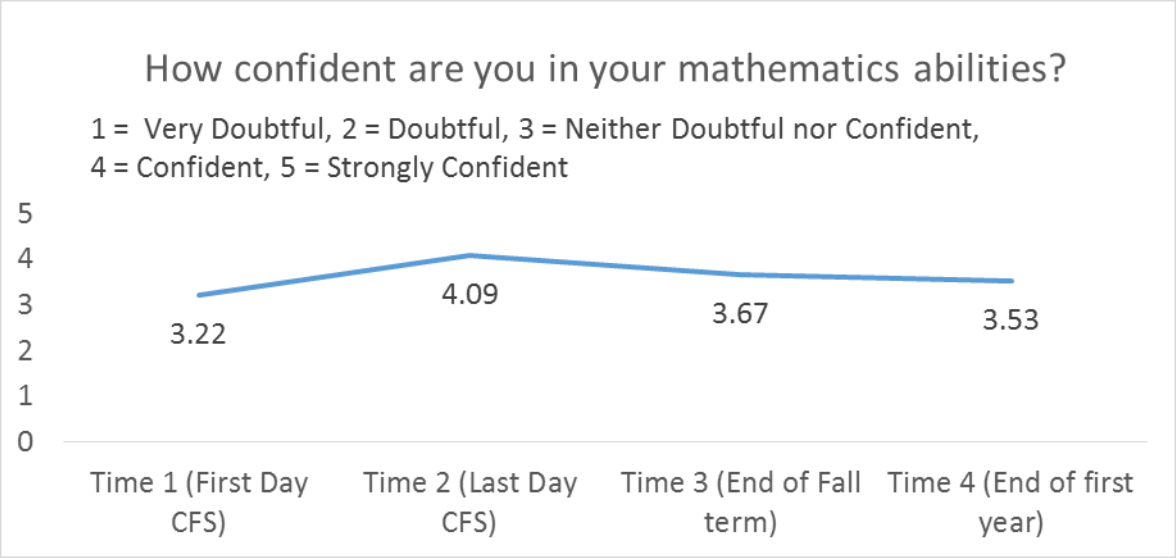


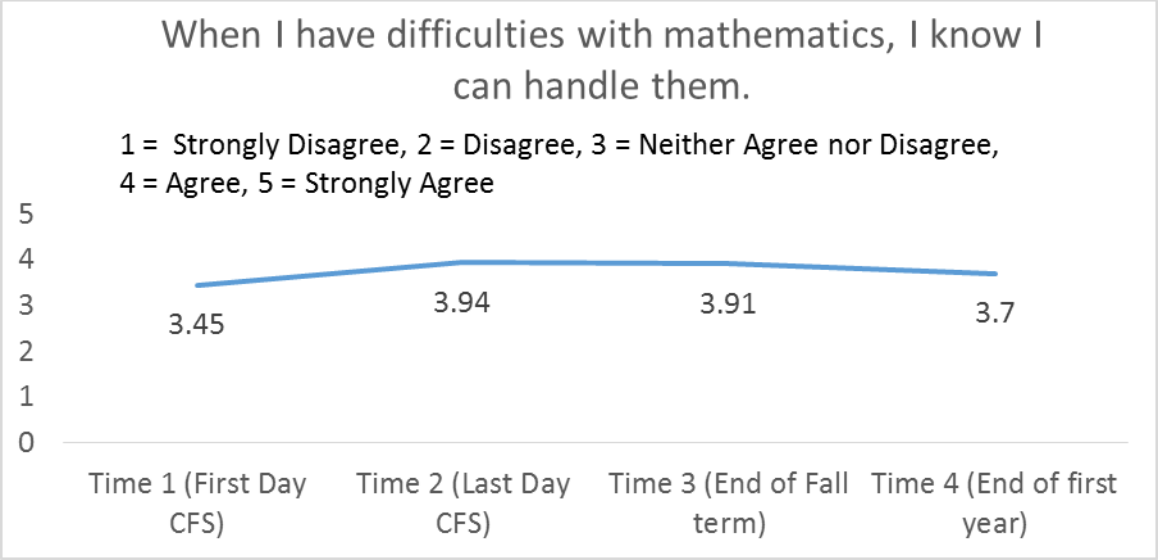
	Time 3 (End of fall term)			
	Participating in volunteer or community service		Seeking academic advising	
Response	Count	%	Count	%
Already Have	37	15%	136	55%
Plan To But Haven't	141	58%	92	37%
Not Sure	51	21%	17	7%
Don't Plan To	16	7%	1	0.4%
Total	**245**	**100%**	**246**	**100%**

	Time 4 (End of first year)			
	Participated in volunteer or community service		Received academic advising	
Response	Count	%	Count	%
Yes	26	16%	82	50%
No	139	84%	83	50%
Total	**165**	**100%**	**165**	**100%**

III. Increased Sense of Confidence and Ability in Mathematic Abilities

Responses to confidence and abilities in mathematics were also measured four times throughout the first year: 1) first day at the start of CFS, 2) last day of CFS, 3) end of fall term, and 4) end of first year in spring. On average, CFS students felt more confident in their mathematics abilities and ability to handle difficulty math problems after participating in CFS. Results show that CFS participants' self-rated confidence and abilities in mathematics increased at time 2 and decreased at time 3 and 4 although their confidence remained higher at time 4 compared to the start of CFS at time 1.





CONCLUSIONS

After controlling for demographic and pre-collegiate characteristics, results indicate that students who participated in CFS 2015 attempted and passed more college-level units and were more likely to attempt and pass their GE math requirement during their first year than FYS remediated through traditional pathways. In regards to GE-level math, FYS that were fully remediated through CFS fared as well as their non-CFS, GE-Ready peers. However, 32% of all 2015 CFS participants did not complete their GE math requirement during their first year. Though their feelings of confidence towards math did remain positive following CFS, those feelings began to decline as their first year progressed, as did their feelings of connectedness to CSUSB faculty, staff, and peers.

APPENDIX A ABBREVIATIONS

CFS Coyote First STEP (Student Transition Enhancement Program)
CIRP Cooperative Institutional Research Program of the Higher Education Research Institute
CO Chancellor's Office (of the California State University system)
CR Credit (for making progress toward college readiness in Math or English)
CSU The California State University (system of 23 campuses)
CSUSB California State University, San Bernardino
DE Developmental Education
EAP Early Assessment Program (a test of college readiness given to CSU-bound high school juniors)
ELM Entry Level Mathematics (CSU placement test)
EPT English Placement Test (CSU placement test)
ES or ESP Early Start or Early Start Program
ESE Early Start English
ESM Early Start Math
FYS First Year Student (First Time Freshmen)
GE General Education
IMP Intensive Mathematics Program
PDC Palm Desert Campus of CSUSB
RP Report in Progress (Satisfied Early Start Requirement but did not progress)
SAT the College Board's Scholastic Aptitude Test
SOAR Student Orientation, Advising and Registration
STEP Student Transition Enhancement Program
TFS The Freshman Survey (from UCLA CIRP)