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# Getting to Graduation on Time at California State University

## Technical Appendices

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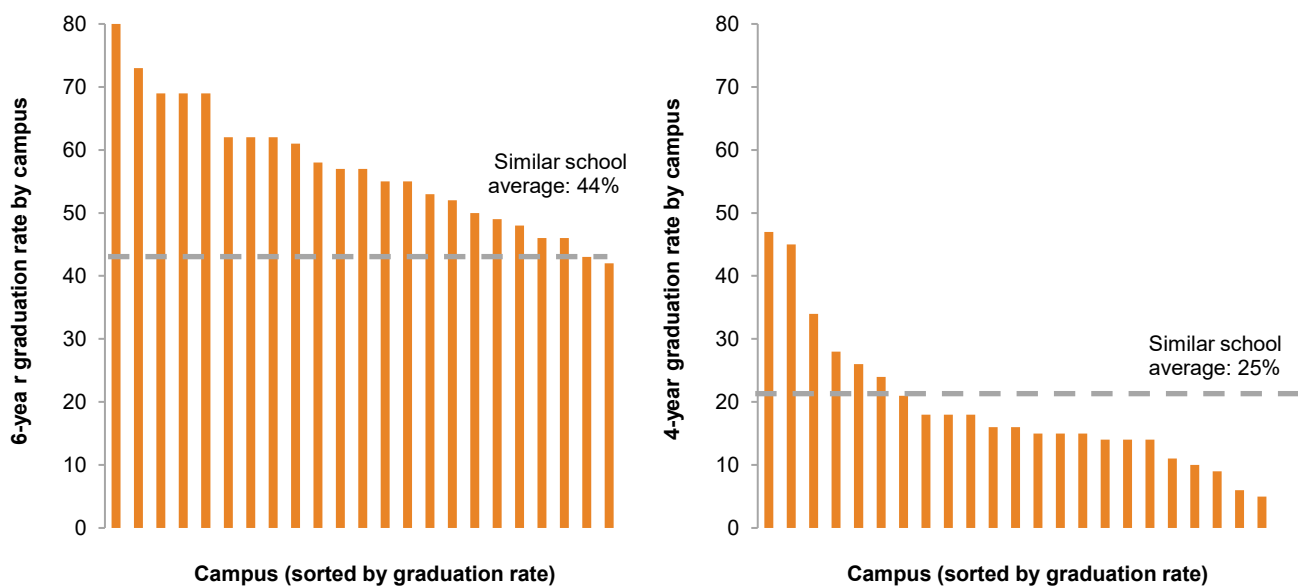
# Appendix A. Campus-Level Statistics

This appendix contains additional analysis of campus level differences in course-taking and outcomes.

The paper uses the most recent data from CSU and UC to compare graduation rates. The most recent graduation rate data we have nationally comes from the Integrated Postsecondary Education Data System (IPEDS) in 2018, which shows the following graduation rates nationally and for each CSU campus. When CSU are compared with similar schools (those with a masters as their highest award offered) they compare more favorably in 6-year graduation rate, but still less favorably in four-year rates (Figure A1).

**FIGURE A1**

In 2018, Most CSU campuses are at or above the six-year graduation rate, but below the four-year rate for similar institutions in the rest of the U.S.



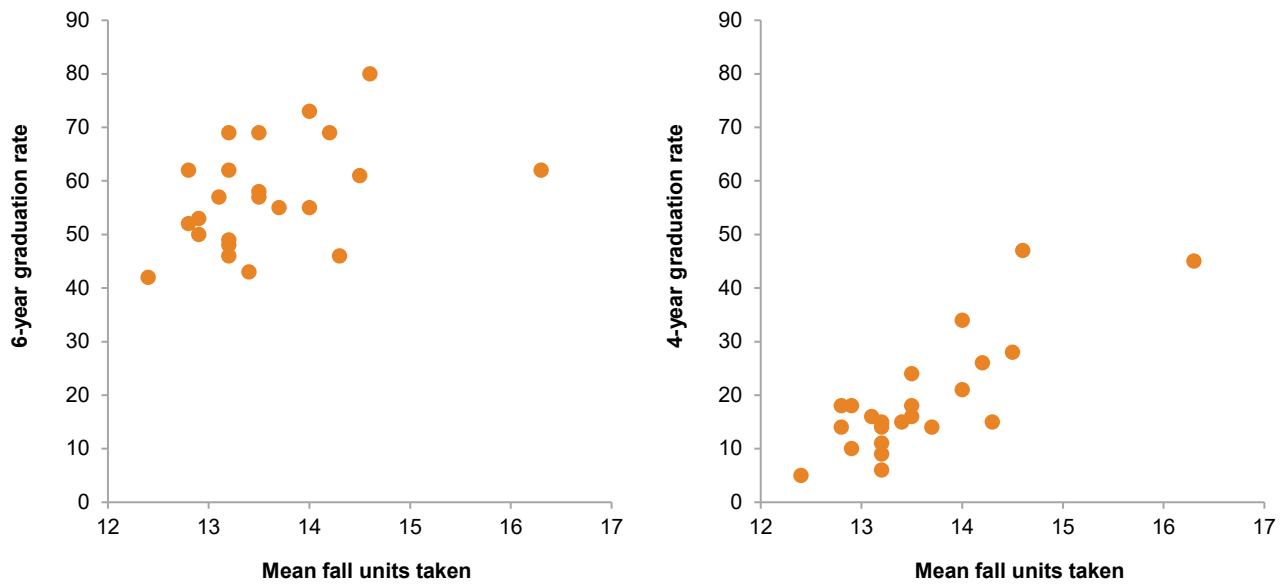
SOURCE: Integrated Postsecondary Education Data System, 2012 entering cohort graduating by 2018 for the six-year rates, and 2016 for the four-year rates.

NOTE: Each bar represents one campus. The comparison group for the national sample is public 4 year universities with master's degrees as the highest award offered. Even if the sample is expanded to all public four-year universities most CSU are at or above the average (50%) for six years and below the average (28%) for four years.

At the institutional level, course loads and graduation rates are related. Students from campuses where students carry heavier average course loads are typically more likely to graduate. They are also more likely to graduate in 4 years (Figure A2). There is little relationship between course enrollment and persistence to the second or third year at the campus level, however (Figure A3). The strongest relationship seems to be with finishing on time rather than finishing at all or persisting.

**FIGURE A2**

Campuses with more students with higher course loads generally have higher graduation rates

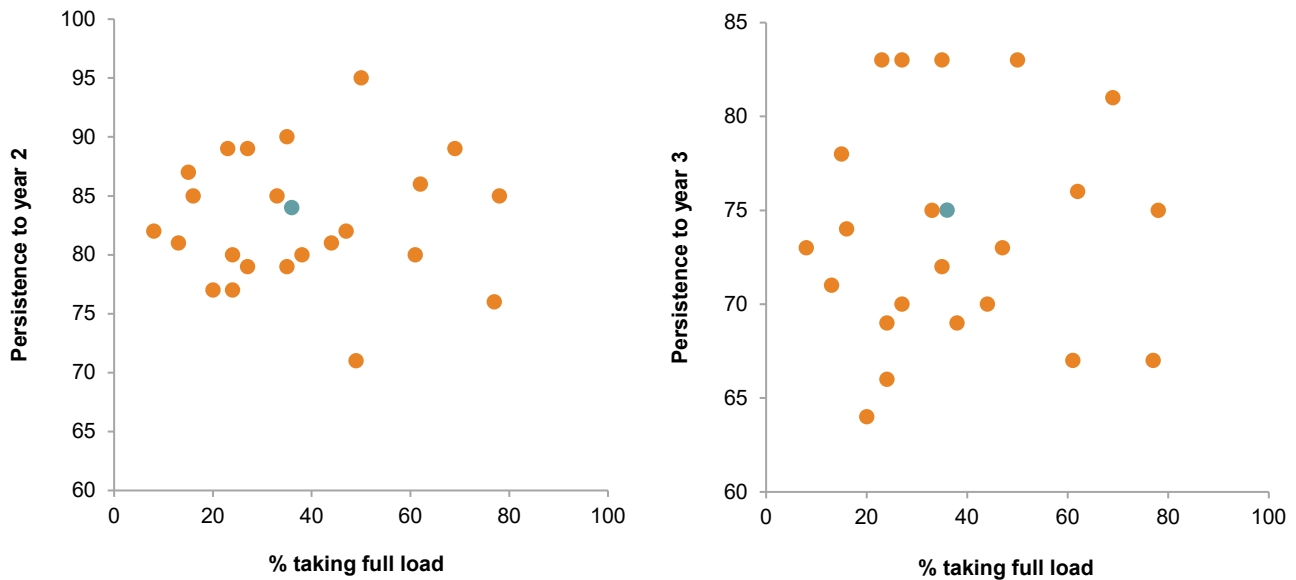


SOURCE: CSU Institutional Research and Analysis.

NOTE: Fall term unit loads. Students starting in fall 2011.

**FIGURE A3**

Course-taking by campus largely unrelated to persistence into year 2 or year 3



SOURCE: CSU Institutional Research and Analysis.

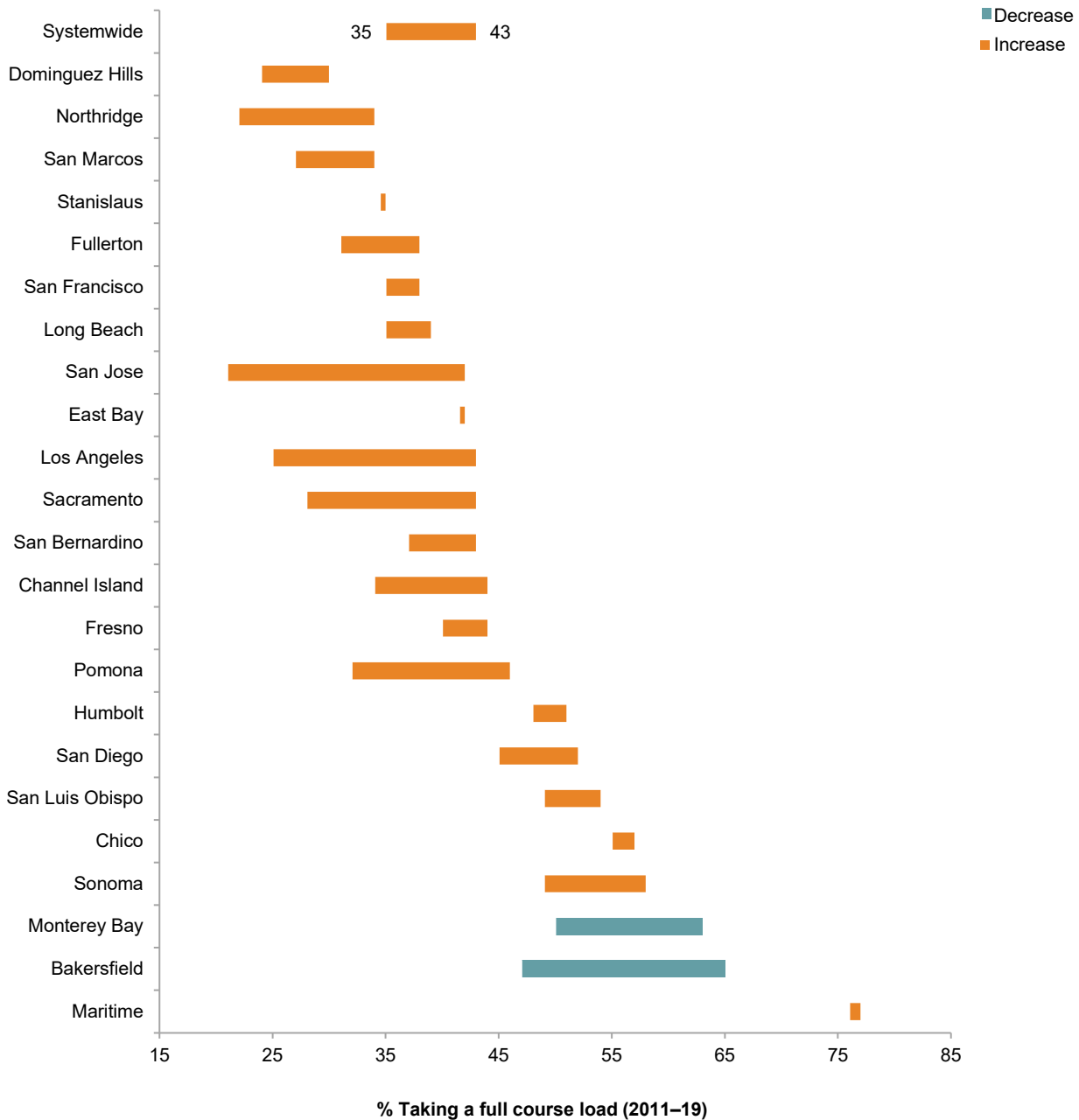
NOTE: Fall term unit loads. Students starting in fall 2017.

Average course-taking has grown at most campuses. Figure A4 shows the growth from 2011 to 2019. Two campuses showed declines in the percent of students taking 15 units but those campuses are still near the top of

the list in course-taking. Their freshmen showed less of a decline in recent years (Table A1). Table A1 also shows the California Promise Program schools gains. In general, schools showed gains regardless of if they participated in the program.

**FIGURE A4**

More students are taking a full course load at most campuses



SOURCE: CSU Institutional Research and Analysis.

NOTE: Fall term unit loads. First Time freshmen make up about 20 percent of all undergraduates per fall term.

**TABLE A1**

Increases in freshmen full-load course taking in fall terms (2015-2019)

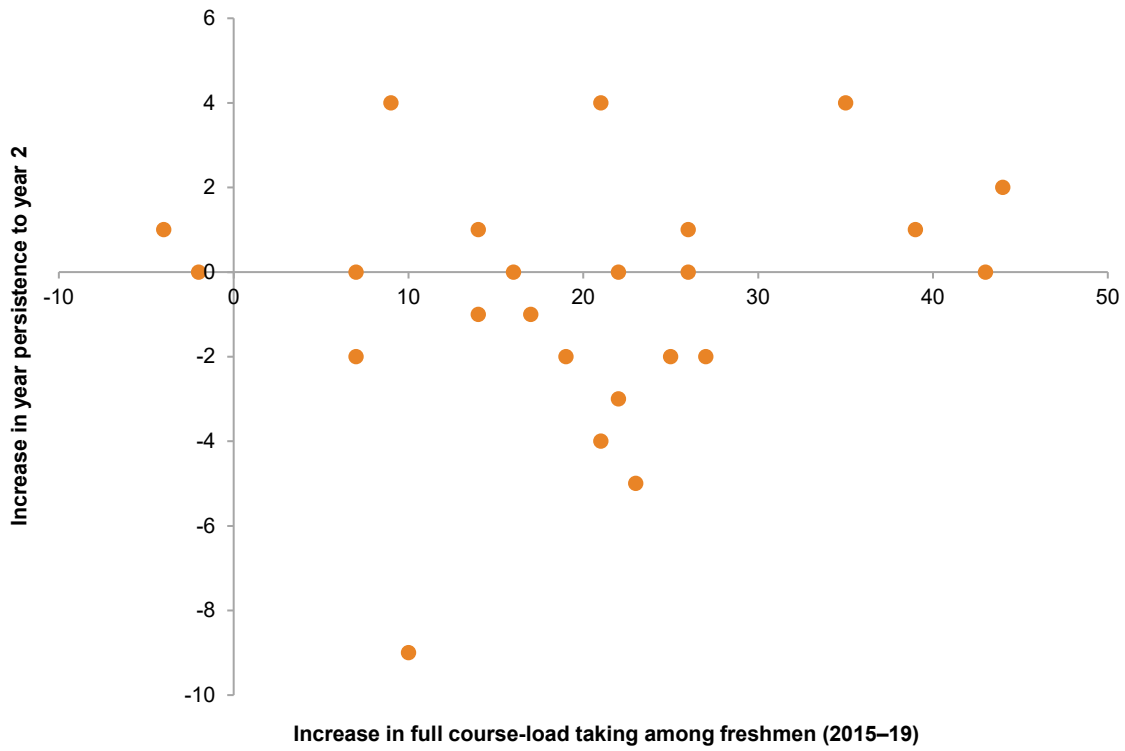
Campus undergraduate	2015	2016	2017	2018	2019	California Promise	2015–19
Dominguez Hills	8	9	24	22	31	yes	23
Stanislaus	15	26	30	26	34	no	19
East Bay	24	24	28	18	38	no	14
San Marcos	13	15	35	32	38	no	25
San Francisco	24	35	37	40	40	no	16
San Bernardino	33	29	30	43	47	yes	14
Fullerton	27	31	43	54	53	yes	26
Northridge	20	20	36	36	55	no	35
Fresno	35	42	48	52	56	yes	21
Long Beach	35	46	70	60	57	yes	22
Humboldt	49	51	58	53	58	yes	9
System	36	40	47	53	58	-	22
San Jose	15	33	50	52	58	yes	43
Monterey Bay	61	69	73	71	59	yes	-2
Pomona	23	22	25	56	62	yes	39
San Luis Obispo	48	61	57	62	65	no	17
Channel Islands	44	38	42	44	65	no	21
Sonoma	38	43	52	53	65	yes	27
Chico	62	58	62	62	69	yes	7
Los Angeles	27	42	70	68	71	no	44
Bakersfield	77	31	52	63	73	yes	-4
Sacramento	47	60	66	73	73	yes	26
San Diego	69	69	70	76	76	yes	7
Maritime Academy	78	73	78	89	88	no	10

SOURCES: California State University Research and Analytics Dashboards.

The recent increases in course-taking do not coincide with a drop in persistence. Though persistence rates are generally high, they do fluctuate from cohort to cohort. However, most stay within plus or minus 4 percentage points from year to year. Campuses all along the spectrum of course-taking growth see slight decreases or increases in persistence rates (Figure A5).

**FIGURE A5**

Increases in course-taking are unrelated to first year persistence



SOURCE: California State University [Research and Analytics Dashboards](#).

NOTE: Course-taking increases from 2015-2019, and first year retention in 2019.

## Appendix B. Student-Level Analysis

This appendix contains information on the data sources for the student-level analyses. Three campuses agreed to provide student level data to enrich the analysis. The data from each campus was different but contained similar components in units attempted each term, presence each term, and timing of graduation.

The sample for the on-time graduation and persistence calculations, which is pooled for some analyses and separate for others, is 25,251 first time freshmen who started in fall of 2011 through 2013. The data contain term by term counts of units attempted, graduation term. The subsample of students for ever graduating is only the 8,066 students who started in 2011, as this allows the longest data window to capture their graduation.

Table B1 contains the data elements and descriptions for each campus. As much as possible, elements were aligned to match between campuses to make pooling possible. But all analyses were done separately by campus.

**TABLE B1**

Outcomes and main predictors

	Campus	Construction
Full course load in first term	A,B,C,D	1= attempted 15 units, 0= did not attempt 15 units, but did attempt at least 12
Full course load in first year	A,B,C,D	1= attempted 30 units in first year (or 45 in quarter campuses) 0= did not attempt 30 units, but did attempt at least 12 in their first term
Persist into year 2	A,B,C,D	1= was present in fall or spring of second year 0 = was not present in fall or spring of second year
Persist into year 3	A,B,C,D	1= was present in fall or spring of third year 0 = was not present in fall or spring of third year
Graduated in 4 years	A,B,C,D	1=graduated at or before summer of their 4 <sup>th</sup> year 0=graduated later than summer of their 4 <sup>th</sup> year, or was present in or after spring of fourth year but did not graduate in this data
Graduated ever	A,B,C,D	1=graduated in the time frame of the data window 0=did not graduate in the time frame of the data, and were also not present in the final term of the data window.
Underrepresented Minority (URM)	A,B,C	1= student was marked as "Hispanic", "African American" or "Native American" or "Pacific Islander" 0 = student was marked "White" or "Asian"
Race Unknown	A,B,C	1=student was marked "Did not respond", "Unknown", "Two or more ethnicities", 0=student was marked any other ethnicity or race
Test Score percentile	A,B,C,D	Student percentile of the highest test score submitted from ACT or SAT
HS GPA	A,B,C,D	High school grade point average
Female	A,B,C	1= Student is female, 0= Student is male or did not respond
Passed 1 AP	A,B,C,D	1=Student passed at least one AP exam 0=Student did not pass at least one AP Exam

The analysis consisted of linear probability models (LPM) for the ease of interpretation. Logistic regression models show similar values when marginal effects estimated at the mean are considered, and are available upon request. Most models follow the form:

$$Y_i = FullLoad_i * \beta + \gamma + \varepsilon_i$$

Where  $Y$  is the outcome (graduation in 4 years, graduation ever, or persistence), for student  $i$ .  $FullLoad$  represents whether or not a student attempted a full slate of courses (15 for a term, for instance), and  $\gamma$  is a vector of demographic information including demographic and academic preparation information. In separate models, whether a student enrolled in a full load of courses is interacted with individual demographic variables.

Data were not pooled in regressions for three reasons. First, there are differences between quarter and semester campuses and each campus enacts different programs and policies aimed at graduation and on-time graduation. One might not expect the relationship between course-taking and graduation to be the same. Second, each campus provided different data for the analysis, so not all items were identical.

**TABLE B2**  
LPM Regression results for all outcomes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Grad in 4Yr	Graduate Ever	Persist Yr2	Persist Yr3	Grad in 4Yr	Graduate Ever	Persist Yr2	Persist Yr3
Attempted 15 Units	0.0933*** (0.00499)	0.0225** (0.0104)	0.0187*** (0.00401)	0.0245*** (0.00502)				
Attempted 30 Units					0.145*** (0.00517)	0.107*** (0.0107)	0.0699*** (0.00420)	0.0809*** (0.00527)
High School GPA	0.0980*** (0.00644)	0.182*** (0.0139)	0.0662*** (0.00516)	0.105*** (0.00646)	0.0909*** (0.00635)	0.175*** (0.0138)	0.0617*** (0.00512)	0.100*** (0.00642)
SAT/ACT Percentile	0.00176*** (0.000121)	0.000407 (0.000257)	3.58e-06 (9.65e-05)	-3.90e-05 (0.000121)	0.00170*** (0.000120)	0.000380 (0.000255)	-3.08e-05 (9.57e-05)	-5.94e-05 (0.000120)
Passed 1+ AP Exams	0.0964*** (0.00577)	0.0668*** (0.0127)	0.0384*** (0.00461)	0.0504*** (0.00577)	0.0959*** (0.00569)	0.0635*** (0.0126)	0.0366*** (0.00458)	0.0487*** (0.00574)
Campus A	0.0534*** (0.00617)	0.0773*** (0.0144)	-0.0193*** (0.00561)	0.0152** (0.00702)	0.0211*** (0.00688)	0.0895*** (0.0143)	-0.00892 (0.00556)	0.0286*** (0.00698)
Campus B	0.0468*** (0.00679)	0.0205 (0.0149)	-0.0509*** (0.00568)	-0.0350*** (0.00711)	-0.0314*** (0.00668)	0.0390*** (0.0148)	-0.0392*** (0.00562)	-0.0195*** (0.00705)
First year fall 2011	-0.0182*** (0.00578)		-0.00175 (0.00464)	0.00905 (0.00581)	0.0192*** (0.00569)		0.00479 (0.00460)	-0.00647 (0.00576)
First year fall 2013	0.0387*** (0.00574)		-0.00203 (0.00460)	0.000760 (0.00576)	0.0584*** (0.00560)		0.00146 (0.00454)	-0.00748 (0.00570)



Female	0.0574***	0.0298***	0.0101**	0.00732	0.0549***	0.0248**	0.00743*	0.00447
	(0.00491)	(0.0105)	(0.00394)	(0.00493)	(0.00484)	(0.0105)	(0.00391)	(0.00490)
Underrepresented Minority (URM)	-0.0373***	0.0165	0.0147***	0.0263***	-0.0365***	0.0175	0.0151***	0.0283***
	(0.00702)	(0.0156)	(0.00569)	(0.00712)	(0.00692)	(0.0155)	(0.00564)	(0.00708)
Ethnicity unknown/n/a	-0.0281***	0.0318**	0.0212***	0.0320***	-0.0301***	0.0303*	0.0199***	0.0319***
	(0.00717)	(0.0157)	(0.00579)	(0.00724)	(0.00707)	(0.0156)	(0.00575)	(0.00721)
First generation	-0.0496***	-0.0306***	-0.0228***	-0.0248***	-0.0468***	-0.0254**	-0.0202***	-0.0218***
	(0.00538)	(0.0117)	(0.00432)	(0.00541)	(0.00531)	(0.0116)	(0.00429)	(0.00539)
Constant	0.136***	0.664***	0.894***	0.811***	0.135***	0.635***	0.879***	0.793***
	(0.00316)	(0.00780)	(0.00291)	(0.00364)	(0.00341)	(0.00747)	(0.00280)	(0.00351)
Observations	22,839	8,066	25,119	25,119	22,971	8,100	25,251	25,251
R-squared	0.129	0.067	0.027	0.036	0.145	0.078	0.036	0.044

SOURCES: Student level data from partner campuses.

NOTES: Each column has the coefficients from a linear probability model. Standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 These models contain only the three campuses that provided demographic information. The results are similar, but with some major differences if all four campuses are included and only student preparation covariates are used.

**TABLE B3**

LPM Regressions with Interactions for Graduation in 4 Years

	(1)	(2)	(3)	(4)	(5)
Outcome	Grad in 4yr	Grad in 4yr	Grad in 4yr	Grad in 4yr	Grad in 4yr
Interaction covariate	HS GPA	SAT/ACT Pctile	Passed AP Exam	URM	Female
Attempted 15 Units	-0.130*** (0.0398)	0.0429*** (0.00943)	0.0790*** (0.00600)	0.113*** (0.00870)	0.0842*** (0.00796)
Unit/covariate Interaction	0.0664*** (0.0118)	0.00126*** (0.000201)	0.0455*** (0.0106)	-0.0289*** (0.0110)	0.0148 (0.0101)
High School GPA	0.0743*** (0.00768)	0.0969*** (0.00644)	0.0980*** (0.00644)	0.0977*** (0.00644)	0.0980*** (0.00644)
SAT/ACT Percentile	0.00173*** (0.000121)	0.00130*** (0.000142)	0.00176*** (0.000121)	0.00175*** (0.000121)	0.00176*** (0.000121)
Passed 1+ AP Exams	0.0966*** (0.00577)	0.0970*** (0.00577)	0.0796*** (0.00697)	0.0964*** (0.00577)	0.0964*** (0.00577)
Underrepresented Minority (URM)	-0.0371*** (0.00701)	-0.0376*** (0.00701)	-0.0373*** (0.00702)	0.00104 (0.00690)	-0.0374*** (0.00702)
Ethnicity missing/unknown	-0.0286*** (0.00716)	-0.0294*** (0.00716)	-0.0284*** (0.00716)	0.0375*** (0.00871)	-0.0282*** (0.00717)
Female	0.0570*** (0.00490)	0.0566*** (0.00490)	0.0571*** (0.00491)	0.0571*** (0.00491)	0.0523*** (0.00599)
First Generation	-0.0494*** (0.00538)	-0.0491*** (0.00538)	-0.0494*** (0.00538)	-0.0493*** (0.00538)	-0.0496*** (0.00538)
Campus A	0.00607 (0.00698)	0.00502 (0.00698)	0.00552 (0.00699)	0.00655 (0.00698)	0.00656 (0.00698)
Campus B	-0.0485*** (0.00679)	-0.0496*** (0.00680)	-0.0485*** (0.00680)	-0.0467*** (0.00679)	-0.0467*** (0.00679)
First Year Fall 2011	-0.0572*** (0.00568)	-0.0574*** (0.00568)	-0.0569*** (0.00568)	-0.0572*** (0.00568)	-0.0569*** (0.00568)
First year Fall 2012	-0.0386*** (0.00574)	-0.0387*** (0.00574)	-0.0388*** (0.00574)	-0.0388*** (0.00574)	-0.0386*** (0.00574)
Constant	-0.0995*** (0.0256)	0.0988*** (0.00671)	0.126*** (0.00403)	0.133*** (0.00554)	0.117*** (0.00503)
Observations	22,839	22,839	22,839	22,839	22,839
R-squared	0.130	0.130	0.129	0.129	0.129

SOURCES: Student level data from partner campuses.

NOTES: Each column has the coefficients from a linear probability model. Standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 These models contain only the three campuses that provided demographic information. The results are similar, but with some major differences if all four campuses are included and only student preparation covariates are used.

**TABLE B4**

LPM Regressions with Interactions for Graduation in 4 Years – 30 units (or equivalent) in the first year

	(1)	(2)	(3)	(4)	(5)
Outcome	Grad in 4yr	Grad in 4yr	Grad in 4yr	Grad in 4yr	Grad in 4yr
Interaction covariate	HS GPA	SAT/ACT Pctile	Passed AP Exam	URM	Female
Attempted 30 Units	-0.125*** (0.0413)	0.0787*** (0.00975)	0.130*** (0.00623)	0.167*** (0.00887)	0.146*** (0.00832)
Unit/covariate Interaction	0.0804*** (0.0122)	0.00164*** (0.000204)	0.0483*** (0.0109)	-0.0397*** (0.0113)	-0.000884 (0.0104)
High School GPA	0.0669*** (0.00731)	0.0899*** (0.00634)	0.0912*** (0.00635)	0.0903*** (0.00635)	0.0909*** (0.00635)
SAT/ACT Percentile	0.00166*** (0.000120)	0.00118*** (0.000136)	0.00169*** (0.000120)	0.00169*** (0.000120)	0.00170*** (0.000120)
Passed 1+ AP Exams	0.0961*** (0.00569)	0.0965*** (0.00569)	0.0809*** (0.00662)	0.0960*** (0.00569)	0.0959*** (0.00569)
Underrepresented Minority (URM)	-0.0356*** (0.00691)	-0.0365*** (0.00691)	-0.0366*** (0.00692)	0.00537 (0.00656)	-0.0365*** (0.00692)
Ethnicity missing/unknown	-0.0303*** (0.00706)	-0.0312*** (0.00706)	-0.0305*** (0.00707)	0.0340*** (0.00829)	-0.0301*** (0.00707)
Female	0.0550*** (0.00484)	0.0543*** (0.00483)	0.0548*** (0.00484)	0.0550*** (0.00484)	0.0552*** (0.00568)
First Generation	-0.0467*** (0.00531)	-0.0466*** (0.00530)	-0.0469*** (0.00531)	-0.0466*** (0.00531)	-0.0468*** (0.00531)
Campus A	0.0217*** (0.00687)	0.0191*** (0.00687)	0.0200*** (0.00688)	0.0203*** (0.00688)	0.0211*** (0.00688)
Campus B	-0.0326*** (0.00667)	-0.0340*** (0.00668)	-0.0331*** (0.00668)	-0.0315*** (0.00668)	-0.0314*** (0.00668)
First Year Fall 2011	-0.0588*** (0.00560)	-0.0588*** (0.00559)	-0.0586*** (0.00560)	-0.0585*** (0.00560)	-0.0584*** (0.00560)
First year Fall 2012	-0.0391*** (0.00565)	-0.0394*** (0.00565)	-0.0395*** (0.00565)	-0.0391*** (0.00565)	-0.0392*** (0.00565)
Constant	-0.0883*** (0.0243)	0.0900*** (0.00642)	0.112*** (0.00384)	0.118*** (0.00527)	0.102*** (0.00478)
Observations	22,971	22,971	22,971	22,971	22,971
R-squared	0.146	0.147	0.145	0.145	0.145

SOURCES: Student level data from partner campuses.

NOTES: Each column has the coefficients from a linear probability model. Standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 These models contain only the three campuses that provided demographic information. The results are similar, but with some major differences if all four campuses are included and only student preparation covariates are used.

**TABLE B5**

LPM Regressions with Interactions for Persistence to Year 2

	(19)	(20)	(21)	(22)	(23)
Outcome	Persist to Yr2	Persist to Yr2	Persist to Yr2	Persist to Yr2	Persist to Yr2
Interaction covariate	HS GPA	SAT/ACT Pctile	Passed AP Exam	URM	Female
Attempted 15 Units	0.176*** (0.0322)	0.0408*** (0.00763)	0.0277*** (0.00482)	0.0180*** (0.00691)	0.0242*** (0.00637)
Unit/covariate Interaction	-0.0470*** (0.00951)	-0.000546*** (0.000160)	-0.0286*** (0.00847)	-0.00150 (0.00881)	-0.00904 (0.00807)
High School GPA	0.0828*** (0.00616)	0.0666*** (0.00516)	0.0662*** (0.00516)	0.0661*** (0.00516)	0.0661*** (0.00516)
SAT/ACT Percentile	2.15e-05 (9.65e-05)	0.000204* (0.000113)	2.06e-06 (9.65e-05)	3.45e-06 (9.65e-05)	5.16e-06 (9.65e-05)
Passed 1+ AP Exams	0.0383*** (0.00461)	0.0381*** (0.00461)	0.0490*** (0.00558)	0.0384*** (0.00461)	0.0384*** (0.00461)
(URM)	0.0145** (0.00569)	0.0148*** (0.00569)	0.0147*** (0.00569)	-0.00605 (0.00551)	0.0147*** (0.00569)
Ethnicity missing/unknown	0.0217*** (0.00579)	0.0217*** (0.00579)	0.0214*** (0.00579)	-0.0241*** (0.00704)	0.0213*** (0.00579)
Female	0.0103*** (0.00393)	0.0104*** (0.00394)	0.0102*** (0.00394)	0.0102*** (0.00394)	0.0132*** (0.00481)
First Generation	-0.0229*** (0.00432)	-0.0230*** (0.00432)	-0.0229*** (0.00432)	-0.0227*** (0.00432)	-0.0228*** (0.00432)
Campus A	-0.0189*** (0.00561)	-0.0187*** (0.00561)	-0.0186*** (0.00561)	-0.0194*** (0.00561)	-0.0193*** (0.00561)
Campus B	-0.0497*** (0.00568)	-0.0497*** (0.00569)	-0.0498*** (0.00569)	-0.0509*** (0.00568)	-0.0510*** (0.00568)
First Year Fall 2011	0.000375 (0.00458)	0.000491 (0.00458)	0.000252 (0.00458)	0.000366 (0.00458)	0.000256 (0.00458)
First year Fall 2012	0.00198 (0.00460)	0.00200 (0.00460)	0.00204 (0.00460)	0.00211 (0.00460)	0.00196 (0.00460)
Constant	0.619*** (0.0205)	0.886*** (0.00539)	0.880*** (0.00327)	0.905*** (0.00445)	0.886*** (0.00405)
Observations	25,119	25,119	25,119	25,119	25,119
R-squared	0.027	0.027	0.027	0.027	0.027

SOURCES: Student level data from partner campuses.

NOTES: Each column has the coefficients from a linear probability model. Standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 These models contain only the three campuses that provided demographic information. The results are similar, but with some major differences if all four campuses are included and only student preparation covariates are used.

**TABLE B6**

LPM Regressions with Interactions for Persistence to Year 2

	(1)	(2)	(3)	(4)	(5)
Outcome	Persist to Yr3	Persist to Yr3	Persist to Yr3	Persist to Yr3	Persist to Yr3
Interaction covariate	HS GPA	SAT/ACT Pctile	Passed AP Exam	URM	Female
Attempted 15 Units	0.170*** (0.0403)	0.0541*** (0.00955)	0.0342*** (0.00603)	0.0178** (0.00865)	0.0309*** (0.00798)
Attempted 30 Units					
Unit/covariate Interaction	-0.0432*** (0.0119)	-0.000732*** (0.000201)	-0.0307*** (0.0106)	0.0109 (0.0110)	-0.0103 (0.0101)
High School GPA	0.120*** (0.00771)	0.105*** (0.00646)	0.105*** (0.00646)	0.105*** (0.00646)	0.105*** (0.00646)
SAT/ACT Percentile	-2.25e-05 (0.000121)	0.000229 (0.000141)	-4.06e-05 (0.000121)	-3.58e-05 (0.000121)	-3.72e-05 (0.000121)
Passed 1+ AP Exams	0.0504*** (0.00577)	0.0501*** (0.00577)	0.0618*** (0.00698)	0.0504*** (0.00577)	0.0504*** (0.00577)
Underrepresented Minority (URM)	0.0262*** (0.00712)	0.0265*** (0.00712)	0.0264*** (0.00712)	-0.00948 (0.00690)	0.0264*** (0.00712)
Ethn. unknown	0.0324*** (0.00724)	0.0327*** (0.00725)	0.0322*** (0.00724)	-0.0345*** (0.00882)	0.0321*** (0.00725)
Female	0.00755 (0.00493)	0.00782 (0.00493)	0.00750 (0.00493)	0.00737 (0.00493)	0.0109* (0.00602)
First Generation	-0.0249*** (0.00541)	-0.0251*** (0.00541)	-0.0249*** (0.00541)	-0.0249*** (0.00541)	-0.0248*** (0.00541)
Campus A	0.0156** (0.00702)	0.0161** (0.00703)	0.0159** (0.00703)	0.0152** (0.00702)	0.0152** (0.00702)
Camps B	-0.0339*** (0.00712)	-0.0333*** (0.00712)	-0.0338*** (0.00712)	-0.0350*** (0.00711)	-0.0351*** (0.00711)
First Year Fall 2011	0.00838 (0.00573)	0.00857 (0.00573)	0.00826 (0.00573)	0.00837 (0.00573)	0.00826 (0.00573)
First year Fall 2012	-0.000808 (0.00576)	-0.000808 (0.00576)	-0.000749 (0.00576)	-0.000727 (0.00576)	-0.000840 (0.00576)
Constant	0.412*** (0.0257)	0.802*** (0.00674)	0.793*** (0.00409)	0.828*** (0.00556)	0.805*** (0.00508)
Observations	25,119	25,119	25,119	25,119	25,119
R-squared	0.036	0.036	0.036	0.036	0.036

SOURCES: Student level data from partner campuses.

NOTES: Each column has the coefficients from a linear probability model. Standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 These models contain only the three campuses that provided demographic information. The results are similar, but with some major differences if all four campuses are included and only student preparation covariates are used.

**TABLE B7**

LPM Regressions with interactions for ever graduating

	(1)	(2)	(3)	(4)	(5)
Outcome	Graduated Ever	Graduated Ever	Graduated Ever	Graduated Ever	Graduated Ever
Attempted 15 units	0.213** (0.0837)	0.0544*** (0.0195)	0.0386*** (0.0121)	0.00573 (0.0179)	0.0129 (0.0167)
Unit/covariate Interaction	-0.0571** (0.0249)	-0.000807* (0.000417)	-0.0583** (0.0228)	-0.0238 (0.0154)	0.0154 (0.0210)
High School GPA	0.206*** (0.0173)	0.183*** (0.0139)	0.182*** (0.0139)	0.182*** (0.0139)	0.182*** (0.0139)
SAT/ACT Percentile	0.000424* (0.000257)	0.000743** (0.000310)	0.000402 (0.000257)	0.000413 (0.000257)	0.000403 (0.000257)
Passed 1+ AP Exams	0.0160 (0.0156)	0.0165 (0.0156)	0.0165 (0.0156)	-0.0238 (0.0154)	0.0163 (0.0156)
Underrepresented Minority (URM)	0.0324** (0.0157)	0.0329** (0.0157)	0.0325** (0.0157)	-0.0475** (0.0196)	0.0317** (0.0157)
Ethnicity missing/unknown	0.0302*** (0.0105)	0.0305*** (0.0106)	0.0300*** (0.0105)	0.0302*** (0.0106)	0.0237* (0.0134)
Female	-0.0307*** (0.0116)	-0.0306*** (0.0117)	-0.0304*** (0.0116)	-0.0309*** (0.0117)	-0.0306*** (0.0117)
First Generation	0.0770*** (0.0144)	0.0779*** (0.0144)	0.0778*** (0.0144)	0.0771*** (0.0144)	0.0774*** (0.0144)
Campus B	0.0210 (0.0149)	0.0219 (0.0149)	0.0217 (0.0149)	0.0203 (0.0149)	0.0208 (0.0149)
Constant	-0.0210 (0.0575)	0.635*** (0.0145)	0.638*** (0.00868)	0.689*** (0.0122)	0.650*** (0.0112)
Observations	8,066	8,066	8,066	8,066	8,066
R-squared	0.067	0.067	0.067	0.067	0.067

SOURCES: Student level data from partner campuses.

NOTES: Each column has the coefficients from a linear probability model. Standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 These models contain only the three campuses that provided demographic information. The results are similar, but with some major differences if all four campuses are included and only student preparation covariates are used.

**TABLE B8**

Some groups of students may benefit more than others from enrolling in full course loads

<b>Advantage in taking a full course load</b>	<b>On-time graduation</b>	<b>Eventual graduation</b>	<b>Persistence to year 2</b>	<b>Persistence to year 3</b>
African American, Latino, Native American, Native Hawaiian	8.5	.05	1.6	2.9
White and Asian	11.3	0.5	1.8	1.8
First Generation	10.4	1.3	0.1	3.0
Non-First Generation	18.7	1.3	0.1	1.0
High School GPA (lower)	6.2	4.7	4.1	4.5
High school GPA (mean)	9.4	2.0	1.9	2.4

SOURCES: Partner universities.

NOTES: Results are regression-adjusted for academic preparation and demographic characteristics. Predicted probabilities are holding all covariates at their means. A lower GPA of 2.89 is one standard deviation below the mean GPA, and 3.36 is the mean GPA of the analytic sample. See Technical Appendix A for more information on the regressions. Differences in italics are not statistically significantly different than zero.



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