The Effects of the Florida Tax Credit Scholarship Program on College Enrollment and Graduation: An Update

Matthew M. Chingos, Tomas Monarrez, and Daniel Kuehn

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The Florida Tax Credit (FTC) scholarship program, which provides private school scholarships to more than 100,000 low-income students annually, is the largest program of its kind in the country. Secretary of Education Betsy DeVos and other supporters of school choice have held it up as a national model,[1] and many states have implemented similar programs (EdChoice 2019).

Over the past two years, the Urban Institute has released several studies estimating the effects of three publicly funded private school choice programs on college enrollment and graduation, including the FTC program (Chingos and Kuehn 2017), the Milwaukee Parental Choice Program (Wolf, Witte, and Kisida 2018), and Washington, DC's Opportunity Scholarship Program (Chingos 2018).

The prior study of FTC found that students who participated were more likely to enroll in Florida public colleges than nonparticipants with similar characteristics, with almost all the effect attributable to increased enrollment in community colleges. Effects were largest for students who participated in the program longer, and few effects were found on associate's degree attainment (Chingos and Kuehn 2017).

This brief expands on and updates the prior study in two important ways. First, whereas the prior study used enrollment data only from public colleges in Florida, this update draws on National Student Clearinghouse (NSC) data covering almost all US colleges (including private and out-of-state colleges). Second, this brief includes college enrollment data through 2018 (rather than 2016), which allows us to include additional students, increasing the number of FTC students we can examine by more than 50 percent.

We find that FTC participants are more likely than similar nonparticipants to enroll in both two-year and four-year colleges, including both public and private nonprofit four-year colleges. Students who entered FTC in elementary or middle school were 6 percentage points more likely to enroll in

college, a 12 percent increase. Students who entered the program in high school were 10 percentage points more likely to enroll, a 19 percent increase.

Participating in FTC also increases the likelihood that students earn a bachelor's degree, with average increases of 1 to 2 percentage points (10 to 20 percent). The size of both effects tends to increase with the number of years of FTC participation. These results are consistent with the earlier findings in Chingos and Kuehn (2017), although in some cases they are larger because of positive estimated impacts of FTC participation in enrollment in private nonprofit and out-of-state colleges.

Data and Methods

We use comprehensive data on public school students from the Florida Department of Education linked to FTC records from Step Up for Students, the nonprofit that administers the FTC program. These data are described in detail in Chingos and Kuehn (2017). For this update, we use NSC college enrollment data on 16,111 FTC students and a matched comparison group of Florida public school students.

The treatment group of scholarship students consists of those who first took standardized reading and math tests in the Florida public school system and participated in the FTC program the following year (Chingos and Kuehn 2017). For this update, we include students who were expected to graduate from high school by 2015–16 so that we can observe their college enrollment within two years of expected graduation.

Table 1 shows the number of FTC students by baseline year and grade (i.e., the year before receiving a scholarship). We include 16,111 FTC students in our analysis, of which 11,315 were entering elementary or middle school (baseline grades 3–7) and 4,796 were entering high school (baseline grades 8–10). We cannot include students entering high school in later years because Florida stopped administering grade-specific math and reading tests in grades 9 and 10.

TABLE 1

FTC Students in Treatment Sample, by Baseline Year and Grade

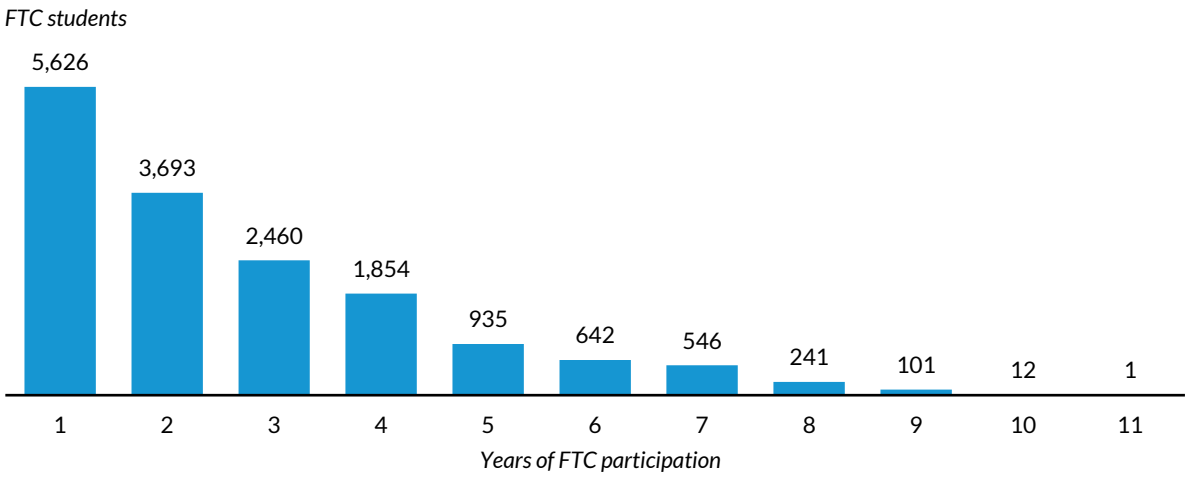
	Baseline Grade								
	3	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Total**
Baseline year									
2003	181	102	180	142	83	60	43	16	807
2004	486	376	413	353	244	160	137	73	2,242
2005	402	392	501	331	278	230	168	120	2,422
2006	514	462	605	392	302	270	188	135	2,868
2007	0	436	641	436	348	300	215	175	2,551
2008	0	0	735	406	348	345	222	154	2,210
2009	0	0	0	486	400	386	238	169	1,679
2010	0	0	0	0	340	419	0	125	884
2011	0	0	0	0	0	448	0	0	448
Total	**1,583**	**1,768**	**3,075**	**2,546**	**2,343**	**2,618**	**1,211**	**967**	**16,111**

Source: Authors' calculations from Step Up for Students program data and Florida Education Data Warehouse data.
Notes: FTC = Florida Tax Credit. Sample includes students for whom enrollment within two years of expected high school graduation is observed (i.e., expected high school graduation in 2015–16 or earlier) and who were tested in a public school in the school year before FTC participation.

Students vary widely in how long they participate in the FTC program. Figure 1 shows that 35 percent of students in our treatment sample participated for only one year, 23 percent participated for two years, 15 percent for three years, and 27 percent for four or more years.

FIGURE 1

Years of Participation in the FTC Program



Source: Authors' calculations from Step Up for Students program data and Florida Education Data Warehouse data.
Note: FTC = Florida Tax Credit.

We match each of the 16,111 students in our treatment group to up to five nonparticipating students who were enrolled in the same baseline school, grade, and year and who had similar

characteristics, including math and reading scores, language, nativity, race or ethnicity, disability status, age, and free lunch participation. We use the same propensity score matching methodology described in Chingos and Kuehn (2017), applied to the larger treatment group described above.

Matching on a rich set of pretreatment characteristics allows us to compare students who are similar in many ways except for FTC participation. But participants and nonparticipants could differ in unmeasured ways, such as parental engagement, family religiosity, or experiences in public school. If these unmeasured characteristics differ, on average, between the treatment and comparison groups and are associated with student outcomes, our results will be biased.

The treatment and comparison groups total 93,210 observations representing 89,302 students (a non-FTC student can be a comparison for multiple FTC students). Table 2 shows that the FTC students and matched non-FTC students have similar baseline characteristics, including gender, race or ethnicity, nativity, language spoken at home, disability status, free lunch participation, age, and standardized baseline test scores.[2]

TABLE 2

Descriptive Statistics

	Baseline Grades 3–7		Baseline Grades 8–10	
	FTC	Non-FTC (matched)	FTC	Non-FTC (matched)
Female	51%	51%	46%	46%
Race or ethnicity				
White	23%	25%	22%	24%
Black	43%	42%	45%	43%
Hispanic	30%	29%	31%	30%
Asian	1%	1%	1%	1%
Other	3%	3%	3%	2%
Born outside US	9%	9%	10%	10%
Language parents speak				
English	73%	74%	74%	75%
Spanish	20%	20%	20%	20%
Other	6%	6%	5%	5%
Disabled	13%	13%	14%	15%
Baseline FRPL				
Free	73%	75%	67%	70%
Reduced price	12%	25%	10%	30%
None	15%	0%	23%	0%
Age	11.6	11.7	15.1	15.1
Baseline math score	-0.36	-0.35	-0.36	-0.37
Baseline reading score	-0.29	-0.28	-0.36	-0.36
Observations (unweighted)	11,315	54,080	4,796	23,019

Source: Authors' calculations from Step Up for Students program data and Florida Education Data Warehouse data.
Notes: FRPL = free and reduced-price lunch; FTC = Florida Tax Credit. Sample includes students for whom enrollment within two years of expected high school graduation is observed (i.e., expected high school graduation in 2015–16 or earlier). Comparison groups are selected based on nearest-neighbor matching (N = 5) with exact matching on baseline school, grade, and year. Baseline test scores are standardized by year, grade, and subject to have a mean of 0 and standard deviation of 1 across Florida.

The Florida Department of Education provided us matched college enrollment and graduation records for the treatment and comparison students from the NSC, a nonprofit organization that maintains student-level data from postsecondary institutions representing 97 percent of US enrollment.[3] This linkage was made specifically for this study.[4]

Numerous studies have used NSC data, including several studies of private school choice programs (Chingos 2018; Chingos and Peterson 2015; Wolf, Witte, and Kisida 2018). The NSC coverage rate for institutions in Florida is 92 percent: close to 100 percent for public institutions, 78 percent for private nonprofit institutions, and 20 percent among for-profit institutions.

Our ability to capture enrollment at private nonprofit and out-of-state institutions is greatly improved compared with Chingos and Kuehn (2017). The NSC data indicate that, among all students who attended college, 26 percent did not attend a public college in Florida. The NSC data do not adequately capture enrollment at for-profit colleges, but only 9 percent of undergraduate students in Florida are enrolled in a for-profit institution.[5] Also, students who attend for-profit institutions tend to have weak labor market outcomes, so enrollment at a for-profit college may not be a positive outcome for students (Cellini and Turner 2018).

We use the NSC data to measure whether students enrolled in college within two years after expected high school graduation. We measure enrollment at any college and by sector (two- versus four-year and public versus private), as well as whether each student enrolled full time.[6] We use NSC data on degree receipt to identify students who received an associate's or bachelor's degree.[7]

As in Chingos and Kuehn (2017), we report all FTC treatment effect estimates as marginal effects from probit regressions of the college enrollment and graduation outcomes on a treatment dummy and controls for the same characteristics included in our matching model. We include a full set of dummies for baseline year-grade cohorts to restrict comparisons within these baseline cohorts.

Results

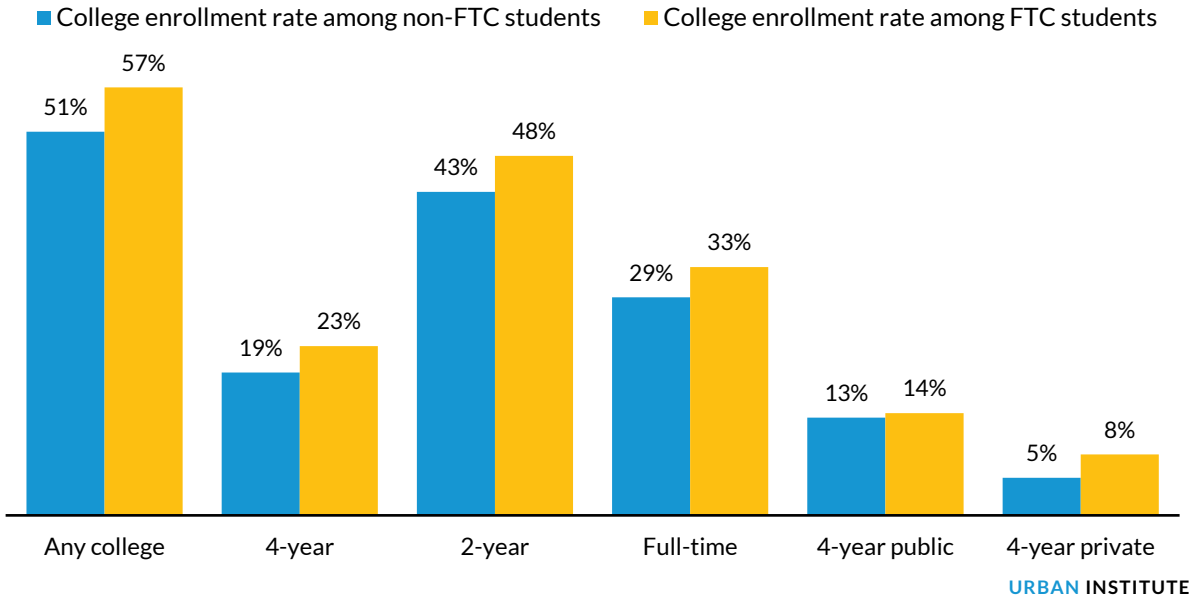
We present our main findings in the figures below, with full results available in appendix tables A.1–A.4. In all our analyses, we estimate separate effects for students entering FTC in elementary and middle school versus high school, as we expect that the effect of attending a private high school may differ from the long-term effect of attending a private elementary or middle school (especially because many of these students go to public high schools). Students who select into private high schools are also likely to differ from students who select into private elementary and middle schools.

Figure 2A and appendix table A.1 show our results for students who began participating in the FTC program in elementary or middle school. FTC students are 6 percentage points more likely to enroll in college, an increase of 12 percent relative to the comparison group's 51 percent enrollment rate. This effect includes increased enrollment at both two-year and four-year colleges and reflects an increase in full-time enrollment (i.e., not just part-time enrollment). The effect in the four-year sector is concentrated in private (nonprofit) colleges, where FTC students were 3 percentage points more likely

to enroll, an increase of 62 percent compared with the 5 percent of their non-FTC peers who enrolled in this sector.

FIGURE 2A

Effects of FTC Participation on College Enrollment within Two Years of Expected High School Graduation, Baseline Grades 3–7

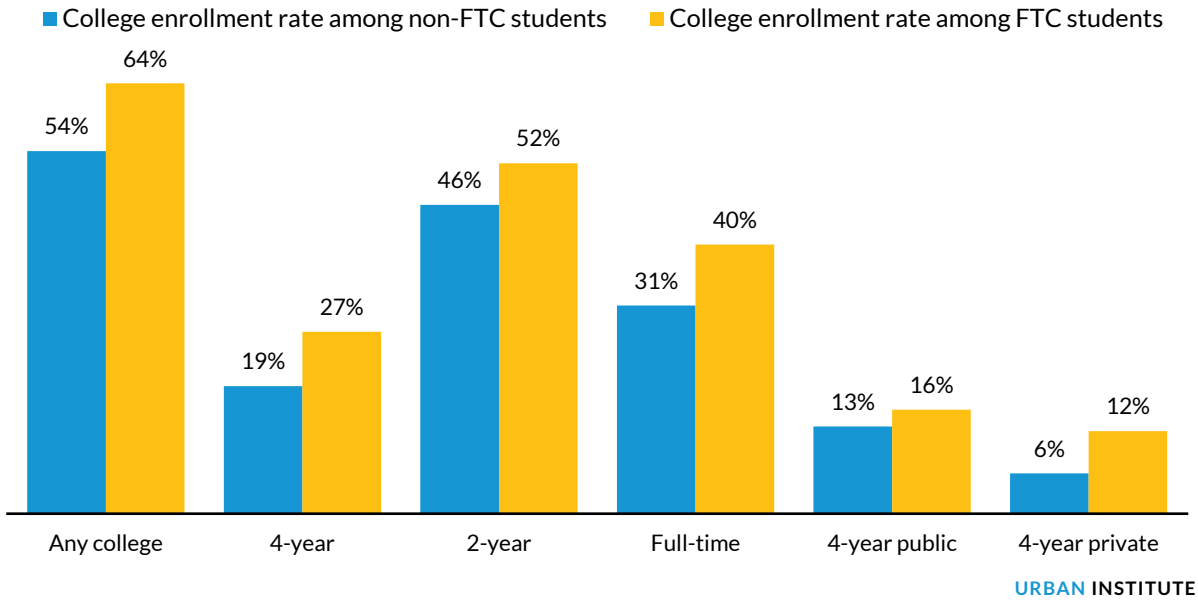


Source: Authors' calculations from Step Up for Students program data, Florida Education Data Warehouse data, and National Student Clearinghouse data.
Notes: FTC = Florida Tax Credit. All FTC effects are statistically significant at the 5 percent level.

We find larger effects across the board for students who first participated in FTC in high school. Figure 2B and appendix table A.1 show that these students were 10 percentage points more likely to enroll in college, a 19 percent increase compared with the 54 percent enrollment rate of their non-FTC peers. This effect was shared between two- and four-year colleges, with especially noteworthy effects at four-year private nonprofit colleges, where the FTC enrollment rate was double that of the comparison group.

FIGURE 2B

Effects of FTC Participation on College Enrollment within Two Years of Expected High School Graduation, Baseline Grades 8–10



Source: Authors' calculations from Step Up for Students program data, Florida Education Data Warehouse data, and National Student Clearinghouse data.
Notes: FTC = Florida Tax Credit. All FTC effects are statistically significant at the 5 percent level.

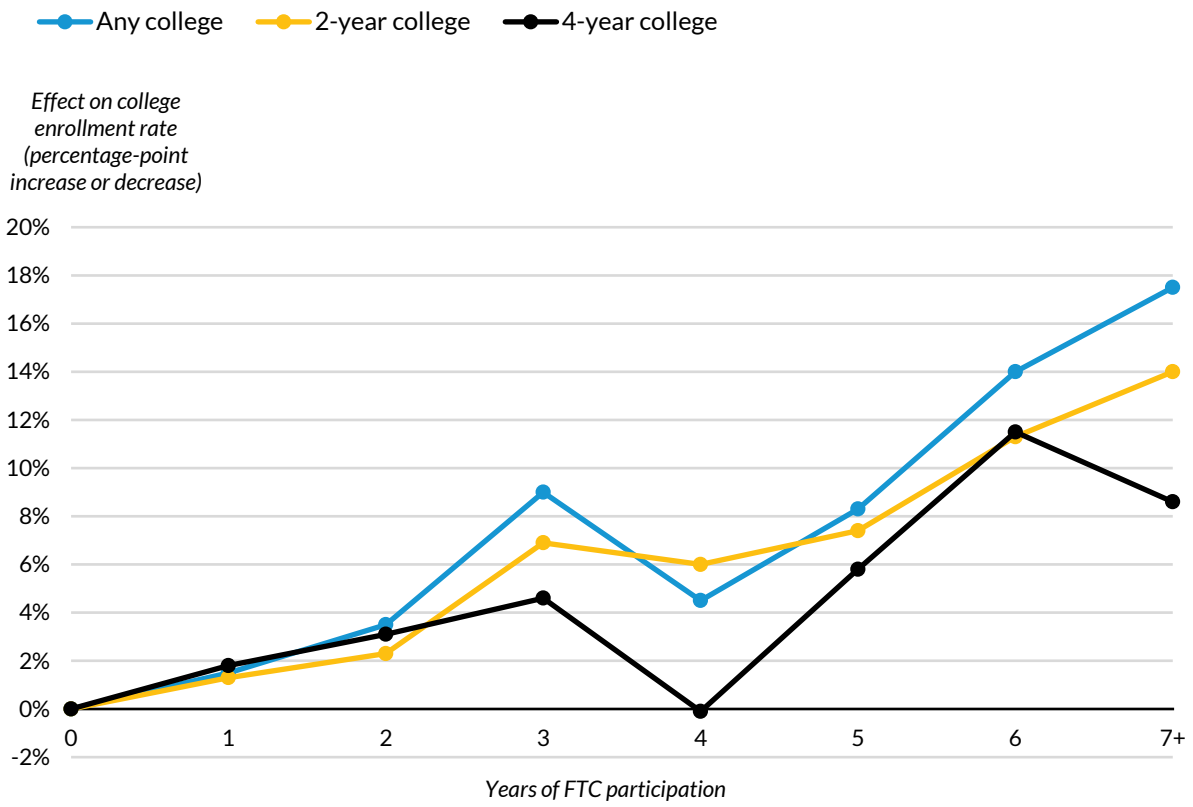
Several of these estimated effects are larger than those reported for Florida public colleges in Chingos and Kuehn (2017). Appendix table A.2 shows that the larger effects are driven by positive FTC impacts on enrollment at private nonprofit colleges in Florida and out-of-state colleges, which were not included in Chingos and Kuehn (2017). For the two outcomes observed in both the prior and current studies, regarding enrollment in public two- and four-year colleges in Florida, coefficient estimates are smaller for the new sample than for the old sample.

Figures 3A and 3B and appendix table A.3 show results by the number of years students participated in FTC. These results should be interpreted with caution, as we expect students who persisted in the program might differ in unmeasured ways from those who left.[8] But the results suggest the possibility of small or null effects from a single year of participation, with larger effects for students who participated longer.

This finding holds for enrollment at both two- and four-year colleges, with larger effects for students who entered FTC in high school. For example, students who spend all four years in a private high school (18 percent of participants in these grades) see their enrollment rate at four-year colleges double compared with the comparison group.

FIGURE 3A

FTC Effects by Years of Participation, Baseline Grades 3–7



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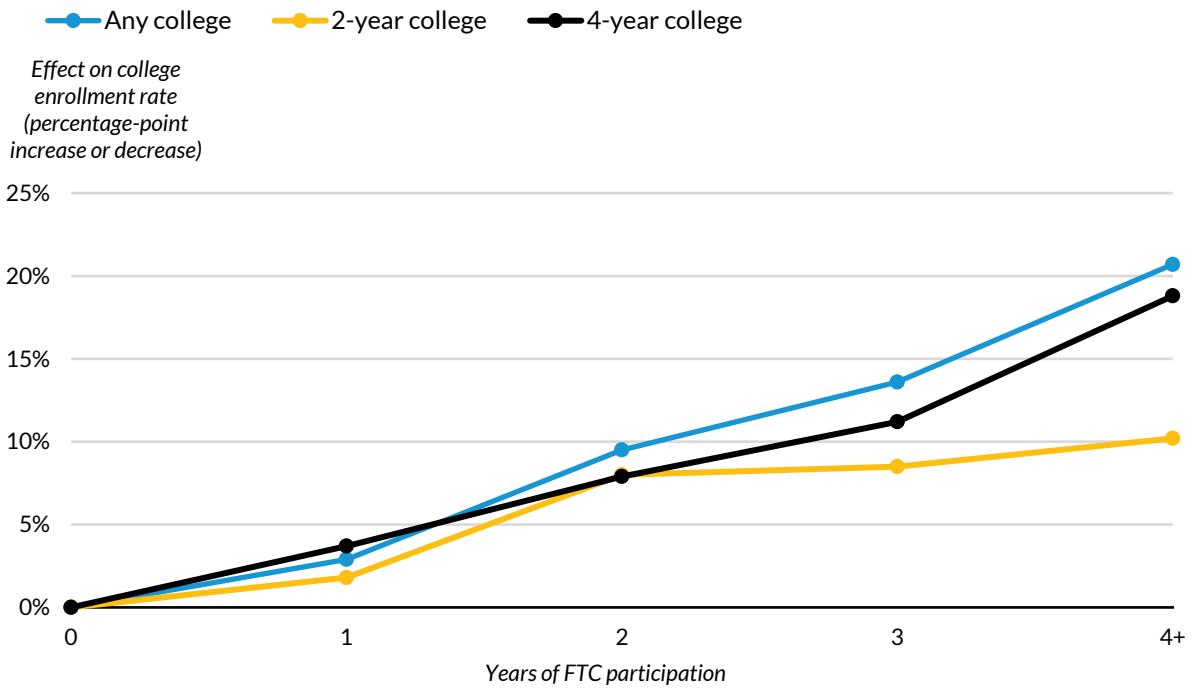
Source: Authors' calculations from Step Up for Students program data, Florida Education Data Warehouse data, and National Student Clearinghouse data.

Notes: FTC = Florida Tax Credit. All FTC effects are statistically significant at at least the 5 percent level, except for the effect on any and two-year college enrollment after one year of FTC participation and the effect on four-year college enrollment after four years of participation.

FIGURE 3B

FTC Effects by Years of Participation, Baseline Grades 8–10



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Source: Authors' calculations from Step Up for Students program data, Florida Education Data Warehouse data, and National Student Clearinghouse data.
Notes: FTC = Florida Tax Credit. All FTC effects are statistically significant at at least the 5 percent level, except for the effect on two-year college enrollment after one year of FTC participation.

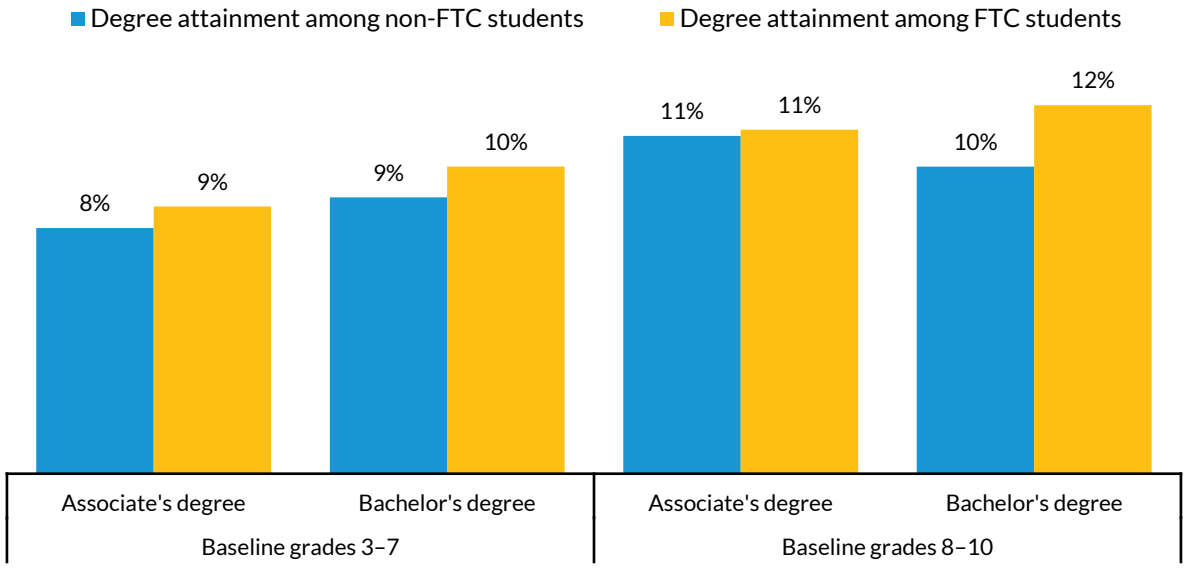
Finally, we estimate FTC participation effects on associate's and bachelor's degree attainment for the students we observed for at least three and six years following expected high school graduation for associate's and bachelor's degrees, respectively.[9]

Figure 4 and appendix table A.4 show consistently positive estimated impacts on bachelor's degree attainment, with an increase of 1 percentage point (about 10 percent) among students who entered FTC in elementary or middle school and an increase of 2 percentage points (about 20 percent) for those who entered in high school. We find a similar increase in associate's degree attainment for students who entered FTC in elementary or middle school (0.7 percentage points) but no significant impact for those who entered in high school.

As with enrollment, the estimated impact on degree attainment tends to increase with the number of years of FTC participation. For example, students who entered FTC in high school and remained in the program for at least three years were about 5 percentage points more likely to earn bachelor's degrees, a 50 percent increase.

FIGURE 4

Effects of FTC Participation on Degree Attainment



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Source: Authors' calculations from Step Up for Students program data, Florida Education Data Warehouse data, and National Student Clearinghouse data.

Notes: FTC = Florida Tax Credit. All FTC effects are statistically significant at at least the 5 percent level, except for the effect on associate's degree attainment for students in baseline grades 8–10.

Conclusion

This study adds to a growing research base on the effects of publicly funded private school choice programs on college enrollment and graduation. We find that including data from private and out-of-state colleges yields larger positive effects of FTC participation on both college enrollment and degree attainment. Positive effects on four-year college enrollment are consistent with recent evidence from Milwaukee (Wolf, Witte, and Kisida 2018), although a randomized evaluation of Washington, DC's voucher program found null effects on enrollment at both two- and four-year colleges (Chingos 2018).

These positive impacts of FTC participation should be interpreted in the context of increased enrollment in the program, which has expanded to include students from lower-middle-income families and more schools where most students use a scholarship (Chingos 2017). How the effects of FTC participation vary across students and schools and over time is fertile ground for future research.

Appendix

TABLE A.1

Effects of Any FTC Participation on College Enrollment within Two Years of Expected High School Graduation

	Baseline Grades 3–7					
	Any college	4-year	2-year	Full-time	4-year public	4-year private
FTC (0/1)	0.059***	0.035***	0.048***	0.040***	0.006*	0.030***
	(0.005)	(0.004)	(0.005)	(0.005)	(0.003)	(0.003)
Control mean	0.51	0.19	0.43	0.29	0.13	0.06
Observations	65,395	65,395	65,395	65,395	65,395	65,395

	Baseline Grades 8–10					
	Any college	4-year	2-year	Full-time	4-year public	4-year private
FTC (0/1)	0.101***	0.081***	0.062***	0.091***	0.025***	0.062***
	(0.008)	(0.007)	(0.008)	(0.009)	(0.005)	(0.005)
Control mean	0.54	0.19	0.46	0.31	0.13	0.07
Observations	27,815	27,815	27,815	27,815	27,815	27,815

Source: Authors' calculations from Step Up for Students program data, Florida Education Data Warehouse data, and National Student Clearinghouse data.

Notes: FTC = Florida Tax Credit. Robust standard errors adjusted for clustering on baseline school appear in parentheses. Treatment estimates are marginal effects from probit regressions. Sample includes students for whom enrollment within two years of expected high school graduation is observed (i.e., expected high school graduation in 2015–16 or earlier). All models include controls for receipt of free lunch in the baseline year, gender, race or ethnicity (i.e., black, Hispanic, Asian, Hawaiian, Native American, multiple race, or other race), a full interaction of nativity (i.e., born in the US or foreign born) and language spoken at home by parents (i.e., English, Spanish, or other or missing), disabled, age and age squared in baseline year, and a cubic function of the cohort-normalized Florida Comprehensive Assessment Test reading and math scores from their baseline year. All models are based on nearest-neighbor matching ($N = 5$) with exact matching on baseline school, grade, and year.

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

TABLE A.2

Effects of Any FTC Participation on College Enrollment within Two Years of Expected High School Graduation, Compared with Results for Cohorts Included in Chingos and Kuehn (2017)

	Baseline Grades 3–7							
	Florida Public 2-Year		Florida Public 4-Year		Florida Private 4-Year		Out-of-State	
	New sample	Old sample	New sample	Old sample	New sample	Old sample	New sample	Old sample
FTC (0/1)	0.051***	0.054***	0.003	0.006*	0.017***	0.019***	0.017***	0.015***
	(0.005)	(0.007)	(0.003)	(0.004)	(0.002)	(0.003)	(0.003)	(0.004)
Control mean	0.38	0.39	0.11	0.12	0.03	0.03	0.10	0.11
Observations	65,395	37,632	65,395	37,632	65,313	37,572	65,395	37,632

	Baseline Grades 8–10							
	Florida Public 2-Year		Florida Public 4-Year		Florida Private 4-Year		Out-of-State	
	New sample	Old sample	New sample	Old sample	New sample	Old sample	New sample	Old sample
FTC (0/1)	0.058***	0.081***	0.006	0.007*	0.035***	0.029***	0.057***	0.052***
	(0.008)	(0.009)	(0.004)	(0.004)	(0.004)	(0.004)	(0.006)	(0.006)
Control mean	0.41	0.41	0.11	0.11	0.03	0.03	0.09	0.09
Observations	27,815	22,100	27,815	22,100	27,785	22,050	27,815	22,100

Source: Authors' calculations from Step Up for Students program data, Florida Education Data Warehouse data, and National Student Clearinghouse data.

Notes: FTC = Florida Tax Credit. Robust standard errors adjusted for clustering on baseline school appear in parentheses. See appendix table A.1 notes for sample and specification details. "Old sample" is limited to students expected to graduate from high school by 2013–14. "Chingos and Kuehn (2017)" refers to Matthew M. Chingos and Daniel Kuehn, *The Effects of Statewide Private School Choice on College Enrollment and Graduation: Evidence from the Florida Tax Credit Scholarship Program* (Washington, DC: Urban Institute, 2017).

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

TABLE A.3

FTC Participation Effects, by Years of Participation, on College Enrollment within Two Years of Expected Graduation

	Baseline Grades 3–7			Baseline Grades 8–10		
	Any	2-year	4-year	Any	2-year	4-year
FTC for 1 year	0.015	0.013	0.018***	0.029**	0.018	0.037***
	(0.009)	(0.009)	(0.007)	(0.012)	(0.013)	(0.011)
FTC for 2 years	0.035***	0.023**	0.031***	0.095***	0.080***	0.079***
	(0.011)	(0.011)	(0.009)	(0.014)	(0.014)	(0.014)
FTC for 3 years	0.090***	0.069***	0.046***	0.136***	0.085***	0.112***
	(0.013)	(0.013)	(0.011)	(0.017)	(0.019)	(0.017)
FTC for 4(+) years	0.045***	0.060***	-0.001	0.207***	0.102***	0.188***
	(0.017)	(0.017)	(0.012)	(0.016)	(0.018)	(0.019)
FTC for 5 years	0.083***	0.074***	0.058***			
	(0.018)	(0.018)	(0.015)			
FTC for 6 years	0.140***	0.113***	0.115***			
	(0.019)	(0.020)	(0.019)			
FTC for 7+ years	0.175***	0.140***	0.086***			
	(0.016)	(0.019)	(0.017)			
Control mean	0.51	0.43	0.19	0.54	0.46	0.19
Observations	65,395	65,395	65,395	27,815	27,815	27,815

Source: Authors' calculations from Step Up for Students program data, Florida Education Data Warehouse data, and National Student Clearinghouse data.

Notes: FTC = Florida Tax Credit. Robust standard errors adjusted for clustering on baseline school appear in parentheses. See appendix table A.1 notes for sample and specification details. "FTC for 4(+) years" refers to students who participated for exactly four years in the specifications for baseline grades 3–7 and to students who participated for four or more years in the specifications for baseline grades 8–10.

*** $p < 0.01$; ** $p < 0.05$.

TABLE A.4

Effects of FTC Participation and Dosage on Degree Attainment

	Baseline Grades 3–7			
	Associate's degree	**Associate's degree**	**Bachelor's degree**	**Bachelor's degree**
FTC (0/1)	0.007***		0.010**	
	(0.002)		(0.004)	
FTC for 1 year		-0.004		0.003
		(0.004)		(0.006)
FTC for 2 years		-0.000		-0.000
		(0.005)		(0.008)
FTC for 3 years		0.015**		0.016
		(0.006)		(0.011)
FTC for 4 years		0.005		-0.002
		(0.007)		(0.013)
FTC for 5 years		0.014*		0.015
		(0.008)		(0.015)
FTC for 6 years		0.025**		0.059***
		(0.010)		(0.022)
FTC for 7+ years		0.037***		0.050**
		(0.010)		(0.022)
Control mean	0.08	0.08	0.09	0.09
Observations	65,395	65,395	24,543	24,543

	Baseline Grades 8–10			
	Associate's degree	**Associate's degree**	**Bachelor's degree**	**Bachelor's degree**
FTC (0/1)	0.002		0.020***	
	(0.004)		(0.005)	
FTC for 1 year		-0.008		0.002
		(0.006)		(0.007)
FTC for 2 years		-0.009		0.020**
		(0.007)		(0.009)
FTC for 3 years		0.020**		0.053***
		(0.010)		(0.013)
FTC for 4+ years		0.020*		0.045***
		(0.011)		(0.016)
Control mean	0.11	0.11	0.10	0.10
Observations	27,815	27,815	20,563	20,563

Source: Authors' calculations from Step Up for Students program data, Florida Education Data Warehouse data, and National Student Clearinghouse data.

Notes: FTC = Florida Tax Credit. Robust standard errors adjusted for clustering on baseline school appear in parentheses. Sample limited to students with expected high school graduation by 2014–15 for associate's degrees and 2011–12 for bachelor's degrees.

*** p <0.01; ** p < 0.05; * p < 0.1.

Notes

[1] Lauren Camera, "DeVos Racks Up More Than a Dozen Visits to Florida Schools," *US News and World Report*, November 28, 2017, https://www.usnews.com/news/best-states/articles/2017-11-28/devos-racks-up-more-than-a-dozen-visits-to-florida-schools.

[2] The difference in nonparticipation in the free lunch program is mechanically because of our restricting the potential comparison group to students who participated in this program. See Chingos and Kuehn (2017) for details.

[3] "NSC Enrollment Percentages," National Student Clearinghouse, November 11, 2018, https://nscresearchcenter.org/wpcontent/uploads/NSC_COVERAGE.xlsx.

[4] Resource constraints prevented us from obtaining data for a larger group of students.

[5] Digest of Education Statistics, table 304.80: https://nces.ed.gov/programs/digest/d17/tables/dt17_304.80.asp.

[6] We classify a college as two- or four-year based on whether it mostly awards two-year degrees or four-year degrees. To do this, we collect total award data from the Integrated Postsecondary Education Data System (IPEDS), via the Urban Institute's Education Data Portal, for the years 2003–15 and compute the fraction awarded at each degree level for each college in the data. This is especially important for Florida's community colleges, which mostly award two-year degrees but award some four-year degrees and thus are classified as four-year colleges by IPEDS and the NSC (which base their classifications on the highest degree offered).

[7] We assume that any students who received a graduate degree earned a bachelor's degree, even if it does not appear in the NSC data.

[8] See Chingos and Kuehn (2017) for a detailed discussion.

[9] We do not restrict the measurement of degree attainment to this window (e.g., we still count a bachelor's degree obtained seven years after expected high school graduation if the student is observed for at least that long).

References

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About the Authors

Matthew Chingos directs the Center on Education Data and Policy at the Urban Institute. He leads a team of scholars who undertake policy-relevant research on issues from prekindergarten through postsecondary education and create tools such as Urban's Education Data Portal. He received a BA in government and economics and a PhD in government from Harvard University.

Tomas Monarrez is a research associate in the Center on Education Data and Policy. His research focuses on education policy topics as they relate to economic and racial inequality. Monarrez received bachelor's degrees in economics and mathematics from the University of Texas at Austin and earned his doctoral degree in economics from the University of California, Berkeley.

Daniel Kuehn is a research associate in the Urban Institute's Income and Benefits Policy Center, where his research focuses on education and training, apprenticeship, and the science and engineering workforce. Kuehn received a BA in economics and sociology from the College of William and Mary, an MPP in labor market policy from the George Washington University, and a PhD in economics from American University.

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