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To Give or to Take: Exploring Effects of Reductions in Pell Lifetime Eligibility

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ABSTRACT

The Pell Grant plays a critical role in helping students across the US to afford undergraduate education. Despite its importance to the US system of higher education finance, little is known about the optimal amount of time students should be eligible to receive Pell or other need-based grant aid programs. I exploit changes made during the Obama administration in 2012 that effectively lowered the maximum lifetime eligibility for Pell from 9 to 6 years of full-time equivalent study. I use a student fixed effects model that estimates the impact of reductions in lifetime Pell eligibility on student enrollment and degree completion outcomes for community college and four-year college students at a large, urban public university system. Findings suggest that lower lifetime eligibility reduced the likelihood of student re-enrollment and lowered students' academic performance. The policy change reduced the average amount of grant aid students received. Black and Hispanic students and community college entrants were most impacted by the policy change and attempted to offset declines in grant aid through increases in outside earnings and loans. These results suggest that there are more effective policy levers to encourage enrollment through degree completion outside of the threat of financial aid loss.

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Financial aid; low-income; community colleges; college persistence; college success

The Pell Grant is arguably the single most important federal financial aid policy. As the largest source of federal grant aid in the US, about 1 in 3 undergraduate students overall receive Pell and more than 40% of community college students receive Pell (Park & Scott-Clayton, 2018). Tuition has increased dramatically across all college sectors since 1990; even community colleges, which are often perceived as low-cost entry points into higher education, have seen dramatic tuition increases over this time (Hanson, 2021). As a means-tested program, the Pell Grant plays a critical role in helping low- and middle-income families afford college. Despite the important role Pell plays in helping students to manage direct and indirect costs associated with higher education, relatively little is known about how certain policy elements, such as lifetime eligibility, impact student outcomes. In 2012, the Obama administration reduced lifetime Pell Grant eligibility from 9 to 6 full-

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time equivalent (FTE) years. I use this policy change to explore the relationship between lifetime Pell Grant eligibility and academic and labor market outcomes for undergraduate students at a large, urban public university system in the US that includes both community and four-year college students.[1] I focus on how the threat of financial aid loss as manifested through reductions in lifetime Pell eligibility impacted student enrollment behavior, degree completion, and labor market outcomes, centering my analysis on the following research questions:

(1) Which student groups were most likely to be impacted by reductions in lifetime Pell eligibility?
(2) How did reduced lifetime Pell eligibility and the threat of financial aid loss impact students' financial aid and earnings, enrollment behavior, and academic performance?

I use an individual fixed effects approach that compares outcomes before and after lifetime Pell eligibility was reduced for students who were notified of the policy change and students who received similar amounts of Pell but were not notified of these changes. Findings suggest that community college entrants and students of color were disproportionately impacted by reductions in lifetime Pell eligibility. Among bachelor's degree completers, the time to degree often extends well beyond lifetime eligibility for financial aid programs – 28% of community college entrants and 15% of four-year college entrants who earned a bachelor's degree and ever received Pell exhausted lifetime Pell Grant eligibility. Causal estimates show that students were less likely to re-enroll as a result of the policy change and offset declines in grant aid with increased borrowing and earnings in the labor market. They were also more likely to enroll part-time rather than full-time and experienced decreases in the number of credits attempted and earned and cumulative GPA.

Policy background

Since its earliest iteration as the Basic Educational Opportunity Grant in the 1965 Higher Education Act, the Pell Grant has become an essential part of higher education finance policy. At the time, the policy represented a marked shift in the way the federal government sought to support higher education access, namely by providing funds directly to students rather than institutions. Since 1972, expenditures on Pell have increased from roughly $250 million to over $30 billion, and these spending increases have helped to grow Pell's reach from serving 176,000 students to more than 9 million students in recent years (Baum, 2015).

To receive a Pell Grant, students must first complete the Free Application for Federal Student Aid (FAFSA), which more than half of high school seniors

do (DeBaun, 2022). Pell Grant eligibility and award size are based on a student's estimated family contribution, which is itself a function of family size, income, and cost of attendance, among other factors. More than 90% of Pell recipients have a reported family income below $60,000 (Hanson, 2024). The maximum Pell Grant award increased to $6,495 for the 2021 academic year, but year over year changes to the maximum Pell grant have failed to keep pace with increases in the cost of college attendance (Delisle, 2021).

As a result of increasing college enrollment and the number of students eligible for Pell during and after the Great Recession, the program faced a multibillion-dollar deficit in 2011 that officials sought to remedy through programmatic changes. These changes included eliminating eligibility for students without a high school diploma, eliminating eligibility for students with award sizes below $555 for a given year, and lowering the lifetime eligibility from 9 to 6 full-time equivalent (FTE) years (Mabel, 2020). Budgetary concerns drove the administration's decision to reduce lifetime Pell eligibility rather than theory that such reductions might encourage more timely degree completion. In spring 2012, the Department of Education's Office of Federal Student Aid sent notifications to students who had used at least 4.5 years of Pell eligibility, letting them know of the policy change and providing instructions on how to view their Pell use to date. The Federal Student Aid Office also enacted accountability measures to ensure that students did not receive Pell Grants beyond the new lifetime eligibility (US Department of Education, 2015). This analysis focuses on the reduction in Pell lifetime eligibility from 9 to 6 FTE years, which was enacted in the academic year 2012–2013 and offers the potential to better understand how lifetime award eligibility and the threat of financial aid loss impact college student enrollment behavior and academic and labor market outcomes.

Financial aid loss may be particularly consequential for students attending the university system in my analysis. About 1 in 2 students receive Pell in their first year of enrollment, and students on average receive more than $7,000 in Pell Grant dollars over the course of their time enrolled in college. Among students who enrolled for at least 5 years, the average amount of Pell Grant aid received was close to $15,000. The maximum Pell Grant award for the academic year 2012–2013 was $5,550, while average annual tuition at community and four-year colleges in the university system of interest was about $4,000 and $5,000, respectively (see Figure 1). Accordingly, Pell and state grant aid maximums exceed undergraduate tuition and fees. In addition, almost half of college entrants in this university system first enroll at a community college. Community college students may be more likely to exhaust lifetime Pell and other financial aid eligibility compared to four-year college starters given longer average time to degree and other issues associated with upward transfer such as credit loss and lack of program structure and advising supports (Bailey et al., 2015).

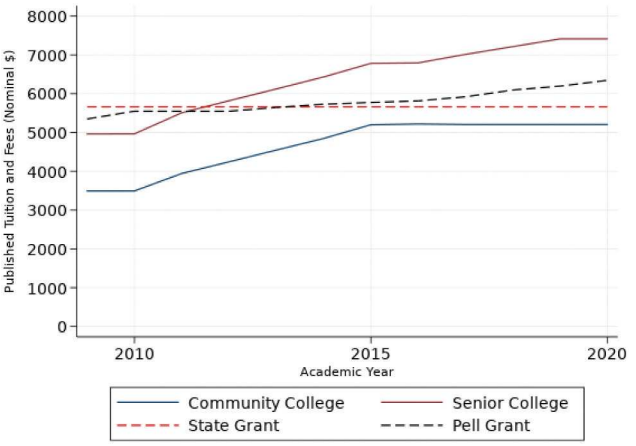


Figure 1. Tuition & fees and maximum grant awards over time.
Notes: Figure 1 shows the maximum Pell and State Grant award sizes in nominal dollars from 2009 to 2020 as well as published tuition and fees for the university system of interest for this analysis.

Literature review & conceptual framework

Literature review

The cost of higher education holds direct implications for students' enrollment decisions, major selection, and ability to earn credentials (Becker, 2009; Denning, 2017; Rothstein & Rouse, 2011). As the nation's largest federal grant aid program, Pell is designed to help low- and middle-income students access and succeed in college. The literature evaluating the impacts of Pell Grants on college student outcomes is mixed, with some papers finding no effects and others finding small but significant increases in enrollment and degree completion rates (Denning et al., 2019; Dynarski et al., 2023; Eng & Matsudaira, 2021; Matsudaira, 2017; Park & Scott-Clayton, 2018). Much of the literature evaluating financial aid policies focuses on impacts on students' college enrollment decisions and academic achievement during early college years (Barrow et al., 2014; Dawson et al., 2020; Leuven et al., 2010).

While financial aid and other interventions to improve college access and early college success are certainly warranted, less research focuses on how financial aid can be used to support students who are close to the finish line. This is especially critical given the substantial proportion of college dropouts who have completed more than three-quarters of required credits for graduation as well as the earnings premium associated with completed credentials (Mabel & Britton, 2018). Bettinger (2004) found that Pell Grants increase the likelihood of student retention beyond students' first year of college enrollment. Other more recent studies similarly found that state need-based grant aid programs improved attendance, credit accumulation, and the likelihood of

degree completion toward the end of students' college trajectory (Bettinger et al., 2019; Castleman & Long, 2016).

Beyond initial access to state and federal grant aid programs, requirements to maintain financial aid eligibility year-over-year may create incentives for students to improve academic performance and complete credentials more quickly. Prior studies address the threat of aid loss and its effects on student outcomes by looking at performance-based eligibility requirements, such as GPA and credit requirements (Schudde & Scott-Clayton, 2016; Scott-Clayton, 2011; Scott-Clayton & Zafar, 2019). While these studies offer some evidence that academic requirements embedded in financial aid eligibility can improve student performance, responses to reduced lifetime eligibility and aid exhaustion may be different.

This paper's contribution to the literature is twofold. This is the first study to causally estimate the effects of reduced lifetime Pell eligibility for both community college and four-year college students, which is particularly important given my results showing community college students who ultimately persist through bachelor's degree completion are more likely than four-year college starters to exhaust financial aid. Prior work evaluating the effects of lifetime Pell reductions on student outcomes was limited to students attending four-year colleges (Mabel, 2020). Second, my analysis is the first to explore how the threat of financial aid loss vis-à-vis reduced lifetime Pell eligibility impacts students' earnings and participation in the labor market.

Conceptual framework

Financial aid loss stemming from reductions in Pell lifetime eligibility from 9 to 6 FTE years could impact student enrollment and degree completion outcomes in several ways. On the one hand, the threat of financial aid loss may encourage students to complete their degrees more quickly if students are at once aware of the threat and sufficiently concerned that financial aid loss will hinder their ability to afford and persist in college. On the other hand, reduced lifetime Pell eligibility may discourage students from further enrollment and degree completion if they view degree completion within a shortened time frame as infeasible, especially in the absence of financial support through Pell receipt.

Drawing on inferences from the human capital model (Becker, 2009), students who are credit constrained or anticipate being credit constrained as a result of losing or having less Pell eligibility may alter their behavior in several ways to afford college. In the absence of other sources of financial aid, students may be more likely to enroll part-time as a means of lowering costs, which could lengthen time to degree. Even if reductions in lifetime Pell eligibility do not induce students to drop out, we might still expect students to increase borrowing or increase earnings through employment to cover

reductions in grant aid. Most students included in this analysis work while enrolled in college. I anticipate increased participation in the labor market to detract from students' enrollment intensity and academic performance so long as employment is a direct substitute away from study hours and does not complement or enhance students' academic experience. I further anticipate these effects to be largest for students who may be experiencing economic precarity and who are most likely to be impacted by the policy change. This includes historically underrepresented minority students and community college entrants who, conditional on enrolling for at least 5 years, receive Pell at higher rates, attempt more credits, and enroll in more semesters before finishing their degree.

Data

I use administrative data from a large, urban public university system that includes student demographics, financial aid, enrollment, and course-taking from academic years 2005 through spring 2022. The university system consists of 25 colleges, 7 of which are community colleges and 11 of which are four-year colleges. In 2021, the system enrolled more than 200,000 undergraduate students, including both full- and part-time students. Students of color and Pell Grant recipients make up the majority of students served, and about one third of undergraduate students in the system are enrolled at a community college. Student transcripts records are available for community college, four-year college, and graduate students. I limit the sample to first-time-in-college undergraduate students since Pell can only be used for undergraduate studies. The decision to reduce Pell lifetime eligibility from 9 to 6 FTE years was finalized in spring 2012 and implemented in fall 2012.

I use students' term-over-term enrollment intensity as measured by full- and part-time status and credits attempted to construct a measure of cumulative Pell usage. For instance, students who enrolled full-time and attempted at least 12 credits in both fall and spring semesters used 1 FTE year of Pell. Students who enrolled part-time in fall and/or spring semesters used an amount of Pell equal to the number of credits attempted in an academic year divided by 24 (the minimum number of credits for full-time status). If a student enrolled part-time and attempted 6 credits in the fall and spring, for example, then that student used .5 FTE Pell years. Students were eligible to receive Summer Pell Grants during academic years 2009–10 and 2010–11. Summer Pell was then discontinued before being reinstated by Congress in July 2017 (Liu, 2020). While receiving Summer Pell did not preclude students from receiving Pell in the fall or spring, it did count toward students' lifetime Pell usage.

In addition to student transcript data, I also have access to quarterly earnings records from an anonymized State Department of Labor. These records

include quarterly employment and earnings, employment industry codes based on the North American Industry Classification system (NAICS), and flags for whether an employer is a government entity. I observe student's term-over-term earnings while enrolled or if not enrolled in college and can see how employment, in terms of number of jobs, job type, and total quarterly earnings vary over time.

There are a few limitations to the data. First, data on this state's need-based grant aid program are incomplete, so I omit any reporting on total grant aid. During years included in my analysis, only full-time students could receive state need-based grant aid, and lifetime eligibility was 4 FTE years. State grant aid is applied to students' total grant aid balance before Pell, meaning that students who complete the FAFSA and are eligible for both state and Pell Grant aid should exhaust state grant aid prior to Pell. The lack of state need-based grant is a key data limitation, but the order of state and federal grant aid processing limits the potential for students to offset declines in Pell Grant aid with state grant aid. As another limitation, my analysis focuses on a set of academic and financial outcomes that vary by term; however, this precludes more direct estimation of effects on graduation rates, which is a one-time event not readily captured by my empirical strategy. To account for this, I use detected effects on enrollment intensity to infer how reduced lifetime Pell eligibility might have impacted time to degree and degree completion.

Methodology

In the ideal experiment, students who had used 5 years' worth of Pell by spring 2012 would have been randomly assigned to a treatment group eligible for 6 FTE years of lifetime Pell eligibility and a control group with 9 FTE years of lifetime Pell eligibility. Differences between treatment and control students in enrollment, financial, and academic outcomes could then be attributed to reduced lifetime Pell eligibility. However, in the absence of random assignment, I use a student fixed effects approach to estimate causal effects of the policy change.

This approach uses the same logic inherent in difference-in-differences empirical strategies. In this instance, the first difference relates to changes in students' behavior and outcomes before and after the policy change, and the second relates to differences in behavior and outcomes between students who were or were not immediately notified of the policy change. Including student fixed effects helps to reduce the potential for biased causal estimates by controlling for student characteristics that do not vary over time. My empirical strategy cannot completely eliminate the potential for selection bias: students who used 5 years' worth of Pell at the time of the policy change may differ along unobservable characteristics as compared to students who eventually used at least 5 years of Pell, just not by spring 2012. To the extent that this is

the case, I use a series of robustness checks to complement my main results and to help alleviate concerns around potential selection bias.

My preferred analytic sample includes first-time-in-college students in entering undergraduate cohorts from 2005 to 2008. Only students in these three cohorts met the criteria of receiving at least 5 FTE years of Pell by spring 2012, the semester prior to implementation of the policy change. Student financial aid records were only available from 2005 on, which prohibits me from looking at additional student entry cohorts. To see whether changes to lifetime Pell eligibility impacted enrollment intensity and other financial and academic outcomes, I use the following student fixed effects model,

$$Y_{it} = \beta T_{it} + \phi_i + \chi_y + \epsilon_{it} \quad (1)$$

where Y is a series of outcome variables for student i in term t including full-time enrollment, part-time enrollment, any enrollment, credits attempted and earned, cumulative GPA, Pell Grant aid, loans, and quarterly earnings. T represents an interaction of treatment and post period indicators for student i in term t. Students are considered treated if they accumulated 5 or more full-time equivalent (FTE) years of cumulative Pell Grants in a given semester. I run alternative model specifications using 2, 3, 4 and 6 years of FTE Pell to define treatment (see Appendix Tables A1a and Table 1). In this context, 5 years of FTE Pell is my preferred treatment threshold for detecting effects of lifetime Pell reduction on student enrollment behavior since these students were informed of the policy change and had time to change their enrollment behavior accordingly. Alternative model specifications using 6 FTE Pell years provide more insight into effects of immediate financial aid exhaustion on enrollment behavior whereas 2-, 3-, and 4-year thresholds may leave too much time for students to modify enrollment behavior such that effects are attributable to factors beyond the policy change reducing lifetime Pell eligibility.

The post period is any semester on or after fall 2012. ϕ represents student fixed effects, χ represents year fixed effects. β represents the causal estimate of reductions in lifetime Pell eligibility on student outcomes. I present results for a similar model that uses term instead of year fixed effects in the appendix, though results do not differ appreciably (see Appendix Table A2).

The main assumptions of the individual fixed effects models are that unobservable differences across individuals and that correlate with outcomes of interest are fixed across time. Similar to a difference-in-differences identification strategy, this model also assumes that treatment and control students' enrollment behavior would have evolved similarly had lifetime Pell eligibility not been reduced from 9 to 6 years. While the longitudinal data used for this analysis is extremely detailed, student fixed effects cannot control for all unobservable characteristics. To address this issue, I use a series of models that estimate effects of reduced lifetime Pell eligibility for placebo students

Table 1. Sample characteristics, 2005–2008 first-time-in-college entry cohorts.

	Community College Entrants			Four-Year College Entrants		
	All Students	Enrolled for 5+ Years	Received 5+ Years of Pell	All Students	Enrolled for 5+ Years	Received 5+ Years of Pell
Race/Gender						
Female	.55	.62	.65	.56	.59	.61
Asian	.14	.21	.21	.19	.24	.27
Black	.31	.25	.25	.26	.23	.26
Hispanic	.39	.37	.44	.27	.27	.34
White	.16	.16	.09	.28	.25	.13
Enrollment						
Total FTE Years Enrolled	2.82	6.13	6.35	3.82	5.95	6.07
Total Credits Attempted at Year 5		114	111		122	121
Total Credits Earned at Year 5		105	103		112	110
Cumulative GPA at Year 5		2.80	2.79		2.84	2.78
Enrolled for 5 or More Years	.19	1	1	.33	1	1
Financial Aid & Earnings						
Received Pell in Year 1	.57	.60	.92	.44	.48	.81
Total Pell FTE Years	1.69	3.70	5.68	1.92	3.09	5.52
Total Pell Grant Aid	7,463	17,040	26,858	8290	13,817	25,833
Received 5 or More Years of Pell	.08	.43	1	.11	.33	1
Total Loans	2,005	6,562	7,301	3,007	5,943	5,180
Worked While Enrolled	.74	.88	.92	.79	.89	.90
Quarterly Earnings While Enrolled	3,183	3,376	3,038	3,854	3,799	3,419
Degree & Transfer Outcomes						
Earned Associate Degree	.32	.77	.81			
Transferred to Senior College	.32	.96	.97			
Earned Bachelor's Degree	.18	.75	.78	.48	.84	.84
N	69,700	13,565	5,783	80,481	26,756	8,814

Total Pell Grant Aid and Loans are totals across all terms that an undergraduate student enrolled in. Quarterly earnings are limited to earnings during semesters in which a student enrolled at least part-time.

who never received Pell and that make use of alternative treatment thresholds and control groups. Robustness checks suggest that these assumptions are likely to hold, though caution is still warranted in the interpretation of causal findings. Results from individual fixed effects models, along with robustness checks, offer credible and policy-relevant evidence as to whether changes in lifetime Pell eligibility and the threat of financial aid loss promoted or hindered student enrollment and other academic and financial outcomes.

Results

Descriptive findings

I present descriptive statistics for entry cohorts 2005–2008 who started at community versus four-year colleges in Table 1. I further disaggregate descriptives for all students, students who enrolled for five or more years, and students who used five or more years of lifetime Pell eligibility. This enables me to discern similarities and differences in subsamples of students for whom the reduction in lifetime Pell eligibility was most likely to impact.

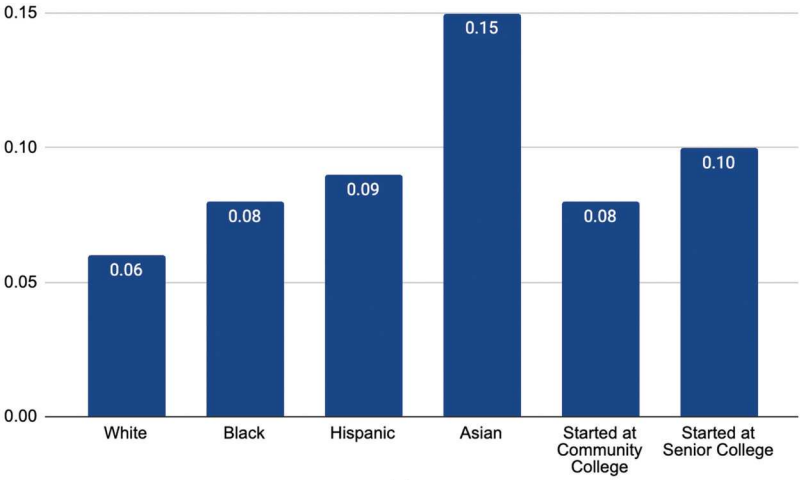
Within the university system of interest, the student body is racially diverse, and 46% of the sample started at a community college. Fifty-seven percent of community college entrants and 44% of four-year college entrants received Pell Grants within their first year of enrollment. Students on average use less than 2 years of Pell eligibility, but this is in part a result of enrollment attrition and low degree completion rates, particularly for community college students — only 18% of community college entrants and 48% of four-year college starters earned a bachelor's degree. Students who enrolled for five or more years received between 3 and 4 years of Pell Grants on average, and about one-third of these students received more than five years of Pell. More than three-quarters of students in the sample worked while enrolled, earning between $3000 and $4,000 on average per quarter. Students on average borrowed between $2,000 and $3,000 over the course of their enrollment while students who enrolled for at least 5 years accumulated upwards of $6,000 in loans, amounts that are low compared to average undergraduate debt nationally and reflect relatively low tuition. These summary statistics highlight that students in the sample rely heavily on financial aid and labor market participation to afford college.

Students who enrolled for at least 5 years or received 5 or more years of Pell earned more than 100 credits by their fifth year of enrollment, or about 80% of required credits for a baccalaureate degree. It is also worth noting that community college and four-year college entrants who received five or more years of Pell had a cumulative GPA of 2.79 and 2.78, respectively. This suggests that students most likely to be impacted

by reductions in lifetime Pell eligibility were close to the finish line at the time of the policy change and, while not in the top quartile of academic performers in terms of GPA, were still above average with respect to academic performance.

Figure 2(a–b) show Pell exhaustion rates, or the percentage of students who use 6 years of Pell eligibility, for students who ever received a Pell Grant and for students who ever received a Pell Grant and went on to earn a bachelor's degree. Overall, about 10% of community and four-year college entrants who ever received a Pell grant exhausted lifetime Pell eligibility, with students of color more likely to exhaust Pell compared to White students. These numbers are slightly underwhelming but, again, reflect low enrollment persistence and degree completion among all students who ever enrolled. When I backwards map to look at Pell exhaustion rates prior to degree completion for students who go on to earn a bachelor's degree in Figure 2(b), the significance of the policy change becomes more apparent: 28% of community college students and 15% of four-year college students exhausted Pell, and students of color were 2 to 3 times more likely to exhaust Pell compared to White students. Among bachelor's degree completers, Black, Hispanic and American Indian students were more likely to use Pell, start at a community college, graduate with excess credits, and enroll for more than 5 years, each of which contributes to higher rates of lifetime Pell exhaustion (author's calculation). Community college entrants were about twice as likely to exhaust Pell compared to students who started at a four-year college.

Disparities in the likelihood of exhausting Pell before graduating might not be an issue if these students eventually complete their degrees. Bachelor's degree completion rates among students who exhaust Pell, however, are low given how many credits students have accumulated and how close they are to graduating. As shown in Figure 2(c), 83% of students who started at a community college and exhausted Pell go on to earn a bachelor's degree compared to 85% of students who started at a four-year college. Black students are slightly less likely to earn a degree after exhausting Pell as compared to White students. These descriptive findings show that reductions in lifetime Pell eligibility were most likely to impact community college entrants and students of color and that students who exhaust Pell have relatively low degree completion rates given how close they are to graduating. Estimated effects of reduced lifetime Pell eligibility on student outcomes thus hold important implications for racial equity, as the threat of financial aid could reduce or exacerbate extant racial equity gaps in student enrollment behavior and degree completion.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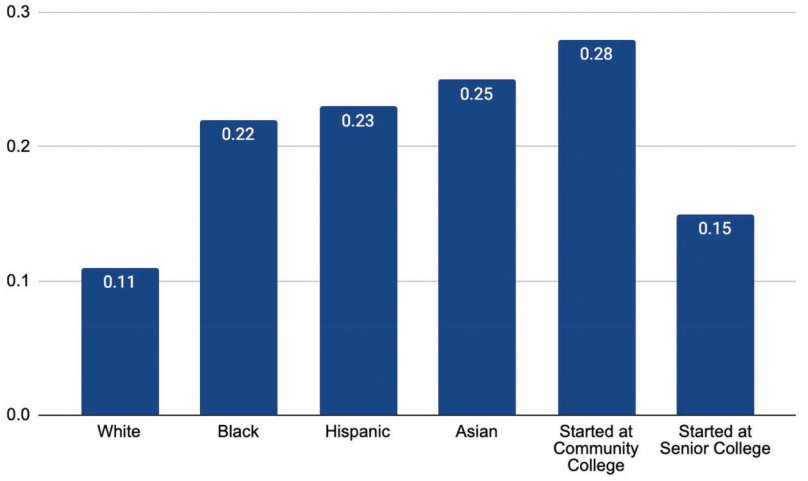
Started at Senior College

(a)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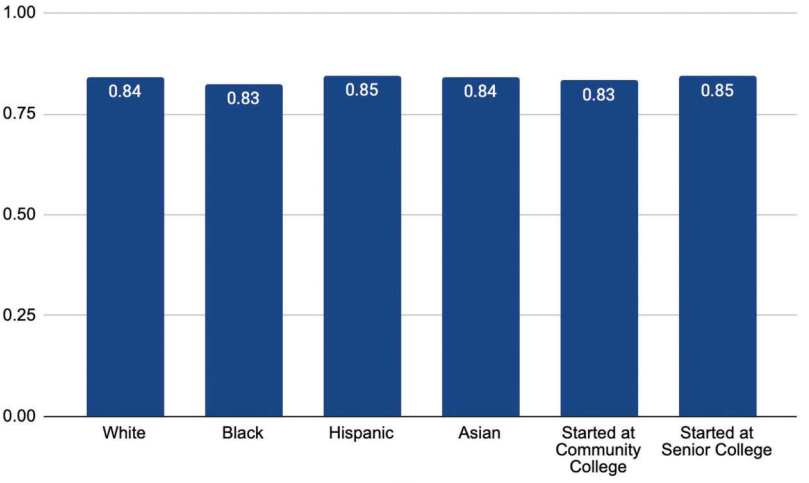
(b)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Started at Community College
Started at Senior College

(c)

Main results

I present estimated effects of reductions in lifetime Pell eligibility from 9 to 6 FTE years on students' financial aid and earnings outcomes using the fixed effects model outlined in the methodology section. All regression results in Table 2 account for student and year fixed effects, and each student is observed for the equivalent of 10 academic years. All models are limited to students who ever used 5 or more years of Pell eligibility, which helps to ensure a more like comparison between treatment and control students. I exclude observations once a student has graduated and run separate models that exclude summer and winter terms and that are limited to terms students enrolled in at least part-time. Including only fall and spring terms is useful in this instance because most students within this university system do not enroll during summer and winter terms and also because few students receive Pell during summer terms. It is also helpful to run the model after limiting to terms that students enrolled in to better understand the extent to which changes in financial aid receipt and quarterly earnings are the result of reduced Pell eligibility versus dropping or stopping out.

For each model specification, I show coefficient estimates for the interaction term between treatment and post indicators from Eq. 1, which represents the causal effect of the policy change on student outcomes. Across all models in Table 2, reductions in lifetime Pell Grant eligibility that took effect in fall 2012 are associated with declines in Pell awards between $540 and $860, with larger declines in Pell occurring in models limited to terms that students were enrolled in. I find no significant effects on loan amounts; however, when I exclude summer and winter terms and limit to terms that students enrolled in, students borrowed $164 more to account for declines in grant aid. Results also suggest that students cope with losses in financial aid receipt through increased labor market participation. Students increased quarterly earnings by roughly $500. This estimate attenuates to $174 after limiting to terms students enrolled in, but remains statistically significant at $p < .001$. These results show that reduced lifetime Pell eligibility decreased Pell Grant aid amounts and that students responded to these changes through increased borrowing and by increasing earnings in the labor market.

Using the same model specifications, I show results on students' enrollment and academic outcomes. Findings reported in Table 3 show overall declines in enrollment between 15 and 20% points, and these declines are predominantly driven by changes in full-time enrollment. Reductions in lifetime Pell eligibility

Figure 2. Pell exhaustion and Bachelor's degree completion rates.
Notes: From top to bottom, figures depict (a) Pell exhaustion rates prior to bachelor's degree completion for students who ever received Pell (b) Pell exhaustion rates for students who ever received Pell and completed a bachelor's degree and (c) the bachelor's degree completion rates among students who exhausted Pell lifetime eligibility.

Table 2. Estimated effects of reductions in lifetime Pell on financial aid and earnings.

	(1)	(2)	(3)
Pell	−538***	−861***	−591***
R2	(13)	(14)	(14)
	.086	.3223	.327
Loans	2	15	164***
R2	(9)	(14)	(17)
	.183	.335	.428
Quarterly Earnings	535***	476***	174***
R2	(24)	(32)	(33)
	.517	.517	.552
Excludes Summer/Winter Terms	No	Yes	Yes
Limited to Terms Students Enrolled In	No	No	Yes
N	14,597	14,597	14,595

All regressions include student and year fixed effects and are limited to students who ever received at least 5 FTE years of Pell. Student observations are limited to 40 terms, and N accounts for the number of unique student observations. Standard errors in parentheses. ***$p < .001$, **$p < .01$, *$p < .05$.

are also associated with modest declines in credits attempted (.35–2.25) and earned (.65–2.19) and in cumulative GPA (.09–.14). Declines in academic performance hold after limiting to students who enrolled in a given semester, and all interaction coefficient terms are statistically significant at $p < .001$. To check for heterogeneity, I run models separately for community college entrants, Black, Hispanic, and American Indian students, and students who were 25 or older at initial entry (see Appendix Table A3). Treatment effect estimates of reduced lifetime Pell eligibility on student outcomes are comparable for each of these subgroups as compared to estimates presented in Tables 2 and 3 with a few exceptions: Black, Hispanic, and American Indian students borrowed and earned more and attempted and earned fewer credits. The effects of reduced lifetime eligibility on loans and earnings are near zero and imprecise for students 25 or older at entry, as are effects on credits attempted and earned.

These results suggest that reduced lifetime Pell eligibility and the threat of financial aid loss discouraged subsequent enrollment and ultimately decreased the number of credits attempted and earned by students as well as their academic performance as captured through cumulative GPA. Detected effects on loans, quarterly earnings, and credits attempted and earned are particularly pronounced for Black, Hispanic, and American Indian students. I next present a series of robustness checks that address potential concerns around biasedness in these results.

Robustness checks and extensions

Effects on enrollment and academic performance may be upwardly biased after taking into account the fact that college students have at least some propensity to stop or drop out in any semester regardless of changes in lifetime Pell eligibility. Moreover, we might expect the propensity to stop or drop out at any point to be higher for students who exhaust more lifetime Pell eligibility relative to those who

Table 3. Estimated effects of reductions in lifetime pell on enrollment and academic outcomes.

	(1)	(2)	(3)
Full-Time Enrollment	−.147***	−.234***	−.110***
R2	(.005)	(.006)	(.007)
	.080	.333	.281
Part-Time Enrollment	−.002	.032***	.110***
R2	(.004)	(.005)	(.007)
	.101	.207	.281
Any Enrollment	−.149***	−.201***	
R2	(.005)	(.005)	
	.080	.295	
Credits Attempted	−1.59***	−2.25***	−.354***
R2	(.062)	(.071)	(.064)
	.085	.315	.245
Credits Earned	−1.55***	−2.19***	−.648***
R2	(.059)	(.070)	(.068)
	.097	.321	.255
Cumulative GPA	−.138***	−.137***	−.091***
R2	(.004)	(.006)	(.007)
	.548	.550	.534
Excludes Summer/Winter Terms	No	Yes	Yes
Limited to Terms Students Enrolled In	No	No	Yes
N	14,597	14,597	14,595

All regressions include student and year fixed effects and are limited to students who ever received at least 5 FTE years of Pell. Student observations are limited to 40 terms, and N accounts for the number of unique student observations. Standard errors in parentheses. ***$p < .001$, **$p < .01$, *$p < .05$.

exhaust less Pell lifetime eligibility independent of the policy change. To try to account for this, I run a similar set of models on a placebo group of students who never received any Pell Grants but still enrolled for at least 5 years. The post coefficient from Eq. 1 in this case represents the likelihood of re-enrollment after the policy was implemented in fall 2012. Results included in Table 4 highlight that students who were not impacted by the policy change and had yet to earn a bachelor's degree were in fact less likely to enroll after the policy change. Students in the placebo group were about 15% points less likely to enroll in semesters after the policy change, and this estimate attenuates to 4% points after excluding summer and winter terms. With regard to academic outcomes, students attempted and earned fewer credits, but effect sizes are small and lose precision after excluding summer and winter terms. After limiting to terms that students enrolled in, I find that students who never received Pell actually improved their cumulative GPA, albeit very modestly.

The magnitude of these results is substantially lower than results for students impacted by reductions in lifetime Pell eligibility. For instance, after excluding summer and winter terms, students who received 5 or more years of Pell were 20% points less likely to enroll compared to 4% points for students who never received any Pell Grants. Among students who re-enrolled after the policy change, placebo students were about 3% points more likely to enroll part-time compared to 11% points for treatment students. While students on the whole were less likely to enroll in a given semester after the policy change, this discrepancy provides evidence that reduced lifetime Pell eligibility is driving more drastic declines in the likelihood of enrollment and in academic outcomes.

Table 4. Enrollment and academic outcomes for students who never received Pell, post policy change.

	(1)	(2)	(3)
Full-Time Enrollment	−.036***	−.042***	−.026**
R2	(.006)	(.008)	(.009)
	.111	.434	.374
Part-Time Enrollment	−.113*	.003	.026**
R2	(.006)	(.008)	(.009)
	.124	.285	.374
Any Enrollment	−.149***	−.039***	
R2	(.006)	(.006)	
	.094	.382	
Credits Attempted	−1.04***	−.506***	−.177*
R2	(.072)	(.086)	(.078)
	.103	.422	.316
Credits Earned	−.925***	−.355***	−.065
R2	(.070)	(.085)	(.081)
	.116	.425	.325
Cumulative GPA	.003	.004	.013*
R2	(.004)	(.006)	(.007)
	.666	.671	.665
Excludes Summer/Winter Terms	No	Yes	Yes
Limited to Terms Students Enrolled In	No	No	Yes
N	9,515	9,515	9,515

All regressions include student and year fixed effects and are limited to students who never received Pell but enrolled for at least 5 FTE years. Student observations are limited to 40 terms, and N accounts for the number of unique student observations. Standard errors in parentheses. ***$p < .001$, **$p < .01$, *$p < .05$.

Main results presented in Tables 2 and 3 compare the effects of reduced lifetime Pell eligibility for students who used five or more years of Pell at the time of the policy change relative to students who ever used 5 years of Pell, just not when the policy change happened. In addition to previously reported results for students who never used Pell, it is useful to show how the policy change impacted treatment students relative to other control groups. Accordingly, I use the same model specified in Eq. 1, where students in the treatment group used five or more years of Pell by spring 2012, but further limit the sample to students who used 2 or more years of Pell and enrolled for at least 5 years. I then re-run this model but limit the sample to students who used 3 or more years of Pell and enrolled for at least 5 years. In doing so, I compare effects of reduced lifetime Pell eligibility on treatment students who used five or more years of Pell by spring 2012 relative to control groups of students who used at least two and then three years of Pell and enrolled for at least 5 years.

I present these results in the appendix (see Appendix Table A4). Observed effects on Pell Grant aid and loans are similar to those presented in the main results, whereas effects on quarterly earnings are negative in models limited to terms students enrolled in. While the control groups in this instance still qualified for and received Pell, they ultimately received fewer years of Pell. Discrepancies in quarterly earnings may in part reflect higher earnings while enrolled for students who are less in need of financial aid. Other estimated effects on enrollment, credits attempted and earned, and cumulative GPA are

negative, though more modest in size compared to the main results. These results again highlight that reduced lifetime Pell eligibility discouraged subsequent enrollment and hindered academic performance by way of fewer credits earned and lower cumulative GPA.

In the methodology section, I noted that preferred model specifications and main regression results presented in Tables 2 and 3 flag a student as treated if they used 5 or more FTE years of Pell by spring 2012. The US Department of Education notified students who had accrued more than 4.5 years of Pell to inform them of the policy change lowering lifetime Pell eligibility, which in turn motivated my decision to use 5 FTE years as a treatment threshold. Lower treatment thresholds are less desirable in this instance since students may not have been informed of the policy change and had more time to adapt. Still, the use of alternative treatment thresholds helps to better understand how reduced lifetime Pell eligibility impacted students who were closer or further away from the lifetime eligibility threshold at the time of the policy change.

I present additional results from student fixed effects models on the same set of financial, enrollment, and academic outcomes, but adjust the treatment specification to include students who used 2, 3, 4 or 6 or more years of Pell at the time of the policy change (see Appendix Tables A1a and Table 1). Results from these models with altered treatment groups are mostly comparable to original models that used 5 or more years of Pell receipt as a treatment group. It is worth noting that declines in Pell Grant aid and increases in loans are highest for students who had used at least 6 years of Pell at the time of the policy change, which makes sense given these students were the most immediately effected relative to other treatment thresholds. Otherwise, the takeaways across all models using alternative treatment thresholds are similar to those from the main results: students receive less Pell, increase borrowing, and increase outside earnings to offset reductions in financial aid. They are significantly less likely to enroll part- or full-time and experience declines in credits attempted and earned as well as in cumulative GPA.

Discussion & policy implications

Reducing lifetime Pell Grant eligibility adversely impacted student enrollment behavior and academic outcomes. Estimates from additional student fixed effects models further suggest that the threat of grant aid exhaustion discourages full-time enrollment and hinders academic performance. Instead of motivating students to complete degrees more quickly, as suggested in Mabel (2020), reduced financial aid eligibility lengthens time to degree and lowers academic performance.

There are several reasons why my results may differ from those found in Mabel (2020), which was the first study to explore causal effects of changes in lifetime Pell eligibility. The author used data from Georgia four-year

public universities to employ a matched difference-in-differences design that compared "High Pell" students who received at least 5 FTE years of Pell to "Low Pell" students who received less than 5 FTE years of Pell before and after the policy change. The analysis, however, was limited to four-year college students and did not include estimated effects on outside earnings. These are important limitations, especially after considering results presented throughout this paper. In my analysis, 40% of students who received at least 5 years of Pell by Fall 2012 started at a community college. These students were more likely to be students of color, experienced longer average time to degree, received more federal and state grant aid, and had lower Expected Family Contribution (EFC) compared to four-year college starters. They were also more likely to work while enrolled in college. Greater economic precarity and increased labor market participation may make re-enrolling in college that much more difficult when faced with the threat of losing financial aid eligibility.

Results from fixed effects models show that students' primary response to lower lifetime Pell eligibility and the threat of financial aid loss is to borrow and increase earnings in the labor market. This takeaway aligns with prior literature showing increased earnings to offset financial aid (Broton et al., 2016; Carruthers & Özek, 2016). It also aligns with intuition from the human capital investment framework: credit constrained students use Pell to alleviate financial constraints and to subsidize investment in higher education. When faced with the loss of grant aid, students substitute loans and earnings from employment. In this particular setting, the opportunity to increase employment hours may involve fewer transaction costs since close to 80% of students in a given semester work while enrolled in college.

The fact that students substitute increased employment for real and perceived losses in Pell Grant aid holds immediate implications for student performance and degree completion outcomes. Increased employment likely contributes to observed declines in credits attempted, credits earned, and cumulative GPA and the shift away from full- to part-time enrollment. More time spent working in the labor market may come at the expense of time spent studying or completing assignments. The threat of financial aid loss and increase in hours worked may present heightened challenges in enrolling and excelling in college for impacted students. These challenges appear to be particularly acute for students identifying as Black, Hispanic, or American Indian. Compared to the full sample of students, these students borrowed more and worked more, albeit marginally, as a result of reductions in lifetime Pell eligibility; they also attempted and earned fewer credits and experienced slightly larger declines in cumulative GPA.

Exhausting financial aid may present students with a more salient opportunity to evaluate the costs and benefits of attending college. For many students, this opportunity resulted in opting not to re-enroll and to instead

increase quarterly earnings. Credit constraints are more likely to bind in the absence of grant aid, and it may simply be unrealistic for students to complete coursework alongside an increase in hours worked. Results highlight the extent to which financial aid matters when it comes to supporting students through degree completion. The students directly impacted by reductions in lifetime Pell eligibility were within 1 to 2 semesters of completing their degree. They were also more likely to be students of color and to have started at a community college. Extended lifetime eligibility could help to support these students by reducing the need to borrow and work outside of school hours and by ensuring students have the requisite time and resources needed to complete their degrees.

Findings from this analysis hold important implications for lifetime eligibility of both federal and state financial aid programs. Most states, including New York, California, and Florida, have lower lifetime eligibility for their grant programs as compared to Pell (Mabel, 2020). This could lead to students exhausting state aid prior to Pell, which then further limits financial aid options once Pell has also been exhausted. Completing federal and state financial aid program applications can be complicated and time-consuming, and students may be unaware of the varied and many eligibility requirements that often accompany these programs. Each of these considerations underscores the need for increasing student exposure to financial aid advising throughout the duration of their college enrollment. Student interactions with financial aid counselors are limited, especially for community college students (Eichelberger et al., 2017; McKinney & Roberts, 2012). Expenditures on student services, which includes financial aid counseling, declined at the university system in this analysis in the year immediately after lifetime Pell eligibility was reduced. Institutional resources devoted to financial aid advising can help to ensure students know all of their options when it comes to paying for college through degree completion.

The pretense for cutting Pell lifetime eligibility from 9 to 6 FTE years arose from budgetary concerns rather than any evidence suggesting that shorter grant eligibility could improve student outcomes. Findings from Mabel (2020) suggest shorter Pell lifetime eligibility may act as an incentive for students to graduate sooner. In contrast, I find that reductions in lifetime Pell eligibility significantly lower student enrollment intensity and academic performance. Community college entrants and students of color were most likely to be impacted by the policy change. Students who exhausted lifetime financial aid eligibility offset declines in grant aid through increased borrowing and labor market participation. These results beg the question of whether there might be non-threatening financial aid incentives for students to graduate sooner as well as how state and federal financial aid policies might better serve community college entrants and historically underrepresented student groups through degree completion.

Policymakers might consider extending lifetime Pell eligibility for community college entrants and/or allowing students to roll over unused eligibility in the pursuit of further education. States and institutions might also consider additional grants or scholarships for students who are close to completing their degree as well as maintaining affordable tuition rates. The Pell Grant will continue to play a critical role in enabling students to enroll and persist in college. Extending lifetime Pell eligibility limits might offer students more certainty in how they will afford college through degree completion while also recognizing that the lack of timely degree completion on the part of many students stems more from structural issues related to college access than student ability or motivation.

Note

1. I use the term "four-year" and "senior college" students interchangeably. Both refer to students who initially enrolled at a bachelor's degree-granting university.

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Data availability statement

Per data usage agreements with the university system and state department of labor that helped to facilitate this project, I am unable to share or deposit data with *JHE*.

References

Bailey, T., Jaggars, S., & Jenkins, D. 2015. *Redesigning America's community colleges: A clearer path to student success.* Harvard University Press.

Barrow, L., Richburg-Hayes, L., Rouse, C. E., & Brock, T. (2014). Paying for performance: The education impacts of a community college scholarship program for low-income adults. *Journal of Labor Economics*, *32*(3), 563–599. https://doi.org/10.1086/675229

Baum, S. (2015). The federal Pell grant program and reauthorization of the higher education act. *Journal of Student Financial Aid*, *45*(3), 4. https://doi.org/10.55504/0884-9153.1587

Becker, G. S. (2009). *Human capital: A theoretical and empirical analysis, with special reference to education* (3rd ed.). University of Chicago Press.

Bettinger, E. (2004). How financial aid affects persistence. In C. Hoxby (Ed.), *College choices: The economics of where to go, when to go, and how to pay for it* (pp. 207–238). University of Chicago Press.

Bettinger, E., Gurantz, O., Kawano, L., Sacerdote, B., & Stevens, M. (2019). The long-run impacts of financial aid: Evidence from California's Cal Grant. *American Economic Journal: Economic Policy*, *11*(1), 64–94. https://doi.org/10.1257/pol.20170466

Broton, K. M., Goldrick-Rab, S., & Benson, J. (2016). Working for college: The causal impacts of financial grants on undergraduate employment. *Educational Evaluation and Policy Analysis*, *38*(3), 477–494. https://doi.org/10.3102/0162373716638440

Carruthers, C. K., & Özek, U. (2016). Losing HOPE: Financial aid and the line between college and work. *Economics of Education Review*, *53*, 1–15. https://doi.org/10.1016/j.econedurev.2016.03.014

Castleman, B. L., & Long, B. T. (2016). Looking beyond enrollment: The causal effect of need-based grants on college access, persistence, and graduation. *Journal of Labor Economics*, *34*(4), 1023–1073. https://doi.org/10.1086/686643

Dawson, R. F., Kearney, M. S., & Sullivan, J. X. (2020). *Comprehensive approaches to increasing student completion in higher education: A survey of the landscape (no. w28046)*. National Bureau of Economic Research.

DeBaun, B. (2022). *Class of 2022 FAFSA completions rebound*. National College Attainment Network.

Delisle, J. (2021). What better data reveal about pell grants and college prices. *The Urban Institute*. https://www.urban.org/urban-wire/what-better-data-reveal-about-pell-grants-and-college-prices

Denning, J. T. (2017). College on the cheap: Consequences of community college tuition reductions. *American Economic Journal: Economic Policy*, *9*(2), 155–188. https://doi.org/10.1257/pol.20150374

Denning, J. T., Marx, B. M., & Turner, L. J. (2019). ProPelled: The effects of grants on graduation, earnings, and welfare. *American Economic Journal: Applied Economics*, *11*(3), 193–224. https://doi.org/10.1257/app.20180100

Dynarski, S., Page, L., & Scott-Clayton, J. (2023). College costs, financial aid, and student decisions. In E. Hanushek, S. Machin, & W. Ludger (Eds.), *Handbook of the economics of education* (Vol. 7, pp. 227–285). Elsevier.

Eichelberger, B., Mattioli, H., & Foxhoven, R. (2017). Uncovering barriers to financial capability: Underrepresented students' access to financial resources. *Journal of Student Financial Aid*, *47*(3), 5. https://doi.org/10.55504/0884-9153.1634

Eng, A., & Matsudaira, J. (2021). Pell grants and Student success: Evidence from the universe of federal aid recipients. *Journal of Labor Economics*, *39*(S2), S413–S454. https://doi.org/10.1086/712556

Hanson, M. (2021). Average cost of college and tuition. *Education Data Initiative*. https://educationdata.org/average-cost-of-college

Hanson, M. (2024). *Pell grant statistics*. Education Data Initiative. https://educationdata.org/pell-grant-statistics

Leuven, E., Oosterbeek, H., & Van der Klaauw, B. (2010). The effect of financial rewards on students' achievement: Evidence from a randomized experiment. *Journal of the European Economic Association*, *8*(6), 1243–1265. https://doi.org/10.1162/jeea_a_00024

Liu, V. Y. T. (2020). Is school out for the summer? The impact of year-round pell grants on academic and employment outcomes of community college students. *Education Finance and Policy*, *15*(2), 241–269. https://doi.org/10.1162/edfp_a_00277

Mabel, Z. (2020). Aiding or dissuading? The effects of reducing lifetime eligibility limits for need-based aid on bachelor's degree attainment and time to completion. *Research in Higher Education*, *61*(8), 966–1001. https://doi.org/10.1007/s11162-020-09600-0

Mabel, Z., & Britton, T. A. (2018). Leaving late: Understanding the extent and predictors of college late departure. *Social Science Research*, *69*, 34–51.

Matsudaira, J. D. (2017). *Not so simple? Financial aid simplification and the impact of pell grants on college enrollment*. New York Federal Reserve Working Paper.

McKinney, L., & Roberts, T. (2012). The role of community college financial aid counselors in helping students understand and utilize financial aid. *Community College Journal of Research and Practice*, *36*(10), 761–774. https://doi.org/10.1080/10668926.2011.585112

Park, R. S. E., & Scott-Clayton, J. (2018). The impact of Pell Grant eligibility on community college students' financial aid packages, labor supply, and academic outcomes. *Educational Evaluation and Policy Analysis*, *40*(4), 557–585. https://doi.org/10.3102/0162373718783868

Rothstein, J., & Rouse, C. E. (2011). Constrained after college: Student loans and early-career occupational choices. *Journal of Public Economics*, *95*(1–2), 149–163. https://doi.org/10.1016/j.jpubeco.2010.09.015

Schudde, L., & Scott-Clayton, J. (2016). Pell grants as performance-based scholarships? An examination of satisfactory academic progress requirements in the nation's largest need-based aid program. *Research in Higher Education*, *57*(8), 943–967. https://doi.org/10.1007/s11162-016-9413-3

Scott-Clayton, J. (2011). On money and motivation a quasi-experimental analysis of financial incentives for college achievement. *Journal of Human Resources*, *46*(3), 614–646. https://doi.org/10.1353/jhr.2011.0013

Scott-Clayton, J., & Zafar, B. (2019). Financial aid, debt management, and socioeconomic outcomes: Post-college effects of merit-based aid. *Journal of Public Economics*, *170*, 68–82. https://doi.org/10.1016/j.jpubeco.2019.01.006

US Department of Education. 2015. *Pell Grant lifetime eligibility – final audit report*. https://www2.ed.gov/about/offices/list/oig/auditreports/fy2015/a06o0002.pdf

Appendix

Table A1a. Estimated effects of reductions in lifetime pell on student outcomes using alternative treatment indicators.

	Treatment = 2 years of Pell			Treatment = 3 years of Pell		
	(1)	(2)	(3)	(1)	(2)	(3)
Pell	−487***	−965***	−941***	−512***	−983***	−741***
	(5)	(9)	(14)	(6)	(13)	(12)
Loan	−11**	−31***	158***	−12**	−36***	151***
	(4)	(6)	(13)	(3)	(7)	(12)
Quarterly Earnings	1,005***	935***	447***	927***	873***	422***
	(15)	(21)	(30)	(15)	(21)	(27)
Full-Time Enrollment	−.144***	−.296***	−.204***	−.164***	−.335***	−.194***
	(.002)	(.003)	(.006)	(.002)	(.004)	(.005)
Part-Time Enrollment	−.021***	.004	.204***	−.022***	.020***	.194***
	(.002)	(.003)	(.006)	(.002)	(.007)	(.005)
Any Enrollment	−.165***	−.292***	−1.81***	−.187***	−.315***	−1.38***
	(.002)	(.004)	(.051)	(.003)	(.004)	(.049)
Credits Attempted	−1.86***	−3.67***	−2.08***	−1.97***	−3.79***	−1.74***
	(.030)	(.041)	(.054)	(.029)	(.044)	(.051)
Credits Earned	−1.73***	−3.41***	−.156***	−1.85***	−3.55***	−.183***
	(.024)	(.038)	(.007)	(.027)	(.042)	(.007)
Cumulative GPA	−.143***	−.136***		−.203***	−.198***	
	(.004)	(.005)		(.003)	(.005)	
Excludes Summer/Winter Terms	No	Yes	Yes	No	Yes	Yes
Limited to Terms Students Enrolled In	No	No	Yes	No	No	Yes
N	60,017	60,017	60,017	43,439	43,439	43,439

Coefficients represent the interaction term from Eq. 1, except that treatment is now defined by whether students used 2 or 3 or more years of Pell by spring 2012. All regressions include student and year fixed effects and are limited to students who ever received either at least 2 or 3 FTE years of Pell. Student observations are limited to 40 terms, and N represents the number of unique student observations. Standard errors are in parentheses. ***$p < .001$, **$p < .01$, *$p < .05$.

Table A1b. Estimated Effects of Reductions in Lifetime Pell on Student Outcomes Using Alternative Treatment Indicators.

	Treatment = 4 years of Pell			Treatment = 6 years of Pell		
	(1)	(2)	(3)	(1)	(2)	(3)
Pell	−485***	−865***	−552***	−875***	−1,471***	−1,338***
	(8)	(9)	(11)	(35)	(34)	(30)
Loan	−3	−12	132***	17	87	333***
	(5)	(8)	(12)	(33)	(48)	(52)
Quarterly Earnings	741***	691***	297***	572***	441***	105
	(17)	(23)	(27)	(57)	(78)	(76)
Full-Time Enrollment	−.159***	−.288***	−.145***	−.151***	−.259***	−.133***
	(.003)	(.004)	(.005)	(.014)	(.017)	(.017)
Part-Time Enrollment	−.003	.040***	.145***	−.010	.039***	.133***
	(.002)	(.003)	(.005)	(.012)	(.015)	(.017)
Any Enrollment	−.161***	−.248***		−.161***	−.220***	
	(.003)	(.004)		(.014)	(.011)	
Credits Attempted	−1.75***	−2.93***	−.763***	−1.69***	−2.49***	−.429***
	(.038)	(.050)	(.049)	(.167)	(.178)	(.160)
Credits Earned	−1.66***	−2.75***	−1.07***	−1.68***	−2.49***	−.762***
	(.036)	(.049)	(.052)	(.161)	(.178)	(.169)
Cumulative GPA	−.174***	−.171***	−.138***	−.141***	−.141***	−.093***
	(.003)	(.005)	(.006)	(.010)	(.014)	(.015)
Excludes Summer/Winter Terms	No	Yes	Yes	No	Yes	Yes
Limited to Terms Students Enrolled In	No	No	Yes	No	No	Yes
Student by Term Observations	30,118	30,118	30,118	3,650	3,650	3,650

Coefficients represent the interaction term from Eq. 1, except that treatment is now defined by whether students used 4 or 6 or more years of Pell by spring 2012. All regressions include student and year fixed effects and are limited to students who ever received either at least 4 or 6 FTE years of Pell. Student observations are limited to 40 terms, and N represents the number of unique student observations. Standard errors are in parentheses. ***$p < .001$, **$p < .01$, *$p < .05$.

Table A2. Estimated Effects of Reductions in Lifetime Pell on Student Outcomes Using Student and Term Fixed Effects.

	(1)	(2)	(3)
Pell	−493***	−860***	−583***
	(9)	(14)	(13)
Loan	−1	20	171***
	(9)	(14)	(17)
Quarterly Earnings	554***	503***	210***
	(24)	(32)	(33)
Full-Time Enrollment	−.129***	−.236***	−.111***
	(.004)	(.006)	(.007)
Part-Time Enrollment	−.018***	.033***	.111***
	(.004)	(.005)	(.007)
Any Enrollment	−.147***	−.203***	
	(.004)	(.005)	
Credits Attempted	−1.43***	−2.27***	−.356***
	(.043)	(.071)	(.064)
Credits Earned	−1.40***	−2.20***	−.639**
	(.043)	(.070)	(.068)
Cumulative GPA	−.137***	−.136***	−.089***
	(.004)	(.006)	(.007)
Excludes Summer/Winter Terms	No	Yes	Yes
Limited to Terms Students Enrolled In	No	No	Yes
N	14,648	14,648	14,648

Coefficients represent the treatment term from a modified version of Eq. 1 that uses term instead of year fixed effects and omits post and interaction terms. All regressions are limited to students who ever received at least 5 FTE years of Pell. Student observations are limited to 40 terms, and N represents the number of unique student observations. Standard errors are in parentheses. ***$p < .001$, **$p < .01$, *$p < .05$.

Table A3. Estimated Effects of Lifetime Pell on Student Outcomes, by Student Subgroups.

	Community College Entrants			Black, Hispanic, American Indian			>25 at Entry		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Pell	−531***	−914***	−670***	−549***	−872***	−598***	−527***	−897***	−700***
	(20)	(23)	(21)	(18)	(20)	(19)	(53)	(62)	(57)
Loans	11	37	197***	18	42*	193***	−279***	−421***	−69
	(16)	(25)	(28)	(13)	(20)	(23)	(69)	(100)	(110)
Quarterly Earnings	363***	325***	147***	585***	546***	198***	−6	−129	−38
	(38)	(50)	(53)	(35)	(47)	(49)	(118)	(162)	(186)
Full-Time Enrollment	−.139***	−.253***	−.146***	−.152***	−.241***	−.117***	−.120***	−.209***	−.123***
	(.008)	(.010)	(.011)	(.007)	(.009)	(.009)	(.021)	(.029)	(.031)
Part-Time Enrollment	.012	.062***	.146***	.004	.037***	.117***	−0.013	.014	.123***
	(.007)	(.009)	(.011)	(.006)	(.008)	(.009)	(.019)	(.026)	(.031)
Any Enrollment	−.128***	−.192***		−.148***	−.203***		−.133***	−.195***	
	(.008)	(.008)		(.007)	(.007)		(.022)	(.022)	
Credits Attempted	−1.29***	−2.05***	−.328***	−1.63***	−2.31***	−.444***	−1.03***	−1.42***	.346
	(.096)	(.111)	(.102)	(.087)	(.100)	(.090)	(.242)	(.296)	(.271)
Credits Earned	−1.24***	−1.24***	−.525***	−1.59***	−2.24***	−.718***	−.923***	−1.23***	.365)
	(.092)	(.290)	(.106)	(.084)	(.098)	(.095)	(.234)	(.290)	(.280)
Cumulative GPA	−.104***	−.064***	−.061***	−.143***	−.142***	−.101***	−.061***	−.064***	−.045
	(.007)	(.022)	(.012)	(.006)	(.008)	(.010)	(.016)	(.022)	(.026)
Excludes Summer/Winter Terms	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Limited to Terms Students Enrolled In	No	No	Yes	No	No	Yes	No	No	Yes
N	5,783	5,783	5,783	7,229	7,229	7,229	737	737	737

Coefficients represent the interaction term from Eq. 1, and standard errors are in parentheses. All regressions include student and year fixed effects and are limited to students who ever received at least 5 FTE years of Pell as well as by specified student subgroups. Student observations are limited to 40 terms, and N represents the number of unique student observations. ***$p < .001$, **$p < .01$, *$p < .05$.

Table A4. Estimated Effects of Reductions in Lifetime Pell on Student Outcomes Using Alternative Control Groups.

	Control Group = 2 years of Pell			Control Group = 3 years of Pell		
	(1)	(2)	(3)	(1)	(2)	(3)
Pell	−462***	−715***	−531***	−485***	−753***	−502***
	(10)	(11)	(12)	(11)	(12)	(13)
Loan	66***	126***	207***	8	28*	170***
	(8)	(12)	(13)	(9)	(13)	(15)
Quarterly Earnings	−10	−42	−164***	128***	79**	−151***
	(21)	(28)	(30)	(23)	(30)	(31)
Full-Time Enrollment	−.121***	−.194***	−.083***	−.127***	−.193***	−.083***
	(.004)	(.005)	(.006)	(.005)	(.006)	(.006)
Part-Time Enrollment	.022***	.076	.083***	−.005	.021***	.083***
	(.004)	(.005)	(.006)	(.004)	(.005)	(.006)
Any Enrollment	−.098***	−.117***		−.133***	−.172***	
	(.004)	(.004)		(.005)	(.004)	
Credits Attempted	−1.09***	−1.42***	.050	−1.36***	−1.78***	−.084
	(.052)	(.056)	(.056)	(.056)	(.063)	(.058)
Credits Earned	−1.00***	−1.27***	−.189**	−1.32***	−1.71***	−.289***
	(.050)	(.056)	(.059)	(.054)	(.062)	(.006)
Cumulative GPA	−.003	−.000	−.040***	−.087***	−.087***	−.051***
	(.0030)	(.004)	(.005)	(.004)	(.005)	(.006)
Excludes Summer/Winter Terms	No	Yes	Yes	No	Yes	Yes
Limited to Terms Students Enrolled In	No	No	Yes	No	No	Yes
N	60,017	60,017	60,017	24,622	24,622	24,622

Coefficients represent the interaction term from Eq. 1, where the treatment indicator is 1 for students with 5 or more years of Pell by spring 2012 and 0 otherwise. All regressions include student and year fixed effects and are limited to students who ever received either at least 2 or 3 FTE years of Pell. Student observations are limited to 40 terms, and N represents the number of unique student observations. Standard errors are in parentheses. ***$p < .001$, **$p < .01$, *$p < .05$.