IS SCHOOL OUT FOR THE SUMMER? THE IMPACT OF YEAR-ROUND PELL GRANTS ON ACADEMIC AND EMPLOYMENT OUTCOMES OF COMMUNITY COLLEGE STUDENTS

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Abstract

Despite having been the largest source of financial aid to low-income college students in the United States, the traditional Pell Grant had one major limitation: If students enrolled in two semesters full-time, they would not have had any tuition support for the summer term of the same academic year. The year-round Pell (YRP) was implemented in the academic years 2009–10 and 2010–11 to provide a second Pell Grant to students who enrolled in more than twenty-four credits prior to the third semester and in at least six credits during the summer term. Using a state administrative dataset from a community college system, this paper uses a difference-in-differences approach to examine the credit, credential completion, and labor market outcomes resulting from the YRP. The study finds that for each $1,000 of additional YRP grant funding, summer enrollment increases by 28 percentage points, diploma completion rates increase by 1.6 percentage points, and third-year earnings from college entry increase by $200. For YRP-eligible students who started in a short-term program, the gains are a 2 percentage point higher certificate attainment rate, 3.6 percentage point increase in associate degree completion, and no effect on four-year transfer rates.

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1. INTRODUCTION

The Pell Grant is the largest source of federal financial aid for low-income college students, allocating over $28 billion in the 2015–16 academic year to 7.6 million students, most of whom had annual family incomes below $50,000 (Dynarski and Scott-Clayton 2013). By lowering the cost of education for low-income students, the Pell Grant program aims to encourage enrollment and completion among those who face the highest financial obstacles. Although the traditional Pell Grant covered a substantial proportion of community college tuition, the maximum financial aid a student could receive amounted to only two semesters' worth of full-time credits, without any support for summer courses.

In light of this limitation, the year-round Pell (YRP) was implemented in academic years 2009–10 and 2010–11, and allowed eligible students during this period to receive a second Pell Grant in the same academic year to cover summer tuition. To ensure the grant was used toward degree acceleration, students were only eligible for the second award if they attended college full-time for two terms, and subsequently enrolled in at least six credits in the last term of the same academic year. Although the YRP program ended in 2011, Congress reinstated it in May 2017, and summer Pell Grants became available again beginning 1 July 2017.

Given the potential benefits of the YRP and the limited literature on this topic, this study examines the causal effects of the YRP. A major contribution of this paper is that it is the first to examine YRP outcomes beyond the first summer, and it investigates results such as short-term credit accumulation, credential attainment, transfer rate, financial aid, and employment outcomes during college in subsequent terms. Secondly, this paper contributes to the body of literature on grant aid by examining the potential effect of grant aid on infra-marginal students—students whose decisions to enroll are not affected by additional grants (Denning 2019). Denning argues that financial aid may increase completion through initial enrollment (extensive effect) or through improving outcomes of students whose initial enrollment is not influenced by financial aid (intensive effect). Most studies examining the effect of financial aid estimate the combined extensive and intensive marginal effects. This combined effect may be dominated by either effect, and it is therefore important to look at these effects separately. By studying Pell recipients who have successfully applied for and received financial aid, the results from this study estimate the intensive effect of aid. Finally, this paper examines the effect of an academic incentive in addition to a need-based grant, because students are incentivized to accumulate credits to be eligible for the YRP.

Using administrative data on community college students in one anonymous state, I utilize a difference-in-differences (DID) approach to compare the difference in the outcomes of full-time and part-time Pell-eligible students enrolling before and after the YRP implementation. Although both the full-time and part-time students were eligible for the traditional Pell Grant, only the full-time students—that is, those who earned at least twenty-four credits in the first two terms prior to the summer term—were eligible for the YRP once the YRP was implemented.

I find that YRP eligibility increases Pell Grant disbursement in the summer by $249 per student; improves the probability of summer enrollment by 7 percentage points; and leads to a 0.4 percentage point increase in the diploma completion rate. However, YRP-eligible students are 1.8 percentage points less likely to transfer to a four-year

institution. In anticipation of summer enrollment, YRP eligible students are also 3 percentage points more likely to work in the fall semester of the first year of enrollment, earning on average about $366 more than non-YRP-eligible students in the first year. The earnings estimates show a $292 and $500 earnings gain per student in their second and third years from college entry, respectively. The impact on students who started in a short-term program is more positive for all outcomes. They received $326 more in summer Pell monies and have a 0.7 to 0.9 percentage point higher completion rate in certificate, diploma, and associate degree. Event study analysis shows the parallel trend assumption holds up with academic outcomes, but the recession effect on post-college earning outcomes may still contain some biases. The DID estimates are possibly overstated but they point us to the direction of a positive effect for the YRP. Subgroup analysis of the data shows higher short-term credential completion rates for women; higher associate degree graduation rates for men; and larger academic and earning gains for older versus younger students.

The next section describes the YRP program. Section 3 discusses the literature pertaining to the traditional Pell program and the YRP. Section 4 describes the data. Section 5 lays out the DID model and evaluates the underlying assumptions. Section 6 presents the results and robustness checks. Conclusions for this study follow in section 7.

2. THE YEAR-ROUND PELL GRANT PROGRAM

The traditional Pell Grant is a need-based grant, and the maximum disbursement is for twenty-four credits in one academic year (fall, spring, and summer terms). That means that students exhaust all of the grant with two semesters of full-time enrollment and can only apply the Pell Grant in the summer if they have enrolled in fewer than twenty-four credits in that academic year.

The Bush administration signed the YRP into law under the Higher Education Opportunity Act in August 2008. Because the final YRP regulations were not published until October 2009, most colleges did not implement the policy until summer 2010 (USDOE 2011). The purpose of the YRP was to lower the cost of education for low-income students and to accelerate degree completion. Therefore, students were only eligible for a second Pell Grant if they had completed at least twenty-four credits or the equivalent of their college's full-year, full-time credits requirement in the academic year prior to the YRP award term.[1] To be eligible, students also had to enroll at least half-time (six credits) in the third term of the academic year.

The YRP provided access to a second Pell Grant in the same academic year. Its disbursement was calculated in the same way as the traditional Pell Grant—by evaluating the Expected Family Contribution (EFC), student cost of attendance, and number of enrolled credits for the term. The maximum disbursement of the YRP was the same as the maximum Pell Grant disbursement for a term of full-time enrollment. An estimated 1.2 million Pell Grant recipients benefited from the YRP in academic year 2009–10 and received an additional $1,700, on average, for their second grant (Alsalam 2013). The total cost was approximately $2 billion, amounting to 6 percent of the total Pell Grant disbursements for that year.

1. Some colleges require 30 credits instead of 24 credits as the equivalent of full-time enrollment for an academic year. The state this study uses has a 24-credit per year requirement for full-time students.

The federal government eliminated the YRP effective 1 July 2011, due to a "lack of evidence" of its effectiveness and because it cost twice what had been expected (OMB 2011, p. 175; USDOE 2011). Elimination of the YRP also helped meet the $11.2 billion funding shortfall in the Pell Grant program, which had nearly doubled in cost from $18.2 billion to $35.6 billion between academic years 2008–09 and 2010–11 (USDOE 2013). After numerous legislative initiatives, Congress reinstated the YRP for fiscal year 2017 under the Omnibus Appropriation budget bill. The summer Pell Grants were available to students for the academic year 2017–18.

3. LITERATURE REVIEW

Research on the Effect of the YRP and Traditional Pell Grants

A handful of studies have examined the YRP (Katsinas et al. 2011, 2012; Bannister and Kramer 2015; Friedmann 2016), but only two studies have used causal methods. Using a single college's data and a DID model, Bannister and Kramer (2015) found the YRP, on average, increased summer enrollment by 1.5 credits per student. Using a DID approach and data from Pell Grant recipients with a $0 EFC in the California Community College system, Friedmann (2016) showed that the YRP led to an average increase of 0.4 credits in summer per enrolled student, but no change in the percentage of students earning at least six credits in the summer, an eligibility requirement for the YRP. Neither study measures outcomes beyond the first summer.

Despite the lack of YRP studies, the financial aid literature is vast and provides insights into the effect of the YRP. The empirical evidence on the Pell Grant has shown, at most, small positive impacts. Some studies have found no impact on enrollment (Hansen 1983; Kane 1995; Rubin 2011; Carruthers and Welch 2019), credit accumulation, or degree attainment (Marx and Turner 2017). A growing number of recent studies have found an enrollment increase of 3 to 6 percent per $1,000 in grant disbursement from various sources (Deming and Dynarski 2010).[2]

While most studies have examined enrollment outcomes, a few have found positive results beyond initial enrollment. Using discontinuities on the funding formula based on change in household size, Bettinger (2004) found that a $1,000 increase in Pell Grants reduced dropout rates by 4 percentage points in Ohio public universities. Examining the effect of falling short of the Satisfactory Academic Progress standard, an eligibility requirement for Pell Grant renewal, Schudde and Scott-Clayton (2016) found that persistence decreased by around 5 percentage points using a DID strategy. Using state administrative data between 2003 and 2014, Denning (2019) found that students who were twenty-four years old on 1 January were independent for financial aid purposes, and their parents' income no longer counted toward their income when calculating aid. Denning also found that the increase in financial aid due to the gain of independency status led to more borrowing, shorter time to degree, and lower employment during college.

2. Many quasi-experimental studies examined need-based grants targeting low-income students and focused mostly on traditional-age students. For example, previous studies have examined the federal Social Security benefit program (Dynarski 2003), college-based grants (Clotfelter, Hemelt, and Ladd 2018), state scholarships (Dynarski 2000, 2004; Castleman and Long 2016; Goldrick-Rab et al. 2016), national private grants (Page et al. 2019), and Pell Grants (Seftor and Turner 2002; Bettinger 2004; Alon 2011).

Several factors have been shown to cause an underestimation of the impact of the Pell Grant and are therefore potential problems for YRP studies. First, studies that use a regression discontinuity approach (Marx and Turner 2017) focus only on the marginal students around the eligibility cutoff, excluding the higher-need students. A subset of studies that investigated older students, veterans, and students from the bottom half of the income distribution found positive gains (Seftor and Turner 2002; Alon 2011; Lovenheim and Owens 2014; Barr 2015; Denning 2019). Therefore, a DID approach may be more appropriate (Clotfelter, Hemelt, and Ladd 2018).

Second, the complexity of financial aid applications has hindered students from applying and disproportionally harms those individuals who need it the most (Kane 1994; Dynarski and Scott-Clayton 2006, 2008; Bettinger et al. 2012). The average impact of the Pell Grant is therefore lower than it otherwise would be, because it is contingent on students' participation. By including students who are already receiving financial aid, the analysis that follows in this article will be able to measure the intensive effect of the Pell Grant.

Third, some colleges reduce institutional grants in order to capture the increase in federal aid (Turner 1998; Fullerton and Metcalf 2002). Turner (2014) estimated that institutions, on average, crowd out 12 percent of Pell Grants with the capture rate lowest at public colleges and highest at private nonprofit colleges. As such, students are not receiving the full benefits of the increase. This may not be as evident in this study because community colleges have the lowest crowding-out rate, provide very little institutional aid, and have little control over their tuition prices (S. Turner 1998; Fullerton and Metcalf 2002; Cellini and Goldin 2014; L. Turner 2014).

Finally, two studies have suggested that grant aid can change borrowing patterns. In Marx and Turner's study (2017), the presence of a fixed cost of borrowing is fixed and an increased Pell Grant makes it no longer worthwhile to pay the cost of a smaller loan. Each dollar of a Pell Grant reduces loans by $1.80 and negatively affects students' degree attainment rates. In contrast, Denning (2019) found that each dollar from a Pell Grant increases borrowing by $0.60. These studies illustrate the importance of looking at—in addition to academic outcomes—student loan behavior, employment during college, and institutional responses to extra aid.

Literature on Other Potential Effects of the YRP

A key difference between the YRP and the traditional Pell Grant is that the former creates a stronger incentive for credit accumulation. The traditional Pell Grant requires that students must simply maintain a minimum 2.0 grade point average (GPA) and complete two thirds of their credits to renew their eligibility. In comparison, the YRP eligibility requirement states that individuals must enroll in at least twenty-four credits in the first two terms and enroll in at least six credits in the last term of the academic year. Studies that look at grants with zero to weak academic incentives have generally found no effect on persistence and graduation rates (Bettinger 2004; Goldrick-Rab et al. 2011; DesJardins and McCall 2014). However, many studies have found strong incentives on grades or credits which improve college outcomes (Angrist, Lang, and Oreopoulos 2009; Richburg-Hayes et al. 2009; Dynarski and Scott-Clayton 2013; Patel et al. 2013). Looking at Virginia's PROMISE scholarship, Scott-Clayton (2011a) found

only positive effects in the first three years, and not in the final year when students still received the financial aid but no longer had the academic incentive.

Another key component of the YRP program is to encourage year-round education. Some studies have found activities that increase academic momentum, such as summer enrollment or full-time enrollment in the first term, can increase academic intensity (credits earned per term) and improve completion and time-to-degree (Adelman 1999, 2006; Attewell, Heil, and Reisel 2012; Attewell and Jang 2013; Martin et al. 2013; Liu 2016). As a result, we can expect a larger cumulative effect of the YRP in comparison to the traditional Pell Grant.

Finally, the availability of YRP may alter students' working patterns during enrollment, Nationally, 70 percent of community college students work during college (Baum 2010; Scott-Clayton 2012) with an average work hour of thirty hours per week (Carnevale et al. 2015). YRP-eligible students may adjust their employment during enrollment in anticipation of the financial need and ability to work in the summer term. The literature on working while in college is inconclusive. Some studies demonstrate that working in college may hinder academic performance by taking time away from learning, social, or extracurricular activities (Tinto 1987; Stinebricker and Stinebrickner 2003; Scott-Clayton 2011b; Soliz and Long 2016). Others found zero to small positive academic gains (Stinebrickner and Stinebrickner 2003; Kalenkoski and Pabilonia 2010; Darolia 2014). The effects of working while in college differ by gender, the reasons for work, and whether students substitute study or leisure time for work. Furthermore, some studies suggested that working in college can improve future labor market outcomes, as students accumulate work experience, professional networks, and soft skills in time management, troubleshooting, and communication (Light 2001; Molitor and Leigh 2005).

The YRP may also increase students' future earnings through its positive effect on degree attainment. Most certificates can be earned within one year, and associate degrees usually take two years to complete for a full-time student (Carnevale, Jayasundara and Hanson 2013). Graduates may see earning gains as soon as the second year after entering college. After reviewing eighteen published papers, Belfield and Bailey (2011) found men who completed an associate degree earned an average of 13 percent more than men with only a high school diploma, and the wage premium is 22 percent for women.

4. DATA

Data Description

The sample in this study consists of four cohorts of first-time degree-seeking students who are Pell Grant–eligible and entered the community college system (more than fifty colleges) of an anonymous state in the fall semesters of 2006–09. Students can earn three types of credentials in this system: certificates (12 to 18 credits), diplomas (36 to 48 credits), and associate degrees (64 to 76 credits). The data include demographic characteristics, program enrollment, transcripts, financial aid, and credential information up to the summer of 2010. Additional credential data were obtained through the National Student Clearinghouse (NSC), including enrollment and degree attainment data from any public or private college through February 2012. The NSC data cover around 96

percent of the postsecondary enrollment in this state, close to 100 percent for public two-year and four-year enrollment, and up to one third of all for-profit enrollment. In addition, quarterly earnings adjusted to 2010 dollars and industry codes are available from Unemployment Insurance records between 1996 and the first quarter of 2012.

The comprehensive nature and the large sample size of this dataset make it well suited for this analysis. Outcomes are tracked for two and a half years after a student first enrolled in college. These data also enable the observation of students' credit attainment, financial aid, and employment patterns by term during the first year of enrollment. The credit and financial aid variables are generated from the college's data. Credential outcomes are a combination of two sources. The college's data have records on any two-year credentials earned in the state's two-year system. The NSC data contain information on any four-year transfer and out-of-state two-year outcomes. The earnings and employment outcomes are from the Unemployment Insurance record. The transcript data also include the first major that students declare in their first term.

The final sample of Pell Grant–eligible students contains around 49,250 individuals. With the goal of evaluating the impact of the YRP on college degree seekers, the sample is restricted to Pell Grant recipients enrolled in a community college credential program, thereby excluding individuals enrolled in enrichment or high school programs according to the program enrollment data.

Descriptive Statistics

Table 1 provides the descriptive statistics for the sample, displaying student characteristics, academic outcomes, and labor market statistics for students enrolling before and in 2009 by enrollment status in the first term. The student composition of this sample is typical of most community college systems, with a high proportion of minority, low-income, and older students. Roughly half of the student body is nonwhite. Age of enrollment varies from 18 to 50 years, with an average age of 23 years. Around 60 percent of students have a zero EFC and therefore are eligible to receive the maximum Pell Grant award. The demographic characteristics of full-time and part-time students look similar, except that full-time students are less likely to be black. Full-time students also earn more credits, have higher GPAs, and complete programs at higher rates. Compared with students enrolled prior to 2009, those who entered in 2009 are slightly older and demonstrate higher financial need. They are also slightly less likely to be employed the year prior to entering college. If employed, students in the 2009 cohort earned more than those in the cohorts entering before 2009.

YRP-eligible students are full-time students who enrolled in 2009. They are nearly 10 percentage points more likely to enroll and earn at least six credits in the summer than full-time students were in previous years. A major concern is that these students seem to have lower socioeconomic status, given their lower EFC and lower employment rate prior to college. If so, it may negatively bias the DID estimates. I test for this potential violation of the DID assumption with the event study method in the next section.

Table 2 summarizes the credits earned and Pell Grants disbursed for a proxy of YRP recipients. With the data on credit enrollment and financial aid disbursement patterns, I cannot directly observe who applied for and was granted the YRP but I am able to

Table 1. Summary Statistics of Cohorts Enrolling Between 2006 and 2009

	Enrolled Prior to 2009		Enrolled in 2009	
Variable	**Full-Time**	**Part-Time**	**Full-Time**	**Part-Time**
Observations	12,145	18,660	7,615	10,826
A. Students Characteristics				
Female, %	66	65	61	61
White, %	54	42	56	41
Black, %	32	45	31	47
Hispanic, %	4	3	5	4
Other race/ethnicity, %	10	9	8	8
Single parent, %	6	6	5	4
High school graduate, %	95	94	93	92
Disabled, %	2	2	1	1
Age at enrollment, years	23	24	25	24
Age over 19 at enrollment, %	42	47	51	53
Zero expected family contribution, %	51	56	58	69
Expected family contribution in term 1, $	1,103	876	975	664
Pell amount in term 1, $	1,878	1,600	2,323	1,972
State grant in term 1, $	483	288	717	437
Institutional grant in term 1, $	64	28	41	18
B. Academic outcomes				
GPA term 1	3.07	2.02	3.09	1.92
GPA year 1	2.88	1.92	2.90	1.83
Credits earned term 1	14	6	13	6
Credits earned year 1	25	11	26	11
Enrolled first summer, %	25	13	34	15
Credits enrolled first summer	2	1	3	1
Credits earned first summer	2	1	2	1
Earned over six credits in summer, %	12	4	20	7
Earned certificate within 2.5 years, %	3	1	4	1
Earned diploma within 2.5 years, %	2	1	3	0
Earned associate degree within 2.5 years, %	6	1	6	1
Earned any degree within 2.5 years, %	10	2	11	2
Ever enrolled in a four-year institution, %	23	15	12	7
C. Employment				
Ever employed 1 year prior to college, %	72	77	65	67
Earnings if employed 1 year prior to college, $	7,843	8,532	8,442	8,498

Notes: Table shows the averages for full-time and part-time community college entrants enrolled before and after 2009 from the state administrative data. The individuals from the sample enrolled between 2006 and 2009 and are all Pell Grant–eligible. Full-time is defined as having at least 12 credits enrolled in the fall. Student characteristics are measure in the first term of enrollment. Earnings are averaged across all quarters in the year prior to college. All dollars are adjusted to 2010.

identify eventual recipients. This proxy includes students who enrolled in 2009, accumulated at least twenty-four credits in the fall and spring semesters, and received Pell Grants in the summer. About 26 percent of the full-time, first-term students who started in 2009 received the YRP under this definition, and 40 percent of those who attempted at least twenty-four credits before the summer succeeded. The main analysis will focus on estimating the effect of the YRP eligibility ("intent to treat"), having at least twelve credits in the first-term, instead of the eventual YRP recipients ("treatment

Table 2. Credits Earned and Pell Amount of Year-Round Pell (YRP) Recipients

	Credits Earned/Pell Amount
Observations	1,965
Credits earned term 1	13.5
Credits earned term 2	13.9
Credits earned term 3	7.7
Credits enrolled first summer	8.2
Earned over 6 credits in summer	63%
Pell amount in term 1	$2,338
Pell amount in term 2	$2,345
Pell amount in term 3	$1,540

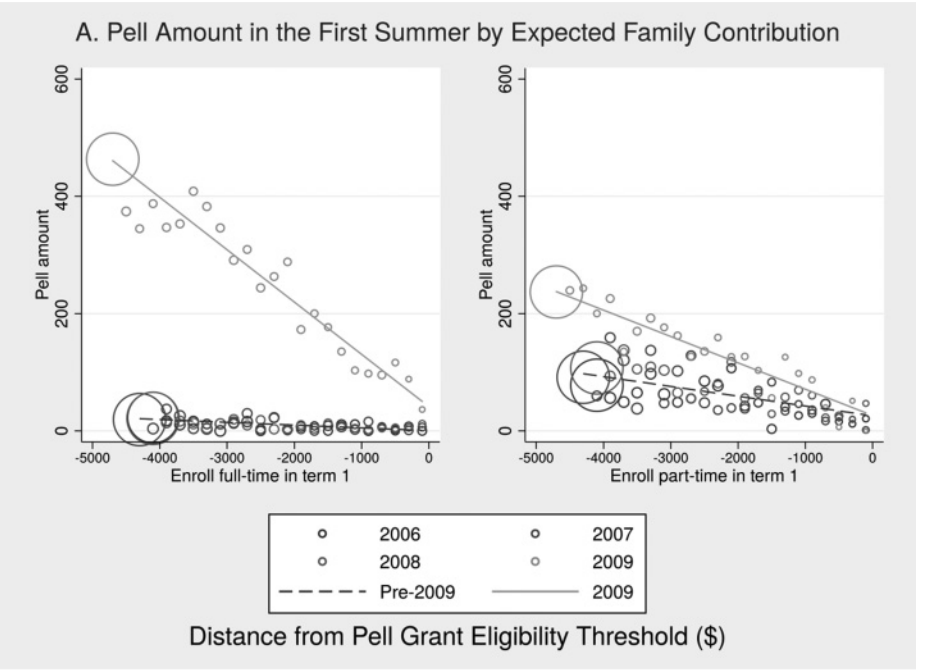
Notes: Table shows the averages for YRP recipients. The proxy for YRP recipients is first-time enrolled in 2009, having at least 24 credits enrolled in the fall and spring in total, and receiving positive amount of Pell grant in the summer. Term 1 corresponds to the fall semester.

on the treated"). This choice is motivated by two reasons. First, the former estimates are more realistic and relevant to policy and program planning because they measure the effect of a program offer and take into account the take-up rate of the program. Second, focusing only on the YRP recipients would underestimate the effect of credit attainment on students who were motivated to accumulate more credits but did not end up receiving the YRP.

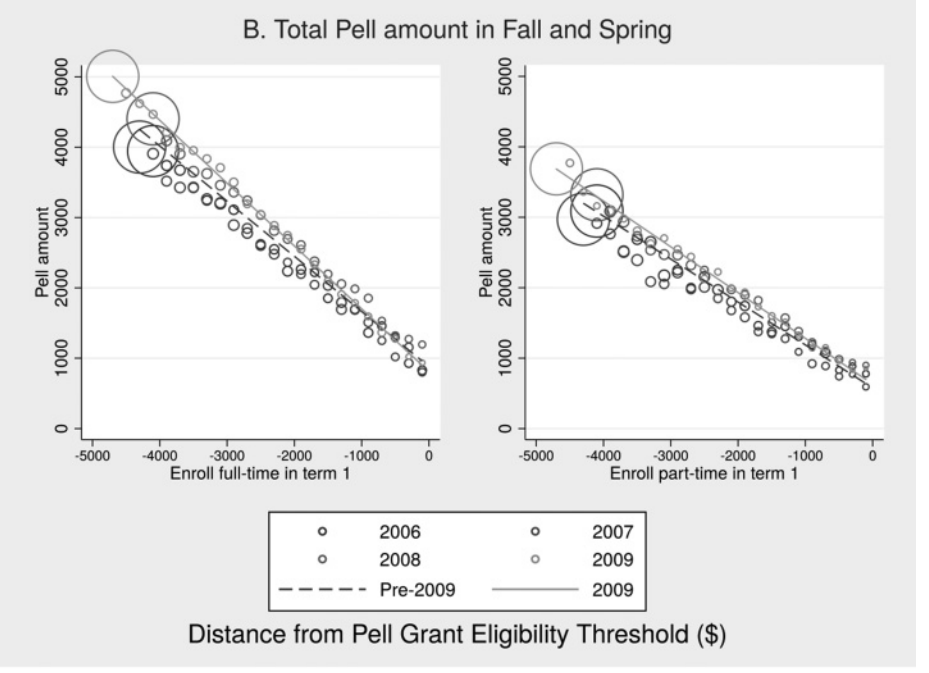
On average, eventual YRP recipients earned roughly fourteen credits in both the fall and spring semesters, which is more than the full-time requirement of twelve credits.[3] The total credits earned in the summer ranged between three and twenty with a mean of nearly eight. Sixty-three percent of the YRP recipients earned over six credits in the summer. Finally, table 2 indicates the average YRP disbursement is substantial: over $1,500, or 66 percent of the amount received in the fall or spring semesters. The YRP is enough to cover more than twelve credits in this system as the average annual tuition and fees for a full-time in-state student (twenty-four credits) enrolled in this community college system is around $2,000 in 2009 and well below the national average of $2,920.

To better understand the distribution of the Pell Grant awards, figure 1 summarizes the Pell Grant disbursements by enrollment status, year enrolled, and EFC. Panel A in figure 1 shows evidence that full-time students who enrolled prior to 2009 exhausted their Pell Grants before the first summer. After implementation of the policy, full-time students who enrolled in 2009 were able to receive a second Pell Grant for the summer. Additionally, the maximum Pell was increased from $4,050 in 2006–07 to $4,320 in 2007–08, to $4,731 in 2008–09, and to $5,350 in 2009–10. Panel B shows the increase in maximum Pell Grant disbursements raised the total Pell awarded by similar amounts for full-time and part-time students in the fall and spring semesters for each cohort. Yet panel A indicates that the increase is much larger in the summer for full-time students after implementation of the YRP policy in 2009.

3. YRP recipients look similar to full-time students in 2009 in terms of demographic characteristics, except they are slightly less likely to be female and tend to be older.



(a)



(b)

Notes: Samples are restricted to 2006–09 fall cohorts of students who are eligible for the Pell Grant. Each point is the mean Pell Grant number of students who fall within a bin size of $200 EFC. The distance from the Pell Grant eligibility threshold is calculated by subtracting the maximum Pell Grant amount of the corresponding year from individual's EFC.

Figure 1. Pell Amount by Expected Family Contribution (EFC)

5. ESTIMATION STRATEGY

Difference-in-Differences Model

To examine the effect of the YRP on student outcomes, this study follows previous research by using a DID strategy to compare the differences in the outcomes of full-time and part-time students who enrolled before and after the YRP implementation. The key equation is:

$$Y_i = \alpha + \gamma\, Post_i + \delta Treat_i + \beta\,(Post_i \cdot Treat_i) + \sigma X_i + \varepsilon_i, \quad (1)$$

where Y_i is the outcome of interest, such as enrollment and credits earned in the summer, completion rate, financial aid, employment rate, and earnings in subsequent terms and years.

$Post_i$ is a binary variable that equals 1 if individual i enrolls in college for the first time after the implementation of the YRP. It estimates the general cohort effect of enrolling after the summer of 2009, such as the Great Recession. $Treat_i$ equals 1 if an individual attends college full-time in the first semester. Because students must enroll in at least twenty-four credits in the fall and spring semesters to be eligible for the YRP, enrolling part-time in the first semester makes it very difficult to receive the YRP. Though students can enroll in more than a full-time credit load in the second semester, only 5 percent of the YRP recipients are part-time in their first term. To test the robustness of this YRP proxy, in the Results section I estimate the model with an alternative definition of full-time. This variable essentially also captures any systematic differences in outcomes between full-time and part-time students. $Post_i \cdot Treat_i$ is the interaction between $Post_i$ and $Treat_i$, which captures the effect of the YRP.

X_i is a vector of individual characteristics such as race/ethnicity, gender, high school graduation status, GPA, credits earned in the first term, EFC, Pell Grant disbursement in the first term, initial college fixed effect, and major fixed effects. Years of work experience and its squared term are also controls for any regression with employment outcomes.[4]

In additional to the main analysis, I also conducted a subgroup analysis of students in the sample who started in a certificate or diploma program indicated by the enrollment record. Those students were likely to have had different goals and responses to the YRP than students enrolled in an associate degree program. They faced lower credit requirements and may therefore be more incentivized by the YRP to graduate faster.

Evaluation of the DID Assumptions

The parallel trend assumption requires the control and treatment groups to have similar underlying trends in the absence of the treatment. It is important to note that the parallel trend assumption does not require any changes in policy or economic condition to have null effect on the 2009 cohort, but the effect should be similar for full-time and part-time students. I addressed two concerns that may potentially violate this

4. The calculation of years of work experience includes two parts. First, the actual number of years worked observed in the data from 1996 up to the year of the outcome. And second, an estimate of the number of years worked prior to 1996, obtained by multiplying the number of years an individual was age 18 years or older prior to 1996 by the proportion of quarters worked after 1996 but before college entry.

assumption. First, the recession beginning in December 2007 and the anticipation of the YRP may have changed the composition of the cohort enrolling in the fall of 2009. The parallel trend assumption would be violated if more low-income students enrolled or more students started as full-time after the summer of 2009 to take advantage of the YRP, particularly in light of research that has shown more students return to college during economic downturns (Hillman and Orians 2013; Charles, Hurst, and Notowidigdo 2018). Reassuringly, the percentage of full-time students remains at around 40 percent in and prior to 2009. The $Post_i$ variable captures any cohort-specific effects and will control for the overall recession effect on student composition. Controlling for first semester financial aid and academic information in all regressions also removes effects that are attributed to socioeconomic status or ability.

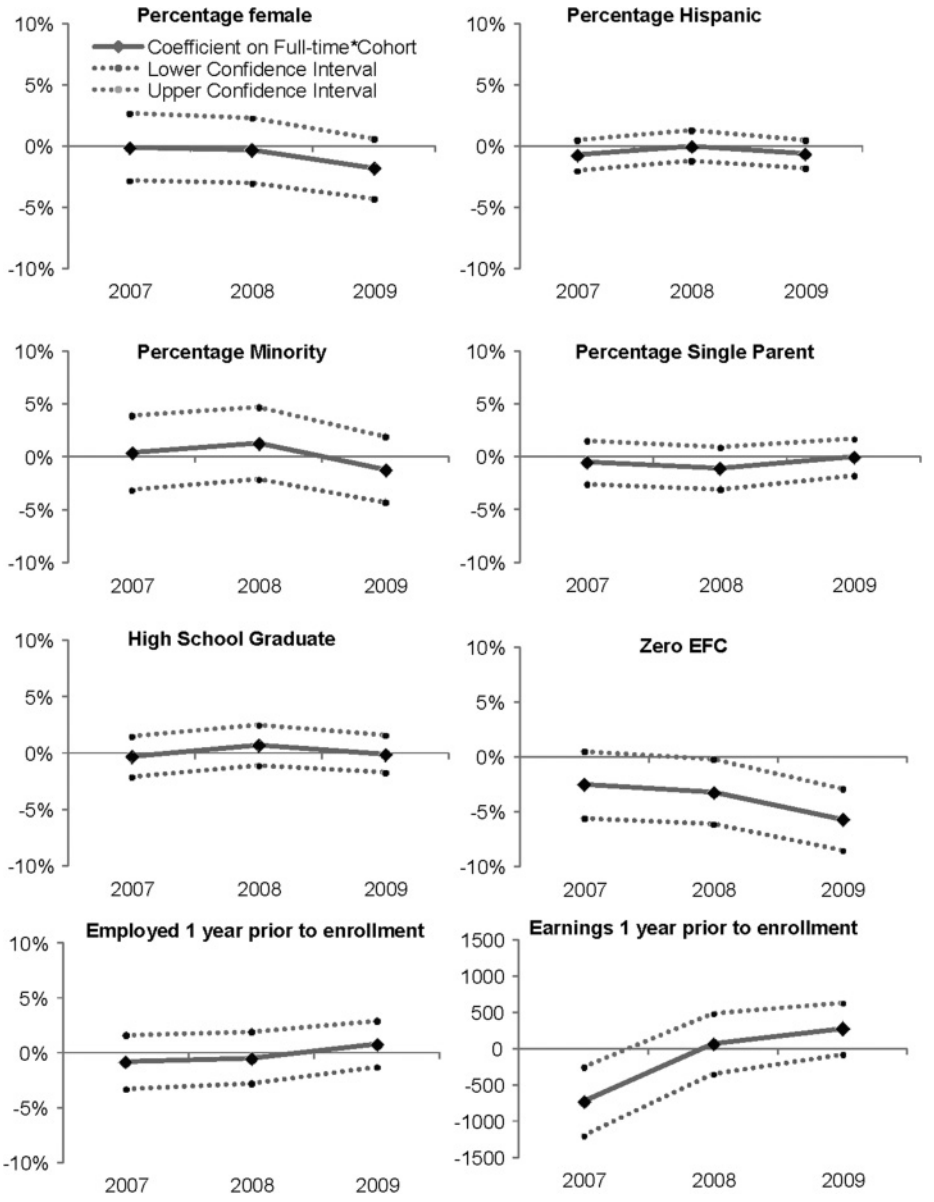
Second, the recession or the recovery from the recession may affect full-time and part-time students in different ways. For example, full-time students are likely to search for new full-time employment upon graduation whereas part-time students also have the option to stay in the same job or receive a promotion. The earnings level may be higher for graduates searching for a new position in 2012 than in 2009 as the market is just beginning to recover in 2009. This may cause the pay gap between full- and part-time students to be larger for the 2009 cohort regardless of the YRP.

Finally, there are two significant policy changes that may affect student composition. The first is the yearly increase in the maximum Pell Grant award and the second is an overall reduction in state aid across the nation after the recession. However, these policies should affect both full-time and part-time students in a similar way.

To test the parallel trend assumption, I followed the event study method, a common approach used in previous DID research (Autor 2003; Dynarski 2003). This test replaces the $Post_i$ variable in the DID regression with year-fixed effects, and the $Post_i \cdot Treat_i$ variable with an interaction term for each year. It shows the changes in student characteristics or outcomes between full-time and part-time students by year, controlling for the enrollment status, start year, and all other covariates in the DID regression. The year-fixed effect is important as it will control for any recession or maximum Pell Grant increase that affects both full-time and part-time students.

For the parallel trend assumption to hold, none of the interaction terms should be significantly different from each other when using student characteristics as dependent variables. That means the recession may have changed student composition, but it had to change both full-time and part-time students in a similar way. The event study analysis was done with all covariates as separate, independent variables using 2006 as the base year. Figure 2 shows a selected group of pretreatment variables including the only two covariates that may be potentially problematic. The coefficient of the percentage of students with zero EFC in 2009 is slightly lower than the previous year, but the difference is not statistically significant. Although the trend in employment rate is similar across all years, the coefficient for earnings one year prior to enrollment is about $1,000 lower in 2007 than in 2006, 2008, and 2009. Pre-enrollment earnings can be associated with lower ability and correlate with post-college earnings. It may generate a slight positive bias on the effect of the YRP on post-college earnings.

Figure 3 shows the event study estimates when using post-treatment outcomes. If the parallel trend assumption holds and the YRP effect is strong, the interaction terms



Note: EFC = Expected Family Contribution.

Figure 2. Event Study Plots for Student Characteristics under the Preferred Model

should be close to zero in 2007 and 2008, and a discontinuity would occur for 2009. All the graphs with academic outcomes reveal a strong effect of YRP eligibility except for diploma attainment.

Among all the graphs in figure 3, the one for earnings two years after enrollment is concerning, as it shows a relatively flat but ascending trend across time. It is likely the parallel trend assumption holds for student characteristics and academic outcomes, but it may not for post-treatment earning outcomes. The second year of the 2006 cohort

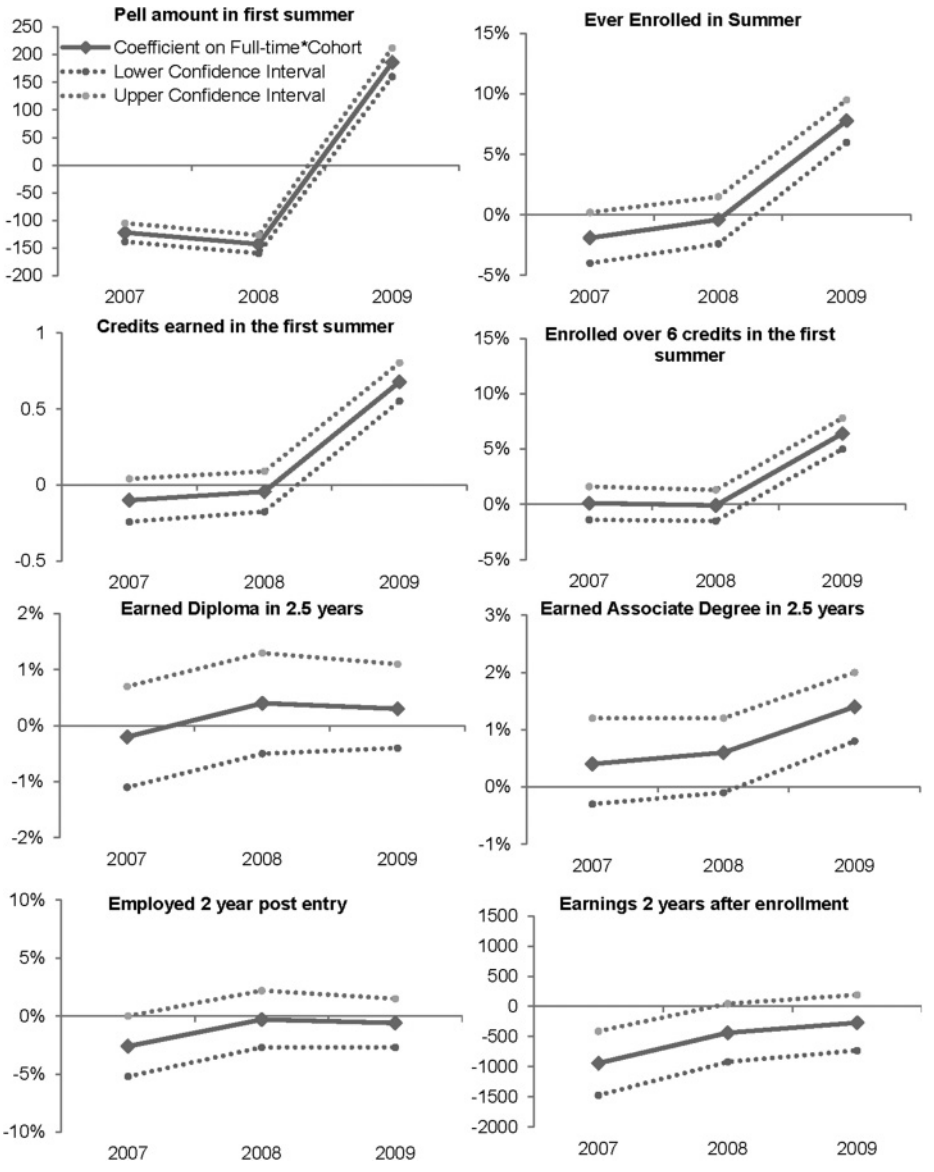


Figure 3. Event Study Plots of Academic Outcomes

occurred during the recession. Meanwhile, the second year of the 2009 cohort took place in 2011, when the economy was recovering and the effects of the recession on full- and part-time students may have differed.

The recession and other policy changes may have affected the student composition of the 2009 cohort, but figures 2 and 3 indicate most of the potential bias are accounted for by the DID specification. Although the recession does not seem to have significantly influenced demographic characteristics or academic behavior, the DID estimation may not be able to completely control for the remaining bias in earnings. As such, readers should take the earnings result with caution. Given the number of covariates tested

Table 3. Difference-in-Differences Estimates of the Effect of Year-Round Pell Eligibility on Academic Outcomes in the First Three Years

Outcomes	Post*Full-Time	SE	*N*	Enrolled in Short-Term Programs
1. Pell amount in summer	249***	[9]	49,246	
	326***	[14]	27,659	X
2. Took class in Summer	0.070***	[0.007]	49,246	
	0.091***	[0.010]	27,659	X
3. Credits earned in summer	0.583***	[0.049]	49,246	
	0.766***	[0.073]	27,659	X
4. Earned over six credits in summer	0.047***	[0.005]	49,246	
	0.060***	[0.007]	27,659	X
5. Credits earned in fall of year 1	−0.000***	[0.000]	49,246	
	0.000***	[0.000]	27,659	X
6. Credits earned in the spring of year 1	−0.001	[0.086]	49,246	
	0.037	[0.119]	27,659	X
7. Earned certificate in 2.5 year	0.003	[0.003]	49,246	
	0.007*	[0.005]	27,659	X
8. Earned diploma in 2.5 years	0.004*	[0.002]	49,246	
	0.009***	[0.003]	27,659	X
9. Earned associate degree in 2.5 years	0.002	[0.003]	49,246	
	0.009**	[0.004]	27,659	X
10. Earned any degree in 2.5 years	0.004	[0.004]	49,246	
	0.015**	[0.006]	27,659	X
11. Ever transfer to a four-year institution	−0.018***	[0.006]	49,246	
	−0.004	[0.007]	27,659	X

Notes: Each row is for a separate regression. Coefficients are for the interaction of post-2009 indicator variable with full-time enrollment status in the first term. Robust standard errors are in brackets. All specifications include post-2009 indicator variable and full-time enrollment status in the first term. All regressions have included covariates controlling for race/ethnicity, gender, high school graduation status, grade point average and credits earned in the first term, expected family contribution, and Pell Grant amount in the first term, intent at college entry, and college and major fixed effects. Only individuals who started at a certificate or diploma program are included in regressions when "enrolled in short-term programs" are checked. Otherwise the whole sample of Pell Grant–eligible students is included. Credits earned in the first term is not included as a covariate when it is the outcome variable. SE = standard error.

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

and the overall evidence upholding the parallel trend assumption, the DID estimation chosen in this study seems to be a reasonable approach.

6. RESULTS

Summer Enrollment

Rows 1 through 4 of table 3 show estimates of the effect of YRP eligibility on academic outcomes of the first summer. Each row is for a separate regression and shows the coefficient of the interaction term between $Post_i$ and $Treat_i$. Rows 1 through 4 test whether the introduction of the YRP affects the Pell Grant disbursements and summer course-taking patterns among eligible students. Controlling for all covariates, the estimated effects of YRP eligibility are $249 per student for the whole sample and $326 per student for those enrolled in certificate or diploma programs.

In rows 2 and 3, the DID estimates of the effect of YRP eligibility on the probability of summer enrollment and credits earned are 7.0 percentage points and nearly 0.6 credits per student, respectively. One of the eligibility requirements for the YRP is that students must be enrolled in at least six credits in the summer. Row 4 indicates that

eligible students are 4.7 percentage points more likely to have earned at least six credits in the summer.

Consistent with the idea that students in certificate and diploma programs may be more incentivized by the YRP to graduate faster (see section 5), the estimates on summer outcomes (rows 2–4) for students enrolled in certificate or diploma programs are generally larger than those for the whole sample.

Other Academic Outcomes

The YRP was not found to affect estimates of how many credits students earned in each semester, as shown in rows 5 and 6 of table 3. Rows 7 through 11 estimate the impact of the YRP on completion and transfer rates. The DID estimates for certificate attainment are positive but statistically insignificant using the entire sample, yet the impact is 0.7 percentage points and statistically significant for students who started in a short-term program. The effect of YRP on diploma completion rates are 0.4 and 0.9 percentage points for the whole sample and short-term program enrollees, respectively. The associate degree attainment rate is also 0.9 percentage points higher for YRP-eligible students who started in a short-term program. This confirms the acceleration component of the YRP does increase completion rates, and students enrolled in short-term programs are more incentivized by the YRP grant.

The YRP also seems to lower the transfer rate to four-year colleges by 1.8 percentage points when using the whole sample. Because the YRP makes college cheaper, more students may decide to delay transfer to earn an associate's degree first and partially explains the gains in associate's degree completion. Transfer outcome after 2.5 years is unfortunately not captured in the current dataset. Furthermore, the combination of the high credit requirement for YRP eligibility and a shortage of guidance may have caused individuals to take more credits in community colleges than originally planned. Students may have also been unsure about whether they could use the YRP at a different institution since the policy was new. As a result, it would have been more costly to transfer to a four-year school.

For ease of comparison, I have converted the effect size per $1,000 in grant aid. Each $1,000 of YRP disbursement per YRP-eligible student increases the likelihood of summer enrollment among YRP-eligible students by 28 percentage points, summer credit enrollment by 2.3 credits, and diploma completion by 1.6 percentage points. Among students who started in short-term programs, the corresponding figures are a 2 percentage point gain in certificate attainment rate and a 2.7 percentage point increase in associate degree completion. These figures are comparable to Denning (2019), who also estimates the intensive effect of the Pell Grant. He found that each $1,000 increase in aid caused by switching from dependent to independent status, makes students who previously held a Pell Grant 3 percentage points more likely to complete a bachelor's degree.

Table 4 shows the effect of the YRP on various financial aid outcomes. Recent literature suggests that a more generous federal grant may have a crowding-out effect on other financial aid. The results are displayed by term, but because financial aid is generally applied and determined annually, it would be more appropriate to interpret the effect for the whole year. Rows 1–3 show that the YRP has a positive impact on borrowing. Each $1,000 increase in the YRP results in an increase of $554 in loans in the

Table 4. Difference-in-Differences Estimates of the Effect of Year-Round Pell on Financial Aid Outcomes in Year 1

Outcomes	Post*Full-Time ($)	SE	*N*	Enrolled in Short-Term Programs
1. Loan in the fall	138***	[9]	49,246	
	157***	[12]	27,659	X
2. Loan in the spring	11	[12]	49,246	
	26	[17]	27,659	X
3. Loan in the summer	−0	[5]	49,246	
	1	[7]	27,659	X
4. State grant in the fall	147***	[13]	49,246	
	114***	[16]	27,659	X
5. State grant in the spring	−146***	[8]	49,246	
	−114***	[10]	27,659	X
6. State grant in the Summer	−1	[1]	49,246	
	−1	[1]	27,659	X
7. Institutional grant in the fall	−8**	[3]	49,246	
	−7*	[4]	27,659	X
8. Institutional grant in the spring	−10***	[3]	49,246	
	−10***	[4]	27,659	X
9. Institutional grant in the summer	−2***	[1]	49,246	
	−3***	[1]	27,659	X

Notes: Each row is for a separate regression. Coefficients are for the interaction of post-2009 indicator variable with full-time enrollment status in the first term. Robust standard errors are in brackets. All specifications include post-2009 indicator variable and full-time enrollment status in the first term. All regressions have included covariates controlling for race/ethnicity, gender, high school graduation status, grade point average and credits earned in the first term, expected family contribution, and Pell Grant amount in the first term, intent at college entry, and college and major fixed effects. Only individuals who started at a certificate or diploma program are included in regressions when "enrolled in short-term programs" are checked. Otherwise the whole sample of Pell Grant–eligible students is included. SE = standard error.

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

fall. It is likely that students are borrowing more money to accumulate enough credits to be eligible for the YRP. This finding is consistent with Denning (2019), who found that each $1,000 of Pell Grant increases borrowing by $600.

The two largest forms of financial aid after the Pell Grant and loan are state and institutional grants. Over the year, there is a $0 net change in grant aid.[5] Rows 7–9 also show some evidence of the crowding-out effect, but it lacks economic significance.

Labor Market Outcomes

The last set of outcomes concerns the probability of employment and earnings during and after enrollment for up to three years from college entry. Given the short follow-up period, the earnings estimates here likely capture earnings while in school. For some students, especially those enrolled in short-term programs, the estimates could reflect initial post-college earnings. Because initial earnings are correlated with long-term earnings, my results are likely an underestimate of the long-term effect.

5. The positive estimates in the fall in row 4 are offset by the negative estimates in the spring in row 5. It is potentially a shift in disbursement schedule in 2009.

Table 5. Difference-in-Differences Estimates of the Effect of Year-Round Pell Eligibility on Labor Market Outcomes in the First Year

Outcomes	Post*Full-Time	SE	*N*	Enrolled in Short-Term Programs
1. Employed in the fall	0.030***	[0.009]	49,246	
	0.042***	[0.012]	27,659	X
2. Employed in the spring	0.012	[0.009]	49,246	
	−0.002	[0.012]	27,659	X
3. Employed in the summer	−0.000	[0.009]	49,246	
	−0.018	[0.012]	27,659	X
4. Earnings in the fall	144***	[38]	49,246	
	187***	[53]	27,659	X
5. Earnings in the spring	185***	[70]	49,246	
	111	[99]	27,659	X
6. Earnings in the summer	44	[41]	49,246	
	−19	[59]	27,659	X

Notes: Each row is for a separate regression. Coefficients are for the interaction of post-2009 indicator variable with full-time enrollment status in the first term. Robust standard errors are in brackets. All specifications include post-2009 indicator variable and full-time enrollment status in the first term. All regressions have included covariates controlling for year of work experience and its squared term, race/ethnicity, gender, high school graduation status, grade point average and credits earned in the first term, expected family contribution and Pell Grant amount in the first term, intent at college entry, and college and major fixed effects. Only individuals who started at a certificate or diploma program are included in regressions when "enrolled in short-term programs" are checked. Otherwise the whole sample of Pell Grant–eligible students is included. SE = standard error.

***$p < 0.01$.

Tables 1 and 2 show, respectively, that YRP-eligible students and YRP recipients take an average of 3 and 7.7 credits in the summer. In anticipation of less time for employment during the summer, some YRP-eligible students may increase employment during the academic year. Table 5 shows evidence of the complementary nature of work and aid in this context. The probability of employment is 3 percentage points higher among YRP-eligible students in the full sample, with an average increase in earnings of $144 in the fall. The numbers are slightly higher for students who started in short-term programs. Otherwise, no significant employment impact is found in the spring or the summer terms.

Rows 1 through 3 of table 6 present the DID estimates of the impact of YRP eligibility on the probability of employment in the first three years from college entry.[6] There are no statistically significant impacts of YRP eligibility on these outcomes. Rows 4–6 show that YRP-eligible students earned $366, $292, and $500 more in the first, second, and third years, respectively. Yet, YRP eligibility does not impact earnings during the first two years after students entered short-term programs. However, as discussed in section 5, the earnings outcome may contain some biases from the recession effect.

Subgroup Analysis and Robustness Check

Previous research has found that the Pell Grant has a heterogeneous effect on students of different genders and ages (Seftor and Turner 2002). Appendix table A.1 shows a set of key estimates on academic and employment outcomes by gender and starting program enrollment status. The key differences from the main results are that all gains in

6. The yearly measure includes summer employment as well.

Table 6. Difference-in-Differences Estimates of the Effect of Year-Round Pell Eligibility on Labor Market Outcomes in the First Three Years

Outcomes	Post*Full-Time	SE	*N*	Enrolled in Short-Term Programs
1. Employed in the first year	0.011	[0.008]	49,246	
	0.003	[0.011]	27,659	X
2. Employed in the second year	0.001	[0.008]	49,246	
	−0.000	[0.011]	27,659	X
3. Employed in the third year	−0.005	[0.008]	49,246	
	0.005	[0.011]	27,659	X
4. Earnings in the first year	366***	[135]	49,246	
	266	[192]	27,659	X
5. Earnings in the second year	292*	[175]	49,246	
	184	[225]	27,659	X
6. Earnings in the third year	500***	[124]	49,246	
	584***	[174]	27,659	X

Notes: Each row is for a separate regression. Coefficients are for the interaction of post-2009 indicator variable with full-time enrollment status in the first term. Robust standard errors are in brackets. All specifications include post-2009 indicator variable and full-time enrollment status in the first term. All regressions have included covariates controlling for year of work experience and its squared term, race/ethnicity, gender, high school graduation status, grade point average and credits earned in the first term, expected family contribution and Pell Grant amount in the first term, intent at college entry, and college and major fixed effects. All Pell Grant–eligible students are included in the top two rows of each panel. Only individuals who started at a certificate or diploma program are included in regressions when "enrolled in short-term programs" are checked. SE = standard error.

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

diploma completion rates (0.05 percentage points) accrue to women, whereas the gain in associate degree completion rate is only statistically significant for men (0.1 percentage point). Among short-term program starters, the effect on earning any degree is 1.4 percentage points higher for women. The earnings effect in the third year is also about $200 more for women for both samples.

Appendix table A.2 compares the effect of YRP eligibility on students who entered prior to age 25 years and on older students who were at least 25 years old at enrollment. Older YRP-eligible students received $246 more in summer Pell aid, earned triple the summer credits, were 1.7 percentage points more likely to earn a diploma, and—if they started in a short-term program—were 0.2 percentage points more likely to complete an associate degree than younger eligible students. These findings are consistent with the research previously mentioned that investigated the effect of Pell Grants on adult student outcomes. All the earning and employment gains are also only positive and statistically significant for older students.

I have so far defined YRP eligibility as Pell Grant–eligible students who enrolled in 2009 and had at least twelve credits in their first term. However, some of these students may not have remained eligible if they did not accumulate at least 24 credits by the summer. Alternatively, part-time students in the fall could have become eligible if they took 18 credits in the spring. As such, table A.3 compares the key outcomes based on the original definition and the two alternative definitions of full-time status: (1) a student who attempted at least 24 credits total during the first fall and spring, and

(2) a student who enrolled in at least 18 credits in the first fall or spring. The academic estimates are generally consistent across models, while some of the earnings estimates lost their statistical significance. Despite the slight differences, table A.3 upholds the conclusion that the YRP induces positive academic outcomes.[7] To be conservative, I have stayed with my original definition for full-time students.

Finally, credit-smoothing may diminish the completion effect of the YRP. Specifically, the YRP may encourage students who would have taken more than a full-time load to adjust their credit-taking pattern to benefit financially from the YRP without increasing their credits enrolled for the entire year. Appendix figure A.1 shows the distribution of the total credits enrolled in during the first term for students starting between 2006 and 2009. The similar distributions across the year rules out the possibility of credit-smoothing.

7. CONCLUSION

As college tuition and nontraditional student enrollment continue to rise, policies that can help students graduate in a timely manner become increasingly important. Students who enroll in community colleges are often older, employed full-time, nonwhite, first-generation, or have greater financial constraints. The traditional Pell Grant covers only two semesters of full-time enrollment, leaving no support for low-income students who want to take courses in the summer. The short-lived YRP program gave extra summer funding to those who enrolled full-time in their prior two semesters.

Using a DID approach, I found that for each $1,000 of YRP disbursement per YRP-eligible student, the likelihood of summer enrollment among YRP-eligible students increased by 28 percentage points. Additionally, I found that each $1,000 increases the diploma completion rate by 1.6 percentage points, and lowers the four-year transfer rate by 7 percentage points. YRP-eligible students who started in short-term programs experienced a 2-percentage point gain in certificate attainment rate and a 3.6-percentage point increase in associate degree completion with no change to the four-year transfer rate. The attainment figures are comparable to Denning (2019), who also estimated the intensive effect of the Pell Grant. Despite the limitations of short follow-up and the use of a single cohort of students eligible for the YRP, this paper provides the only evidence to date on the effect of the YRP on completion rates and labor market outcomes.

Considering that the YRP was restored in the summer of 2017, this research provides important guidance to the federal government, policy makers, and educators. Unlike the original YRP, the new YRP program no longer requires students to have at least twenty-four credits (full-time definition for financial aid). The new legislative language will increase the low take-up rate of YRP found in this study. Just 40 percent of YRP-eligible students leverage the aid, while 80 percent of eligible students capitalize on

7. In Appendix table A.4, I ran another DID model looking at the effect of Pell Grant–eligibility after 2009 using non–Pell Grant students as the untreated group. Then I looked at the heterogeneous effect of the policy for full-time and part-time students in the fall. The gains are much higher for the full-time students, which supports YRP's inducing positive outcomes. Although this is a good robustness check, further event study analysis does not support the parallel trend assumption across Pell and non-Pell eligible students, especially when looking at full-time or part-time students only. Changes in composition, especially in terms of EFC, of these two groups of students are very large. The parallel trend assumption is more plausible when comparing full-time and part-time Pell recipients than comparing Pell and non-Pell eligible students.

the Pell Grant (Martorell and Friedmann 2018). On the other hand, the elimination of the credits requirement will cease to incentivize students to accumulate credits and graduate on time, as suggested by the research cited earlier.

Further research can look at the impact of the YRP on longer-term transfer rate. This paper found that students are likely to reduce transfer rate to four-year institutions within the first 2.5 years as a result of the YRP. A natural next step is to explore whether the YRP reduces transfer in general or simply delays transfer after individuals earn an associate's degree. In the meanwhile, colleges can make clear to students the additional funding provided through the YRP can be portable, even if students transfer.

This article also contributes to a broader set of conversations. Does more money matter in higher education? Results from this study suggest that it does and that adult students especially benefit from increased educational funding. Are there certain conditions that would maximize the impact of grants? Need-based grants with academic incentives seem to have higher impacts than those found in other studies evaluating need-based grants. The YRP is also small enough that it does not trigger any substantial crowding-out effect on institutional aid or any changes in employment during college. These findings suggest that there exist some optimal conditions regarding the student composition, structure, and design of grant programs that can maximize their impact. And finally, are individuals willing to go to college year-round? This study shows that when provided an incentive, more students enroll in courses in the summer term in addition to the fall and spring semesters. In fact, as tuition continues to rise, year-round education may become essential for students with high credit constraints.

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APPENDIX

Table A.1. Difference-in-Differences Estimates of the Effect of Year-Round Pell Eligibility by Gender

Outcomes	Post*Full-Time	SE	*N*	Subgroup	Enrolled in Short-Term Programs
1. Pell Grant amount in summer	247***	[12]	31,490	Women	
	253***	[14]	17,756	Men	
	323***	[19]	17,284	Women	X
	330***	[20]	10,375	Men	X
2. Credits earned in summer	0.629***	[0.063]	31,490	Women	
	0.500***	[0.079]	17,756	Men	
	0.832***	[0.097]	17,284	Women	X
	0.614***	[0.112]	10,375	Men	X

Table A.1. Continued.

Outcomes	Post*Full-Time	SE	*N*	Subgroup	Enrolled in Short-Term Programs
3. Earned certificate in one year	0.001	[0.002]	31,490	Women	
	0.000	[0.004]	17,756	Men	
	0.003	[0.004]	17,284	Women	X
	−0.001	[0.006]	10,375	Men	X
4. Earned diploma in 2.5 years	0.005*	[0.002]	31,490	Women	
	0.001	[0.003]	17,756	Men	
	0.013***	[0.004]	17,284	Women	X
	−0.000	[0.005]	10,375	Men	X
5. Earned associate degree in 2.5 years	−0.000	[0.004]	31,490	Women	
	0.007	[0.005]	17,756	Men	
	0.008	[0.005]	17,284	Women	X
	0.011*	[0.006]	10,375	Men	X
6. Earned any degree in 2.5 years	0.004	[0.005]	31,490	Women	
	0.005	[0.007]	17,756	Men	
	0.019**	[0.008]	17,284	Women	X
	0.005	[0.010]	10,375	Men	X
7. Enrolled in a four-year institution in 2.5 years	−0.019**	[0.008]	31,490	Women	
	−0.020**	[0.010]	17,756	Men	
	−0.005	[0.009]	17,284	Women	X
	−0.007	[0.010]	10,375	Men	X
8. Employed in the fall	0.032***	[0.011]	31,490	Women	
	0.028*	[0.015]	17,756	Men	
	0.046***	[0.016]	17,284	Women	X
	0.042**	[0.019]	10,375	Men	X
9. Earnings in the fall	108**	[47]	31,490	Women	
	225***	[63]	17,756	Men	
	126*	[68]	17,284	Women	X
	322***	[87]	10,375	Men	X
10. Employed in the third year	−0.006	[0.010]	31,490	Women	
	−0.005	[0.013]	17,756	Men	
	−0.013	[0.014]	17,284	Women	X
	0.027	[0.018]	10,375	Men	X
11. Earnings in the third year	581***	[147]	31,490	Women	
	356*	[222]	17,756	Men	
	620***	[208]	17,284	Women	X
	453	[312]	10,375	Men	X

Notes: Each row is for a separate regression. Coefficients are for the interaction of post-2009 indicator variable with full-time enrollment status in the first term. Robust standard errors are in brackets. All specifications include post-2009 indicator variable and full-time enrollment status in the first term. All regressions control for race/ethnicity, gender, high school graduation status, grade point average and credits earned in the first term, expected family contribution and Pell Grant amount in the first term, intent at college entry, and college and major fixed effects. Rows 5 to 8 also include year of work experience and its squared term as covariates. All Pell Grant–eligible students are included in the top two rows of each panel. Only individuals who started at a certificate or diploma program are included in regressions when "enrolled in short-term programs" are checked. SE = standard error.

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

Table A.2. Difference-in-Differences Estimates of the Effect of Year-Round Pell Eligibility by Age at Enrollment

Outcomes	Post*Full-Time	SE	*N*	Age at Enrollment (years)	Enrolled in Short-Term Programs
1. Pell Grant amount in summer	429***	[20]	14,312	≥25	
	183***	[10]	34,934	<25	
	479***	[24]	10,058	≥25	X
	233***	[16]	17,601	<25	X
2. Credits earned in summer	0.966***	[0.108]	14,312	≥25	
	0.381***	[0.053]	34,934	<25	
	1.084***	[0.134]	10,058	≥25	X
	0.472***	[0.083]	17,601	<25	X

Table A.2. Continued.

Outcomes	Post*Full-Time	SE	*N*	Age at Enrollment (years)	Enrolled in Short-Term Programs
3. Earned certificate in one year	0.003	[0.005]	14,312	≥25	
	−0.001	[0.002]	34,934	<25	
	0.005	[0.006]	10,058	≥25	X
	0.001	[0.004]	17,601	<25	X
4. Earned certificate in 2.5 year	0.004	[0.005]	14,312	≥25	
	0.002	[0.002]	34,934	<25	
	0.010	[0.006]	10,058	≥25	X
	0.006	[0.004]	17,601	<25	X
5. Earned diploma in 2.5 years	0.013**	[0.007]	14,312	≥25	
	−0.004	[0.003]	34,934	<25	
	0.019**	[0.008]	10,058	≥25	X
	−0.001	[0.004]	17,601	<25	X
6. Earned associate degree in 2.5 years	0.012	[0.009]	14,312	≥25	
	−0.003	[0.004]	34,934	<25	
	0.021*	[0.012]	10,058	≥25	X
	0.004	[0.007]	17,601	<25	X
7. Earned any degree in 2.5 years	−0.011	[0.010]	14,312	≥25	
	−0.018**	[0.007]	34,934	<25	
	−0.011	[0.011]	10,058	≥25	X
	0.000	[0.009]	17,601	<25	X
8. Employed in the fall	0.040**	[0.016]	14,312	≥25	
	0.035***	[0.011]	34,934	<25	
	0.043**	[0.019]	10,058	≥25	X
	0.061***	[0.015]	17,601	<25	X
9. Earnings in the fall	223**	[93]	14,312	≥25	
	151***	[33]	34,934	<25	
	296***	[109]	10,058	≥25	X
	213***	[50]	17,601	<25	X
10. Employed in the third year	0.028*	[0.015]	14,312	≥25	
	−0.017*	[0.009]	34,934	<25	
	0.034*	[0.018]	10,058	≥25	X
	−0.006	[0.013]	17,601	<25	X
11. Earnings in the third year	2062***	[292]	14,312	≥25	
	−223*	[122]	34,934	<25	
	2019***	[369]	10,058	≥25	X
	−204	[181]	17,601	<25	X

Notes: Each row is for a separate regression. Coefficients are for the interaction of post-2009 indicator variable with full-time enrollment status in the first term. Robust standard errors are in brackets. All specifications include post-2009 indicator variable and full-time enrollment status in the first term. All regressions control for race/ethnicity, gender, high school graduation status, grade point average and credits earned in the first term, expected family contribution and Pell Grant amount in the first term, intent at college entry, and college and major fixed effects. Rows 8 to 10 also include year of work experience and its squared term as covariates. All Pell-eligible students are included in the top two rows of each number. Only individuals who started at a certificate or diploma program are included in regressions when "enrolled in short-term programs" are checked. SE = standard error.

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$.

Table A.3. Difference-in-Differences Estimates of the Effect of Year-Round Pell Eligibility Using Alternative Full-time Definitions

	Model 1		Model 2		Model 3	
Outcomes	Preferred Specification		Fall + Spring Credits ≥ 24		Fall + Spring Credits ≥ 18	
All students						
1. Pell Grant amount in summer	249***	[9]	367***	[11]	347***	[9]
2. Credits earned in summer	0.583***	[0.049]	0.776***	[0.058]	0.722***	[0.046]
3. Earned certificate in one year	0.001	[0.002]	−0.002	[0.002]	0.001	[0.002]
4. Earned certificate in 2.5 year	0.003	[0.003]	0.006**	[0.003]	0.002	[0.002]
5. Earned diploma in 2.5 years	0.004*	[0.002]	0.004	[0.003]	0.003*	[0.002]

Table A.3. Continued.

Outcomes	Model 1 Preferred Specification		Model 2 Fall + Spring Credits ≥ 24		Model 3 Fall + Spring Credits ≥ 18	
6. Earned associate degree in 2.5 years	0.002	[0.003]	0.003	[0.004]	0.001	[0.003]
7. Earned any degree in 2.5 year	0.004	[0.004]	0.004	[0.005]	0.001	[0.004]
8. Enrolled in a 4-year college in 2.5 years	−0.018***	[0.006]	−0.034***	[0.006]	−0.039***	[0.006]
9. Employed in the fall	0.030***	[0.009]	0.028***	[0.009]	0.018*	[0.009]
10. Earnings in the fall	144***	[38]	−5	[53]	−32	[55]
11. Employed in the third year	−0.005	[0.008]	−0.022***	[0.008]	−0.011	[0.008]
12. Earnings in the third year	500***	[124]	222	[154]	572***	[155]
13. Earnings in the fall (X$0)	−1	[53]	−5	[53]	−32	[55]
14. Earnings in the third year (X$0)	664***	[151]	222	[154]	572***	[155]
Enrolled in short-term program						
1. Pell Grant amount in summer	326***	[14]	475***	[16]	438***	[13]
2. Credits earned in summer	0.766***	[0.073]	1.006***	[0.086]	0.931***	[0.068]
3. Earned certificate in one year	0.003	[0.003]	−0.001	[0.004]	0.004	[0.003]
4. Earned certificate in 2.5 year	0.007*	[0.005]	0.015***	[0.005]	0.006	[0.004]
5. Earned diploma in 2.5 years	0.009***	[0.003]	0.009**	[0.004]	0.007**	[0.003]
6. Earned associate degree in 2.5 years	0.009**	[0.004]	0.011**	[0.005]	0.005	[0.004]
7. Earned any degree in 2.5 year	0.015**	[0.006]	0.018**	[0.007]	0.007	[0.006]
8. Enrolled in a 4-year college in 2.5 years	−0.004	[0.007]	−0.021***	[0.007]	−0.020***	[0.007]
9. Employed in the fall	0.042***	[0.012]	0.019	[0.012]	0.011	[0.012]
10. Earnings in the fall	187***	[53]	−28	[81]	−3	[81]
11. Employed in the third year	0.005	[0.011]	−0.014	[0.011]	0.002	[0.011]
12. Earnings in the third year	584***	[174]	168	[219]	594***	[217]
13. Earnings in the fall (X$0)	−10	[80]	−28	[81]	−3	[81]
14. Earnings in the third year (X$0)	764***	[213]	168	[219]	594***	[217]

Notes: Each row is for a separate regression. Coefficients are for the interaction of post-2009 indicator variable with full-time enrollment status. Model 1 uses the same definition of full-time students as in tables 3 to 6—at least 12 credits in the first term. Model 2 identifies full-time students with at least 24 credits attempted in the first fall and spring semesters together. Model 3 defines full-time as having at least 18 credits attempted in the first fall and spring semesters together. Robust standard errors are in brackets. All specifications include post-2009 indicator variable and full-time enrollment status (according to the definition of full-time in each model). All regressions control for race/ethnicity, gender, high school graduation status, grade point average and credits earned in the first term, expected family contribution and Pell Grant amount in the first term, intent at college entry, and college and major fixed effects. Rows 9 to 14 in each panel also include year of work experience and its squared term as covariates. All Pell-eligible students are included in the top panel and only those first enrolled in a certificate or diploma program are included in the regression in the bottom panel.

***p < .01; **p < .05; * p < .1.

Table A.4. Difference-in-Differences Estimates of the Effect of Pell Eligibility

Outcome	Model 4 Full & Part-time	SE	Model 6 Full-time	SE	Model 5 Part-time	SE
All students						
1. Pell Grant amount in summer	248***	[5]	337***	[7]	132***	[6]
2. Credits earned in summer	0.445***	[0.033]	0.638***	[0.054]	0.217***	[0.037]
3. Earned certificate in one year	0.001	[0.002]	0.000	[0.003]	−0.001	[0.002]
4. Earned certificate in 2.5 year	−0.004**	[0.002]	−0.004	[0.003]	−0.006***	[0.002]
5. Earned diploma in 2.5 years	0.000	[0.001]	−0.001	[0.003]	0.000	[0.001]
6. Earned associate degree in 2.5 years	−0.002	[0.002]	−0.003	[0.004]	−0.002	[0.002]
7. Earned any degree in 2.5 year	−0.006**	[0.003]	−0.007	[0.005]	−0.008***	[0.003]
8. Enrolled in a 4-year college in 2.5 years	0.014***	[0.004]	0.016***	[0.006]	0.006	[0.006]

Table A.4. Continued.

	Model 4		Model 6		Model 5	
Outcome	**Full & Part-time**	**SE**	**Full-time**	**SE**	**Part-time**	**SE**
9. Employed in the fall	−0.018***	[0.006]	−0.006	[0.009]	−0.039***	[0.009]
10. Earnings in the fall	−20	[32]	−47	[33]	−52	[53]
11. Employed in the third year	−0.014**	[0.005]	−0.013*	[0.008]	−0.015**	[0.008]
12. Earnings in the third year	549***	[97]	−101	[124]	1,037***	[148]
13. Earnings in the fall (X$0)	−131***	[47]	−112**	[51]	−127*	[73]
14. Earnings in the third year (X$0)	1,097***	[124]	130	[156]	1,900***	[192]
Enrolled in certificates program						
1. Pell Grant amount in summer	291***	[7]	416***	[10]	135***	[9]
2. Credits earned in summer	0.480***	[0.052]	0.686***	[0.085]	0.231***	[0.057]
3. Earned certificate in one year	−0.001	[0.003]	−0.004	[0.006]	−0.004	[0.004]
4. Earned certificate in 2.5 year	−0.010**	[0.004]	−0.012*	[0.007]	−0.012***	[0.004]
5. Earned diploma in 2.5 years	0.002	[0.003]	0.003	[0.005]	−0.002	[0.002]
6. Earned associate degree in 2.5 years	−0.001	[0.003]	0.001	[0.006]	−0.004	[0.003]
7. Earned any degree in 2.5 year	−0.010**	[0.005]	−0.010	[0.008]	−0.018***	[0.005]
8. Enrolled in a 4-year college in 2.5 years	0.008*	[0.004]	0.017***	[0.006]	−0.003	[0.006]
9. Employed in the fall	−0.003	[0.009]	0.014	[0.012]	−0.030**	[0.012]
10. Earnings in the fall	91*	[49]	12	[50]	99	[82]
11. Employed in the third year	−0.012	[0.008]	−0.013	[0.011]	−0.010	[0.011]
12. Earnings in the third year	1,003***	[144]	103	[196]	1,789***	[216]
13. Earnings in the fall (X$0)	−135*	[75]	−175**	[86]	−83	[114]
14. Earnings in the third year (X$0)	1,408***	[180]	332	[242]	2,324***	[269]

Notes: Each row is for a separate regression. Coefficients are for the interaction of post-2009 indicator variable with full-time enrollment status. Model 1 uses the same definition of full-time students as in tables 3 to 6—at least 12 credits in the first term. Model 2 identifies full-time students with at least 24 credits attempted in the first fall and spring semesters together. Model 3 defines full-time as having at least 18 credits attempted in the first fall and spring semesters together. Robust standard errors are in brackets. All specifications include post-2009 indicator variable and full-time enrollment status (according to the definition of full-time in each model). All regressions control for race/ethnicity, gender, high school graduation status, grade point average and credits earned in the first term, expected family contribution and Pell Grant amount in the first term, intent at college entry, and college and major fixed effects. Rows 9 to 14 in each panel also include year of work experience and its squared term as covariates. All Pell Grant–eligible students are included in the top panel and only those first enrolled a certificate or diploma program are included in the regression in the bottom panel. SE = standard error.

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$.

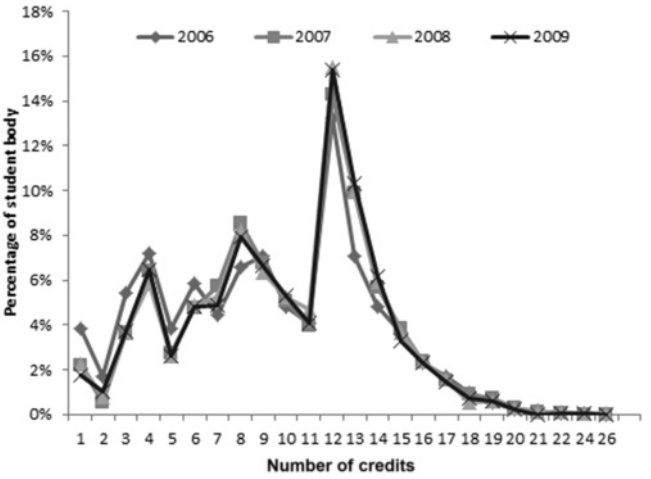

Figure A.1. The Distribution of Total First-Term Credits