

The Impact of Year-round Pell Grants on Academic and Employment Outcomes for Community College Students

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Abstract

Does extra financial aid for the summer lead to completion and earnings gains? Despite being the largest source of financial aid to low-income college students, the Pell grant has one major limitation: if students enroll in two semesters full-time, they will not have any tuition support for the third semester 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 24 credits prior to the third semester and in at least 6 credits during the third semester. My paper is the first to employ a difference-in-difference approach to examine the completion and labor market outcomes resulting from the YRP using a state administrative dataset from a community college system. I find that for each \$1,000 of additional YRP grant funding, summer enrollment increases by 28 percentage points and associate degree completion rate increases by 2.4 percentage points, with these gains primarily benefitting adult students who enrolled at age 20 or above. Given that the federal government is considering reinstating the YRP, my research is timely in providing insight into the efficacy of the YRP.

1. Introduction

Does extra financial aid for the summer lead to completion and earnings gains? The Pell grant is the largest source of financial aid to low-income college students, allocating over \$28 billion in the academic year 2015-2016 to 7.6 million students, most of whom have family incomes below \$50,000 (Dynarski and Scott-Clayton, 2013). While the traditional Pell covers a substantial proportion of college tuition, the maximum financial aid a student can receive only amounts to two semesters worth of full-time credits without any support for summer classes.

In light of this limitation, the year-round Pell (YRP) was implemented in academic year (AY) 2009-2010 and AY 2010-2011, allowing eligible students to receive a second Pell grant in the same fiscal year to cover summer tuition. To ensure that the grant is used towards degree acceleration, students were only eligible for the second award if they attended college full-time for two terms and subsequently enrolled at least part-time in the last term of the same AY.

Reducing the cost of education should increase the demand for education, but the Pell literature found only small positive impacts from such education subsidies. Presumably, the potential positive treatment effects were masked by a number of factors in prior data analysis, including 1) the exclusion of non-marginal students around the Pell eligibility cutoff who had higher needs and received larger grant awards in regression discontinuity analysis, 2) the complexity of financial aid applications, and 3) an institutional crowding-out effect. To avoid the first of these problems, I include all Pell-eligible students in my analysis.

Given the potential benefits of the YRP and the sparse literature on this topic, this study looks at the causal effects of the YRP and will be the first to examine outcomes beyond the first summer, such as short-term credits accumulation, credential attainment, financial aid disbursements, and earnings during college in subsequent terms.

I use a two-period optimization model in which students choose the level of education based on the projected returns and costs. If the crowding-out and employment effects during enrollment are small, the introduction of the YRP should be expected to lead to higher summer enrollment, completion, and earnings.

Using restricted-use state administrative data, I employ the difference in difference (DID) approach to compare the difference in the outcomes of YRP-eligible and ineligible students enrolling before or after the YRP implementation. I find that YRP eligibility increases the Pell grant disbursement in the summer by \$312 per student, improves the probability of enrollment by 8.3 percentage points, and leads to 0.7 more credits earned per student in the summer. These improvements in academic support and achievement in turn induces completion gains of three percentage points in certificates and 0.7 percentage points in associate degrees. The DID estimates show some evidence of crowding-out, but that is without impact on loans. The employment estimates show a \$681 earnings gain per student in their third year from college entry. 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 employment gains for older as compared to younger students.

The next section will discuss literature pertaining to the traditional Pell and YRP. In section 3, I develop a stylized model illustrating the decision YRP eligible students face when choosing an education level. 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, and my conclusions follow in section 7.

2. The Year-Round Pell Grant Program

2.1 The Year-round Pell Grant

The Bush administration signed the YRP into law under the Higher Education Opportunity Act in August 2008, but since the final YRP regulations were not published until October 2009, most colleges did not implement the policy until summer 2010 (Department of Education 2012).

The purpose of the YRP was to accelerate degree completion, so students were only eligible for a second Pell grant if they had completed at least 24 credits prior to the summer semester covered by the YRP and also enrolled at least half-time (6 credits) in the last term of the AY. The YRP disbursement is calculated in the same way as for the traditional Pell: by evaluating the Expected Family Contribution, student cost of attendance, and enrolled credits for each term. The maximum disbursement the student can receive via the YRP is therefore the same as the maximum Pell grant disbursement he/she received for a term of full-time enrollment. An estimated 1.2 million Pell grant recipients benefited from the YRP in the AY 2009-2010, receiving an additional \$1,700 on average for their second grant (Congressional Budget Office 2013). The total cost was approximately \$2 billion, amounting to six percent of the total Pell Grant disbursements for that year.

The federal government eliminated the YRP effectively July 1, 2011 due to a “lack of evidence” that the YRP was effective and due to a cost that was twice what had been expected (Office of Management and Budget, 2011; U.S. Department of Education, 2011). The YRP was accordingly eliminated in order to meet the 11.2 billion funding shortfall in the Pell grant program, whose cost had nearly doubled from \$18.2 billion to \$35.6 billion between AY 2008-09 and AY 2010-2011 (Department of Education 2013).

Policy makers have been trying to reinstate the YRP through numerous legislative initiatives since Jan 2015, the latest of which being a spending bill for June 2017 that included a \$2 billion expansion for the Pell Grant program with a provision for the YRP to be funded by \$1.2 billion of the Pell grant surplus from June 2016. The YRP provision passed the Senate but failed in the House.

2.2 The Effect of Need-based Grants

Grant disbursements should theoretically reduce the cost of education and increase the quantity demanded for college, but so far the empirical evidence has shown at most only small positive impacts from such education subsidies. Indeed, some studies have found that the Pell grant had no impact on enrollment (Carruthers and Welch, 2015, Hansen 1983; Kane 1995; Rubin, 2011), credits accumulation, or degree attainment (Marx and Turner, 2017). In contrast to those studies, a growing body of academics think that on the basis of recent studies, an increase of 3-6% in enrollment can be found per \$1,000 in grant disbursement (Deming and Dynarski, 2010). Focusing mostly on traditional-age students, these quasi-experimental studies looked at grants provided by the social security benefit program (Dynarski, 2003), state scholarships (Abraham and Clark, 2006, Dynarski, 2000, 2004; Kane, 2003), and Pell grants (Bettinger, 2004, Schudde and Scott-Clayton, 2014) using national and state data.

Several factors have been shown to limit the impact of the Pell Grant so far: first, most of the studies mentioned above use regression discontinuity approach, which focus on the local average treatment effect only among the marginal students around the eligibility cutoff. This is significant since the grant size is smaller around the threshold and the higher need students are not included in the analysis. In contrast, in that subset of studies that looked specifically at nontraditional students, positive gains were found for older students, veterans, and students from

the bottom half of the income distribution (Alon, 2011; Barr, 2014; Bound and Turner, 2002; Lovenheim and Owens, 2014; Seftor and Turner 2002).

Second, the complexity of financial aid applications has undermined aid effectiveness and disproportionately harmed the individuals that need it the most (Bettinger, Long, Oreopoulos, and Sanbonmatsu 2012; Dynarski and Scott-Clayton 2006; Dynarski and Scott-Clayton, 2008; Kane, 1994). Due to challenge of simply applying for federal aid, many eligible low-income students simply pass on the opportunity to apply for or receive a Pell Grant.

Third, some schools increase Pell Grant recipients' net tuition cost by reducing institutional aid and grants in order to capture the federal aid (Fullerton and Metcalf 2002; Turner 1998). Turner (2014) estimated that institutions on average crowded-out 12 of Pell grant funding through price discrimination, with the capture rate being the lowest at public colleges and highest at private nonprofit colleges.

Finally, Marx and Turner (2017) suggested that grant aid may actually reduce education attainment through reducing borrowing, thereby offsetting the expected gain from the grant. They showed that each dollar of Pell grant reduces loans by \$1.8 among borrowers in a university system with a fixed cost of borrowing. Their results suggested that the increase in Pell grant funding might make it no longer worthwhile to pay the fixed cost of a smaller loan and cause students to reduce schooling to shift consumption to the present.

The Pell literature sheds light on several important points regarding the analysis of the YRP. First, the impact of the YRP should be larger than that of traditional grants especially when not using regression discontinuity methods. The impact should also be larger when focusing on nontraditional students sensitive to college price or students at the public colleges with low grant capture rates. Also, when the comparison is made among students who already have access to the

Pell grant, the complexity of the application should not be a barrier to enrollment in the YRP. Furthermore, the YRP provides an incentive to accumulate more credits, which should theoretically produce better outcomes than the traditional Pell grant that has no such provision. Finally, Marx and Turner (2017) illustrate the importance of looking at other student behavior in addition to academic outcomes.

2.3 The Effect of the YRP

A handful of studies have examined the YRP (Katsinas, Davis, Friedel, Koh and Grant 2011; Katsinas, Davis, Joh and Grant 2012; Bannister and Kramer 2015; Friedmann 2016), but only two studies attempted to use causal methods. Using the difference-in-difference (DID) approach, Bannister and Kramer (2015) found that the YRP on average increased enrolled summer credits by 1.5 credits per student for the 4,900 students from one community college in Florida. Yet the ability to generalize their results may be limited by their focusing only on one school. Using the same method and data from the California Community College system, Friedmann (2016) showed that the YRP led to an increase in summer credits enrollment of 0.4 credits per student on average. However, Friedmann did not find an increase in the external margin of students enrolling in the summer or in the percentage of students earning over six credits in the summer, an eligibility requirement for the YRP. Despite having results consistent with Bannister and Kramer (2015), a limitation of Friedmann's study (2016) is the lack of outcomes measured beyond the first summer. As Marx and Turner (2016) demonstrated, the positive effect of Pell grants on enrolled credits per student does not necessarily translate into a detectable effect on credits accumulation or degree completion.

In sum, much research is left to fully characterize the impact of the YRP. The literature up to this point suffers from numerous limitations: many papers are based on data from two

decades ago, follow-up periods are too short, and the range of outcomes evaluated are too narrow, with only one paper looking at the effect of the YRP on students' loan patterns (Marx and Turner, 2017) and none evaluating its impact on labor market outcomes. My paper will fill some of the gaps in the literature by 1) focusing on community college students, who are predominately nontraditional, adult, and low-income; (2) Using a difference-in-difference approach and administrative data from one community college system to look for the first time at the effect of the YRP on outcomes after the first summer such as degree completion and labor market outcomes (3); estimating the impact of the YRP on loans, other non-Pell financial aid, and employment patterns during enrollment.

3. Theoretical Framework

The introduction of the YRP provides a second Pell for eligible students to use towards summer tuition. Students must already be Pell recipients, enrolled full-time in the fall and spring semesters, and at least half-time enrolled in the summer to be eligible. The relative cost to enrolling year-round and full-time is therefore lower after the implementation of the YRP. Building on previous literature, I develop a stylized model to predict the impact of the grant on students' academic and employment outcomes. Granting that the hours of work and leisure are fixed, all Pell grant recipients face the following two-period optimization problem:

$$\max V(c_1, E) = u(c_1) + \alpha u(c_2)$$

subject to

$$(1) \quad c_1 p_c + \sum_{k=1}^K \text{Max}[t_k - t_{YRP} - t_p, 1] \cdot 1\{E = k\} \leq (\beta Y + (1 - \gamma \cdot T_{YRP})S) \cdot 1\{E = k\} + h$$

$$c_2 p_c \leq w \int E - h(1 + r)$$

Pell grant recipients choose the level of education E , ranging from 1 to K , to maximize the total utility from both periods (during and after enrollment). The set K contains the different levels of schooling individuals can attain, including some credits, certificates, diplomas, s associate degrees. Since the credits requirement increases with K , tuition t_k rises monotonically with K .

In choosing E , individuals weigh the marginal future return to K level of education $w \int E$ with the cost of attaining it. In the first period, the sum of consumption and tuition paid by students net of the Pell grant disbursement will be less than or equal to the sum of income, borrowing against future income, the YRP, and tuition subsidies other than the YRP. The tuition payment is $\sum_{k=1}^K \text{Max} [t_k - t_{YRP} - t_p, 1] \cdot 1\{E = k\}$, which is the amount of tuition for the level of education chosen minus any year-round or traditional Pell reimbursement.

The model allows current income Y (opportunity cost of education) and other non-Pell grant subsidies S to vary with the level of education chosen. The opportunity cost of enrolling in more schooling increases with K . The term $\gamma \cdot T_{YRP}$ indicates the crowding-out effect by the YRP. Both β and γ are positive ranges with zero to one. h is savings in period one or borrowing from future income and could be invested or borrowed at an interest rate of r .

The model has the following predictions regarding the introduction of YRP for YRP eligible students: (1) higher level of summer enrollment and credits, (2) increased persistence and graduation rates, (3) small decrease in Y and S if any at all, and (4) higher earnings after leaving college. Predictions 1, 2, and 4 are straightforward if prediction 3 is true. Given that the amount of YRP is small relative to the traditional Pell amount, the crowding-out effect should be minimal. Also, the requirement for YRP in the summer is six credits or about two courses, which should not have a large effect on the income during enrollment.

4. Data

4.1 Data Description

My sample consists of four cohorts of first-time degree-seeking students who enter the community college system of an anonymous state in the fall semesters of 2006 - 2009. The data includes demographic characteristics, transcripts, financial aid, and credential information up to the summer of 2010. Additional credential data is obtained through the National student clearinghouse (NSC) that includes data from any public or private college up through February 2012. In addition, quarterly earnings adjusted to 2010 dollars and industry codes are available between 1996 and the first quarter of 2012.

The comprehensive nature and the large sample size of this dataset make it well suited to answer my research questions. Completion and labor market results are followed for up to at least 2.5 years after enrolling in college for the first time. This data also enables me to observe the term by term variations of students' credits attainments, financial aid behaviors, and employment patterns during the first year of enrollment.

With the goal of evaluating the impact of the YRP on college degree seekers, I restricted my sample to Pell recipients enrolled in a community college credentials program, thereby dropping individuals in enrichment or high school programs. I also dropped students intending to transfer since the data do not provide any transcripts for transfer students. And although the NSC data provides information on degree attainments out of this community college system, the short follow-up period makes it impossible to observe any bachelor's degree attainments.

4.2 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

during 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. Up to 50 percent of the student body is non-white. Age of enrollment varies from 18 to 50 with a median of 22. Over 60 percent have zero expected family contribution (EFC) and therefore are eligible to receive the maximum Pell grant.

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 have more credits earned, grade point averages (GPA), and completion rates.

Compared to students enrolled prior to 2009, those who entered in 2009 are slightly older and demonstrated higher financial need. They are also slightly less likely to be employed the year prior to entering college. If employed, the 2009 cohort earned less than the cohorts entering before.

YRP eligible students are full-time students who enrolled in 2009. They are at least 10 percentage points more likely to enroll and earn over six credits in the summer than full-time students in the previous years.

To better understand the distribution of the Pell grant, Figure 1 and 2 summarize the Pell grant disbursement by enrollment status, year enrolled, and EFC. Panel A shows evidence that full-time students who enrolled prior to 2009 exhausted their Pell grant before the first summer. After the implementation of the policy, full-time students who enrolled in 2009 were able to receive extra Pell grant disbursements for the summer. Additionally, Panel A and B shows that the increase in maximum Pell grant disbursements in 2009 has raised the total Pell amount by similar amounts for full-time and part-time students, yet the effect is much larger in the summer.

Table 2 summarized the credits earned and Pell grant disbursements for YRP recipients who enrolled in 2009 with full-time enrollment in the fall and spring semesters and who still received Pell grants in the summer. On average, they earned 14 credits in the fall and spring semesters, which is more than the full-time requirement of 12 credits. The total credits earned in the summer ranges between 3 and 20 credits with a mean of 8 credits. Over 71 percent of the YRP recipients earned over six credits in the summer. Finally, Table 2 also indicates that the amount of average YRP disbursement is substantial: over \$1,500 or 66 percent of the amount received in fall or spring semesters.

5. Estimation Strategy

5.1 Different-In-Difference Model

To examine the effect of the YRP, this paper follows previous research and uses a difference-in-difference strategy by comparing the differences in the outcomes of the full-time and part-time student enrolling before or after the YRP implementation. The key equation is:

$$Y_i = \alpha + \gamma Post_i + \delta Treat_i + \beta(Post_i * Treat_i) + \sigma X_i + \varepsilon_i$$

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

$Post_i$ is a binary variable which equals to 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 2008. $Treat_i$ equals to 1 if an individual is full time in the first semester. Since students must accumulate at least 24 credits in the fall and spring semesters to be eligible for the YRP, enrolling part-time in the first semester makes it impossible to receive the YRP. This variable essentially also captures any systematic differences in outcomes between full-time and

part-time students. $Post_i * Treat_i$ is the interaction between $Post_i$ and $Treat_i$, which captures the effect of the YRP.

X_i is a vector of demographic characteristics, such as race, gender, high school graduation status, grade point average and credits earned in the first term, expected family contribution, and Pell grant disbursement in the first term, college, and major fixed effects. Years of work experience and its squared term are also controls for any regression with employment outcomes.

5.2 Evaluation of the DID Assumptions

My paper will address two concerns that may potentially violate the parallel trend assumption required for DID. First, the recession in 2008 may change the composition of the cohort enrolling in the fall of 2009 and making it unable to be compared with the prior cohorts. The $Post_i$ variable will capture some of the cohort-specific effects. Figure 2 also confirms that the student composition of the 2009 cohort is similar to prior cohorts in terms of the percentage of students with zero EFC, EFC in the first term (fall), earnings one year prior to enrollment, percentage with full-time status, credits earned in the first term, and GPA in the first term.

Second, the recession may also influence the composition of full-time or part-time students in different ways. Reassuringly, Panel D of Figure 2 shows that the percentage of full-time remains at 52 percent between 2008 and 2009. Figure 3 also shows that the composition of these two groups of students is comparable across years in terms of the percentage of minority students and the percentage who graduated from high school. The EFC of part-time students enrolled in 2009 looks slightly lower than the previous cohorts. Yet the differences do not affect the credits earned in the fall and spring terms. As expected, the credits earned in the summer

spiked with the full-time students enrolled in 2009 and not with part-time students or students enrolled before 2009.

Finally, the next section will provide event study plots to evaluate the year-by-year trend for a set of outcomes adjusted for the year trend, full-time or part-time trend, and other covariates. As the last robustness check, I will run my key analysis on a subgroup of students whose parallel trend assumption looks the most plausible.

6. Results

6.1 Summer Enrollment

Table 3 shows the estimates of the effect of the YRP on academic outcomes of the first summer and sequent terms. Each row is a separate regression showing the coefficient of the interaction term between $Post_i$ and $Treat_i$.

Panels 1 to 4 test whether the introduction of the YRP affects the Pell disbursements and summer course taking patterns among potential students. Without covariates, the estimated effects of the eligibility of the YRP are \$321 per student for the whole sample and \$469 per student for those enrolled in certificate programs. The estimates remain stable after adding covariates.

The rationale for looking at a subset of the sample enrolled in a certificate or diploma program is that these students are likely to have different goals and responses to the YRP than students enrolled in an associate degree program. Certificate students face lower credits requirements and may therefore be more incentivized by the YRP.

In panels 2 and 3, the DID estimates of the effect of YRP eligibility on the probability of summer enrollment and credits earned are 8.3 percentage points and 0.7 credits per student

respectively. Panel 4 measures summer impact in an alternative way. One of the eligibility requirements for the YRP is that students must be enrolled in six credits in the summer. Panel 4 indicates that eligible students are six percentage points more likely to have earned over six credits in the summer.

Consistent with the predictions above, the estimates on summer outcomes (panel 2 to 4) for students enrolled in certificate or diploma programs is generally twice that for the whole sample.

6.2 Credits Earned and Degree Completion

To explore whether students engage in credit smoothing behavior as a result of the YRP, Panels 5 and 6 display the estimates on credits earned in each semester and found no evidence for any smoothing behavior.

Panels 7 to 9 estimate the impact of the YRP on completion rates. The Community College System in this state has three kinds of credentials: certificates (12-18 credits), diplomas (36-48 credits), and Associate Degrees (64-76 credits). The difference-in-difference estimates for certificate attainment is 0.3 percent and not statistically significant using the entire sample, yet it is three percent and statistically significant for students with an intention to earn a certificate.

It is important to point out that even though certificates generally require 12 to 18 credits, the number of credits earned in the first year averages at 21 with the 90th percentile being 37 credits. That means that the majority of certificate holders have excess credits or credits that do not count towards their degree requirement. If degree acceleration is the goal, academic advisement to reduce excess credits may be a better investment than providing extra funding for certificate students in the summer.

There is no impact on diploma completion rates but the completion rate is 0.7 percentage points higher for those eligible for the YRP.

6.3 Financial Aid

Table 4 explores the effect of the YRP on various financial aid outcomes. Recent literature suggests that a more generous grant may have a crowding-out effect on other financial aid. Marx and Turner (2017) found an over 100 percent reduction in loans as a result of increased Pell disbursements within \$1000 of the Pell Grant eligibility threshold when there is a fixed cost in borrowing. Given that the amount of the YRP is relatively small, Panels 1 to 3 found that it has no impact on loan patterns.

Turner (2014) found that institutions may try to capture the increase in the federal grant by reducing institutional aid. Panels 4 to 6 show that the estimates for other aid, excluding the federal Pell grants or loans, are positive in the fall semester and negative in the spring semester. Overall, the net effect on state and institutional aid is about -\$77 or 25% of the gains in the YRP for the first year for the whole sample and -\$121 for students with intent to complete a certificate. Accordingly, my results show some evidence of the crowding-out effect.

6.4 Labor market outcomes

The last set of outcomes concerns the probability of employment and earnings during and after enrollment up to three years from college entry. Tables 1 and 2 showed that YRP eligible students and YRP recipients on average take up to two courses in the summer. As a result, some YRP eligible students may increase employment during enrollment in anticipation of less income from the summer. Yet the impact should be small given that the additional course load is small. Table 5 suggests that the impact on the probability of employment is four percent higher with an

average increase in earnings of \$146 in the fall for the full sample. Otherwise, no employment impact is found in the first two years.

Panel 12 indicates that the YRP induces an increase of earnings in the third year from college entry of \$681 for the entire sample and \$1390 for those in a certificate program.

6.5 Subgroup Analysis

Table 6 shows a set of key estimates on academic and employment outcomes by gender and whether they enrolled in a certificate program. The results are generally consistent with Tables 3 to 5 with some variations by gender. The DID estimates are positive and statically significant in the first summer for both women and men. All the gains in certificate and diploma completion rates accrue to women. YRP eligible women, who enrolled in a certificate program, are 5.8 percentage points more likely to receive a certificate within one year. Female YRP eligible individuals are 0.1 percentage points more likely to earn a diploma. The gain in associate degree completion rates, however, concentrates among men. Male YRP eligible students are 1.2 percentage points more likely to have completed an associate degree in 2.5 years.

The YRP seems to induce more YRP eligible women to work in the first term, yet YRP eligible men tend to earn more on average in that term. In the third year of college enrollment, YRP eligible students of both gender experience similar earning gains.

Table 7 examines the same set of outcomes by the age of enrollment. Pell grants may have a different impact on the group of students who enroll within two years of high school graduation versus those attend later (Seftor and Turner, 2002). The DID estimates on the amount of Pell received and credits earned in the first summer are higher for older students. The gains in completion rates and earnings only concentrate on older students. These findings are consistent

with the research mentioned previously that investigated the effect of Pell grants on adult students.

6.6 Robustness Check

The method section provides some checks on the composition of full-time versus part-time students before and after the YRP policy implementation. Figure 4 offers a more robust test to the parallel trend assumption by showing the year-by-year interaction term on a set of outcomes controlling for enrollment status, enrolled year, and all other covariates in previous tables. The coefficient shown is similar to the $Post_i * Treat_i$ interaction term shown before. Instead of interacting $Treat_i$ with pre and post-2009 enrollment status, $Treat_i$ is interacted with the actual year of enrollment: $Year_i * Treat_i$.

For the parallel trend assumption to hold, the coefficients for 2009 should be drastically different from the rest and the coefficients for cohorts 2006, 2007, and 2008 should be very similar. Figure 4 shows support for the assumption since panels A to D show a spike in all categories for the 2009 cohort.

While the recession does not seem to influence student characteristics or academic behavior, it may influence the earnings three years from college enrollment. For example, the third year of the 2006 cohort is 2009, which is the end of the recession. The third year of the 2009 cohort is 2012, by which time the economy is recovering.

Panel A of Figure 5 displays the earning level in the third year from college entry for the whole sample and the YRP does not seem to have a strong impact on this. Panels B to F break down the sample and show the same graph by the amount of EFC below the Pell eligibility cutoff. The recession may influence full-time students specifically as there seems to be some

earnings trends for students with EFC from zero to 3000 below the cutoff. If that is true, the strong earnings gains in Tables 5 to 7 may be inflated.

As a final test, I ran the analysis with the 80% of the students who have EFC of at least 4000 below the eligibility cutoff and therefore have a more plausible parallel trend assumption according to Panel F. Table 8 shows almost identical results as Tables 3 to 5 except for the earning results. The estimate for the third year earnings is now \$100 smaller for the entire sample and still positive though no longer statistically significant for those enrolled in a certificate program. This test confirms the previous results.

Overall, I found that students who are eligible for the YRP receive more Pell grants in the summer, which then leads to gains in credits earned, completion rates, and earnings. The YRP has almost no impact on loans, yet it reduces other state and institutional aid slightly. Subgroup analysis suggests that the YRP has a larger impact on the short-term credential completion rate for women and on the associate degree graduation rate for men. Older students also experience larger gains than younger students. Robustness checks show support for the parallel trend assumption. Yet event study plots indicate that the recession may inflate the third year earnings for the 2009 cohort. When excluding students with the inflated third year earnings, all results are identical though the earnings gains are reduced slightly.

7. Conclusion

As college tuition and the enrollment of nontraditional students continue to rise, policies that can help students graduate in a timely matter become increasingly important. Nontraditional

students enrolled in community colleges are often older, employed full-time, low-income, minority, or first-generation students who are more vulnerable to credits 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 was introduced between the academic years of 2009-10 and 2010-2011, giving extra summer funding for those who enrolled full-time in the prior two semesters. I exploit the exogenous variations of the timing of the introduction of the policy and its eligibility requirements to shed light on the impact of providing summer tuition support for nontraditional students.

Using the DID approach, I found that for each \$1,000 of additional YRP disbursement, there is an increase of summer enrollment by 28 percentage points and of associate degree completion rate by 2.4 percent points. When breaking down by age of enrollment, the completion and labor market gains accrue primarily to adult students, who enrolled at age 20 or above. That increase in enrollment is substantially larger than the consensus of three to six percentage points previously published in Deming and Dynarski (2010). The main reason for this is the inclusion of all Pell-eligible students in my sample, thereby avoiding limiting the analysis to only those around the Pell eligible threshold or those who may have been hindered by the financial aid application. I also do not find any crowding-out effect on loans as Marx and Turner (2017) did. Additionally, the crowding-out effect on state and institutional aid seems too small to influence the positive outcome.

Robustness checks have confirmed that the recession in 2008 did not substantially change the composition of the 2009 cohort. Event study plots also support the parallel trend assumption required for the DID methods. Though the recession does not affect the academic outcomes, some evidence suggests that it may affect the trend of earnings in the third year of college entry

for some groups of students. As the economy recovers from the recession, the third-year earnings may be significantly higher for the 2009 cohort. When limiting the analysis to the students unaffected from the trend, I found almost identical results. Ideally, having more cohorts and follow-up data would improve the robustness of my study considerably.

Despite these limitations, my paper provides the only evidence on the effect of the YRP on completion rates and labor market outcomes to date. It also provides an upper boundary to the effect of need-based grants. My research will provide important guidance to the federal government and advocacy groups as they continue with their effort to reinstate the YRP.

This paper also contributes to a broader set of conversations. Do students respond to grants? Yes, adult students especially benefit from them. Are there certain conditions that would maximize the impact of grants? Though not directly tested in this paper, there probably are and grant programs should be aware of these conditions. The sample restrictions in this paper provide the best case scenario, where individuals have high financial needs and no complication with aid applications. The YRP is also so small enough that it does not trigger any aid crowding-out or changes in employment during college. These conditions seem to suggest that there exist some optimal conditions regarding the student composition, structure and design of the grant programs, and other unknown factors that can maximize the impact of grant programs. Finally, would individuals be willing to go to school all year-round? This study shows that when incentivized, more students would enroll in summer courses in addition to the fall and spring semesters. In fact, as tuition continues to rise, finding ways to attend schools all year-round will be especially important for students with credit constraints.

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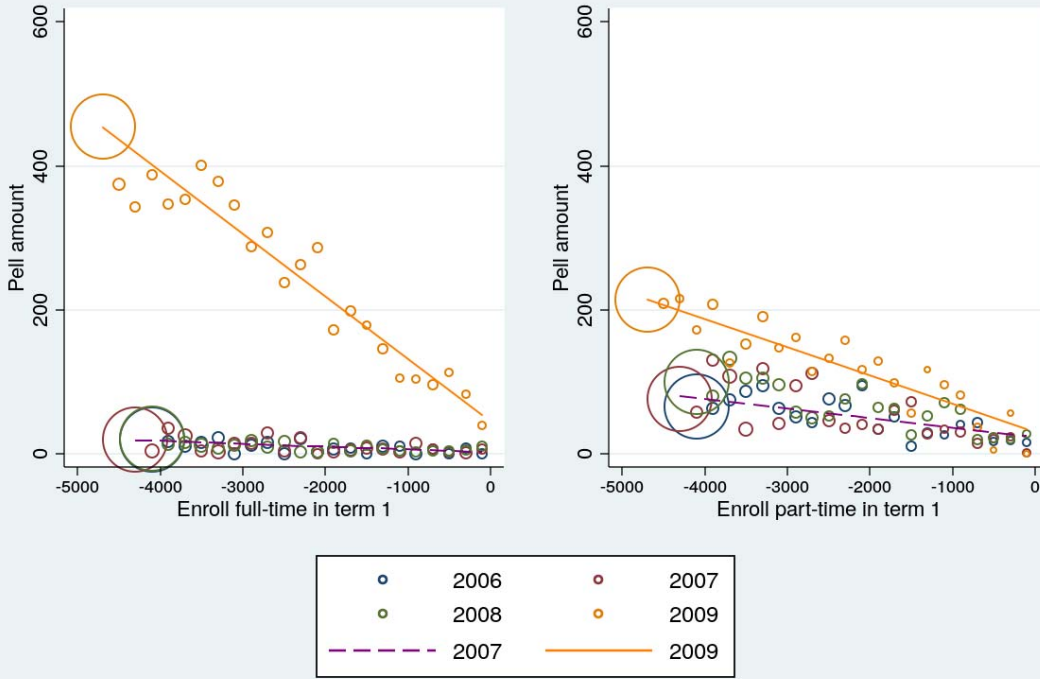
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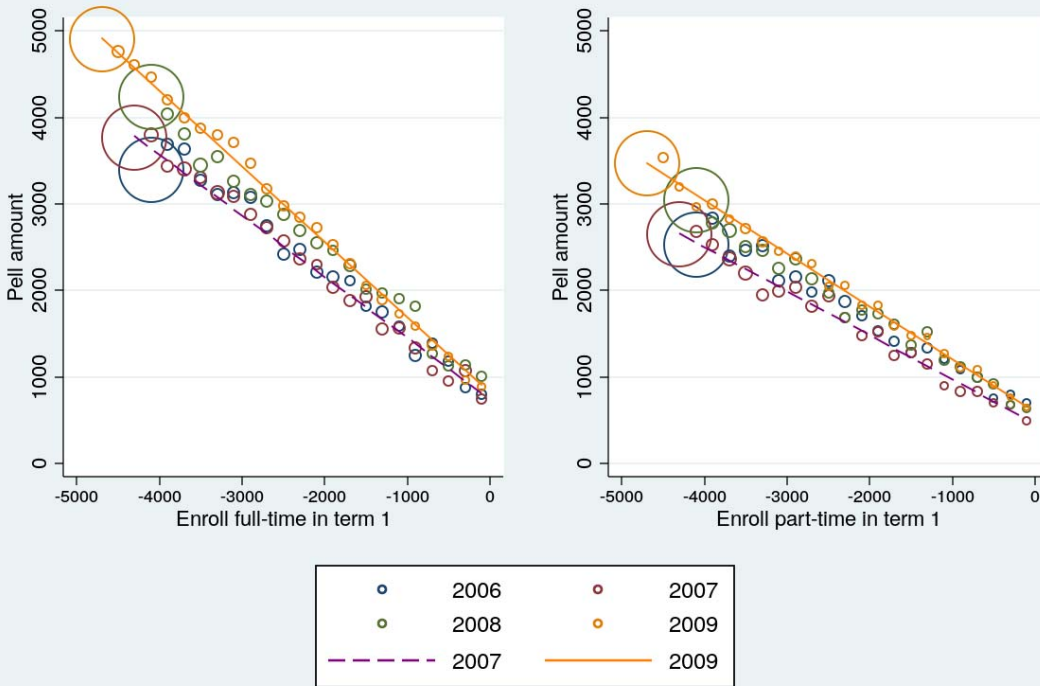
Figure 1: Pell Amount by Expected Family Contribution

A. Pell Amount in the First Summer by Expected Family Contribution



Distance from Pell Grant Eligibility Threshold

B. Total Pell amount in Fall and Spring



Distance from Pell Grant Eligibility Threshold

Figure 2: Students Characteristics by Cohort

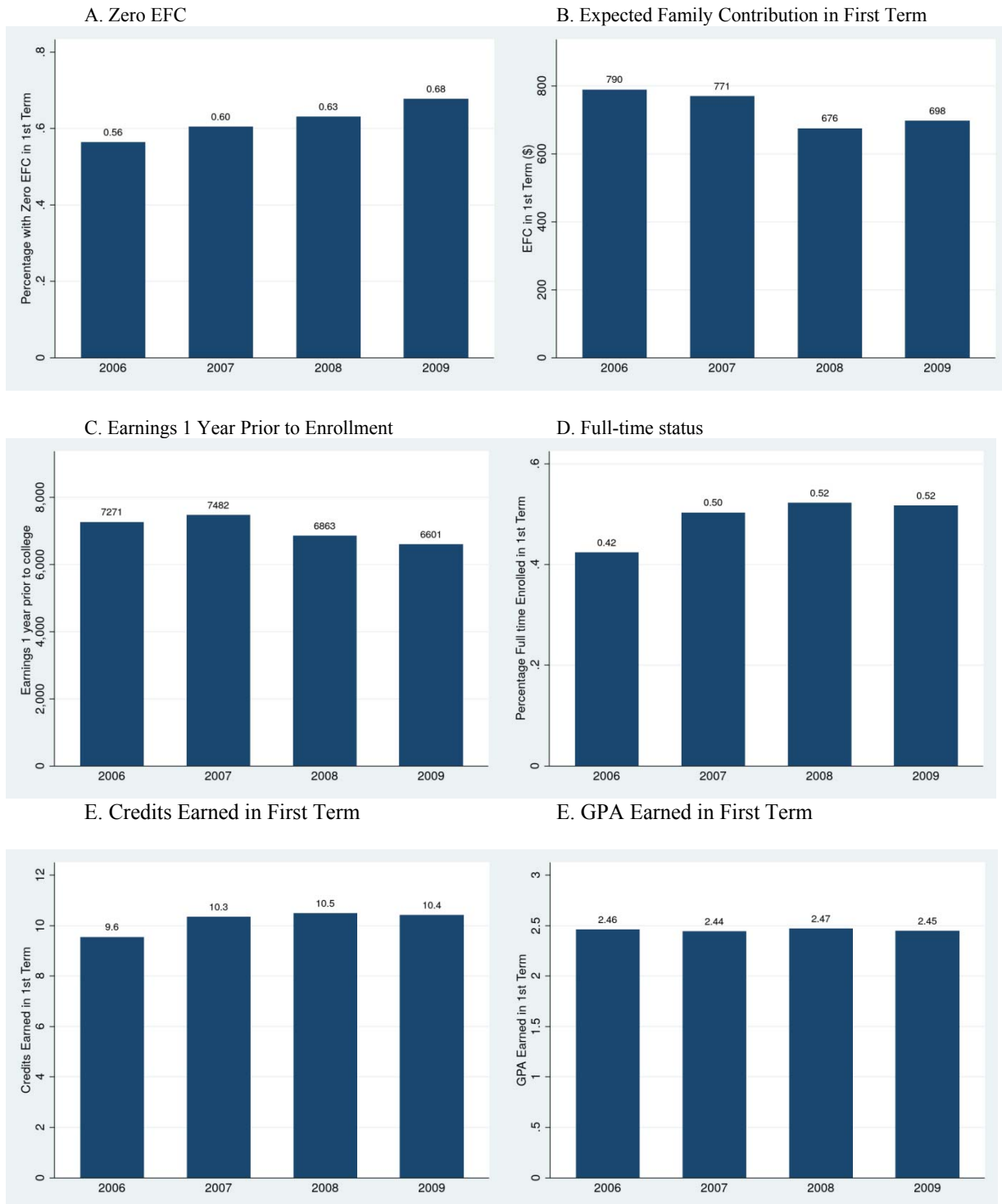


Figure 3: Students Characteristics By Cohort and Full-time/Part-time status

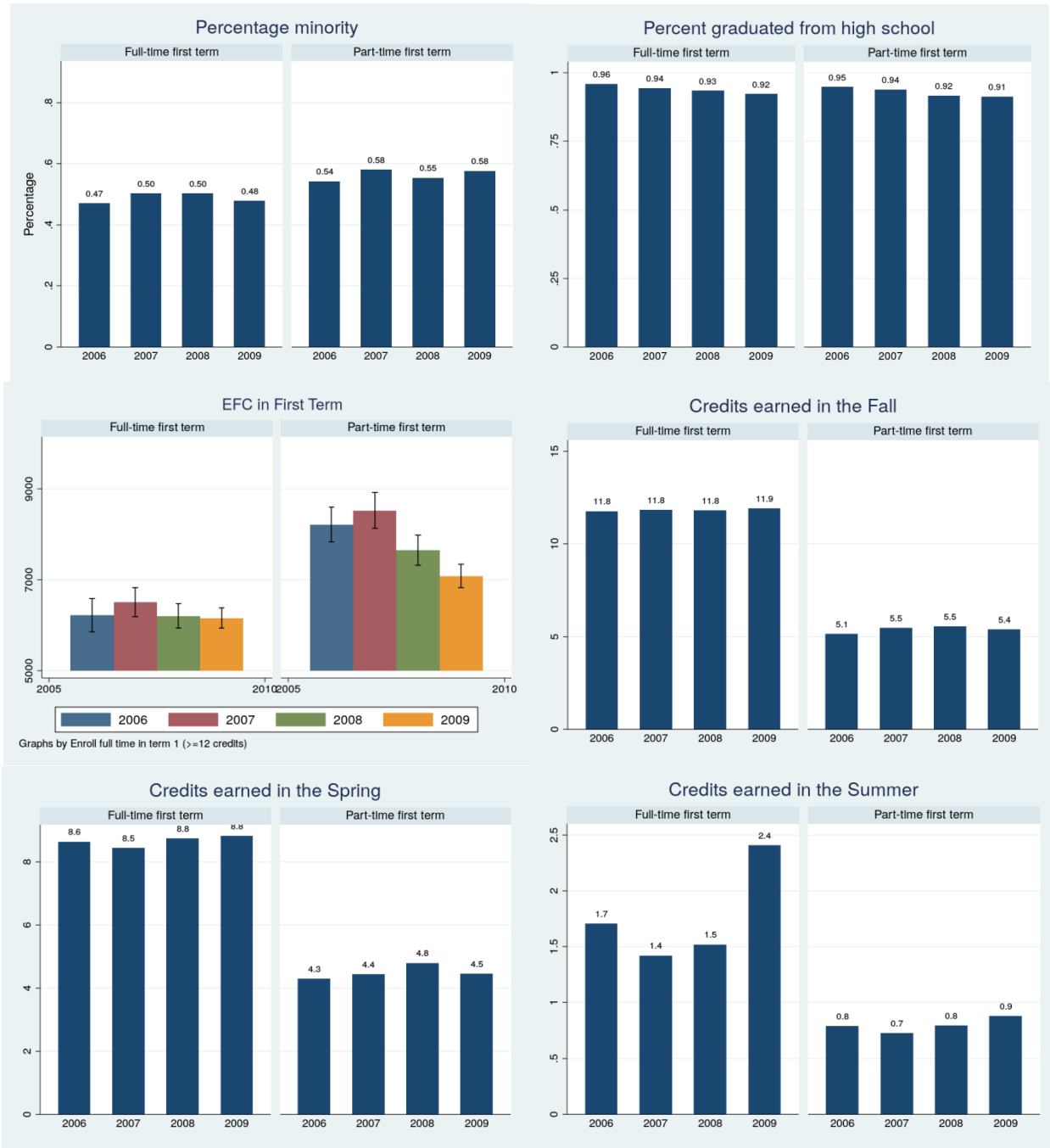
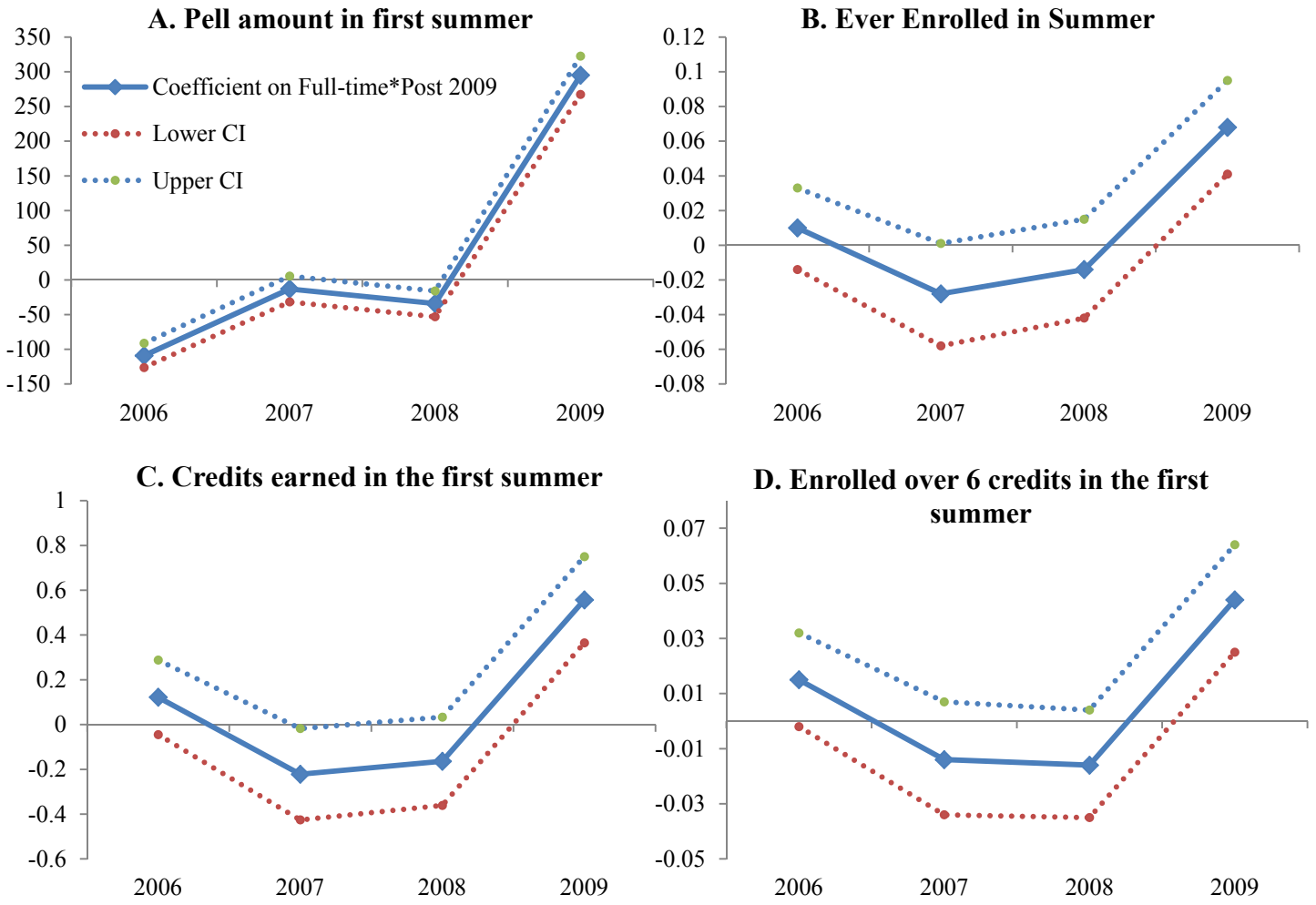


Figure 4: Event Study Plots



**Figure 5: Event Study Plot of Earnings Third Year from College Entry
(Displayed in \$1,000)**

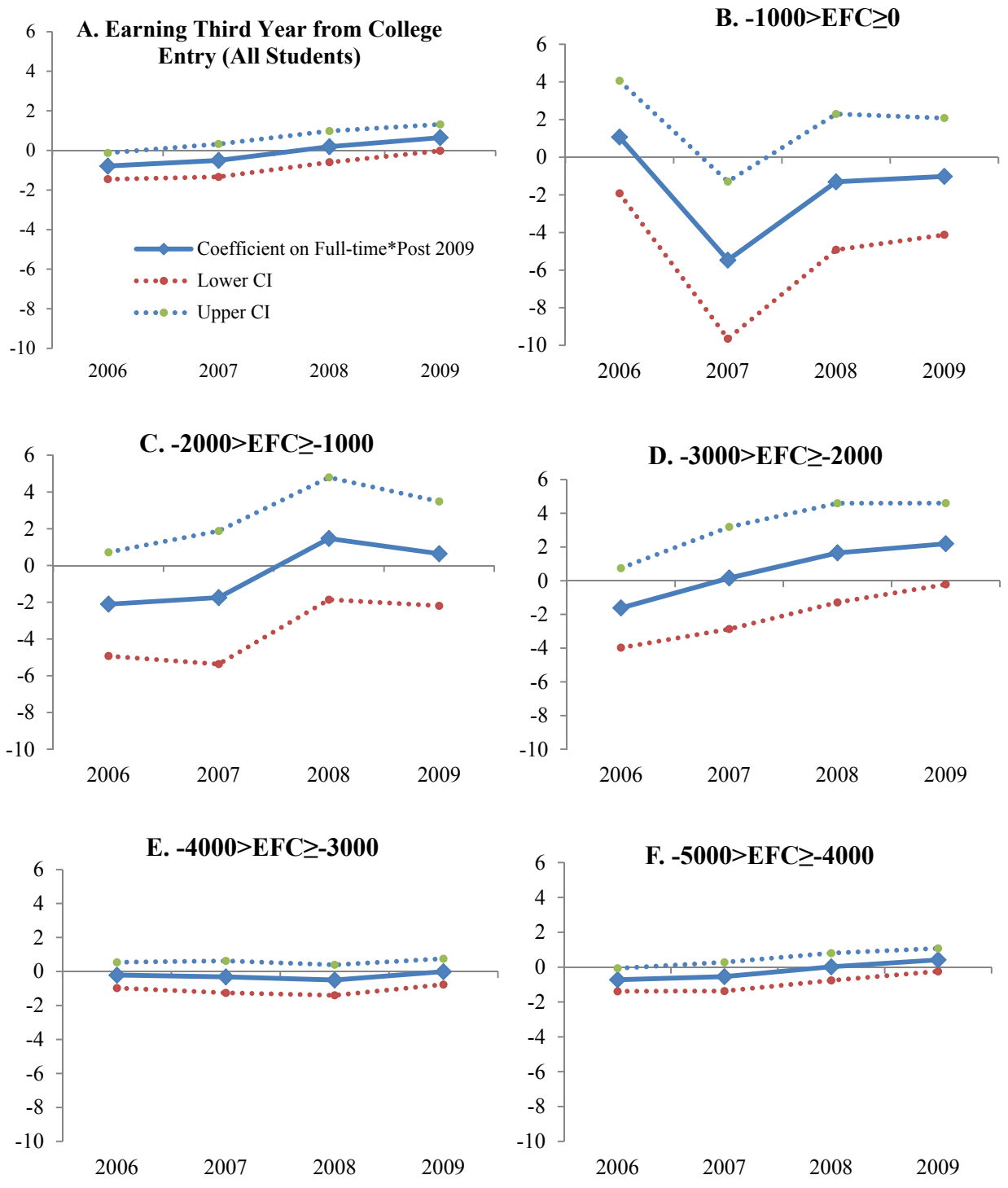


Table 1: Summary Statistics of Cohorts Enrolling Between 2006 and 2009

Variable	Enrolled prior to 2009		Enrolled in 2009	
	Full-time	Part-time	Full-time	Part-time
<i>Observation</i>	7908	8183	5434	5073
A. Students Characteristics				
Female	69%	70%	63%	65%
Black	34%	46%	33%	48%
Hispanic	3%	3%	4%	4%
Other races	8%	9%	7%	7%
Single parent	8%	8%	7%	6%
High school graduate	94%	93%	93%	91%
Disabled	2%	2%	1%	1%
Age at enrollment	25	26	27	26
Age over 19 at enrollment	57%	59%	66%	65%
Zero Expected Family Contribution	57%	61%	62%	71%
Expected Family Contribution in term 1	942	757	874	587
Pell amount in term 1	1,918	1,578	2,347	1,939
B. Academic outcomes				
GPA term 1	3.09	2.08	3.13	1.98
GPA year 1	2.89	1.97	2.93	1.89
Credits earned term 1	14	6	13	6
Credits earned year 1	25	11	26	11
Enrolled first summer	29%	15%	41%	17%
Credits enrolled first summer	2	1	3	1
Credits earned first summer	2	1	3	1
Earned over 6 credits in summer	15%	4%	25%	7%
Earned certificate within 2.5 year	5.3%	1.7%	6.1%	1.5%
Earned diploma within 2.5 year	3.4%	0.9%	3.9%	0.6%
Earned associate within 2.5 year	4.5%	0.5%	5.7%	0.5%
C. Employment				
Ever employed 1 year prior to college	73%	77%	67%	69%
Earnings if employed 1 year prior to college	6,576	7,632	6,520	6,662

Table 2: Credits Earned and Pell Amount of YRP Recipients

Observation	<i>1,044</i>
Credits earned term 1	14.1
Credits earned term 2	14.5
Credits earned term 3	8.0
Credits enrolled first summer	8.4
Earned over 6 credits in summer	71%
Pell amount in term 1	2,315
Pell amount in term 2	2,320
Pell amount in term 3	1,529

Table 3: Difference-in-Difference Estimates of the Effect of YRP on Academic Outcomes

Outcomes	Post*Full-time	SE	N	Include Covariates	Enrolled in short-term programs
1. Pell amount in summer	321***	[13]	26,598		
	312***	[13]	26,598	X	
	488***	[48]	2,632		X
	469***	[46]	2,632	X	X
2. Took class in Summer	0.093***	[0.010]	26,598		
	0.083***	[0.010]	26,598	X	
	0.164***	[0.034]	2,632		X
	0.144***	[0.032]	2,632	X	X
3. Credits Earned in Summer	0.768***	[0.074]	26,598		
	0.698***	[0.069]	26,598	X	
	1.393***	[0.265]	2,632		X
	1.287***	[0.253]	2,632	X	X
4. Earned over 6 credits in Summer	0.060***	[0.007]	26,598		
	0.055***	[0.007]	26,598	X	
	0.117***	[0.026]	2,632		X
	0.115***	[0.025]	2,632	X	X
5. Credits Earned in Fall	0.101	[0.092]	26,598		
	-0.003	[0.089]	26,598	X	
	-0.098	[0.317]	2,632		X
	-0.134	[0.312]	2,632	X	X
6. Credits Earned in the Spring	0.278**	[0.134]	26,598		
	0.029	[0.116]	26,598	X	
	0.141	[0.458]	2,632		X
	-0.084	[0.407]	2,632	X	X
7. Earned Certificate in 1 year	0.005*	[0.003]	26,598		
	0.003	[0.003]	26,598	X	
	0.032**	[0.015]	2,632		X
	0.034**	[0.015]	2,632	X	X
8. Earned Diploma in 2.5 years	0.006*	[0.003]	26,598		
	0.005	[0.003]	26,598	X	
	-0.011	[0.011]	2,632		X
	-0.011	[0.011]	2,632	X	X
9. Earned Associate in 2.5 years	0.011***	[0.004]	26,598		
	0.007*	[0.004]	26,598	X	
	0.011	[0.012]	2,632		X
	0.010	[0.013]	2,632	X	X

Note: Each row is a separate regression. Coefficients are for the interaction of post-2008 indicator variable with full-time enrollment status in the first term. Robust standard errors are in parentheses. All specification includes post-2008 indicator variable and full-time enrollment status in the first term. The regressions with covariates controlled for race, gender, high school graduation status, grades point average and credits earned in the first term, expected family contribution and Pell grant amount in the first term, intent at college entry, college and major fixed effects. Credits earned in the first term is not included as an covariate when it is the outcome variable. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table 4: Difference-in-Difference Estimates of the effect of YRP on Financial Aid Outcomes

Outcomes	Post*Full-time	S.E.	N	Include Covariates	Enrolled in short-term programs
1. Loan in the Fall	19	[16]	26,598		
	7	[15]	26,598	X	
	-24	[49]	2,632		X
	-27	[48]	2,632	X	X
2. Loan in the Spring	37**	[18]	26,598		
	23	[17]	26,598	X	
	-75	[59]	2,632		X
	-69	[57]	2,632	X	X
3. Loan in the Summer	-1	[7]	26,598		
	-3	[7]	26,598	X	
	4	[24]	2,632		X
	13	[24]	2,632	X	X
4. Other aid in the Fall (non-Pell or loan)	64***	[18]	26,598		
	71***	[17]	26,598	X	
	36	[46]	2,632		X
	37	[42]	2,632	X	X
5. Other aid in the Spring	-145***	[12]	26,598		
	-142***	[11]	26,598	X	
	-116***	[37]	2,632		X
	-121***	[36]	2,632	X	X
6. Other aid in the Summer	-4**	[2]	26,598		
	-6***	[2]	26,598	X	
	-5	[7]	2,632		X
	-7	[7]	2,632	X	X

Note: Each row is a separate regression. Coefficients are for the interaction of post-2008 indicator variable with full-time enrollment status in the first term. Robust standard errors are in parentheses. All specification includes post-2008 indicator variable and full-time enrollment status in the first term. The regressions with covariates controlled for race, gender, high school graduation status, grades point average and credits earned in the first term, expected family contribution and Pell grant amount in the first term, intent at college entry, college and major fixed effects. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table 5: Difference-in-Difference Estimates of the effect of YRP on Labor Market Outcomes

Outcomes	Post*Full-time	S.E.	N	Include Covariates	Enrolled in short-term programs
1. Employed in the Fall	0.024*	[0.012]	26,598		
	0.037***	[0.012]	26,598	X	
	0.029	[0.040]	2,632		X
	0.044	[0.040]	2,632	X	X
2. Employed in the Spring	-0.003	[0.012]	26,598		
	0.009	[0.012]	26,598	X	
	-0.035	[0.040]	2,632		X
	-0.035	[0.040]	2,632	X	X
3. Employed in the Summer	-0.021*	[0.012]	26,598		
	-0.010	[0.012]	26,598	X	
	-0.026	[0.041]	2,632		X
	-0.023	[0.040]	2,632	X	X
4. Employed in the 1st year	-0.000	[0.012]	26,598		
	0.010	[0.011]	26,598	X	
	-0.011	[0.039]	2,632		X
	-0.007	[0.039]	2,632	X	X
5. Employed in the 2nd year	-0.002	[0.011]	26,598		
	0.007	[0.011]	26,598	X	
	0.007	[0.038]	2,632		X
	0.008	[0.037]	2,632	X	X
6. Employed in the 3rd year	-0.001	[0.012]	26,598		
	0.009	[0.011]	26,598	X	
	-0.022	[0.038]	2,632		X
	-0.018	[0.037]	2,632	X	X
7. Earnings in the Fall	97*	[56]	26,598		
	146***	[55]	26,598	X	
	162	[197]	2,632		X
	152	[196]	2,632	X	X
8. Earnings in the Spring	26	[103]	26,598		
	96	[100]	26,598	X	
	135	[383]	2,632		X
	115	[387]	2,632	X	X
9. Earnings in the Summer	-35	[60]	26,598		
	-7	[59]	26,598	X	
	198	[233]	2,632		X
	121	[231]	2,632	X	X
10. Earnings in the 1st year	80	[201]	26,598		
	227	[195]	26,598	X	
	486	[739]	2,632		X
	375	[738]	2,632	X	X
11. Earnings in the 2nd year	310	[263]	26,598		
	407	[265]	26,598	X	
	1,172	[990]	2,632		X
	953	[959]	2,632	X	X
12. Earnings in the 3rd year	609***	[184]	26,598		
	681***	[179]	26,598	X	
	1,433**	[648]	2,632		X
	1,390**	[637]	2,632	X	X

Note: Each row is a separate regression. Coefficients are for the interaction of post-2008 indicator variable with full-time enrollment status in the first term. Robust standard errors are in parentheses. All specification includes post-2008 indicator variable and full-time enrollment status in the first term. The regressions with covariates controlled for year of work experience and its squared term, race, gender, high school graduation status, grades point average and credits earned in the first term, expected family contribution and Pell grant amount in the first term, intent at college entry, college and major fixed effects. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table 6: Difference-in-Difference Estimates of the effect of YRP by Gender

Outcomes	Post*Full-time	SE	N	Subgroup	Enrolled in short-term programs
1. Pell amount in summer	291***	[16]	18,015	Women	
	349***	[21]	8,583	Men	
	456***	[65]	1,518	Women	X
	444***	[67]	1,114	Men	X
2. Credits Earned in Summer	0.706***	[0.084]	18,015	Women	
	0.630***	[0.120]	8,583	Men	
	1.598***	[0.354]	1,518	Women	X
	0.704*	[0.374]	1,114	Men	X
3. Earned Certificate in 1 year	0.004	[0.003]	18,015	Women	
	0.003	[0.007]	8,583	Men	
	0.058***	[0.020]	1,518	Women	X
	-0.005	[0.023]	1,114	Men	X
4. Earned Diploma in 2.5 years	0.008**	[0.004]	18,015	Women	
	-0.001	[0.006]	8,583	Men	
	0.005	[0.014]	1,518	Women	X
	-0.024	[0.018]	1,114	Men	X
5. Earned Associate in 2.5 years	0.003	[0.004]	18,015	Women	
	0.012*	[0.007]	8,583	Men	
	0.017	[0.017]	1,518	Women	X
	-0.006	[0.020]	1,114	Men	X
5. Employed in the Fall	0.043***	[0.015]	18,015	Women	
	0.033	[0.021]	8,583	Men	
	0.034	[0.056]	1,518	Women	X
	0.080	[0.059]	1,114	Men	X
6. Earnings in the Fall	107*	[65]	18,015	Women	
	304***	[100]	8,583	Men	
	71	[285]	1,518	Women	X
	414	[293]	1,114	Men	X
7. Employed in the 3rd year	-0.005	[0.013]	18,015	Women	
	0.029	[0.019]	8,583	Men	
	-0.043	[0.052]	1,518	Women	X
	-0.009	[0.056]	1,114	Men	X
8. Earnings in the 3rd year	706***	[204]	18,015	Women	
	641*	[355]	8,583	Men	
	872	[811]	1,518	Women	X
	1,310	[1,072]	1,114	Men	X

Note: Each row is a separate regression. Coefficients are for the interaction of post-2008 indicator variable with full-time enrollment status in the first term. Robust standard errors are in parentheses. All specification includes post-2008 indicator variable and full-time enrollment status in the first term. All regressions controlled for race, gender, high school graduation status, grades point average and credits earned in the first term, EFC and Pell grant amount in the first term, intent at college entry, college and major fixed effects. Panel 5 to 8 also include year of work experience and its squared term as covariates.*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table 7: Difference-in-Difference Estimates of the effect of YRP by Age at Enrollment

Outcomes	Post*Full-time	SE	N	Enroll Age	Enrolled in short-term programs
1. Pell amount in summer	396***	[17]	16,300	≥20	
	190***	[18]	10,298	<20	
	481***	[53]	1,929	≥20	X
	419***	[97]	703	<20	X
2. Credits Earned in Summer	0.871***	[0.095]	16,300	≥20	
	0.365***	[0.096]	10,298	<20	
	1.371***	[0.303]	1,929	≥20	X
	0.788	[0.484]	703	<20	X
3. Earned Certificate in 1 year	0.008*	[0.004]	16,300	≥20	
	-0.006*	[0.004]	10,298	<20	
	0.046**	[0.018]	1,929	≥20	X
	0.000	[0.022]	703	<20	X
4. Earned Diploma in 2.5 years	0.007	[0.005]	16,300	≥20	
	0.001	[0.004]	10,298	<20	
	-0.022	[0.014]	1,929	≥20	X
	0.008	[0.014]	703	<20	X
5. Earned Associate in 2.5 years	0.010*	[0.005]	16,300	≥20	
	-0.002	[0.004]	10,298	<20	
	0.002	[0.015]	1,929	≥20	X
	0.029	[0.023]	703	<20	X
5. Employed in the Fall	0.028*	[0.015]	16,304	≥20	
	0.076***	[0.019]	10,294	<20	
	0.043	[0.046]	1,929	≥20	X
	0.075	[0.085]	703	<20	X
6. Earnings in the Fall	209***	[79]	16,304	≥20	
	190***	[53]	10,294	<20	
	203	[247]	1,929	≥20	X
	208	[234]	703	<20	X
7. Employed in the 3rd year	0.015	[0.014]	16,304	≥20	
	0.002	[0.017]	10,294	<20	
	-0.029	[0.043]	1,929	≥20	X
	0.036	[0.078]	703	<20	X
8. Earnings in the 3rd year	1,330***	[254]	16,304	≥20	
	-305	[226]	10,294	<20	
	1,497*	[783]	1,929	≥20	X
	1,429	[1,149]	703	<20	X

Note: Each row is a separate regression. Coefficients are for the interaction of post-2008 indicator variable with full-time enrollment status in the first term. Robust standard errors are in parentheses. All specification includes post-2008 indicator variable and full-time enrollment status in the first term. All regressions controlled for race, gender, high school graduation status, grades point average and credits earned in the first term, EFC and Pell grant amount in the first term, intent at college entry, college and major fixed effects. Panel 5 to 8 also include year of work experience and its squared term as covariates. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Table 8: Difference-in-Difference Estimates of the effect of YRP on Students with EFC between -5000 and -4000

Outcomes	Post*Full-time	SE	N	Include Covariates	Enrolled in short-term programs
1. Pell amount in summer	354***	[15]	21,280	X	
	508***	[54]	2,067	X	X
2. Credits Earned in Summer	0.776***	[0.076]	21,280	X	
	1.348***	[0.281]	2,067	X	X
3. Earned Certificate in 1 year	0.004	[0.003]	21,280	X	
	0.032**	[0.016]	2,067	X	X
4. Earned Associate in 2.5 years	0.010***	[0.004]	21,280	X	
	-0.000	[0.013]	2,067	X	X
5. Employed in the Fall	0.051***	[0.013]	21,280	X	
	0.070	[0.044]	2,067	X	X
6. Earnings in the Fall	182***	[57]	21,280	X	
	349*	[196]	2,067	X	X
7. Employed in the 3rd year	0.011	[0.012]	21,280	X	
	-0.011	[0.042]	2,067	X	X
8. Earnings in the 3rd year	593***	[192]	21,280	X	
	906	[676]	2,067	X	X

Note: Each row is a separate regression. Coefficients are for the interaction of post-2008 indicator variable with full-time enrollment status in the first term. Robust standard errors are in parentheses. All specification includes post-2008 indicator variable and full-time enrollment status in the first term. All regressions controlled for race, gender, high school graduation status, grades point average and credits earned in the first term, EFC and Pell grant amount in the first term, intent at college entry, college and major fixed effects. Panel 5 to 8 also include year of work experience and its squared term as covariates.*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.