

Abstract Title Page
Not included in page count.

Title: Aiding or Dissuading? The Effect of Maintaining Eligibility for Need-Based Financial Aid on Late Stage Persistence and Completion

Authors and Affiliations:

Zachary A. Mabel
Doctoral Candidate, Quantitative Policy Analysis in Education
Harvard Graduate School of Education

Abstract Body

Limit 4 pages single-spaced.

Background / Context:

Description of prior research and its intellectual context.

The returns to higher education have increased dramatically in recent decades with the rise of the global, knowledge-based economy. Research shows that the college earnings premium has increased more than 10 percent over the last fifteen years and that the returns to college are concentrated among completers (Carnevale, Rose and Cheah, 2011; Oreopoulos and Petronijevic, 2013). Despite these benefits, many students who attend college are withdrawing without experiencing the full returns on their investment. More than 80 percent of degree-seeking 2-year college goers withdraw prior to earning an associate's degree, and although more than half of community college students intend to transfer to earn a bachelor's degree, just over 20 percent ever do (NCES, 2012; Kienzl et al., 2012). Among students who start out at 4-year colleges, approximately 40 percent do not complete (NCES, 2012). Furthermore, on-time graduation has become the exception today and not the rule among completers, and the extra out-of-pocket schooling expenses, loan borrowing, and foregone wages students incur on the path to completion further diminish the lifetime payoff to postsecondary education (Complete College America, 2014; Campaign for College Opportunity, 2014).

Purpose / Objective / Research Question / Focus of Study:

Description of the focus of the research.

For decades financial aid has been a widely utilized policy tool to support college access and attainment. In the fifty years since the passage of the federal Higher Education Act of 1965, average aid per student has more than tripled, from \$3,709 in 1971-72 to \$14,180 (in constant 2014 dollars), largely due to the expansion of federal aid programs (Baum, Elliot and Ma, 2014; Dynarski and Scott-Clayton, 2013). In 2013-14, student aid in the form of grants, loans, federal work study, and federal tax credits and deductions totaled \$238 billion, with 38 percent of undergraduate students receiving Pell Grants that averaged \$3,678 per recipient (Baum, Elliot and Ma, 2014).

Given the size of these subsidies and the troubling outcomes of college enrollees, understanding how financial aid impacts student progress to degree completion is critical. Yet most research to date has examined the effect of aid on attendance. For example, quasi-experimental studies suggest that an additional \$1,000 in grant aid increases college enrollment by 3 to 5 percentage points and pays off for students if the individual rate of return to a year of college is 2.5 percent or higher (Dynarski, 2003; Kane, 2003; Seftor and Turner, 2002). Much less is known about the effect of aid on persistence, and in particular, its impact on long-term progress to degree completion.

Do sustained tuition subsidies boost completion? Do they accelerate or protract time to degree? In this paper, I shed light on one important design consideration of need-based aid programs: the length of time for which grants should be made available. My findings contribute to the existing literature by estimating the late stage persistence and graduation effects of maintaining eligibility for aid as students near completion.

Setting:

Description of the research location.

This study is national in scope. Specifically, I exploit recent changes to federal Pell Grant eligibility rules and I rely on annual microdata from the nationally representative Current Population Survey (CPS) for my analysis. As a result, I provide estimates of the average treatment effect of maintaining Pell aid eligibility on long-term college outcomes that generalize to the population of Pell-eligible students attending four-year colleges and universities throughout the United States.

Population / Participants / Subjects:

Description of the participants in the study: who, how many, key features, or characteristics.

My analytic sample is comprised of 4,652 individuals, all of whom: a) participated in two consecutive waves of the October CPS between 2009 and 2014, b) enrolled at a four-year college or university in October of year 1, and c) had not yet earned a bachelor's degree in October of year 2. Of the individuals in my sample, 46 percent were eligible to receive a federal Pell Grant on the basis of their estimated Expected Family Contribution and 14 percent would have enrolled as a 5th or higher-level undergraduate in October of year 2 if they continued with their studies. Importantly, the subset of Pell-EFC-eligible students in my sample excludes 508 individuals who: i) did not earn a high school diploma or GED, ii) were eligible for a minimum Pell award, and iii) qualified for a maximum award because their family income was between \$24,000 and \$32,000. As I explain in more detail below, the changes to the Pell Grant eligibility rules that took effect in 2012-13 affected these three subsets of students. I exclude them in order to isolate the effects induced by a change to the lifetime Pell eligibility duration rule introduced at the same time.

Intervention / Program / Practice:

Description of the intervention, program, or practice, including details of administration and duration.

In 2008 and 2009, the cost of the federal Pell Grant program rose rapidly due to large increases in college enrollment, the effect of the Great Recession on grant eligibility, and a large increase in the maximum Pell award (New America Foundation, 2015). By 2011, these cost increases led to an \$18.3 billion shortfall to fund the program. Congress infused the program with \$17 billion, leaving a more manageable \$1.3 billion deficit. To address the remaining gap and maintain the maximum award amount of \$5,550, Congress implemented four rule changes: 1) an elimination of awards to students without a high school diploma or GED, 2) an elimination of awards to students who would receive no more than \$555 (10% of the maximum award amount); 3) a reduction of the family income ceiling (from \$32,000 to \$23,000) that automatically assigns students EFCs of zero for full award eligibility, and 4) a reduction of lifetime award eligibility from 9 to 6 years (ACCT, 2012). These changes applied to both incoming undergraduates and continuing students effective immediately on July 1, 2012. Estimates suggest that 145,000 recipients lost Pell awards in the 2012-13 academic year as a result of the combined changes to program eligibility, of which 40 percent were impacted by the lifetime eligibility reduction (ACCT, 2012). As mentioned above, I focus on the effects on persistence and completion caused only by the change to the eligibility duration rule by excluding from my sample students who would have been impacted by rule changes (1) – (3).

Research Design:

Description of the research design.

I use a difference-in-differences (DD) strategy to examine the effect of maintaining Pell Grant eligibility on college persistence for students who would take 5 or more years to graduate. Ideally, to exactly mirror the change in aid eligibility enacted by Congress, my approach would compare the college outcomes of students enrolled for 6 or fewer years to the outcomes of students enrolled for 7-9 years before and after the new rules took effect. Due to data limitations which I discuss in more detail below, I cannot differentiate between students once they have enrolled for 5 or more years. I therefore compare the outcomes of students enrolled for 4 or fewer years to the outcomes of students enrolled for 5 or more years before and after the rule change. Under the assumption that the outcome trends for students in both groups would be the same in the absence of changes to the program, my analysis provides an estimate of the intent-to-treat effect of maintaining aid eligibility on late stage college persistence.[†] As an extension to my DD model, I also estimate effects on persistence in a triple difference framework in which I compare the outcomes of Pell-EFC-eligible students by class level before and after the rule change to the outcomes of non-Pell-EFC-eligible students. The latter group provides an additional control that eliminates any bias introduced by secular changes in enrollment between more and less advanced students that are unrelated to the loss of aid eligibility.

Data Collection and Analysis:

Description of the methods for collecting and analyzing data.

I rely on six years of annual microdata from the 2009-2014 Current Population Surveys (CPS) for this study. The CPS asks respondents every October about the schooling behavior of all household members and half of the sample in a given October is re-surveyed the following year. These features allow me to observe if changes in Pell eligibility alter the re-enrollment decisions of individuals who participate in two successive waves of data collection.

While the CPS is the best publicly available dataset for this study, it has two notable limitations. First, I do not observe an indicator for Pell Grant eligibility directly in the data. I therefore follow Seftor and Turner (2002) and estimate eligibility using annual aid formulas published by the U.S. Department of Education and data on family income, marital status, and the number of dependents from the CPS. Error in estimating eligibility primarily arises from the fact that asset information is not reported in the CPS; I must therefore assume that all respondents have zero assets. This approach overstates program eligibility and biases my results towards zero. However, in practice the magnitude of bias is likely to be small because most assets that families own (e.g. homes and retirement funds) are omitted from the aid eligibility formula and other financial assets count against eligibility only if they exceed a threshold (up to \$71,000 for independent students in the 2012-13 school year). In simulation work, Dynarski and Scott-Clayton (2007) find that the correlation of actual versus predicted (excluding asset data) Pell Grant amounts is 0.95 and three quarters of the students in their study would have received the same award amount if the award formula excluded asset information.

[†] In Figure 1, I present graphical evidence that the parallel trends assumption is plausible. Enrollment appears stable in the pre-rule change period for all four groups of students. Re-enrollment differences by class level between 2010 and 2011 are 0.025 and 0.001 among the Pell-EFC-eligible and non-Pell-EFC-eligible samples respectively, and neither difference is statistically significant (the respective p-values are 0.44 and 0.96).

The CPS data is also limited by the fact that class level information is top-coded (at 4 years of college) for college enrollees. As a result, I do not observe the exact number of years of college completed for enrolled students. I therefore categorize individuals who would have enrolled for a minimum of 5 years prior to earning a degree, which is my proxy for the group of students potentially impacted by the lifetime eligibility rule change. Because this “5+” group includes individuals who would have maintained Pell Grant eligibility for a sixth year, and due to the measurement error in estimating Pell eligibility, my analysis likely provides a lower bound estimate of the effect of Pell Grant eligibility on late-stage college outcomes.

Findings / Results:

Description of the main findings with specific details.

My results indicate that the loss of Pell eligibility substantially decreases the likelihood that advanced undergraduates continue to progress towards a bachelor’s degree. I estimate that losing aid after six years decreases persistence to the next year by 9-12 percentage points overall. Moreover, this effect appears to be driven entirely by financially independent students. Independents are 13-15 percentage points less likely to re-enroll once Pell aid is unavailable, whereas the effect for dependents is near zero and not statistically significant. Notably, I also find that full-time enrollment declines by 9 percentage points, which provides suggestive evidence that a non-trivial fraction of the students induced to withdraw were on a path to completion before they lost their eligibility for aid. On the other hand, I find no evidence that the threat of losing aid accelerates time to degree. Among the 5+ students in my sample, 37 percent earned a bachelor’s degree in 2010-11, when losing aid in the next school year did not pose a threat. Thirty-six percent of students graduated on average in the three subsequent school years when future Pell aid could be lost.

Conclusions:

Description of conclusions, recommendations, and limitations based on findings.

My findings reveal that sustained investments in need-based financial aid are a necessary condition for maintaining long-term progress to degree completion for many low-income students. Public aid programs therefore have an essential role to play in reducing the large and growing income disparities in college attainment in the U.S postsecondary system. Furthermore, and in light of the fact that many college students who leave without a degree fulfill most of the credits typically required to graduate (Bowen, Chingos, & McPherson, 2009; Mabel and Britton, 2015; Shapiro et al., 2014), my results suggest that unanticipated shocks (financial or otherwise) may play an important role in explaining and addressing the phenomenon of college late departure. Finally, the threat of losing aid may not accelerate time-to-degree because the financial barriers to delayed completion are of second order. Aid policy may have a limited role to play in addressing inefficiencies in degree production as a result, while other obstacles to on-time graduation, such as the complexity of the college decision environment, are likely to be considerable and deserve more policy attention.

Appendices

Not included in page count.

Appendix A. References

References are to be in APA version 6 format.

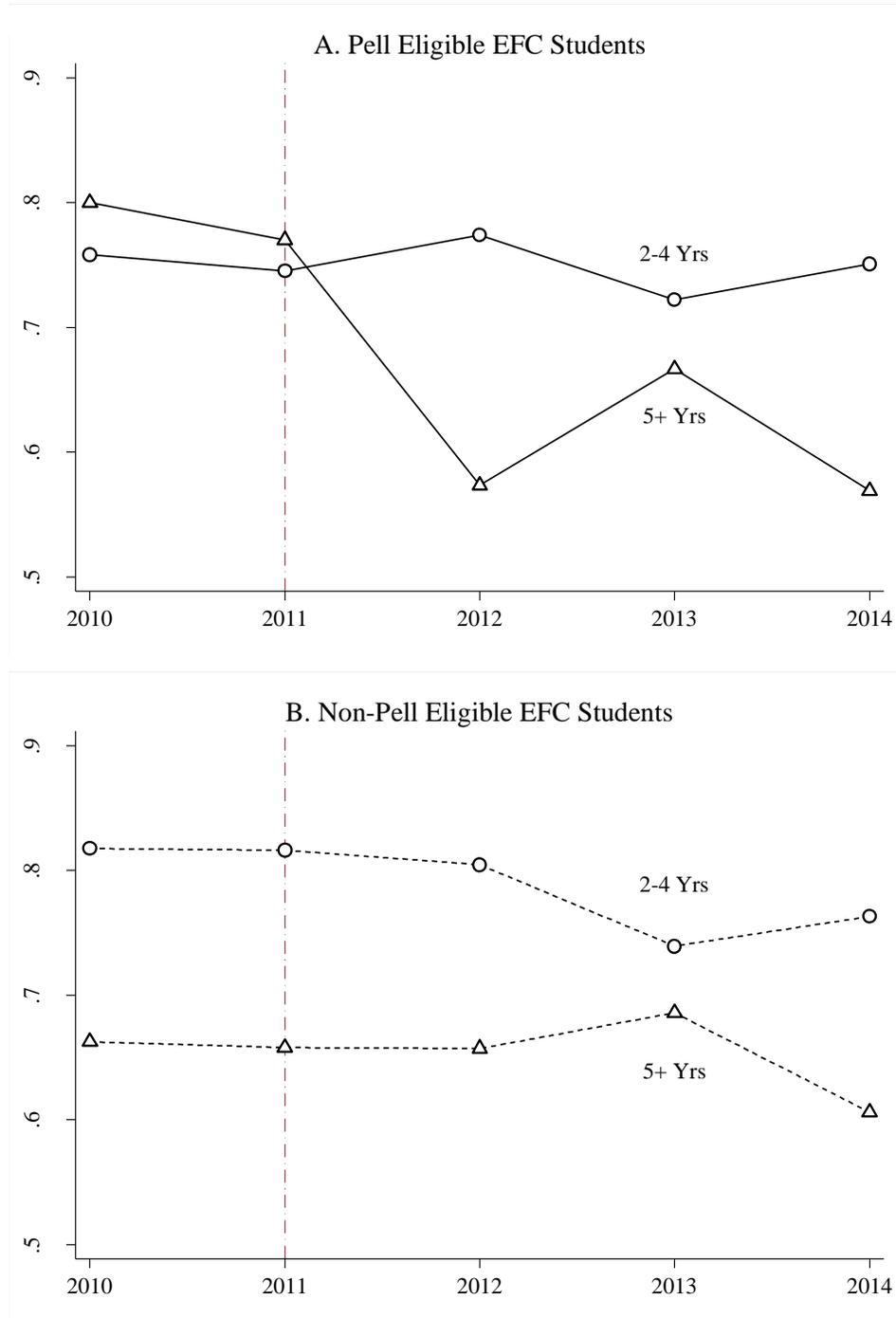
- Association for Community College Trustees. (2012). *Pell Grant Eligibility Changes*. Washington, DC: Association for Community College Trustees.
- Baum, S., Elliot, D. C., & Ma, J. (2014). *Trends in student aid 2014*. Trends in Higher Education Series. Washington, DC: The College Board.
- Bowen, W. G., Chingos, M. M. & McPherson, M. S. (2009). *Crossing the finish line: Completing college at America's public universities*. Princeton, NJ: Princeton University Press.
- Campaign for College Opportunity. (2014). *The real cost of college: Time & credits to degree at California community colleges*. Los Angeles, CA: The Campaign for College Opportunity.
- Carnevale, A. P., Rose, S. J., & Cheah, B. (2011). *The college payoff: Education, occupations, lifetime earnings*. Washington, DC: Center on Education and the Workforce, Georgetown University.
- Complete College America. (2014). *4-Year Myth*. Indianapolis, IN: Complete College America.
- Dynarski, S. (2003). Does aid matter? Measuring the effect of student aid on college attendance and completion. *American Economic Review*, 93(1), 278–88.
- Dynarski, S. & Scott-Clayton, J. (2007). *College grants on a postcard: A proposal for simple and predictable federal student aid*. The Hamilton Project Discussion Paper 2007-01. Washington, DC: The Brookings Institution.
- Kane, T. J. (2003). *A quasi-experimental estimate of the impact of financial aid on college-going*. NBER Working Paper No. 9703. Cambridge, MA: National Bureau of Economic Research.
- Kienzl, G., Wesaw, A. J., & Kumar, A. (2012). *Understanding the transfer process: A report by the Institute for Higher Education Policy for the Initiative on Transfer Policy and Practice*. Washington, DC: Institute for Higher Education Policy and Practice.
- Mabel, Z., & Britton, T. (2015). *Leaving late: Understanding the extent and predictors of college late departure*. Cambridge, MA: Harvard Graduate School of Education. Unpublished Manuscript.

- National Center for Education Statistics. (2012). *Digest of education statistics, table 376*. Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics.
- New America Foundation. (2015). *Pell Grant Program Overview*. Retrieved on September 29, 2015 at <http://atlas.newamerica.org/federal-pell-grant-program>.
- Oreopoulos, P., & Petronijevic, U. (2013). Making college worth it: A review of the returns to higher education. *Future of Children*, 23(1), 41-65.
- Seftor, N., & Turner, S. (2002). Back to school: Federal student aid policy and adult college enrollment. *Journal of Human Resources*, 37(2), 336–52.
- Shapiro, D., Dundar, A., Yuan, X., Harrell, A., Wild, J., & Ziskin, M. (2014). *Some college, no degree: A national view of students with some college enrollment, but no completion* (Signature Report No. 7). Herndon, VA: National Student Clearinghouse Research Center.

Appendix B. Tables and Figures

Not included in page count.

Figure 1. Fraction of undergraduates enrolled at a 4-year institution in the prior academic year returning to college, by Pell eligibility status, class level, and year



Note: Reference lines denote the last year in which EFC-eligible students enrolled in college for 7-9 years remained eligible to receive a Pell grant.

Source: 2009-2014 Current Population Surveys

Table 1. Effect of Pell Grant eligibility on the probability of late stage persistence (N = 2,123)

	(1)	(2)	(3)	(4)	(5)
Before x 5+ Yrs	0.154*** (0.057)	0.111** (0.051)	0.106** (0.051)	0.104** (0.051)	0.091* (0.053)
5+ Yrs	-0.135*** (0.042)	-0.065* (0.037)	-0.066* (0.037)	-0.066* (0.037)	-0.067 (0.173)
Before	-0.005 (0.021)	0.003 (0.020)	-0.058* (0.033)		
Constant	0.754*** (0.014)				
R ²	0.007	0.136	0.144	0.145	0.166
<i>Controls</i>					
Individual Demographics		✓	✓	✓	✓
Economic Conditions			✓	✓	✓
Region Fixed Effects			✓	✓	✓
Year Effects				✓	✓
Demographics x Year Dummies					✓
Demographics x 5+					✓

*** p<0.01 ** p<0.05 * p<0.10

Notes: Columns (1) - (3) report results from difference-in-differences specifications; columns (4) - (5) report results from specifications that include census division and year fixed effects. Additional controls are listed in the bottom panel of the table. Individual demographics include indicators for gender, race and independent status, and age in years. Time-varying regional economic controls include the real (in 2009 dollars) percentage change in GDP and seasonally adjusted October unemployment rate. All models also include a constant. Robust standard errors, clustered at the household level, are shown in parentheses.

Source: 2009-2014 October Current Population Surveys.

Table 2. Triple differencing estimate of the effect of Pell Grant eligibility on the probability of late stage persistence

	(1)	(2)	(3)	(4)	(5)	(6)
	DD		DD		DDD	
	Pell Eligible (N = 2,123)		Non-Pell Eligible (N = 2,529)		Pooled Sample (N = 4,652)	
Before x 5+ Yrs x Pell					0.191** (0.079)	0.120 (0.074)
Before x 5+ Yrs	0.154*** (0.057)	0.091* (0.053)	-0.037 (0.054)	-0.024 (0.052)	-0.037 (0.054)	-0.025 (0.052)
5+ Yrs	-0.135*** (0.042)	-0.067 (0.173)	-0.120*** (0.036)	0.205 (0.173)	-0.120*** (0.036)	0.200 (0.175)
Before	-0.005 (0.021)		0.046*** (0.018)		0.046*** (0.018)	
Pell					-0.016 (0.019)	0.089 (0.251)
5+ x Pell					-0.015 (0.055)	-0.278 (0.245)
Before x Pell					-0.051* (0.028)	
Constant	0.754*** (0.014)		0.770*** (0.012)		0.770*** (0.012)	
R ²	0.007	0.166	0.015	0.171	0.012	0.167
<i>Additional Controls</i>						
Demographics X Year Dummies		✓		✓		✓
Demographics X 5+		✓		✓		✓
Demographics X Year Dummies X Pell						✓
Demographics X 5+ X Pell						✓

*** p<0.01 ** p<0.05 * p<0.10

Note: Odd-numbered columns report results from difference-in-differences (DD) and difference-in-differences-in-differences (DDD) specifications without controls; even-numbered columns report results from specifications that include indicators for gender, race and independent student status; age in years; the real (in 2009 dollars) percentage change in GDP; seasonally adjusted October unemployment rate; region and year fixed effects; and a constant. Additional interaction terms included in each model are listed in the bottom panel of the table. Robust standard errors, clustered at the household level, are shown in parentheses.

Table 3. Effect of Pell Grant eligibility on the probability of late stage persistence by dependency status

	(1)	(2)	(3)	(4)	(5)
Dependent Students (N = 1,337)					
Before x 5+ Yrs	0.031 (0.057)	0.044 (0.057)	0.042 (0.056)	0.036 (0.056)	0.002 (0.064)
5+ Yrs	0.032 (0.046)	0.038 (0.047)	0.036 (0.046)	0.036 (0.046)	0.321 (0.466)
Before	0.013 (0.022)	0.009 (0.022)	-0.068* (0.036)		
Constant	0.843*** (0.015)				
R ²	0.003	0.010	0.023	0.028	0.051
Independent Students (N = 786)					
Before x 5+ Yrs	0.174* (0.091)	0.154* (0.089)	0.139 (0.089)	0.133 (0.090)	0.151* (0.091)
5+ Yrs	-0.151*** (0.058)	-0.147*** (0.057)	-0.138** (0.056)	-0.134** (0.056)	-0.025 (0.205)
Before	-0.018 (0.041)	-0.010 (0.040)	-0.043 (0.065)		
Constant	0.578*** (0.027)				
R ²	0.009	0.058	0.077	0.080	0.119
<i>Controls</i>					
Individual Demographics		✓	✓	✓	✓
Economic Conditions			✓	✓	✓
Region Fixed Effects			✓	✓	✓
Year Effects				✓	✓
Demographics X Year Dummies					✓
Demographics X 5+					✓

*** p<0.01 ** p<0.05 * p<0.10

Notes: Columns (1) - (3) report results from difference-in-differences specifications; columns (4) - (5) report results from specifications that include census division and year fixed effects. Additional controls are listed in the bottom panel of the table. Individual demographics include indicators for gender, race and independent status, and age in years. Time-varying regional economic controls include the real (in 2009 dollars) percentage change in GDP and seasonally adjusted October unemployment rate. All models also include a constant. Robust standard errors, clustered at the household level, are shown in parentheses.

Source: 2009-2014 October Current Population Surveys.

Table 4. Effect of Pell Grant eligibility on the probability of late stage persistence by re-enrollment type (N= 2,123)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outcome	Any		Four-Year		Public		Full-Time	
Before x 5+ Yrs	0.154*** (0.057)	0.091* (0.053)	0.188*** (0.059)	0.127** (0.053)	0.132** (0.062)	0.089 (0.062)	0.167*** (0.062)	0.092* (0.055)
5+ Yrs	-0.135*** (0.042)	-0.067 (0.173)	-0.060 (0.043)	0.029 (0.167)	-0.074* (0.044)	0.044 (0.183)	-0.151*** (0.044)	0.070 (0.171)
Before	-0.005 (0.021)		-0.025 (0.024)		0.004 (0.025)		-0.008 (0.024)	
Constant	0.754*** (0.014)		0.643*** (0.016)		0.609*** (0.016)		0.663*** (0.016)	
R ²	0.007	0.166	0.005	0.150	0.003	0.089	0.007	0.202
<i>Controls</i>								
Individual Demographics		✓		✓		✓		✓
Economic Conditions		✓		✓		✓		✓
Region Fixed Effects		✓		✓		✓		✓
Year Effects		✓		✓		✓		✓
Demographics X Year Dummies		✓		✓		✓		✓
Demographics X 5+		✓		✓		✓		✓

*** p<0.01 ** p<0.05 * p<0.10

Note: Odd-numbered columns report results from difference-in-differences (DD) specifications without controls; even-numbered columns report results from specifications that include all controls listed in the bottom panel of the table. Individual demographics include indicators for gender, race and independent student status, and age in years. Time-varying regional economic controls include the real (in 2009 dollars) percentage change in GDP and seasonally adjusted October unemployment rate. All models also include a constant. Robust standard errors, clustered at the household level, are shown in parentheses.

Source: 2009-2014 October Current Population Surveys.

Table 5. College outcomes of Pell-eligible EFC students who enrolled at a four-year college and would be enrolled as a fifth or higher-level undergraduate in the next academic year, by year relative to rule change

	(1)	(2)	(3)	(4)	(5)
	2010	2011	2011-2013	Difference (1 - 2)	Difference (1 - 3)
Graduate in year t	0.373	0.297	0.364	0.076 (0.068)	0.009 (0.056)
Withdraw in year t	0.164	0.307	0.242	-0.143** (0.061)	-0.079* (0.045)
Re-enroll in year t+1	0.464	0.396	0.394	0.068 (0.072)	0.070 (0.057)
Observations	110	101	264	223	412

*** p<0.01 ** p<0.05 * p<0.10

Note: Means are shown in columns (1) - (3). Mean differences are reported in columns (4) and (5) with robust standard errors, clustered at the household level, shown in parentheses.

Source: 2010-2014 October Current Population Surveys.