

# Credits for College: The Impacts of Information on Take-Up of Tax-Based Student Aid and Enrollment\*

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## Abstract

We present experimental evidence on the impacts of providing information on education tax benefits on take-up of these tax benefits and on college enrollment. The experiment was administered in early 2015 and focused on three types of students: high school seniors, dependent college students and independent college students. Individuals from each group were randomly assigned to treatment and control groups. Individuals in the treatment group received an experimental information flyer that highlighted information on tax benefits related to college, while individuals in the control group were not sent anything. While we do not find significant impacts of the treatment on enrollment, the results indicate meaningful impacts on take-up of education tax credits for some subgroups of students.

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## **I. Introduction**

The federal income tax code has become a significant tool to provide households with financial assistance to offset college costs (Dynarski, Scott-Clayton and Wiederspan 2013 and Dynarski and Scott-Clayton 2016). In 2017, taxpayers claimed just over \$20 billion of tax benefits from two key tax credits and a deduction for current education costs (Turner 2016). To put this amount in perspective, in that same year total federal grant aid was roughly \$40 billion (College Board, 2017). However, many individuals forgo education tax benefits (Ackerman, Cronin and Turner 2015). Incomplete take-up of tax based aid can have meaningful effects on postsecondary enrollment and attainment, causing students to drop out or not to enroll in the first place. Why do students and their families fail to capitalize on these benefits? Are they simply unaware of tax-based federal student aid? In this paper, we address these questions using a random assignment experiment that provides information to students and their families about key tax benefits for higher education.

Targeting three groups of students—high school seniors, dependent college students, and independent college students—we randomly assign students into a treatment group that receives information on tax-based aid and to the control group that does not receive any information. Individuals in the treatment group were mailed experimental informational flyers from the Internal Revenue Service (IRS) on two separate occasions. The flyers highlighted information about key tax benefits for higher education including the American Opportunity Tax Credit (AOTC), Lifetime Learning Credit (LLC) and college-related aspects of the Earned Income Tax Credit (EITC).

The results indicate that the informational flyers had virtually no effect on college enrollment. However our findings suggest that the treatment increased take-up of the highlighted

tax benefits, with effects as large as 8% for some groups of students. We also report estimates of take-up rates in the control group, which are among the first reported findings on the take-up of key education tax benefits. Take-up varies widely across student groups, from just over 50% for independent students who have children of their own, to over 90% for families claiming the EITC for enrolled students. Overall, our findings suggest that some taxpayers may be unaware of tax-based federal student aid, but when informed about these benefits they capitalize on the programs and that there is considerable scope for outreach to further increase the take-up of education tax benefits.

The remainder of this paper is organized as follows. Section II provides a summary of prior work on the effectiveness of outreaches, background on key tax benefits related to college costs, describes the administrative tax data used in the analysis, and details the experimental design. Section III presents the empirical analysis and results from the experiment, and Section IV discusses conclusions from the experiment and possible directions for further work.

## **II. Background**

### *A. Prior work on informational interventions*

Results from recent work suggest that there are meaningful informational barriers that prevent students from applying for student aid, and therefore also serve as a barrier to postsecondary enrollment. Bettinger, Long, Oreopolous and Sanbonmatsu (2012) use a field experiment to study the effect of information and reduced application costs on the decisions to apply for federal student aid and enroll in college. In their study, low to moderate income families who file their taxes with H&R Block were randomly assigned to one of two treatment groups as well as a control group. The treatment groups include one that received information about college costs

and likely federal student aid amounts and a second that received this information as well as help with the relatively lengthy and complex federal student aid application. Their results indicate that the group that received both information and help with the application were significantly more likely to submit the application, receive financial aid and enroll in college. This finding is remarkable given the relatively low cost of the intervention relative to the higher earnings associated with college enrollment. Yet this finding suggests that information alone may not alter behavior. Carrell and Sacerdote (2017) also reach this conclusion when studying college going behavior in a setting where youths received mentoring and information, or just information. However, some work suggests that providing students and their families with information results in meaningful changes in behavior. Hoxby and Turner (2013 and 2015) show that informational barriers also impact high-achieving low-income students. Using a random experiment, they show that providing these students with additional information on college costs significantly increases the rate at which these students apply and subsequently enroll at elite colleges. They also find that the information materially changes their perception of college costs and the availability of programs of study. Castleman and Page (2015) show that text-message reminders impact the persistence of federal student aid use, and subsequent enrollment for community college students. Using a field experiment in which the treatment group received text message reminders about federal student aid application deadlines while the control group did not receive any text messages, they find that first-year students who received the messages were 14 percent more likely to be enrolled the following year compared to those who did not receive any reminders. Castleman, Owen and Page (2015) and Barr, Bird and Castleman (2016) also present experimental evidence indicating that text-message informational interventions can impact enrollment and borrowing decisions..

While these earlier studies highlight informational barriers for students, there is also evidence that taxpayers respond to information about tax benefits provided by the United States Internal Revenue Service (IRS). For example, in 2006 the deduction for tuition and fees was expired at the time that the IRS printed the individual income tax form and instructions. As a result, in those paper forms the IRS indicated that the deduction had expired. However, the tuition deduction was later extended so that taxpayers could claim the benefit on their 2006 tax return. The IRS issued guidance on how to claim this benefit and software providers updated their products to reflect this change. Yet, in 2006 many taxpayers were uncertain about how to claim the tuition deduction and the number of deductions fell by 17%. When the tax forms returned to normal in 2007, credit use increased and the number of credits claimed was back to within 2% of 2005.<sup>1</sup> More generally, recent work (Bhargava and Manoli 2015, Manoli and Turner 2016, Guyton et al 2017) suggests that notifications from the IRS can impact taxpayer behavior in other settings such as claiming Earned Income Tax Credit benefits and filing a tax return.

### *B. Tax Benefits for Higher Education*

The tax code includes benefits for higher education in numerous ways, including tax benefits for current postsecondary expenses, for education savings, for prior education expenses and for education institutions (Turner 2016). The experimental informational flyers highlight tax benefits for current education, so we focus on these benefits in the discussion below.<sup>2</sup>

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<sup>1</sup> During that same year, many taxpayers shifted into the LLC. Compared to 2005 levels, the tuition deduction fell by roughly 780,000 claims while the LLC increased by 730,000. Taxpayers are often eligible for both the deduction and an education tax credit. However they can claim only one benefit per student per year. Turner (2011) shows that most, but not all, taxpayers select the single benefit that offers the largest reduction in taxes.

<sup>2</sup> Turner (2016) discusses all education tax benefits in greater detail and IRS Publication 970 provides official documentation on the eligibility conditions and rules for computing benefit amounts for tax benefits for education.

The federal tax code offers two tax credits explicitly designed to help students and families offset the costs of higher education, the American Opportunity Tax Credit (AOTC) and the Lifetime Learning Tax Credit (LLTC). The AOTC was introduced for s 2009 and 2010 as part of the American Recovery and Reinvestment Act of 2009.<sup>3</sup> The Lifetime Learning Tax Credit was introduced in 1997 as part of the Taxpayers' Relief Act.

The AOTC provides a tax credit of up to \$2500 per eligible student, and a maximum of \$1000 (40% of the credit amount) is refundable. Benefit amounts are computed based on 100% of the first \$2000 of qualified education expenses and 25% of the second \$2000 of qualified education expenses. Qualified education expenses include tuition, enrollment fees, and fees for course materials. Benefit amounts are also computed based on household income. Households with eligible students must have incomes below thresholds amounts to qualify for the credit. The thresholds amounts are \$180,000 for married filing jointly households and \$90,000 for single or head-of-household households. These thresholds amounts are based on modified adjusted gross income which is equal to adjusted gross income for most households but also includes some foreign income and expense exclusions if claimed. An eligible student is generally an individual who has not yet completed more than 4 years of postsecondary education and who was enrolled in a postsecondary education program at least half-time for one academic period in a given year. An academic period corresponds to a semester, trimester, quarter or summer session.

The Lifetime Learning Credit is another tax benefit for higher education that is available to taxpayers. While the AOTC is a partially refundable credit, the LLTC is a non-refundable credit. Also, while the AOTC is available only for the first 4 years of postsecondary education,

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<sup>3</sup> This tax credit was subsequently extended through 2012 as part of the Tax Relief, Unemployment Insurance Reauthorization and Job Creation Act of 2010, and then again through 2017 as part of the American Taxpayer Relief Act of 2012. Most recently, the AOTC was made permanent as part of the Protecting Americans from Tax Hikes Act of 2015.

the LLC is available for any number of years of postsecondary education. The LLC provides up to a maximum of \$2,000 per return (as opposed to being per eligible student like the AOTC). The benefit amount is computed as 20% of the first \$10,000 of qualified educational expenses. Qualified education expenses include tuition and registration fees, as well as fees for course-related materials that are paid to the postsecondary education institution. Similar to the AOTC, households must have modified adjusted gross income below threshold amounts to be eligible for LLC benefits. For 2014, the threshold amounts were \$128,000 for married filing jointly tax returns, and \$64,000 for single or head-of-household returns. These income thresholds for the LLC are noticeably lower than the income threshold amounts for the AOTC. In general, the AOTC is more generous than the LLC, so if individuals are eligible for both, it is usually advantageous to claim the AOTC instead of the LLC. Households cannot claim the LLC if they claim the AOTC and vice versa.

Lastly, the experimental treatment highlighted college-related aspects of the Earned Income Tax Credit (EITC), which is an extension of child-related tax benefits for postsecondary students. EITC benefits are determined in part by the number of qualifying children in a household and can be worth a maximum of just over \$6,000 in 2014. To qualify for the EITC, children must be 18 and younger or be ages 19-23 and enrolled full-time in postsecondary education institutions for at least 5 months.

### *C. Data and Experimental Design*

We design the sample and analyze the results of the experiment using administrative tax data from the IRS, including information from tax returns (IRS Form 1040) and tuition statements (IRS Form 1098-T). The tuition statements are reported by universities, colleges, and

accredited, degree-granting institutions for all enrolled students who pay tuition. Since the experiment was conducted in early 2015, the experimental sample was drawn from administrative tax data in late 2014 at which time 2013 tax returns were the most recent data available. As a result, our experimental sample consists of three groups based on information from 2013 tax forms: (1) individuals who would be high school seniors in 2014, (2) individuals who were dependent college students in 2013, and (3) individuals who were independent college students in 2013. The high school senior sample consisted of individuals who were born between August 1996 and July 1997 (ages 17 and 18 in 2014), claimed as dependents on 2013 tax returns, and did not have a 1098-T in 2013. The dependent college student sample consisted of individuals who were born between January 1991 and July 1996 (ages 18 to 23 in 2014), claimed as dependents on 2013 tax returns and received a 1098-T in 2013. The independent college student sample consisted of individuals who were born between January 1991 and July 1996 (ages 18 to 23 in 2014), filed a 2013 tax return as either a primary or secondary taxpayer, and received a 1098-T in 2013.

Once these populations were identified, we pulled mailing addresses from the associated 2013 tax returns and we determined the set of individuals that had complete, valid mailing addresses in the United States. Address validity was assessed using National Change of Address data. After imposing the sample restriction based on having complete, valid addresses, the sample size was 523,844 individuals. From this population of individuals, we randomly selected 200,000 individuals to the treatment group and the remaining individuals were assigned to the control group. The randomization was stratified based on student type (high school senior, dependent college student and independent college student) and adjusted gross income on the 2013 tax return. For high school seniors and dependent college students, we stratified based on

the following income groups: less than \$60,000, between \$60,000 and \$120,000 and more than \$120,000. For independent college students, we did not stratify based on income since the large majority of independent college students had adjusted gross income below \$60,000.

Individuals in the treatment group were sent informational flyers on tax benefits for higher education. Figure 2 shows an example of the flyer. The flyer highlights tax benefits from the AOTC, LLC and EITC and directed individuals to file their tax returns and claim these benefits if they were eligible. The flyers were mailed to treated individuals twice: first on February 23, 2015 and then again on March 23, 2015. Non-deliverable mail was tracked, and roughly 95% of the mailings were delivered. Individuals in the treatment group were randomly assigned to receive one out of seven possible variations of the experimental informational flyer. The different versions of the flyers had different messaging in the middle of the flyer. Appendix Table 1 presents each of the messaging variations and the hypothesis associated with each variation. We show the different effects of each of the messaging variations below, but because we do not find clear evidence of systematically different impacts across the different treatments, we pool the different treatment groups into a single treatment group in the main analysis below.

The tax filing season typically starts in the middle of January and many taxpayers file relatively quickly. As a result, many students and their families already filed their 2014 taxes when the first mailer arrived. In addition, in 2014 one student group—the high school seniors—are not expected to have an effect. Therefore we focus on taxpayer responses in 2015 in the main results and present the findings for 2014 in the Appendix.<sup>4</sup>

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<sup>4</sup> In this setting, the randomization is still valid so that we can compare treatment and control groups, given that we find no difference in early filing. In addition, early filing observations (those who file before the mailer would arrive) in the treatment serve as an additional control group. We explored these possibilities, but the results are generally imprecise. Intuitively, missing the early filers in 2014 reduced our sample size of the treated treatment group so that we lose power to make meaningful inferences. Appendix Table 2 reports the results for take-up in 2014, split by early/late filers and Appendix Table 3 reports results for take-up in 2015 split by early filing status in each year.

Table 1 presents summary statistics for the treatment and control groups for each student type. We note some important differences in characteristics *across* the student types. Compared to independent college students, high school seniors and dependent college students are more likely to come from married households, have higher incomes, and have larger tax refunds. Table 1 also presents t-statistics for tests of statistical significance between treatment and control characteristics *within* student type. Overall, the differences in mean characteristics within student type are very small and the t-statistics are relatively small indicating that the treatment and control groups appear similar and that the slight differences are not statistically significant. This pattern is expected given the random assignment to treatment status.

### III. Empirical Analysis

#### A. Regression Specification

We analyze the impacts of the experimental treatment by examining difference between the treatment and control groups and then testing for statistical significance of these differences. Given the random selection into the treatment group, statistically significant differences between the treatment and control groups can be interpreted as causal effects of the experimental treatment.

For this empirical analysis, we estimate the following regression specification

$$y_i = \alpha + \beta T_i + \varepsilon_i$$

where  $y_i$  denotes an outcome of interest for individual  $i$ . The variable  $T_i$  denotes an indicator equal to 1 if individual  $i$  is in the treatment group or equal to 0 if individual  $i$  was in the control group. The estimated coefficient  $\hat{\alpha}$  reflects the mean of the outcome variable for the control group, and  $\hat{\beta}$  reflects the estimated treatment effect so that  $\hat{\alpha} + \hat{\beta}$  captures the mean of the

outcome for the treatment group. We test for statistical significance of  $\hat{\beta}$  to assess any effects of the experimental treatment.

We estimate the above regression specification separately for each student type (high school seniors, dependent college students and independent college students). We examine multiple outcomes of interest for each group, including enrollment and take-up of education tax benefits. We measure enrollment by the presence 1098-T tuition statement reported to the IRS or if that individual received a Pell grant from the Department of Education<sup>5</sup>. In some specifications, when examining take-up we condition on whether the tax return lists an enrolled college student and meets the income requirements to be eligible for the tax benefits.<sup>6</sup>

## *B. Results*

Table 2 shows the main regression results on take-up of tax benefits. In Panel A we show the results for the entire sample and in Panel B we restrict the sample to those individuals who are eligible based on income and being enrolled in college. In all cases, we focus on outcomes in 2015.

The flyers have an economically small effect despite the fact that take-up of education tax benefits is not complete. For example, in Panel B, the estimated effect of the treatment among independent college students is 1.07 percentage points, relative to a baseline take-up rate of 65%, translating into a 1.5% increase in take-up. For the other two student groups, these effects are roughly 0.7 percentage points, or 1% increase in take-up. Baseline take-up rates, vary considerably across eligible student groups, from 65% of independent college students to 77% of

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<sup>5</sup> We include students who receive a Pell grant because these students in some cases may not receive a F1098-T statement if the Pell grant was large enough to cover all of their education costs.

<sup>6</sup> As shown in Appendix Table 4, we do not find that the treatment has an effect on enrollment or tax filing. In Appendix Table 5, we report results that further show there is no enrollment effect when considering each benefit separately, and also no effect of the information on the amount of education spending.

high-school seniors who subsequently enroll in college. This level of incomplete take-up suggests that many students and families are unaware of their eligible tax benefits.

The small aggregate effects in Table 2 mask heterogeneity in the take-up response to the flyers. As shown in Table 3, which presents the results for take-up conditional on eligibility split by marital status and income groups, some families are more responsive to the notices. Among families with high-school seniors, higher income families appear relatively more responsive compared to lower-income families. This may be consistent with higher income families believing that they are not eligible for federal student aid. Confusion over federal aid administered by the Department of Education is well documented (see for example Manoli and Turner 2017). The effects of the treatment are also relatively larger for non-married independent students, with effects ranging from 4.3% for lower-income families to 3.3% for higher-income families.

There is also considerable variation in the effect of the treatment across tax benefits, as shown in Table 4. This Table reports the results for take-up of each program separately, conditioning on the enrolled sample that is income eligible. For all three student groups, the effects are significant for the AOTC and are relatively larger for this credit compared to the LLC or the EITC. The take-up effects for the AOTC range from just under 1% for high-school seniors to just over 2% for independent college students. It is not surprising that the treatment had the largest effect for the AOTC, given that this credit is worth more than the LLC when students are eligible for both. Compared to the EITC, the AOTC also has more scope for an effect. As shown in Table 4, the baseline take-up rates of the EITC are relatively high, ranging from 96% to 99%, consistent with high take-up rates reportedly previously for the EITC (Manoli and Turner, 2017).

The relatively high EITC take-up rate also masks the effects of the flyers. The EITC is an education tax benefit only for families who claim a dependent student. Independent students cannot benefit from the EITC for their own enrollment, but may claim the EITC if they have their own dependent children. To further separate the EITC effect among independent students, Table 5 reports the results for take-up of education tax benefits, split by the number of children. Panel A reports the results for take-up of any tax benefit, including the EITC and Panel B reports for the results for take-up excluding the EITC. Consistent with higher EITC take-up, the baseline take-up rate is higher (97%) among independent students with kids, relative to independent students without kids (61%).<sup>7</sup> On net, the effect of the notices is larger in Panel B (2.9%) compared to Panel A (1.7%) as shown in the first column. Among independent students with kids, the difference is even larger, roughly 8% in Panel B and not significantly different from zero in Panel A. Intuitively, with the high baseline take-up rates among independent students with kids it is difficult to measure the effect of the notice on education tax benefits. Given that these students cannot claim the EITC for their own enrollment, the results in Panel B may more accurately characterize the response to the notices for this group with respect to higher education tax benefits.<sup>8</sup>

#### **IV. Conclusions**

Keeping college affordable so that students are not deterred from entering and insuring that they do not leave school with unmanageable debt burdens are key public policy challenges.

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<sup>7</sup> The baseline take-up rate is relatively unchanged across Panels A & B for independent students without kids. Take-up rates for the no-child EITC are relatively lower (Manoli and Turner, 2017) and the eligible income range is also much lower so that many independent students without kids are not eligible for the EITC.

<sup>8</sup> The notices may also informed these students about the EITC, however the notices emphasize the EITC for enrolled college students.

Policymakers work towards these goals in a variety of ways, both through direct spending programs and by offering tax benefits for higher education. Yet, our findings suggest that the tax benefits are not as effective as they could be due to unawareness of the programs. Using a relatively light-touch intervention, providing information on tax benefits for higher education roughly one-year in advance of measuring take-up effects, we find that some students respond to the informational outreach by increasing use of these tax benefits. The impact of the intervention varies across student and family types, with no effects in some cases ranging to 8% in others. While it is encouraging news that some families learn about the programs and subsequently use them to help offset the costs of college, there are several ways that future outreaches could be structured to further increase take-up of tax benefits for higher education.

Reducing transaction costs is one way that future outreaches could be more effective. Prior work (Bettinger, Long, Oreopolous and Sanbonmatsu, 2012; Carrell and Sacerdote, 201) documents that interventions that provide information and reduce transactions costs are more effective compared to providing information alone. IRS outreaches for tax-based aid that are structured like existing EITC outreaches studied by Manoli and Turner (2017) may further increase use of tax-based aid. In that setting, taxpayers are notified when they are eligible for the EITC after they file their taxes and are able to claim the credit by returning the notice (and verifying eligibility). Personalization of the notices, by including estimated benefit amounts and/or scaling the benefit by the cost of colleges in the local area, may also increase the likelihood that individuals respond to the treatment. Sending additional notices and contacting taxpayers by text may also increase overall response rates. Castleman and Page (2015) find that repeated text messages are effective at encouraging community college students to apply for federal student aid. Lastly, timing the outreaches to correspond to the opening of tax filing

season may further increase their effectiveness. In our setting, for many families in the treatment group, the notices arrived too late to affect current tax filing behavior. As a result, some families who learned about the credits may have forgotten one year later when they filed their next tax return. We hope to explore these possibilities in future work.

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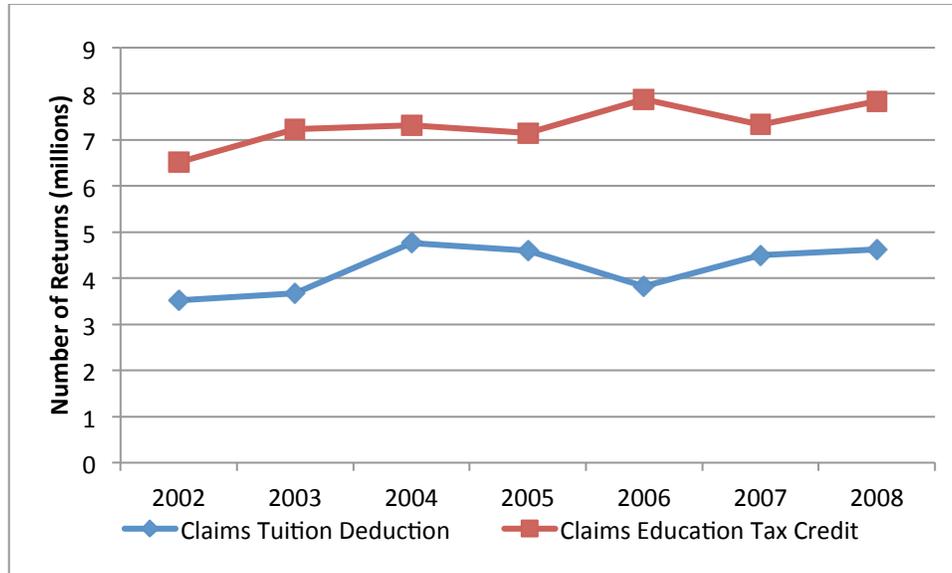
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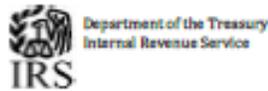
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Figure 1. Number of Tax Returns Claiming Education Tax Credits and the Tuition Deduction, 2002-2008



Notes: Authors calculations based on administrative tax data.

Figure 2. Example of Experimental Informational Flyer.



## Important Information about Tax Benefits for Higher Education

- Are you or someone in your household considering college?
- Were you or someone in your household enrolled as a college student last year?

Eligible taxpayers can claim thousands of dollars of Tax Benefits for Higher Education

### What are Tax Benefits for Higher Education?

Some Tax Credits for Higher Education give taxpayers money by reducing the amount of tax owed. Other Tax Credits for Higher Education give taxpayers money even if they do not owe any taxes.

- The **American Opportunity Tax Credit (AOTC)** provides up to \$2,500 per student per year to help pay your expenses, or up to \$10,000 over four years of education. You may be eligible to claim the AOTC if your income is less than \$180,000 in 2014 (\$90,000 for families filing a Head of Household return).
- The **Lifetime Learning Credit (LLC)** provides up to \$2,000 per tax return per year to help pay your expenses. You may be eligible to claim the LLC if your income is less than \$128,000 in 2014 (\$64,000 for families filing a Head of Household return).
- The **Earned Income Tax Credit (EITC)** up to \$6,100 per family. EITC benefits are based on the number of qualifying children in a family. Children younger than age 19 can be qualifying children. Children between ages 19 and 24 can be qualifying children if they are enrolled as full-time students.

## Tax Benefits for Higher Education can help eligible taxpayers access the benefits of college.

What should I do?	<p>If you are eligible, make sure you claim your Tax Benefits for Higher Education when you file your tax return.</p> <p>If you or someone in your household were enrolled in college last year, you may be eligible for Tax Benefits for Higher Education when you file your 2014 tax return. If you or someone in your household enrolls in college this year, you may be eligible for Tax Benefits for Higher Education when you file your 2015 tax return.</p> <p>Ask your tax preparer if you are eligible for any of these tax benefits for college. If you prepare your own tax return, make sure to check if you are eligible for these important tax benefits.</p> <p>You may be eligible for these tax benefits regardless of whether you receive financial aid from other sources. Remember to file your FAFSA to qualify for other valuable student aid.</p>
Have you received a Form 1098-T Tuition Statement?	<p>If you or someone in your household were enrolled as a student at a college, university, or other eligible higher education institution, your household should receive a Form 1098-T, Tuition Statement.</p> <p>Do not discard the Form 1098-T. This form could help you save thousands of dollars when you file your taxes. Your household may be eligible to claim the AOTC, LLC and other tax benefits for some of the "qualified tuition and related expenses" listed on this form.</p>
More information	<p>Visit <a href="http://www.irs.gov">www.irs.gov</a> and learn more about Tax Benefits for Higher Education:</p> <ul style="list-style-type: none"> <li>• IRS Publication 970: Tax Benefits for Education</li> <li>• IRS Form 8863: Education Tax Credits</li> </ul>

**Table 1: Summary Statistics by Student Type and Treatment Status, 2013**

	High School Senior			Dependent College Student			Independent College Student		
	Treatment	Control	t-stat	Treatment	Control	t-stat	Treatment	Control	t-stat
<i>Income and Family Characteristics</i>									
Student Age in 2013	16.42	16.42	0.8	19.79	19.79	0.73	20.63	20.63	
	0.49	0.49		1.39	1.39		1.22	1.22	
Married Family	0.75	0.75	0.75	0.76	0.76	0.95	0.22	0.25	0.25
	0.44	0.43		0.43	0.43		0.15	0.14	
Number of Dependent Children	2.10	2.11	0.55	1.76	1.76	0.41	0.10	0.10	0.38
	1.10	1.10		0.97	0.97		0.34	0.34	
Adjusted Gross Income	86434	86267	0.80	88202	88462	0.95	13412	13479	0.69
	50163	50022		49527	57470		9651	14676	
Wages	77397	77194	0.95	77281	77361	0.16	12757	12728	0.41
	50109	50068		49875	51608		9376	9495	
Self-employment Income	689	712	1.45	739	752	0.65	267	291	
	3608	3614		4124	4124		2131	4248	
Has Self-Employment Income	0.06	0.06	1.24	0.06	0.06	0.45	0.04	0.04	0.11
	0.23	0.24		0.23	0.23		0.19	0.18	
<i>Tax Refunds and Tax Credit Claiming</i>									
Tax Refund Amount	-2806	-2806	0.00	-3097	-3102	0.15	-1613	-1539	0.28
	5060	6581		5130	5947		48610	65792	
Has Tax Refund	0.80	0.80	0.14	0.83	0.83	0.29	0.94	0.94	0.30
	0.40	0.40		0.37	0.37		0.24	0.24	
Claims Earned Income Tax Credit	0.25	0.25	0.75	0.21	0.21	0.44	0.11	0.12	1.01
	0.43	0.43		0.41	0.41		0.32	0.32	
Claims Education Tax Credit				0.71	0.71	0.16	0.50	0.49	1.43
				0.46	0.46		0.50	0.50	
Claims Tuition Deduction				0.07	0.07	0.46	0.05	0.05	0.43
				0.25	0.25		0.22	0.21	
N	85,716	138,789		85,716	138,626		28,572	46,425	

**Table 5: Treatment Effects on Take-Up, Independent Students**

Sample	All	No Kids	Kids
<i>Panel A: Take-Up of Education Tax Benefits, conditional on eligibility including EITC</i>			
Treatment	0.0107** [0.00536]	0.0137*** [0.00581]	-0.00899 [0.00622]
Constant	0.652*** [0.00332]	0.613*** [0.00360]	0.972*** [0.00350]
N	33,139	29,528	3,611
<i>Panel B: Take-Up of Education Tax Benefits, conditional on eligibility excluding EITC</i>			
Treatment	0.0172*** [0.00560]	0.0143** [0.00583]	0.0400** [0.0157]
Constant	0.591*** [0.00425]	0.601** [0.00435]	0.502** [0.0111]
N	33,139	29,528	3,611

Notes: This table shows the results for cross sectional regressions in 2015. The dependent variable in Panel A is claiming any education tax benefit noted on the flyers. In Panel B the dependent variable excludes the EITC from the take-up measure. Standard errors are clustered at the three-digit zipcode level.

**Table 4: Treatment Effects on Take-Up, conditional on eligibility**

Student Type	High School Senior	Dependent College	Independent College
<i>Panel A: Take-Up of Education Tax Benefits</i>			
Treatment	0.00657** [0.00324]	0.00650** [0.00301]	0.0107* [0.00558]
Constant	0.774*** [0.00353]	0.732*** [0.00293]	0.652*** [0.00420]
N	70,653	93,310	33,139
<i>Panel B: Take-Up of AOTC</i>			
Treatment	0.00576* [0.00309]	0.0104*** [0.00288]	0.0109* [0.00587]
Constant	0.683*** [0.00512]	0.557*** [0.00387]	0.457*** [0.00450]
N	99,864	121,406	28,383
<i>Panel C: Take-Up of LLTC</i>			
Treatment	0.000731 [0.00112]	0.000712 [0.00170]	-0.000374 [0.00368]
Constant	0.0214*** [0.000724]	0.0641*** [0.00117]	0.116*** [0.00247]
N	70,653	93,310	33,139
<i>Panel D: Take-Up of EITC</i>			
Treatment	0.00355 [0.00327]	-0.00336 [0.00324]	0.00393 [0.00285]
Constant	0.955*** [0.00247]	0.943*** [0.00261]	0.991*** [0.00204]
N	15,522	20,988	3,298

Notes: This table shows the results for cross sectional regressions in 2015. The dependent variable is claiming the education tax benefit noted in the panel heading. In each panel, the sample includes returns that are enrolled and income eligible for the specific benefit. Standard errors are clustered at the three-digit zipcode level.

**Table 3: Treatment Effects on Take-Up, by Income**

Student Type Family Type	High School Senior		Dependent College Student		Independent College Student	
	Not Married	Married	Not Married	Married	Not Married	Married
<i>Panel A: Low Income</i>						
Treatment	-0.0149 [0.00933]	0.00649 [0.00743]	-0.000126 [0.00820]	0.00266 [0.00611]	0.0230** [0.00926]	-0.0308 [0.0296]
Constant	0.906*** [0.00602]	0.782*** [0.00547]	0.852*** [0.00595]	0.735*** [0.00467]	0.542*** [0.00669]	0.878*** [0.0170]
N	4,662	13,870	8,551	21,062	13,274	606
<i>Panel B: Middle Income</i>						
Treatment	0.00289 [0.00990]	0.000461 [0.00660]	0.00293 [0.00808]	0.00895 [0.00643]	-0.00747 [0.00992]	-0.0152 [0.0374]
Constant	0.869*** [0.00650]	0.742*** [0.00583]	0.789*** [0.00605]	0.700*** [0.00461]	0.713*** [0.00630]	0.816*** [0.0223]
N	5,389	18,281	8,665	22,348	10,375	569
<i>Panel C: High Income</i>						
Treatment	0.0135 [0.0130]	0.0143*** [0.00533]	0.0103 [0.00992]	0.00968* [0.00570]	0.0240** [0.00948]	-0.0656 [0.0427]
Constant	0.582*** [0.00924]	0.804*** [0.00460]	0.561*** [0.00705]	0.763*** [0.00415]	0.723*** [0.00664]	0.763*** [0.0257]
N	6,863	21,588	9,325	23,359	7,851	464

Notes: This table shows the results for cross sectional regressions in 2015. The dependent variable is claiming any education tax benefit noted on the flyers. The sample includes observations that are eligible for a benefit, based on enrollment and income. Income groups are defined as income terciles for groups defined by student type and family marital status, among all returns that are income eligible. The limits for the bottom terciles are roughly \$20,000 and \$67,000 for not married and married returns for high school seniors and dependent students. For independent students the limit in the bottom terciles are roughly \$14,000 for not married and \$32,000 for married. For the second tercile, the limits are roughly \$37,000 for not married and \$100,000 for married among high school seniors and dependent college students. Among independent college students the limits for the second tercile are roughly \$24,000 for not married and \$50,000 for married. the lowest income group Standard errors are clustered at the three-digit zipcode level.

**Table 2: Treatment Effects on Take-Up**

Student Type	High School Senior	Dependent College	Independent College
<i>Panel A: Take-Up of Education Tax Benefits</i>			
Treatment	0.00242 [0.00213]	0.000277 [0.00213]	0.00449 [0.00366]
Constant	0.543*** [0.00355]	0.532*** [0.00252]	0.396*** [0.00326]
N	224,424	224,262	74,915
<i>Panel B: Take-Up of Education Tax Benefits, conditional on eligibility</i>			
Treatment	0.00657** [0.00324]	0.00650** [0.00301]	0.0107* [0.00558]
Constant	0.774*** [0.00353]	0.732*** [0.00293]	0.652*** [0.00420]
N	70,653	93,310	33,139

Notes: This table shows the results for cross sectional regressions in 2015. The dependent variable is claiming any education tax benefit noted on the flyers. Panel A includes the entire sample. Panel B includes the sample that is eligible for a benefit, based on enrollment and income. Standard errors are clustered at the three-digit zipcode level.

**Appendix Table 3: Treatment Effects on Enrollment & Spending, by Program Eligibility**

Student Type Family Type	High School Senior		Dependent College Student		Independent College Student	
	Enrolled	Spending	Enrolled	Spending	Enrolled	Spending
<i>Panel A: AOTC</i>						
Treatment	-0.000129 [0.00233]	19.64 [67.10]	-0.00297 [0.00217]	94.45 [67.73]	-0.00175 [0.00393]	-118.8 [111.9]
Constant	0.583 [0.00543]	9,724 [188.1]	0.695*** [0.00203]	10,996 [145.4]	0.511 [0.00347]	7,603 [145.3]
N	188,132	109,584	191,651	133,015	65,285	33,333
<i>Panel B: LLTC</i>						
Treatment	0.00260 [0.00274]	29.81 [80.00]	-0.00268 [0.00258]	57.45 [82.21]	-0.00192 [0.00398]	-100.5 [111.9]
Constant	0.515 [0.00492]	8,996 [159.3]	0.677*** [0.00224]	10,543 [136.3]	0.517*** [0.00353]	7,575 [144.7]
N	136,880	70,649	137,973	93,307	64,241	33,138
<i>Panel C: EITC</i>						
Treatment	0.00574 [0.00538]	-182.2 [169.8]	-0.0039 [0.00538]	55.58 [189.7]	-0.00585 [0.0111]	93.28 [217.1]
Constant	0.382 [0.00540]	9,270 [193.2]	0.681 [0.00375]	11,161 [173.5]	0.397 [0.00587]	4,683 [144.5]
N	40,667	15,522	30,831	20,987	8,313	3,298

Notes: This table shows the results for cross sectional regressions in 2015. The dependent variables are given in the Column headings, where enrolled is a binary variable for enrolling in college and spending is the amount of education spending (in dollars) conditional on enrollment. The Panels include the sample that is income eligible for the listed education tax benefit.

**Appendix Table 2: Treatment Effects on Tax Filing & Enrollment**

Student Type	High School Senior	Dependent College	Independent College
<i>Panel A: Tax Filer</i>			
Treatment	0.00200 [0.00101]	-0.000652 [0.00103]	0.00191 [0.00258]
Constant	0.929 [0.00114]	0.943 [0.000914]	0.878 [0.00185]
N	224,424	224,257	74,911
<i>Panel B: Enrolling in College</i>			
Treatment	-0.000562 [0.00213]	-0.00214 [0.00196]	-0.000252 [0.00370]
Constant	0.589 [0.00557]	0.696 [0.00201]	0.502 [0.00336]
N	224,424	224,257	74,911

Notes: This table shows the results for cross sectional regressions in 2015. The dependent variable in Panel A is being a tax filer, in Panel B the dependent variable is enrolling in college. In both Panels, the sample includes all returns. Standard errors are clustered at the three-digit zipcode level.

**Appendix Table 3: Treatment Effects on Take-Up in 2015, by filing time**

Student Type	High School Senior	Dependent College	Independent College
<i>Panel A: Files Early 2014</i>			
Treatment	0.00242 [0.00436]	0.00844 [0.00416]	0.00997 [0.00690]
Constant	0.797 [0.00408]	0.777 [0.00375]	0.725 [0.00489]
N	33,215	39,514	17,444
<i>Panel B: Files Early 2015</i>			
Treatment	0.00339 [0.00463]	0.00519 [0.00430]	0.0131 [0.00698]
Constant	0.805 [0.00406]	0.787 [0.00369]	0.724 [0.00491]
N	32,036	38,327	17,911
<i>Panel C: Files Early 2014 &amp; 2015</i>			
Treatment	0.00137 [0.00505]	0.00253 [0.00478]	0.0145 [0.00782]
Constant	0.814 [0.00433]	0.804 [0.00398]	0.749 [0.00542]
N	23,817	28,281	13,185

Notes: This table shows the results for cross sectional regressions in 2015. The dependent variable is claiming any education tax benefit noted on the flyers. Panel A includes the entire sample. Panel B includes the sample that is eligible for a benefit, based on enrollment and income. Standard errors are clustered at the three-digit zipcode level.

**Appendix Table 2: Treatment Effects on Take-Up, 2014**

Student Type Filler Type	Dependent College Student		Independent College Student	
	Early Filer	Later Filer	Early Filer	Later Filer
Treatment	0.00409 [0.00325]	0.00366 [0.00320]	-0.00456 [0.00600]	0.00302 [0.00709]
Constant	0.844 [0.00262]	0.756 [0.00292]	0.684 [0.00433]	0.527 [0.00490]
N	54,741	71,961	27,305	21,637

Notes: This table shows the results for cross sectional regressions in 2014. The dependent variable is claiming any education tax benefit listed on the flyers. Early filers are those who filed their tax return prior to the date when the first mailer was likely to have arrived. Later filers are those who filed their tax returns after the first mailer is likely to have arrived. The sample includes only returns that are income eligible for an education tax benefit and have an enrolled student.

**Appendix Table 1: Treatment Messaging Variations**

Treatment Emphasis	Middle Headline
1. Benefits of college	Tax Benefits for Higher Education can help eligible taxpayers access the benefits of college.
2. Costs of college	Tax Benefits for Higher Education can help eligible taxpayers deal with the costs of college.
3. Tax relief framing	Tax Benefits for Higher Education can decrease income taxes for eligible taxpayers.
4. Financial assistance framing	Tax Benefits for Higher Education can increase college financial assistance for eligible taxpayers.
5. Unawareness	Many taxpayers and guidance counselors may not be aware of Tax Benefits for Higher Education.
6. Loss aversion	If you are eligible, do not lose your Tax Benefits for Higher Education.
7. Social persuasion	Many eligible taxpayers claim their Tax Benefits for Higher Education. If you are eligible, you can too.