Losing Aid, Losing Ground? The Academic and Career Consequences of Financial Aid Loss—Evidence from the TEXAS Grant

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August 8, 2025

Abstract

This paper examines the impact of losing financial aid on students' academic and labor market outcomes using a multidimensional difference-in-discontinuities design using the GPA and credit completion renewal thresholds of the TEXAS Grant. Unlike prior research that focuses on initial renewal checkpoints, this study analyzes the consequences of aid loss after the second and third years of college, by which point students have made substantial academic progress but remain financially vulnerable. Results show that losing the TEXAS Grant significantly reduces total financial aid, leading to increased borrowing but little compensatory support from other aid sources or earnings. At both renewal points, aid loss decreases persistence, full-time enrollment, and credit accumulation. While aid loss after the second year does not significantly reduce timely graduation or overall degree attainment, third-year aid loss decreases five- and six-year graduation rates by 17.4 percentage points (pp) and 12.4 pp, respectively. However, these average effects mask important heterogeneity: students who fail to meet the credit renewal threshold but maintain a GPA above 2.5 experience the most severe consequences, including large declines in both timely graduation (10-15 pp) and overall degree completion (7-12 pp). A back-of-the-envelope calculation suggests that a one-time course failure waiver would have prevented aid loss for nearly two thousand students and could have led to approximately 200 additional degrees.

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1 Introduction

Higher education in the U.S. is financed through a complex system of financial aid programs, including federal grants, state and institutional scholarships, and student loans. The rising cost of higher education has made financial aid an even more critical tool for supporting college access and affordability. Over the past several decades, tuition has outpaced income growth, making it more difficult for families to cover college costs out of pocket, thereby deepening their dependence on financial aid (Ma et al., 2024). To offset these rising costs, federal and state policymakers have expanded financial aid programs, keeping net cost of attendance relatively stable (NCES, 2023).

While these efforts have mitigated some of the financial burden on students, they have also made financial aid an increasingly central component of the higher education system. For example, in the 2022-23 academic year, 85.2% of first-time undergraduate students received some form of financial aid, averaging $12,997 in grants and $7,709 in loans (NCES, 2023). Financial aid is a critical lifeline for many students: 40.7% of undergraduates received a Pell Grant, indicating widespread financial need among college students (NCES, 2023). Despite these investments, the ability of financial aid to keep pace with college costs remains uncertain, particularly as state and institutional budgets tighten, limiting future support for aid programs.[1]

Uncertainty at the federal level further complicates the stability of financial aid. The U.S. Department of Education has faced significant challenges in implementing new aid initiatives, as well as delays in grant disbursement and abrupt shifts in loan repayment policies. The Trump administration's temporary freeze on federal grant aid, which halted funding for various education and research programs pending policy review, underscored the risks posed by unpredictable federal interventions (OMB, 2025). Coupled with changes to Title IV funding mechanisms, such disruptions raise concerns about the reliability of financial aid as a long-term support system.

Administrative hurdles in the financial aid system also create challenges for students, particularly in maintaining eligibility. Recent delays in processing the Free Application for Federal Student Aid (FAFSA) have raised alarms about disruptions to both initial enrollment and ongoing persistence, especially for students most reliant on financial assistance. The complexity of the FAFSA process, combined with uncertainty around eligibility criteria, can discourage students from applying or reapplying for aid—even when they remain eligible (Bettinger et al., 2012; Kofoed, 2017). Research shows that simplifying the financial aid process increases college attendance and retention, underscoring how administrative burdens can function as de facto barriers to access (Castleman and Page, 2016). Students who fail to renew their aid or miss critical deadlines may experience sudden financial shocks, often forcing them to increase work hours, reduce course loads, or drop out entirely.

A particularly consequential source of instability is financial aid renewal requirements, which

[1]For example, Indiana's primary need-based grant, the Frank O'Bannon Grant, will reduce award amounts for most students beginning in fall 2025 (Indiana Commission for Higher Education, 2025), and Missouri's merit-based Bright Flight Program saw its maximum award decline by 40% in fall 2022 due to budget limitations (Missouri Coordinating Board for Higher Education, 2020).

often require students to maintain a minimum GPA or complete a set number of credits each year. Federal regulations, for example, require students to demonstrate Satisfactory Academic Progress (SAP), typically defined as maintaining at least a 2.0 GPA and completing 67% of attempted credits. These requirements can have significant consequences: more than one-quarter of initial Pell Grant recipients at community colleges lose eligibility due to SAP violations (Schudde and Scott-Clayton, 2016). State programs often impose more stringent criteria, causing even students in good academic standing to lose aid. For instance, the Georgia HOPE Scholarship requires recipients to maintain a 3.0 cumulative GPA, contributing to 35% of initial recipients losing the award by the second renewal checkpoint (GA ORPA, 2024).

Despite extensive research showing that reducing college costs through grants and scholarships increases enrollment, persistence, and completion (Castleman and Long, 2016; Denning et al., 2019), little is known about the consequences of losing financial aid. Given the central role of aid in funding higher education, losing it may have especially disruptive effects. Yet research on the impact of aid loss remains limited, leaving policymakers and institutions without clear guidance on how students respond or which groups are most affected.

In this paper, I investigate the consequences of losing financial aid due to unmet renewal requirements in the Toward EXcellence, Access, and Success (TEXAS) Grant program, examining effects on academic performance, degree attainment, major choice, and early-career earnings. While prior research has focused exclusively on first-year benchmarks, this study shifts the lens to aid loss after the second and third years of college, shedding light on how students respond when financial support is withdrawn later in their academic careers. Further, I estimate the effects of aid loss separately for students who fall short of only the GPA threshold, only the credit threshold, or both, highlighting meaningful heterogeneity in effects across these groups.

Results suggest that the impacts of aid loss depend heavily on when it occurs and which renewal criterion is unmet. Losing aid after the second year leads to declines in enrollment intensity and credit accumulation, but does not significantly impact timely graduation or overall degree completion. In contrast, aid loss after the third year produces similar academic disruptions, but also leads to substantial delays in graduation. However, these overall effects mask important heterogeneity: students who lost aid solely due to failing the credit benchmark experienced especially severe setbacks, with large declines in both timely graduation and overall degree completion. Finally, analyses of major choice and early-career earnings yield no clear patterns, suggesting limited effects of aid loss on these outcomes.

This paper proceeds as follows. Section 2 details the TEXAS Grant program and its renewal criteria. Section 3 reviews the relevant literature and highlights this paper's key contributions. Section 4 describes the data, while Section 5 outlines the empirical strategy. Section 6 presents the results, and Section 7 concludes by summarizing key findings and proposing policy reforms to improve the design of financial aid renewal requirements.

2 TEXAS Grant

2.1 Program Overview

The TEXAS Grant is a statewide, need-based aid program that began in the 1999-2000 academic year to provide financial aid to students attending public universities in Texas. To initially qualify for the TEXAS Grant, one must be a Texas resident with financial need and enroll at least three-quarter time within 16 months of graduating high school.[2] Unlike many other state programs, the TEXAS Grant does not require a minimum high school GPA or SAT/ACT score for eligibility.

The TEXAS Grant operates as a last-dollar scholarship, covering any remaining tuition and required fees after other non-loan federal, state, and institutional aid has been applied. While the program helps reduce the direct cost of attendance, it does not cover living expenses such as room, board, or transportation. Thus, many recipients still rely on loans or other aid to meet these needs. The average annual award is approximately $6,000, accountsing for nearly one-third of a recipient's total financial aid package. Students may receive up to five years of funding if they continue to meet program requirements.

The scale and reach of the TEXAS Grant underscore its importance in the state's higher education landscape. In the 2020–21 academic year, nearly 83,000 students—about one in six undergraduates at public universities—received TEXAS Grant funding, totaling over $400 million in state disbursements. Since its inception, the grant has supported hundreds of thousands of students, with roughly 13% of in-state graduates receiving the award at some point in their college careers. Funding is distributed across all four-year public universities, including those in the University of Texas and Texas A&M systems. More than half of recipients (54%) are Hispanic, and a majority (56%) have an expected family contribution (EFC) of $0, highlighting the program's focus on supporting low-income and historically underserved students.

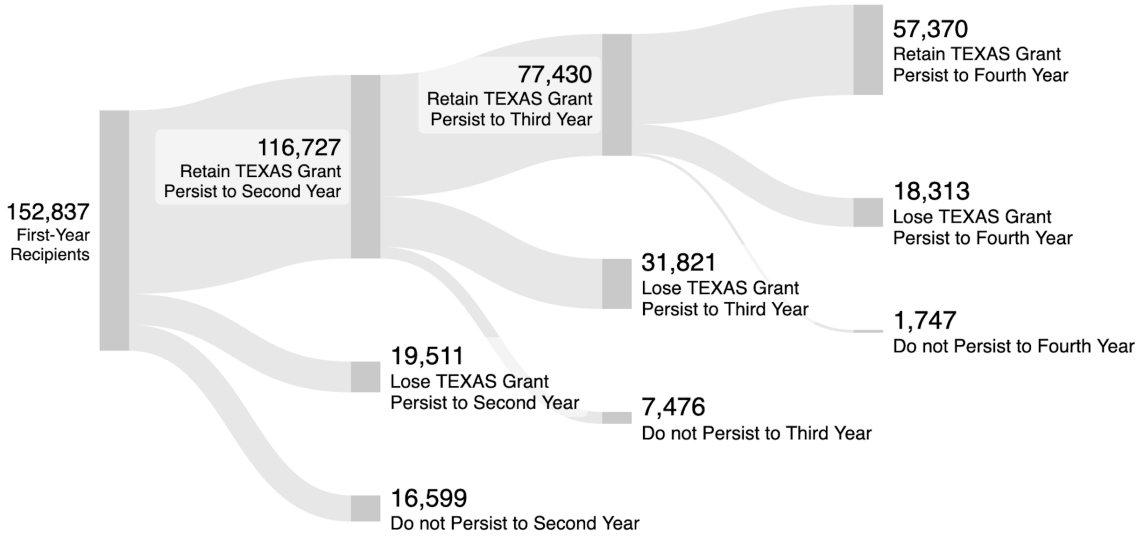
2.2 Renewal Requirements and Aid Loss

To continue receiving the TEXAS Grant, students must meet their institution's SAP standards after their first year. These criteria can vary across universities, making first-year renewal standards non-uniform. Beginning in the second year, however, renewal requirements are standardized statewide: all students must maintain a 2.5 cumulative GPA and complete at least 24 credit hours each academic year. These renewal criteria are unique among Texas aid programs and differ from federal eligibility rules.

As shown in Figure 1, a significant number of students failed to meet these benchmarks. Among the 152,837 students who entered between fall 2011 and fall 2018 and received the TEXAS Grant in their first year, 136,238 (89.1%) returned for a second year, but 19,511 (14.3%) lost the grant despite

[2]Students must also be registered for the Selective Service and never have been convicted of a felony or any offense involving a controlled substance. While 95% of recipients enter from high school, students can also qualify if they have earned an associate's degree and pursue a bachelor's within a year of completion; enroll after an honorable discharge from the military; or satisfy additional requirements after beginning their bachelor's degree with the Texas Educational Opportunity Grant. This paper only considers students entering immediately after high school.

persisting. Attrition at later renewal points was even higher: 31,821 of the 109,251 students (29.1%) who returned for a third year did not renew. By the fourth year, 18,313 of the remaining 75,683 recipients (24.1%) failed to renew. Among students who lost the grant due to unmet benchmarks, 43% fell short on both GPA and credit requirements, 35% fell below only the credit threshold, and 22% fell below only the GPA requirement.[3]



Notes: This figure shows the flow of initial TEXAS Grant recipients in the fall 2011–2018 entering cohorts as they exit college and the program over time.

Figure 1. Flow of TEXAS Grant Recipients

These statistics highlight the prevalence of aid loss in the TEXAS Grant program. Among those who remained enrolled, nearly 70,000 students in these eight cohorts failed to renew their grants, resulting in substantial repercussions to their financial aid packages. For instance, a student who did not renew the grant after their second year lost $6,000 per year, or $18,000 if they graduate in five years. Many of these students cannot afford to attend college without this support, forcing them to replace the lost aid, reduce their enrollment, or drop out.

3 Literature Review and Contributions

3.1 Literature Review

This paper primarily contributes to the literature on the consequences of financial aid loss. When students lose grant aid, they often turn to alternative funding sources, with loans being the most immediate and accessible option. This shift in aid composition can affect persistence, graduation, and financial and academic trajectories. To provide context for why aid loss may impact students,

[3]Some students lose aid despite meeting both criteria. I exclude these cases from this breakdown, as the reason for aid loss is not observable in the data.

this section first reviews prior research on how financial aid receipt affects student outcomes as well as selected work on student debt and career choices—which I explore as a potential downstream consequence of aid loss—before turning to the existing literature on aid loss itself.

3.1.1 Financial Aid, Debt, and Student Outcomes

Research consistently finds that lowering the net cost of college improves enrollment, persistence, and completion (Nguyen et al., 2019). Need-based grants, such as the federal Pell Grant, have a particularly strong impact on enrollment and degree attainment (Goldrick-Rab et al., 2016; Castleman and Long, 2016; Denning et al., 2019; Denning, 2019). In contrast, merit-based aid primarily influences where students enroll rather than whether they attend college (Mayer et al., 2015). While it may shift enrollment choices, merit aid does not significantly affect student achievement (Monks, 2009; Sjoquist and Winters, 2015; Angrist et al., 2022).

The effects of financial aid extend beyond college, as financial constraints shaped by aid availability can influence students' academic paths, career choices, and labor market outcomes. Stater (2011) finds that a higher net cost of attendance increases the likelihood of students selecting professional majors while decreasing their likelihood of majoring in the humanities and certain sciences. Reducing student loan burdens has also been shown to increase the likelihood that graduates pursuing lower-paying public service and nonprofit careers, whereas higher debt levels push students toward higher-paying private-sector jobs (Rothstein and Rouse, 2011). Building on this, Hampole (2023) examines the staggered implementation of more than 20 "no-loan" policies across over 700,000 graduates, showing that students with higher debt levels choose majors with higher initial earnings, but lower lifetime earnings. This effect is particularly pronounced among low-income students, who are more sensitive to debt burdens in their decision-making.

Several studies have also established a clear link between student debt and mental health, raising concerns that loan reliance can impose psychological burdens as well. Research has associated high debt burdens with increased stress, anxiety, and depression (Selenko and Batinic, 2011; Sweet et al., 2013; Hojman et al., 2016). More specifically, student debt has been shown to negatively impact mental well-being (Walsemann et al., 2015; Despard et al., 2016), which may in turn influence academic performance, persistence, and career choices (Herzog, 2018; Destin and Svoboda, 2018; Baker and Montalto, 2019). These effects may be especially pronounced for students who unexpectedly lose grant aid and must shift to loans, potentially exacerbating stress and derailing their educational plans. This body of research highlights the broader consequences of debt-financed higher education, suggesting that financial aid policies should consider not only students' ability to pay but also their mental health and long-term economic security.

3.1.2 Financial Aid Loss and Student Outcomes

While the literature on the impacts of financial aid receipt is extensive, relatively little research examines the consequences of losing it. Recent evidence suggests that students value the stability of financial support: Dynarski et al. (2021) show that a guaranteed four-year aid package covering

tuition and fees—without requiring annual reapplication—increases both applications and enrollments, suggesting that students place a premium on predictability in financial support. Related work suggests that changes in financial aid status may be more consequential than the initial level of aid a student receives, as fluctuations in support can significantly alter students' educational trajectories (Bettinger, 2004). In this sense, losing aid may not only reverse the positive effects of initial aid receipt—undoing the very gains that aid programs aim to generate—but may also impose new barriers to persistence and completion. This interpretation is consistent with the loss aversion literature in behavioral economics: once anchored in expectations of continued support, students may respond more strongly to aid removal than to its initial receipt (Kahneman et al., 1991).

In the small body of empirical work on aid loss, Henry et al. (2004) examines the Georgia HOPE Scholarship, which covers full tuition, books, and mandatory fees for in-state students with at least a 3.0 high school GPA. To retain the scholarship, students must maintain a 3.0 cumulative GPA and attempt at least 30 credits per year. His findings indicate that students who lost eligibility had similar credit accumulation, GPAs, persistence, and four-year graduation rates to those who narrowly missed qualifying upon entry. However, students who retained the scholarship throughout college had significantly better outcomes than both groups.

Further evidence on the effects of aid loss comes from Carruthers and Özek (2016)'s examination of Tennessee's HOPE Scholarship. This program covers approximately 70% of tuition and fees for up to five years for Tennessee high school graduates who met either the 3.0 high school GPA requirement or scored at least a 21 on the ACT. Continued eligibility required maintaining a 2.75 cumulative GPA after 24 attempted credit hours and a 3.0 cumulative GPA at subsequent checkpoints (48, 72, and 96 credit hours). Using a regression discontinuity design (RDD) at the first GPA renewal threshold, the authors find that students who lost eligibility became slightly detached from college, as reflected in a 14 cent increase in earnings per dollar of aid lost. However, losing the scholarship did not appear to affect overall persistence or graduation rates.

More recent work by Cummings et al. (2022) reexamines the consequences of losing the Tennessee HOPE Scholarship at the same checkpoint for cohorts entering between fall 2011 and fall 2014. Losing the scholarship meant a reduction of roughly $2,000 in aid per semester, which had differential consequences across racial and socioeconomic groups. Students who lost aid were more likely to stop out if they were White and higher income, while Black students had higher community college transfer rates and lower on-time degree completion compared to their peers who retained the scholarship.

Finally, and most relevant to this paper, is Jones et al. (2021)'s research on changes to the Georgia HOPE program. Beginning in 2011, the HOPE Scholarship was reduced to cover only 90% of tuition, eliminating funding for books and mandatory fees. In its place, the newly created Zell Miller Scholarship covered these costs in full but imposed stricter eligibility requirements: a 3.7 high school GPA, a 1200 SAT (or 26 ACT) score, and a 3.3 cumulative college GPA to maintain eligibility. Continuing students were not grandfathered into the new program, meaning those who did not meet its higher thresholds but remained eligible for HOPE experienced a modest

10-15% reduction in aid. To study these changes, the authors employ a multidimensional RDD to estimate the effects of this partial aid reduction for cohorts entering college no more than two years before the change. Unlike traditional RDD approaches that rely on a single cutoff, this method accounts for multiple eligibility thresholds simultaneously, allowing for a more precise identification of students' varying exposure to aid reductions. They find no significant impact on persistence or graduation rates, suggesting that higher-achieving students may be less sensitive to aid loss or that the reduction in aid was not substantial enough to disrupt educational trajectories.

3.2 Contributions

This paper makes several contributions to the aid loss literature within the broader field of financial aid research. First, it examines a large-scale need-based financial aid program, whereas existing works focus on merit-based programs. As need-based recipients often have fewer resources to replace lost aid, the consequences of losing support may be more severe, affecting not only continued enrollment but also academic progress, performance, and major choice. These consequences may be especially pronounced in the context of the TEXAS Grant, where students lose access to approximately $6,000 per year in aid with no opportunity to regain eligibility once it is lost—a structure that makes the program higher stakes than others studied in the existing literature.

Second, the TEXAS Grant conditions renewal on both cumulative GPA and credit completion thresholds, while merit-based programs typically assess GPA at fixed credit checkpoints but do not require students to complete a minimum number of credits each year. As a result, TEXAS Grant recipients must maintain both satisfactory grades and steady academic progress, whereas students in merit-based programs generally need only be concerned with their GPA. This paper exploits this structure by estimating the overall effect of aid loss from failing to meet any renewal requirement, as well as separate effects based on whether students fell below only the GPA threshold, only the credit threshold, or both. Rather than treating these distinctions as supplementary, the analysis places them at the center, recognizing that GPA- and credit-based aid loss reflect different academic challenges, student circumstances, and expectations around continued eligibility. By isolating effects for students below only one threshold, the study provides new insight into how the interaction between multiple renewal criteria shapes student responses to aid loss, offering important implications for financial aid policy and institutional support strategies.

This paper provides the first evidence on financial aid loss at later renewal checkpoints—specifically, after the second and third years of college—offering insight into how the consequences may differ for students further along in their academic careers and the implications for policies aimed at supporting persistence and degree completion. The final contribution of this paper is its expanded scope of outcomes examined in response to aid loss. In addition to persistence and graduation, I analyze students' academic adjustments (e.g., credit accumulation, GPA, and major switching), financial coping strategies (e.g., shifts in grants, loans, work-study, and outside earnings), and early-career labor market outcomes. By tracking these responses over multiple years, the analysis offers the most comprehensive picture to date of how students navigate the loss of grant

aid.

Together, these contributions offer a more complete picture of how and why financial aid loss affects students, highlighting the importance of program structure, timing, and student circumstances. This broader understanding is essential for designing aid policies that promote not just access, but long-term student success.

4 Data

The data for this paper come from the Houston Education Research Center, which houses longitudinal data provided by the Texas Education Agency (TEA), the Texas Higher Education Coordinating Board (THECB), and the Texas Workforce Commission (TWC). These records track students who attended both high school and a public university in Texas, linking their postsecondary enrollment, academic performance, and employment histories.

The postsecondary data include student admissions information, annual financial aid records, semester-by-semester courses, grades, and majors, as well as graduation outcomes. Admissions data include student and family demographics, such as age, gender, race/ethnicity, parental education, and family income range. The financial aid records contain an indicator for TEXAS Grant receipt, along with all other sources and amounts of aid awarded to each student. These data allow me to examine how students adjust their aid packages after losing the TEXAS Grant by disaggregating changes across grants, loans, and work-study. All financial aid amounts are expressed in 2021 dollars using the Bureau of Labor Statistics' College Tuition and Fees Price Index (Series ID: CUUR0000SEEB01).[4]

The semester-by-semester course and grade data provide the information needed to calculate cumulative GPA and credit accumulation, which determine whether a student meets TEXAS Grant renewal requirements. Students' declared major(s) each semester are identified using 6-digit Classification of Instructional Programs (CIP) codes, while graduation records capture graduation dates, majors, and degrees earned. Because the dataset covers all Texas public universities, I can track students who transfer and graduate within these schools; however, transfers out of state or to private institutions are not observed.

Employment records contain quarterly wage reports from Texas employers, detailing both earnings and North American Industry Classification System (NAICS) employment sector. I use these data to examine changes in earnings patterns in response to aid loss during enrollment and after leaving or graduating. All earnings data are adjusted to 2021 dollars using the Consumer Price Index for All Urban Consumers (Series ID: CUUR0000SA0). These records do not fully capture earnings from informal employment, gig work, or self-employment, which can be significant sources of income for students.

To align with the availability of semester-by-semester course and grade data required to track GPA and credit accumulation, this analysis uses data spanning from fall 2011 through spring 2022.

[4]The final academic year included in the financial aid data is 2021-22, making 2021 the most appropriate base year for inflation adjustments.

I restrict analysis to cohorts entering between fall 2011 and fall 2018, ensuring that all students are observed for at least four years. Since the TEXAS Grant is only available to in-state students, I further limit to students who attended high school in Texas. Additional restrictions, described in the methodology section, further refine the analytic sample.

5 Methodology

5.1 Framework

Because the first-year TEXAS Grant renewal thresholds vary across universities, I focus on the second- and third-year checkpoints, when all recipients must maintain a 2.5 cumulative GPA and complete 24 credits annually to retain eligibility. Students become ineligible if they fall short of either requirement, and those attempting fewer than 24 credits automatically lose eligibility regardless of GPA. To avoid conflating aid loss with endogenous enrollment choices, I restrict to students who attempted at least 24 credits per year.[5] I estimate overall effects of aid loss using both GPA and credits as running variables in a multidimensional framework, and I obtain threshold-specific effects by reducing to a single running variable while restricting the sample to students who satisfied the other requirement.

Although the multidimensional RDD framework provides an estimate of the impact of aid loss, it does not isolate the causal effect of losing financial aid from other academic disruptions. Since all students attempted at least 24 credits, falling below the credit requirement necessarily implies at least one course failure. Course failure may carry its own academic or psychological consequences that influence subsequent enrollment, major choice, and graduation outcomes—effects that an RDD would not disentangle. Simply comparing students above and below the renewal thresholds would therefore risk conflating the effects of aid loss with those of course failure.

To address this concern, I incorporate non-TEXAS Grant recipients as a comparison group in a difference-in-discontinuities (diff.in-disc.) framework. These non-recipients include both students who received other forms of financial aid and those who received none. Given that approximately three-quarters of financial aid recipients receive the TEXAS Grant, restricting the comparison group to only non-TEXAS Grant aid recipients would result in a much smaller comparison group, particularly when examining outcomes later in students' academic careers. Including all students who faced similar academic challenges but were not TEXAS Grant recipients allows me to net out the effects of course failure and isolate the causal impact of financial aid loss.[6]

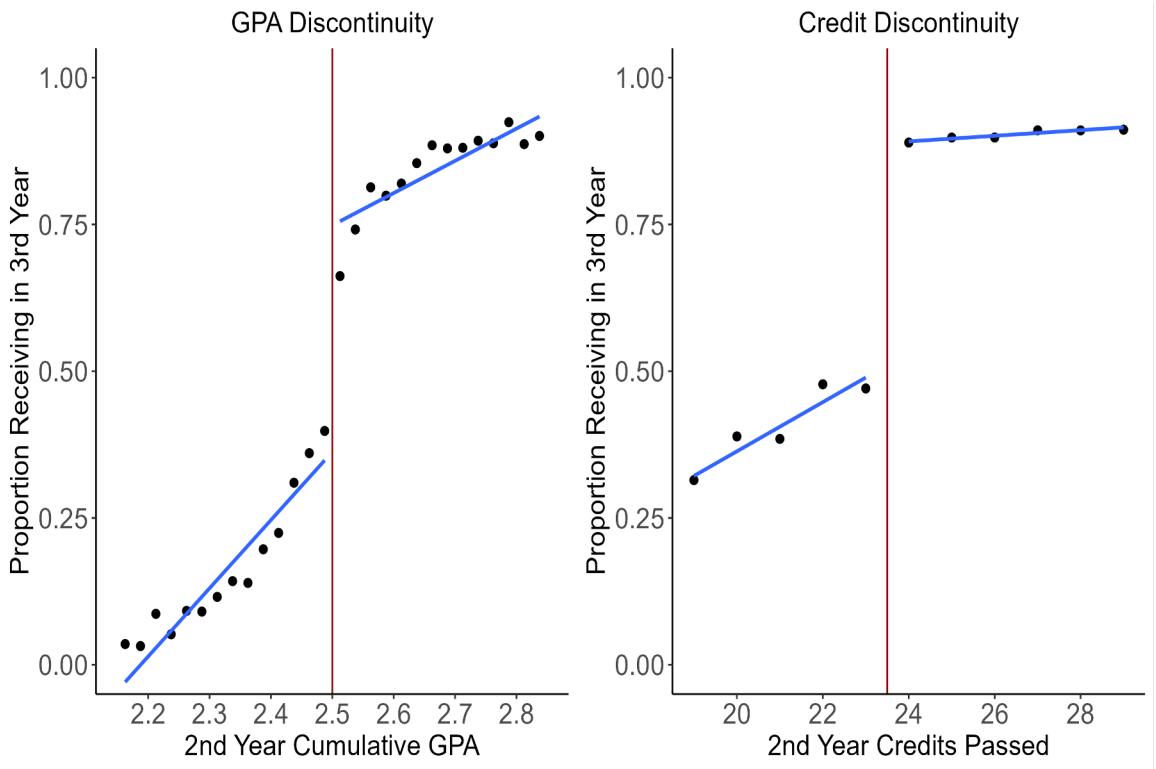
I further restrict the analysis to students with no prior course failures and who were enrolled full-time in all semesters leading up to the renewal checkpoints. For the second-year benchmark,

[5] This count includes only courses for which a student received a grade, including courses marked as incomplete. I exclude courses from which a student has withdrawn, as I do not observe the timing or reason for the withdrawal.

[6] Non-recipients are subject to the same sample restrictions as recipients, including attending high school in Texas. Out-of-state students face a significantly higher financial burden, further justifying this restriction. When analyzing financial aid outcomes, I assign non-recipients who did not receive aid a value of zero for all aid components (grants, loans, and work-study) to ensure consistency in comparisons.

this means students passed at least 24 credits with no failed courses in their first year and attempted at least 24 credits in their second. The third-year sample is similarly defined based on successful completion of credits in the first two years and attempted credits in the third. These restrictions help ensure a more precise counterfactual, isolating the effect of aid loss from broader patterns of academic difficulty.

Although eligibility is based on clearly defined thresholds, actual grant renewal is not deterministic. Not all TEXAS Grant recipients who fell below a renewal threshold ultimately lost the grant in the subsequent year. Figure 2 illustrates the proportion of students who continued to receive the TEXAS Grant in their third year based on each second-year renewal requirement.[7] Among those with cumulative GPAs below the threshold, approximately 35% of those within 0.1 points still received the grant, but this share falls to 5–10% for those further below. In contrast, 65–90% of students who met the GPA requirement renewed, with most non-renewals driven by failure to satisfy the credit requirement. For the credit benchmark, 25–50% of students below the threshold retain the grant, compared to over 85% among those who met it. Similar patterns hold for third-year GPA and credit benchmarks, as shown in Figure A.1.



Notes: This figure shows the first-stage for each renewal threshold separately at the second-year benchmark.

Figure 2. First Stage—Year 2 Benchmark

[7] Although the empirical design uses a multidimensional running variable, it is not straightforward to visualize the joint first stage. I therefore present first stages separately by GPA and credit thresholds to illustrate the pattern of imperfect compliance along each dimension.

One reason some students continued receiving the grant despite failing to meet renewal requirements is the appeal process for aid loss. Students who can demonstrate that they experienced hardships during the year they lost eligibility may retain the grant.[8] Data on appeals is not available, making it difficult to assess the extent to which appeals contributed to continued grant receipt for ineligible students.

There is also no clear evidence that certain universities systematically applied renewal criteria more leniently or used discretionary funds to extend aid to ineligible students. However, there is a strong relationship between proximity to a renewal threshold and the likelihood of continuing to receive the grant: students who narrowly missed the GPA or credit requirements were more likely to retain the TEXAS Grant than those further below a cutoff. Students who retained the grant despite falling short of renewal requirements also differed from those who lost it—they tended to have higher GPAs and were less likely to be male or Black.[9] This may stem from the appeals process, institutional discretion, or unobserved administrative factors, with the GPA pattern in particular suggesting that stronger academic performance may have increased the likelihood of leniency. I return to the implications of this pattern later in the methodology section.

Since the renewal requirements do not perfectly predict continued receipt of the TEXAS Grant, I use a fuzzy multidimensional diff.-in-disc. design. I extend the framework of Choi and Lee (2018) and Jones et al. (2021) to accommodate both the fuzziness in treatment assignment and the inclusion of non-recipients. The first-stage uses the following equation:

$$\begin{aligned}(Lose_{i,t+1} \times Recipient_{it}) = \pi_0 + \pi_1(1\{GPA_{it} < 2.5 \text{ or } Credits_{it} < 24\} \times \text{Recipient}_{it}) + \\ \gamma\text{Recipient}_{it} + f(GPA_{it}, Credits_{it}) + [Recipient_{it} \times f(GPA_{it}, Credits_{it})] + X_{it} + W_{i,t-1} + \\ Major_{i,t=1} + Institution_i + Cohort_i\end{aligned} \quad (1)$$

where $(Lose_{i,t+1} \times Recipient_{it})$ is the endogenous treatment variable that captures the effect of losing the TEXAS Grant among prior recipients. The variable $Lose_{i,t+1}$ equals 1 if a student either loses the TEXAS Grant (for recipients) or falls below either renewal threshold (for non-recipients, who by definition cannot lose the grant).[10] The instrument is the interaction $1\{GPA_{it} < 2.5 \text{ or } Credits_{it} < 24\} \times Recipient_{it}$, which captures exogenous variation in grant loss induced by falling below a threshold, but only for recipients. X_i is a vector of student demographic characteristics including gender, age, race/ethnicity, and family income. $W_{i,t-1}$ is a vector of pre-renewal academic outcomes that includes cumulative GPA, credits attempted and passed, and the number of math, science, social science, and English credits completed through the year prior to the renewal checkpoint.

[8] Students must submit a letter of explanation documenting their hardship, which may include severe illness, responsibility for the care of another individual, or loss of a family member, among others.

[9] See Appendix Table A.1 for characteristics of compliers and non-compliers who fell below at least one threshold at the second-year benchmark. Comparisons are presented by specification, introduced later. Compliance is highest in the Diagonal and GPA specifications, while differences are most pronounced in the Credit specification.

[10] This structure creates a sharp discontinuity for non-recipients and a fuzzy discontinuity for recipients. The validity of this approach relies on the assumption that compliance among recipients is not systematically correlated with unobserved determinants of outcomes, and that crossing a threshold for non-recipients affects outcomes only through academic disruptions.

Fixed effects for 2-digit CIP entry major, institution, and cohort are also included.

The function $f()$ accounts for the multidimensional nature of the running variables and is specified as:

$$\begin{aligned} f() = \delta_1 GPA\ Below_{it} + \delta_2 GPA\ Above_{it} + \delta_3 Credits\ Below_{it} + \delta_4 Credits\ Above_{it} + \\ \delta_5(GPA\ Below_{it} \times Credits\ Below_{it}) + \delta_6(GPA\ Above_{it} \times Credits\ Above_{it}) \end{aligned} \tag{2}$$

where $GPA\ Below_{it}$ and $Credits\ Below_{it}$ are forcing variables equal to centered GPA and centered $Credits$ if they are below their respective threshold, otherwise 0. $GPA\ Above_{it}$ and $Credits\ Above_{it}$ are defined analogously for values above their respective threshold. I center GPA at 2.5 and $Credits$ at 24, so negative values indicate ineligibility and positive values eligibility.

These forcing variables serve two purposes. First, they provide flexible controls for smooth trends in academic performance just above and below each threshold, ensuring that the estimated effects are not driven by underlying differences in GPA or credit completion. Second, by incorporating both GPA and credit running variables, the specification captures the joint determination of eligibility. The inclusion of interaction terms between GPA and credit thresholds further accounts for students who are just above one threshold but just below the other, allowing for more precise estimation of the effect of aid loss across different academic profiles.

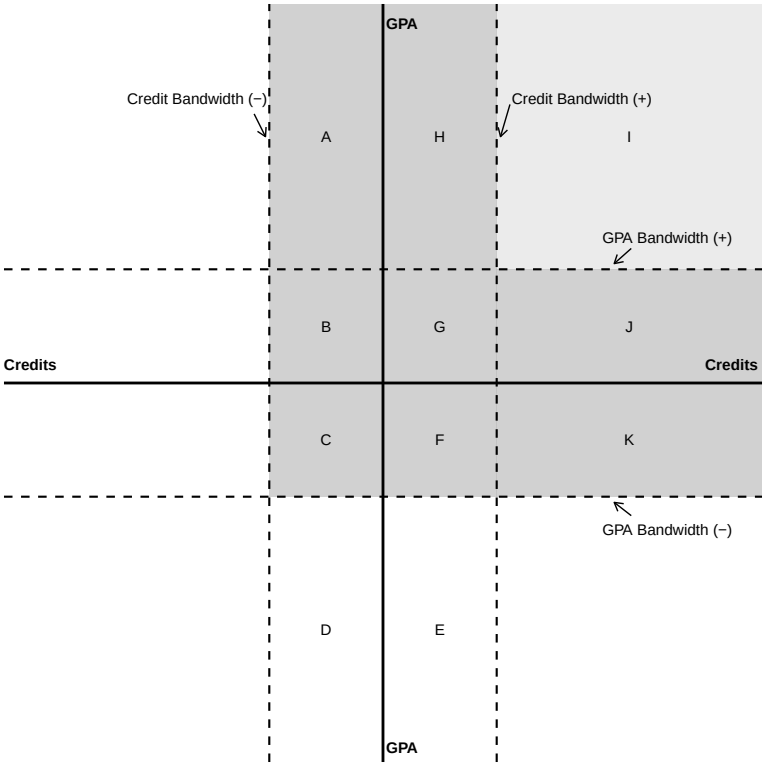
First-stage estimates show that falling below a renewal threshold(s) reduces the probability of continued grant receipt by 51 to 56 percentage points (pp) depending on the bandwidth, confirming the strength of the instrument. My second-stage equation is then specified as follows:

$$\begin{aligned} Y_{i\tau} = \alpha + \beta(\widehat{\text{Lose}_{it+1} \times \text{Recipient}_{it}}) + \gamma_1 Lose_{i,t+1} + \gamma_2 Recipient_{it} + \\ f(GPA_{it}, Credits_{it}) + [Recipient_{it} \times f(GPA_{it}, Credits_{it})] + \\ \lambda X_i + \omega W_{i,t-1} + Major_{i,t=1} + Institution_i + Cohort_i + \epsilon_{it} \end{aligned} \tag{3}$$

where $Y_{i\tau}$ is an outcome relating to subsequent financial aid, academic outcomes, graduation, major changes, or earnings, with $\tau \geq t+1$, and all other variables are as previously defined. The coefficient of interest, β provides the local average treatment effect (LATE) of losing the TEXAS Grant for recipients near at least one renewal threshold.

It is important to clarify that I define treatment based on whether a student loses the grant in the subsequent year $(t+1)$. For the second-year benchmark, students who lose the grant after their third or fourth year remain in the analysis but are not classified as "treated" at this stage. That is, the design compares TEXAS Grant recipients (and non-recipients) who lost the grant after the second year to those who retained it. This avoids comparing students who lost the grant after two years to those who never lost, which would overstate the effects on outcomes like graduation, given that continued receipt is conditional on persistence—which is itself strongly correlated with degree completion.

Following Jones et al. (2021), I select bandwidths for each dimension separately using the optimal bandwidth procedures from Calonico et al. (2014). The resulting bandwidths are 5 credits



Notes: This figure illustrates the multidimensional design. The horizontal dashed lines represent the GPA bandwidth, while the vertical dashed lines indicate the credit bandwidth. Students far from both cutoffs are excluded—either far above both (I) or far below both (D, E, and all white areas). The included regions for each specification are as follows:

Full: A,B,C,F,G,H,J,K; **Diagonal:** B,C,F,G; **Credit:** A,B,G,H; **GPA:** F,G,J,K

Figure 3. Bandwidths and Specification Illustration

and 0.328 GPA points for the second-year benchmark and 5 credits and 0.333 GPA points for the third-year benchmark.[11] My primary, or "Full", specification includes students close to either cutoff, as shown by the darker shaded region in Figure 3, which encompasses regions A, B, C, F, G, H, J, and K. Students in regions A, B, C, F, and K fail to meet at least one of the renewal requirements, making them ineligible for continued TEXAS Grant receipt.

Limiting the analysis to only students close to one of the renewal requirements covers more than one-quarter of all initial TEXAS Grant recipients who entered between fall 2011 and fall 2018. Because renewal status is observed in the year following each benchmark, the analysis conditions on students returning for a third (or fourth) year. For example, the second-year benchmark sample includes 41,926 of the 109,251 (38.4%) initial recipients who remained enrolled at least three years.

The first two columns of Table 1 compare all initial TEXAS Grant recipients to those included in the second-year benchmark analysis. Recipients in the analysis were slightly younger at their time of application (18.03 vs. 18.08) but were otherwise similar in gender and racial/ethnic composition to

[11]Optimal bandwidths are nearly identical if I do not condition on being above the other renewal threshold. For the second-year benchmark, the bandwidths are 5 credits and 0.349 GPA points; for the third-year, they are 5 credits and 0.348 GPA points.

Variable	All Recipients (1)	Recipients in Analysis (2)	Non-Recipients in Analysis (3)
Age	18.08	18.03	18.06
Male	0.42	0.40	0.45
White	0.18	0.18	0.54
Black	0.17	0.16	0.08
Hispanic/Latino	0.55	0.55	0.26
Year 1 Credits Passed	24.44	28.07	28.36
Year 1 Cumulative GPA	2.71	3.07	3.18
Graduate	0.66	0.88	0.92
Students	152,837	41,926	140,219

Notes: This table reports descriptive statistics for three groups. Column (1) includes all students who ever received the TEXAS Grant. Column (2) restricts to second-year TEXAS Grant recipients who fall within the optimal bandwidth of at least one second-year renewal threshold and persist to a third year. Column (3) includes non-recipients satisfying the same restrictions.

Table 1. Descriptive Statistics of Recipients and Non-Recipients

the full population of recipients. Since the sample excludes early-leavers, these students accumulated more first-year credits (28.07 vs. 24.44), had higher first-year GPAs (3.07 vs. 2.71), and graduated at higher rates (88% vs. 66%) than all recipients.

The third column of Table 1 provides descriptives of non-TEXAS Grant recipients in the analysis. While non-recipients were similar in age, their racial/ethnic composition differed markedly from recipients. Specifically, a much larger share of non-recipients were white (54% vs. 18%), while a smaller share were Hispanic/Latino (26% vs. 55%), reflecting broader trends in need-based financial aid receipt. First-year credit accumulation is comparable between recipients and non-recipients, though non-recipients had slightly higher first-year GPAs (3.18 vs. 3.07) and graduated at somewhat higher rates (92% vs. 88%).

Although some observable differences exist between recipients and non-recipients, this does not necessarily pose a threat to identification. What matters is whether both groups exhibit similar patterns at the thresholds, ensuring that any observed discontinuities in outcomes are driven by aid loss rather than differential changes in observable characteristics. This assumption is tested in later covariate balance checks.

5.2 Alternative Specifications: Examining Heterogeneous Effects

The Full specification contains students with a wide range of academic performance, even among those who lose the TEXAS Grant. For instance, a student in region A might have failed a one-credit course while maintaining a 3.5 cumulative GPA, while a student in region K could pass 30 credits but fall just short of a 2.5 cumulative GPA. Because students differ not only in their academic performance but also in the reasons they lose aid, the consequences of aid loss are likely to differ

across groups.

Students with stronger academic records may be more likely to persist and have access to alternative financial resources, such as institutional aid or private scholarships. However, they may also perceive their aid as secure, making the loss more unexpected and potentially more disruptive. This dynamic is relevant for students who fall short of the credit requirement but maintain a strong GPA. In contrast, students who lose aid due to falling below the GPA requirement may already be experiencing academic challenges that place them at higher risk of stopping out. For these students, aid loss could either exacerbate existing setbacks or have a smaller marginal impact if it is anticipated and perceived as part of broader academic difficulties. Finally, students who fall below both thresholds may face the most acute risks: they are academically vulnerable on multiple dimensions, and the loss of aid may serve not only as a financial shock but also as a confirmation of limited academic progress.

These academic struggles are not unique to TEXAS Grant recipients—non-recipients experience similar challenges by design. However, only recipients face the additional consequence of losing financial aid when those struggles cross a renewal threshold. My empirical strategy is designed to isolate this interaction: whether and how the consequences of academic setbacks differ when they also trigger the loss of financial support.

To examine whether the reason for aid loss moderates its effects, I segment the analysis into three groups based on which threshold(s) students fall below. Each student falls into one or more of the following categories:[12]

1. **Credit Discontinuity.** The first group consists of students near the credit threshold who exceed the GPA requirement, represented by regions A, B, G, and H in Figure 3. Specifically, this includes students who passed between 19 and 29 credits—corresponding to the optimal 5-credit bandwidth around the 24-credit threshold—while maintaining a cumulative GPA of 2.5 or higher. These regions account for 83.8% of the second-year sample and 86.6% of the third-year sample, but include only 24.9% of second-year recipients and 53.4% of third-year recipients who lose the TEXAS Grant. As all students meet the GPA requirement, the model simplifies to a single-dimensional diff.-in-disc. using credits passed as the running variable. This specification, shown below, isolates the effect of losing aid due to insufficient credit accumulation:

$$\begin{aligned} Y_{i\tau} = \alpha + \beta(\widehat{Lose_{i,t+1} \times Recipient_{it}}) + \phi_1 Lose_{i,t+1} + \phi_2 Recipient_{it} + \\ \phi_3 \tilde{R}_{it} + \phi_4(\tilde{R}_{it} \times Lose_{i,t+1}) + \phi_5(\tilde{R}_{it} \times Recipient_{it}) + \\ \phi_6(\tilde{R}_{it} \times Lose_{i,t+1} \times Recipient_{it}) \ + \lambda X_i + \omega W_{i,t-1} + \\ Major_{i,t=1} + Institution_i + Cohort_i + \epsilon_{it} \end{aligned} \tag{4}$$

where $\tilde{R}_{it}$ denotes centered credits passed and all other variables are defined as in Equation

[12] Only students in region G are included in multiple specifications. Students in all other regions appear in only one group.

3. The endogenous treatment indicator, ($Lose_{i,t+1} \times Recipient_{it}$), is instrumented using the interaction ($1\{Credits_{it} < 24\} \times \text{Recipient}_{it}$). The coefficient of interest, β, captures the LATE of losing the TEXAS Grant due to insufficient credit accumulation.

2. **GPA Discontinuity.** Represented by regions F, G, J, and K in Figure 3, this group includes students who are close to the GPA benchmark but satisfy the credit completion requirement. Students in this group passed at least 24 credits with cumulative GPAs ranging from 2.172 to 2.828 based on the optimal bandwidth around the 2.5 threshold. This group comprises 27.0% of the second-year sample and 22.0% of the third-year sample, and includes 56.3% and 30.8% of second- and third-year recipients, respectively, who lose the grant. Because all students in this group satisfy the credit requirement, this specification isolates the impact of aid loss due to narrowly missing the GPA threshold. The estimating equation is defined analogously to the Credit specification but uses centered GPA as the running variable and an indicator for falling below the 2.5 GPA threshold, interacted with recipient status, as the instrument.

3. **Diagonal.** Students who narrowly meet or narrowly miss both renewal thresholds—those in regions C and G of Figure 3—comprise the third group. This includes students who are simultaneously within the optimal GPA and credit bandwidths and who fall either above both thresholds or below both thresholds. This group includes 14.5% of students in the second-year benchmark and 10.7% in the third-year benchmark. Similarly, it accounts for 18.7% and 15.8% of students who lose the TEXAS Grant at each respective benchmark. I retain the full model shown in Equation 3 but restrict the sample to students in regions C and G. This specification isolates the effect of aid loss among students who fall below both thresholds. Students in regions B and F are excluded because, although they are within the optimal bandwidths of both thresholds, they fall below only below one. Including them would conflate the effects of failing both benchmarks with the effects of failing just one.

Table 2 presents descriptive statistics for each subgroup, showing meaningful differences in both demographics and academic performance. The share of White students is highest in the Credit specification (46.6%), while the share of Black students is nearly double in the GPA specification compared to the Credit specification (16.0% vs. 8.5%). Further, students in the Credit specification had GPAs 0.68 points higher, on average, than those in the GPA specification, but they completed nearly 2 fewer credits. Those in the Diagonal group had the fewest completed credits (53.32) and the second-lowest GPAs (2.64) of the three groups. These patterns highlight the importance of estimating effects separately by region.

5.3 Identifying Assumptions

The validity of the diff.-in-disc. framework relies on satisfying two key assumptions: (1) continuity in observable characteristics across the threshold and (2) no manipulation of the running variables.

Variable	Full	Credit	GPA	Diagonal
Male	0.439	0.432	0.474	0.484
White	0.454	0.466	0.398	0.392
Black	0.100	0.085	0.160	0.146
Hispanic	0.326	0.322	0.354	0.374
Other	0.120	0.127	0.088	0.088
First-Generation	0.145	0.141	0.164	0.171
Credits Passed	55.01	54.55	56.34	53.32
Cumulative GPA	3.15	3.27	2.59	2.64
N	182,137	152,585	49,233	26,447

Notes: This table reports descriptive statistics for students in the second-year benchmark analysis. "Full" includes all students within the optimal bandwidth around at least one threshold. "Credit" includes students who met the GPA requirement but fell within the optimal bandwidth around the credit requirement. "GPA" includes students who met the credit requirement but fell within the optimal bandwidth around the GPA threshold. "Diagonal" includes students within the optimal bandwidth of both thresholds who were above or below both thresholds. Cumulative GPA and credits passed are measured at the end of the second year, when TEXAS Grant renewal is assessed.

Table 2. Descriptive Statistics by Sample

5.3.1 Covariate Balance

For the continuity in observable characteristics, any changes at the thresholds must be similar for both recipients and non-recipients. To test this assumption, I conduct a covariate balance check using the following equation:

$$X_{it} = \alpha + \beta(Ineligible_{it} \times Recipient_{it}) + \eta_1 Ineligible_{i,t} + \eta_2 Recipient_{it} + f(GPA_{it}, Credits_{it}) + [Recipient \times f(GPA_{it}, Credits_{it})] \tag{5}$$

where $Ineligible_{it}$ is an indicator for falling below either renewal benchmark and X_{it} is a vector of student characteristics, previous academic outcomes (previously denoted as $W_{i,t-1}$ in Equation 3), and the institution attended. All other variables retain their previous definitions. In this equation, β captures whether there are systematic differences in student characteristics between recipients and non-recipients at the thresholds.

The four panels of Table 2 present results from the above equation for the second-year renewal benchmark. While most characteristics show no significant differences, a few small but notable shifts emerge. Moving from just above to just below a renewal threshold is associated with a 3.0 pp greater proportion of White students among recipients than non-recipients, and a 3.7 pp lower proportion of Hispanic/Latino students. Similarly, the share of first-generation students is 3.7 pp lower among recipients, and the share from families earning below $20,000 is 1.6 pp higher.[13]

Panel C reports results for academic characteristics prior to renewal, which are especially impor-

[13]These family income bins reflect the response categories on student applications.

Panel A: Student Demographics		Panel B: Family Income		Panel C: 1st-Year Academic Outcomes		Panel D: Institution	
Outcome	**Estimate**	**Outcome**	**Estimate**	**Outcome**	**Estimate**	**Outcome**	**Estimate**
Age	-0.002	Unknown	-0.012	STEM Major	0.020	UT-Austin	0.002
	(0.0141)		(0.0152)		(0.0139)		(0.0111)
Male	-0.007	<$20,000	0.016***	Cumulative GPA	0.001	Texas A&M	0.030***
	(0.0159)		(0.0077)		(0.0080)	College Station	(0.0114)
White	0.030**	$20k–$39,999	-0.015	Credits Attempted	0.016	UT-Dallas	0.000
	(0.0152)		(0.0094)		(0.1040)		(0.0056)
Black	0.010	$40k–$59,999	0.008	Credits Passed	0.041	Texas Southern	-0.005
	(0.0094)		(0.0093)		(0.1027)		(0.0030)
Hispanic/Latino	-0.037**	$60k–$79,999	0.003	Math Credits Attempted	0.089	UT-Brownsville	0.000
	(0.0145)		(0.0086)		(0.0964)		(0.0016)
First-Generation	-0.037***	$80,000+	0.000	Science Credits Attempted	0.198	Sul Ross State	0.000
	(0.0110)		(0.0140)		(0.1526)		(0.0014)
N	182,137	**N**	182,137	**N**	182,137	**N**	182,137

Notes: The family income bins in Panel B correspond to the options students can select on their applications. STEM majors include fields related to engineering, biological sciences, mathematics/statistics, and physical sciences. Mathematics and science courses are classified based on subject codes, with mathematics/statistics representing math courses and biology, chemistry, physics, physical sciences, geology, and general science representing science courses. UT-Austin, Texas A&M - College Station, and UT-Dallas have the three highest graduation rates among the schools in this analysis, while Texas Southern, UT-Brownsville, and Sul Ross State have the lowest. *p<0.10; **p<0.05; ***p<0.01.

Table 3. Covariate Balance Check—Year 2 Benchmark

tant given that the outcomes of interest include credit accumulation, GPA, and graduation rates. It is important to verify that recipients and non-recipients are comparable on these pre-treatment academic measures across the thresholds; otherwise, any pre-existing differences could bias estimates. However, there is no evidence of differential changes in STEM representation, GPA, credits attempted or passed, or math and science credits attempted between recipients and non-recipients across the thresholds.[14]

Similarly, to ensure that institution-level graduation rates do not confound the effects of aid loss, Panel D examines whether the proportion of students attending high- or low-graduation-rate institutions changes differentially across the thresholds for recipients and non-recipients. I focus on the three universities with the highest graduation rates (UT-Austin, Texas A&M-College Station, and UT-Dallas) and the three with the lowest (Texas Southern, UT-Brownsville, and Sul Ross State). The proportion of students attending Texas A&M is 3.0 pp higher for recipients than for non-recipients when moving from just above to just below the threshold. While modest in magnitude, this shift is noteworthy given the institution's high graduation rate.

Table A.2 shows that patterns in student demographics, family income, and institution attended for the third-year benchmark are similar to those in the second-year benchmark. However, small differences emerge in academic outcomes when falling below a renewal threshold. For recipients, GPA is 0.066 points higher and credits passed are 0.591 higher than for non-recipients.

[14]STEM majors are defined according to the Department of Homeland Security's STEM Designated Degree Program list that includes majors under the following four primary CIP 2-digit series: 14 (Engineering), 26 (Biological and Biomedical Sciences), 27 (Mathematics and Statistics), and 40 (Physical Sciences) (Department of Homeland Security, 2023).

Across both renewal benchmarks, there are some differences in student characteristics between recipients and non-recipients across thresholds. However, these differences are generally small in magnitude, and overall patterns across thresholds are similar for both groups. As a result, they are unlikely to meaningfully bias the estimated effects of aid loss.

5.3.2 No Manipulation

Second, recipients must not be able to differentially manipulate either of the running variables. While some degree of sorting or strategic behavior may occur, what matters for identification is that any bunching or discontinuities at the threshold are similar for both recipients and non-recipients. If, for example, recipients disproportionately clustered just above the GPA renewal threshold while non-recipients were evenly distributed, this would suggest differential sorting that could bias estimates.

The two graphs in the left panel of Figure 4 plot the density of cumulative GPA for TEXAS Grant recipients and non-recipients at the second-year renewal benchmark. Visual inspection confirms that both groups exhibit similar density patterns around the threshold, suggesting no systematic manipulation of GPA. This aligns with the fact that students have limited ability to control their cumulative GPA. Moreover, unlike prior research documenting bunching at GPA values corresponding to standard letter grades (Barreca et al., 2016)—primarily in first-year GPA distributions due to grading scales and fewer courses contributing to GPA—there is no evidence of similar bunching at the second- and third-year renewal thresholds.

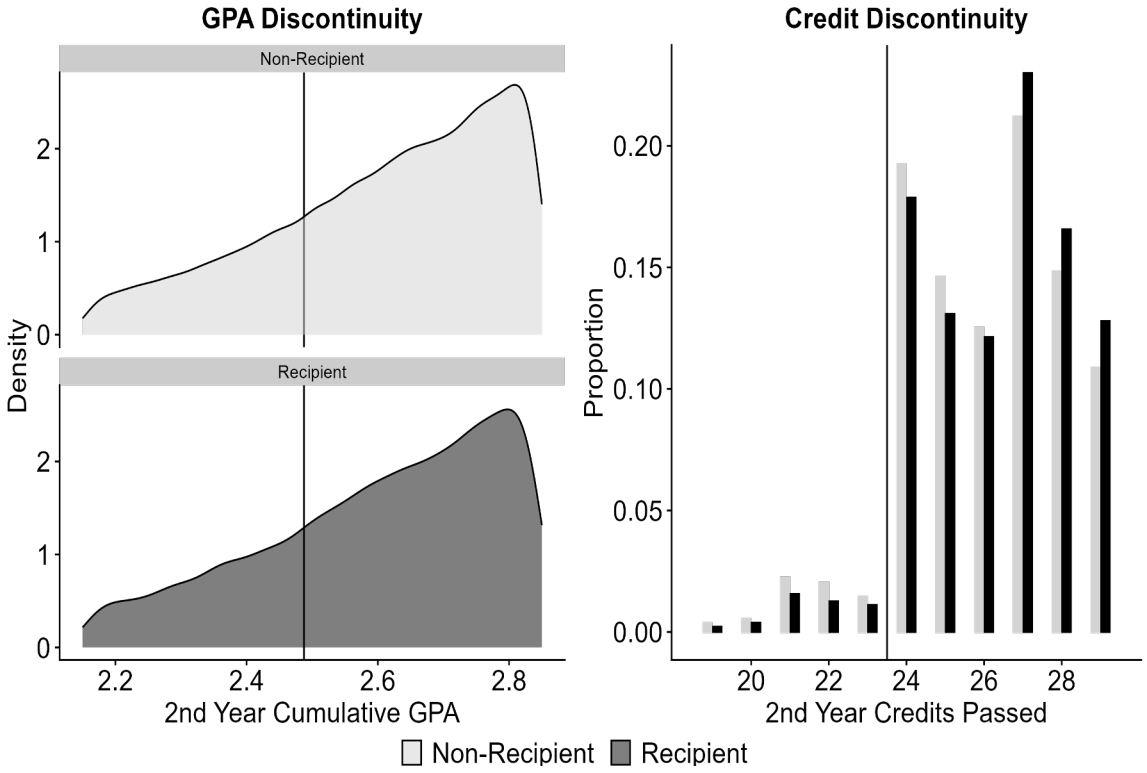
While students cannot precisely manipulate GPA, higher GPAs may still increase the likelihood of grant retention among those who fall below a renewal threshold. As discussed earlier, Appendix Table A.1 shows that students who retain the grant despite not meeting the requirements tend to have significantly higher GPAs than those who lose it. This suggests that institutions may exercise some discretion in favor of stronger academic performers. However, this does not violate this identifying assumption: students cannot manipulate their GPA to ensure retention.

The right panel of Figure 4 plots the distribution of students passing between 19 and 29 credits. If the renewal requirement were based on attempted credits, direct manipulation would be a major concern, as students could strategically adjust their course loads to stay above the threshold. However, just as students cannot directly manipulate their GPA, they also cannot directly manipulate whether they pass a course. A student failing a course would have to convince an instructor to retroactively change their grade.[15]

In theory, a student could attempt an extreme number of credits (e.g., 42) to increase the likelihood of passing at least 24, but this would be highly unusual given typical course loads and the risk of falling below a 2.5 GPA if the workload proves unmanageable.[16] However, while there is visible

[15] While both are unlikely, persuading a professor to round up a final grade is a much lower hurdle than overturning a failing course outcome.

[16] Regressing credits attempted during the renewal year on a recipient indicator yields statistically insignificant estimates: recipients attempt 0.09 fewer credits in the second year and 0.26 fewer in the third year. This suggests that recipients are not strategically over-enrolling to create a buffer.



Notes: This figure shows the distribution of cumulative GPA (left) and credits passed (right) at the second-year renewal benchmark for TEXAS Grant recipients and non-recipients. The vertical lines indicate the relevant GPA (2.5) and credit (24) thresholds.

Figure 4. Density Plots—Year 2 Benchmark

bunching at and just above the 24-credit threshold, this simply reflects the fact that more students pass all of their courses than fail at least one. Crucially, the density shift across the threshold is nearly identical for recipients and non-recipients, indicating no differential manipulation. Thus, while there is some natural clustering around the cutoff, the similarity across groups supports the validity of the no manipulation assumption.

Figure A.2 presents density plots for the third-year renewal thresholds. Because only TEXAS Grant recipients were subject to a cumulative GPA requirement in the second year, their third-year GPA distribution is more concentrated above the 2.5 threshold, as shown in the left two graphs. However, there is no noticeable change in density across the threshold for either group, suggesting that differential manipulation of GPA remains unlikely.

The right-hand graph, in contrast, reveals a notable difference: a larger proportion of non-recipients passed 24 or more credits, while a slightly smaller share completed between 18 and 23 credits. This pattern suggests some degree of differential movement across the credit threshold, though it appears to be driven by non-recipients rather than recipients. While non-recipients lack a direct incentive to manipulate their credit accumulation in response to TEXAS Grant renewal rules, one possible explanation is the influence of institutional policies that apply to broader segments

of the student population. Crucially, while this density shift points to differential movement across the threshold, it does not appear to reflect strategic manipulation among recipients in response to the TEXAS Grant renewal criteria.

6 Results

6.1 Second-Year Renewal Benchmark

6.1.1 Financial Aid

Table 4 presents the estimated impact of losing the TEXAS Grant after the second year on subsequent financial aid. Panel A reports effects on third-year financial aid, while Panel B shows effects on fourth-year financial aid for students who remained enrolled. Each column corresponds to one of the four specifications discussed in the previous section. The first column shows estimates from the Full specification, which includes all students near at least one renewal threshold. The remaining columns correspond to the three alternative specifications.

	Specification				Specification			
Aid Component	**Full**	**Credit**	**GPA**	**Diagonal**	**Full**	**Credit**	**GPA**	**Diagonal**
	Panel A: 3rd-Year Financial Aid				**Panel B: 4th-Year Financial Aid**			
Total Aid	-3643***	-4602***	-4349***	-1069	-1860***	-2342***	-1807**	-403
	(431)	(308)	(678)	(1942)	(491)	(348)	(757)	(2255)
TEXAS Grant	-6238***	-5590***	-6344***	-5796***	-2796***	-3172***	-1550***	-2478***
	(177)	(70)	(120)	(222)	(167)	(119)	(269)	(661)
Non-TG Gift Aid	948***	-601***	874**	986	-11	-507**	-415	-1555
	(268)	(195)	(421)	(1088)	(290)	(218)	(438)	(1208)
Loans	1628***	1613***	1019**	3466**	935***	1289***	130	3522**
	(328)	(205)	(515)	(1518)	(353)	(231)	(547)	(1624)
Federal Loan Maximum	0.092***	0.074***	0.058	0.064	0.071**	0.071***	0.018	0.244**
	(0.026)	(0.015)	(0.041)	(0.106)	(0.028)	(0.018)	(0.043)	(0.122)
Parent PLUS	0.020	-0.013	0.004	0.094	0.010	-0.019	-0.001	0.044
	(0.019)	(0.015)	(0.029)	(0.087)	(0.019)	(0.016)	(0.031)	(0.082)
Work-Study	18	-24	102	276	12	-42	28	108
	(68)	(44)	(107)	(257)	(66)	(44)	(101)	(254)
Earnings	44	-33	40	79	66*	67**	68	-223
	(30)	(30)	(41)	(153)	(36)	(31)	(51)	(317)
Loans After Benchmark	–	–	–	–	1541	3026***	-35	10464**
					(1120)	(753)	(1756)	(4805)
Cumulative Federal Loan Maximum	–	–	–	–	0.028	0.040**	0.021	0.145
					(0.026)	(0.016)	(0.042)	(0.115)
N	182,137	152,585	49,233	26,447	157,982	133,220	42,373	23,479

Notes: 4th-year financial aid estimates are only provided for students who enrolled a fourth year. "Loans After Benchmark" is the cumulative loan amount students borrowed after their second year. The annual federal loan maximum for dependent students is $7,500 in the third year and beyond. The cumulative federal loan maximum is $31,000. *p<0.10; **p<0.05; ***p<0.01.

Table 4. Effects of TEXAS Grant Loss on Subsequent Financial Aid—Year 2 Benchmark

With the exception of students who narrowly missed both thresholds (Diagonal specification), losing the TEXAS Grant significantly reduced total third-year financial aid. The decrease in total aid ranged from $3,643 in the Full specification to $4,602 for students in the Credit specification,

representing an approximate 20% decrease in total aid. The primary driver of this decline was the \$5,500–\$6,500 loss from the TEXAS Grant, although students partially offset this loss through other forms of aid.

One such source is non-TEXAS Grant gift aid. Students in the Full and GPA specifications received approximately \$900 more from these sources. To better understand the exact sources of this aid, Appendix Table A.3 presents estimates for the Full specification across all observed sources of third-year non-TEXAS Grant gift aid. Loss of the TEXAS Grant coincided with a \$349 decrease in Pell Grant aid, though as shown later, this is attributable to reduced full-time enrollment, not an overlap with Pell renewal requirements.[17] This decline is particularly pronounced in the Credit specification, where students received significantly less non-TG gift aid overall, largely due to reduced Pell awards.

While Pell Grant awards declined, other federal and state need-based aid programs showed modest increases. Specifically, students received \$113 more from the Supplemental Educational Opportunity Grant (SEOG),[18] \$344 more from HB3015,[19] and \$212 more from the Texas Public Education Grant (TPEG).[20] Taken together, these three programs accounted for approximately \$650 in additional aid and represented a 50-170% increase relative to students' average second-year awards. In addition, students received \$729 more in other forms of gift aid not shown separately in the table. This category includes smaller state, institutional, or private grants for which the specific source is unavailable.

These programs are all need-based and do not require separate applications. The increases likely reflect a mechanical response to higher financial need after TEXAS Grant loss—students remain eligible, but with more unmet need, award amounts increase. Other forms of aid—including institutional merit aid, categorical federal aid, and tuition exemptions—do not exhibit meaningful changes. These results help explain why the overall decline in gift aid is smaller than the reduction in TEXAS Grant aid. Importantly, the lack of sharp declines in aid from other programs reinforces that the observed effects are attributable to TEXAS Grant loss.

The largest source of replacement aid was loans, with increases of at least \$1,000 across all specifications. The largest increase occurred among students falling below both thresholds, with third-year borrowing rising by over \$3,400 (80%). This substantial borrowing response explains the insignificant change in total aid for this group. On the other hand, many students in the Full and Credit specifications appear unable to fully replace lost grant aid through borrowing, likely due to federal loan limits. In both groups, students were significantly more likely (7.4 and 9.2 pp, respectively) to borrow the annual federal maximum of \$7,500, despite only 16.3% of aid recipients

[17]The maximum Pell Grant award is available only to students enrolled full-time. Eligibility is based on expected family contribution (EFC) and enrollment intensity, with awards prorated for part-time students.

[18]The SEOG is a federal need-based grant administered by institutions. Awards are targeted toward Pell-eligible students with exceptional financial need and are subject to limited institutional allocations.

[19]HB3015 refers to state-authorized tuition-set-aside grants, which require institutions to set aside a portion of designated tuition revenue for need-based aid. Awards are typically reserved for Texas residents with financial need.

[20]TPEG is a state-administered, need-based grant available to Texas residents or students attending a public college in Texas. Eligibility is determined by financial need, and awards vary by institution and available funds.

hitting this cap. This constraint is a key reason these groups experienced sizable reductions in total third-year aid despite increases in loan take-up.

To explore whether families compensated through alternative borrowing channels, I also examine Parent PLUS loans, which are federal loans taken out by a student's parent and are not subject to the borrowing limits discussed above. However, these loans require a credit check and are unavailable to families with adverse credit histories. I find no significant effect of aid loss on Parent PLUS loan take-up. This null result may reflect constraints in eligibility or willingness: families of TEXAS Grant recipients are low-income and may either be unable to qualify for these loans or unwilling to take on additional debt. Lastly, I examine earnings from the federal work-study program and outside employment, but do not find significant changes in these aid sources in response to loss of the TEXAS Grant. Taken together, these results suggest that while students were able to partially replace lost aid—primarily through loans and increased need-based grants—most were not able to fully offset the loss, leading to meaningful reductions in total financial aid during their third year.

By the fourth year, the effect of losing the TEXAS Grant on total aid diminished in magnitude, with reductions in total aid approximately half the size of the third-year estimates across all specifications. This attenuation largely reflects a smaller direct effect of TEXAS Grant loss, as some students retained the grant through their third year but lost it afterward. That is, the third-year estimate captures the impact of losing aid after the second year relative to students who retained it into the third year. In contrast, the fourth-year estimate compares students who lost the grant after the second year to those who either retained it for four (or more) years or lost it after their third year.

Consistent with third-year trends, most students continued to rely on loans to partially offset the loss. In the Full specification, students borrowed an additional $935, while those who fell below both thresholds continued to borrow at high levels, with a $3,522 increase in fourth-year loans. Many also remained more likely to hit the annual federal loan maximum, with increases of 7.1 and 24.4 pp, respectively. However, as in earlier years, there is no evidence that students increased their participation in work-study or significantly raised their outside earnings in response to the aid loss.

The final two rows assess the cumulative impact of TEXAS Grant loss on student borrowing after the second year. Students who failed only the credit benchmark borrowed $3,026 more in federal loans over their remaining college years, while those who failed both benchmarks borrowed over $10,000 more. Despite significant increases in third- and fourth-year loan uptake, the effect on total subsequent borrowing in the Full specification is not statistically significant. One possible explanation is that students who lost aid may have left college earlier, thereby reducing their need for additional loans. This is explored in later sections on persistence and degree completion.

The final row examines whether students were more likely to reach the cumulative federal loan limit of $31,000 for dependent undergraduates. Students in the Credit specification were 4.0 pp more likely to hit this borrowing cap, a substantial increase relative to the 19.3% of aid recipients who reached the threshold. This suggests that the loss of the TEXAS Grant accelerated students' reliance on federal loans and pushed many to the upper bound of what they were allowed to borrow.

Overall, losing the TEXAS Grant led to a substantial reduction in total financial aid. Students primarily compensated through increased borrowing rather than through additional grants, work-study, or outside employment. However, binding federal loan limits may have prevented them from fully replacing the lost aid. Another possible explanation for the decline in total aid is that students reduced their course loads, thereby lowering tuition charges and, in turn, the amount of aid they required. I return to this possibility in the next section.

6.1.2 Academic Outcomes

Table 5 presents the estimated effects on subsequent academic outcomes. The first row of Panel A reports impacts on third-year persistence rates for all second-year recipients and reflects the effect of falling below a renewal threshold, rather than the actual loss of the TEXAS Grant, which is only observed for those returning for a third year. Third-year persistence declined only for students who fell below the credit threshold alone (7.8 pp), suggesting that enrollment decisions may have responded even before aid loss was confirmed. As a result, later estimates of graduation and academic performance among persisting students may understate the full consequences of failing to meet renewal criteria.

	Specification				Specification			
Outcome	**Full**	**Credit**	**GPA**	**Diagonal**	**Full**	**Credit**	**GPA**	**Diagonal**
	Panel A: 3rd-Year Academic Outcomes				**Panel B: 4th-Year Academic Outcomes**			
Persistence	-0.002	-0.078***	0.134	0.003	-0.031*	-0.159***	0.005	-0.062
	(0.007)	(0.007)	(0.420)	(0.037)	(0.017)	(0.015)	(0.027)	(0.085)
Transfer	-0.004	0.088***	-0.005	0.011	0.011	0.079***	0.012	-0.003
	(0.013)	(0.013)	(0.019)	(0.055)	(0.015)	(0.013)	(0.021)	(0.068)
Credits Withdrawn	-0.075	0.186	-0.195	0.854	-0.083	0.067	-0.203	-0.052
	(0.174)	(0.141)	(0.269)	(0.784)	(0.150)	(0.136)	(0.231)	(0.748)
Full-Time Enrollment	-0.079***	-0.246***	0.007	-0.294**	-0.033	-0.171***	0.044	-0.197
	(0.028)	(0.036)	(0.065)	(0.046)	(0.029)	(0.024)	(0.045)	(0.138)
Credits Attempted	-0.944**	-3.096***	0.124	-3.514	-0.530	-1.923***	0.223	-2.865
	(0.449)	(0.391)	(0.691)	(2.173)	(0.513)	(0.413)	(0.776)	(2.567)
Attempt 36+	-0.002	-0.016	0.024	0.020	0.042**	0.012	0.047	0.079
	(0.018)	(0.014)	(0.030)	(0.071)	(0.019)	(0.014)	(0.030)	(0.089)
Credits Passed	-1.146**	-3.986***	0.111	-3.850	-0.737	-2.288***	0.462	-2.399
	(0.515)	(0.435)	(0.794)	(2.569)	(0.572)	(0.413)	(0.873)	(2.827)
GPA	0.001	-0.194***	0.081	-0.099	-0.018	-0.084*	0.083	0.161
	(0.045)	(0.041)	(0.068)	(0.074)	(0.052)	(0.046)	(0.081)	(0.243)
N	182,137	152,585	49,233	26,447	157,982	133,220	42,373	23,479

Notes: "Credits Withdrawn" is the credit value of total withdraws during the given academic year. "GPA" only considers courses during the given year, not cumulative GPA. 4th-Year academic outcomes are conditional on persisting. *p<0.10; **p<0.05; ***p<0.01.

Table 5. Effects of TEXAS Grant Loss on Subsequent Academic Outcomes—Year 2 Benchmark

The second row examines whether students who lost the TEXAS Grant were more likely to transfer to other institutions. Once again, only students who fell below the credit threshold were affected, with an 8.8 pp increase in transfer rates—more than four times the baseline rate of 2.1%. One possible explanation is that students sought to reduce costs by transferring to less expensive institutions. However, further analysis shows no evidence that these students moved to colleges with

lower tuition or fees, or to institutions closer to home that might have reduced living expenses.

The next several rows focus on enrollment patterns and academic performance. While there is no significant impact on the number of credits withdrawn, there is a substantial decline in enrollment intensity. In the Full specification, full-time enrollment—defined as attempting at least 24 credits during the academic year—declined by 7.9 pp. This effect is even larger in the Credit and Diagonal specifications, at 24.6 pp and 29.4 pp, respectively. The reduction in full-time enrollment translated into fewer credits attempted and passed. Overall, students attempted 0.94 fewer credits and passed 1.15 fewer credits, while those below only the credit benchmark attempted 3.10 fewer credits and passed 3.99 fewer credits. Estimates from the latter also indicate worse academic performance, with a 0.194-point decline in their third-year GPA. With the exception of decreased enrollment intensity in the Diagonal specification, students in this group and the GPA specification did not experience significant changes in any outcomes.

These reductions in attempted credits lowered tuition charges but do not fully explain the observed decline in total aid shown in Table 4. Using the estimates from Table 5 and multiplying by the average tuition per credit among students who lost the TEXAS Grant, I estimate that tuition charges decreased by \$255 (0.944×270.45) in the Full specification and \$874 (3.096×282.43) in the Credit specification. After accounting for these reductions in tuition, total third-year aid remained \$3,388 (-3,643 + 255) and \$3,728 (-4,602 + 874) lower, respectively. While reduced course loads slightly reduced financial need, they do not explain the full decline in aid, indicating that most of the observed reduction reflects a loss of funding rather than a lower cost of attendance.

Panel B of Table 5 presents results on fourth-year outcomes. Students most affected by aid loss in the third year continued to experience negative impacts in the fourth year. In the Full and Credit specifications, persistence decreased by 3.1 pp and 14.8 pp, respectively. For context, 94.4% of third-year TEXAS Grant recipients persisted to a fourth year, highlighting that while many affected students remain enrolled, their likelihood of persisting was meaningfully lower relative to continued recipients. This suggests that beyond affecting credit accumulation and enrollment intensity, losing the TEXAS Grant also influenced the re-enrollment margin, making affected students more likely to leave college altogether.

Among students who persisted, academic disruptions remained substantial in the Credit specification. Full-time enrollment dropped by 17.1 pp, with students attempting and passing 1.92 and 2.29 fewer credits, respectively. Academic performance also suffered, with fourth-year GPA falling by 0.084 points. At the same time, some students accelerated their credit accumulation. In the Full specification, students were 4.2 pp more likely to attempt 36 or more credits during their fourth year. Though modest in size, these effects suggest that some students responded to aid loss by increasing coursework—possibly in an effort to graduate sooner and limit future borrowing. As in the third year, students below both thresholds or only the GPA threshold did not experience significant declines in academic outcomes.

These results underscore that the consequences of TEXAS Grant loss depend heavily on the reason for aid loss. Students who fell below only the credit threshold experienced the largest and

most persistent negative effects on enrollment and academic performance, despite having relatively strong academic records prior to aid loss. In contrast, students who failed to meet only the GPA requirement showed no adverse effects and had the smallest increases in borrowing, suggesting that higher loan burdens may partly explain the academic disruptions observed among other groups. Students who failed to meet both requirements also exhibited sizable negative point estimates, though smaller sample sizes limit precision. Together, these patterns highlight the importance of disaggregating effects by the specific criteria that triggered aid loss, as the Full specification alone would have masked substantial heterogeneity in how students responded to the loss of financial aid.

Moreover, this finding underscores an important yet underappreciated consequence of financial aid loss: it does not only affect academically struggling students. In fact, these results suggest the opposite—academically successful students suffered the most when they lost aid. One key reason for this may be the unexpected nature of aid loss for higher-achieving students, who may have assumed their financial aid was secure throughout college. Beyond the initial shock, the burden of higher loan balances discussed earlier may have further exacerbated their academic challenges. The need to manage additional debt may have contributed to declining academic confidence and performance, as financial stress and uncertainty about repayment weighed on their ability to focus on coursework.

6.1.3 Graduation

Table 6 presents estimates on four-, five-, and six-year graduation rates, degree attainment, and time to degree. Overall, losing the TEXAS Grant did not significantly affect degree attainment or graduation rates at any of the measured intervals. However, students who lost aid due to insufficient credit accumulation experienced an 11.9 pp decline in bachelor's degree attainment, along with 14.8 and 14.2 pp reductions in five- and six-year graduation rates, respectively. These declines align with earlier persistence estimates, which showed similarly large negative effects concentrated among this group. Paired with a 1.45-month increase in time to graduation among students who eventually earned a degree, the results suggest that loss of the TEXAS not only reduced degree completion but also delayed graduation. For reference, 92.1% of recipients who retained the grant in this group ultimately earned a bachelor's degree, indicating that while the likelihood of completion was substantially lower for those who lost aid, many still graduated.

The observed graduation patterns are further reflected in post-renewal borrowing behavior. While Table 4 previously showed overall loan uptake increased after aid loss for students only below the credit threshold, disaggregating loans by graduation status reveals a more nuanced pattern. Among graduates in this group, total subsequent borrowing increased by \$5,725 ($p<0.01$), likely reflecting the extended time to degree. This suggests that students who persisted to graduation faced greater financial strain and relied more heavily on borrowing to remain enrolled, further highlighting the challenges of sustaining enrollment without the TEXAS Grant.

Consistent with earlier findings that GPA-threshold students did not experience meaningful changes in persistence, enrollment intensity, or academic performance, there are no significant effects

	Specification			
Outcome	**Full**	**Credit**	**GPA**	**Diagonal**
Panel A: 3rd-Year Academic Outcomes				
Graduate in 4 Years	0.033	-0.012	0.016	-0.171*
	(0.027)	(0.023)	(0.043)	(0.097)
N	182,137	152,585	49,233	26,447
Graduate in 5 Years	-0.012	-0.148***	0.005	-0.205
	(0.030)	(0.026)	(0.046)	(0.144)
N	159,618	132,634	44,933	24,049
Graduate in 6 Years	-0.014	-0.142***	0.051	-0.297*
	(0.030)	(0.026)	(0.047)	(0.159)
Bachelor's Degree	-0.036	-0.119***	0.028	-0.202
	(0.028)	(0.023)	(0.042)	(0.152)
N	135,531	112,027	39,076	20,802
Time to Graduate (Months)	-0.613	1.446*	-0.357	4.886
	(0.898)	(0.796)	(1.352)	(4.650)
N	152,404	129,546	39,084	20,546

Notes: Four-year graduation rates include all cohorts; five-year graduation rates omit the fall 2018 entry cohort as spring 2023 graduation records are not yet available; six-year graduation rates and degree attainment further omit the the fall 2017 entry cohort. Time to graduation only includes graduates, using the month and year of their graduation and assumes a uniform starting month of September for all universities. *p<0.10; **p<0.05; ***p<0.01.

Table 6. Effects of TEXAS Grant Loss on Graduation Outcomes—Year 2 Benchmark

in this specification across any graduation outcomes. In the Diagonal specification, estimates are large and negative but not always significant, ranging from a 20.2 pp decline in bachelor's degree attainment to a 29.7 pp decline in six-year graduation. These patterns also mirror those observed in the academic outcomes, where point estimates were also consistently negative but imprecise.

6.1.4 Major Change

Financial aid loss can create strong incentives for students to reevaluate their major selection, but the likelihood of switching depends on several competing factors. On one hand, the loss of financial support may increase pressure to reduce academic demands or costs, encouraging students to consider changing majors. On the other hand, switching can itself be costly, especially later in college. Many majors have distinct course sequences and requirements, so changing fields may delay graduation and increase overall educational expenses—a risk that financially constrained students may be especially reluctant to take. The scope of the major change may also matter: switching to a substantially different field (e.g., from Engineering to Psychology) would require additional prerequisite coursework and extend time to degree.

Among those who do switch majors, there are likewise competing forces that may shape the nature of the change. The increased debt burden resulting from aid loss could incentivize students to

pursue higher-earning fields in anticipation of future repayment obligations (Rothstein and Rouse, 2011). Another possibility is that students increase work hours in response to financial strain. While I do not find significant effects on reported earnings, prior research finds that financial aid loss can increase work hours (Carruthers and Özek, 2016), which could in turn push students toward less demanding majors. Similarly, a desire to graduate more quickly may also drive students to switch into more flexible or closely related majors that facilitate faster credit accumulation. These diverging responses highlight the complex ways financial instability can reshape academic decision-making.

To explore these possible mechanisms, Table A.4 presents estimated impacts on the likelihood of a student changing majors in the year following the loss of the TEXAS Grant, two years after aid loss (conditional on remaining enrolled), and by graduation (conditional on graduating). For students who changed majors, the table also reports estimates on whether the change involved moving across 2-digit CIP families or entering or exiting a STEM field.[21]

With the exception of a 6.1 pp increase in the likelihood of students in the Credit specification changing majors within a year of losing aid, I find no significant effects on major switching following the loss of the TEXAS Grant. While students clearly adjusted their persistence, enrollment intensity, and borrowing, the decision to change majors was not responsive to aid loss. Among those who did switch, however, I observe more substantive changes in field of study.

To assess the extent of these academic shifts, I first examine whether students who changed majors moved into a different 2-digit CIP category—a proxy for more significant changes in academic focus. Effects are again concentrated among students in the Credit specification: those who switched majors were 9.5 pp more likely to exit their original CIP family after one year and 4.7 pp more likely after two years. By graduation, however, there were no significant effects, suggesting that while some students initially made more disruptive changes, many ultimately converged toward similar fields.

Beyond broad academic area, another key dimension of major switching is movement into or out of STEM fields. Two years after aid loss, students in the Full specification who changed majors were 3.6 pp less likely to enter a STEM field. In the GPA specification, students were 10.5 pp less likely to switch into STEM after one year, 6.4 pp less likely after two years, and 6.8 pp less likely by graduation. Similarly, students below only the credit threshold were more likely to move out of STEM, with 5.0 and 4.2 pp increases in switching from a STEM to a non-STEM major after one and two years, respectively.

However, these effects mostly fade by graduation. One possible explanation is that students who changed majors in response to aid loss were also more likely to leave college before earning a degree, removing them from the graduation sample. Another possibility is that some students later reversed course and returned to their original field before completing their degree. Regardless of the underlying mechanism, the lack of lasting differences in degree field suggests that while financial aid loss may have triggered short-term academic detours, its long-run influence on major choice

[21] STEM majors are defined based on CIP classifications and include engineering, biological sciences, mathematics/statistics, and physical sciences.

was more limited.

6.1.5 Early-Career Earnings

This section shifts focus to longer-term outcomes by examining the early-career earnings effects of financial aid loss. These outcomes reflect the cumulative consequences of disrupted academic progress, including degree completion and major choice. While earlier results show limited changes in students' final majors, career trajectories can still diverge substantially even within the same field of study. For example, students may pursue different types of jobs, industries, or locations depending on financial constraints or debt burdens. As a result, observed effects on earnings represent the net outcome of these competing forces.

To disentangle the combined effects of academic disruption and post-college choices, Table A.5 presents estimated effects on earnings one, two, and three years after college exit, reported separately for all students and for graduates.[22] Across all years and outcomes, the clearest pattern appears among students who lost aid due to unmet credit requirements. These students experienced consistently negative—and in some cases significant—earnings effects. For instance, among all students, earnings were significantly lower in the first and second years ($4,067 and $3,564, respectively), likely reflecting reduced graduation rates. Even among those who graduated, first-year earnings were $3,819 lower, though effects were not significant in later years. This is consistent with earlier findings that these students did not substantially change their majors, suggesting earnings gaps may instead reflect differences in job opportunities or career entry.

For the remaining specifications, there is no consistent evidence that aid loss affected early-career earnings. Estimates are generally small and imprecise, echoing earlier findings of limited effects on graduation rates or major switching. Taken together, the results suggest that the early labor market consequences of financial aid loss are largely concentrated among students who leave college without a degree.

6.2 Third-Year Renewal Benchmark

This section examines whether similar effects emerge for students who face aid loss after the third year. Many of the same mechanisms likely contribute, but students reaching this checkpoint have already persisted further in college, signaling greater academic commitment and leaving them with fewer opportunities to adjust academic plans without delaying graduation. At the same time, losing aid this late in their college career can be more disruptive: students may have fewer alternative funding options, making continued enrollment more reliant on loans. As a result, aid loss at this stage could pose a more significant barrier to degree completion.

[22] This analysis captures earnings for approximately 63% of students. It includes only those who exited college and matched to TWC records; students still enrolled, in graduate school, unemployed in Texas, or working out of state are not included.

6.2.1 Financial Aid

Table 7 presents estimates of the effects of losing the TEXAS Grant at the third-year renewal checkpoint on fourth-year financial aid. Overall declines in total aid are broadly similar to those observed following second-year aid loss. Most aid sources also follow similar patterns: students partially replaced lost aid with other grants and/or increased borrowing, with no significant change in work-study or outside earnings. Students below only the credit threshold were again more likely to reach the annual federal loan maximum (9.6 pp), hit the cumulative federal loan maximum (5.0 pp), and borrow substantially more after the third-year benchmark ($2,071). The fact that these students remained more likely to reach the cumulative borrowing cap despite having received the TEXAS Grant for three years underscores the lasting financial strain of losing aid and the extent to which such disruptions can reshape borrowing trajectories deep into college.

Aid Component	**Full**	**Credit**	**GPA**	**Diagonal**
Total Aid	-3552***	-4171***	-4936***	-10773
	(951)	(384)	(1393)	(7151)
TEXAS Grant	-5993***	-5518***	-6150***	-6132***
	(164)	(76)	(266)	(863)
Non-TG Gift Aid	1311**	-455*	1032	-1973
	(613)	(249)	(866)	(3787)
Loans	1281*	1828***	191	-1979
	(720)	(258)	(1075)	(5030)
Federal Loan Maximum	0.087	0.096***	-0.028	0.022
	(0.060)	(0.022)	(0.091)	(0.373)
Parent PLUS	0.033	0.002	0.037	0.080
	(0.041)	(0.020)	(0.061)	(0.298)
Work-Study	-152	-26	-8	-688
	(145)	(53)	(205)	(1257)
Earnings	-1	36	88	10
	(80)	(55)	(114)	(224)
Loans After Renewal	479	2071***	-1398	-4440
	(1910)	(762)	(3030)	(12230)
Cumulative Federal Loan Maximum	0.026	0.050**	-0.056	-0.468
	(0.058)	(0.019)	(0.087)	(0.406)
N	115,399	99,984	25,422	12,291

Notes: "Loans After Benchmark" is the cumulative loan amount students take out after their third year. The annual federal loan maximum for dependent students is $7,500 in the third year and beyond. The cumulative federal loan maximum is $31,000. *p<0.10; **p<0.05; ***p<0.01.

Table 7. Effects of TEXAS Grant Loss on Subsequent Financial Aid—Year 3 Benchmark

6.2.2 Academic Outcomes

Table 8 presents estimates on fourth-year academic outcomes. In the Full specification, aid loss led to a marginally significant decline of 2.05 credits passed and a 0.204-point reduction in fourth-year GPA, reinforcing the academic consequences of financial instability even late in students' college careers. As with the second-year results, the strongest academic impacts were concentrated among students below only the credit threshold: persistence dropped by 17.7 pp, full-time enrollment declined by 21.3 pp, attempted credits fell by 3.26, and passed credits fell by 4.00. Fourth-year

GPA also declined by 0.253 points, indicating not only reduced course loads but lower academic performance in the courses taken. Connecting these findings to the earlier aid results, the more than $4,000 decline in total aid translated into substantial academic setbacks and underscores that financial shocks can disrupt progress toward graduation even in the later stages of students' academic careers. As before, students near only the GPA threshold showed no significant effects, while estimates for those failing both benchmarks remained negative but imprecise due to smaller sample sizes.

Outcome	**Full**	**Credit**	**GPA**	**Diagonal**
Persistence	-0.019	-0.177***	-0.015	-0.169*
	(0.017)	(-0.013)	(0.021)	(0.087)
Transfer	0.028	0.018*	0.045	0.224
	(0.020)	(0.010)	(0.085)	(0.137)
Credits Withdrawn	0.103	-0.053	0.521	0.017
	(0.344)	(0.181)	(0.507)	(1.880)
Full-Time Enrollment	-0.061	-0.213***	0.045	-0.361
	(0.060)	(0.031)	(0.085)	(0.429)
Credits Attempted	-1.420	-3.263***	-0.306	-10.784
	(0.979)	(0.515)	(1.397)	(7.416)
Attempt 36+	-0.001	-0.038**	0.018	-0.285
	(0.036)	(0.016)	(0.055)	(0.238)
Credits Passed	-2.054*	-3.996***	0.067	-9.116
	(1.104)	(0.569)	(1.524)	(8.387)
GPA	-0.204**	-0.253***	0.018	0.031
	(0.104)	(0.059)	(0.140)	(0.803)
N	115,399	99,984	25,422	12,291

Notes: 'Credits Withdrawn" is the credit value of total withdraws during the given academic year. "GPA" only considers courses during the given year, not cumulative GPA. *p<0.10; **p<0.05; ***p<0.01.

Table 8. Effects of TEXAS Grant Loss on Subsequent Financial Aid—Year 3 Benchmark

6.2.3 Graduation

Table 9 presents effects on graduation outcomes. Unlike the second-year benchmark, where graduation rates were not impacted in the Full specification, aid loss at this later stage significantly reduced on-time completion. Specifically, five- and six-year graduation rates fell by 17.4 and 12.4 pp, respectively, though overall degree attainment and time to degree among graduates were not significantly affected. These results highlight that even after three years of steady academic progress, losing aid can still disrupt timely graduation, likely because students have fewer semesters to recover from academic setbacks.

Students below only the credit threshold experienced comparable declines, with a 14.8 pp drop in five-year graduation and a 10.4 pp decline in six-year graduation. More notably, these students were also 7.1 pp less likely to earn a bachelor's degree. In contrast, students who lost aid due to GPA alone or both thresholds did not experience significant effects on graduation outcomes, echoing the

earlier patterns observed for persistence and academic performance.

Outcome	Full	Credit	GPA	Diagonal
Graduate in 4 Years	-0.065	0.017	-0.066	-0.328
	(0.057)	(0.030)	(0.093)	(0.266)
N	115,399	99,984	25,422	12,291
Graduate in 5 Years	-0.174***	-0.148***	-0.021	-0.292
	(0.066)	(0.034)	(0.093)	(0.371)
N	100,000	85,782	23,437	11,253
Graduate in 6 Years	-0.124**	-0.104***	-0.019	-0.135
	(0.060)	(0.031)	(0.086)	(0.365)
Bachelor's Degree	-0.052	-0.071***	-0.069	-0.266
	(0.053)	(0.027)	(0.075)	(0.338)
N	85,435	72,775	20,770	9,922
Time to Graduate (Months)	2.998	1.744*	0.524	0.375
	(1.988)	(0.9739)	(2.916)	(10.196)
N	103,528	90,247	21,953	10,112

Notes: Four-year graduation rates include all cohorts; five-year graduation rates omit the fall 2018 entry cohort as spring 2023 graduation records are not yet available; six-year graduation rates and degree attainment further omit the the fall 2017 entry cohort. Time to graduation only includes graduates, using the month and year of their graduation and assumes a uniform starting month of September for all universities. *p<0.10; **p<0.05; ***p<0.01.

Table 9. Effects of TEXAS Grant Loss on Graduation Outcomes—Year 3 Benchmark

6.2.4 Major Change

Appendix Table A.6 presents estimated effects of aid loss on major switching. In contrast to the second-year benchmark, there is more evidence that losing the TEXAS Grant at this later stage increased the likelihood of changing majors. The increase appeared as early as one year after aid loss for students in the Credit specification (9.4 pp). Among students who ultimately graduated, those in the Full specification were 16.7 pp more likely to switch majors, with an even larger increase of 20.4 pp among students who lost aid due to the GPA requirement. GPA-based aid loss also reduced the likelihood of switching from a STEM field by 14.6 pp. However, there is no consistent evidence of directional movement into or out of STEM fields, nor clear patterns in CIP family transitions among students near any renewal threshold.

These results suggest that financial aid loss can prompt students to reevaluate their academic path, even late in college. The fact that many of these students were on track to graduate makes this pattern particularly striking—major switching typically occurs earlier, when students have more flexibility in their course plans. The timing here implies that financial stress or declining academic confidence may drive academic adjustments even in the final stages of degree completion.

6.2.5 Early-Career Earnings

Appendix Table A.7 reports the estimated impact of losing aid after the third-year renewal checkpoint on early-career earnings. There is no evidence that losing aid at this later stage significantly impacted post-college earnings. Estimates for the Full, Credit, and GPA specifications are consistently positive across all years but not statistically significant. As in earlier analyses, estimates for the Diagonal specification are noisy and show no discernible pattern.

6.2.6 Discussion

The results from both renewal checkpoints highlight the significant consequences of losing the TEXAS Grant, with the timing of aid loss playing a critical role in shaping student responses. While the Full specification showed no significant reduction in overall degree attainment at either checkpoint, students who lost aid after the third-year renewal checkpoint experienced marked declines in five- and six-year graduation rates. This finding may seem counterintuitive, as students at this stage have completed most of their coursework and appear well on track to graduate. Yet the sharp decline in on-time completion suggests that financial disruptions late in college can be particularly destabilizing—both because they occur at a pivotal moment in students' academic paths and because they are often less anticipated. For students who expected their aid to continue through graduation, the loss may create sudden financial strain with limited time or flexibility to adapt.

These findings also suggest that the consequences of aid loss are shaped by the criteria that triggered the loss, and that strong academic standing does not necessarily protect students from negative outcomes. Students below only the credit threshold—all of whom had solid GPAs—consistently experienced the most severe academic and graduation impacts, including substantial declines in enrollment intensity, GPA, and degree attainment across both renewal checkpoints. Among those who lost the TEXAS Grant but ultimately did not graduate, average credit accumulation at the time of exit exceeded 80 credits after the second-year benchmark and 95 credits after the third—well beyond the halfway point toward a degree. Their average cumulative GPAs, 3.06 and 3.15 respectively, further reflect strong academic performance and steady progress. These students were not failing out of college; rather, they left despite being academically on track to graduate, suggesting that financial strain was a central driver of attrition. In contrast, students who lost aid due to narrowly missing the GPA threshold experienced no significant academic or graduation effects—consistent with prior evidence on GPA-based renewal criteria after the first year (e.g., Carruthers and Özek, 2016; Jones et al., 2021)—suggesting that credit-based requirements may pose greater risks to completion than GPA thresholds.

Taken together, these results demonstrate that financial aid loss poses a significant risk to student success—not just in the early years of college, but even after students have made substantial academic progress. That many students left college despite being on track to graduate challenges the notion that non-completion primarily reflects poor academic standing. Instead, these findings point

to financial instability as a key barrier to degree completion. From a policy perspective, ensuring the continuity of aid throughout college and offering targeted supports at renewal junctures could meaningfully improve graduation rates.

6.3 Heterogeneity

To provide a more granular view of how students with stronger or weaker academic records responded to losing the TEXAS Grant due to insufficient credit accumulation, I first examine heterogeneity within the Credit specification by cumulative GPA tercile at the time of renewal. I then extend the analysis to institutional characteristics (e.g., tuition caps) and student background (e.g., race/ethnicity, first-generation status). These analyses focus on the second-year benchmark and are restricted to the Full and Credit specifications.

6.3.1 Cumulative GPA Tercile

To better understand which students were most affected by aid loss due to the credit requirement, I examine heterogeneity by cumulative GPA among those in the Credit specification. Specifically, I ask whether the negative effects identified in the Credit specification were concentrated among students close to the 2.5 GPA renewal threshold, or whether students across a broader range of academic performance were similarly affected. To do this, I divide students into terciles based on the distribution of second-year cumulative GPAs among TEXAS Grant recipients in the Credit specification. The bottom tercile includes students with GPAs from 2.50 to 2.97 (inclusive), the middle above 2.97 to 3.37, and the top tercile includes students with GPAs above 3.37. Because the cut points are based only on recipients, the terciles do not contain equal numbers of total students. Similarly, they do not contain the same number of recipients losing the TEXAS Grant. In particular, the top tercile includes the most students overall but the fewest aid recipients who actually lost the TEXAS Grant.

Table 10 presents estimates of the effects of aid loss on third- and fourth-year academic outcomes by cumulative GPA tercile. Across all terciles, students experienced significant declines in full-time enrollment and attempted credits. While point estimates are largest among students in the top GPA tercile, these estimates are not always significant and are very imprecise. The consistency of negative effects across the GPA distribution underscores that even students with strong academic records are vulnerable to academic disruptions following aid loss.

Graduation outcomes by cumulative GPA tercile reveal notable variation in the consequences of aid loss, as shown in Table 11. Students in the top GPA tercile show no significant effects, suggesting that the highest-achieving students may be better equipped to absorb financial shocks without jeopardizing degree completion. In contrast, students in the bottom and middle terciles experienced significant declines. The middle tercile, in particular, saw the most pronounced effects, including reductions in five- and six-year graduation rates (16.8 and 16.5 pp, respectively) and overall degree attainment (12.1 pp). These findings indicate that students with moderately strong academic records remain vulnerable to the destabilizing effects of midstream aid loss.

	Bottom Tercile	Middle Tercile	Top Tercile
Panel A: 3rd-Year Academic Outcomes			
Credits Withdrawn	0.280	0.028	-0.177
	(0.203)	(0.326)	(0.803)
Full-Time Enrollment	-0.205***	-0.211***	-0.504***
	(0.032)	(0.056)	(0.172)
Credits Attempted	-2.658***	-1.833**	-1.667
	(0.527)	(0.928)	(2.996)
Attempt 36+ Credits	-0.027	0.022	0.172
	(0.019)	(0.036)	(0.133)
N	41,703	46,289	64,593
Panel B: 4th-Year Academic Outcomes			
Credits Withdrawn	0.006	0.212	-0.654
	(0.190)	(0.330)	(0.637)
Full-Time Enrollment	-0.133***	-0.177***	-0.388***
	(0.033)	(0.058)	(0.178)
Credits Attempted	-1.475**	-1.539	-3.516
	(0.582)	(0.966)	(2.618)
Attempt 36+ Credits	0.017	0.056*	-0.061
	(0.020)	(0.033)	(0.086)
N	37,163	40,760	55,297
GPA Range	[2.5,2.97]	(2.97,3.37]	(3.37,4]

Notes: "Credits Withdrawn" is the credit value of total withdraws during the given academic year. 4th-Year academic outcomes are conditional on persisting. *p<0.10; **p<0.05; ***p<0.01.

Table 10. Effects of TEXAS Grant Loss on Subsequent Academic Outcomes, By Second-Year Cumulative GPA Tercile—Year 2 Benchmark

6.3.2 No Tuition Cap vs. Tuition Cap

To understand how institutional pricing structures influenced the consequences of losing financial aid, I examine heterogeneity by tuition cap status. Since the 2005 statutory reforms, all public universities in Texas charge a $50 per-credit statutory tuition rate, as mandated by Texas Education Code §54.051(c) (Texas Legislature, 2023a). However, designated tuition—-the institutional component layered on top of statutory tuition—varies across institutions. Some universities charge a flat per-credit rate regardless of total enrollment, while others implement a cap (typically at 12 credits), beyond which additional credits incur no further designated tuition. Approximately one-third of public universities follow this capped model, representing roughly 30% of the students in my analysis.

This institutional variation shapes the marginal cost of enrolling in heavier course loads. At universities with a tuition cap, students pay only the $50 statutory tuition for each credit beyond 12. In contrast, students at uncapped institutions continue to pay both the $50 statutory rate and the institution's designated tuition, making each additional course substantially more expensive. These pricing differences may influence students' responses to aid loss, particularly when deciding whether to maintain or accelerate their academic progress.

For example, a student enrolled in 15 credits would pay just $150 more than a 12-credit student

	Bottom Tercile	Middle Tercile	Top Tercile
Graduate in 4 Years	0.008	0.027	0.282
	(0.029)	(0.057)	(0.224)
N	41,703	46,289	64,593
Graduate in 5 Years	-0.101***	-0.168***	-0.129
	(0.035)	(0.064)	(0.131)
N	37,513	40,699	54,422
Graduate in 6 Years	0.101***	-0.165***	-0.085
	(0.036)	(0.062)	(0.112)
Bachelor's Degree	-0.113***	-0.121***	-0.002
	(0.033)	(0.054)	(0.099)
N	32,316	34,829	44,882
Time to Graduate (Months)	0.683	-0.084	-3.385
	(1.103)	(1.858)	(4.375)
N	32,844	39,261	57,441
GPA Range	[2.5,2.97]	(2.97,3.37]	(3.37,4]

Notes: Four-year graduation rates include all cohorts; five-year graduation rates omit the fall 2018 entry cohort as spring 2023 graduation records are not yet available; six-year graduation rates and degree attainment further omit the the fall 2017 entry cohort. Time to graduation only includes graduates, using the month and year of their graduation and assumes a uniform starting month of September for all universities. *p<0.10; **p<0.05; ***p<0.01.

Table 11. Effects of TEXAS Grant Loss on Graduation Outcomes, By Second-Year Cumulative GPA Tercile—Year 2 Benchmark

at a capped institution, since the additional three credits would incur only the $50 statutory tuition per credit. At an uncapped institution, however, each additional credit would cost both the $50 statutory tuition and approximately $200 in designated tuition, or $750 for three credits.[23] While this gap may appear modest over one semester, it compounds over time: enrolling in three extra credits each semester for two academic years would cost an additional $2,400 at an institution without a cap.

Crucially, these marginal cost differences only come into play after students lose the TEXAS Grant, which previously covered full tuition and fees. Once students must pay out of pocket, the financial burden of taking more than 12 credits becomes much more salient—especially at uncapped institutions. This may discourage heavier enrollment, increase loan reliance, or even prompt students to leave college due to rising costs. Although overall tuition levels vary, this example illustrates how pricing structures can amplify the academic consequences of aid loss and shape students' post-renewal decisions.

The academic outcomes in Table 12 show a significant 9.4 pp decline in full-time enrollment among students who lost aid at uncapped institutions, compared to a smaller and statistically insignificant 4.4 pp decline at capped institutions. Among students below only the credit threshold, however, full-time enrollment fell sharply at both types of institutions—by 25.2 pp at capped and

[23]The $200 designated tuition rate reflects an approximate average across uncapped Texas public universities; actual rates vary by institution and year.

22.9 pp at uncapped universities—suggesting similarly large responses. Patterns for attempted credits are also comparable. While aid loss had no significant effect on attempted credits in the Full specification at either type of institution, students in the Credit specification reduced their course loads by 3.12 credits at capped and 2.77 credits at uncapped institutions. These similar declines across cap structures suggest that students adjust enrollment intensity in response to aid loss regardless of marginal tuition pricing.

	No Tuition Cap		**Tuition Cap**	
Specification	**Full**	**Credit**	**Full**	**Credit**
Panel A: 3rd-Year Academic Outcomes				
Credits Withdrawn	-0.032	0.369**	-0.183	-0.408
	(0.207)	(0.159)	(0.322)	(0.320)
Full-Time Enrollment	-0.094***	-0.252***	-0.044	-0.229***
	(0.035)	(0.027)	(0.046)	(0.049)
Credits Attempted	-0.829	-3.123***	-1.127	-2.769***
	(0.557)	(0.447)	(0.758)	(0.834)
Attempt 36+ Credits	0.010	-0.014	-0.027	-0.013
	(0.022)	(0.016)	(0.032)	(0.032)
N	127,824	105,755	54,313	46,830
Panel B: 4th-Year Academic Outcomes				
Credits Withdrawn	-0.016	0.122	-0.236	-0.144
	(0.184)	(0.158)	(0.258)	(0.274)
Full-Time Enrollment	-0.043	-0.162***	-0.011	-0.227***
	(0.036)	(0.028)	(0.049)	(0.047)
Credits Attempted	-0.748	-1.702***	-0.010	-2.885***
	(0.627)	(0.478)	(0.894)	(0.868)
Attempt 36+ Credits	0.031	0.014	0.065*	0.005
	(0.023)	(0.016)	(0.035)	(0.030)
N	109,846	91,554	48,136	41,666

Notes: "Credits Withdrawn" is the credit value of total withdraws during the given academic year. 4th-Year academic outcomes are conditional on persisting. *p<0.10; **p<0.05; ***p<0.01.

Table 12. Effects of TEXAS Grant Loss on Subsequent Academic Outcomes, By University Tuition Caps—Year 2 Benchmark

Fourth-year outcomes mirror the third-year patterns. Among all students who lost aid, there were no significant changes in full-time enrollment or credits attempted at either capped or uncapped institutions. In contrast, students below only the credit threshold continued to see substantial declines: full-time enrollment dropped by 16.2 pp at capped and 22.7 pp at uncapped institutions, while attempted credits fell by 1.70 and 2.89, respectively. Although the point estimate for credits attempted is slightly larger at uncapped institutions, the similarity in magnitude across settings reinforces that credit-based aid loss leads to academic disruptions regardless of tuition structure.

Results for enrolling in 36 or more credits do not show a clear pattern by cap status. In the fourth year, students at capped institutions were 6.5 pp more likely to attempt a heavy course load,

while those at uncapped institutions showed no change. However, this increase is only marginally significant and limited to a single specification. Overall, there is little evidence that differences in pricing structures substantially affect the likelihood of attempting particularly heavy course loads after aid loss.

Table 13 examines graduation outcomes and provides some evidence that institutional pricing structures shaped students' longer-term trajectories. In the Full specification, there are no significant effects at either institution type. However, notable differences emerge in the Credit specification. At universities without tuition caps, students below only the credit threshold saw significant declines in five-year graduation (16.2 pp), six-year graduation (17.0 pp), and overall degree attainment (13.0 pp). At capped institutions, impacts were smaller: a marginally significant 9.3 pp decline in five-year graduation and an 8.6 pp drop in eventual degree attainment. Additionally, students at uncapped institutions took significantly longer to graduate, with an average increase of 1.57 months in time to degree.

	No Tuition Cap		**Tuition Cap**	
Outcome	**Full**	**Credit**	**Full**	**Credit**
Graduate in 4 Years	0.029	0.004	0.066	-0.029
	(0.033)	(0.026)	(0.045)	(0.048)
N	127,824	105,755	54,313	46,830
Graduate in 5 Years	-0.009	-0.162***	-0.006	-0.093*
	(0.038)	(0.030)	(0.049)	(0.053)
N	112,446	92,283	47,172	40,351
Graduate in 6 Years	-0.009	-0.170***	-0.018	-0.053
	(0.037)	(0.030)	(0.051)	(0.053)
Bachelor's Degree	-0.032	-0.130***	-0.038	-0.086*
	(0.034)	(0.027)	(0.047)	(0.049)
N	95,622	77,991	39,909	34,036
Time to Graduate (Months)	-0.782	1.569*	-0.877	0.161
	(1.130)	(0.928)	(1.463)	(1.632)
N	105,613	88,485	46,791	41,061

Notes: Four-year graduation rates include all cohorts; five-year graduation rates omit the fall 2018 entry cohort as spring 2023 graduation records are not yet available; six-year graduation rates and degree attainment further omit the the fall 2017 entry cohort. Time to graduation only includes graduates, using the month and year of their graduation and assumes a uniform starting month of September for all universities. *p<0.10; **p<0.05; ***p<0.01.

Table 13. Effects of TEXAS Grant Loss on Graduation Outcomes, By University Tuition Caps—Year 2 Benchmark

6.3.3 Student Characteristics

To further explore heterogeneity in the effects of TEXAS Grant loss, I explore heterogeneity by race/ethnicity and first-generation status. Racial/ethnic differences are motivated by persistent

racial wealth gaps and disparities in access to need-based aid, which may amplify the consequences of aid loss (Sullivan et al., 2015; Espinosa et al., 2019). Likewise, first-generation students may be especially vulnerable to aid disruptions due to limited access to institutional knowledge and support systems (Pascarella et al., 2004; Unverferth et al., 2012; Ko et al., 2025).

Tables A.8 and A.9 report results separately for Hispanic/Latino and White students. The most notable differences appear in short-term academic outcomes. In both the Full and Credit specifications, Hispanic/Latino students experienced larger and more immediate disruptions following aid loss, including significant declines in full-time enrollment and attempted credits in the third year. In contrast, White students who fell below at least one threshold did not exhibit such in the Full specification, and those in the Credit specification showed smaller but still significant effects. Fourth-year outcomes were broadly similar across groups within each specification.

By contrast, graduation outcomes were more consistent across racial/ethnic groups. While there were no significant effects in the Full specification, students near the credit benchmark in both groups experienced sharp declines in five- and six-year graduation rates and overall bachelor's degree attainment. These patterns suggest that although Hispanic/Latino students faced more immediate enrollment challenges, the long-run academic consequences of aid loss were substantial for both groups.

Tables A.10 and A.11 examine whether the effects of aid loss differ by first-generation status.[24] While both groups experienced negative effects, the estimated impacts were notably larger for first-generation students, particularly in the short term. In the third year, first-generation students attempted significantly fewer credits—more than twice the reduction observed for their non-first-generation peers. Estimated declines in attempted credits were 2.46 and 5.87 in the Full and Credit specifications, respectively, compared to 0.73 and 2.65 for non-first-generation students. In the Credit specification, the drop in full-time enrollment was also larger for first-generation students (35.5 pp vs. 23.5 pp), and they were less likely to attempt 36 or more credits. By the fourth year, however, these gaps largely disappear.

Despite larger short-term disruptions, differences in graduation outcomes are more modest. In the Credit specification, both groups experienced significant declines in five- and six-year graduation rates, with descriptively larger effects for first-generation students. Notably, only first-generation students saw a significant drop in four-year graduation (11.7 pp), while no such effect emerged for their non-first-generation peers. These results suggest that aid loss may impose sharper short-term academic costs on first-generation students, though the longer-run impacts on degree attainment are broadly similar across groups. Overall, these characteristics appear more strongly associated with short-term academic disruptions than with differences in graduation outcomes.

[24] First-generation status is derived from parent education records. Students are classified as first-generation if neither parent attended college, and as non-first-generation if at least one parent did. Students are excluded if one parent's education is unknown and the other did not attend college, or if both are missing. As a result, the combined sample size is smaller than in the full analysis.

6.3.4 Course Failure Level and Type

I also explored whether the academic context of a failed course moderates the effects of aid loss. For example, failing a lower-level general education course may carry different implications than failing an upper-level course within a student's major. While I cannot directly observe whether a course fulfills a major requirement, I categorize failures by course level (100/200 vs. 300/400).[25] The estimated effects of aid loss are similar across these groups. This suggests that while course level may be academically meaningful, it is less relevant to the financial and behavioral consequences of losing aid than student-level characteristics, such as first-generation status. I also compared outcomes for students receiving incompletes (5% of failures) versus failing grades (Fs or No Credit) and found no meaningful differences. Excluding students with incompletes does not materially affect any of the main results presented in this paper. This suggests that course-level distinctions may play a smaller role in shaping the consequences of aid loss than student-level factors.

6.4 Robustness Checks

To assess the sensitivity of my findings, I conduct a series of robustness checks focused on academic and graduation outcomes. I exclude checks for major switching and early-career earnings, where effects are limited or inconsistent, and for financial aid outcomes, which are mechanically tied to grant eligibility. The analysis is limited to the Full and Credit specifications at the second-year benchmark.

Tables 12 and 13 present results from a range of alternative specifications. Columns 1 and 2 report estimates from a regression discontinuity (RD) framework, which excludes non-recipients and removes all terms involving recipient status from Equations 3 and 4. These estimates provide a benchmark for comparison, illustrating how estimates differ when non-recipients are excluded and course failure effects are not separately accounted for.

Column 3 implements a single running variable approach using a standardized measure of distance from the two renewal thresholds. For each student, I calculate their standardized distance from both the GPA and credit completion cutoffs and use the smaller of the two as the running variable. This approach reflects the fact that students lose eligibility if they fall below either threshold, enabling estimation of the overall effect of aid loss within a unified single-dimensional diff.-in-disc. framework. The optimal bandwidth for this specification is 0.685 standard deviations, which corresponds to 3 passed credits and 0.328 GPA points. As in the main analysis, this specification includes students who are near at least one threshold.

Columns 4–7 assess robustness to alternative bandwidth choices. Columns 4 and 5 use wider bandwidths—7 credits around the credit threshold and 0.5 GPA points around the GPA threshold. I do not extend bandwidths beyond these values, as students who fail more than 8 credits or fall more than 0.5 GPA points below the threshold typically trigger SAP violations. Columns 6 and 7 use narrower bandwidths of 3 credits and 0.175 GPA points.

[25] Among students who failed a course in their second year, roughly two-thirds failed a 100- or 200-level course; by the third year, roughly two-thirds failed a 300- or 400-level course.

Finally, columns 8 and 9 implement an overidentified instrumented difference-in-differences (DDIV) framework as an alternative to the multidimensional diff.-in-disc. approach used in the main analysis. In the Full specification, I replace the single combined instrument with two separate instruments: one for falling below the GPA threshold and one for falling below the credit threshold (each interacted with recipient status). This setup maintains flexible controls for each running variable and their interactions with recipient status. In the Credit specification, the diff.-in-disc. design shown in Equation 4 becomes a standard instrumented difference-in-differences by removing the running variable and its interactions from the model entirely.

Panel A of Table 14 shows that the estimated effects on third-year academic outcomes are similar across specifications and closely match the main results presented in Table 5. Across all columns, estimates for full-time enrollment range from 6 to 10 pp declines in the Full specification and 17 to 26 pp declines in the Credit specification, closely aligning with the 7.9 and 24.6 pp drops in the main analysis. Similarly, estimated impacts on credits attempted and credits passed remain negative and comparable in magnitude, though some alternative specifications yield less precise estimates. The GPA estimate in the RD specification is notably larger, likely because it combines the effects of financial aid loss with those of course failure. GPA estimates in the remaining columns are similar in size to the main results.

Panel B of Table 14 shows that fourth-year academic outcome estimates are broadly consistent with those reported in Table 5. Across most specifications, estimates for persistence, full-time enrollment, credits attempted, and credits passed remain negative and statistically significant. As with the third-year outcomes, the GPA estimate is larger in the RD specification, while estimates from the remaining specifications closely track those in the main analysis.

Table 15 shows that estimates for degree attainment and graduation rates are generally robust across specifications, with a few notable differences. Columns 1 and 2 yield larger negative estimates, with degree attainment becoming statistically significant in the Full specification—underscoring the importance of accounting for course failure effects through the inclusion of non-recipients in the main design. In column 3, estimates for five- and six-year graduation rates and overall degree attainment are negative and significant, suggesting that aid loss hampers timely completion regardless of which threshold is missed. The remaining specifications produce results similar in magnitude and significance to those reported in Table 6.

Taken together, these robustness checks confirm that the main academic and graduation effects are not sensitive to alternative specifications or bandwidth choices. Financial aid loss consistently leads to negative outcomes, particularly for students below only the credit threshold.

7 Conclusion

This study examines the consequences of losing financial aid after the second- and third-year renewal checkpoints of the TEXAS Grant, highlighting how both the timing and reason for aid loss shape student responses. While prior research has largely focused on first-year aid renewal, these results

Specification	RD		1D Diff.-in-Disc.	Diff-in-Disc				DDIV	
Sample	**Full**	**Credit**	**Full**	**Full**	**Credit**	**Full**	**Credit**	**Full**	**Credit**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
Panel A: 3rd-Year Academic Outcomes									
Persistence	-0.002	-0.004	-0.003	0.002	-0.042***	-0.002	-0.068***	-0.002	-0.034**
	(0.003)	(0.006)	(0.007)	(0.006)	(0.006)	(0.009)	(0.009)	(0.007)	(0.014)
Transfer	-0.001	-0.022	-0.001	-0.012	0.064***	0.000	0.098***	-0.010	-0.028
	(0.013)	(0.031)	(0.013)	(0.010)	(0.011)	(0.019)	(0.015)	(0.012)	(0.028)
Credits Withdrawn	-0.055	0.700**	-0.184	0.036	0.109	-0.024	0.317*	-0.221	0.148
	(0.169)	(0.336)	(0.185)	(0.138)	(0.126)	(0.253)	(0.172)	(0.145)	(0.325)
Full-Time Enrollment	-0.076***	-0.174***	-0.068**	-0.073***	-0.228***	-0.097**	-0.262***	-0.062**	-0.208***
	(0.027)	(0.057)	(0.029)	(0.022)	(0.021)	(0.041)	(0.029)	(0.027)	(0.062)
Credits Attempted	-1.032**	-1.337	-0.697	-0.627*	-2.573***	-0.852	-3.529***	-0.665	-2.690***
	(0.429)	(0.886)	(0.472)	(0.363)	(0.343)	(0.653)	(0.477)	(0.455)	(1.032)
Credits Passed	-1.501***	-2.602**	-0.855	-0.890**	-3.609***	-1.220	-4.418***	-0.722	-3.347***
	(0.495)	(1.020)	(0.543)	(0.417)	(0.386)	(0.755)	(0.531)	(0.484)	(1.095)
GPA	-0.029	-0.584***	0.037	-0.012	-0.181***	0.048	-0.272***	0.036	-0.161***
	(0.044)	(0.099)	(0.047)	(0.036)	(0.036)	(0.066)	(0.049)	(0.035)	(0.078)
N	41,198	34,184	141,946	251,547	216,162	125,894	107,220	182,137	152,585
Panel B: 4th-Year Academic Outcomes									
Persistence	-0.015	0.017	-0.045**	-0.023	-0.153***	-0.059**	-0.157***	-0.013	-0.088*
	(0.016)	(0.031)	(0.018)	(0.014)	(0.013)	(0.025)	(0.018)	(0.021)	(0.048)
Transfer	0.005	0.003	-0.045**	0.005	0.063***	0.023	0.109***	0.002	0.001
	(0.015)	(0.036)	(0.018)	(0.012)	(0.013)	(0.023)	(0.018)	(0.014)	(0.032)
Credits Withdrawn	-0.027	0.471	-0.123	-0.015	0.032	-0.009	0.011	-0.276**	-0.031
	(0.144)	(0.298)	(0.159)	(0.118)	(0.119)	(0.217)	(0.167)	(0135)	(0.299)
Full-Time Enrollment	-0.060**	-0.086	-0.043	-0.051**	-0.185***	-0.047	-0.170***	-0.032	-0.121*
	(0.028)	(0.056)	(0.031)	(0.024)	(0.021)	(0.043)	(0.030)	(0.030)	(0.068)
Credits Attempted	-0.888*	0.040	-0.666	-0.633	-2.303***	-0.578	-1.716***	-0.529	-0.681
	(0.489)	(1.012)	(0.546)	(0.418)	(0.373)	(0.743)	(0.516)	(0.485)	(1.101)
Credits Passed	-1.328**	-1.263	-0.872	-0.820*	-2.666***	-0.904	-2.182***	-0.453	-1.320
	(0.548)	(1.121)	(0.608)	(0.466)	(0.416)	(0.830)	(0.569)	(0.512)	(1.152)
GPA	-0.048	-0.380***	-0.012	-0.017	-0.051	-0.006	-0.158***	0.039	0.022
	(0.051)	(0.111)	(0.055)	(0.042)	(0.041)	(0.077)	(0.057)	(0.042)	(0.093)
N	39,399	32,235	122,384	216,063	187,037	108,748	92,927	157,982	133,220
Includes Non-Recipients?	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Credits Passed Range	≥19	[19,29]	≥21	≥17	[17,31]	≥21	[21,27]	≥19	[19,29]
GPA Range	≥ 2.172	≥2.5	≥2.172	≥2	≥2.5	≥2.325	≥2.5	≥2.172	≥2.5

Notes: "Credits Withdrawn" is the credit value of total withdraws during the given academic year. "GPA" only considers courses during the given year, not cumulative GPA. 4th-Year academic outcomes are conditional on persisting. *p<0.10; **p<0.05; ***p<0.01.

Table 14. Academic Outcomes Robustness Check

demonstrate that aid loss later in college poses distinct challenges with implications for persistence, academic performance, and degree completion.

Losing the TEXAS Grant after the second year led to immediate academic disruptions for many students, including declines in persistence, enrollment intensity, and GPA. These effects were most pronounced among students who fell short of the credit renewal requirement—despite otherwise strong academic performance—and were accompanied by substantial reductions in graduation rates. Students who lost aid after the third year experienced similar declines in full-time enrollment and attempted credits but had even fewer opportunities to adjust. As a result, timely graduation rates dropped sharply for all recipients who lost aid. In both cases, students who left college had already accumulated most of the credits needed for a degree and maintained high GPAs, underscoring that financial constraints, rather than academic struggles, were often the driving force behind attrition.

Specification	**RD**		**1D Diff.-in-Disc.**	**Diff-in-Disc**				**DDIV**	
Sample	**Full**	**Credit**	**Full**	**Full**	**Credit**	**Full**	**Credit**	**Full**	**Credit**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
Graduate in 4 Years	0.034	-0.075	0.003	0.022	0.030	0.033	-0.016	0.040	-0.065***
	(0.026)	(0.051)	(0.023)	(0.021)	(0.020)	(0.027)	(0.029)	(0.029)	(0.017)
N	41,918	34,184	141,946	251,547	216,162	182,137	107,220	182,137	152,585
Graduate in 5 Years	-0.046	-0.171***	-0.071***	-0.028	-0.130***	-0.012	-0.120***	0.001	-0.085
	(0.029)	(0.061)	(0.026)	(0.024)	(0.022)	(0.030)	(0.031)	(0.025)	(0.057)
N	35,796	28,928	125,041	219,340	187,245	159,618	93,295	159,618	132,634
Graduate in 6 Years	-0.040	-0.210***	-0.067***	-0.041*	-0.130***	-0.014	-0.115***	-0.007	-0.122***
	(0.029)	(0.062)	(0.025)	(0.024)	(0.023)	(0.030)	(0.031)	(0.238)	(0.052)
Bachelor's Degree	-0.054**	-0.220***	-0.064***	-0.052**	-0.123***	-0.036	-0.115***	-0.023	-0.158***
	(0.027)	(0.058)	(0.023)	(0.022)	(0.021)	(0.028)	(0.028)	(0.020)	(0.044)
N	29,806	23,956	106,506	185,894	157,882	135,531	78,806	135,531	112,027
Time to Graduate (Months)	-0.438	0.994	0.230	-0.153	0.283	-0.613	0.471	-0.331	1.407***
	(0.859)	(1.965)	(0.763)	(0.724)	(0.714)	(0.898)	(0.964)	(0.815)	(0.477)
N	33,768	28,067	117,312	213,534	186,619	152,404	90,063	152,404	129,546
Includes Non-Recipients?	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Credits Passed Range	≥19	[19,29]	≥21	≥17	[17,31]	≥21	[21,27]	≥19	[19,29]
GPA Range	≥ 2.172	≥2.5	≥2.172	≥2	≥2.5	≥2.325	≥2.5	≥2.172	≥2.5

Notes: Four-year graduation rates include all cohorts; five-year graduation rates omit the fall 2018 entry cohort as spring 2023 graduation records are not yet available; six-year graduation rates and degree attainment further omit the the fall 2017 entry cohort. Time to graduation only includes graduates, using the month and year of their graduation and assumes a uniform starting month of September for all universities. *p<0.10; **p<0.05; ***p<0.01.

Table 15. Graduation Outcomes Robustness Check

This study contributes to the financial aid literature by moving beyond first-year benchmarks to examine how mid-college aid loss affects student trajectories. The findings highlight that even academically successful students remain vulnerable to financial shocks later in college. Some students persisted by reducing course loads or taking on additional debt, while others ultimately exited without earning a degree. The most severe consequences were concentrated among students who failed to meet credit completion requirements, suggesting that current aid renewal policies may insufficiently distinguish between signs of academic struggle and indicators of progress. Together, these findings underscore the importance of stable aid not only early in college, but throughout a student's academic path.

In addition to differences in renewal structure, the magnitude and nature of effects observed here diverge from those documented in prior studies of aid loss. Existing research has largely focused on merit-based programs and finds that aid loss early in college produces only modest impacts on enrollment and graduation. In contrast, the later timing of aid loss examined in this study, combined with the need-based design of the TEXAS Grant, amplified its disruptive effects. Notably, the most severe impacts are concentrated among students who maintain relatively strong GPAs but fail to meet credit accumulation requirements—a group often overlooked in prior work focused on GPA-based eligibility. This distinction underscores the importance of considering how the design of aid renewal criteria interacts with students' academic progress when assessing the consequences of financial aid loss.

Finally, relative to the extensive literature showing that financial aid receipt improves enroll-

ment, persistence, and graduation, these findings suggest that losing aid can have just as pronounced disruptive effects. For example, Castleman and Long (2016) find that expanding access to the FSAG increased six-year graduation rates by 4.6 percentage points (22%), while Denning et al. (2019) find a 3.4 pp (9%) increase from expanded Pell Grant access. In contrast, this study finds that losing aid due to completing fewer than 24 credits in the second year reduces six-year graduation by 14.2 pp, or a 15.7% decline relative to continued recipients. Although the absolute effect is larger here, continued TEXAS Grant recipients have higher baseline graduation rates, yielding a percent change that is broadly comparable across studies. These findings suggest that the sudden withdrawal of financial support—particularly after students have made substantial academic progress—can be especially destabilizing. This underscores the need for renewal criteria that maintain academic standards while recognizing students' ongoing momentum toward degree completion.

While this study provides important new evidence on the consequences of financial aid loss, the findings should be interpreted with care regarding their generalizability. The TEXAS Grant program is relatively unique in its use of a credit completed renewal requirement, unlike many state and institutional aid programs that base renewal on GPA and/or credits attempted. As a result, the substantial declines in persistence and degree attainment observed among students who narrowly missed the credit requirement may not extend to settings with less stringent or differently structured criteria. Within the TEXAS Grant population, the analysis focuses on students near at least one renewal threshold, representing 38.4% of second-year recipients who persisted into the third year. Students in the Credit specification account for 24.4% of all second-year recipients, indicating that the credit analysis captures a substantial and policy-relevant share of the broader recipient pool. While the findings apply most directly to this subset of students, they reflect the real-world experiences of many navigating renewal in practice.

7.1 Policy Implications

These findings carry important implications for the design of financial aid policies, especially amid ongoing concerns about college affordability. While rising tuition costs have been partially offset by expanded grant aid, many programs still impose rigid renewal criteria that may conflict with the broader goal of promoting degree completion. Given that aid loss often affects students who have already made substantial academic progress, current renewal structures may inadvertently hinder students' path to a degree.

One potential policy reform is the introduction of a probationary period following aid loss. Under such a policy, students who narrowly miss renewal requirements could either retain the TEXAS Grant temporarily during the following year, conditional on meeting both GPA and credit benchmarks, or lose aid initially but regain it if they satisfy the requirements by the end of that year. Descriptive evidence suggests that offering a path to requalification could meaningfully improve outcomes. Among the 5,156 students who lost the TEXAS Grant after their second year, 1,762 (34%) went on to meet both renewal thresholds by the end of the third year. This figure likely underestimates the potential benefits of a probationary or requalification policy, since aid loss is

associated with sharp declines in full-time enrollment, making it harder for students to complete sufficient credits even if academically capable. Allowing students to maintain or regain eligibility based on demonstrated progress could help preserve financial support for those recovering from temporary setbacks and promote higher rates of degree attainment. While this study cannot directly estimate the effects of regaining aid, the strong negative consequences of aid loss suggest that restoring support could help mitigate some of the adverse academic and enrollment impacts documented here.

Additionally, policymakers could consider modifying the credit completion requirement to focus on credits attempted rather than a fixed number of passed credits. Currently, the TEXAS Grant requires students to pass 24 credits annually to remain eligible, irrespective of how many credits they attempt. This structure penalizes students who take full course loads but fall slightly short due to course failures, withdrawals, or other temporary setbacks. An alternative approach would align the requirement with the federal financial aid standard, which mandates that students pass at least two-thirds of their attempted credits. This shift would ensure that students who remain enrolled and continue attempting a full course load are not rendered ineligible due to setbacks in individual courses. Given that students who failed to meet the current credit threshold experienced the most severe academic and financial consequences, adopting an attempted-credit-based metric could offer greater flexibility while still promoting meaningful academic progress.

As an alternative to modifying the credit completion metric, policymakers could consider introducing a one-time course failure waiver. Under such a policy, students who attempt a full-time course load but missed the 24-credit requirement would retain TEXAS Grant eligibility. This reform could meaningfully affect degree completion: among students in the Credit specification, 1,288 who lost the TEXAS Grant after their second year and 639 after their third year could have retained aid under such a waiver. Applying the estimated effects of aid loss on graduation rates, this policy could have yielded approximately 199 additional bachelor's degrees.[26] While this is a back-of-the-envelope calculation, the strong negative effects of aid loss on degree attainment suggest that preserving aid for students facing minor academic setbacks could substantially improve completion outcomes.

However, the policy would not be cost-effective from a purely fiscal standpoint. Using observed time-to-degree and TEXAS Grant retention rates among continuing recipients, I estimate that the policy would have cost the state approximately $19.68 million, or $98,883 per additional degree earned.[27] To break even through future tax revenues, the average annual earnings gain from a degree would need exceed $77,881—a figure substantially higher than any estimates of the degree premium (Carnevale et al., 2013; Baum, 2014). See Appendix A for a detailed breakdown of these calculations. Notably, the estimated $19.68 million cost is spread across 8 cohorts, coming out to less than $2.5 million a year—or 0.65% of the state's $400 million annual TEXAS Grant budget.

While this policy is not cost-effective when viewed solely through the lens of tax revenue re-

[26] $(1288 \times 0.119) + (639 \times 0.071) = 198.64$.

[27] The cost per additional degree is based on the estimated 199 additional graduates resulting from the proposed waiver policy. While many affected students graduated without continued TEXAS Grant aid, this figure isolates the cost solely attributable to the additional degrees generated by the policy.

coupment, the TEXAS Grant —like many state aid programs—is designed to promote access, persistence, and equitable degree attainment, particularly for low-income and historically underserved students (Texas Legislature, 2023b). From this broader perspective, a one-time failure waiver would help prevent otherwise capable students from being derailed by temporary setbacks. Assessing such a policy purely through cost-benefit calculations risks missing its core objectives: fostering upward mobility and reducing educational inequality.

7.2 Future Research

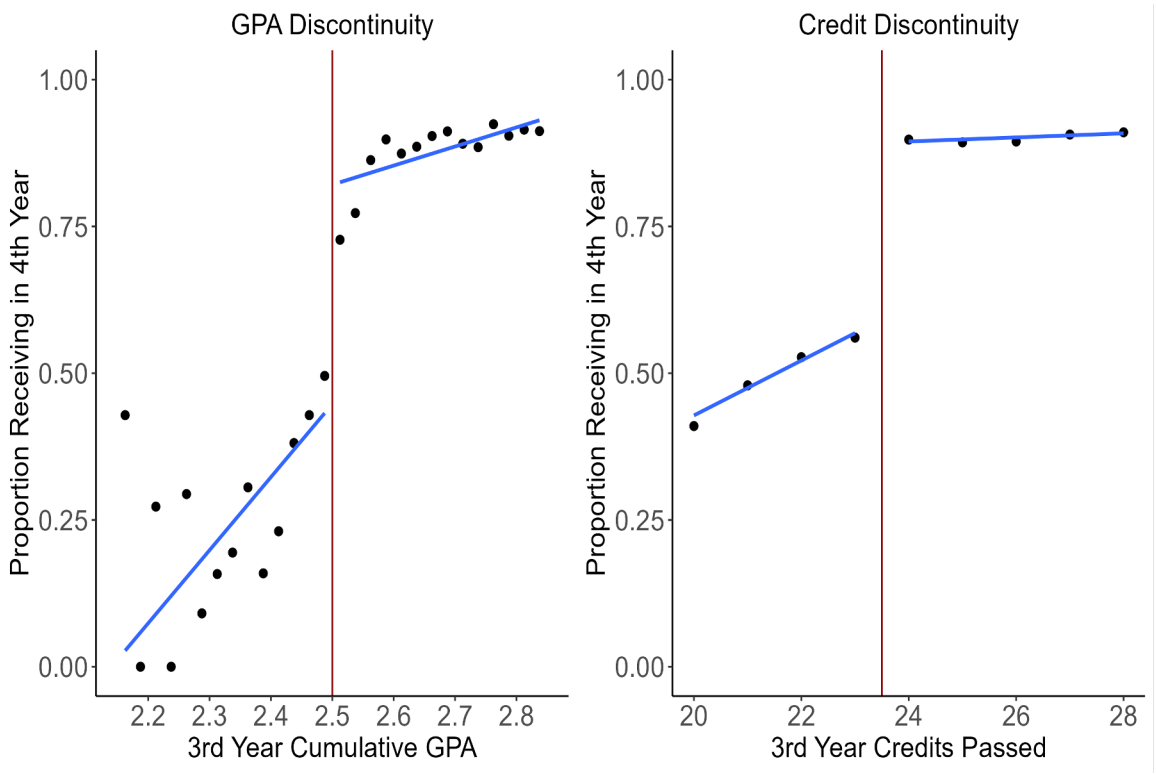
While this study focuses on aid loss triggered by academic renewal benchmarks, future research should examine the broader landscape of financial aid disruptions. Many students lose aid for reasons unrelated to academic performance, such as modest increases in family income that push them above need-based eligibility cutoffs or administrative barriers like failing to complete the FAFSA. The recent challenges surrounding FAFSA processing delays and federal funding uncertainties underscore the fragile and often unpredictable nature of financial aid systems. Understanding how such disruptions affect student outcomes is essential for designing policies that promote both accessibility and stability in aid delivery.

As financial aid programs evolve, policymakers must look beyond access alone and consider how program structures influence persistence and completion. The evidence presented here demonstrates that losing aid can derail students who are otherwise on track to graduate. Future research should further investigate the mechanisms driving these outcomes, including students' employment decisions, borrowing behavior, and long-term labor market trajectories.

While more work is needed to understand the full range of aid disruptions, the findings from this study highlight the unintended consequences of existing renewal criteria. Aid loss in the later years of college can meaningfully disrupt academic progress and degree attainment, particularly for students who have already demonstrated academic ability. However, that is not to say that renewal criteria should be eliminated—standards for academic progress are a critical component of any financial aid program. Nor do the results suggest that strict renewal policies harm all students. Rather, current policies often fail to reflect the complexity of student progress and financial vulnerability. In many cases, they risk undermining the very goal of financial aid by pushing students out of college even when they are academically capable and close to completion.

Ultimately, the purpose of financial aid is not just to open the door to college, but to support students through graduation. Yet many programs fall short of this mission. Aid loss during the final years of college imposes unnecessary barriers. Reforming renewal policies to better accommodate the realities of student progress—while maintaining reasonable academic standards—would help ensure that financial aid fulfills its full potential: enabling students not just to enroll, but to graduate.

8 Appendix



Notes: This figure shows the first-stage for each renewal threshold separately at the third-year benchmark.

Figure A.1. First Stage—Year 3 Benchmark

	Full		Credit		GPA		Diagonal	
Outcome	**Compliers**	**Non-Compliers**	**Compliers**	**Non-Compliers**	**Compliers**	**Non-Compliers**	**Compliers**	**Non-Compliers**
GPA	2.46***	2.77	2.80***	3.06	2.35***	2.41	2.34***	2.39
Credits Passed	24.80***	24.17	21.47***	21.67	27.43**	27.75	21.33	21.43
Age	18.04	18.02	18.03	18.01	18.04	18.04	18.04	18.07
Male	0.44***	0.37	0.44***	0.36	0.44**	0.39	0.47**	0.34
White	0.16**	0.19	0.18*	0.20	0.16	0.17	0.16	0.14
Black	0.24***	0.16	0.17**	0.13	0.28***	0.19	0.23	0.23
Hispanic/Latino	0.53***	0.59	0.58	0.59	0.50***	0.59	0.55	0.54
First-Generation	0.28	0.29	0.29	0.27	0.28	0.30	0.28***	0.47
N	5,156	1,764	1,286	965	2904	729	966	70

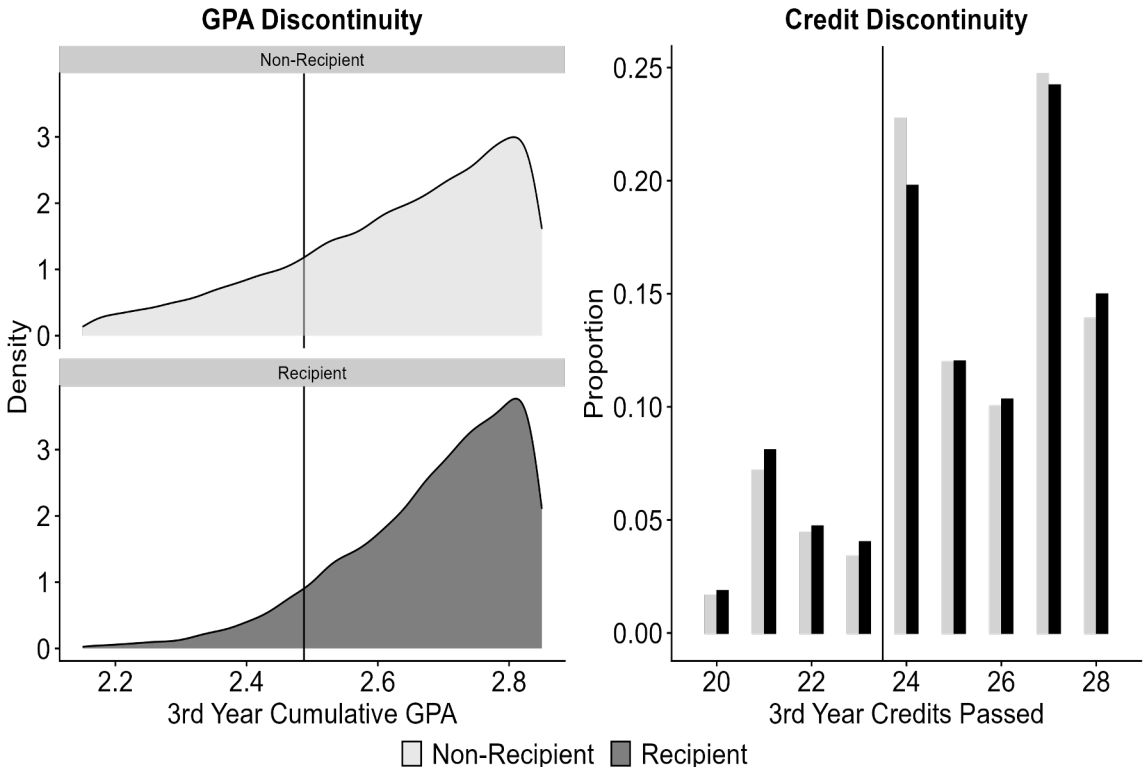
Notes: Compliers are students who lost the TEXAS Grant after falling below a renewal threshold; non-compliers retained the grant despite being below a threshold. Asteriks denote significance levels from two-sided t-tests comparing compliers and non-compliers within each specification. *p<0.10; **p<0.05; ***p<0.01.

Table A.1. Characteristics of Compliers and Non-Compliers by Specification—Year 2 Benchmark

Panel A: Student Demographics		Panel B: Family Income		Panel C: 2nd-Year Academic Outcomes		Panel D: Institution	
Outcome	**Estimate**	**Outcome**	**Estimate**	**Outcome**	**Estimate**	**Outcome**	**Estimate**
Age	0.021	Unknown	-0.014	STEM Major	0.035	UT-Austin	-0.029
	(0.0239)		(0.0268)		(0.0257)		(0.0207)
Male	0.005	<$20,000	0.016	Cumulative GPA	0.066***	Texas A&M	0.028
	(0.0280)		(0.0125)		(0.0082)	College Station	(0.0213)
White	0.068**	$20k–$39,999	0.014	Credits Attempted	0.258	UT-Dallas	0.007
	(0.0269)		(0.0155)		(0.2132)		(0.0111)
Black	-0.011	$40k–$59,999	-0.014	Credits Passed	0.591***	Texas Southern	-0.014***
	(0.0157)		(0.0159)		(0.2238)		(0.0049)
Hispanic/Latino	-0.047*	$60k–$79,999	-0.004	Math Credits Attempted	0.167	UT-Brownsville	-0.003
	(0.0247)		(0.0151)		(0.1686)		(0.0025)
First-Generation	-0.044**	$80,000+	0.002	Science Credits Attempted	0.233	Sul Ross State	-0.002
	(0.0182)		(0.0252)		(0.3331)		(0.0023)
N	115,399	**N**	115,399	**N**	115,399	**N**	115,399

Notes: The family income bins in Panel B correspond to the options students can select on their applications. STEM majors include fields related to engineering, biological sciences, mathematics/statistics, and physical sciences. Mathematics and science courses are classified based on subject codes, with mathematics/statistics representing math courses and biology, chemistry, physics, physical sciences, geology, and general science representing science courses. UT-Austin, Texas A&M - College Station, and UT-Dallas have the three highest graduation rates among the schools in this analysis, while Texas Southern, UT-Brownsville, and Sul Ross State have the lowest. *p<0.10; **p<0.05; ***p<0.01.

Table A.2. Covariate Balance Check—Year 3 Benchmark



Notes: This figure shows the distribution of cumulative GPA (left panel) and credits passed (right panel) at the third-year renewal benchmark for TEXAS Grant recipients and non-recipients. The vertical lines indicate the relevant GPA (2.5) and credit (24) thresholds.

Figure A.2. Density Plots—Year 3 Benchmark

Aid Source	Estimate	Year 2 Recipient Mean
Panel A: Federal Need-Based		
Pell Grant	-349*	5,452
	(183)	
SEOG	113***	67
	(30)	
Categorical Aid	-23	381
	(97)	
Panel B: State Need-Based		
HB3015 Grants	344***	824
	(129)	
HB3015 Other	-11	1
	(13)	
TPEG	212**	491
	(84)	
Panel C: Other Need-Based / Exemptions		
Student Deposit Fund Scholarship	12	9
	(11)	
Other Grants	729***	773
	(283)	
Tuition Exemptions and Waivers	-53	347
	(167)	
Panel D: Merit-Based		
Texas Top 10% Scholarship	34***	37
	(5)	
Institutional Merit Aid	-34	813
	(183)	
N	182,137	41,926

Notes: This table shows estimated effects on non-TEXAS Grant aid sources for students in the Full specification. "Other Grants" includes all other forms of grants not itemized in the above table. "Year 2 Recipient Mean" refers to the average amount received by TEXAS Grant recipients in Year 2. *p<0.10; **p<0.05; ***p<0.01.

Table A.3. Effects on Other Sources of Gift Aid—Year 2 Benchmark

	After 1 Year				After 2 Years				To Graduation			
Specification	**Major Change**	**Out of CIP2**	**To STEM**	**From STEM**	**Major Change**	**Out of CIP2**	**To STEM**	**From STEM**	**Major Change**	**Out of CIP2**	**To STEM**	**From STEM**
Full	0.009	-0.006	-0.024	-0.020	0.016	0.007	-0.036**	0.011	0.018	0.004	-0.028	0.026
	(0.029)	(0.044)	(0.027)	(0.037)	(0.030)	(0.033)	(0.017)	(0.030)	(0.036)	(0.018)	(0.024)	(0.036)
N	182,137	51,094	51,094	51,094	157,982	73,717	73,717	73,717	155,757	54,066	54,066	54,066
Credit	0.061**	0.095***	0.004	0.050*	0.032	0.047*	0.009	0.042*	0.058	-0.002	-0.031	0.046
	(0.024)	(0.035)	(0.025)	(0.030)	(0.025)	(0.027)	(0.016)	(0.025)	(0.030)	(0.019)	(0.026)	(0.031)
N	152,585	41,509	41,509	41,509	133,220	61,466	61,466	61,466	132,462	44,348	44,348	44,348
GPA	0.056	0.052	-0.105**	0.027	0.004	0.083	-0.064**	-0.008	0.025	-0.006	-0.068*	0.031
	(0.045)	(0.070)	(0.042)	(0.059)	(0.047)	(0.055)	(0.028)	(0.046)	(0.054)	(0.030)	(0.038)	(0.056)
N	49,233	15,655	15,655	15,655	42,373	20,646	20,646	20,646	39,774	16,378	16,378	16,378
Diagonal	-0.079	0.027	0.095	-0.048	0.140	-0.073	-0.122**	-0.158	0.029	-0.021	0.049	-0.034
	(0.136)	(0.201)	(0.128)	(0.184)	(0.138)	(0.145)	(0.060)	(0.141)	(0.166)	(0.043)	(0.109)	(0.167)
N	26,592	8,648	8,648	8,648	23,479	11,589	11,589	11,589	20,559	8,784	8,784	8,784

Notes: "Major Change" is an indicator variable equal to 1 if a student's major at the end of the third year, fourth year, or at graduation differs from their major at the end of their second year, which was the last recorded major before the renewal checkpoint. "Out of CIP2", "To STEM", and "From STEM" are conditional on a student changing majors. "Out of CIP2" is an indicator for switching to a major outside the 2-digit CIP category of a student's major at the end of their second year. "To STEM" indicates that a student's major at the end of the second year was not in STEM, but their major at the end of the third year, fourth year, or at graduation was in STEM. "From STEM" is defined analogously. *p<0.10; **p<0.05; ***p<0.01.

Table A.4. Effects of TEXAS Grant Loss on Major Changes—Year 2 Benchmark

	All			Graduates		
Specification	**1 Year**	**2 Years**	**3 Years**	**1 Year**	**2 Years**	**3 Years**
Full	1203	1786	-542	704	1263	-151
	(1557)	(2036)	(2444)	(1781)	(2304)	(2808)
N	114,604	92,856	75,069	104,711	85,055	68,705
Credit	-4067***	-3564*	-2425	-3819*	-3173	-672
	(1576)	(2002)	(2457)	(1848)	(2352)	(2873)
N	94,345	75,914	60,945	87,440	70,506	56,584
GPA	204	1908	-2359	-676	1780	-3298
	(2205)	(2941)	(3597)	(2456)	(3236)	(4061)
N	33,627	27,956	23,289	29,369	24,633	20,524
Diagonal	4471	3621	-14180	9299	3538	-8162
	(6772)	(8752)	(10633)	(8154)	(9757)	(12392)
N	17,770	14,604	12,133	15,080	12,538	10,413

Notes: Earnings are calculated starting with the first full calendar year after a student is no longer enrolled. Individuals with no earnings reported to the TWC or are still enrolled are omitted from this analysis. I cannot determine whether individuals with no reported earnings are unemployed, have non-reported earnings, or are no longer in Texas. "All" includes all students who meet this requirement, while "Graduates" restricts to those who earned a bachelor's degree. *p<0.10; **p<0.05; ***p<0.01.

Table A.5. Effects of TEXAS Grant Loss on Early-Career Earnings—Year 2 Benchmark

	After 1 Year				To Graduation			
Specification	**Major Change**	**Out of CIP2**	**To STEM**	**From STEM**	**Major Change**	**Out of CIP2**	**To STEM**	**From STEM**
Full	0.021	0.158*	-0.010	0.003	0.167**	0.074	-0.039	0.006
	(0.051)	(0.085)	(0.059)	(0.101)	(0.076)	(0.062)	(0.061)	(0.070)
N	115,399	33,732	33,732	33,732	104,613	31,031	31,031	31,031
Credit	0.094***	0.021	-0.002	0.018	0.014	0.033	0.024	0.024
	(0.026)	(0.036)	(0.022)	(0.044)	(0.037)	(0.031)	(0.029)	(0.032)
N	99,984	29,554	29,554	29,554	91,214	25,560	25,560	25,560
GPA	-0.069	0.020	0.039	-0.101	0.204*	0.117	-0.045	-0.146**
	(0.071)	(0.112)	(0.077)	(0.111)	(0.105)	(0.081)	(0.074)	(0.073)
N	25,422	6,668	6,668	6,668	22,140	8,768	8,768	8,768
Diagonal	0.008	-0.448	-0.128	-0.040	-0.410	0.039	0.005	0.272
	(0.317)	(0.576)	(0.543)	(0.620)	(0.410)	(0.490)	(0.473)	(0.495)
N	12,291	3,266	3,266	3,266	10,195	4,001	4,001	4,001

Notes: "Major Change" is an indicator variable equal to 1 if a student's major at the end of the fourth year or at graduation differs from their major at the end of their third year, which was the last recorded major before the renewal checkpoint. "Out of CIP2", "To STEM", and "From STEM" are conditional on a student changing majors. "Out of CIP2" is an indicator for switching to a major outside the 2-digit CIP category of a student's major at the end of their third year. "To STEM" indicates that a student's major at the end of the third year was not in STEM, but their major at the end of the fourth year or at graduation was in STEM. "From STEM" is defined analogously. *p<0.10; **p<0.05; ***p<0.01.

Table A.6. Effects of TEXAS Grant Loss on Major Changes—Year 3 Benchmark

	All			Graduates		
Specification	**1 Year**	**2 Years**	**3 Years**	**1 Year**	**2 Years**	**3 Years**
Full	5134	3632	3295	4408	2561	2836
	(3517)	(4029)	(5768)	(3743)	(4352)	(6244)
N	69,609	55,830	43,941	67,013	53,908	42,423
Credit	1673	143	2731	1636	165	3329
	(2186)	(2753)	(3514)	(2346)	(2934)	(3752)
N	59,528	47,380	36,952	57,683	46,064	35,923
GPA	3101	2404	6475	5204	1933	9945
	(4765)	(5672)	(8605)	(5151)	(6084)	(8837)
N	17,465	14,551	11,919	16,280	13,639	11,181
Diagonal	-21140	-24113*	16391	-19097	-27022*	27948
	(15208)	(14544)	(39113)	(18297)	(14940)	(47748)
N	8,234	6,785	5,487	7,486	6,225	5,048

Notes: Earnings are calculated starting with the first full calendar year after a student is no longer enrolled. Individuals with no earnings reported to the TWC or are still enrolled are omitted from this analysis. I cannot determine whether individuals with no reported earnings are unemployed, have non-reported earnings, or are no longer in Texas. "All" includes all students who meet this requirement, while "Graduates" restricts to those who earned a bachelor's degree. *p<0.10; **p<0.05; ***p<0.01.

Table A.7. Effects of TEXAS Grant Loss on Early Career Earnings—Year 3 Benchmark

	Hispanic/Latino		White	
Specification	**Full**	**Credit**	**Full**	**Credit**
Panel A: 3rd-Year Academic Outcomes				
Credits Withdrawn	-0.036	0.219	-0.558	0.048
	(0.262)	(0.236)	(0.398)	(0.312)
Full-Time Enrollment	-0.094**	-0.267***	-0.036	-0.169***
	(0.042)	(0.039)	(0.066)	(0.048)
Credits Attempted	-1.094	-3.205***	0.135	-2.141***
	(0.676)	(0.654)	(1.089)	(0.788)
Attempt 36+ Credits	0.014	-0.013	0.008	-0.026
	(0.026)	(0.022)	(0.048)	(0.032)
N	59,382	49,186	82,780	71,150
Panel B: 4th-Year Academic Outcomes				
Credits Withdrawn	-0.072	-0.110	-0.066	-0.011
	(0.229)	(0.232)	(0.349)	(0.290)
Full-Time Enrollment	-0.034	-0.141***	-0.038	-0.145***
	(0.044)	(0.040)	(0.070)	(0.051)
Credits Attempted	-0.224	-1.524**	-1.313	-1.521*
	(0.778)	(0.686)	(1.191)	(0.851)
Attempt 36+ Credits	0.046*	0.013	0.016	-0.010
	(0.027)	(0.021)	(0.043)	(0.028)
N	51,421	42,790	71,544	61,980

Notes: "Credits Withdrawn" is the credit value of total withdraws during the given academic year. 4th-Year academic outcomes are conditional on persisting. *p<0.10; **p<0.05; ***p<0.01.

Table A.8. Effects of TEXAS Grant Loss on Subsequent Academic Outcomes, By Race/Ethnicity—Year 2 Benchmark

	Hispanic/Latino		White	
Specification	**Full**	**Credit**	**Full**	**Credit**
Graduate in 4 Years	0.035	-0.036	0.055	0.071
	(0.039)	(0.036)	(0.071)	(0.052)
N	59,382	49,186	82,780	71,150
Graduate in 5 Years	0.002	-0.121***	-0.007	-0.136***
	(0.045)	(0.044)	(0.073)	(0.051)
N	51,016	41,839	73,735	62,987
Graduate in 6 Years	0.008	-0.089*	0.002	-0.194***
	(0.045)	(0.046)	(0.071)	(0.050)
Bachelor's Degree	0.000	-0.119***	-0.055	-0.147***
	(0.041)	(0.042)	(0.064)	(0.045)
N	42,355	34,503	63,620	54,086
Time to Graduate (Months)	-0.901	-0.137	-2.578	-0.839
	(1.386)	(1.320)	(2.135)	(1.488)
N	48,219	40,533	71,682	62,234

Notes: Four-year graduation rates include all cohorts; five-year graduation rates omit the fall 2018 entry cohort as spring 2023 graduation records are not yet available; six-year graduation rates and degree attainment further omit the the fall 2017 entry cohort. Time to graduation only includes graduates, using the month and year of their graduation and assumes a uniform starting month of September for all universities. *p<0.10; **p<0.05; ***p<0.01.

Table A.9. Effects of TEXAS Grant Loss on Graduation Outcomes, By Race/Ethnicity—Year 2 Benchmark

	Non-First-Generation		First-Generation	
Specification	**Full**	**Credit**	**Full**	**Credit**
Panel A: 3rd-Year Academic Outcomes				
Credits Withdrawn	-0.217	0.373*	0.042	0.639
	(0.266)	(0.207)	(0.355)	(0.404)
Full-Time Enrollment	-0.097**	-0.235***	-0.122**	-0.355***
	(0.042)	(0.034)	(0.056)	(0.064)
Credits Attempted	-0.730	-2.646***	-2.463***	-5.873***
	(0.687)	(0.561)	(0.896)	(1.116)
Attempt 36+ Credits	-0.003	-0.004	-0.062*	-0.074*
	(0.030)	(0.021)	(0.033)	(0.040)
N	118,097	100,518	26,315	21,547
Panel B: 4th-Year Academic Outcomes				
Credits Withdrawn	-0.411*	0.046	0.389	0.559
	(0.227)	(0.193)	(0.305)	(0.370)
Full-Time Enrollment	0.008	-0.192***	-0.129**	-0.089
	(0.043)	(0.035)	(0.060)	(0.065)
Credits Attempted	-0.335	-2.391***	-1.050	-1.870
	(0.766)	(0.594)	(1.066)	(1.140)
Attempt 36+ Credits	0.052*	-0.001	0.050	-0.010
	(0.030)	(0.019)	(0.038)	(0.038)
N	103,454	88,572	22,692	18,685

Notes: "Credits Withdrawn" is the credit value of total withdraws during the given academic year. 4th-Year academic outcomes are conditional on persisting. *p<0.10; **p<0.05; ***p<0.01.

Table A.10. Effects of TEXAS Grant Loss on Academic Outcomes, By First-Generation Status—Year 2 Benchmark

	Non-First Generation		First Generation	
Specification	**Full**	**Credit**	**Full**	**Credit**
Graduate in 4 Years	-0.002	0.036	0.044	-0.158***
	(0.043)	(0.034)	(0.055)	(0.060)
N	118,097	100,518	26,315	21,547
Graduate in 5 Years	-0.012	-0.140***	-0.005	-0.231***
	(0.046)	(0.036)	(0.058)	(0.067)
N	102,237	86,379	22,948	18,657
Graduate in 6 Years	-0.001	-0.120***	-0.037	-0.186***
	(0.046)	(0.037)	(0.058)	(0.064)
Bachelor's Degree	-0.003	-0.090***	-0.078	-0.169***
	(0.042)	(0.034)	(0.054)	(0.056)
N	84,397	70,983	19,180	15,525
Time to Graduate (Months)	0.898	0.402	-2.695	3.043
	(1.336)	(1.096)	(1.734)	(2.132)
N	100,060	86,334	21,477	17,907

Notes: Four-year graduation rates include all cohorts; five-year graduation rates omit the fall 2018 entry cohort as spring 2023 graduation records are not yet available; six-year graduation rates and degree attainment further omit the fall 2017 entry cohort. Time to graduation only includes graduates, using the month and year of their graduation and assumes a uniform starting month of September for all universities. *p<0.10; **p<0.05; ***p<0.01.

Table A.11. Effects of TEXAS Grant Loss on Graduation Outcomes, By First-Generation Status—Year 2 Benchmark

A Proposed Policy

This section outlines the assumptions and calculations underlying the cost analysis of the proposed one-time course failure waiver for the TEXAS Grant.

A.1 Estimated Number of Affected Students and Additional Degrees

Based on the credit specification, 1288 students lost their grant after the second year and 639 students after the third year. Using the estimated impacts of aid loss on graduation (11.9 pp after the second year; 7.1 pp after the third year), and the number of students who would have been impacted by the proposed policy, the waiver is projected to generate approximately 199 additional degrees:

$$(1288 \times 0.119) + (639 \times 0.071) = 198.64$$

This figure captures only the marginal degrees attributable to continued aid under the proposed policy.

A.2 Estimated Policy Cost

To estimate the cost to the state of continued TEXAS Grant support under the proposed policy, I first calculate the average number of years of additional grant receipt for students in the credit specification who retained the award beyond each renewal benchmark. Among these students, those meeting the second-year requirements received the TEXAS grant for an average of 1.986 additional years; those meeting the third year benchmark received it for an average of 1.254 additional years. I then compute the average annual award during these additional years: \$5,847 after the second year and \$5,852 after the third year.

For students who would have retained the grant under the proposed policy after the second-year benchmark, the average policy cost per student is:

$$1.986 \times 5,847 = \$11,612.14$$

and for those affected at the third-year benchmark:

$$1.254 \times 5,852 = \$7,338.408$$

Multiplying these per-student costs by the number of students impacted by the policy yields an estimated total cost of:

$$(11,612.14 \times 1288) + (7,338.408 \times 639) = \$19,677,629.032$$

A.3 Break-Even Analysis

To assess returns, I calculate the annual earnings gain from a degree necessary to break even on the $19.68 million investment using the following equation:

$$\text{Cost} = N \times \Delta\text{Earnings} \times M \times T \times A$$

where:

- Cost is the total cost to the state of the proposed policy ($19.68 million).
- N is the number of additional degrees attributable to the policy (199).
- ΔEarnings is the required annual earnings premium per graduate.
- M is the share of graduates who remain in the Texas workforce.
- T is the effective tax rate on earnings in Texas.
- A is the annuity factor, which converts a stream of future tax payments into their present value.

Solving for ΔEarnings yields the minimum annual degree premium required to offset the policy's cost through state tax revenue. The term M accounts for the fact that Texas can only recover taxes from graduates who remain in the state. Based on the Texas workforce data, 67% of students in the first five cohorts included in the analysis were employed in Texas every year following graduation. Although Texas does not levy a personal income tax, the combined state and local tax burden is 8.2% (Tax Foundation, 2025).[28] The annuity factor A captures the present value of $1 of additional annual earnings over a 40-year working horizon, discounted at an annual rates of 3%, as shown below:

$$A = \sum_{t=1}^{40} \frac{1}{(1+.03)^t} = 23.11$$

Using these values, the annual earnings premium from a degree would need to exceed $77,880.93 for the state to earn a return on this policy:

$$\Delta\text{Earnings} = \frac{19,677,629.032}{(199)(0.67)(0.082)(23.11)} = \$77,880.93$$

This break-even point far exceeds all estimates of the college degree earnings premium, indicating that the policy is not cost-effective when viewed solely as a financial investment. Moreover, this calculation does not account for students' foregone earnings during additional semesters of enrollment caused by the policy, which would further increase the cost and raise the required degree premium.

[28] This accounts for state and local sales and property taxes.

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