Student Debt Cancellation: Evidence from Credit Reporting Panel Data [*]

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We estimate the economic impact of student debt cancellation on borrower financial outcomes using a nationally-representative credit panel and a staggered difference-in-differences/event study framework, comparing cohorts of borrowers whose student loans were canceled in 2021-2024 to a control group consisting of borrowers with active student loans. We estimate a 1.5 percentage point increase in homeownership, a 19 point increase in credit score, a $756 increase in auto debt, and a 1.9 percentage point reduction in credit utilization, among other outcomes. Our findings shed light on the effect of student debt holding constant educational attainment, variation in which confounds most estimates.

Following the Biden administration's proposal to cancel between $10,000 and $20,000 in outstanding student debt for all borrowers in 2022, interest in the topic of student debt forgiveness has grown among academics, policymakers, and the public. Despite this heightened interest, there is limited empirical evidence on the economic impact of loan cancellation, leading to a lack of consensus as evidenced by the 2023 Supreme Court ruling in *Biden v. Nebraska*. This paper addresses a gap in the literature by analyzing the financial outcomes of borrowers whose loans were canceled between 2021 and 2024. Our analysis compares borrowers whose loans were canceled with a control group of borrowers whose loans remained active.

This paper's primary contribution is providing comprehensive empirical evidence on how student loan cancellation impacts a range of financial outcomes, including homeownership, home equity loan debt, and auto loan debt, as well as credit card debt, credit limits, utilization rates, and credit scores. Using credit panel data, we track individual borrowers' financial outcomes before and after loan cancellation to identify causal effects. We address the challenges of evaluating staggered policy interventions by employing a cohort-specific difference-in-differences (DiD) design, drawing on the estimator developed by Sun and Abraham (2021). By adopting a staggered DiD approach, we estimate the causal effects of loan cancellation across cohorts and time periods more accurately, mitigating potential issues in traditional two-way fixed effects models, which may yield biased estimates when treatments are implemented at different times across individuals or groups and hence have heterogeneous effects (Goodman-Bacon, 2021).

Our findings reveal improvements in borrowers' financial outcomes following student loan cancellation, as measured by the average treatment effects (ATTs) and cohort-specific average treatment effects (CATTs). Overall, we find that borrowers who had at least one student loan canceled experience increased homeownership and first-time homeownership rates, higher auto and credit card debt levels, higher credit limits, lower credit utilization rates, and significantly higher credit scores, compared to those whose loans remained active. On average, homeownership rates increase by an estimated 1.5 percentage points across all cancellation co-

horts relative to borrowers with active loans. This effect is largest for the 2021 cohort, with a CATT of 3.7 percentage points. To contextualize these effects, the 1.5 percentage point increase represents 5.1 percent of the baseline homeownership rate for all treated cohorts in 2020, while the 3.7 percentage point increase corresponds to 21.8 percent of the baseline rate for the 2021 cohort. Borrowers in the cancellation cohorts also saw notable improvements in their credit scores, with an ATT of 19 points across all cohorts. These credit score improvements partly reflect pre-treatment (i.e., pre-cancellation) trends coinciding with the federal repayment pause since borrowers treated by cancellation also benefited from the repayment pause, while control group borrowers did not (explained in detail below). However, the sharp and immediate increase in credit score following cancellation suggests a significant and independent effect of cancellation.

Although borrowers with canceled loans saw increases in certain types of debt, particularly for the 2021 cohort, which saw a CATT of $620 for credit card debt and $2,571 for auto loans, these increases were offset by significant reductions in home equity loan balances, with a CATT of -$2,494 for the same cohort. Finally, loan cancellation improved borrowers' access to credit, as evidenced by an ATT of $1,188 in increased credit limits and a reduction in credit card utilization rates by 1.9 percentage points. This pattern suggests that borrowers with canceled student loans–particularly those who already owned homes–were able to pay down certain debts while incurring new ones. Alternatively, some of these borrowers may have leveraged their improved creditworthiness to increase borrowing, whereas others used the financial relief to reduce outstanding obligations.

This paper is organized as follows: Section I provides a brief review of the literature on the financial impacts of student loan burdens and the potential effects of debt forgiveness. Section II details the dataset used in this study, including the process for identifying federal loan cancellations, and presents cohort summary statistics. Section III describes the empirical strategy and presents the main regression findings. Section IV interprets these results and places them in the context of existing research on student debt and financial health. Finally,

Section V summarizes the findings and implications. All tables and figures are included at the end of the paper.

I Literature Review

This paper is one of the first to explore the effects of large-scale student loan cancellation occurring between 2021 and 2024. Our study is closely related to Dinerstein et al. (2024), who also analyze credit reporting data to estimate the effects of student loan forgiveness. However, our paper differs in three significant ways. First, while Dinerstein et al. (2024) focus on short-term impacts up to six months post-cancellation, we examine outcomes over a longer horizon of up to three years, capturing medium-term financial adjustments that provide a more comprehensive picture of borrowers' financial trajectories. Second, we employ a more conservative methodology for identifying student loan cancellations, ensuring robustness by applying stricter criteria to minimize misclassification while potentially increasing the frequency of false negatives. Finally, our analysis incorporates a carefully defined control group of borrowers with active student loans during the repayment pause (when most of the cancellation studied in both papers was implemented), matched to the treatment group of borrowers with canceled loans. This approach generates a counterfactual for canceled borrowers that is not contaminated by the repayment pause.[1]

Maggio, Kalda and Yao (2019) examine a private loan forgiveness program and find that participants experience improvements in financial stability. However, public student loan forgiveness programs may differ in their impact due to differences in borrower profiles and the scale of the programs. A more recent study by Catherine and Yannelis (2023) looks at the prospective distributional effect of student loan forgiveness under the assumption that bor-

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[1]Dinerstein, Yannelis and Chen (2024) explore the effects of the student loan repayment pause on borrowers' credit outcomes, providing evidence that even temporary relief measures can positively affect credit scores and financial health. They also find that the repayment pause enabled affected borrowers to take on additional consumer debt, including auto loans and credit card balances, motivating the refinement of our control group to estimate a 'clean' cancellation effect. Collier et al. (2024*a*) and Collier et al. (2024*b*) come to broadly similar conclusions using a range of methodologies and, additionally, measuring borrower subjective wellbeing.

rowers eligible for income-driven repayment programs effectively have no student debt.

Beyond cancellation specifically, the financial impact of student debt has received increasing attention from researchers as rising debt levels have become a key issue for policymakers and the public. Findings tend to fall into two groups: those that use variation in access to student debt to estimate the effect of debt on outcomes find it has a positive effect (Black et al., 2023), while findings that use variation in the cost of attendance find negative ones (Mezza et al., 2020; Bleemer et al., 2021). The likely omitted variable in both cases is educational attainment: increased access to debt causes increased attainment, which may be positive, while increased cost of attendance reduces attainment while increasing debt, making it difficult to disentangle the two channels. However, Pinto and Steinbaum (2023) show that increased attainment doesn't necessarily benefit borrowers.

In this paper we are able to vary the amount of student debt (through permanent cancellation) while holding attainment constant. We find that reducing student debt is beneficial to borrowers.

II Data

For this study, we use data from the University of California Consumer Credit Panel (UC-CCP), a longitudinal dataset covering the period from 2004 to the present (2024). The UC-CCP provides anonymized credit records for a 2 percent nationally representative sample of U.S. adults with credit histories, which translates to each archive containing approximately 6 million individuals. It includes detailed demographic and geographic information, credit scores, and tradeline-level data on loans and credit, such as payment history, credit limits, balances, and loan statuses.

We restrict the dataset to borrowers with student loan tradelines between 2010 and 2024. Although the UC-CCP is available quarterly, we primarily rely on the Q2 (June) archives to manage the computational demands of such a large dataset. However, to observe trends in loan balances over time, we supplement these with quarterly data from 2019 to 2024, constructing

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variables that track balance changes 3, 6, 9, and up to 24 months before each Q2 archive from 2021 to 2024.

This section proceeds as follows: we first describe the major federal loan cancellation programs implemented since 2021. We then outline our approach to identifying canceled loans and defining treatment and control groups, essential for constructing a credible counterfactual. Finally, we present baseline characteristics and trends for these groups, focusing on key outcomes such as student debt balance, homeownership rate,[2] and credit score.

A.   Federal Student Loan Cancellation Programs

Since 2021, several federal programs have facilitated student loan cancellation, targeting borrowers based on their repayment history, employment, or institutional factors. The Public Service Loan Forgiveness (PSLF) program cancels the remaining balance on federal Direct Loans for borrowers who have made 120 qualifying monthly payments under an Income-Driven Repayment (IDR) plan while working full-time for a qualifying public service employer (Federal Student Aid, 2024*b*; Student Borrower Protection Center, 2024). Borrower Defense to Repayment forgives loans for borrowers who were defrauded by their educational institution or misled into taking out loans under false pretenses. This program has primarily provided relief to borrowers from for-profit institutions accused of deceptive practices (Federal Student Aid, 2024*a*). The Closed-School Discharge program provides loan forgiveness to borrowers whose educational institutions closed while they were enrolled or shortly thereafter, preventing them from completing their degrees (Smith, 2021).

While we cannot directly observe how individual borrowers in our sample received loan forgiveness, the financial characteristics of the treatment cohorts presented in Table 1 offer insight into the likely pathways through which forgiveness occurred. For example, the 2021 and 2024 cohorts exhibit financial characteristics indicative of Borrower Defense or Closed-School

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[2]Since homeownership status is not directly observable in the credit bureau data, we infer it based on the presence of an open mortgage account or an open home equity line of credit account.

Discharge, as these programs often target borrowers from for-profit institutions or those facing significant financial distress. In contrast, the 2022 and 2023 cohorts are more likely to be PSLF beneficiaries, given their comparatively higher credit scores and homeownership rates prior to cancellation. Overall, borrowers with canceled loans were in worse financial positions before cancellation than those who repaid their loans, suggesting that loan forgiveness provided relief to economically disadvantaged groups. This evidence counters the assumption that loan forgiveness disproportionately benefits higher-income borrowers (Looney, 2022).

B. Identifying Canceled Loans and Constructing Comparison Groups

To analyze the impact of student loan cancellation on financial outcomes, we first need to identify canceled loans. To do so, for each Q2 archive in 2021-2024, we classify each student loan held by sampled borrowers as either a zero-balance or positive-balance loan. We assign each zero-balance loan to one of three primary categories: 1. discharged in bankruptcy or charged off, 2. repaid, or 3. canceled. We assign these categories based on a detailed classification process that uses the borrower's loan history and loan status indicators in the two years prior to the archive in which it's observed as having a zero balance.

Loans discharged in bankruptcy include those legally expunged or written off by creditors. Although charged-off loans differ legally from those discharged through bankruptcy, with distinct impacts on the borrower's credit record, the financial characteristics of the loans and the borrowers in both cases are sufficiently similar that we group them together for the purposes of this study. Zero-balance loans are categorized as repaid if they display balances declining smoothly to zero, show stagnant balances near origination levels, or record significant payments. Unlike Dinerstein et al. (2024), we do not rely on observed payments to classify a loan as repaid rather than canceled.[3]

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[3]Actual payments are recorded incompletely in credit panels since not all servicers report payments made, so we cannot assume that reported payments reflect all payments that are actually made. Nonetheless, we believe that the payments that are observed are accurate, and so when we observe them we infer that the reason for the zero balance was those payments. We assign loans whose pre-zero balance is stagnant and which show no other signs of distress to the repaid category recognizing that some student loans are interest-only and they may be paid

The categorization of canceled loans is particularly complex due to the COVID-19 repayment pause. Under the pause, most federal student loans were subject to zero interest, and payments were made voluntary, resulting in stagnant balances even for borrowers on track for forgiveness under programs like PSLF. To address this, we assign a zero-balance loan to the canceled category if it meets one of four specific sets of criteria based on balance trends, distress flags, and pre-zero balance amounts in the two years preceding the zero balance. First, we classify a loan as canceled if its balance increased up to the archive in which it recorded a zero balance, the borrower's outstanding balance across all loans likewise increased up to the date on which the zero balance was recorded, and the specific loan was flagged as distressed (current or previous past-due payment status). Second, in the absence of a distress flag, a loan is classified as canceled if its pre-zero balance (the last positive balance observed) exceeded its origination amount, which we take to be indicative of IDR enrollment. Third, for the 2022Q2 and 2023Q2 archives, we consider loans with stagnant balances up to the sampling date and a distress flag or balance in excess of origination to be canceled, under the assumption that had the repayment pause not been in place, these loans would have seen their balances increase. Overall, this schema is intended to be conservative, i.e. there are probably zero balance loans that we do not categorize as canceled (likely because they did not evince pre-cancellation signs of distress) that were in fact canceled. Table 2 summarizes the four ways a given zero-balance loan can be categorized as having been canceled.

For borrowers with multiple loans reaching zero balance in the same year, all loans must have reached zero simultaneously, with the most recent loan at least five years into repayment, to be classified as canceled. Additionally, any borrower with a zero-balance loan and an overall student loan balance (aggregating across loans) that equals or exceeds the prior year's balance is excluded from the repaid or canceled categories, since this likely reflects a refinancing of the loan observed to have zero balance.

These zero-balance categories (bankrupt/discharged, repaid, and canceled) are neither mu-

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off with a 'waterfall' payment when the loan comes due.

tually exclusive nor exhaustive. Loans that do not meet the criteria for any category—approximately 25–30% of zero-balance loans in our panel—are categorized as "unknown" and excluded from the cancellation analysis. In cases where loans meet the criteria for more than one category (about 1%), we apply a hierarchy: discharge takes precedence over repaid, which takes precedence over canceled. We interpret "unknown" loans as likely refinanced or transferred, though no replacement loan was found in the borrower's credit record. This conservative categorization approach results in a lower prevalence of canceled loans in our panel than the Department of Education's aggregate statistics would suggest.

Having established a method for identifying canceled loans, we next define our treatment and control groups to allow for a comparison that quantifies the effects of loan cancellation through a staggered difference-in-differences (DiD) approach. The treatment group includes all borrowers whose loans are classified as canceled in the 2021Q2, 2022Q2, 2023Q2, and 2024Q2 archives, while the control group consists of borrowers with active loans during the same period, structured to serve as a counterfactual for causal estimation. To improve comparability, we limit the control group to borrowers whose most recent loans originated in 2013 or earlier, aligning them more closely with the treatment group's characteristics prior to cancellation. We further restrict the control group to those who made positive student loan payments during the pandemic repayment pause, ensuring our analysis focuses on borrowers for whom loan obligations remained a financial constraint. These criteria address the potential dampening effect of the repayment pause on counterfactual financial outcomes for canceled borrowers, enabling us to estimate the impact of loan cancellation against a counterfactual that is not contaminated by the contemporaneous repayment pause. That also contributes to this study's external validity, i.e. what would happen in future cancellations now that the repayment pause has ended.

C. *Summary Statistics and Trends by Cancellation Cohort*

Next, we present baseline characteristics and trends for the treatment and control groups. Table 1 provides an overview of the demographic and financial profiles of borrowers in 2020,

before the initiation of student loan cancellation. Overall, borrowers with canceled loans were, on average, financially worse-off than those whose loans remained active. The treatment group exhibited higher median student loan balances, lower credit scores, lower credit utilization rates, and lower homeownership rates compared to the control group. For instance, the median student debt balance in the 2023 cohort reached $65,540, compared to $20,051 for the control group. Likewise, the median credit score among treatment cohorts ranged from 600 to 666, in contrast with a higher median score of 751 in the control group. Homeownership rates were substantially lower for borrowers in the treatment group, particularly for those in the earliest-treated cohort.

We emphasize that the difference-in-differences (DiD) approach we employ does not require identical baseline levels between the treatment and control group. Our identification strategy relies on the assumption of parallel trends: in the absence of loan cancellation, the treatment and control groups would have evolved similarly over time. Under this assumption, the control group serves as a meaningful benchmark for the treatment group, allowing us to assess the causal impact of loan cancellation on financial outcomes, even with differences in baseline characteristics.

Figure 1 depicts trends in financial outcomes over time, observing trends in student loan balances, monthly loan payments, homeownership, and consumer credit scores from 2015 to 2024. Each panel depicts five groups: four treatment cohorts representing borrowers whose loans were forgiven in 2021–2024 and a control group of borrowers who did not experience loan cancellation and whose loans remained active.

Borrowers in the treatment cohorts show steadily increasing student loan balances in the pre-cancellation period. Post-cancellation, their balances drop sharply to zero or near-zero and remain there, validating our methodology for identifying canceled loans. By contrast, the control group exhibits a gradual decline in balances over time, consistent with ongoing repayment. These findings are complemented by the top-right chart highlighting payment trends. Despite having higher loan balances, treatment group borrowers made lower monthly payments pre-

cancellation than the control group, likely due to enrollment in Income-Driven Repayment (IDR) plans. After the repayment pause began in 2020, monthly payments for the treatment groups dropped to zero or near-zero, while payments for the control group declined modestly but remained above zero. This divergence reflects the intentional design of our control group, which consists of borrowers who continued making payments during the repayment pause, providing a more appropriate counterfactual for canceled borrowers than uncanceled borrowers who also had zero payments thanks to the pause.

Among treatment cohorts, the 2021 cohort exhibits the largest increase in homeownership between 2020 and 2024, which indicates that the effects of loan cancellation on homeownership take time to materialize, as purchasing a home often requires financial stability and the accumulation of savings post-cancellation. This may also reflect the 2021 cohort's comparatively disadvantaged pre-cancellation economic status, consistent with Borrower Defense rather than PSLF as the program resulting in cancellation. In contrast, the impact of cancellation on credit scores is immediate: borrowers in all treatment cohorts experienced sizable credit score improvements in the same year their loans were forgiven. Meanwhile, the control group exhibited steadier trends for both homeownership and credit scores, lacking the sharp inflection points observed among treatment cohorts, underscoring the direct benefits of loan forgiveness.

While these descriptive patterns suggest a relationship between loan cancellation and improved financial outcomes, causal interpretation requires further analysis. In the following section, we employ a staggered difference-in-differences (DiD) approach to formally estimate the causal impact of student loan cancellation on these outcomes, controlling for baseline differences and addressing potential confounding factors.

III   Results: Financial Outcomes of Loan Cancellation

In this section, we examine the effects of student loan cancellation on financial outcomes such as homeownership, credit access, and overall debt burden, utilizing an event study and a difference-in-differences (DiD) approach designed for staggered interventions. We begin by

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detailing the empirical specification used to estimate the causal effects of loan cancellation. Next, we present the model estimates and describe the event-study plots, which quantify the impact of loan cancellation on financial outcomes.

A. Empirical Specification

Our empirical strategy employs a staggered difference-in-differences (DiD) design to estimate the effects of student loan cancellation on borrower outcomes. This approach leverages variation in the timing of loan cancellations across multiple cohorts from 2021 to 2024, allowing us to capture the dynamic effects of loan forgiveness.

Traditional two-way fixed effects (TWFE) models in staggered treatment settings have been shown to produce biased estimates when treatment effects vary over time or across cohorts (Goodman-Bacon, 2021). To address this, we adopt the method developed by Sun and Abraham (2021), which accounts for heterogeneity in treatment timing and dynamic treatment effects. This approach enables us to estimate cohort-specific average treatment effects on the treated (CATT) for each cancellation cohort, while correcting for biases that arise in TWFE models.

The generalized model is specified as follows:

$$(1) \qquad y_{it} = \sum_{\tau} \beta_\tau \cdot (Cancellation_i \times Post_{t,\tau}) + \alpha_i + \delta_{d,t} + \epsilon_{it}$$

where y_{it} represents the outcome of interest for individual i at time t, and τ indexes time relative to the loan cancellation event. The coefficients β_τ capture the dynamic effects of loan cancellation at different points in time, where $\tau = 0$ corresponds to the period of cancellation, $\tau < 0$ represents pre-cancellation periods, and $\tau > 0$ represents post-cancellation periods.

The variable $Cancellation_i$ is an indicator equal to 1 if the individual's loan was canceled, and $Post_{t,\tau}$ is a set of indicator variables equal to 1 for the period τ relative to the cancellation event. The model includes individual fixed effects (α_i) to control for time-invariant borrower

characteristics, as well as fixed effects for the 2019 student loan payment decile interacted with year ($\delta_{d,t}$), which are computed across all borrowers in both the treatment and control groups. Finally, ϵ_{it} is the error term.

The inclusion of 2019 payment-decile-by-calendar-time fixed effects ensures that borrowers with canceled loans are compared to others at similar stages of their economic life cycles. Borrowers with canceled student loans may differ significantly from those without, due to factors like whether they attended college before or after the Great Recession (Pinto and Steinbaum, 2023), their resulting labor market earnings, and the degree to which they relied on student loans to finance their education. Without controlling for these differences, the estimated effects of loan cancellation could be confounded by these pre-existing disparities, violating the parallel trends assumption. Interacting the payment deciles with calendar time captures distinct economic trends for borrowers at various stages in their financial lives, enabling a clearer estimation of the true impact of loan cancellation among borrowers with similar *ex ante* payment obligations, whom we interpret as comparable in terms of their pre-treatment student debt burden.

B. *Estimated Impact of Loan Cancellation*

Figure 2 plots event-study estimates of equation 1 for eight financial outcomes. Table 3 reports average treatment effects (ATTs) across all cancellation cohorts, as well as cohort-specific average treatment effects on the treated (CATTs) for each cancellation year from 2021 to 2024. The event study plots track changes in outcomes from five years before to three years after cancellation ($\tau = -5$ to $\tau = 3$), with the year before cancellation ($\tau = -1$) serving as the reference point. The dashed vertical line indicates the cancellation year, while shaded areas represent 95% confidence intervals. While the event-study design offers insights into the timing of effects, caution is warranted in interpreting the coefficients, particularly for the $+3$ period (three years post-cancellation), as it is estimated solely from the 2021 cancellation cohort, whereas earlier coefficients draw on data from multiple cohorts.

Homeownership-related outcomes show substantial improvements following loan cancellation. Across all cohorts, loan cancellation increases homeownership rates by 1.5 percentage points, with the largest effect observed for the 2021 cohort (3.7 percentage points). Overall homeownership rates rise steadily, with the most pronounced effects observed two to three years post-cancellation. We find that having a student loan canceled increases the likelihood of homeownership by nearly four percentage points two years post-treatment, increasing to about 8 percentage points three years post-treatment. First-time homeownership shows similarly positive effects, with an ATT of 1.2 percentage points and larger impacts for the 2021 and 2022 cohorts, 2.1 and 2.0 percentage points, respectively. However, the timing exhibits a different trajectory, with earlier and more gradual increases compared to overall homeownership. This pattern suggests that the overall homeownership indicator loosely aggregates first-time homeownership gains over time.

Trends in home equity loan balances and auto loan balances exhibit more nuanced patterns. Home equity loan balances show a modest initial increase in the first year post-cancellation, followed by declines into negative territory, suggesting that borrowers use their improved financial positions to pay down existing housing-related debt two to three years post-cancellation. The ATT across all cohorts indicates a modest increase of $592, though this estimate is not statistically significant. Notably, the 2021 cohort shows a larger but negative cohort-specific impact of -$2,494. This pattern may reflect heterogeneity in how earlier-treated borrowers managed their housing-related debt post-cancellation, potentially using improved financial stability to pay down existing home equity loans. Auto loan balances, in contrast, show a steady increase, rising to approximately $1,250 by the first year post-cancellation and remaining at that level in subsequent years. The overall ATT for auto loan balances is $756. The largest cohort-specific impact is observed for the 2021 cohort ($2,571), suggesting that earlier-treated borrowers leveraged their improved credit access to finance vehicle purchases.

Credit outcomes, detailed in the second part of Figure 2, exhibit pronounced and immediate improvements. Credit scores exhibit the most consistent and immediate improvements follow-

ing loan cancellation, with an average increase of 19 points across all cohorts, though again the caveat highlighted when discussing the event study results continues to apply. The largest gains are observed for the 2021 and 2022 cohorts, at 23.6 and 22.3 points. We find a sharp increase in credit score immediately following loan cancellation, with gains observed across all treatment cohorts starting in the year of cancellation. In this period, borrowers experience an average increase in credit scores of 18 points relative to the pre-cancellation baseline, with continued growth reaching 24 points two years post-cancellation.

While credit card balances increase modestly (ATT = $189), credit limits show a substantial rise ($1,188). Notably, the increase in credit limits outpaces the growth in balances, leading to a small decline in credit utilization rates (ATT = -1.9 percentage points). The rise in credit card balances likely indicates improved financial flexibility, while the more pronounced growth in credit limits demonstrates greater access to credit among borrowers. Importantly, the increase in credit limits exceeds the rise in balances, leading to a reduction in credit utilization rates, a standard metric for financial health. This decline suggests a meaningful alleviation of financial strain, as borrowers hold a larger share of unused credit relative to their obligations.

However, it is important to caveat our event study results for the credit score and credit limit outcomes because they exhibit pre-trends across specifications. We interpret the pre-trends as caused by the student loan repayment pause, which by construction did not affect the control group but did affect the treatment group, and which other research has shown improved credit conditions for its beneficiaries. Hence, the overall pattern of convergence we estimate between the treatment group and the control group, part of which happens pre-cancellation (as can be seen in Figure 1, should be regarded as jointly caused by cancellation as well as the repayment pause. Our methodology is not well-suited to attributing shares in the improvement precisely to each cause, other than roughly as that which occurred pre-cancellation ($\approx$ 5 points on credit scores) and which occurred post-cancellation ($\approx$ 20 points on credit scores), although we reiterate that this timing does not bespeak a precise attribution of causal influence.

While the main results demonstrate significant overall impacts of loan cancellation, further

analysis reveals notable differences across demographic subgroups. For event study plots and treatment effect estimates by race and gender, see online Appendix A.

IV   Discussion

Our results contribute to and expand the existing research on the financial impact of student debt and of student debt relief, offering new insights into the effects of large-scale federal loan cancellation, which varies student indebtedness while holding educational attainment fixed. The results build on and clarify prior studies, providing a deeper understanding of how loan forgiveness influences various financial outcomes.

Consistent with prior studies highlighting the credit-enhancing effects of debt relief, such as those by Dobbie and Song (2015) and Maggio, Kalda and Yao (2019), we find that student loan cancellation produces immediate and substantial improvements in credit scores. Borrowers across all cohorts experience gains in creditworthiness beginning in the year of cancellation, with average increases of up to 24 points observed two years post-cancellation. Our results also refine the understanding of how borrowers utilize improved credit access. While prior research suggested that the repayment pause allowed borrowers to take on additional consumer debt, including auto loans and credit card balances (Dinerstein, Yannelis and Chen, 2024), we find that loan forgiveness expands credit limits at a rate that outpaces increases in balances, resulting in reduced credit utilization rates. Hence, insofar as those authors conclude the forbearance had ambiguous effects on financial status since the borrowers who benefited took on more debt, by considering credit utilization we show an unambiguous improvement in their financial well-being.

The relationship between student debt and homeownership has been a central focus in the literature, with prior research highlighting the constraints that student loans impose on wealth accumulation and housing market entry (Mezza et al., 2020; Bleemer et al., 2021). Our findings extend this literature by demonstrating that loan cancellation leads to measurable improvements in homeownership outcomes. Three years post-cancellation, overall homeownership

rates increase by nearly eight percentage points, while first-time homeownership also registers notable gains. These results indicate that loan forgiveness reduces vital financial obstacles to homeownership, including difficulties in saving for a down payment and meeting mortgage qualification criteria.

Importantly, our analysis reveals evidence that student debt cancellation enables previously hampered borrowers to substitute secured loans, such as mortgages or auto loans, for the unsecured student debt removed from their balance sheets. This substitution effect reflects the significant financial constraints that borrowers face while their student debt remains outstanding. The removal of these constraints enables borrowers to advance through their economic life cycles, with potential downstream effects on household composition, career choices, and asset accumulation. In this sense, student debt cancellation facilitates social reproduction, counteracting the economic stasis imposed by otherwise unresolvable debt overhangs.

We uncover significant heterogeneity in borrowers' responses to loan forgiveness, echoing prior findings that larger discharges and demographic differences influence outcomes (Maggio, Kalda and Yao, 2019; Collier et al., 2024*b*). Consistent with these findings, we observe that the 2021 cohort, facing the greatest financial constraints at baseline, experiences the largest gains in homeownership rates, credit scores, and credit access. These results suggest that student debt cancellation disproportionately benefits economically disadvantaged borrowers by directly alleviating their financial vulnerabilities. Moreover, the variation in outcomes across cohorts implies that the pathways through which borrowers achieved cancellation—whether via Public Service Loan Forgiveness (PSLF), Borrower Defense, closed-school discharge, or other mechanisms—interact with the dollar amount of debt canceled and its share of total liabilities. The fact that the 2021 cohort was the worst-off ex-ante and experienced the greatest relative gain in status indicates that this cohort was comprised primarily of beneficiaries of the latter two programs, which target students who attended for-profit institutions because they are segregated out of traditional higher education. Future research could explore these dimensions of heterogeneity to refine our understanding of how debt cancellation affects different borrower

subgroups. A treatment-intensity framework, examining variation in outcomes based on the amount of debt canceled or its relative share of borrowers' total liabilities, could further illuminate the mechanisms through which debt relief shapes financial behavior and inform more effective policy design.

Our results also underscore the fundamental distinction between temporary relief measures, such as income-driven repayment (IDR) plans or the COVID-19 repayment pause, and the principal reductions achieved through loan cancellation. While temporary measures may alleviate immediate financial pressure, they do not address the underlying economic impairments caused by unresolved debt. For instance, neither IDR nor the repayment pause enabled borrowers to make significant asset purchases relative to their counterfactual scenarios, as evidenced by the absence of pre-trends in key outcomes such as homeownership in Figure 2, as well as previous studies like Collier et al. (2024*b*), who find modest-to-nonexistent effects of the repayment pause on these outcomes. These results suggest that only permanent reductions in outstanding student debt balances can fully mitigate the long-term financial constraints that thwart wealth accumulation.

Finally, these findings shed light on the economic impact of financing higher education through individually-held debt. Attempts to study the effect of a debt-financed higher education system against some sort of counterfactual are typically stymied by the fact that indebtedness and educational attainment are jointly determined in a debt-financed system; hence, it is difficult to establish a counterfactual holding educational attainment constant while varying the amount of debt. Here we accomplish that by studying a reduction in student debt that was plausibly exogenous for individuals who had (largely) already determined their level of educational attainment, a unique opportunity to adjust one variable while holding the other fixed. As a result, we provide suggestive evidence that a higher education system that does not feature student debt leaves students financially better off than one that does.

Policymakers should take these distinctions into account when designing debt relief policies. While temporary measures can provide important short-term relief, our findings high-

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light the transformative potential of principal reduction in fostering economic mobility. To maximize the impact of loan forgiveness, policymakers should also consider pairing debt relief with complementary measures, such as affordable housing initiatives, to address broader structural barriers to wealth accumulation and promote long-term economic security.

V Conclusion

This study provides comprehensive evidence on the financial impacts of federal student loan cancellation, demonstrating its role in alleviating financial constraints and improving borrowers' economic outcomes. Overall, we demonstrate that loan forgiveness leads to immediate improvements in credit scores, credit access, and financial flexibility, as well as measurable gains in homeownership over time. These effects are most pronounced among borrowers facing significant financial challenges, highlighting the potential of loan cancellation to enhance economic mobility and stability.

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	Cancellation Cohorts				Control Group
	2021	**2022**	**2023**	**2024**	
Number of Individuals	522	2,188	2,616	3,123	59,404
Average Age	41.2	43.3	42.7	43.3	44.1
Share Homeowners	17.0%	28.2%	39.7%	23.3%	52.3%
Median Student Debt Balance	$24,925	$32,902	$65,540	$41,203	$20,051
Median Auto Loan Balance	$17,899	$15,810	$15,823	$14,919	$15,346
Median Credit Card Balance	$884	$1,877	$2,866	$1,852	$2,563
Median Credit Card Limit	$4,900	$10,100	$13,975	$6,385	$20,500
Median Credit Card Utilization	27.0%	28.4%	32.4%	46.1%	15.1%
Median Credit Score	600	618	666	600	751

Notes: This table compares the financial and demographic characteristics of different student loan cancellation cohorts and a control group in 2020, one year before any loans were canceled.

TABLE 2. CRITERIA FOR CATEGORIZING CANCELED LOANS

	Increasing Loan Balance	Stagnant Loan Balance	Increasing Overall Balance	Stagnant Overall Balance	Distress Flag Present	Pre-zero Balance $>$ Original Balance
1	✓		✓		✓	
2	✓		✓			✓
3*		✓		✓	✓	
4*		✓		✓		✓

Notes: Each row represents a set of criteria for categorizing a zero-balance loan as canceled. Rows 3 and 4 only apply to the zero-balance loans observed in 2022Q2 and 2023Q2, i.e. those for which the entire two-year pre-zero-balance observation period coincided with the repayment pause. The implicit assumption is that those loans would have had an increasing pre-zero loan balance had the repayment pause not been in effect.
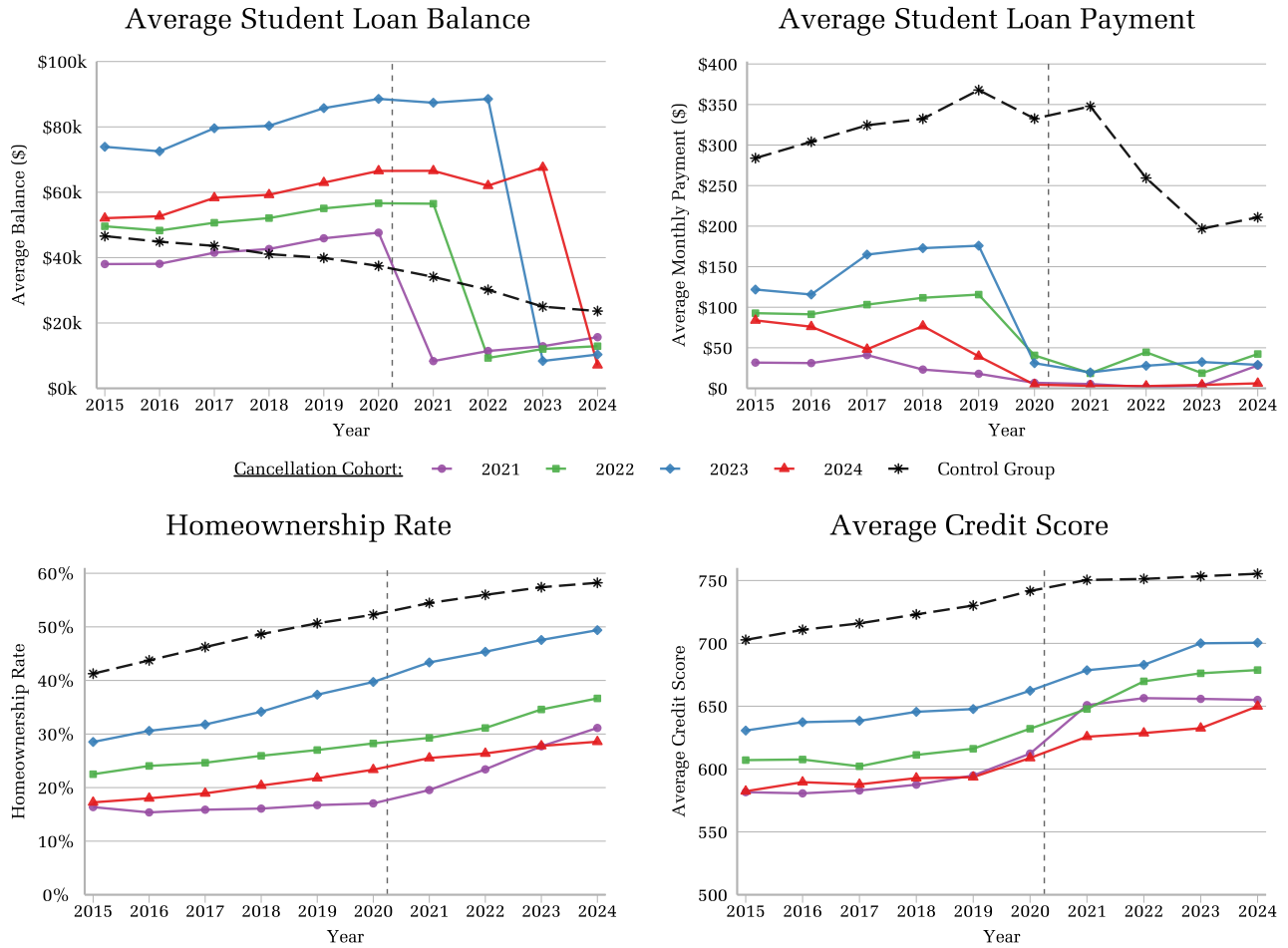
FIGURE 1. TRENDS IN STUDENT LOAN BALANCE, PAYMENT, HOMEOWNERSHIP, AND CREDIT SCORE BY CANCELLATION COHORT AND CONTROL GROUP (2015–2024)

Notes: This figure presents the trends from 2015 to 2024 in average student loan debt, monthly student loan payments, homeownership rate, and credit scores, disaggregated by cancellation cohort and control group. The line charts depict five groups: four cancellation cohorts, each representing different years of loan forgiveness (2021–2024), and a control group of borrowers who did not experience loan cancellation.
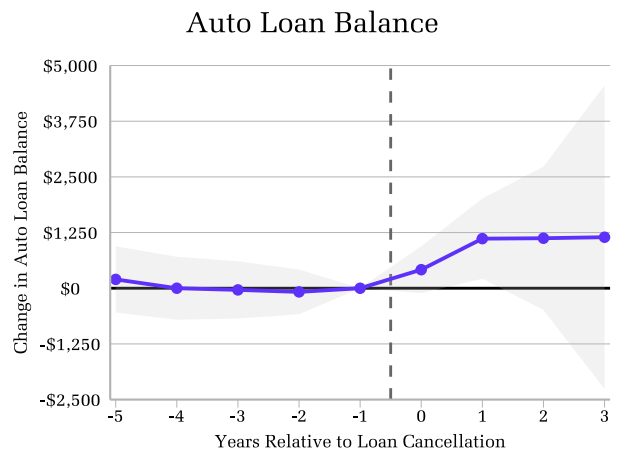
Homeownership (%)

New Homeownership (%)

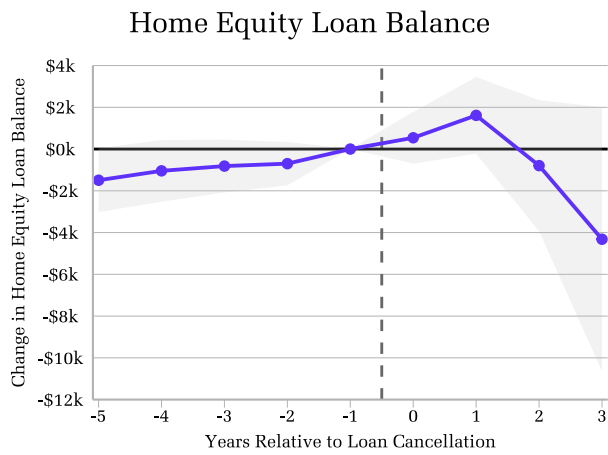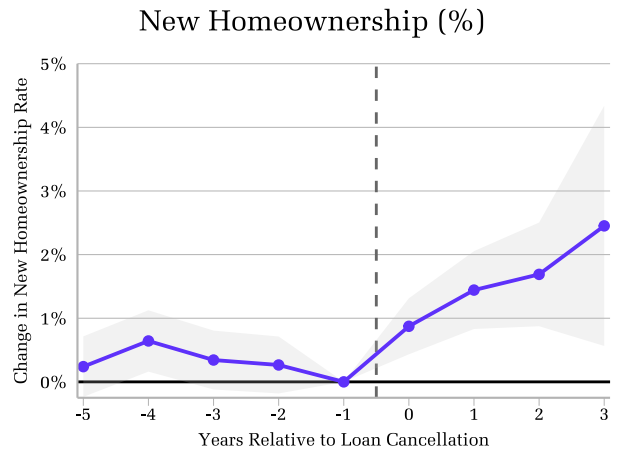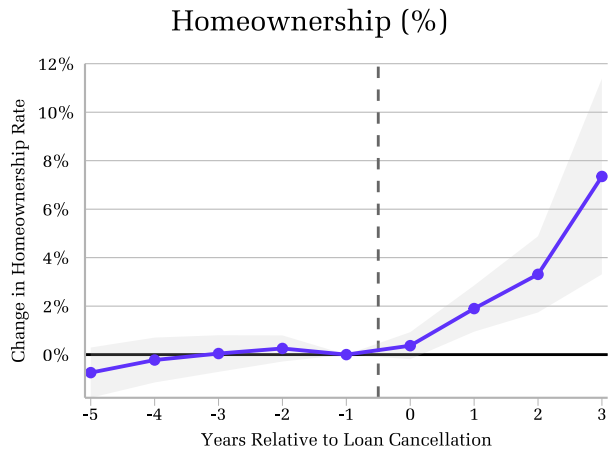## Home Equity Loan Balance

Auto Loan Balance

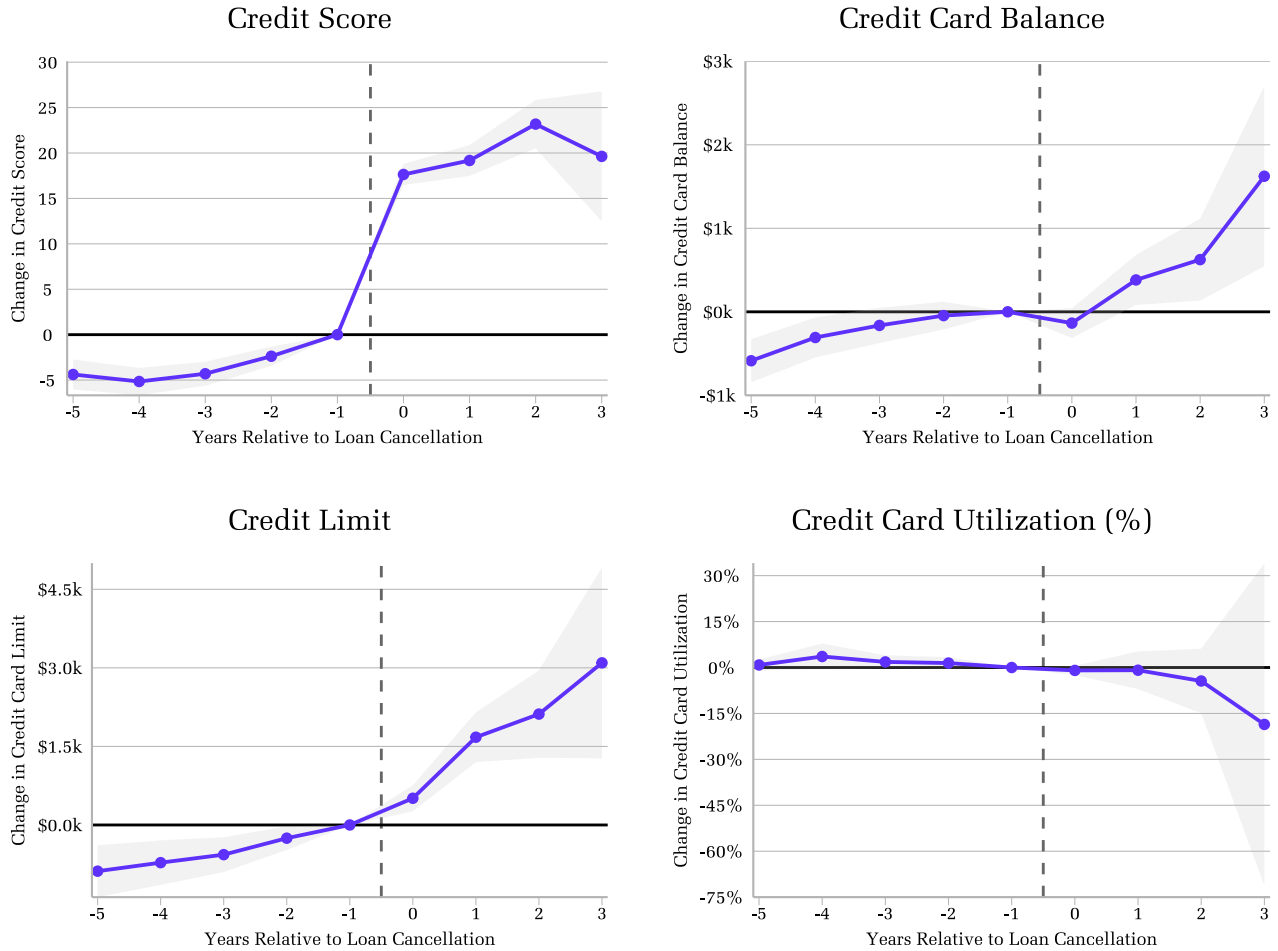FIGURE 2. EVENT STUDY ESTIMATES OF THE FINANCIAL IMPACTS OF STUDENT LOAN CANCELLATION

FIGURE 2. EVENT STUDY ESTIMATES OF THE FINANCIAL IMPACTS OF STUDENT LOAN CANCELLATION (CONT.)

Notes: This figure presents event study estimates for the financial impacts of student loan cancellation on borrower outcomes, computed by estimating equation 1. Each panel displays the estimated change in an outcome—such as homeownership rate—relative to the year before cancellation. The time axis spans from five years before to three years after loan cancellation, with the dashed vertical line indicating the period right before cancellation. Shaded areas around the estimates represent 95% confidence intervals.

TABLE 3. AVERAGE TREATMENT EFFECTS BY OUTCOME AND COHORT

Outcome	Cancellation Cohort	Estimate	Std. Error	p-value
Homeownership Rate	All Cohorts	0.015	(0.004)	[0.000]
	2021	0.037	(0.016)	[0.018]
	2022	0.017	(0.007)	[0.013]
	2023	0.012	(0.005)	[0.021]
	2024	0.001	(0.004)	[0.809]
First-time Homeownership	All Cohorts	0.012	(0.002)	[0.000]
	2021	0.021	(0.007)	[0.002]
	2022	0.020	(0.004)	[0.000]
	2023	0.005	(0.004)	[0.169]
	2024	0.003	(0.003)	[0.407]
Total Home Equity Balance	All Cohorts	592.105	(766.578)	[0.440]
	2021	-2,494.135	(1,998.770)	[0.212]
	2022	566.071	(1,776.672)	[0.750]
	2023	1,006.415	(674.612)	[0.136]
	2024	1,280.118	(1,196.913)	[0.285]
Total Auto Loan Balance	All Cohorts	755.765	(335.901)	[0.024]
	2021	2,570.896	(1,442.306)	[0.075]
	2022	592.192	(647.921)	[0.361]
	2023	786.360	(474.429)	[0.097]
	2024	-24.763	(429.094)	[0.954]

Outcome	Cancellation Cohort	Estimate	Std. Error	p-value
Credit Score	All Cohorts	19.039	(0.663)	[0.000]
	2021	23.552	(2.573)	[0.000]
	2022	22.306	(1.110)	[0.000]
	2023	14.762	(1.012)	[0.000]
	2024	16.498	(1.099)	[0.000]
Total Credit Card Balance	All Cohorts	189.149	(109.796)	[0.085]
	2021	620.194	(365.959)	[0.090]
	2022	-3.802	(200.980)	[0.985]
	2023	383.412	(170.509)	[0.025]
	2024	-62.068	(160.714)	[0.699]
Total Credit Limit	All Cohorts	1,187.761	(180.513)	[0.000]
	2021	2,175.342	(615.997)	[0.000]
	2022	1,404.396	(349.271)	[0.000]
	2023	1,228.156	(251.931)	[0.000]
	2024	130.801	(211.854)	[0.572]
Credit Utilization Rate	All Cohorts	-0.019	(0.026)	[0.464]
	2021	-0.193	(0.211)	[0.362]
	2022	-0.015	(0.011)	[0.170]
	2023	0.014	(0.021)	[0.508]
	2024	0.018	(0.022)	[0.412]
Observations	743,723			

Notes: This table displays the average treatment effects (ATT) across all cancellation cohorts, as well as the cohort-specific average treatment effects on the treated (CATT) for individual cohorts treated from 2021 to 2024. Standard errors are in parentheses, and p-values are in brackets. Fixed effects include individual and 2019 student loan payment decile interacted with calendar time.

Appendix

A   Loan Cancellation Effects by Race and Gender

This appendix provides additional analyses exploring the heterogeneous effects of student loan cancellation on financial outcomes based on race and gender. The event study plots presented below are constructed in the same methodology as Figure 1 in the main text, which examines the overall effects of loan cancellation on various financial outcomes over time. Here, the sample is split by race (White vs. Non-White) and gender (Men vs. Women) to investigate potential disparities in how different demographic groups experience the impacts of loan cancellation.

Analysis by Gender

Figure A.1 illustrates the effects of loan cancellation by gender. Across outcomes, we find that men tend to experience larger financial improvements compared to women:

- **Homeownership:** We estimate a 2.5 percentage point increase in homeownership for men, compared to an increase of 0.9 percentage points for women. In contrast, the changes in first-time homeownership are approximately equal between men and women.

- **Credit Score and Credit Limit:** Both women and men experience significant increases, with men showing slightly larger improvements in credit scores and substantially larger increases in credit limits.

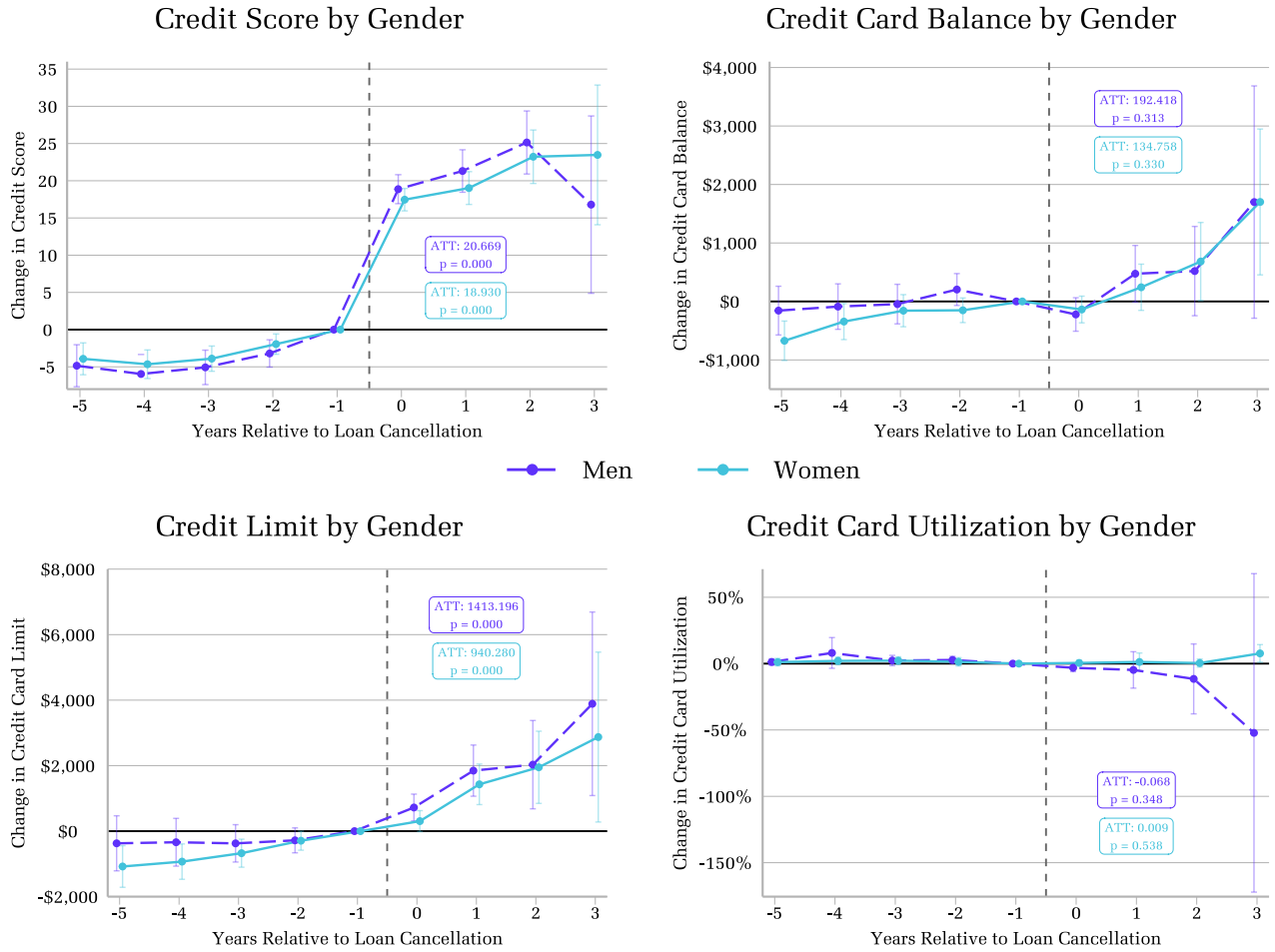FIGURE A.1. FINANCIAL IMPACTS OF STUDENT LOAN CANCELLATION BY GENDER

FIGURE A.1. FINANCIAL IMPACTS OF STUDENT LOAN CANCELLATION BY GENDER (CONT.)

Notes: This figure shows event study estimates of the financial impacts of student loan cancellation on borrower outcomes, derived from equation (1). Each panel tracks changes in outcomes—such as homeownership rate—relative to the year preceding cancellation. The horizontal axis spans five years before to three years after cancellation, with a dashed vertical line marking the pre-cancellation period. Separate lines represent subgroup estimates (Men vs. Women), with error bars reflecting 95% confidence intervals.

Analysis by Race

Figure A.2 depicts the effects of loan cancellation by race. We observe notable differences between White and Non-White borrowers across outcomes: White borrowers experience significant improvements in homeownership rates and debt balances, while the impacts for Non-White borrowers are more muted or negative in some cases.

3

- **Homeownership:** The estimated average treatment effect (ATT) on homeownership shows a 2.3 percentage point increase for White borrowers, while Non-White borrowers exhibit no measurable change (-0.1 percentage points). For first-time homeownership, the impacts are more comparable, with a 1.3 percentage point increase for White borrowers and a 1.0 percentage point increase for Non-White borrowers.

- **Credit Score and Credit Limit:** Both White and Non-White borrowers experience significant improvements in credit scores and credit limits following loan cancellation.

- **Debt Balances:** White borrowers see increases in credit card balances ($255.97) and auto loan balances ($1,333.80), while Non-White borrowers show much smaller or negative changes.
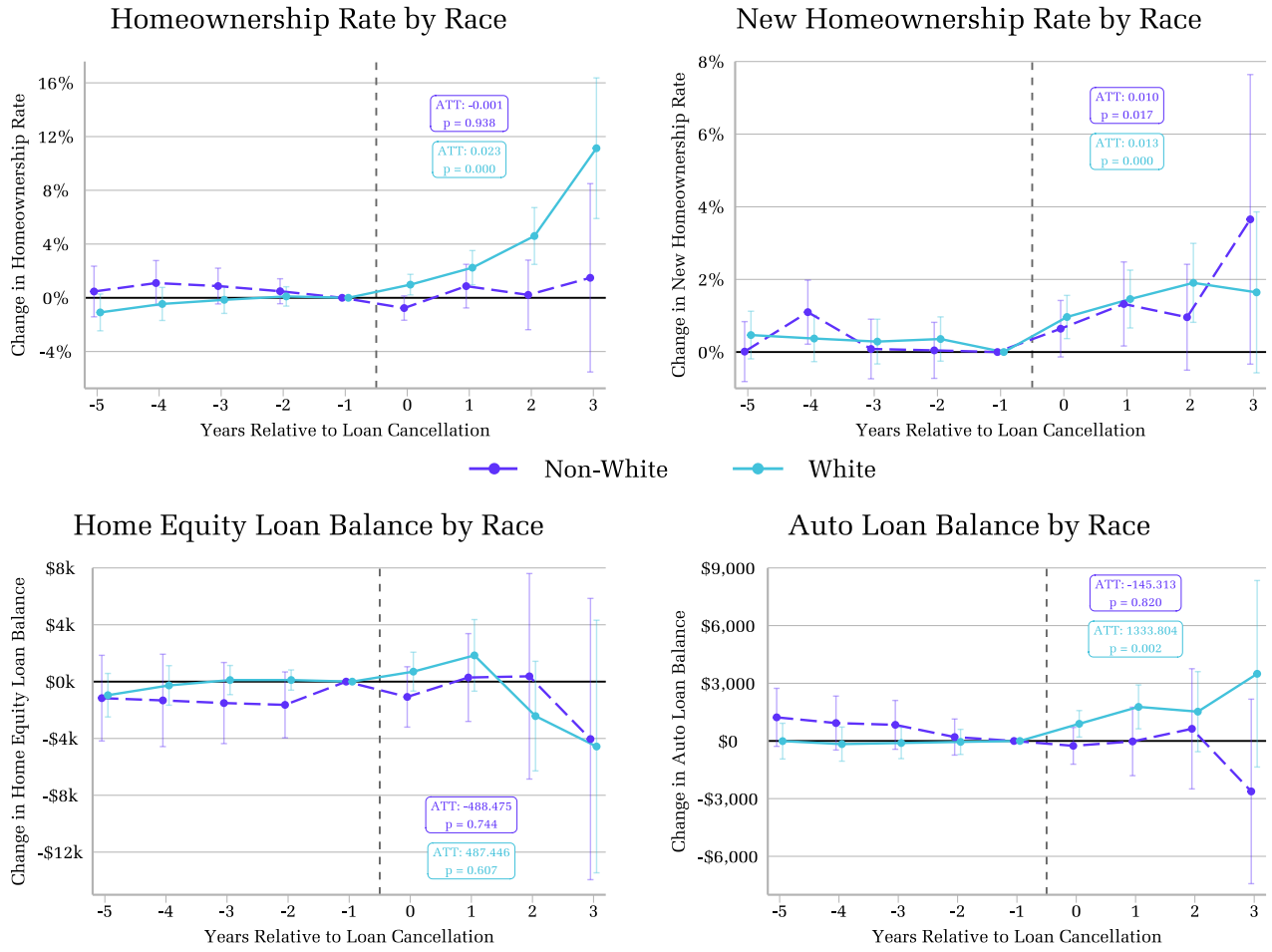
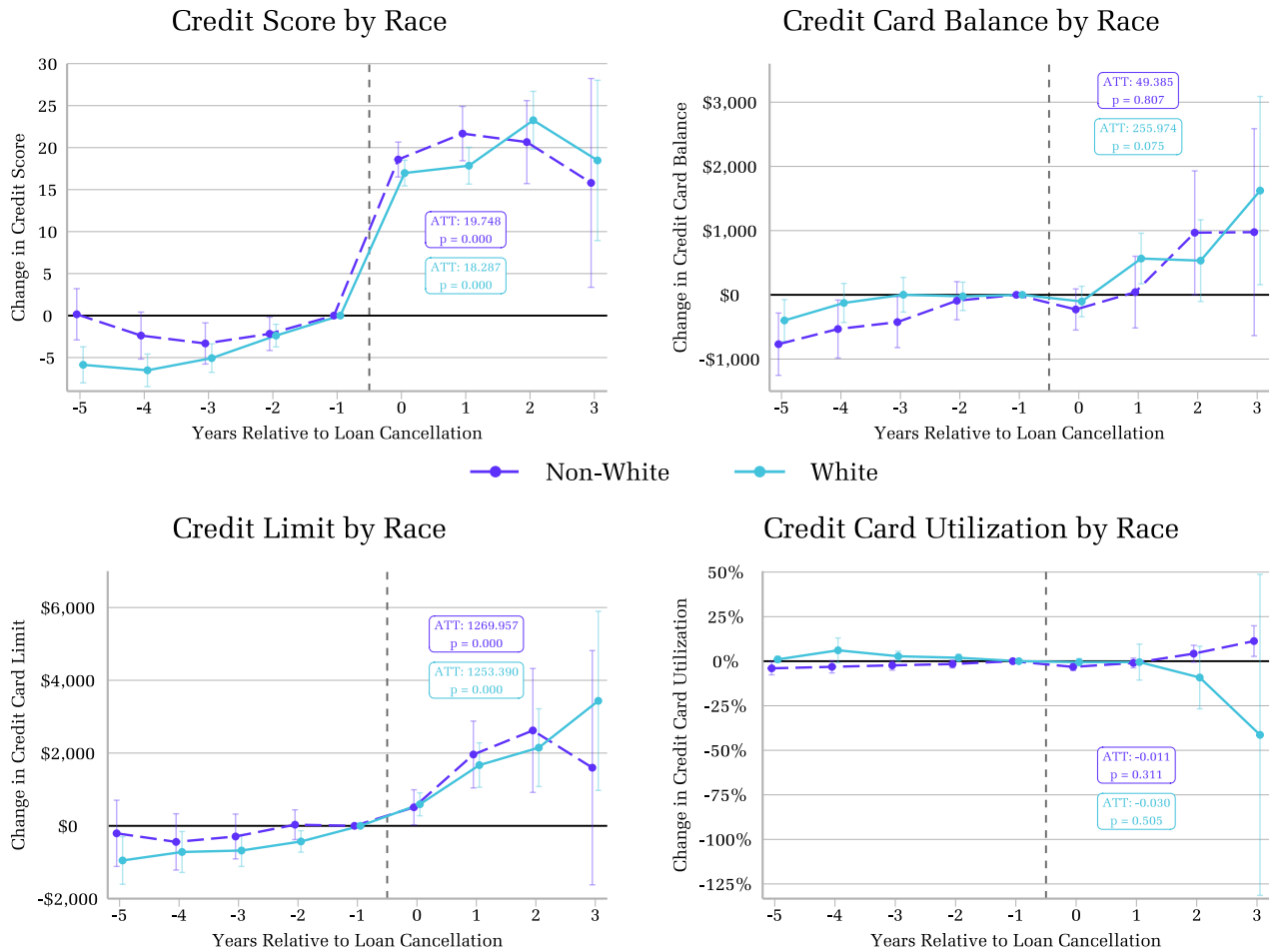FIGURE A.2. FINANCIAL IMPACTS OF STUDENT LOAN CANCELLATION BY RACE

FIGURE A.2. FINANCIAL IMPACTS OF STUDENT LOAN CANCELLATION BY RACE (CONT.)

Notes: This figure shows event study estimates of the financial impacts of student loan cancellation on borrower outcomes, derived from equation (1). Each panel tracks changes in outcomes—such as homeownership rate—relative to the year preceding cancellation. The horizontal axis spans five years before to three years after cancellation, with a dashed vertical line marking the pre-cancellation period. Separate lines represent subgroup estimates (White vs. Non-White), with error bars reflecting 95% confidence intervals.