Note Regarding Submission Materials

NBER Summer Institute 2026

This submission consists of an abstract and slides in lieu of a working paper. Our study uses confidential administrative data from multiple providers, and results based on these data must be reviewed and cleared before external release. The working paper is currently being prepared for that review and has not yet been cleared. The abstract and slides included here summarize the analysis and main findings.

Financial Consequences of College Financial Aid *

Joshua Angrist† David Autor‡ Lucas Goodman§
Amanda Pallais¶ Andrew Whitten‖

March 2026

Abstract

Student debt may constrain borrowers' access to credit, making it more difficult to buy a car or acquire a home. Borrowers also report that loans compel them to take undesirable, poorly paid jobs. This paper uses a large randomized trial that awarded generous financial aid to college-bound seniors in Nebraska to evaluate the impact of grant aid on student loan balances, credit outcomes (including credit scores and auto lending), and employment and earnings. Previous analyses of this trial show randomly assigned aid increased BA completion by 8-10 points while reducing student borrowing by 60%. Despite these benefits, the aid treatment generated no improvement in creditworthiness or credit-funded consumption. Among trial participants intent on four-year degree programs, randomly assigned grant aid has had no medium-run effect on employment and earnings. Among trial participants targeting two-year programs, aid awards appear to have reduced earnings 7-12 years after random assignment. A mediation analysis suggests these effects are not explained by the standard human capital tradeoff between additional schooling and forgone experience. Rather, we find suggestive evidence that aid recipients induced to switch from two- to four-year programs did poorly in the latter. Overall, the economic returns to the marginal schooling generated by aid awards are, at this point at least, surprisingly low.

JEL Codes: H52, I22, J24.

*This study was carried out under data-use agreements between MIT and the Susan Thompson Buffett Foundation (STBF). Noa Benveniste, Abigail Orbe, Gabriel Solis, and Gayeong Song provided outstanding research assistance. We thank Eryn Heying, Jennifer Jackson, and Niamh McLoughlin for invaluable administrative support, and the staff of the Susan Thompson Buffett Foundation for their expert assistance. Raj Chetty, Lawrence Katz and seminar participants at FRBNY, Harvard, and the January 2026 SKILS meeting made many helpful comments and suggestions. We acknowledge financial support from the Susan Thompson Buffett Foundation. Autor also acknowledges support from the Hewlett Foundation, the Google Technology and Society Visiting Fellows Program, the NOMIS Foundation, the Schmidt Sciences AI2050 Fellowship, and the Smith Richardson Foundation. This research was conducted while Goodman and Whitten were employees at the U.S. Department of the Treasury. Research findings, interpretations, and conclusions presented here are entirely those of the authors and do not necessarily reflect views or an official position of the U.S. Department of the Treasury. Any taxpayer data used in this research was kept in a secured IRS data repository, and all results have been reviewed to ensure that no confidential information is disclosed in this study.

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Financial Consequences of College Financial Aid

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Media Increasingly Highlight the Growing Burden of College Debt


The New York Times

Millions of Student Loan Borrowers Are Behind on Payments

They're seeing their credit scores drop, which will make it more difficult to buy a car or rent a home. And that has implications for the already slowing econ


THE WALL STREET JOURNAL.

PERSONAL FINANCE

Student-Loan Debt Is Strangling Gen X

Free-flowing student loans promised upward mobility. Instead, they left the 'forgotten generation' with a mountain of debt and regret; 'I'm going to be working until the day I die.'


BUSINESS INSIDER

CAREERS

A recent Gen Z grad with $25,000 in student debt says his job search has made him accept he may never work in his dream field: 'I know that life isn't fair'

- Our Buffett Awards RCT offered generous grant aid to 2012-16 Nebraska public college and university applicants, reducing student borrowing sharply
- Following our eval of effects on post-secondary outcomes, we now look at aid effects on credit and labor-market outcomes

Recent Research on Grant Aid and Student Loans: Highlights

- Quasi-experimental studies of grant aid
  - Bettinger et al. (2019): DD/RD design suggests Cal Grant increases degree completion with mixed, imprecise long-run earnings effects
  - Andrews et al. (2020): DD generates mixed estimates of effects of Longhorn Opportunity Scholarships for two Texas public campuses; gains mostly for high achievers
- Quasi-experimental (DD) studies of student loans, forbearance, and forgiveness
  - Black et al. (2023): Higher federal loans increase constrained students' degrees and earnings
  - Dinerstein et al. (2024): Borrowers subject to COVID-era payment pause increased mortgage, auto, and credit card borrowing
  - Dinerstein et al. (2025): Student loan forgiveness increases mortgage, auto, credit card balances while reducing monthly earnings and employment
- RCTs evaluating grant aid
  - Goldrick-Rab et al. (2016) WSG; Harris et al. (2018) Degree Project; and Baker-Smith et al. (2023): little effect of aid to prospective or continuing students on persistence/degrees
  - Hill et al. (2025): Ohio ASAP-type CC program, which offered both aid and comprehensive support services, boosted earnings eight years out

Susan Thompson Buffett Foundation (STBF) Grant Aid

- High-achieving, low-income Nebraska HS seniors may apply
  - High school GPA ≥ 2.5
  - FAFSA Expected Family Contributions $\leq$ \$10,000 (15k in 2012)
- Applicants identify a target college
  - Buffett Scholars at University of Nebraska (NU) campuses participate in Learning Communities (LCs), a student support service
  - Some treated applicants were assigned to a dollar-equivalent aid-only program at NU, the College Opportunity Scholarship (COS)
- Applications are scored based on merit and need
- STBF Awards can be used at any public college or university
  - Aid covers full tuition and fees for up to 5 years (3 for CCs), conditional on 2.0+ GPA
  - STBF funds 11% of Nebraska public college enrollment

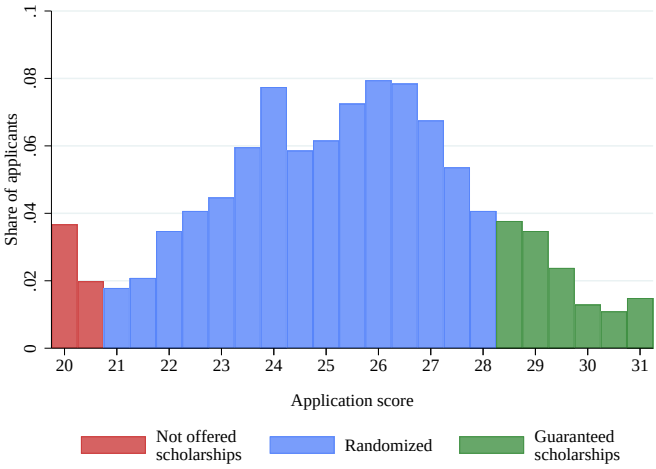
Nebraska's Diverse Public Institutions

School	Type	Carnegie Group	Barron's Selectivity Index†	Median ACT	Undergrad FTE	6-year/3-year grad. rate	Share female	Share URM
NU - Lincoln	4yr	Doctoral; Highest Research Activity	3	25	17,862	66%	53%	12%
NU - Omaha	4yr	Doctoral; Higher Research Activity	4	22	10,807	52%	53%	23%
NU - Kearney	4yr	Master's; Larger Programs	5	23	3,861	57%	60%	15%
Chadron State	4yr	Master's; Medium Programs	6	22	1,527	39%	61%	16%
Peru State	4yr	Master's; Medium Programs	6	20	1,115	39%	48%	17%
Wayne State	4yr	Master's; Larger Programs	6	21	3,112	50%	52%	15%
Community Colleges (6)	2yr	Associate's; 1 Large, 3 Medium, 2 Small	N/A	—	24,148	34%	27%	22%

Sources: IPEDS, Barron's Profile of American Colleges 2017. †Category 3 schools are "Very Competitive", category 4 are "Competitive", category 5 are "Less Competitive", category 6 are "Non-competitive". "FTE" abbreviates full-time enrollment. "URM" abbreviates under-represented minorities. The 2015 national average composite score was 21.

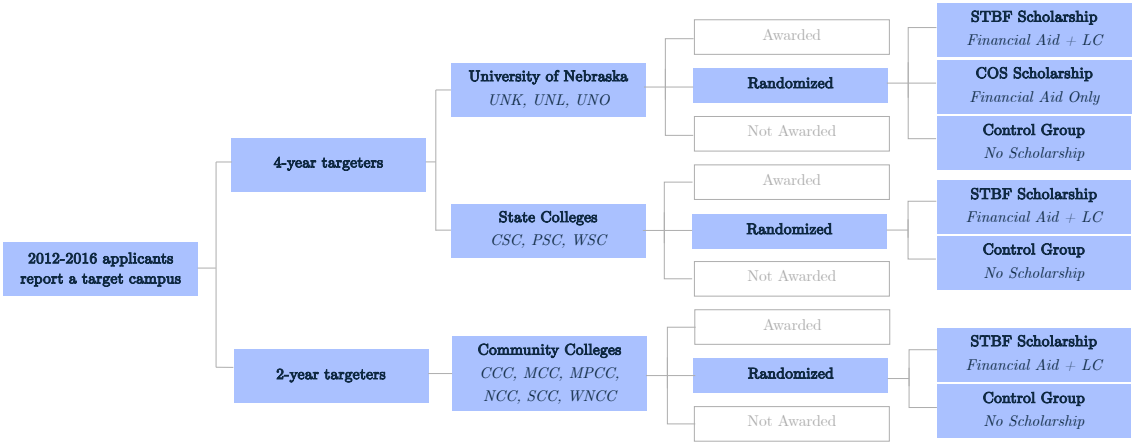
Designing Aid for Research

Guaranteed, Disqualified, and Randomized Applicants in 2016



Notes: This graph plots the distribution of application scores for 2016 applicants targeting UNL. STBF applicants were scored by reviewers who assessed transcripts, FAFSA student aid reports, an essay, and two letters of recommendation. 14% of eligible applicants in this group were guaranteed awards; 6% percent were disqualified. Awards were randomly assigned to applicants in the middle group.

Treatment Groups by Target Campus



Notes: Learning communities (LCs) are offered on NU campuses only. COS awards offer aid with no LC component. Applicants are classified into two- and four-year strata by declared target school. Awards are randomized within target-campus strata defined by individual NU campuses, the group of state colleges, and the group of community colleges. Offer rates vary by target college and cohort.

Data Sources

Baseline characteristics 	STBF applications	High school transcripts and ACT scores FAFSA Student Aid Reports Survey of college plans
	Nebraska DMV	Demographic information
Post-secondary 	Nebraska public colleges and universities	Academic and financial aid records
	National Student Clearinghouse (NSC)	Enrollment and degree information
Credit 	Major credit bureau	Credit accounts Loan balances
Labor market 	U.S. Treasury Department and IRS	Earnings Employment

Follow-Up Horizon

	Years since randomization											
Application year	1	2	3	4	5	6	7	8	9	10	11	12
2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	**2024**
2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	**2024**	
2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	**2024**		
2015	2016	2017	2018	2019	2020	2021	2022	2023	**2024**			
2016	2017	2018	2019	2020	2021	2022	2023	**2024**				
Sample size	8,190	8,190	8,190	8,190	8,190	8,190	8,190	8,190	6,182	4,305	2,628	999

- Today's analysis covers:
  - Enrollment and degrees through summer 2024
  - Credit outcomes through June 2024
  - Earnings through the 2024 tax year

Econometric Framework

- Proximate offer effects
  - The aid-acceptance first stage is .93
  - Awards boost grant aid and reduce loans sharply

	Four-year strata		Two-year strata	
	Control mean	Award effect	Control mean	Award effect
Total Aid in Y1	$13,283	5,713	$5,792	2,753
		(168)		(230)
Grants in Y1	$8,273	8,703	$4,282	3,602
		(152)		(203)
Loans in Y1	$4,282	-2,706	$1,395	-803
		(93)		(112)

- We start with reduced-form program-offer effects estimated using:

$$Y_i = \tau A_i + \sum_r 1\{R_i = r\}\alpha_r + \varepsilon_i, \tag{1}$$

where A_i indicates scholarship offers and $R_i = [W_i' \; c_i]'$ encodes RCT strata, defined by target school dummies (W_i) $\times$ cohort (c_i)

- Estimates are for randomized applicants only
- The vector of covariates consists of saturating strata indicators denoted $1\{R_i = r\}$, plus year effects when labor market outcomes are stacked

Post-Secondary Outcomes
(Updating Autor, Angrist and Pallais 2022)

Degree Completion Effects

	Four-year strata					Two-year strata	
			NU 2013-2016				
	Control Mean (1)	Award Effect (2)	Control Mean (3)	Regular Award (4)	COS Award (5)	Control Mean (6)	Award Effect (7)
Bachelor's degree	.668	.079	.672	.088	.056	.247	.099
		(.011)		(.014)	(.018)		(.025)
Associate degree	.059	-.026	.054	-.029	-.019	.362	-.004
		(.005)		(.006)	(.008)		(.026)
No degree	.273	-.053	.274	-.058	-.036	.391	-.096
		(.011)		(.014)	(.017)		(.026)
Total years of schooling	4.37	.400	4.35	.399	.306	2.86	.598
		(.049)		(.063)	(.076)		(.107)
Still enrolled, any intensity	.113	.010	.119	.002	.016	.078	.003
		(.008)		(.010)	(.013)		(.015)
Still enrolled, half-time or more	.089	.014	.097	.007	.015	.065	.002
		(.007)		(.010)	(.012)		(.014)
No. of individuals	3,786	6,845	2,925	5,212		705	1,345

Notes: This table reports estimated effects of STBF awards on degree completion and years of schooling using the most recent data available for each cohort. Degree categories are mutually exclusive based on highest degree attained. "Still enrolled, any intensity" counts any level of enrollment, including less than half-time. "Still enrolled, half-time or more" counts only those enrolled at least half-time. Regressions control for strata.

Big Picture Summary



Post-secondary outcomes



Credit outcomes

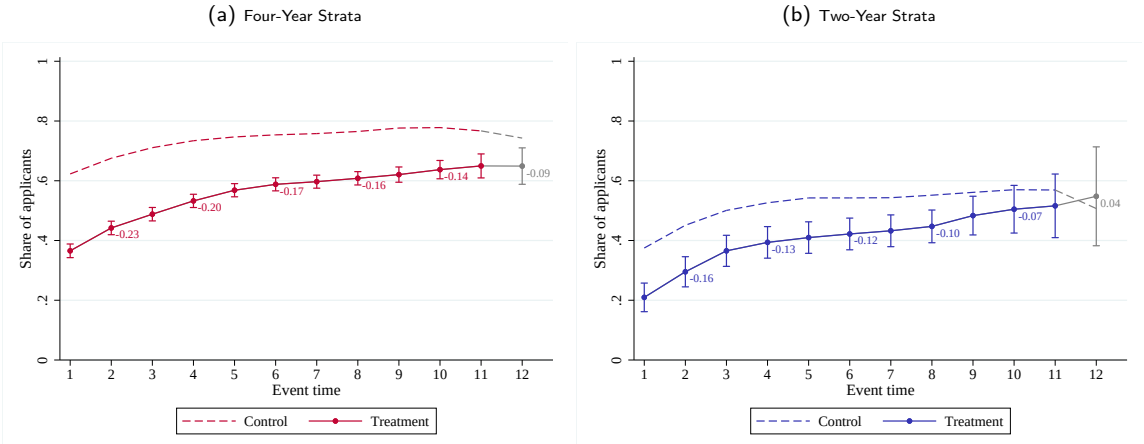


Labor market outcomes

	Four-year strata	Two-year strata
Enrollment	↑ *Enroll at higher rates and spend more time in school*	↑ *Enroll at higher rates and spend more time in school*
Degrees	↑ *More likely to earn a BA and less likely to earn an AA*	↑ *More likely to earn a BA and no less likely to earn an AA*
Student loans		
Credit scores		
Credit cards		
Auto loans		
Mortgages		
Employment		
Earnings		

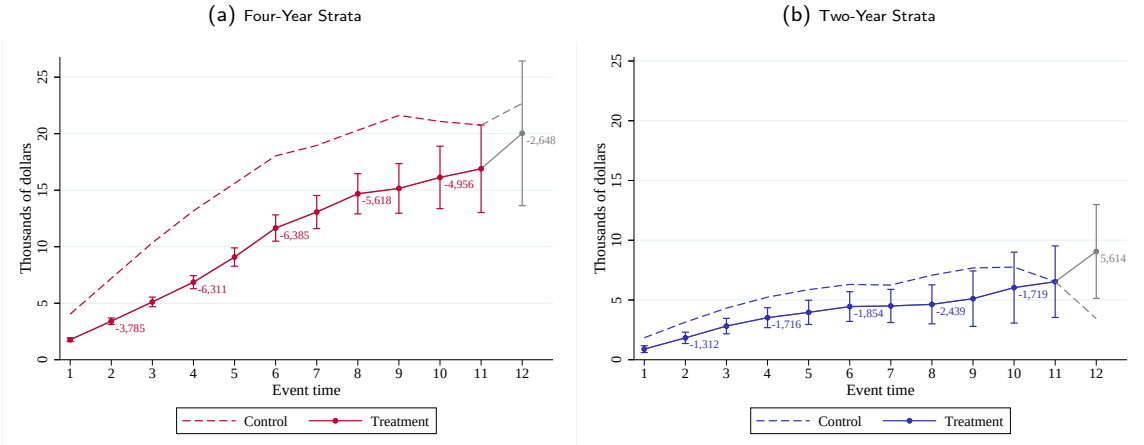
Credit Outcomes

Student Loan Accounts



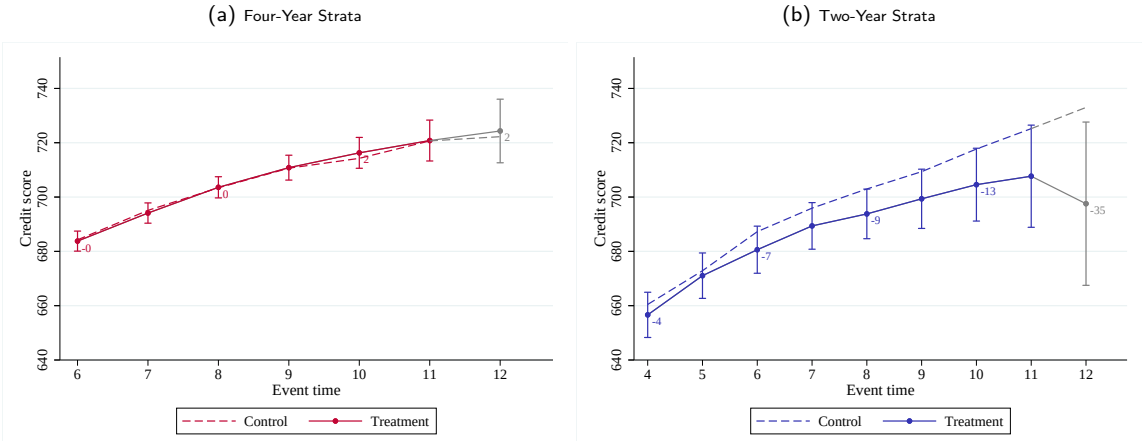
Notes: This figure plots the share of applicants with an open student loan account by treatment status for four- and two-year applicants. Starting in 2017, outcomes measured at the end of quarter 2 (June 30th) and quarter 4 (December 31st) are stacked to produce a single annual estimate. Data for earlier years are from quarter 2. Estimates control for strata. Whiskers mark 95% confidence intervals.

Student Loan Balances



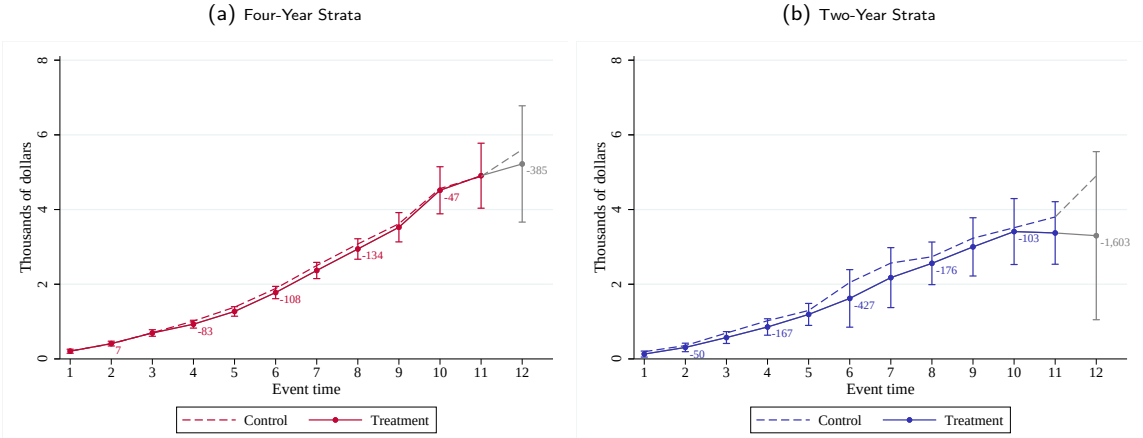
Notes: This figure plots the mean of average student loan balances in open loan accounts in the last 3 months by treatment status for four- and two-year applicants. Starting in 2017, outcomes measured at the end of quarter 2 (June 30th) and quarter 4 (December 31st) are stacked to produce a single annual estimate. Data for earlier years are from quarter 2. Applicants with no loans have a balance of 0. Estimates control for strata. Whiskers mark 95% confidence intervals. Graduate enrollment explains growing post-BA balances in four-year strata.

Credit Scores



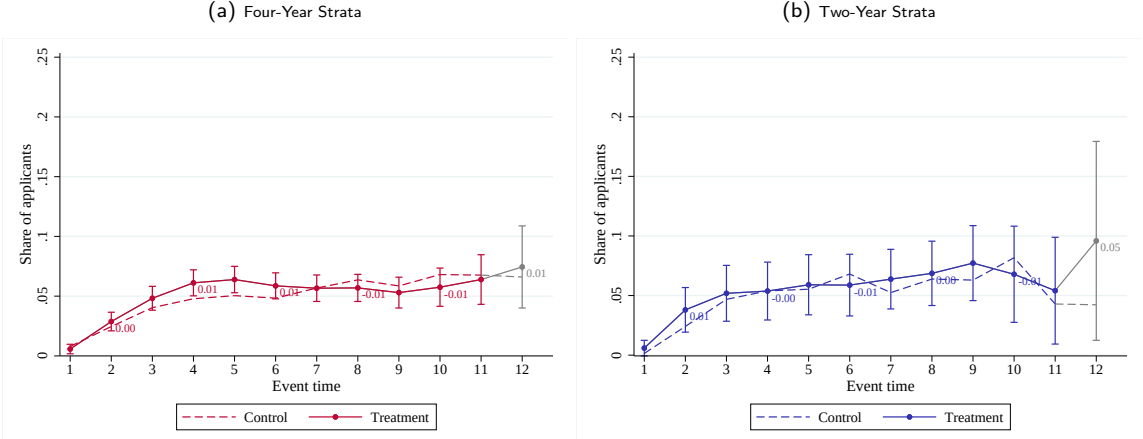
Notes: This figure plots mean VantageScores (scaled like FICO scores) by treatment status for four- and two-year applicants. Everyone matched to tax data has a score. Starting in 2017, scores measured at the end of quarter 2 (June 30th) and quarter 4 (December 31st) are stacked to produce a single annual estimate. Scores for earlier years are from quarter 2. Estimates control for strata. Whiskers mark 95% confidence intervals.

Credit Card Balances



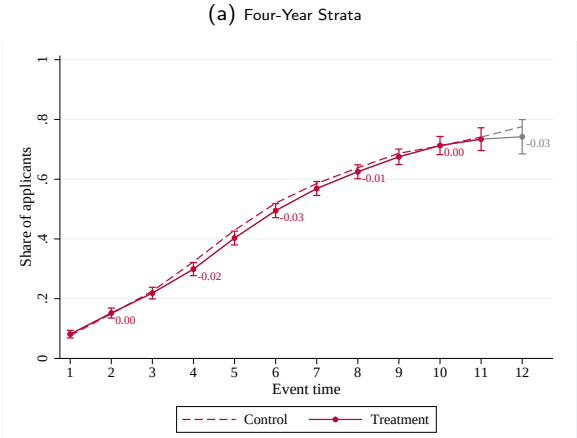
Notes: This figure plots mean credit card balances by treatment status for four- and two-year applicants. Starting in 2017, outcomes measured at the end of quarter 2 (June 30th) and quarter 4 (December 31st) are stacked to produce a single annual estimate. Data for earlier years are from quarter 2. Applicants with no loans have a loan balance of 0. Estimates control for strata. Whiskers mark 95% confidence intervals.

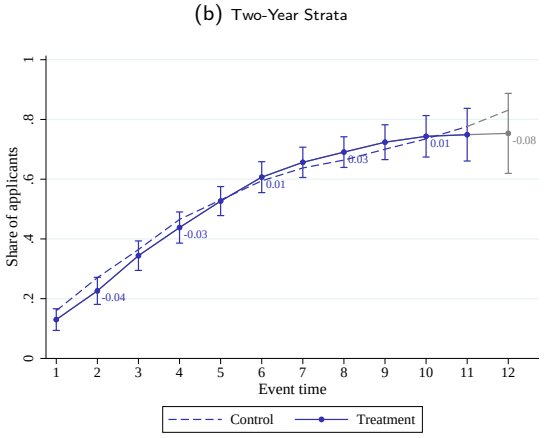
Credit Card Delinquency Rates



Notes: This figure plots the share of applicants reported 60 or more days delinquent on a revolving loan balance (mostly credit card debt) in the last 12 months, by treatment status in four-year strata (Panel A) and two-year strata (Panel B). Outcomes are measured at the end of quarter 2 (June 30th). Estimates control for strata. Whiskers mark 95% confidence intervals.

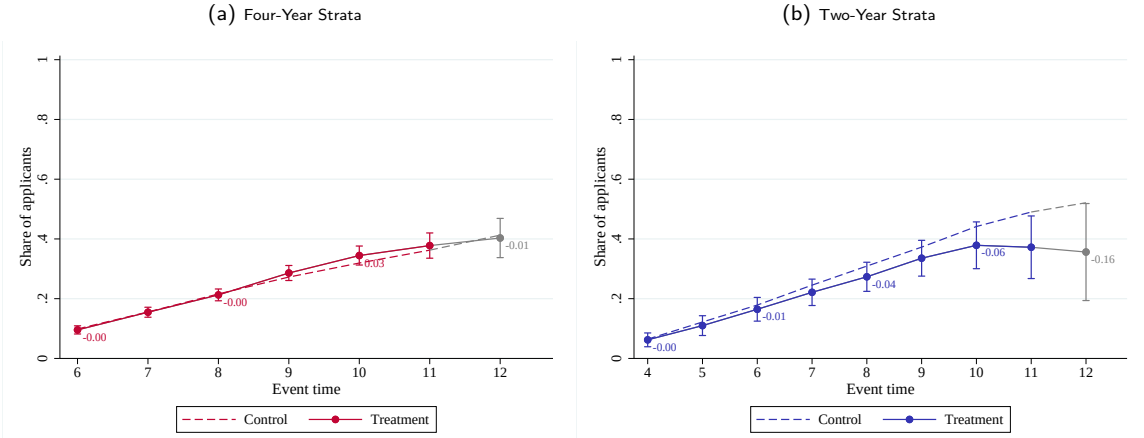
Auto Loan/Lease Accounts





Notes: This figure plots the share of applicants with an open auto loan or lease account by treatment status for four- and two-year applicants. Starting in 2017, outcomes measured at the end of quarter 2 (June 30th) and quarter 4 (December 31st) are stacked to produce a single annual estimate. Data for earlier years are from quarter 2. Estimates control for strata. Whiskers mark 95% confidence intervals.

Mortgages



Notes: This figure plots the share of applicants with an open mortgage account by treatment status for four-year applicants (Panel A) and two-year applicants (Panel B). Starting in 2017, outcomes measured at the end of quarter 2 (June 30th) and quarter 4 (December 31st) are stacked to produce a single annual estimate. Data for earlier years are from quarter 2. Estimates control for strata. Whiskers mark 95% confidence intervals.

Big Picture Summary



Post-secondary outcomes



Credit outcomes



Labor market outcomes

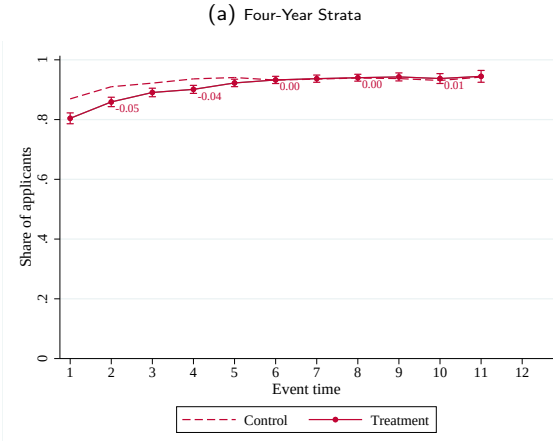
	Four-year strata		Two-year strata	
Enrollment	↑	*Enroll at higher rates and spend more time in school*	↑	*Enroll at higher rates and spend more time in school*
Degrees	↑	*More likely to earn a BA and less likely to earn an AA*	↑	*More likely to earn a BA and no less likely to earn an AA*
Student loans	↓	*Fewer student loans and much lower balances*	↓	*Fewer student loans and much lower balances*
Credit scores	–	*Similar credit scores*	↓	*Lower credit scores*
Credit cards	–	*Similar balances and delinquency rates*	–	*Similar balances and delinquency rates*
Auto loans	–	*Similar incidence*	–	*Similar incidence*
Mortgages	–	*Similar incidence*	–	*Marginally fewer*
Employment				
Earnings				

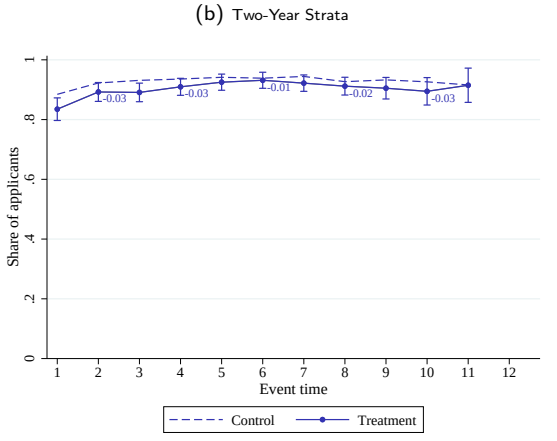
Labor Market Outcomes

Labor Market Outcome Definitions

Outcome	Definition
 Employment	W-2 wages + self-employment income exceeds $1,999
 Earnings	Sum of W-2 wages and self-employment income on tax year 1040

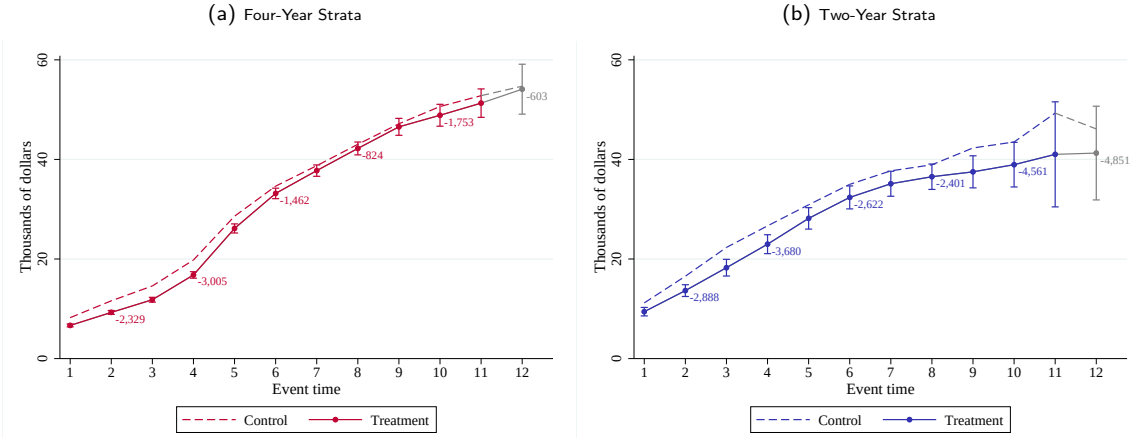
Employment Rates





Notes: This figure plots employment rates by treatment status in four- and two-year strata. Individuals are coded as employed if the sum of their W-2 wages and self-employment income reported on an annual tax returns exceeds $1,999. Year 12 estimates are omitted to protect taxpayer privacy. Estimates control for strata. Whiskers mark 95% confidence intervals.

Earnings



Notes: This figure plots annual earnings profiles by treatment status in four- and two-year strata. Annual earnings equal the sum of W-2 wages and self-employment income reported on an annual tax return. Estimates control for strata. Whiskers mark 95% confidence intervals.

Summary Estimates







Outcome	Period	Four-year strata		Two-year strata	
		Control Mean	Award Effect	Control Mean	Award Effect
Years of Enrollment	As of 2024	4.37	0.40 (0.05)	2.86	0.60 (0.11)
BAs	As of 2024	0.668	0.079 (0.011)	0.247	0.099 (0.025)
Student Loan Balance	End of Y6	$18,591	-6,288 (639)	$6,469	-1,863 (664)
Credit Score	Pooled, Y7-Y12	705	0 (2)	706	-10 (5)
Auto Loan or Lease	In 2024	0.466	-0.003 (0.012)	0.481	-0.007 (0.027)
Mortgage	In 2024	0.255	-0.002 (0.010)	0.339	-0.053 (0.025)
Employment	In Y7	0.936	0.001 (0.006)	0.944	-0.022 (0.014)
Earnings	Stacked, Y7-Y12	$44,941	-1,009 (674)	$41,040	-3,759 (1,446)

Notes: Estimates control for strata. Pooled credit scores average over Y7-Y12. Stacked earnings regressions includes year effects and cluster on applicant.

Mediation Analysis

- For earnings up to 12 years since random assignment, we see:
  - No earnings gains in 4-year strata
  - Persistent earnings losses in 2-year strata
- To what extent can these reduced-form earnings effects be explained by award-induced changes in human capital variables?
- We assess this using a causal mediation framework similar to that outlined in Imai et al. (2010), surveyed in Huber (2020), extended in Kwon and Roth (2024)
- This framework is applied to gauge the extent to which earnings effects reflect award-induced changes in schooling (+) and experience (-)
  - Expected long-run earnings effects are calibrated using OLS estimates of a Mincer-type human capital earnings function
  - Returns to the extra schooling and lost experience generated by STBF awards might differ from these benchmark estimates

Our Benchmark Mincer Model

- Our *Mincer mediator* is obtained from OLS estimates of a regression model for log annual earnings observed in year t:

$$\ln Y_{it} = \underbrace{\alpha_{0t} + \alpha_1 F_i + \tau_B S_{Bi} + \sum_{j \neq B} \tau_j S_{ji} + f(m_{it})}_{X_{it}'\beta} + W_i'\gamma + \eta_{it} \tag{2}$$

  - S_{Bi} is a BA dummy with coefficient τ_B; dummies S_{ji} indicate other schooling levels, omitting some college/no degree
  - $f(m_{it})$ is a quadratic function of potential experience, $m_{it} = t - c_i - S_i$, where $c_i \in \{2012, \ldots, 2016\}$ is experimental cohort and S_i is (imputed) years of schooling
  - $X_{it}'\beta$ collects schooling and experience terms, plus year effects & female dummy, F_i
  - W_i indicates strata by target school only; exclusion of cohort, c_i, from (2) is justified by control for experience
  - Given zero employment effects, truncating $Y_i < 2000$ should be innocuous

Mincer Mediation: Assumptions

- Let $\mathrm{Y}_{it} = \ln Y_{it}$ and let $S_i(1), S_i(0)$ denote potential schooling indexed against award offers, A_i. Vector $R_i = [W_i' \; c_i]'$ encodes strata as in (1). Note that:

$$E[\mathrm{Y}_{it}|X_{it}, R_i, A_i] \equiv E[\mathrm{Y}_{it}|X_{it}, W_i, c_i, A_i] = E[\mathrm{Y}_{it}|X_{it}, W_i, A_i],$$

  since X_{it} includes m_{it} and S_i and $c_i = t - S_i - m_{it}$

- Assumptions
  1. $S_i(1), S_i(0) \perp\!\!\!\perp A_i | R_i$, so $X_{it}(1), X_{it}(0) \perp\!\!\!\perp A_i | R_i$
  2. $E[\mathrm{Y}_{it}|X_{it}, W_i = w, A_i = a] = E[\mathrm{Y}_{it}|X_{it}(a), W_i = w]$
  3. $E[\mathrm{Y}_{it}|X_{it}(a), W_i = w] = X_{it}(a)'\beta + W_i'\gamma$ for β, γ defined by (2)
  4. This eq. describes a causal CEF for Y_{it} indexed against X_{it}
- Assumptions 1-4 combine *sequential ignorability* (Imai et al., 2010) with *full mediation* (Kwon and Roth, 2024) and the additive, linear model in (2)
- Assumption 4 is implicit in most models of a human capital earnings functions

Mincer Mediation: Implications

- Under these assumptions, reduced-form award effects are explained by causal effects of A_i on X_{it}:

$$
\begin{aligned}
&E[\mathrm{Y}_{it}|R_i, A_i = 1] - E[\mathrm{Y}_{it}|R_i, A_i = 0] \\
&\quad = E\{E[\mathrm{Y}_{it}|X_{it}, R_i, A_i = 1]|R_i, A_i = 1\} - E\{E[\mathrm{Y}_{it}|X_{it}, R_i, A_i = 0]|R_i, A_i = 0\} \\
&\quad = E\{E[X_{it}(1)'\beta + W_i'\gamma]|R_i, A_i = 1\} - E\{X_{it}(0)'\beta + W_i'\gamma]|R_i, A_i = 0\} \\
&\quad = (E[X_{it}(1)|W_i, c_i] - E[X_{it}(0)|W_i, c_i])'\beta \\
&\quad = E[X_{it}(1) - X_{it}(0)|R_i]'\beta, \qquad (3)
\end{aligned}
$$

  using additivity of (2)
- Assuming causal effects on X_{it} are also additive, $E[X_{it}(1) - X_{it}(0)|R_i]'\beta$ in (3) is the coefficient on A_i in a regression of $X_{it}'\beta$ on A_i and strata dummies
- Do the reduced-form earnings effects at the top of (3) match the Mincer-mediated effects at the bottom?

Mincer Estimation Details

- Equation (2) is fit using 5 samples:
  1. 2021-23 ACS data on Nebraska-born high school graduates aged 25-54, excluding anyone presently enrolled
  2. Sample 1 limited to approximate STBF birth cohorts (born 1993-98)
  3. Data on STBF applicants from our STBF applicant-IRS match, excluding presently enrolled half-time or more. Degrees, S_i and experience use NSC data matched to STBF applicant records. Earnings are from 2021-2024 IRS data stacking years 7-12
  4. Sample 3 limited to applicants in four-year strata
  5. Sample 3 limited to applicants in two-year strata
- The dependent variable for samples 1-2 is annual wage & salary earnings in the ACS
- The dependent variable for columns 3-5 is W-2 earnings + max(self-employment income, 0) in IRS data
- Potential experience is imputed from degrees following Park (1994). Degree attainment may be time-varying.

Estimated Returns to Degrees and Experience

	(1)	(2)	(3)	(4)	(5)
BA	0.525	0.521	0.442	0.462	0.329
	(0.022)	(0.048)	(0.015)	(0.016)	(0.037)
AA	0.158	0.266	0.225	0.221	0.175
	(0.027)	(0.060)	(0.018)	(0.026)	(0.028)
No college	-0.147	-0.132	-0.008	-0.047	0.028
	(0.027)	(0.060)	(0.043)	(0.056)	(0.064)
dy/d(Experience)	0.033	0.038	0.034	0.035	0.028
	(0.003)	(0.010)	(0.003)	(0.004)	(0.009)
Sample experience range	(3, 36)	(1, 12)	(1, 11)†	(1, 11)†	(2, 11)†
Sample mean experience	19	6	5	5	6
No. observations	12,209	2,296	20,960	17,522	3,438
No. individuals	—	—	7,248	6,058	1,190
Model details					
Data source	ACS	ACS	STBF-IRS	STBF-IRS	STBF-IRS
Years	2021-23	2021-23	2021-24*	2021-24*	2021-24*
Strata	—	—	All	4-year	2-year
Cohorts	Ages 25-54	Born 1993-1998	STBF Y7-Y12	STBF Y7-Y12	STBF Y7-Y12

Notes: This table reports schooling and experience returns estimated using equation (2); the reference schooling group is some college/no degree. All models include year dummies and a female dummy. STBF-IRS models also control for target college. ACS samples are limited to Nebraska-born high school graduates. Experience derivatives are evaluated at mean experience in the 2021-2024 STBF-IRS control sample in years 7-12 since random assignment, a value of 5.91. *The STBF-IRS sample stacks 2021-24 earnings for cohorts in Y7-Y12, with standard errors clustered by applicant. †Experience ranges in the STBF-IRS sample are defined using mean experience for the 10 most- and 10 least-experienced people in the sample.

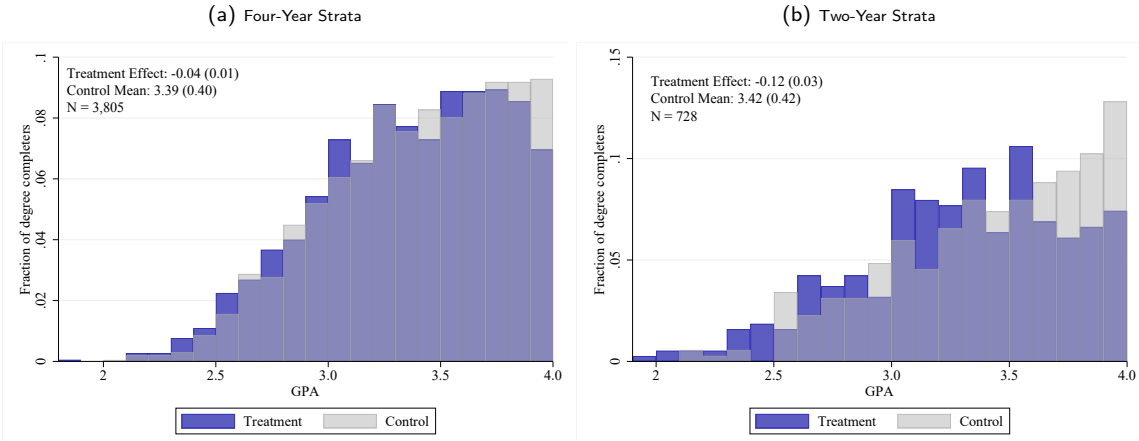
Calibrated vs. Actual Earnings Effects

	Award effect on Mincer fitted values					Reduced form	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
4-year strata	0.028	0.025	0.018	0.020	—	-0.019	-0.018
	(0.007)	(0.006)	(0.005)	(0.005)		(0.014)	(0.015)
Regular award	0.023	0.021	0.017	0.019	—	-0.036	-0.036
	(0.009)	(0.008)	(0.006)	(0.006)		(0.019)	(0.019)
COS award	0.026	0.022	0.017	0.018	—	0.005	0.024
	(0.011)	(0.009)	(0.008)	(0.008)		(0.024)	(0.025)
2-year strata	0.028	0.025	0.022	—	0.009	-0.058	-0.096
	(0.015)	(0.013)	(0.010)		(0.011)	(0.033)	(0.037)
Mediator model	ACS age 25-54	ACS b. 1993-98	STBF	STBF 4-year	STBF 2-year	—	—
Earnings model	Logs	Logs	Logs	Logs	Logs	Logs	Exponential

Notes: This table compares award effects on Mincer mediators $X_{it}'\beta$ to reduced-form earnings effects. The latter are estimated in STBF-IRS 2021-2024 earnings stacking years 7-12 since random assignment. For the same years and cohorts, columns 1-5 report award effects on Mincer mediators (fitted values from the corresponding Mincer model estimates reported in the previous table) for log earnings. Column (6) reports reduced form award effects on log earnings. Column (7) reports exponential reduced form award effects on earnings, including zeros. All models include year dummies and control for randomization strata; standard errors are clustered by applicant.

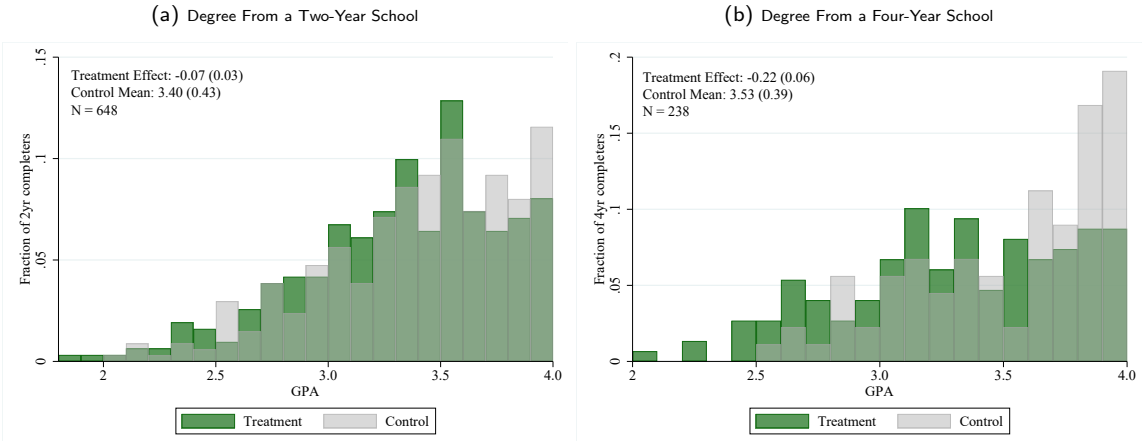
The Mystery of Two-Year Minuses

GPA Distributions in Four- and Two-Year Strata



Notes: This figure plots the distribution of terminal-degree GPAs reported at the end of the last semester of enrollment in a student's terminal degree program for four- and two-year strata. GPAs are available for students who complete a degree at a Nebraska public university or college only. GPAs for graduates with more than one degree at a given level are averaged. Y-axis scales differ across panels.

GPA Distributions by Degree Type in **Two-Year Strata**



Notes: This figure plots the distribution of terminal-degree GPAs reported at the end of the last semester of enrollment in a student's terminal degree program, for two-year strata only. GPAs are reported separately for graduates of two- and four-year programs. GPAs for graduates with more than one degree at a given level are averaged. Y-axis scales differ by panel.

Summary and Conclusions

- BA gains persist, though with a few twists
  - COS $-only impact on BAs is less than effects of awards requiring LC participation
  - Awards in two-year strata generate proportionally more BAs than awards in four-year strata
- Awards reduce initial student borrowing by around 60%
  - In four-year strata, awards have no effect on longer-term credit-related outcomes
  - Treated in two-year strata have persistently lower credit scores and are marginally less likely to have taken out a mortgage
- Treated employment rates have caught up to control
  - Mincer models predict modest earnings gains (around 2%) by 2021-24
  - Small negative earnings RFs in four-year strata suggest degree returns are lower and/or the penalty for lost experience exceeds the values expected based on Mincer-model OLS
  - IV estimates using awards to instrument S_i confirm this
- Treated in two-year strata still earn 6-10% less than controls
  - Low GPAs for treated two-year grads earning BAs hint at a mismatch story
- The story continues

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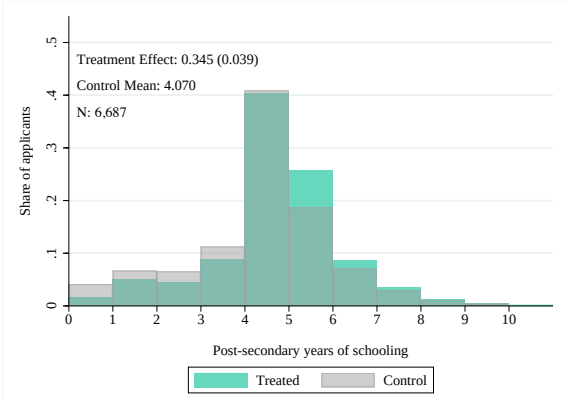
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Additional Exhibits

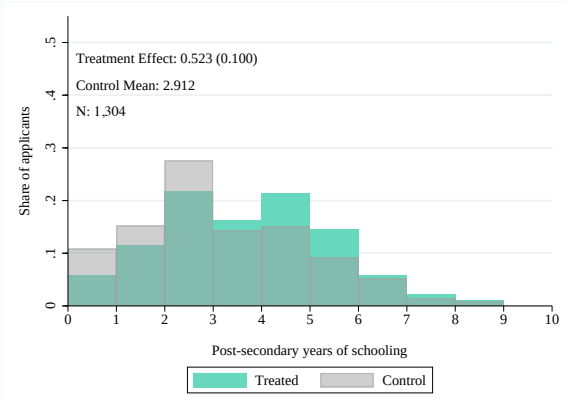
1. Distribution of time in school
2. Distribution of time in school among non-completers
3. CDF difference in schooling by award offer
4. Instrumented Mincer returns to BA degree and experience
5. Award effects on degree completion by GPA threshold
6. Degree completion and GPA effects
7. Credit match rates

Distribution of Time in School

(a) 4-year strata



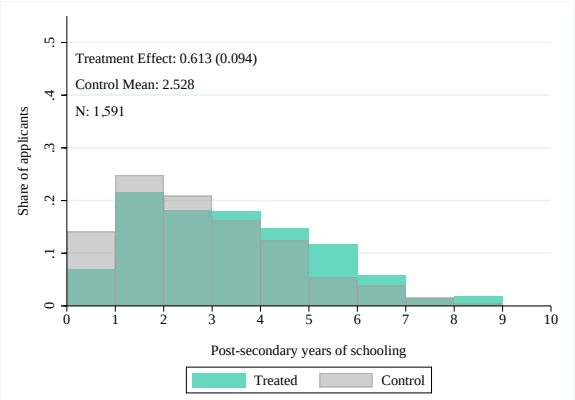
(b) 2-year strata



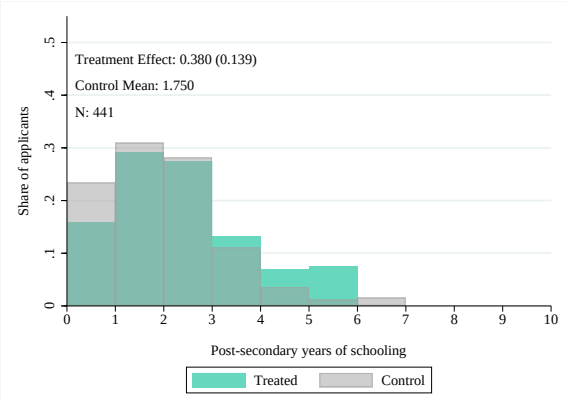
Notes: Enrollment and degree completion data comes from NSC only. Years of enrollment are incremented by 0.5 for each semester of half-time or more enrollment. This figure plots the unconditional distribution of years enrolled by year 14 in the four-year strata (Panel A) and two-year strata (Panel B).

Distribution of Time in School among Non-Completers

(a) 4-year strata



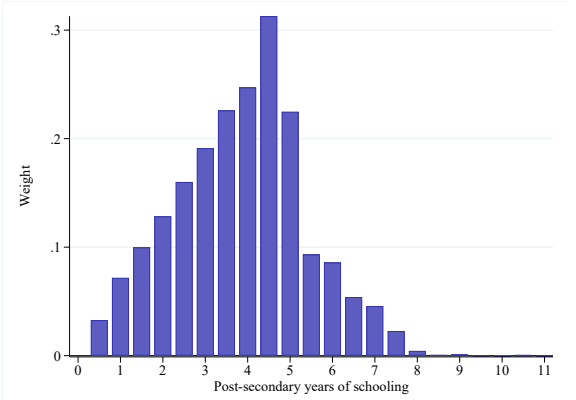
(b) 2-year strata



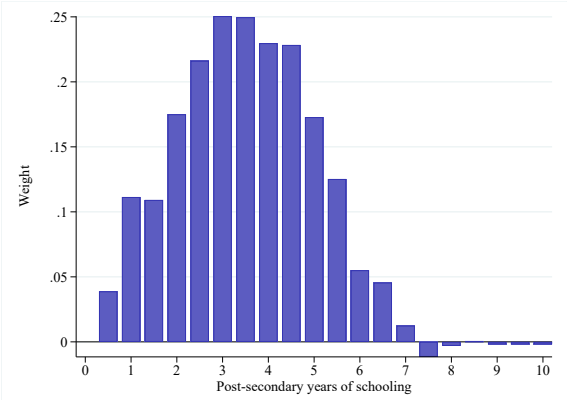
Notes: Enrollment and degree completion data comes from NSC only. Years of enrollment are incremented by 0.5 for each semester of half-time or more enrollment. This figure plots the distribution of years enrolled among students who did not complete any degree by year 14 in the four-year strata (Panel A) and two-year strata (Panel B).

CDF Difference in Schooling by Award Offer

(a) 4-year strata



(b) 2-year strata



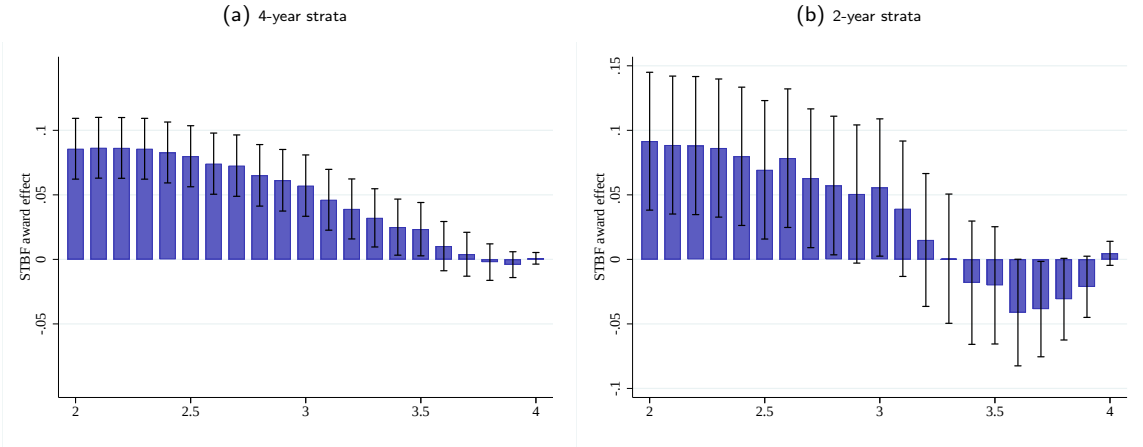
Notes: Figures plot ACR weights at each schooling threshold j following Angrist & Imbens (1995). Weights are computed from CDF shifts in schooling by award offer, $\Pr(S < j \mid A = 0) - \Pr(S < j \mid A = 1)$, normalized by $E[S \mid A = 1] - E[S \mid A = 0]$. A is the award offer indicator and S is NSC years enrolled half-time or more, binned at 0.5-year intervals.

Instrumented Mincer Returns to BA Degree and Experience

	NSC experience (full-time)		NSC experience (half-time+)	
	OLS	2SLS (Award + YOB)	OLS	2SLS (Award + YOB)
	(1)	(2)	(3)	(4)
Panel A: Four-Year Strata				
BA degree	0.357	0.300	0.352	0.316
	(0.013)	(0.156)	(0.013)	(0.156)
Experience	0.010	0.073	0.009	0.077
	(0.003)	(0.007)	(0.003)	(0.008)
First stage F-stat	—	17	—	17
Reduced form on earnings	-0.020	—	-0.020	—
	(0.016)		(0.016)	
Reduced form on BA degree	0.075	—	0.075	—
	(0.012)		(0.012)	
Reduced form on experience	-0.399	—	-0.401	—
	(0.044)		(0.045)	
Observations	17,437		17,437	
Unique individuals	6,038		6,038	
Panel B: Two-Year Strata				
BA degree	0.181	-0.437	0.191	-0.414
	(0.028)	(0.341)	(0.028)	(0.333)
Experience	0.004	0.049	0.008	0.051
	(0.006)	(0.016)	(0.006)	(0.017)
First stage F-stat	—	5	—	5
Reduced form on earnings	-0.070	—	-0.070	—
	(0.035)		(0.035)	
Reduced form on BA degree	0.103	—	0.103	—
	(0.028)		(0.028)	
Reduced form on experience	-0.439	—	-0.497	—
	(0.096)		(0.104)	
Observations	3,429		3,429	
Unique individuals	1,185		1,185	

Notes: This table reports OLS and 2SLS returns to BA attainment and experience using STBF-IRS 2021–2024 earnings over years 7–12. Columns (1)–(2) define potential experience using full-time enrollment; columns (3)–(4) use half-time-or-more enrollment. 2SLS instruments BA and experience with award offer and YOB dummies. All specifications include year fixed effects, gender, and campus dummies; standard errors are clustered by individual.

Award effects on Degree Completion by GPA Threshold



Notes: This figure plots the share of four-year targeters who are enrolled in a graduate program (red) and have completed a graduate degree (blue). Graduate programs exclude post-baccalaureate certificate programs. Estimates control for strata. Whiskers mark 95% confidence intervals.

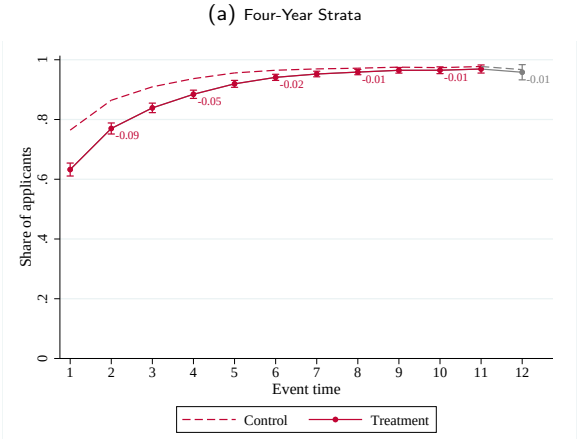
Degree Completion and GPA Effects

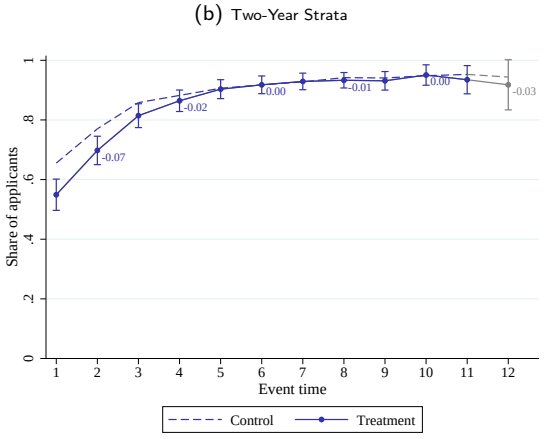
	4-year strata			2-year strata		
	Control Mean	Award Effect	N	Control Mean	Award Effect	N
GPA in semester of degree completion	3.389	-0.033 (0.013)	3,804	3.415	-0.115 (0.032)	730
. . . in standard deviations	—	-0.080 (0.032)	3,804	—	-0.275 (0.077)	730
Degree completion	0.727	0.053 (0.011)	6,845	0.609	0.096 (0.026)	1,345
GPA $\geq$ 2.5 | Degree completion	0.984	-0.009 (0.005)	3,804	0.986	-0.040 (0.013)	730
Degree completion & GPA $\geq$ 2.5	0.515	0.080 (0.012)	6,845	0.494	0.071 (0.027)	1,345
GPA $\geq$ 3.0 | Degree completion	0.812	-0.015 (0.013)	3,804	0.816	-0.035 (0.030)	730
Degree completion & GPA $\geq$ 3.0	0.425	0.060 (0.012)	6,845	0.409	0.057 (0.027)	1,345
GPA $\geq$ 3.5 | Degree completion	0.444	-0.020 (0.016)	3,804	0.484	-0.103 (0.037)	730
Degree completion & GPA $\geq$ 3.5	0.232	0.026 (0.011)	6,845	0.243	-0.016 (0.023)	1,345
GPA $\geq$ 3.9 | Degree completion	0.092	-0.020 (0.009)	3,804	0.125	-0.056 (0.022)	730
Degree completion & GPA $\geq$ 3.9	0.048	-0.004 (0.005)	6,845	0.062	-0.021 (0.012)	1,345

Notes: This table reports award effects on completion and GPA outcomes. Conditional rows (GPA $\geq$ X \| Degree completion) restrict to completers with non-missing GPA. Unconditional rows (Degree completion & GPA $\geq$ X) code non-completers and completers without GPA data as zero. Regression control for strata.

Credit Match Rates

Main deck Appendix TOC





Notes: This figure plots the quarter 2 credit match rate for four-year applicants (Panel A) and two-year applicants (Panel B). Estimates control for strata. Whiskers mark 95% confidence intervals.