Summarizing the Evidence on High School Technical Education

Shaun M. Dougherty
Boston College
Institute for Research on Poverty
Webinar
July 23, 2025

Includes references to work funded by the Institute for Education Sciences:
Grants #R305A160195, R305A170498, R305N180005

Summary

- High Quality Evidence is accumulating suggesting that CTE in high school can smooth the transition to college & the workforce,

- In this brief presentation:
  - Report on growing evidence
    - What do we know and with what degree of confidence do we know it?
    - Where was the evidence generated?
  - Comment on policy constraints - What more do we need to know?

- As policy emphasis on updating and spending on CTE has increased, figuring out:
  - what to offer,
  - where,
  - to whom, &
  - under what conditions

How & where is high school CTE delivered?

	Whole School Model	Regional Centers	Comprehensive HS
Curricular Alignment	X		
Equipment Centralization	X	X	
Cost Smoothing	X	X	
Shared Teaching Staff	X	X	
Work-based learning	X	X	X
Employer Partnerships	X	X	X
College Partners	X	X	X
Universal Access			X
Market Share (NCES)	3-5%	~60%	~35%

Note: Career Academies often are situated in comprehensive high schools and have been growing in number
Linked Learning is another model that has been growing outside of California

Impacts on high school outcomes

- Better graduation outcomes
  - Bonilla, 2020; Brunner et al.,2021; Dougherty, 2018; Hemelt et al., 2019 *Kemple et al. (2023) shows equivalent outcomes in NYC; Gottfried & Plasman (2018); Rosen (2023)
  - More recent evidence on the role of industry credentials in supporting graduation among those already off track (Glennie et al. 2024)
- Improved or equivalent learning outcomes (test scores)
  - Brunner et al., 2021; Dougherty, 2018; Hemelt et al., 2019
- Higher attendance levels, especially in pivotal grade 9
  - Brunner et al., 2021; Dougherty, 2018; Kistler et al. 2024
- Large + impacts for students with disabilities for graduation
  - Dougherty et al., 2018; Brunner et al., 2024

Workforce outcome impacts are largely positive

- Clear theory of change to support workforce outcomes. Evidence has long aligned w/ theory
  - Bishop & Mane, 2004; Kemple & Willner, 2008; Kreisman & Stange, 2020; Page, 2012

- Recent evidence that supports causal interpretation reinforces these conclusions & adds nuance
  - Brunner et al. (2023) find very large impact (30% increase in earnings by age 23), but only for boys
  - Brunner et al. (2022) highlights that much of the gendered differences in impact are explained by industry sorting
    - Within-industry returns are comparable across genders
    - Most of the average difference in earnings by gender is explained by gender patterns in enrollment
  - Ecton & Dougherty (2023) returns differ substantially by program cluster & student characteristic
  - Brunner et al. (2024) show especially large impacts for students with disabilities

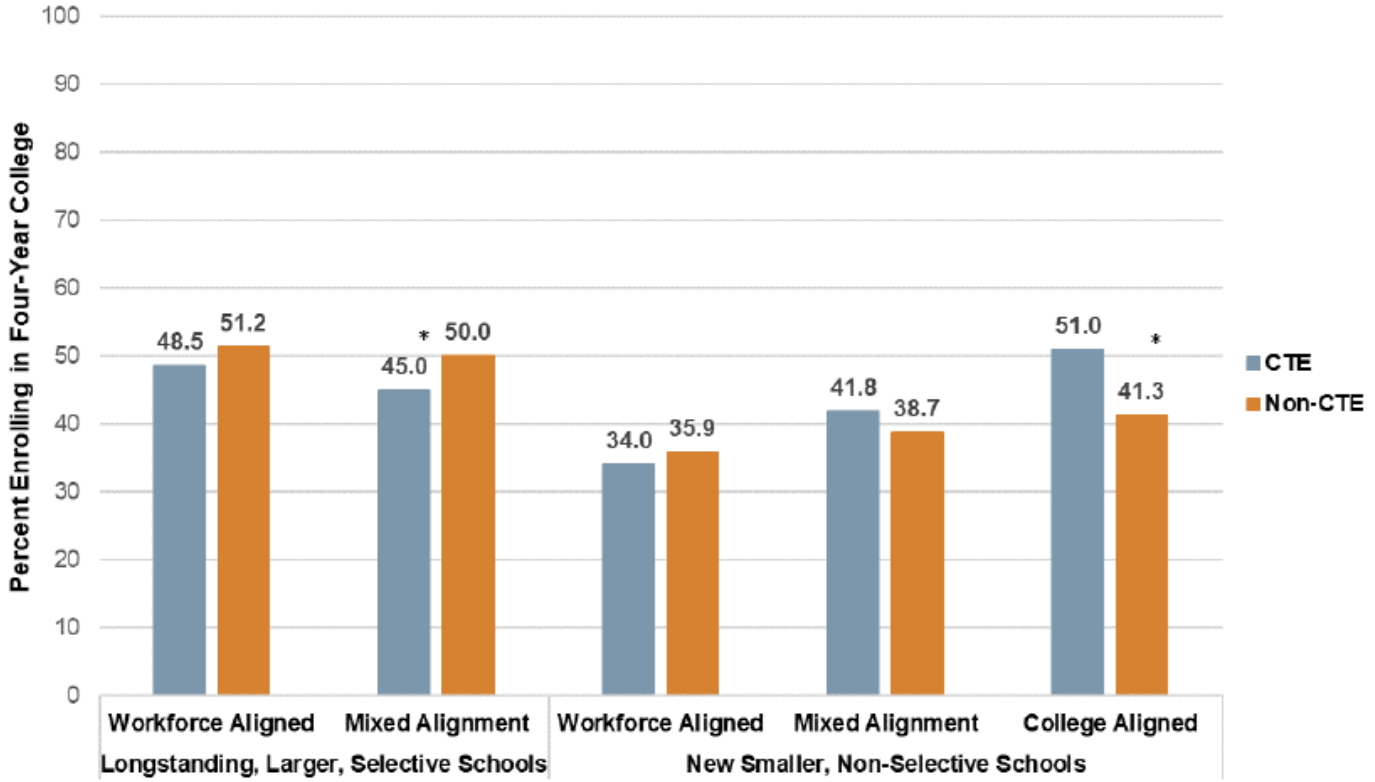
College going impacts are ambiguous, perhaps predictably

- Aggregate evidence is equivocal
  - Often, on average, no difference or negative impact for high school CTE participants
  - Most postsecondary CTE research is set in Comm. Colleges and doesn't observe transition

- Expanding evidence that likelihood of college enrollment is connected to program of study in high school
  - Hemelt et al. (2019) IT-focused academy in high-performing setting
  - Ecton & Dougherty (2023) – statewide averages in Massachusetts
  - Edmunds et al. (2024) – North Carolina dual enrollment
  - Kemple et al. (2023) – NYC CTE dedicated schools
  - Dixon & Rosen (2022) – PTECH model in NYC – dual enrollment
  - All builds on work from Cellini (2006) on tech prep

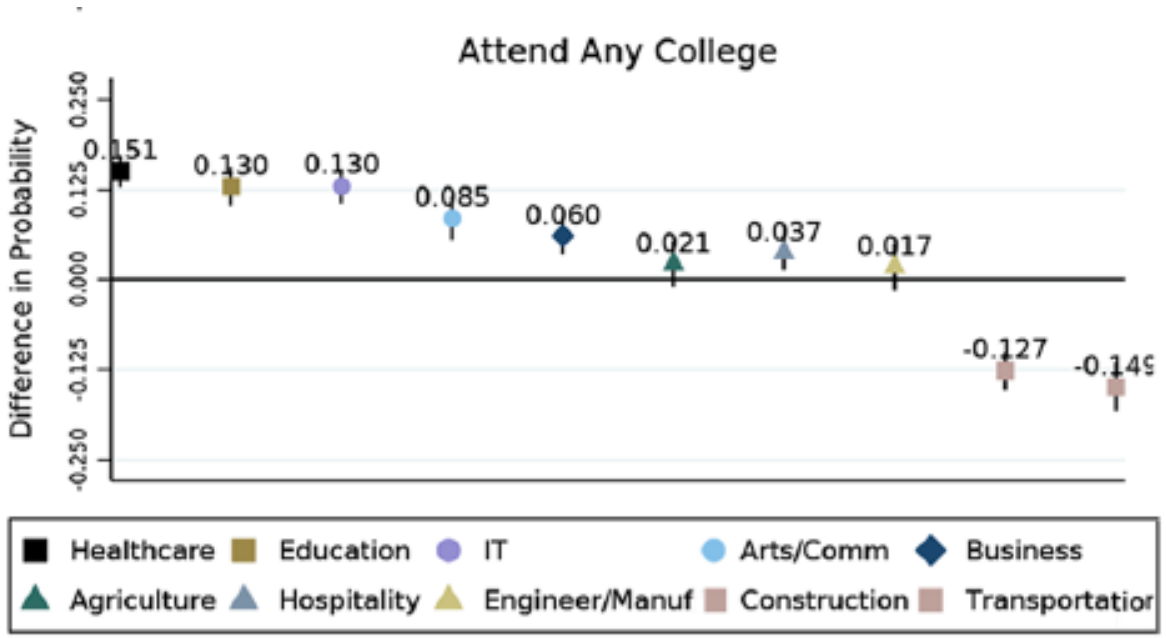
Impacts on college depend on aligned occupational needs

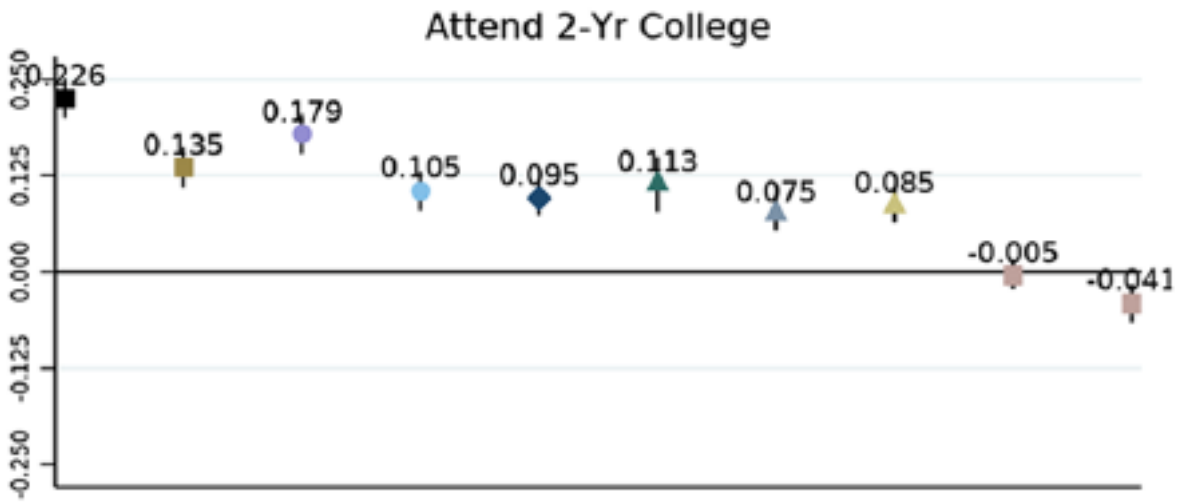
Figure 6: CTE Impacts on Enrollment in Four-Year Colleges, by High School Subgroup



Source: https://steinhardt.nyu.edu/research-alliance/research/nyc-laboratory-learning-about-career-and-technical-education

College going differs by CTE cluster in Massachusetts





Source: Ecton, W. G., & Dougherty, S. M. (2023). Heterogeneity in high school career and technical education outcomes. *Educational Evaluation and Policy Analysis*, *45*(1), 157-181.

Growth in evidence for innovative delivery models

- Career academies have been growing and show some evidence of benefit in high school (Hemelt et al 2019; Kistler et al. 2024)

- 9-14 models have proliferated and show promising evidence for high school and workforce outcomes (Edmunds et al. 2024; Rosen et al. 2024)

- Uses and benefits of industry certificates and credentials in high school is mixed (Giani 2023; Glennie et al. 2024)

Variation in impacts by student & school context matter

- Evidence from Connecticut, Massachusetts, and Washington show clear benefits for students with disabilities – similar to impacts for all students.
  - (Brunner et al. 2025; Dougherty et al. 2018; Theobald et al. 2019)

- Impacts differ by gender,
  - Some of difference can be explained by the composition of programs and the short-term returns from those programs (e.g. construction versus early childhood education & care)
  - Brunner et al. 2024; Ecton & Dougherty 2023

- Capital-intensive models can be cost effective
  - Evidence in MA and CT demonstrate that even more costly models of delivery can deliver impacts that at least offset public costs (Dougherty & Smith 2024)

Staffing qualifications & challenges must be considered

- Chen et al. (2022) find that students having a CTE teacher who scored higher on their subject-specific certification exam had higher earnings, though this did not hold for teacher certification exams in writing

- Theobald et al. (2023) showed better non-test outcomes for students with disabilities who had teachers with more industry experience

- Kistler et al. (2024) showed that CTE teacher turnover is similar to shortage areas like STEM and Spec. Ed and that teacher loss can result in fewer learning opportunities.

Evidence needs & policy challenges

- Still know too little about efficacy in settings where most students get CTE
- Nuanced evidence on registered apprenticeships, college certificate & degree completion is needed
- Policy efforts should emphasize:
  - Cost effectiveness
  - Thoughtful use of resources across K12 and postsecondary and adult settings
  - Recruiting and flexibly staffing high-demand teaching areas
- Scale effective offerings while managing costs, access, & personnel
- Structure programs and partnerships to engage employers and connect youth with meaningful work-based learning and professional exposure
  - Ensure dynamic alignment with evolving workforce needs
  - Allow for the exploration of a variety of pathways

Conclusion

- Expansion of focus on multiple pathways to adulthood should be a net positive for education & workforce policy
- Ensuring success will mean attention & coordination of elements known to positively contribute to skill & interest development
- Thank you

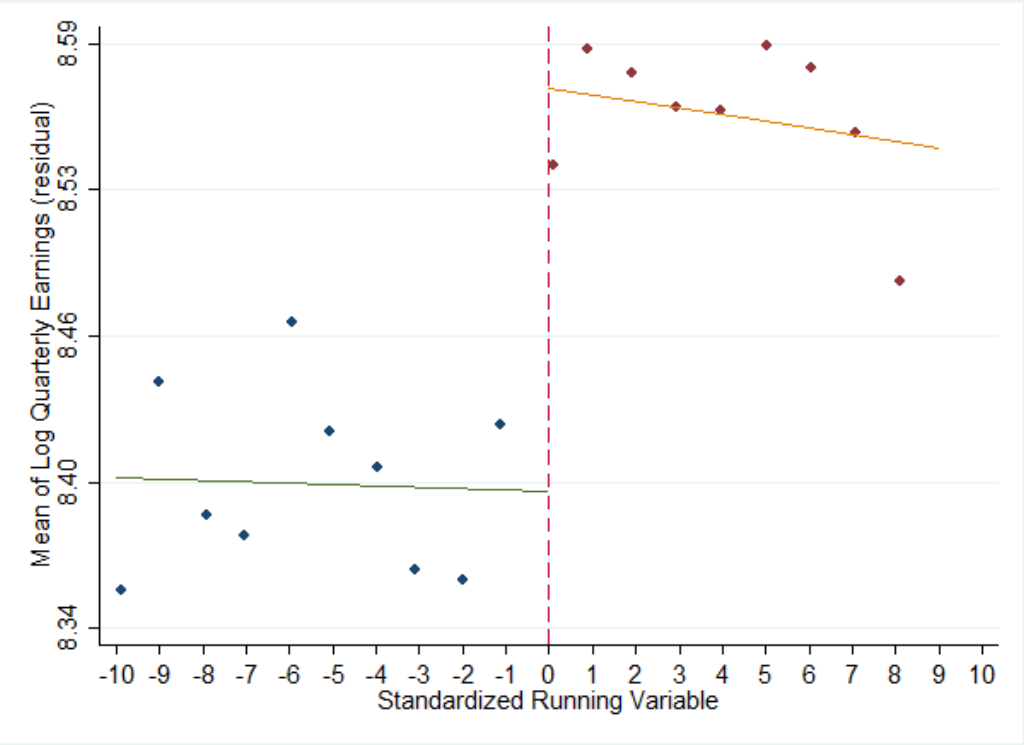
shaun.dougherty@bc.edu

References

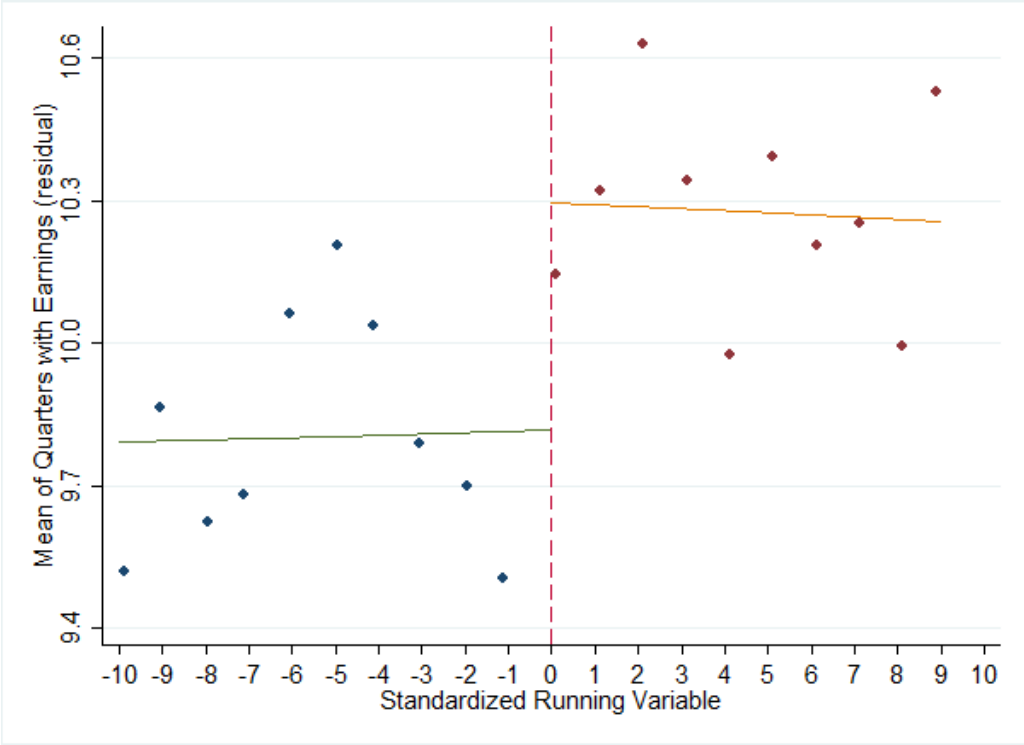
- Bishop J.H., Mane F. (2004). The impacts of career-technical education on high school labor market success. *Economics of Education Review*, 23 (4), 381–402.
- Bonilla S. (2020). The dropout effects of career pathways: Evidence from California. *Economics of Education Review*, 75, 101972.
- Brunner E.J., Dougherty S.M., Ross S.L. (2021). The effects of career and technical education: Evidence from the Connecticut Technical High School System. *The Review of Economics and Statistics*, 1–46.
- M. (2017). *Linked Learning and postsecondary transitions: A report on the early postsecondary education outcomes of Linked Learning students*. SRI International.
- Chen, B., Dougherty, S., Goldhaber, D., Holden, K., & Theobald, R. (2023). CTE teacher licensure and long-term student outcomes. *Education Finance and Policy*, *18*(2), 253-276.
- Dixon M., Rosen R. (2022). *Dual enrollment impacts from the evaluation of New York City's P-TECH 9-14 schools*. MDRC.
- Dougherty S.M. (2018). The effect of career and technical education on human capital accumulation: Causal evidence from Massachusetts. *Education Finance and Policy*, 1–52.
- Dougherty S.M., Grindal T., Hehir T. (2018). The impact of career and technical education on students with disabilities. *Journal of Disability Policy Studies*, 29b (2), 108–118.
- Dougherty S.M., Harbaugh Macdonald I. (2020). Can growth in the availability of STEM technical education improve equality in participation? *Evidence from Massachusetts. Journal of Vocational Education & Training*, 72 (1), 47–70.
- Dougherty, S. M., & Smith, M. M. (2025). At What Cost? Is Technical Education Worth the Investment?. *Education Finance and Policy*, *20*(1), 85-109.
- Ecton W.G., Dougherty S.M. (in press). Understanding heterogeneity in the selection into and returns to technical education. *Educational Evaluation & Policy Analysis*.
- Edmunds J., Unlu F., Phillips B., Hutchins B., Mulhern C. (2022). *CTE-focused dual enrollment: participation and outcomes* (EdWorkingPaper 22-692). Annenberg Institute at Brown University.
- Edmunds, J., Unlu, F., Phillips, B., Mulhern, C., & Hutchins, B. C. (2024). CTE-focused dual enrollment: Participation and outcomes. *Education Finance and Policy*, *19*(4), 612-633.
- Gottfried M.A., Plasman J.S. (2017). Linking the timing of career and technical education coursetaking with high school dropout and college-going behavior. *American Educational Research Journal*, 55 (2).
- Hemelt S.W., Lenard M.A., Paeplow C.G. (2018). Building bridges to life after high school: Contemporary career academies and student outcomes. *Economics of Education Review*.
- Kemple J.J., Willner C.J. (2008). *Career academies: Long-term impacts on labor market outcomes, educational attainment, and transitions to adulthood*. MDRC.
- Kistler, H. C., Childs, J., & Dougherty, S. M. (2024). Can Career Academies Work as a School Turnaround Strategy? *Educational Evaluation and Policy Analysis*, *0*(0). https://doi.org/10.3102/01623737241289152
- Kistler, H., Dougherty, S. M., & Woods, S. C. (2024). Teacher exit and educational opportunity: Lessons from career and technical education. *Educational Researcher*, *53*(3), 156-166.
- Kreisman D., Stange K. (2020). Vocational and career tech education in American high schools: The value of depth over breadth. *Education Finance and Policy*, 15 (1), 11–44.
- Lindsay, J., Hughes, K., Dougherty, S. M., Reese, K., & Joshi, M. (2024). What we know about the impact of career and technical education: A systematic review of the research. *American Institutes for Research, Career and Technical Education Research Network: Arlington, VA, USA*.
- Neumark D., Rothstein D. (2006). School-to-career programs and transitions to employment and higher education. *Economics of Education Review*, 25 (4), 374–393.
- Oakes J. (1983). Limiting opportunity: Student race and curricular differences in secondary vocational education. *American Journal of Education*, 91 (3), 328–355.
- Page L.C. (2012). Understanding the impact of career academy attendance: An application of the principal stratification framework for causal effects accounting for partial compliance. *Evaluation Review*, 36 (2), 99–132.
- Stern D., Dayton C., Raby M. (2000). *Career academies: Building blocks for reconstructing American high schools*. University of California at Berkeley, Career Academy Support Network.
- Stevens A.H., Kurlaender M., Grosz M. (2019). Career technical education and labor market outcomes evidence from California community colleges. *Journal of Human Resources*, 54 (4), 986–1036.
- Theobald R., Plasman J., Gottfried M., Gratz T., Holden K., Goldhaber D. (2019). *Sometimes less, sometimes more: Trends in career and technical education participation for students with disabilities* (CALDER Working Paper No. 220-0819). American Institutes for Research.
- Xu D., Trimble M. (2016). What about certificates? Evidence on the labor market returns to nondegree community college awards in two states. *Education Evaluation and Policy Archives*, 38

Male Workforce outcomes: Conn. Technical High Schools

Ln(Quart. Earn.)



Quarters w/ Earn.



- More quarters worked, total and average quarterly earnings about 30% higher (Brunner et al. 2021)

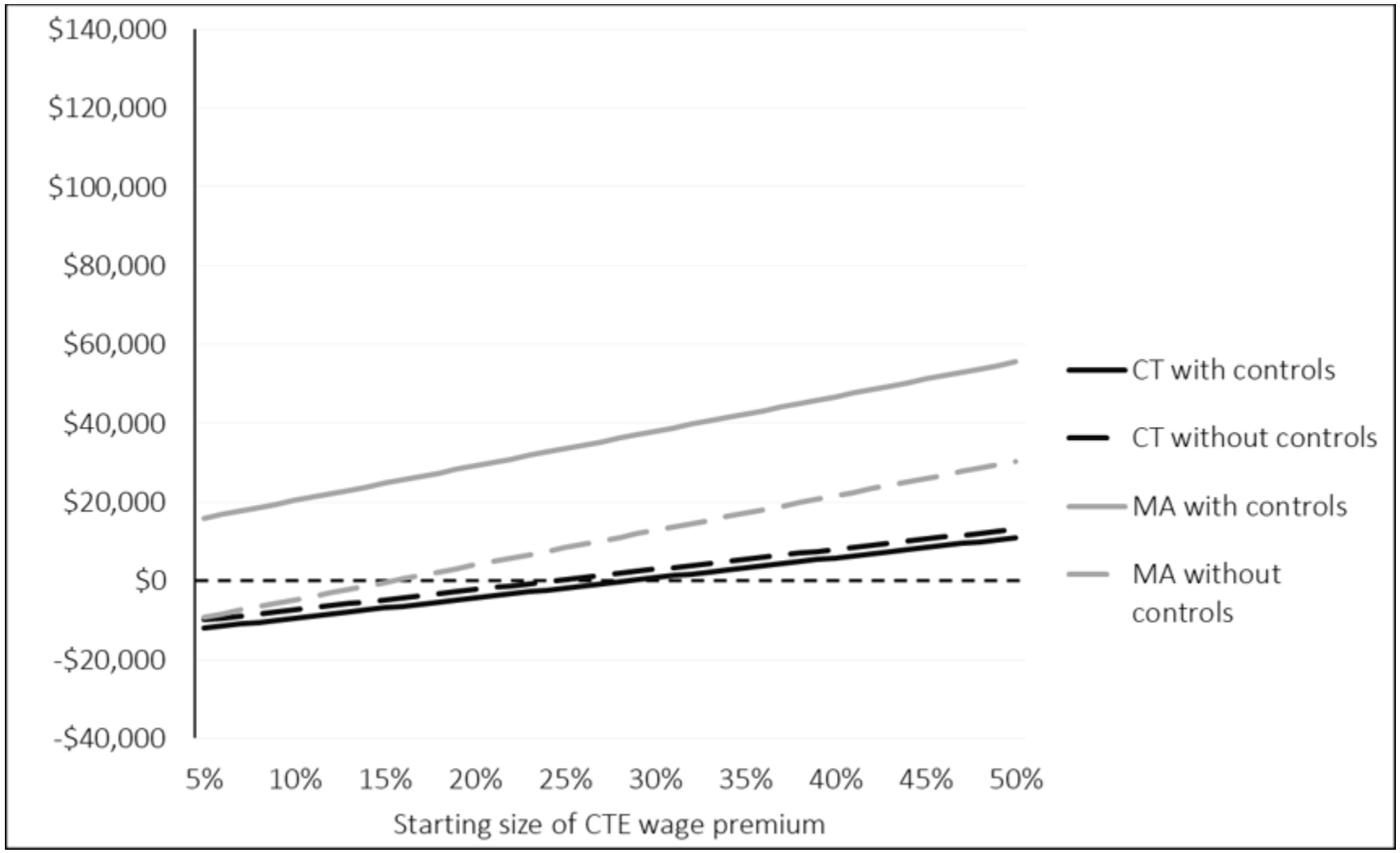
CTE is also more expensive, on average

Table A4: Future value of additional per pupil expenditure for CTE

	Interest rate			
	0.02	0.03	0.04	0.05
With controls				
Connecticut	40,185	64,187	102,061	161,565
New Jersey	54,614	87,233	138,705	219,573
Massachusetts	31,130	49,723	79,063	125,158
Pennsylvania	(7,505)	(11,987)	(19,060)	(30,172)
Delaware	77,615	123,973	197,124	312,051
Without controls				
Connecticut	38,062	60,795	96,668	153,028
New Jersey	71,239	113,788	180,930	286,416
Massachusetts	56,302	89,930	142,994	226,362
Pennsylvania	(8,271)	(13,212)	(21,007)	(33,255)
Delaware	53,711	85,791	136,412	215,943

Note: CTE = career and technical education. Future value calculated as the total per student cost of 4 years of obtaining a CTE-specific high school education over student career (ages 20-65). The regression-adjusted estimates of additional per pupil expenditures at CTE schools are $3,883.30 per year in Connecticut, $3,008.25 per year in Massachusetts, $5,277.56 in New Jersey, -$725.20 in Pennsylvania, and $7,500.26 in Delaware. The non-adjusted estimates of additional per pupil expenditures at CTE schools are $3,678.10 per year in Connecticut, $5,440.73 per year in Massachusetts, $6,884.15 in New Jersey, -$799.30 in Pennsylvania, and $5,190.26 in Delaware. Regression-adjusted estimates come from Column 4 of tables 3 and 4 and appendix tables A5, A6, and A7.

Yet, CTE can pay off even under reasonable assumptions



Note: Figure shows the difference between estimated lifetime future benefits and total estimated costs from models with and without controls when assuming an interest rate of 2%. CTE wage premium is held constant from ages 18-25 and linearly smoothed to zero by age 45.

Analyzing the Benefits and Limitations of Non-Degree Credentials: The Case of Apprenticeship in Oregon

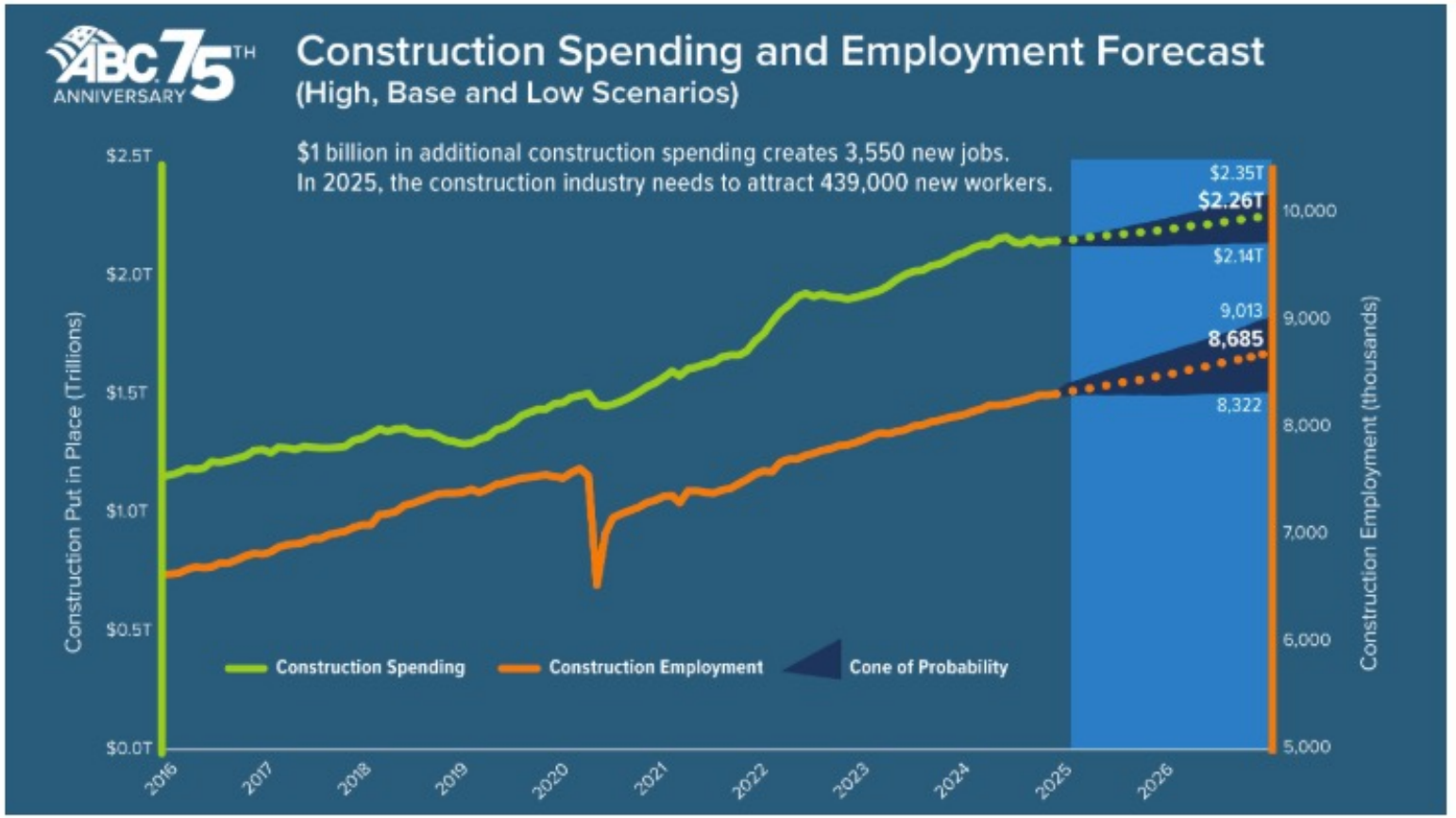
Maura Kelly
Department of Sociology
Portland State University

Institute for Research on Poverty
July 23, 2025

ABC: Construction Industry Must Attract 439,000 Workers in 2025

January 24, 2025 | Construction Economics, News Releases 2025

WASHINGTON, Jan. 24—The construction industry will need to attract an estimated 439,000 net new workers in 2025 to meet anticipated demand for construction services, according to a proprietary model developed and released today by Associated Builders and Contractors. In 2026, the industry will need to bring in 499,000 new workers as spending picks up in response to presumed lower interest rates.



Non-degree credentials

"Industry certifications, apprenticeship certificates, and occupational licenses, are a key component of state economic development and credential attainment goals, helping workers obtain better jobs and serving to reconnect them to further postsecondary education and training opportunities." (Duke-Benfield 2019).

Approximately 21% of US adults have non-degree licenses or certifications (Kleiner and Krueger 2010).

Those with credentials earn approximately 6.5% higher wages compared to those who do not have credentials (Gittleman, Klee, and Kleiner 2017).

Image: COAT Flagging

Credentialization

The way workforce development has started incorporating credentials as a way to ensure training in work related skills, increase wages for specialized skills (Drange and Helland 2019; Dill et al 2022).

Image: Oregon Tradeswomen

Registered apprenticeship in Oregon

- Healthcare (i.e. medical assistant)
- Information technology (e.g. IT support professional) *inactive*
- Construction (e.g. carpenter)
- Manufacturing (e.g. machinist)
- Utilities (e.g. line repairer)
- Other (e.g. bus technician)

Credentialization

Benefits

- Less costly training
- Less time intensive training
- More specific job relevant skills
- Employability
- Higher wages
- Benefits and retirement
- Prestige

Limitations

- Restricts entrance into specific occupations through limiting access to these training opportunities
- Workers from marginalized groups may not have the same access to these opportunities
- Some credentialing programs can be costly and/or time intensive

Method

- Oregon Bureau of Labor and Industries' (BOLI) Oregon Apprenticeship System (OAS) has information on all registered apprentices in Oregon
- Analysis includes ten types of apprenticeship programs selected for variation in:
  - Industry (construction, manufacturing, utilities, healthcare, and other)
  - Union affiliations (union, non-union, and mixed)
  - Journey level wages (hourly pay after completing apprenticeship)
  - Length of apprenticeship (two year, four year)
- N = 1588 apprenticeship agreements

Characteristics of selected apprenticeship programs, 2022 Oregon Apprenticeship System data

Apprenticeship programs (SOC code)	Industry	OTJ hours required	Journey level wage rate	Number of apprentices in the cohort
Elevator Mechanic, union (47-4021)	Construction	8,000	59.95	44
Lineworker, union (49-9051)	Utilities	7,000	52.96	19
Exterior/Interior Specialist Carpenter, union (47-2081)	Construction	8,000	43.59	268
Inside Electrician, non-union (47-2111)	Construction	8,000	41.63	677
Heavy Duty Bus Mechanic, union (49-3031)	Other	2,000	37.02	21
Limited Maintenance Electrician, mixed (49-9071)	Manufacturing	4,000	31.74	91
Industrial Maintenance Millwright, mixed (49-9041)	Manufacturing	8,000	29.08	104
Roofer, union (47-2181)	Construction	4,000	30.05	213
Laborers, non-union (47-2061)	Construction	4,000	26.24	90
Medical Assistant, non-union (31-9092)	Healthcare	2,000	20.30	61

Findings

Workers, particularly those from marginalized groups, face challenges accessing apprenticeship and experience low completion rates

Workers who complete apprenticeship programs enjoy high hourly wages

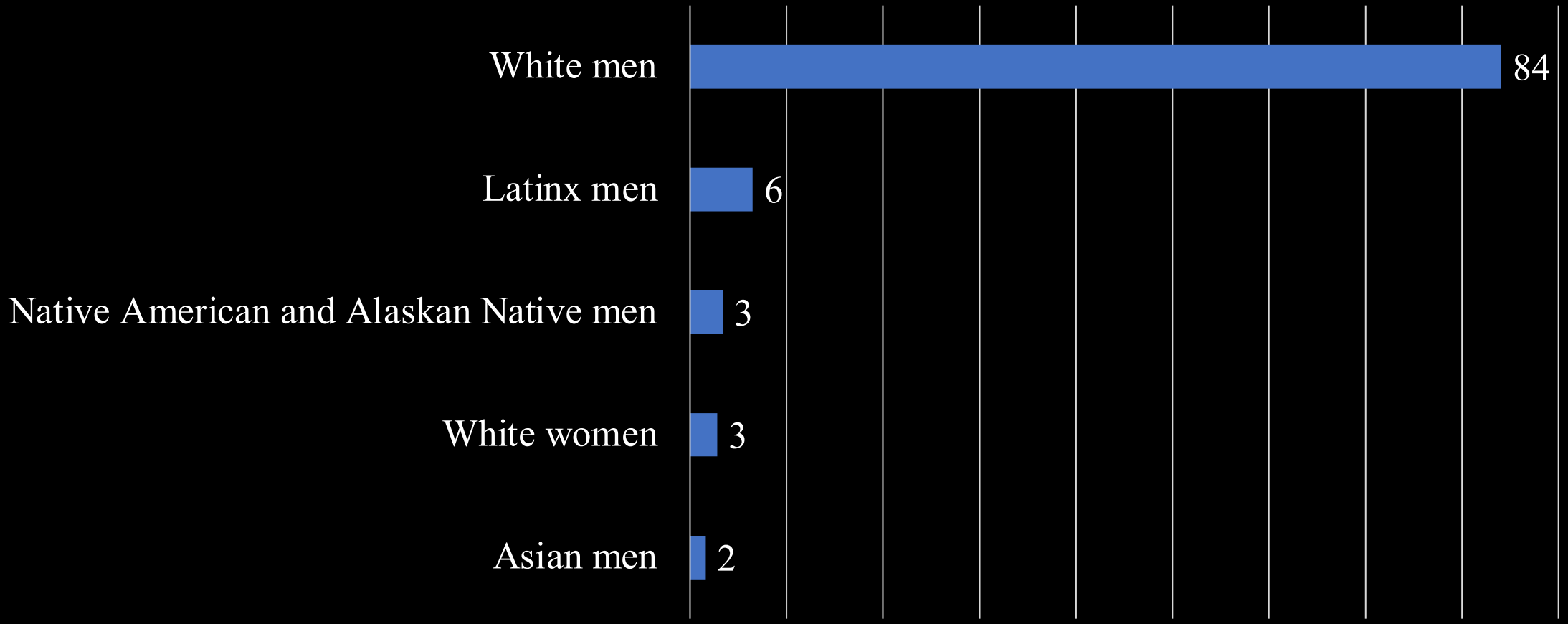
Image: *New York Post*

Characteristics of selected apprenticeship programs Oregon Apprenticeship System data (OAS)

Apprenticeship programs (SOC code)	Industry	OTJ hours required	Journey level wage rate	Number of apprentices in the cohort
Elevator Mechanic, union (47-4021)	Construction	8,000	59.95	44
Lineworker, union (49-9051)	Utilities	7,000	52.96	19
Exterior/Interior Specialist Carpenter, union (47-2081)	Construction	8,000	43.59	268
Inside Electrician, non-union (47-2111)	Construction	8,000	41.63	677
Heavy Duty Bus Mechanic, union (49-3031)	Other	2,000	37.02	21
Limited Maintenance Electrician, mixed (49-9071)	Manufacturing	4,000	31.74	91
Industrial Maintenance Millwright, mixed (49-9041)	Manufacturing	8,000	29.08	104
Roofer, union (47-2181)	Construction	4,000	30.05	213
Laborers, non-union (47-2061)	Construction	4,000	26.24	90
Medical Assistant, non-union (31-9092)	Healthcare	2,000	20.30	61

Challenges accessing apprenticeship

Race and gender demographics of the 2014-2015 cohort of non-union inside electrician apprentices (OAS)

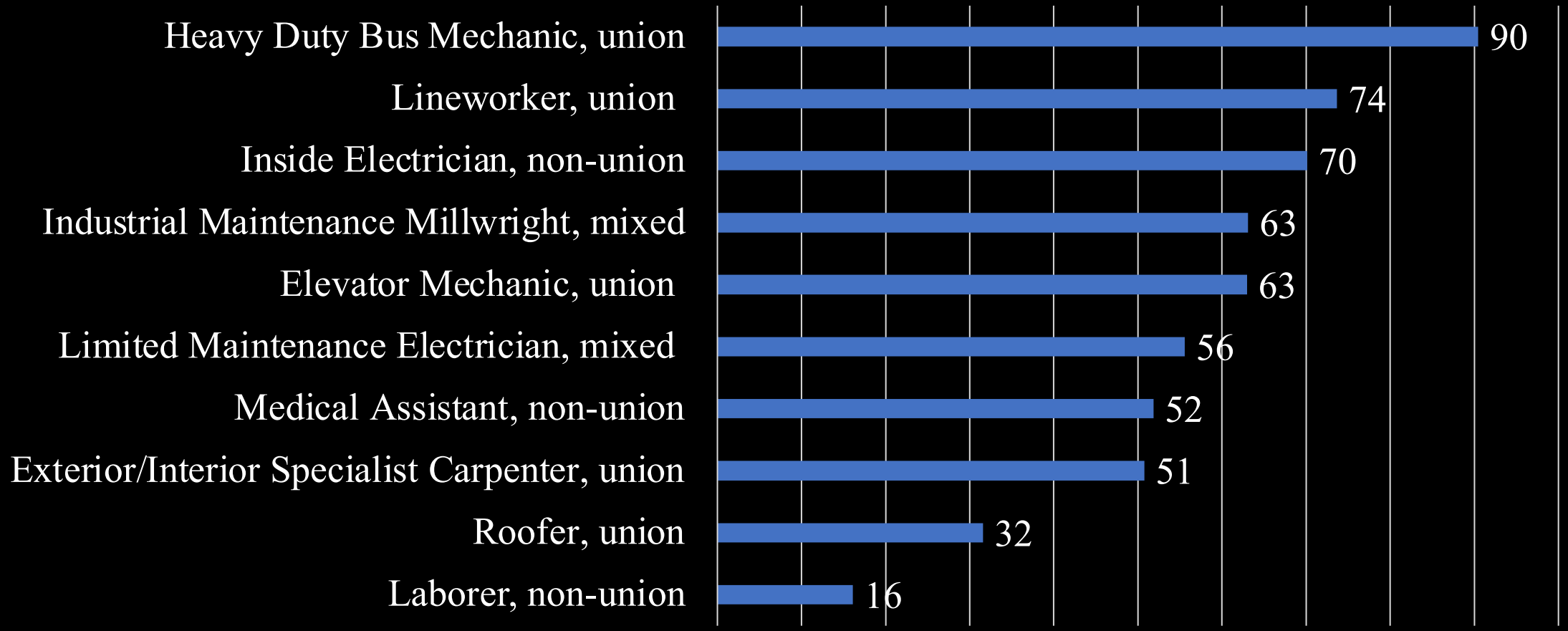


Characteristics of selected apprenticeship programs Oregon Apprenticeship System data (OAS)

Apprenticeship programs (SOC code)	Industry	OTJ hours required	Journey level wage rate	Number of apprentices in the cohort
Elevator Mechanic, union (47-4021)	Construction	8,000	59.95	44
Lineworker, union (49-9051)	Utilities	7,000	52.96	19
Exterior/Interior Specialist Carpenter, union (47-2081)	Construction	8,000	43.59	268
Inside Electrician, non-union (47-2111)	Construction	8,000	41.63	677
Heavy Duty Bus Mechanic, union (49-3031)	Other	2,000	37.02	21
Limited Maintenance Electrician, mixed (49-9071)	Manufacturing	4,000	31.74	91
Industrial Maintenance Millwright, mixed (49-9041)	Manufacturing	8,000	29.08	104
Roofer, union (47-2181)	Construction	4,000	30.05	213
Laborers, non-union (47-2061)	Construction	4,000	26.24	90
Medical Assistant, non-union (31-9092)	Healthcare	2,000	20.30	61

Challenges competing apprenticeship

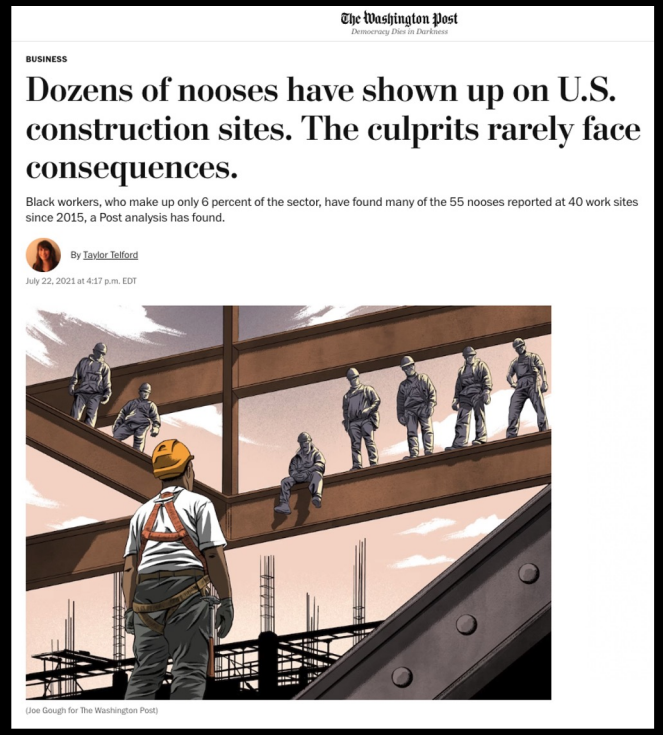
Completion rates for selected apprenticeship programs (OAS)



Other PSU research on retention in construction apprenticeships

Reasons for leaving apprenticeship (PSU 2022 survey of apprentices)

- Job site culture
- Bring out of work too much
- Poor training on the job or in the classroom
- Illness, injury, or concerns about safety



The Washington Post
Democracy Dies in Darkness

BUSINESS

Dozens of nooses have shown up on U.S. construction sites. The culprits rarely face consequences.

Black workers, who make up only 6 percent of the sector, have found many of the 55 nooses reported at 40 work sites since 2015, a Post analysis has found.

By Taylor Telford

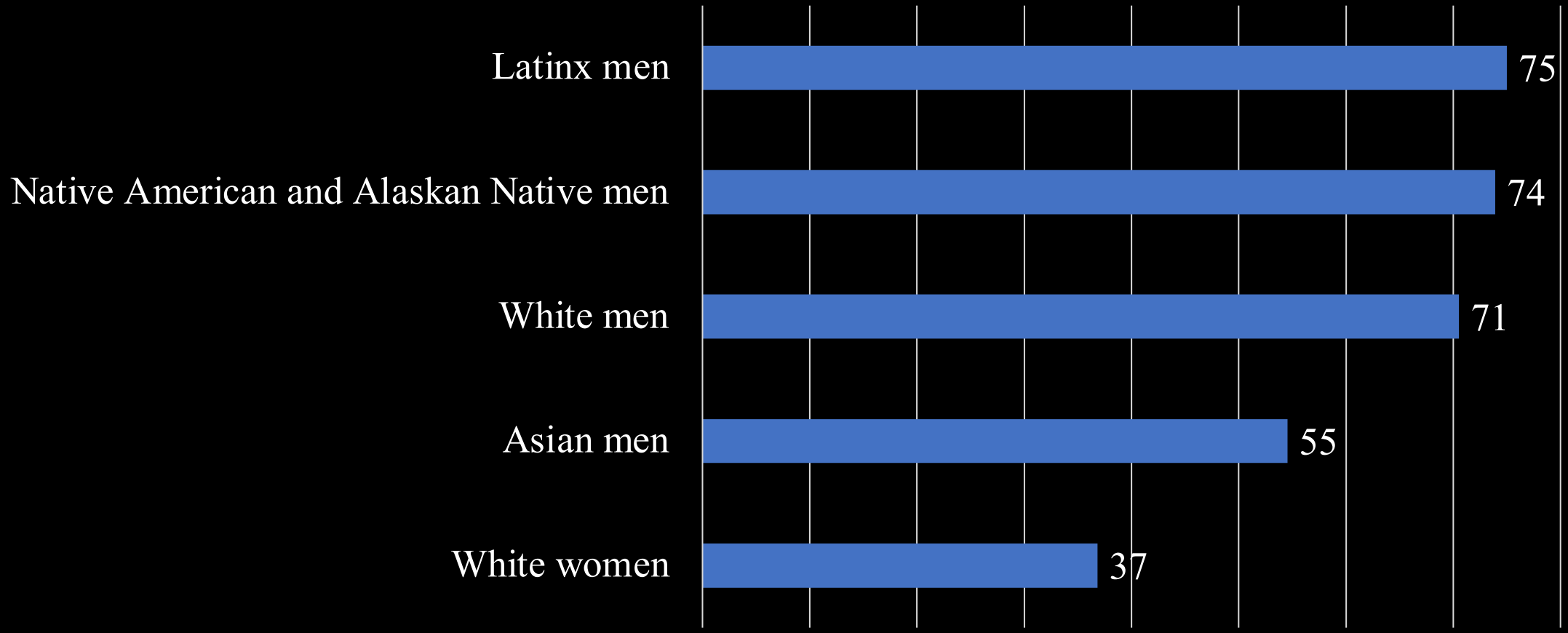
July 22, 2021 at 4:17 p.m. EDT

(Joe Gough for The Washington Post)

Experiences of harassment on the job (PSU 2020 interviews)

- *I would say the hardest part [of my apprenticeship] was racism* (Black man apprentice).
- *There's some guys out there that really hate women and it's dangerous* (white woman apprentice).

Completion rates for the 2014-2015 cohort of non-union inside electrician apprentices, by race and gender (OAS)



Characteristics of selected apprenticeship programs Oregon Apprenticeship System data (OAS)

Apprenticeship programs (SOC code)	Industry	OTJ hours required	Journey level wage rate	Number of apprentices in the cohort
Elevator Mechanic, union (47-4021)	Construction	8,000	59.95	44
Lineworker, union (49-9051)	Utilities	7,000	52.96	19
Exterior/Interior Specialist Carpenter, union (47-2081)	Construction	8,000	43.59	268
Inside Electrician, non-union (47-2111)	Construction	8,000	41.63	677
Heavy Duty Bus Mechanic, union (49-3031)	Other	2,000	37.02	21
Limited Maintenance Electrician, mixed (49-9071)	Manufacturing	4,000	31.74	91
Industrial Maintenance Millwright, mixed (49-9041)	Manufacturing	8,000	29.08	104
Roofer, union (47-2181)	Construction	4,000	30.05	213
Laborers, non-union (47-2061)	Construction	4,000	26.24	90
Medical Assistant, non-union (31-9092)	Healthcare	2,000	20.30	61

Earnings after apprenticeship

Discussion

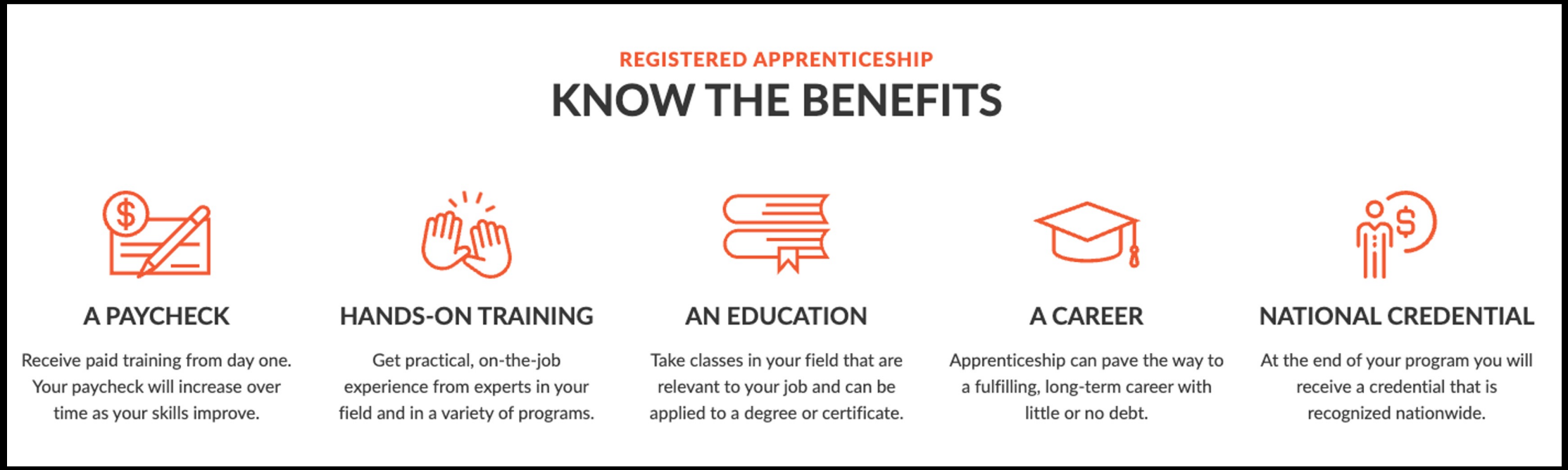


Image: Oregon Apprenticeship website oregonapprenticeship.org

PSU Evaluation of The ODOT/BOLI Highway Construction Workforce Development Program

- Pre-apprenticeship: four-to-nine-week classes that prepare individuals for careers in the trades
- Respectful Workplaces: Job site trainings that give tradespeople tools to address harassment on the job.
- Supportive services
  - Ready items (tools, clothing, PPE)
  - Child care subsidies
  - Assistance for travel to and from job sites and required classes
  - Hardship funds
  - Non-financial support services (e.g. social support, mentoring, budget class)

Image: ODOT

Analyzing the Benefits and Limitations of Non-Degree Credentials: The Case of Apprenticeship in Oregon

Maura Kelly
Department of Sociology
Portland State University

Institute for Research on Poverty
July 23, 2025

From Training to Earnings: Labor Market Returns to Noncredit Workforce Programs and Industry Credentials

Di Xu and Michael Cooper, University of California, Irvine
Kelli Bird and Ben Castleman, University of Virginia

July 23rd | Institute for Research on Poverty Webinar

Acknowledgement: The research reported here was supported by the Institute of Education Sciences, U.S. Department of Education, Lumina Foundation, and Ascendium Education Group. The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education or the private philanthropic organizations.

Motivation: The Role of Noncredit CTE Programs and Industry Credentials

- Community college noncredit Career and Technical Education (CTE) programs are an important contributor to workforce development
- Distinctions from credit-bearing programs
  - **Skill based** training leading to a specific occupation (commercial truck driving, welding etc.)
  - Typically **no requirements** like accreditation and other college- and state-level oversights
  - **Respond quickly** to shifting workforce demands and employer needs
  - Many of these programs also lead to **industry-recognized credentials**
  - **Short program duration** and **lower costs**
- Approximately **five million** students enroll in community college noncredit programs nationally (AACC, 2018), representing 41% of the total enrollment
- More than 2/3 of the noncredit enrollment are for workforce development
- Many are leading to industry-recognized credentials
- Limited understanding of noncredit CTE programs and industry credentials

Study Context: Noncredit CTE at VCCS

In-person and online training programs to kick-start your career

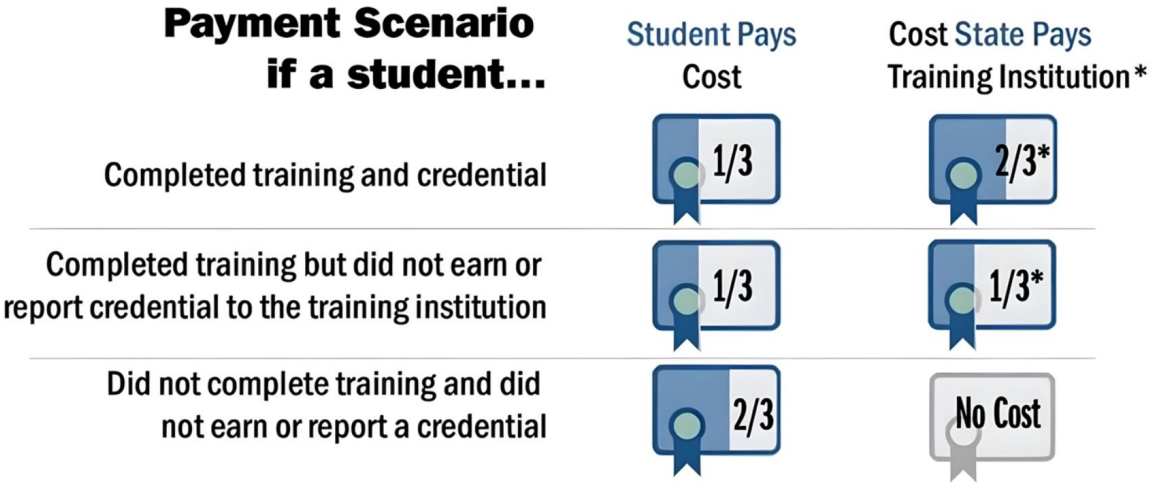
Training Takes Weeks. Not Years.

There are thousands of jobs open across Virginia, and many of these ***essential fields*** don't require a college degree. If you're looking for a safe, affordable job career training program, consider enrolling in FastForward.

FastForward is a short-term training program for high-demand industries, helping Virginians get ***the jobs they want and the salaries they need***. Our training is offered locally through Virginia's Community Colleges.

- FastForward programs
- Short-term training (6-12 weeks)
  - Some highly enrolled programs: Commercial Driver's License, Clinical Medical Assistant, VDOT Asphalt Field Level 1 & 2, Certified Nurse Aide
- Leads to industry-recognized credential in a high-demand field. Some examples include
  - Certified Nurse Aide (CNA): Prepares individuals to assist patients with daily living and basic care needs
  - Commercial Driver's License (CDL): Authorizes individuals to operate commercial vehicles
  - CompTIA A+ Certification: Validates foundational IT skills, essential for entry-level positions

Illustration of the Cost Sharing Model

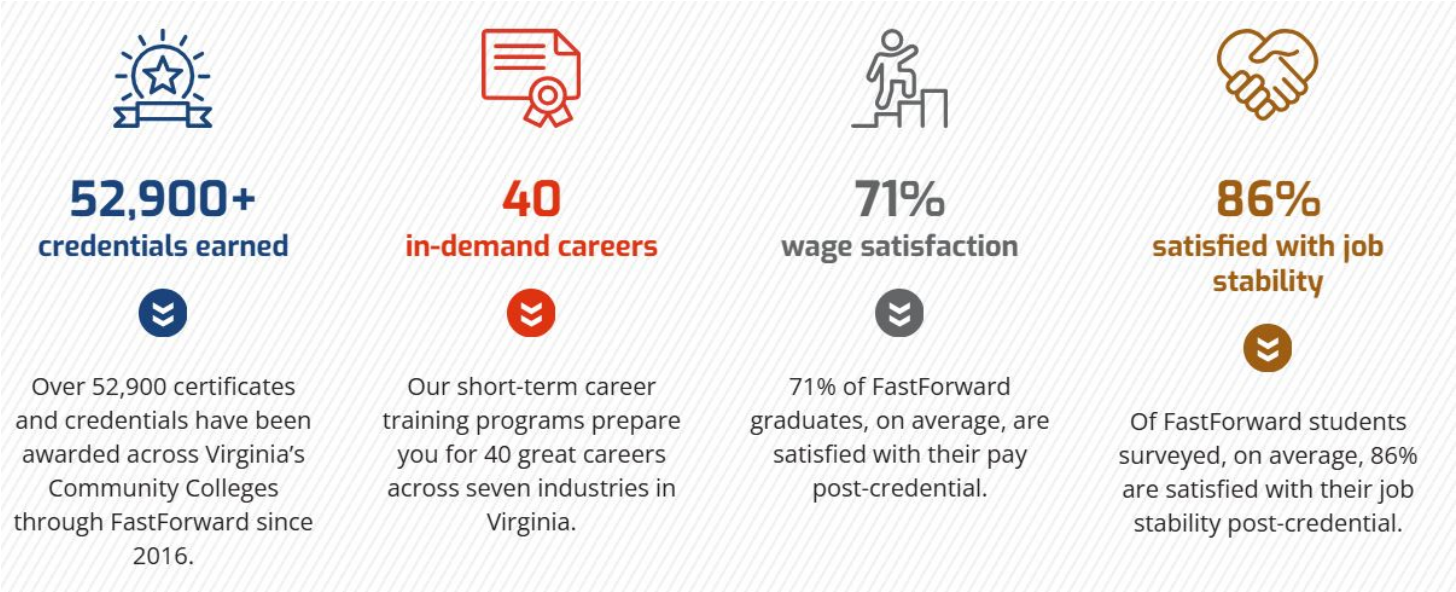


- Average tuition for ⅓ was $849 in FY2023 (SCHEV, 2024)
- Additional funding is available based on needs (e.g. G3, FANTIC)
- 0 cost for many low-income students!

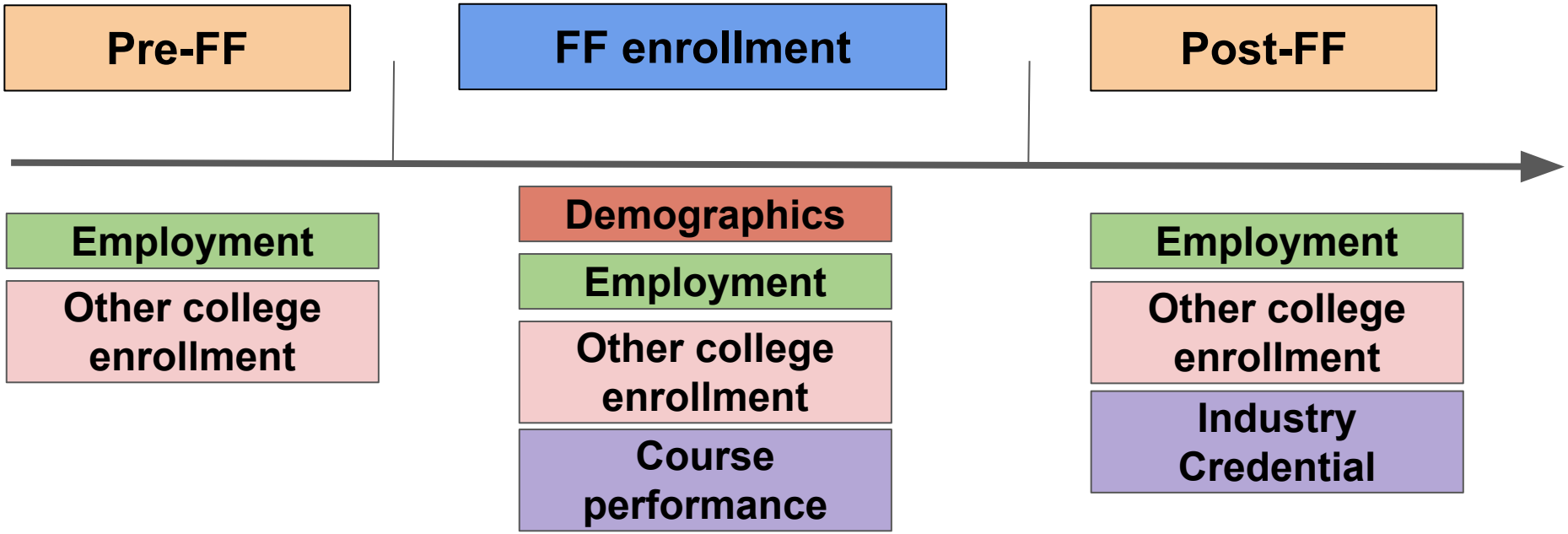
Strong Increase in Enrollment

- State investment through WCG:

- Steady increase in enrollment: More than 13,000 enrollments in FY 2023



Unique Data → New evidence on noncredit workforce training



This data structure allows us to track FastForward enrollees' academic outcomes, as well as employment and earnings trajectories

Research Questions

- Who enroll in FastForward programs and their academic outcomes?

- What are the labor market benefits of industry credential through the noncredit CTE training programs?

Sample

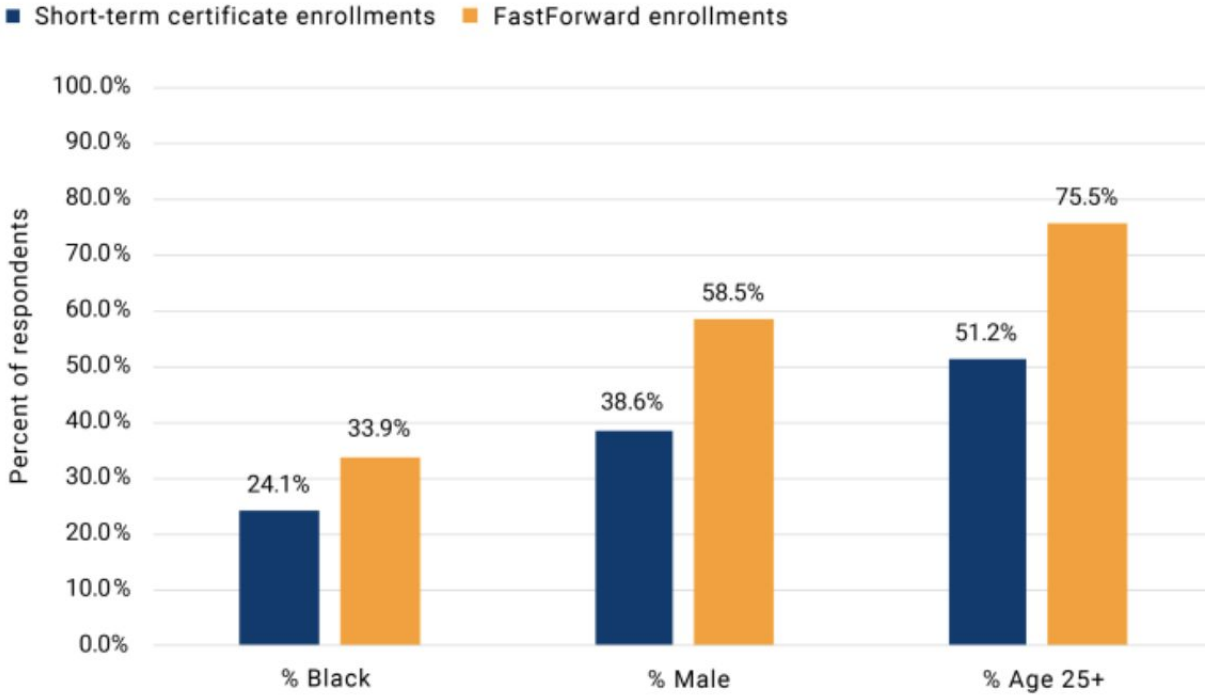
- Focus our analysis on students enrolled in FF between July 2016 and June 2021 with at least one valid employment record in the UI data
- Focus on working-age adults (students enrolled between ages 20 and 65)
- Earnings outcomes are measured in real dollars in 2022
- Top and bottom code earnings
- Impose age restrictions and drop quarters in which an individual was younger than 18 or older than 65 years.
- N~750,000 earnings records for a total of approximately 26,000 unique individuals

Who enroll in FastForward programs and their academic outcomes?

FastForward programs attract and enroll a different segment of the population than credit-bearing programs

FIGURE 1

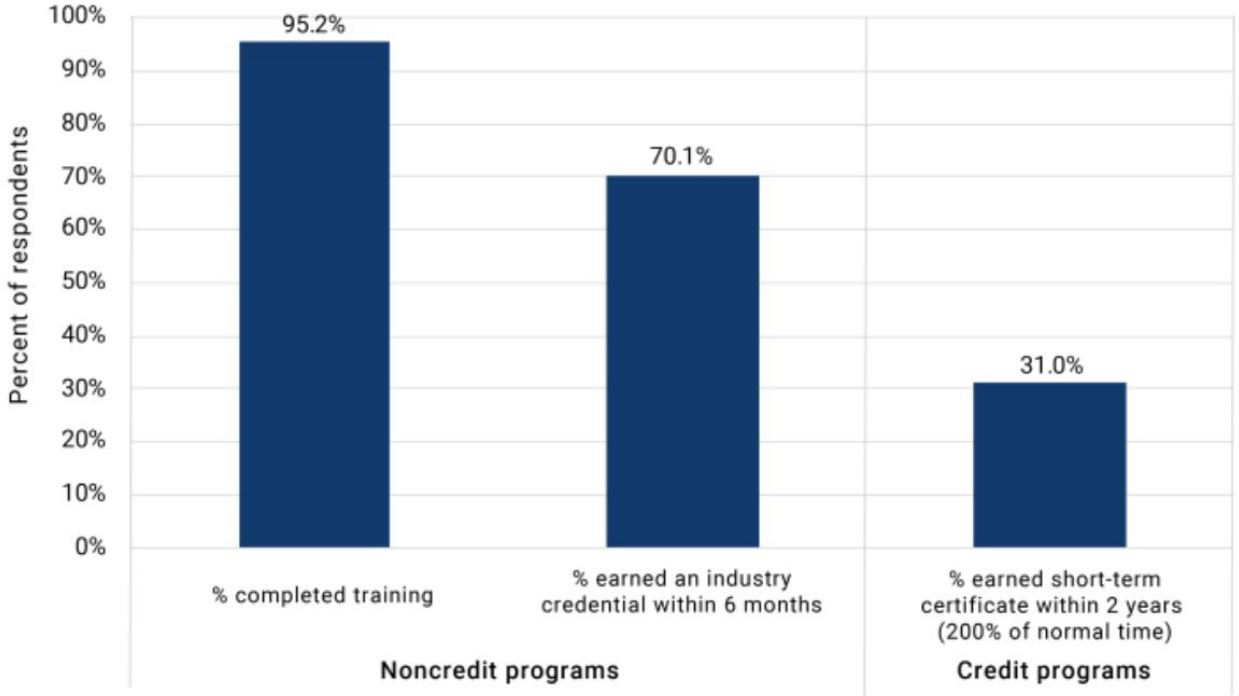
Enrollments during the fall 2018 term by noncredit and credit sector



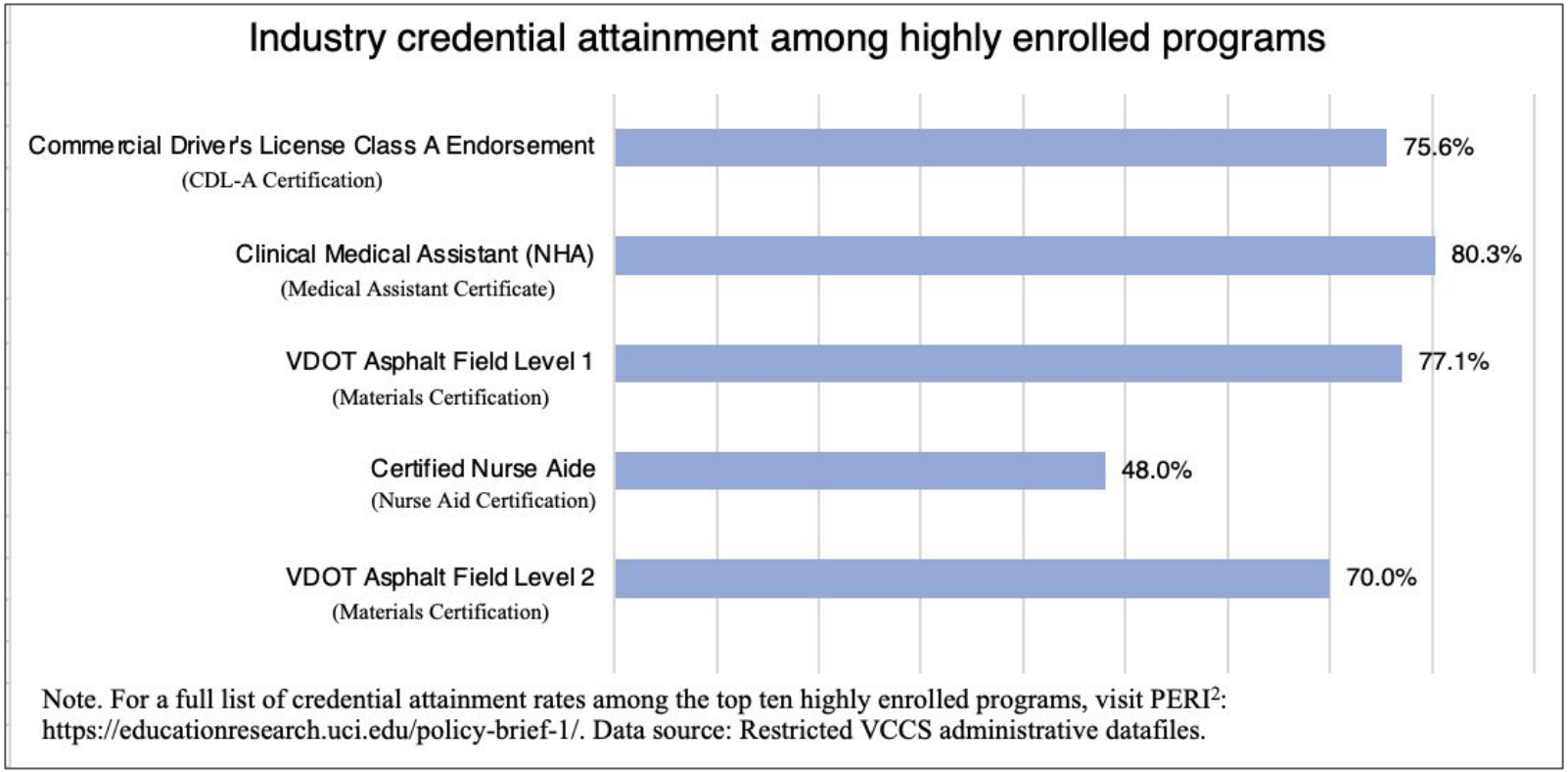
FastForward program completion and industry credentialing rates are high

FIGURE 3

FastForward completion and industry credential rates of fall 2018-2019 cohorts



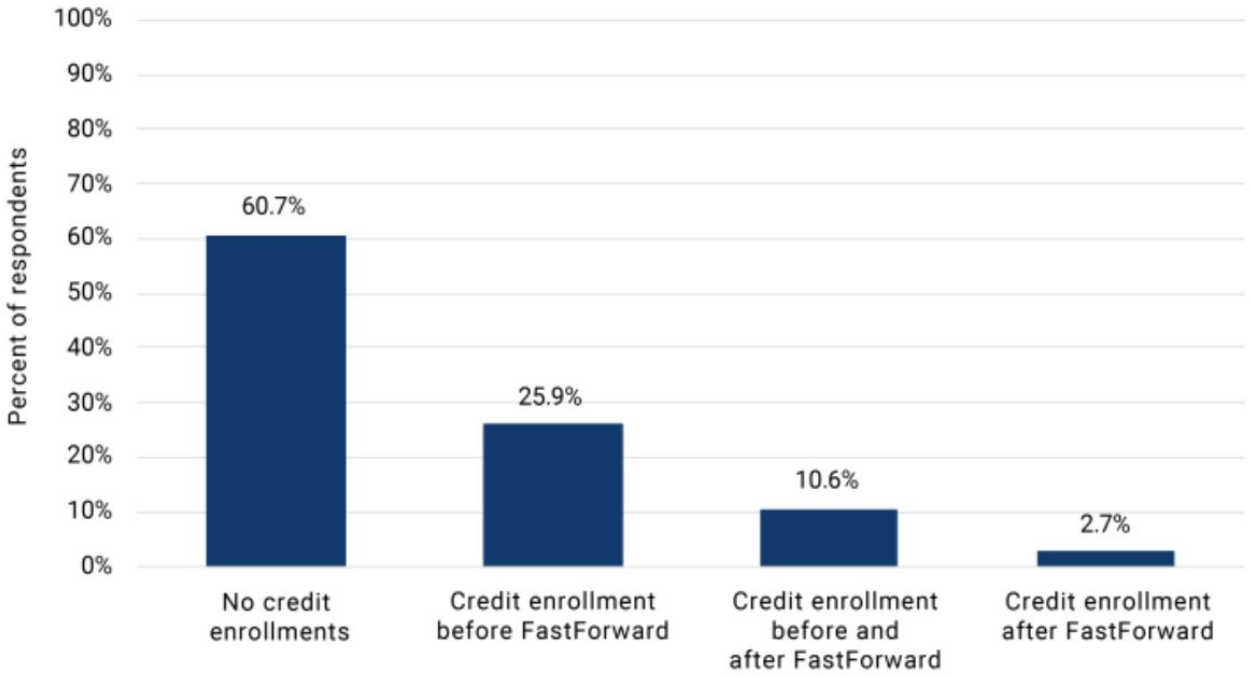
Credential Attainment: Variation across Programs



We observe little flow from FastForward to the credit-bearing sector

FIGURE 2

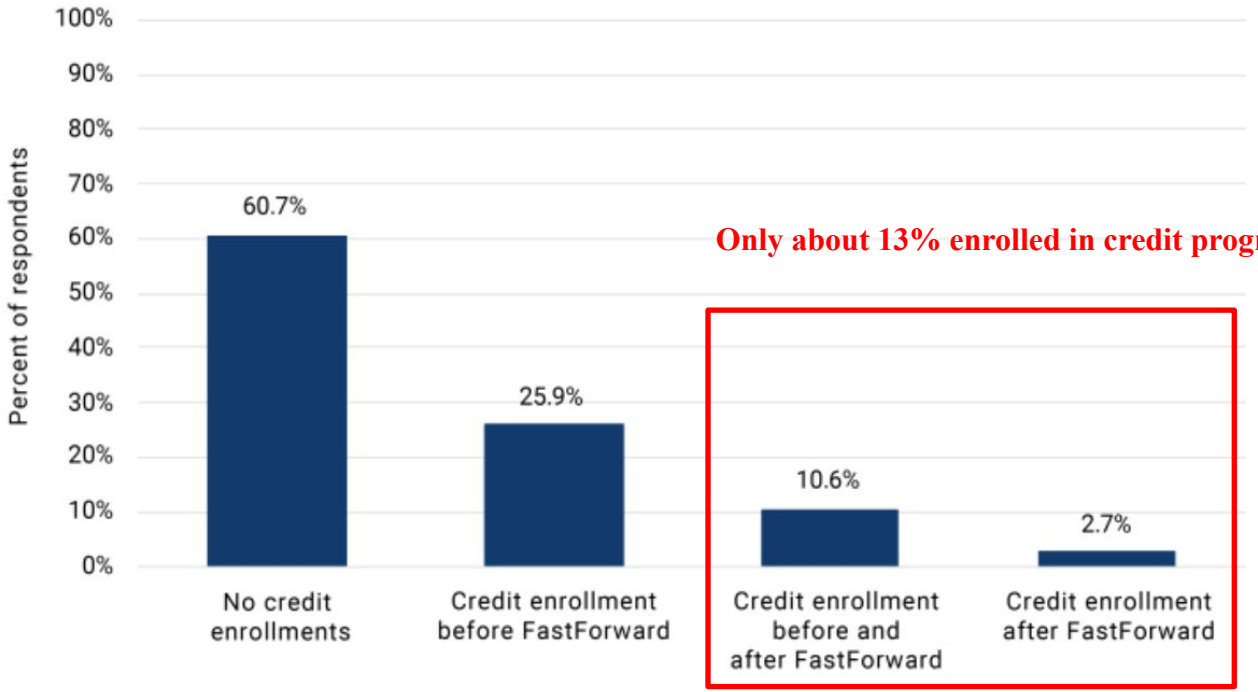
Matriculation to the credit sector among students in the 2016-2017 and 2017-2018 cohorts



We observe little flow from FastForward to the credit-bearing sector

FIGURE 2

Matriculation to the credit sector among students in the 2016-2017 and 2017-2018 cohorts

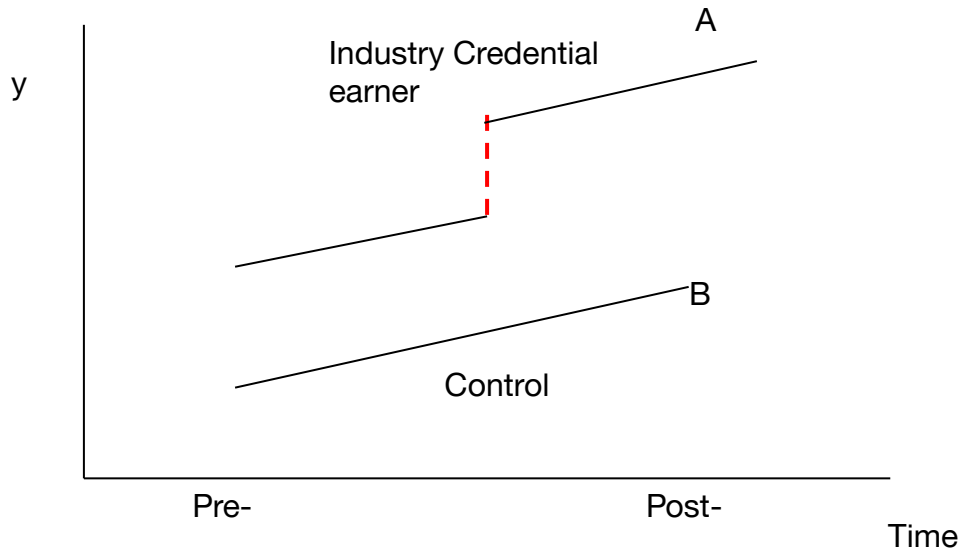


Only about 13% enrolled in credit programs afterwards!

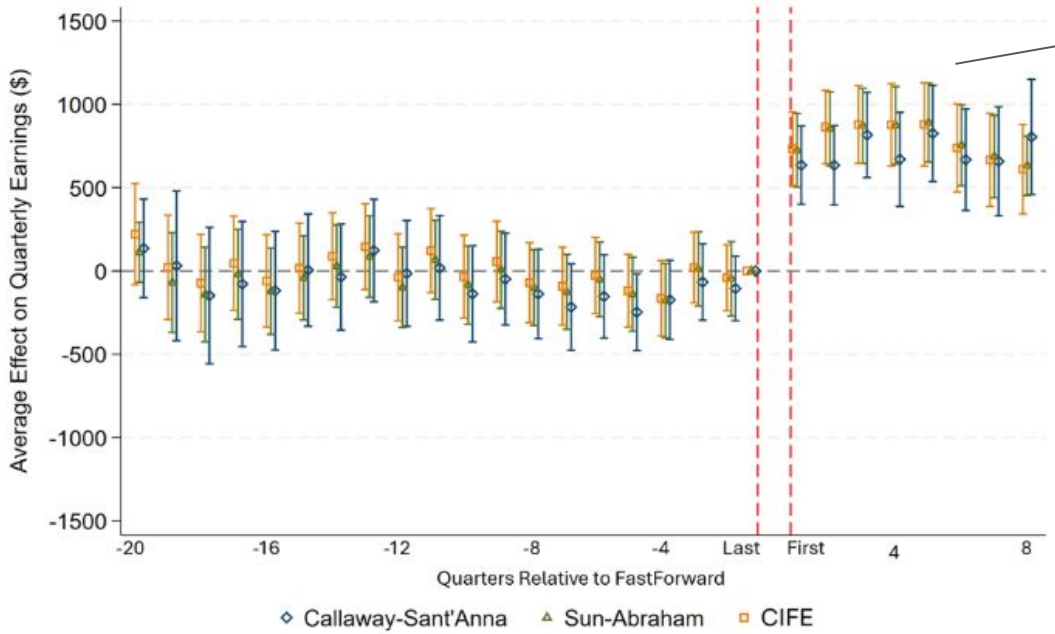
What are the labor market benefits of earning an industry credential through the FF program?

Methodological Approach

- Method: Comparative Individual Fixed Effects (CIFE)
- What does it mean?



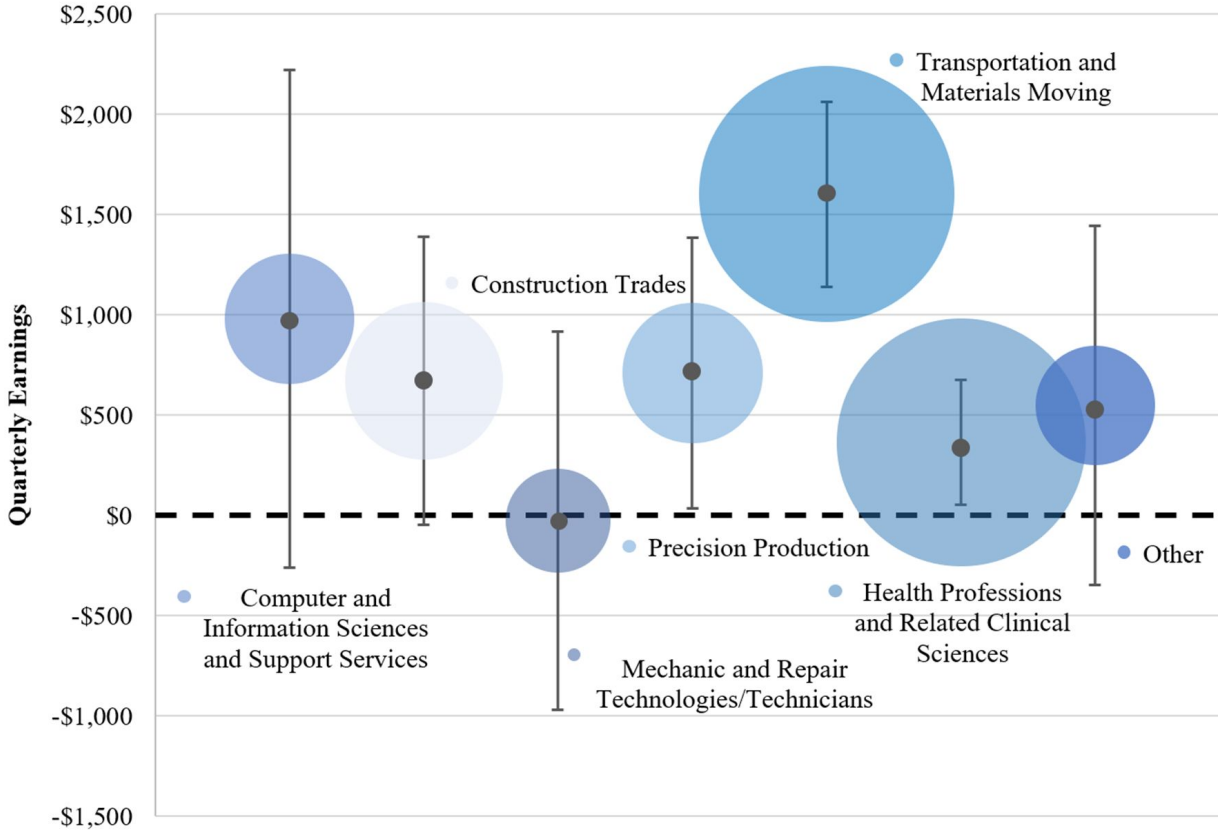
Event Study: Credential Effect on Earnings



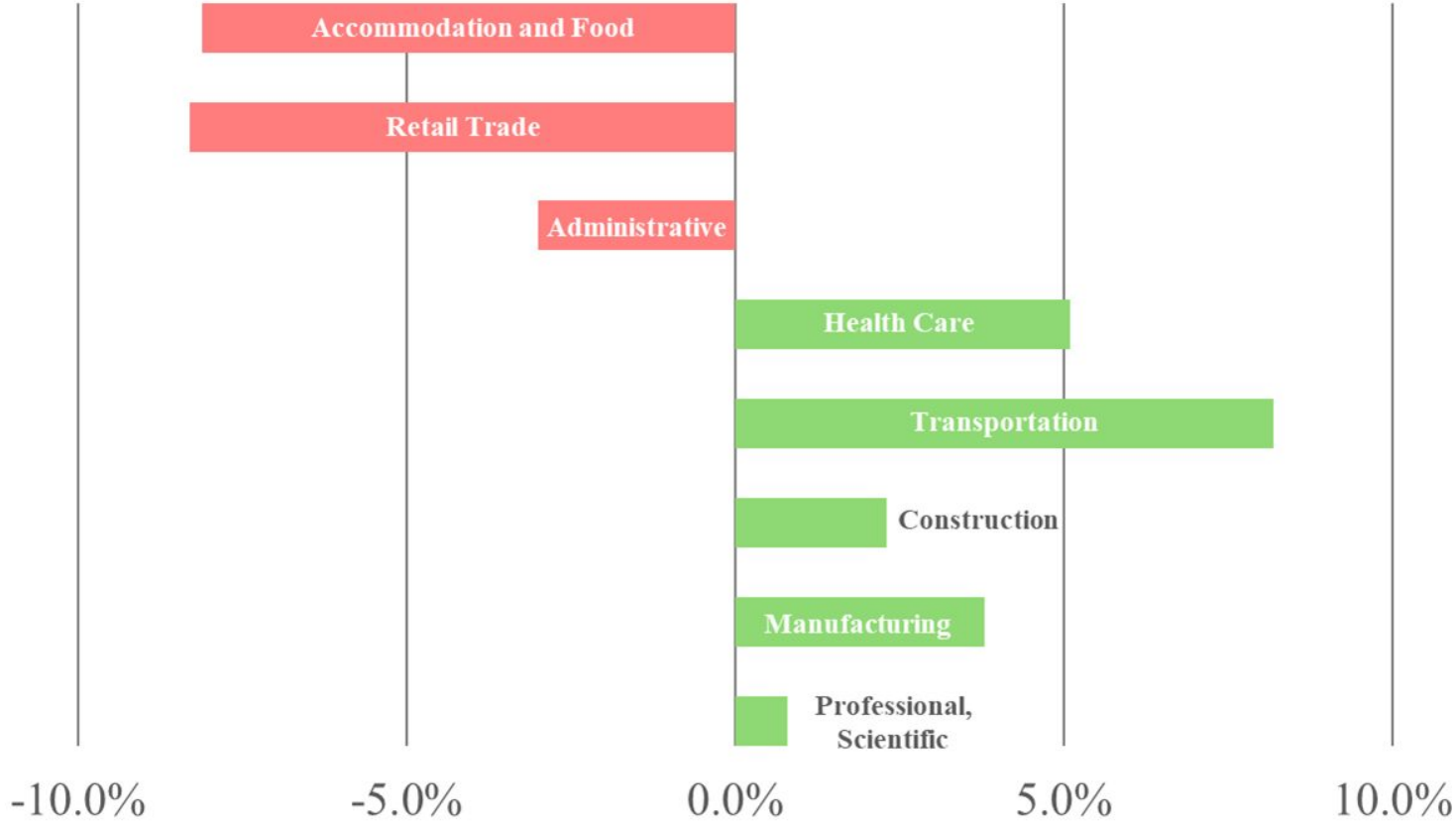
An average quarterly return of 817 dollars

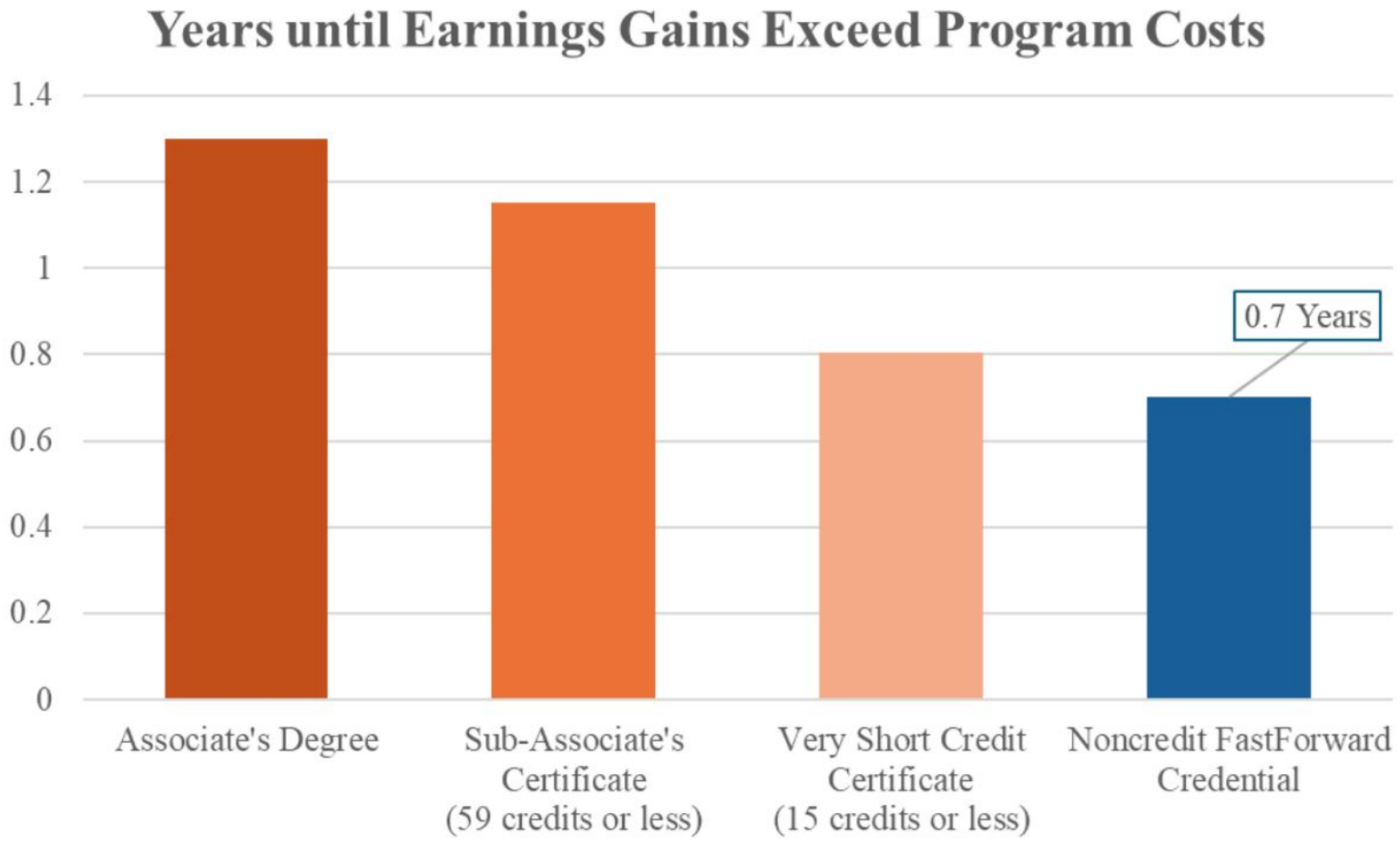
Note: Each point shows an effect estimate at each quarter relative to FastForward Enrollment with "Last" representing the last quarter before enrollment and "First" representing the first quarter after exit. Alternate estimators (Callaway and Sant'Anna, 2021 in blue and Sun and Abraham, 2021 in green) are shown alongside the results of the comparative individual fixed effects model (CIFE). Quarters are binned at five years before FastForward enrollment and the two years after FastForward exit for the Sun-Abraham estimator and the CIFE estimator. All estimators compare to a "never treated" control group of students who completed FastForward training but did not earn a credential.

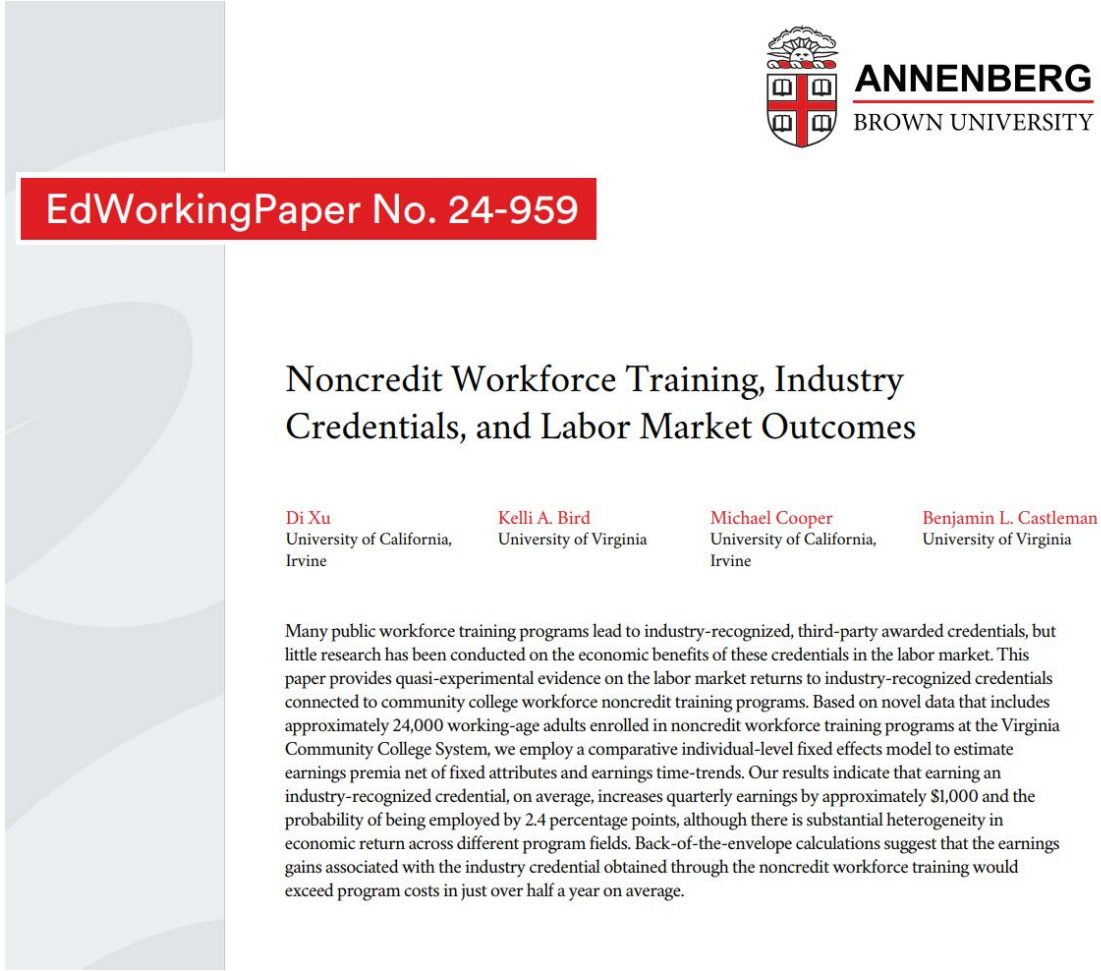
Heterogeneous Returns to Industry Credentials by Field of Study



Impact of Industry Credential on Industry Mobility




Years until Earnings Gains Exceed Program Costs
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0.7 Years
Associate's Degree
Sub-Associate's Certificate (59 credits or less)
Very Short Credit Certificate (15 credits or less)
Noncredit FastForward Credential



ANNENBERG
BROWN UNIVERSITY

EdWorkingPaper No. 24-959

Noncredit Workforce Training, Industry Credentials, and Labor Market Outcomes

Di Xu
University of California, Irvine

Kelli A. Bird
University of Virginia

Michael Cooper
University of California, Irvine

Benjamin L. Castleman
University of Virginia

Many public workforce training programs lead to industry-recognized, third-party awarded credentials, but little research has been conducted on the economic benefits of these credentials in the labor market. This paper provides quasi-experimental evidence on the labor market returns to industry-recognized credentials connected to community college workforce noncredit training programs. Based on novel data that includes approximately 24,000 working-age adults enrolled in noncredit workforce training programs at the Virginia Community College System, we employ a comparative individual-level fixed effects model to estimate earnings premia net of fixed attributes and earnings time-trends. Our results indicate that earning an industry-recognized credential, on average, increases quarterly earnings by approximately $1,000 and the probability of being employed by 2.4 percentage points, although there is substantial heterogeneity in economic return across different program fields. Back-of-the-envelope calculations suggest that the earnings gains associated with the industry credential obtained through the noncredit workforce training would exceed program costs in just over half a year on average.

Link to the paper: https://edworkingpapers.com/ai24-959

Thank You!

Please feel free to send an email to dix3@uci.edu

if you have any questions!

Bonus Slides

Table 2. Estimated Effects of Attaining an Industry Credential on Employment and Earnings based on Different Samples

	Different Samples			
	A (Full Sample)	B (Restriction on Employment)	C (Restriction on for-credit)	D (Both Restrictions)
Outcomes:				
Earnings Conditional on Employment	$817.50 ***	$805.80 ***	$867.40 ***	$868.60 ***
	(112.2)	(118.1)	(117.0)	(122.8)
Probability of Employment	0.012 *		0.012	
	(.007)		(.007)	
Sample Restrictions:				
At least one post-FF quarter with nonzero earnings		Yes		Yes
At least 8 quarters from 3y pre-FF with nonzero earnings		Yes		Yes
Exclude those with a credit award earned before starting FF			Yes	Yes
Observations				
Average Earnings before FF (s.d.)	$8,639	$9,496	$8,758	$9,602
	(7,168)	(7,247)	(6,951)	(7,384)
Number of Unique Students	25,715	20,262	23,154	18,328
N for earnings conditional on employment	590,404	518,278	513,254	453,205
N for employment	759,415		657,580	