

ECONOMIC RETURNS TO SKILLS-BUILDING

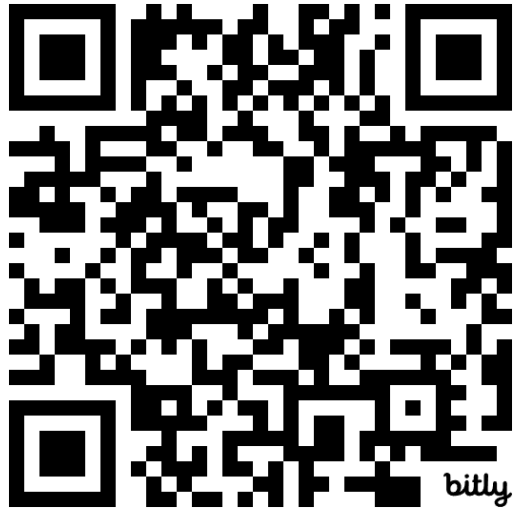
CAN SHORT-TERM UP/RESKILLING YIELD A LIVING WAGE?

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Working Paper



https://bit.ly/skillsbuilding_returns



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ECONOMIC RETURNS TO SKILLS-BUILDING

THANKS

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The views expressed are those of the authors alone, and do not necessarily represent the views of ECMC Foundation or the Colorado Community College System.

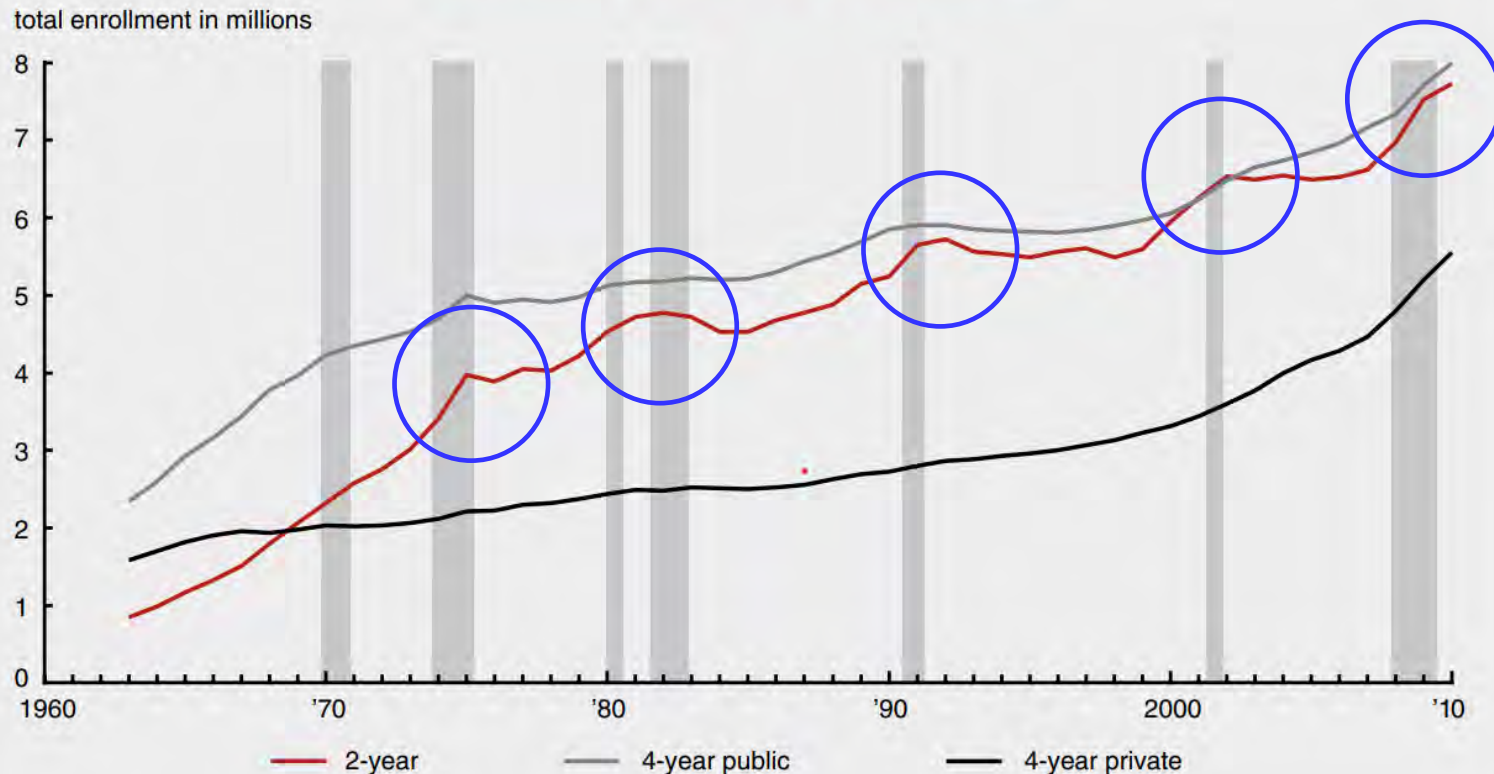
OUTLINE

1. The significant role of community colleges in upskilling and reskilling.
2. A method for identifying community college students who are taking up/reskilling paths—referred to as *skills-building students* or just *skills builders*.
3. The “big picture” view of skills builders in four states.
4. Characteristics of skills builder students and up/reskilling course combinations.
5. Earnings gains following completion of up/reskilling course combinations.
6. Factors affecting earnings gains.
7. What up/reskilling course combinations can and can't do.
8. Takeaways.

COUNTERCYCLICAL ENROLLMENT TRENDS

FIGURE 2

Postsecondary enrollment by institution type



Note: Shaded bars indicate recessions as defined by the National Bureau of Economic Research.

Source: Authors' calculations based on data from the National Center for Education Statistics' *Integrated Postsecondary Education Survey*.

Community college enrollments surge in economic downturns.

Barrow, L., & Davis, J., The upside of down: Postsecondary enrollment in the great recession. *Economic Perspectives*.

<https://www.chicagofed.org/publications/economic-perspectives/2012/4q-barrow-davis>

A METHOD FOR IDENTIFYING SKILLS BUILDER STUDENTS

Prior research tell us that skills builders...

- Enroll in community college for a short time (typically 1-2 semesters)
- Attempt few credits (usually attending part-time)
- Take most or all of their courses in career & technical education (CTE) fields
- Complete their courses successfully at an exceptionally high rate

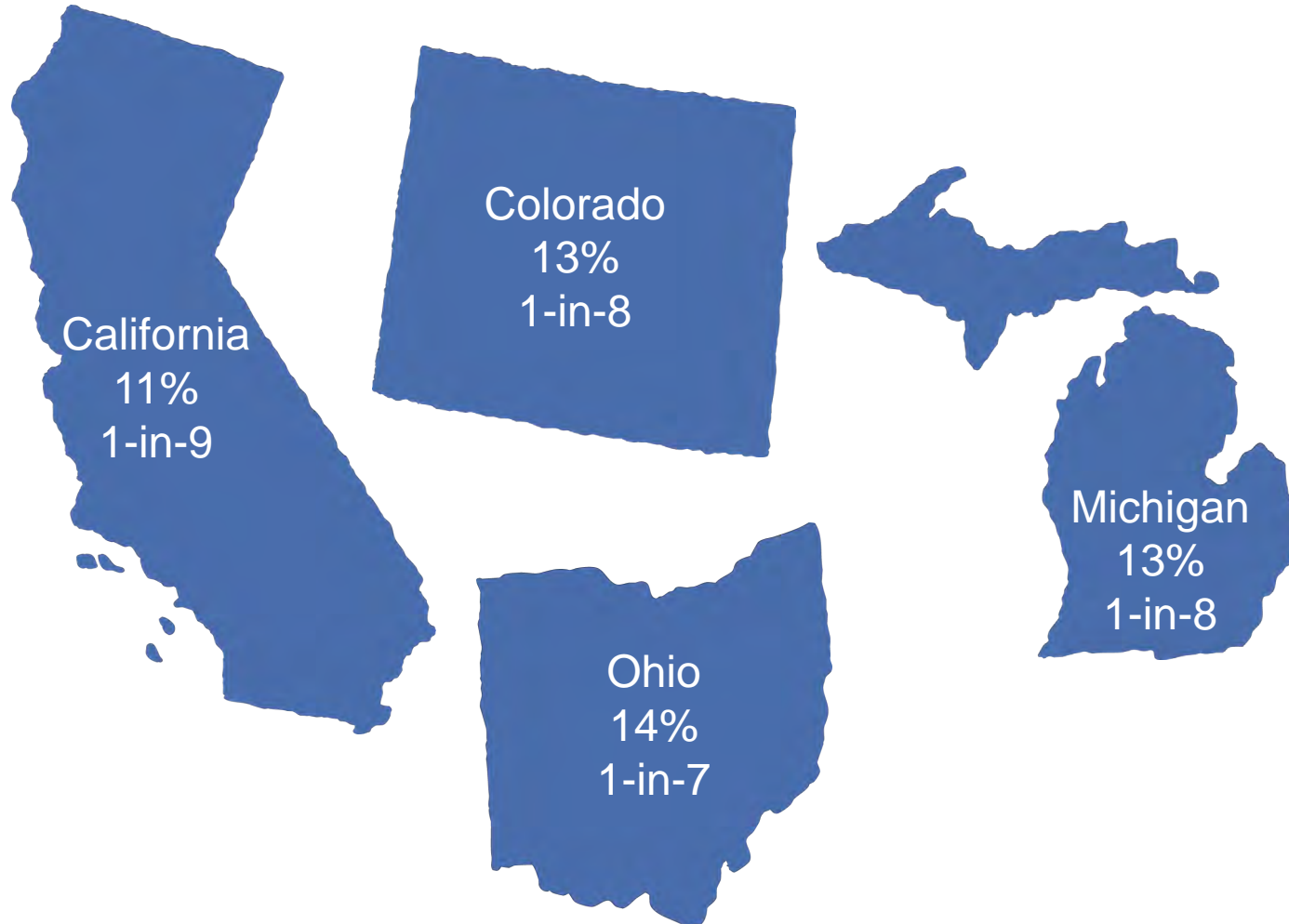
We developed a method to consistently identify skills builders.

Bahr, P. R., Chen, Y., & Columbus, R. (2023). Community college skills builders: Prevalence, characteristics, behavior, and outcomes of successful non-completing students across four states. *Journal of Higher Education*, 94, 96-131.

<https://bit.ly/skillsbuilders4states>



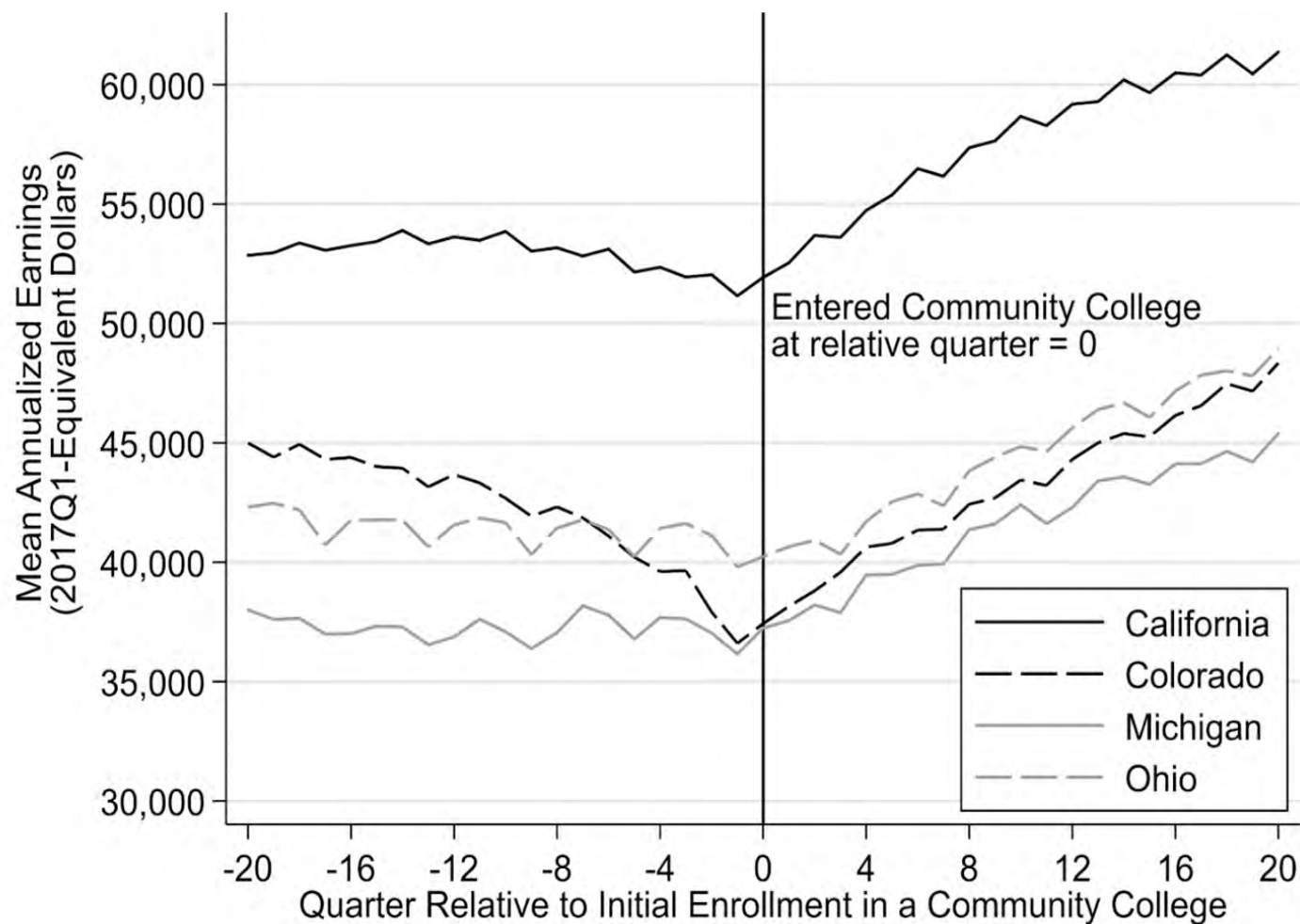
ABOUT 1-IN-8 NEW COMMUNITY COLLEGE ENTRANTS ARE SKILLS BUILDERS



Skills builders...

- Rarely complete a postsecondary credential, though Colorado's skills builders have a comparatively high rate of certificate completion.
- Tend to be of above average age and disproportionately male.

SKILLS BUILDERS EXPERIENCE AN INCREASE IN AVERAGE EARNINGS AFTER COLLEGE



The earnings trend are intriguing...
...but they mask substantial variation in gains across the many up/reskilling sequences.

FOCUSING ON COLORADO'S SKILLS BUILDERS

Broader Sample

- New entrants to the Colorado Community College System (CCCS) in 2007 through 2014
- Age 17 to 64 at entry
- No record of dual-enrollment in high school and college
- No record of enrollment in a four-year college or university in the 400 days prior to community college entry
- $N = 302,368$

Subset of Skills Builder Students

- Applied the Bahr et al. (2023) methodology to identify a subset of 34,319 skills builders
- Restricted the subset to the 19,768 skills builders who had at least 2 quarters of UI earnings records before and after college
- 19,768 skills builders enrolled in 6,981 different course combinations.
- We retained course combinations taken by at least 10 students.
- Final Analytical Sample = 9,558 skills builders who enrolled in 317 different course combinations.

FOCUSING ON COLORADO'S SKILLS BUILDERS

Pre-college economic shock 33%

Prior College Experience

None 63%

Some college, no credential 12%

Prior college credentials 25%

Self-Reported Goal

Baccalaureate degree 1%

Associate degree 13%

Certificate 22%

Some courses for job 5%

Personal interest 29%

Unknown 30%

Number of credits

0-2.0 26%

2.1-4.0 27%

4.1-8.0 16%

8.1-12.0 15%

12.1-16.0 3%

16.1+ 13%

Avg Number of Courses 2.5

Credential (6 Years)

No credential awarded 59%

Certificate 37%

Associate degree 1%

Baccalaureate degree 3%

Field of Study

Health 45%

Information Science 13%

Engineering Technology 12%

Protective Services 9%

Business 8%

Precision Production 3%

Construction Trades 2%

All others 8%

Locale of College

Large City 9%

Midsize City 22%

Large Suburb 40%

Remote Town 19%

Remote Rural 10%

Women 46%

Race/Ethnicity

White 73%

Latino/a 12%

Race Unknown 9%

Black 2%

Asian & NHPI 2%

American Indian 1%

Multiple Race 1%

Nonresident Alien 0%

Average Age at Entry 37

COMMON UP/RESKILLING COURSE COMBINATIONS

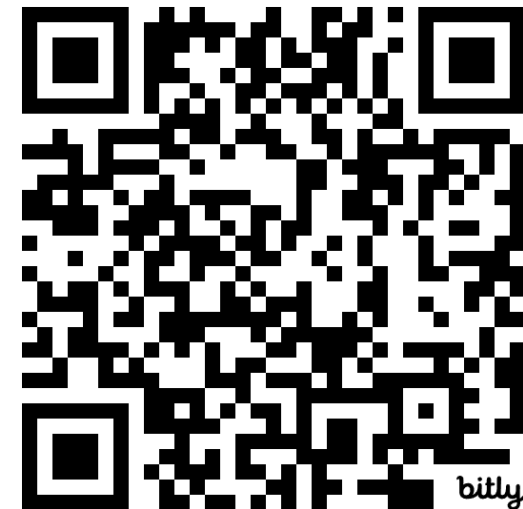
Field of Study	Course Combinations						% of Students Awarded CCCS Certificate	
	N-combos	Students			Credits		Mean	
		N-students	Mean	SD	Mean	SD		
Health	115	4,340	38	52	7	6	46%	
Information Science	58	1,204	21	12	5	5	8%	
Engineering Technology	30	1,116	37	71	4	2	5%	
Protective Service	25	848	34	20	35	9	80%	
Business	33	798	24	17	6	3	18%	
Precision Production	14	286	20	12	8	13	18%	
Construction Trades	8	235	29	24	14	10	37%	
Others	34	731	22	13	7	10	21%	
Total	317	9,558	30	40	8	10	31%	

MEASURING AND ANALYZING EARNINGS GAINS

A simple measurement method proved robust to dimensionality issues in analyzing earnings gains

- Average pre-enrollment quarterly wages were calculated over the 11 quarters prior to college entry.
Earnings in quarters nearer college entry were weighted more heavily with an exponential decay characterized by $\lambda = 0.1$.
- Average post-enrollment quarterly wages were calculated over the 12 quarters after college entry, which for most skills builders is after exit.
Earnings in quarters farther from college entry were weighted more heavily with an exponential decay characterized by $\lambda = 0.1$.

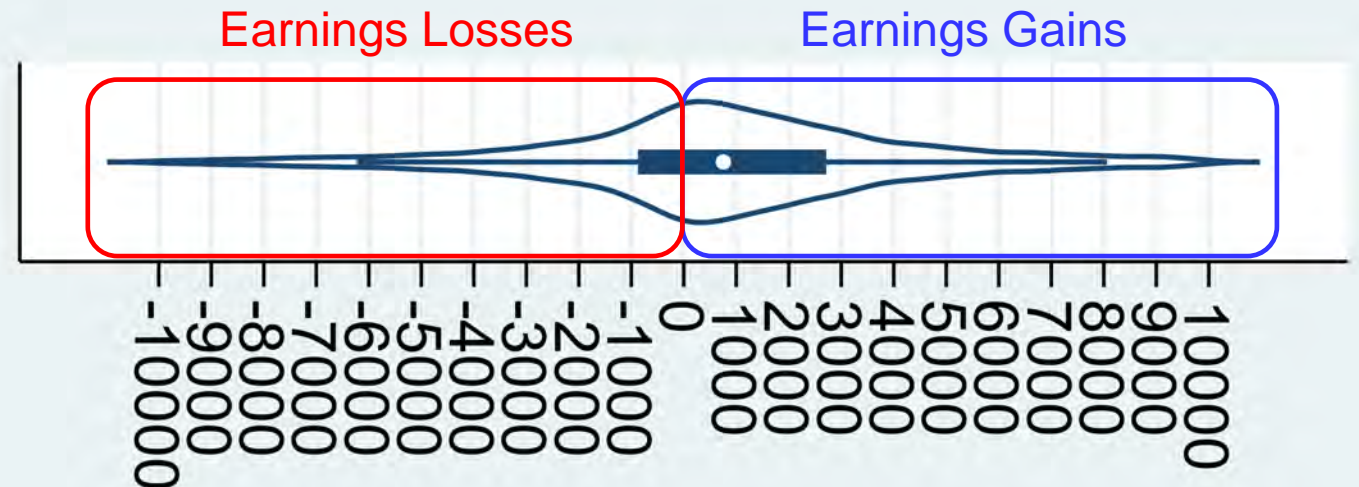
See our working paper for details on our preferred and alternative methods of measuring earnings gains.



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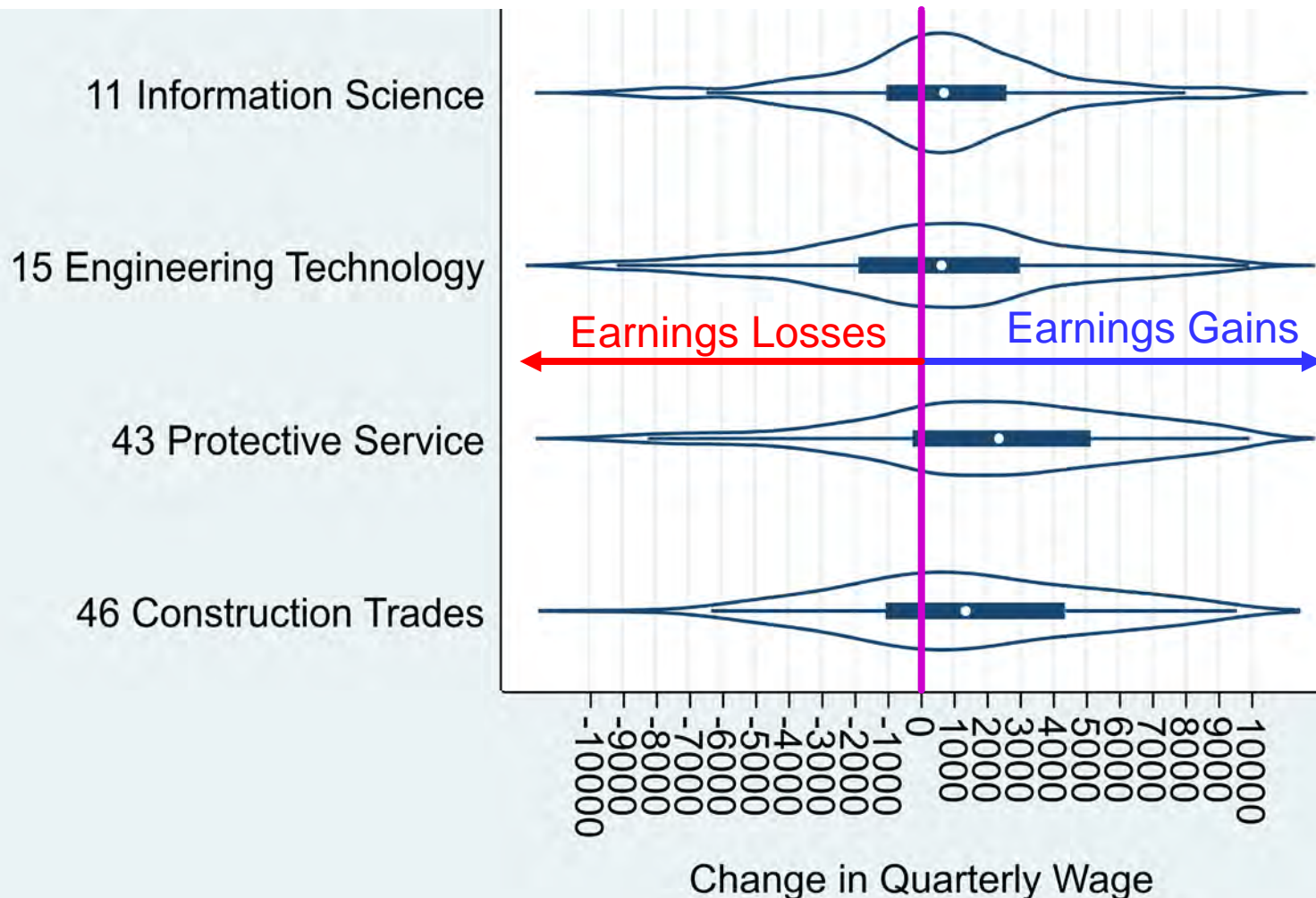
AVERAGE EARNINGS GAINS

All Skills Builders



- There is substantial variation in changes in earnings from pre-college to post-college.
- A majority of employed skills builders realize moderate gains in average earnings, typically under \$2,000 per quarter.
- A sizeable minority of skills builders experience no gains or losses in average earnings.

AVERAGE EARNINGS GAINS



- Average gains differ by field of study.
- In some fields of study, a greater share of skills builders realize earnings gains.
- In every field, a sizeable minority of skills builders experience no gains or earnings losses.

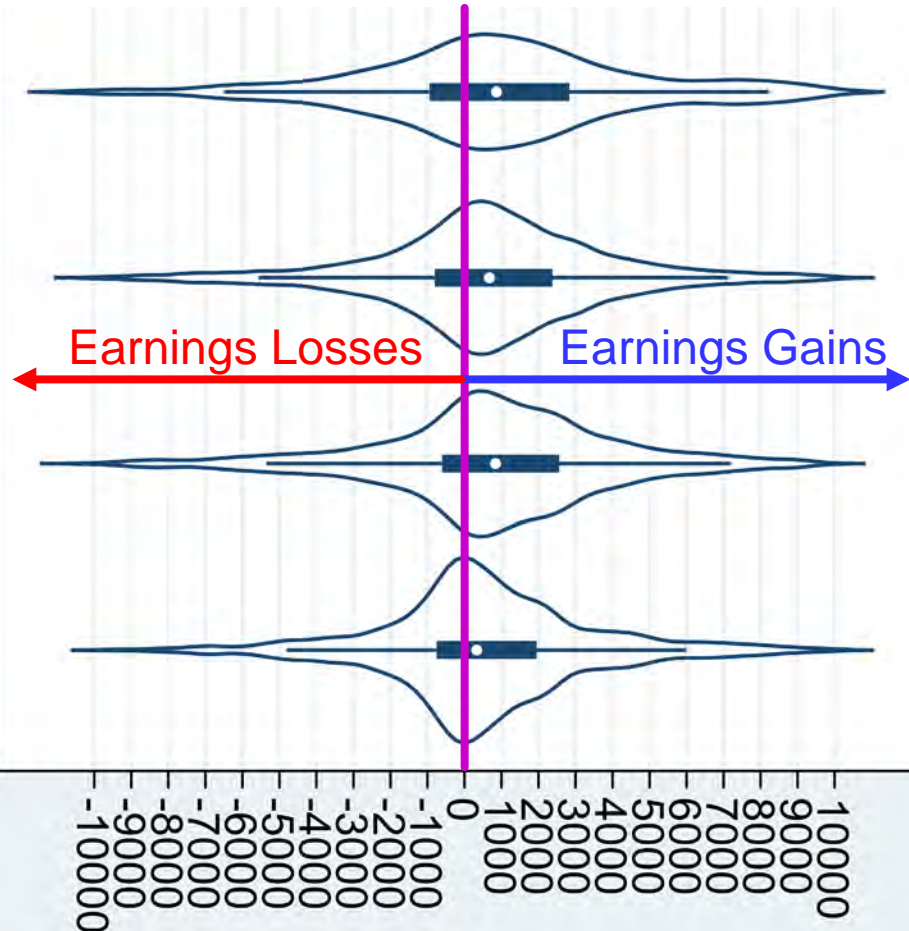
AVERAGE EARNINGS GAINS

48 Precision Production

51 Health

52 Business

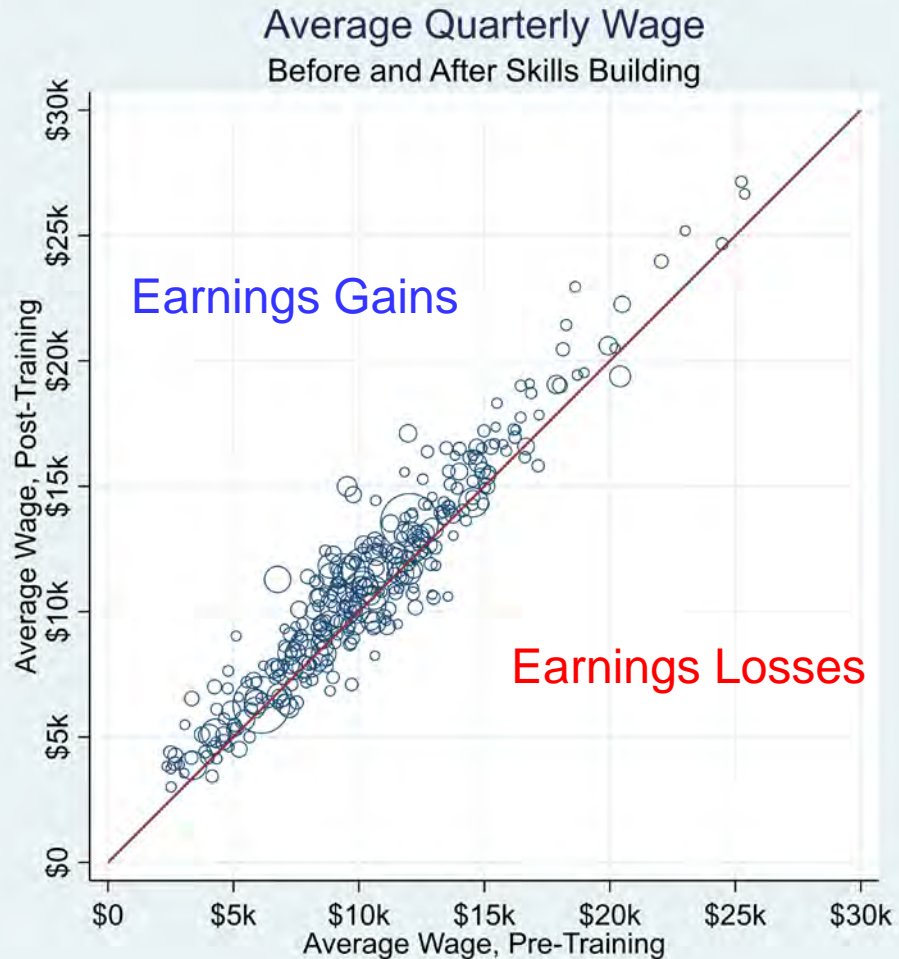
99 Others



Change in Quarterly Wage

Are the strongest gains found in course combinations serving skills builders with the lowest incomes?

PRE- AND POST-EARNINGS BY COURSE COMBINATION



Students in most course combinations realize gains in average earnings.

Course combinations in which students enter with lower average earnings rarely result in substantial earnings gains.

ESTIMATING POST-COLLEGE AVERAGE EARNINGS

What types of course combinations yield the strongest earnings gains?



What types of students realize the strongest earnings gains?

Can up/reskilling course combinations lift impoverished students up to a living wage?

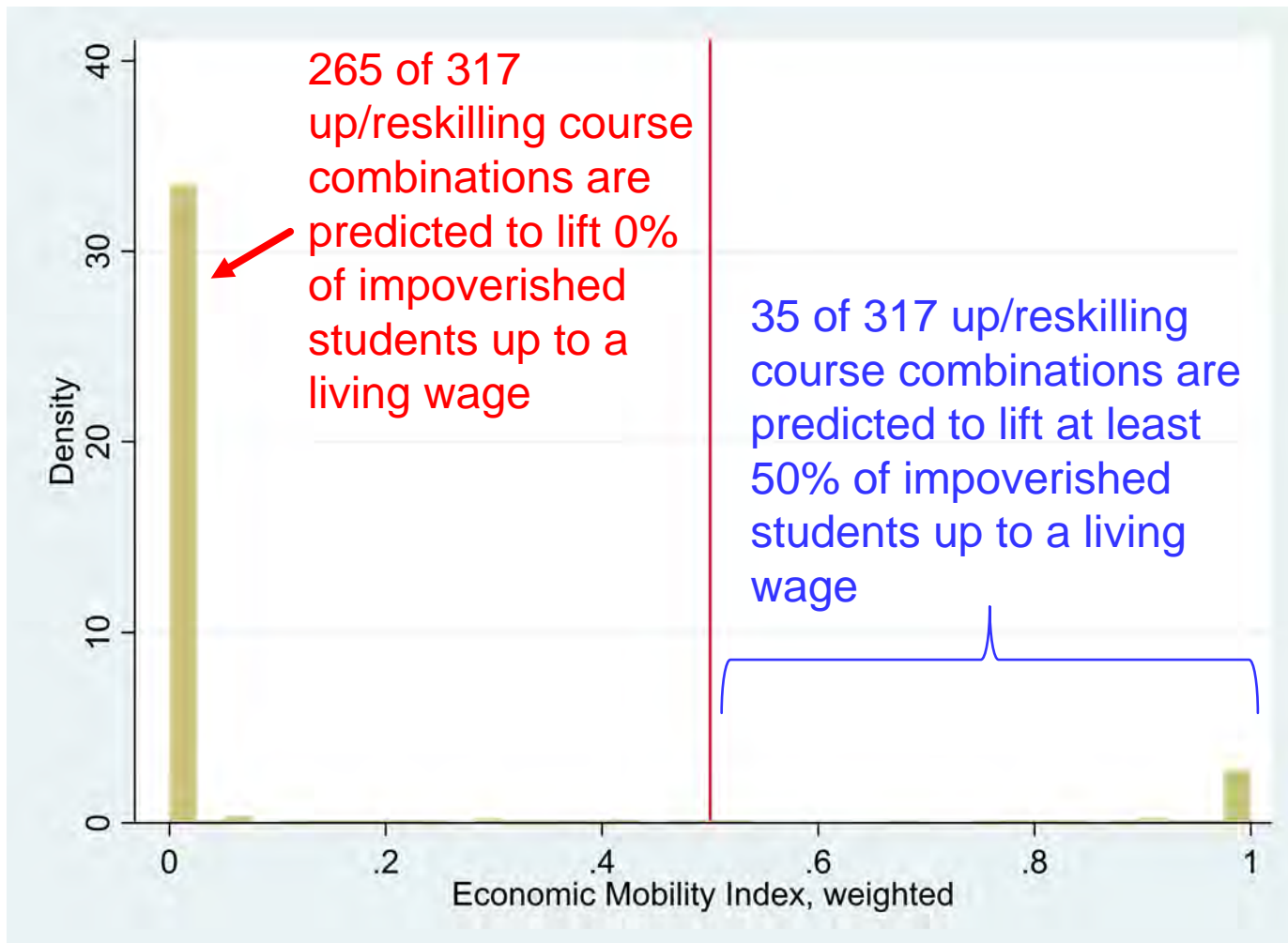
ANALYZING DIFFERENCES IN EARNINGS GAINS

Explanatory Variable	Coef	p
Pre-College Earnings (\$1000s)	-\$220	***
Prior College Experience		
Some College, No Degree (vs. No College)	\$560	***
Previous Credential (vs. No College)	\$1,040	***
Pre-Enrollment Economic Shock (vs. No Shock)	-\$977	***
Age		
Identity	-\$634	***
Square	\$17	***
Cube	-\$0.15	***
Women (vs. Men)	-\$1,113	***
Race/Ethnicity		
Black (vs. White)	-\$430	NS
Hispanic (vs. White)	-\$43	NS
Asian or Pacific Islander (vs. White)	\$350	NS
American Indian or Alaskan Native (vs White)	\$120	NS
[coefficients for other groups not shown]	---	---

- The magnitude of earnings gains from up/reskilling are inversely related to pre-enrollment earnings.
- Students with prior college education, especially degree-holders, net larger earnings gains from up/reskilling.
- Students who experienced a pre-college economic shock realize smaller gains from up/reskilling.
- Students in their 20s tend to realize larger gains than students in their 30s and 40s, while students in their 50s and older have the lowest gains.
- Women realize smaller gains than men.
- No significant differences in gains by race/ethnicity.

Model includes fixed effects for the 317 course combinations and a control for students' reported goal at college entry.

WHAT SHARE OF UP/RESKILLING COURSE COMBINATIONS COULD LIFT STUDENTS OUT OF POVERTY?



Economic Mobility Index

The proportion of impoverished students who are predicted to be earning a living wage by 12 quarters after completing a particular up/reskilling course combination.

Poverty: Less than 130% of the Federal Poverty Line

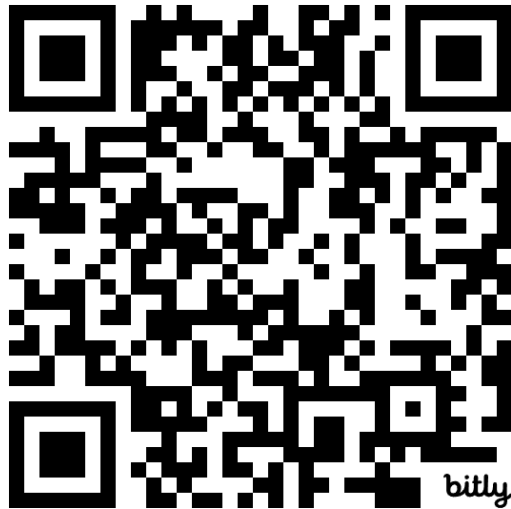
Living Wage: More than 185% of the Federal Poverty Line

TAKEAWAYS

1. It is possible to identify skills-building students on state- or system-wide scale, as well as in individual colleges.
2. Skills builders account for about 1-in-8 new community college entrants.
3. Skills builders are a highly varied group and enroll in an even more varied set of course combinations.
4. A majority of up/reskilling course combinations yield earnings gains, and a majority of skills builders realize earnings gains.
5. Earnings gains vary substantially by the characteristics of the course combinations and the characteristics of the students enrolling in them.
6. Most up/reskilling course combinations will not lift impoverished students up to a living wage.

FOR MORE INFORMATION

Working Paper



https://bit.ly/skillsbuilding_returns

For more of our research



EdPolicyResearch.org

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