

Building a Bridge to Graduation in Maryland: Implications for Research, Practice, and Policy

Stats DC
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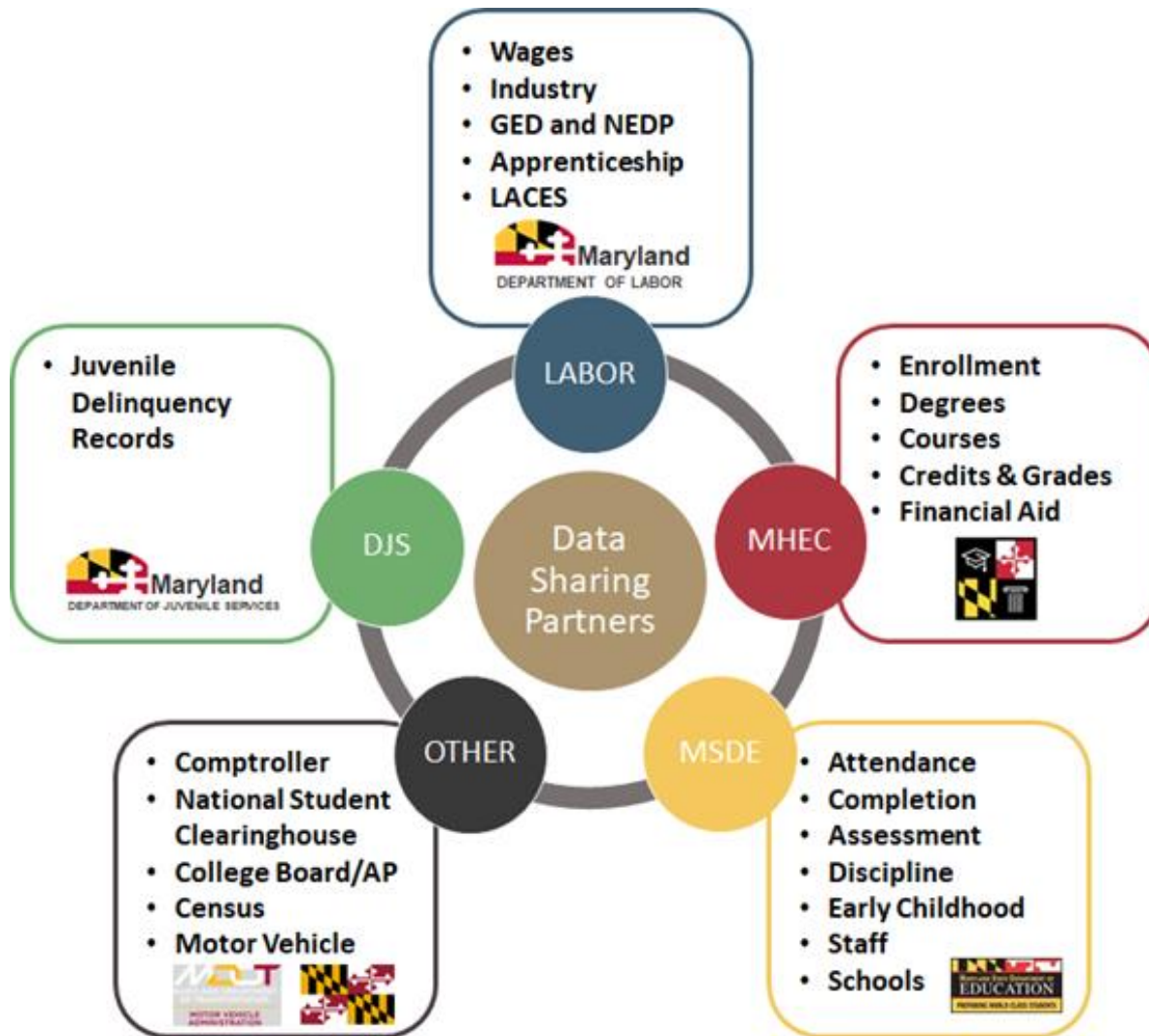
A Growing Concern (for some)

- **The Need:**

- ✓ Graduation and College and Career Readiness Standards have been vigorously and spiritedly debated in Maryland
- ✓ Some stakeholders have echoed anecdotal concerns about Bridge project “watering down” MD diploma in the eyes of employers
- ✓ Growing concerns that Bridge Program participants aren’t as prepared or competitive for college and career opportunities

- **The Request:**

- ✓ MSDE only has access to K-12 education data and the main stakeholders concerned are interested in college and career success outcomes
- ✓ Bridge Program data is not an institutionalized MSDE data publication, so rigorous and standardized data cleaning and analysis is needed for data inferences



The MLDS Center

Research Project

A Bridge to Graduation: Testing the Effects of an Alternative Pathway for Students who Fail Exit Exams

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- Kalena Cortes - Texas A&M University

Background and Motivation

- States expanded the use of standardized subject-area exams as a high school graduation requirement in the aim to improve standards for public education and increase college-readiness.
- Studies suggest that high school exit exams are not meeting their goals (e.g., Dee & Jacob 2007, Papay, Murnane & Willett 2010).
- Alternative graduation pathways offer another option for students to demonstrate mastery of tested subjects.
- Hemelt and Marcotte (2013) find that adding exit exams did not increase dropout in states where students can use an alternate graduation pathway
- **Can non-test alternatives to exit exams provide students with equivalent preparation for college and the workforce?**

Maryland Exam Policy

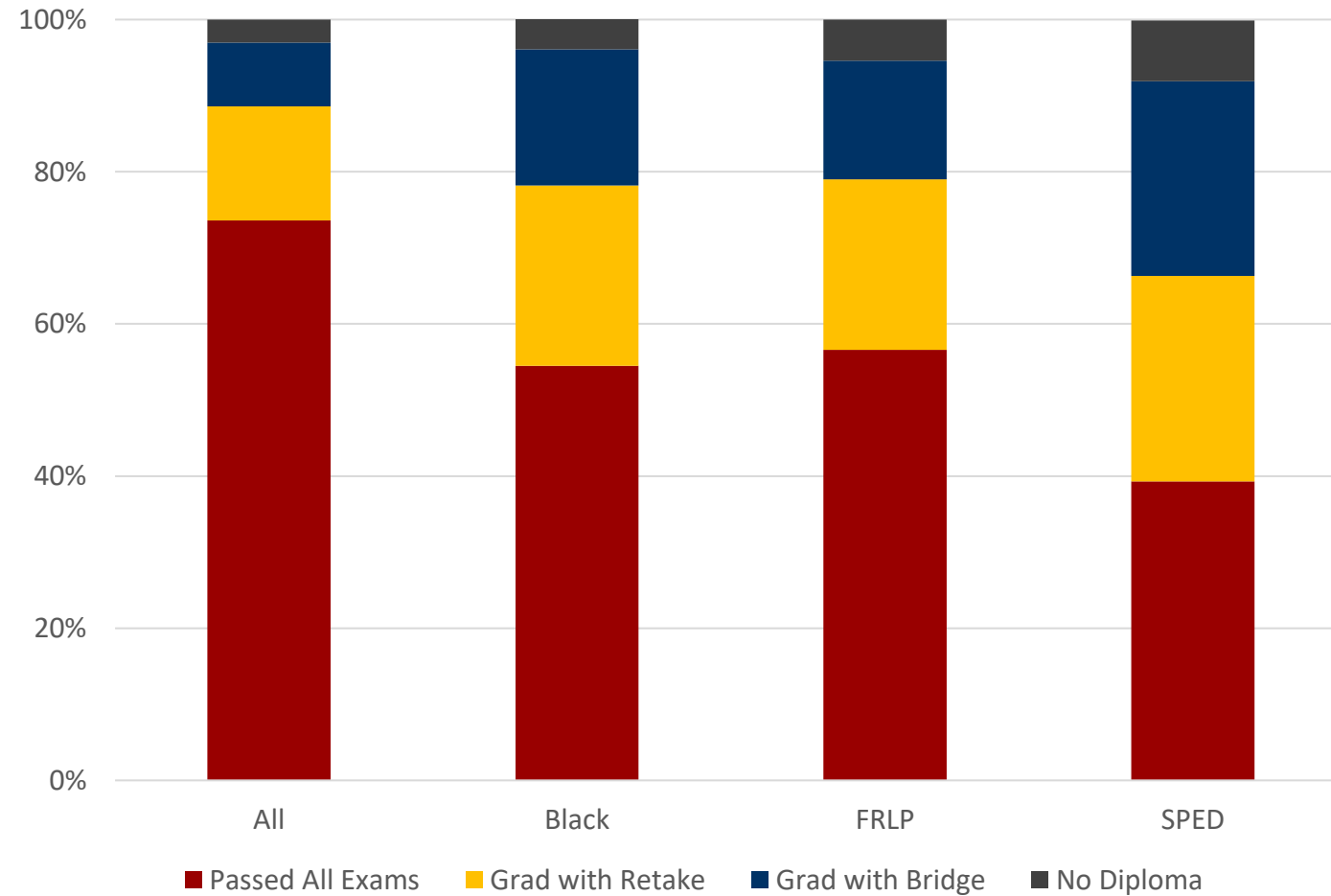
- Since 2005, Maryland has required high school exit exams in algebra, biology, and English.
- Maryland also offers the Bridge Plan for Academic Validation:
 - ✓ Administered by each local school district
 - ✓ Students are eligible after attempting and failing an exit exam 2 times
 - ✓ Student and school design a project work plan
 - ✓ Product is evaluated by a local school system review panel to determine if the requirement for graduation is met
 - ✓ Students who complete Bridge get the same diploma as test-passers

Diploma and Bridge Completion after Multiple Failures

Subject	Fail twice*	Diploma without Bridge	Diploma with Bridge
Algebra	51,001	44%	35%
English	41,580	44%	43%
Biology	35,965	36%	50%

*Includes members of 4 freshman cohorts who failed the test at least twice.

Who Bridges?



Research Questions

Conditioned on failing an exit exam twice:

- Do **Bridge completers** have different post-secondary outcomes than **test-passers**?
- Do **Bridge completers** have better post-secondary outcomes than **non-completers**?



MLDS Center Data for this Project

- All Maryland public high school freshmen from 2008 to 2011 (exit exams required for graduation)
- Follow them through 4 years of public high school in Maryland including all attempted exit exams, and all completed Bridge projects
- Background data from middle school in Maryland public schools
- Merge post-secondary outcomes from
 - ✓ National Student Clearinghouse & MHEC – 2 & 4-year college enrollment in the US
 - ✓ Maryland Unemployment Insurance data - employment & wages

Empirical Challenge

Estimate the relationship between Bridge and post-secondary outcomes

- Students are selected into Bridge eligibility by failing tests (*observable*)
- Students self-select into Bridge completion based on motivation, feelings about tests, advice from teachers, peer influence, etc. (*unobservable*)
- Need to identify the effects of Bridge beyond selection of students into different pathways

- Overcome selection bias by:
 - ✓ Selecting a sample of students who are eligible to Bridge & similarly motivated to graduate
 - ✓ Regression with matching strategies
 - ✓ Controlling for observable testing history, demographics, etc.

Sample Selection

- **Only students who are eligible to Bridge in each subject**
 - ✓ Failed two attempts in at least one subject
 - ✓ Attempted every exit exam at least once
 - ✓ Disaggregated analysis by subject

- **Eliminate confounding effects of school transfer or early dropout**
 - ✓ 4 years of high school enrollment in the local school system
 - ✓ No more than one within-district transfer during high school

Empirical Matching Strategies

Cell Fixed Effects Model

$$Y_{ijc} = \alpha + \beta(\text{Bridge}_i) + \gamma(\mathbf{X}_i) + \theta_j + \delta_{\text{cohort}} + \varepsilon_{ijc} \quad (1)$$

θ_j - fixed effects group students in cells with identical school, race, gender, FRPL status, and distance bins from passing second exit exam attempt

- ✓ Includes only cells with at least one Bridger and one Comparison Student

Propensity Score Matching

$$P_{\text{score}}_{isc} = \text{prob}(\text{Bridge} = 1) = \alpha + \gamma(\mathbf{X}_i) + \pi_{\text{school}} + \delta_{\text{cohort}} + \varepsilon_{isc} \quad (2)$$

- ✓ Local-linear regression method of p-score matching
- ✓ LLR + within-school district matching (robustness)

Controls for Observables

Pre-high school engagement and performance (Warren & Edwards, 2005)

- ✓ 8th grade attendance
- ✓ 8th grade disciplinary suspensions
- ✓ Middle school assessment scores in math, reading, and science

Demographics

- ✓ Race, gender, ever FRPL, SPED, ELL, Title I, Homeless

Exit exam performance

- ✓ First attempt score in all 3 subjects
- ✓ Second attempt score in Bridge subject

School policies and resources

- ✓ School and cohort fixed effects

2 COMPARISONS

Bridge vs. Test Passer / Bridge vs. No Diploma

3 SUBJECTS

Algebra / Biology / English

3 OUTCOME DOMAINS

College Enrollment / MD UI Employment /
MD UI Wages

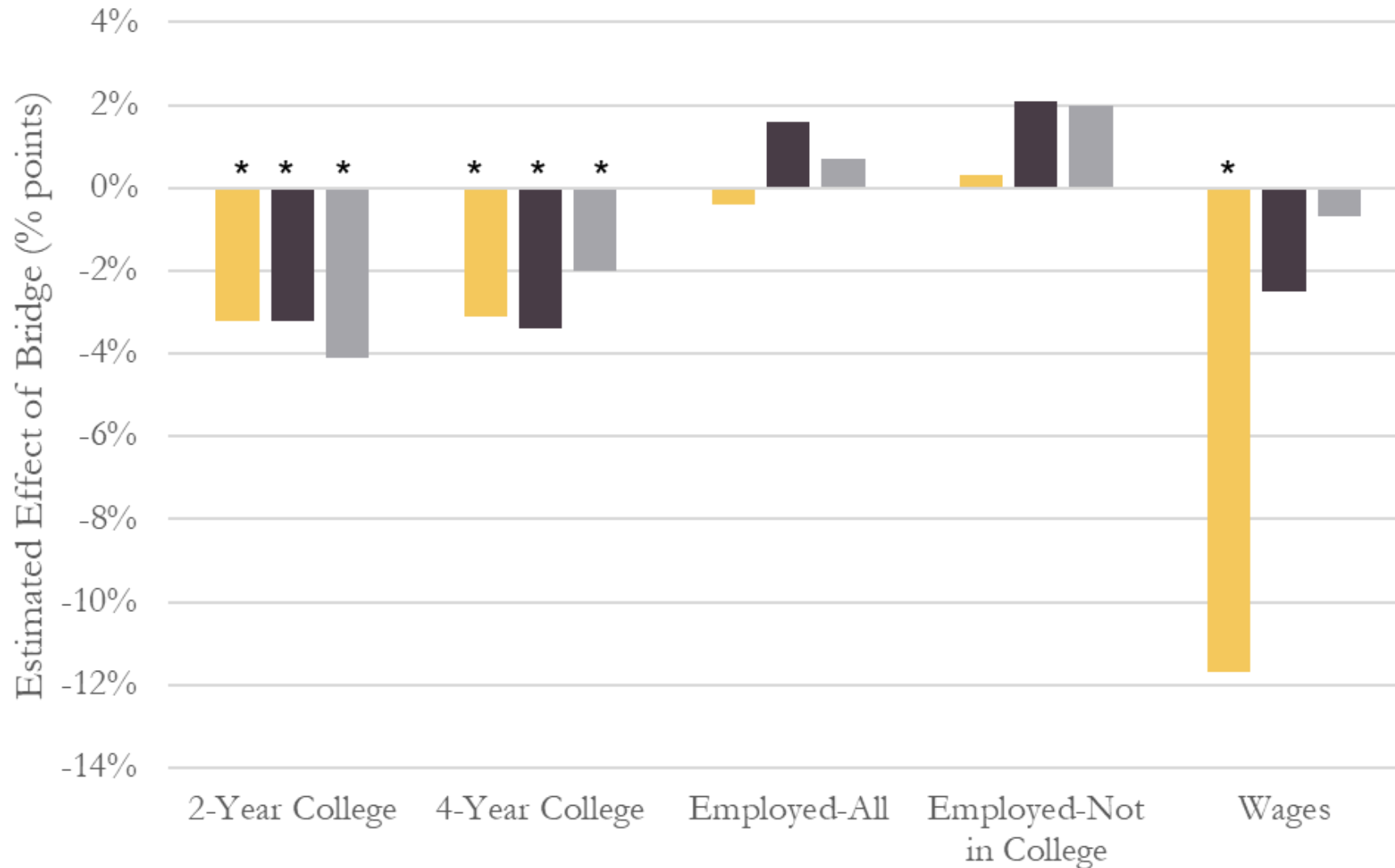
Subgroup Analysis By:

Race, FRPL, SPED, number of eligible Bridge subjects, and
distance from passing

Robustness Checks:

Within-district matching, High-Eligibility districts

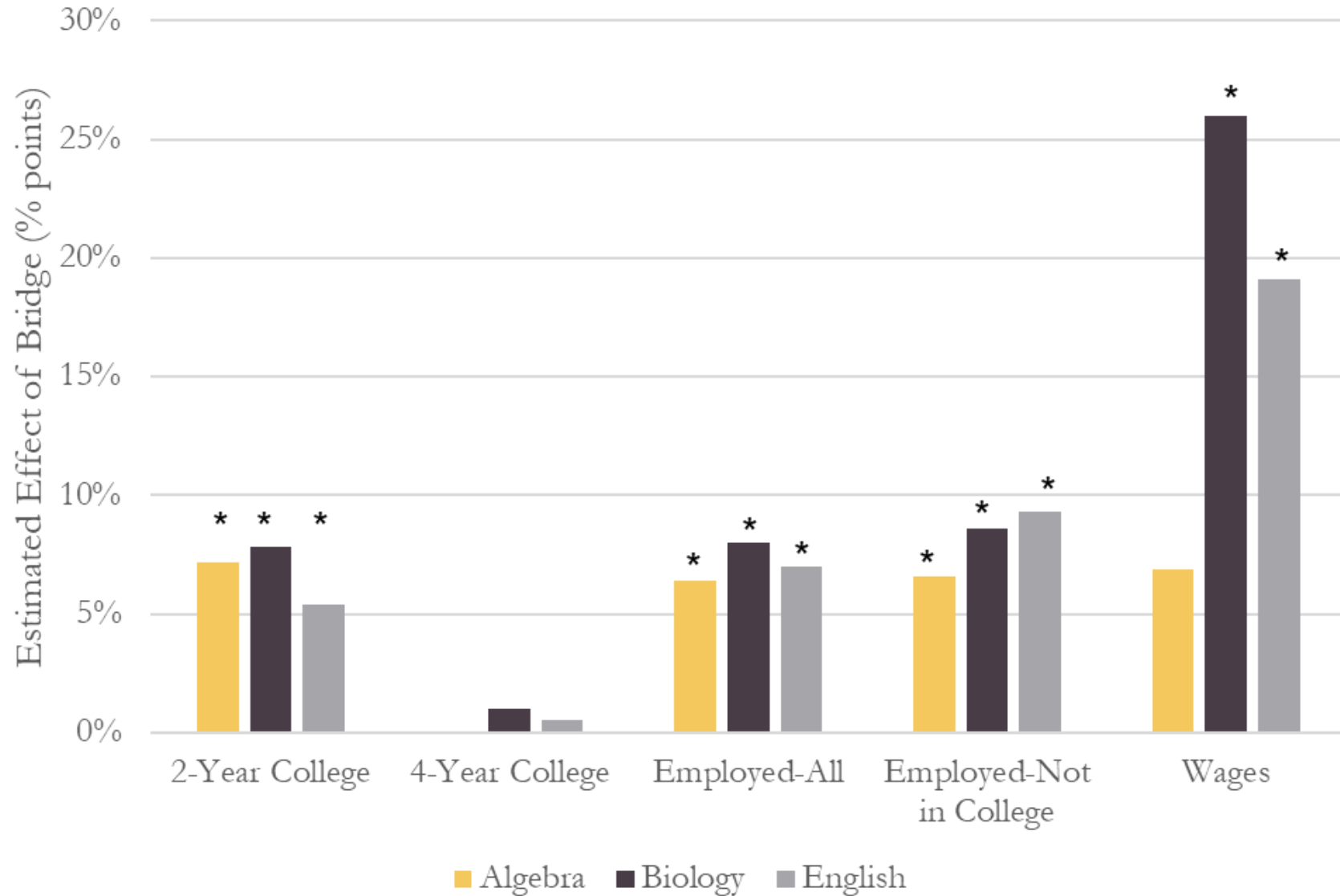
Results: Bridge vs. Test-Passers



Results of cell-matched fixed effects regression. * $p < 0.05$

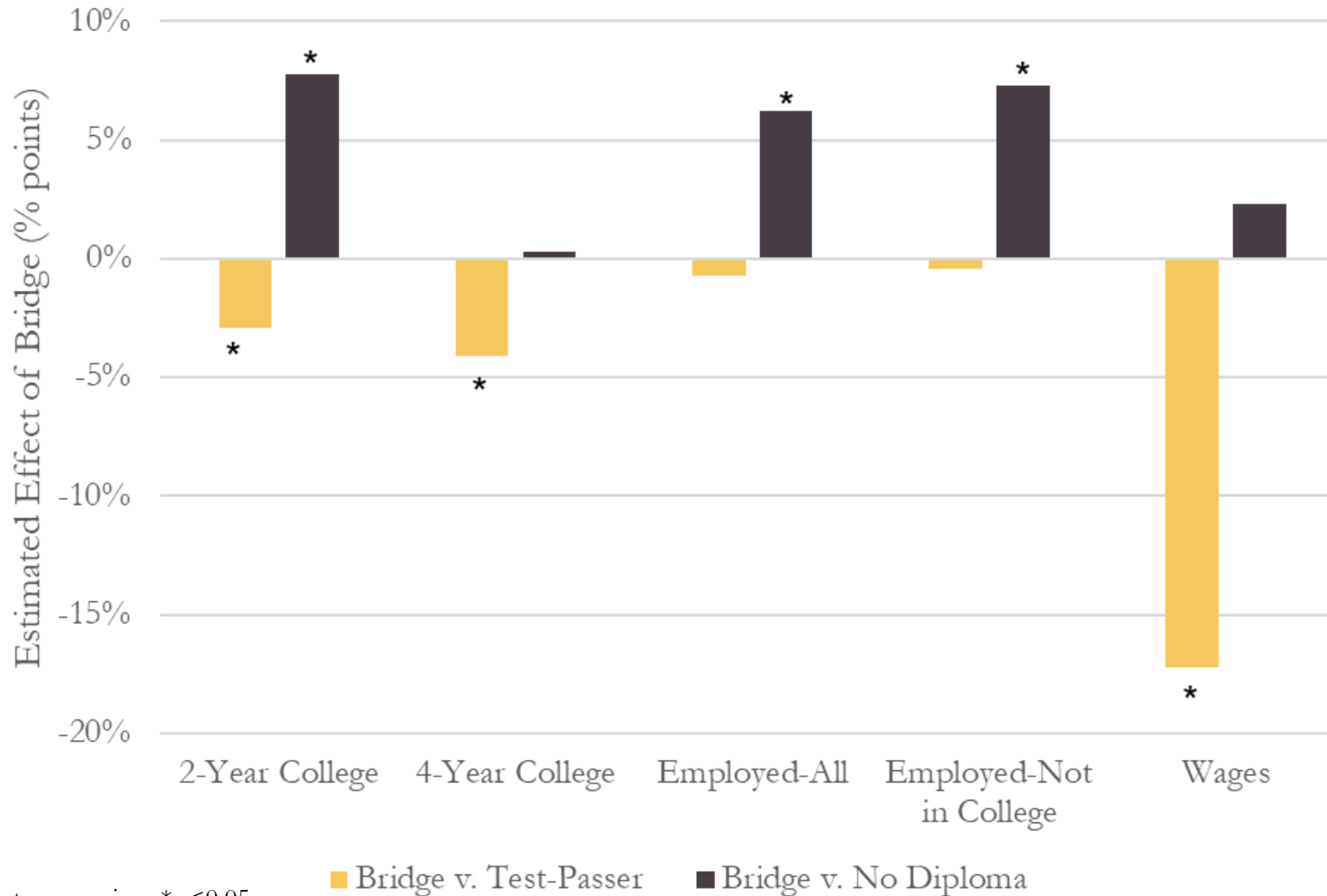
■ Algebra ■ Biology ■ English

Results: Bridge vs. Non-Completers



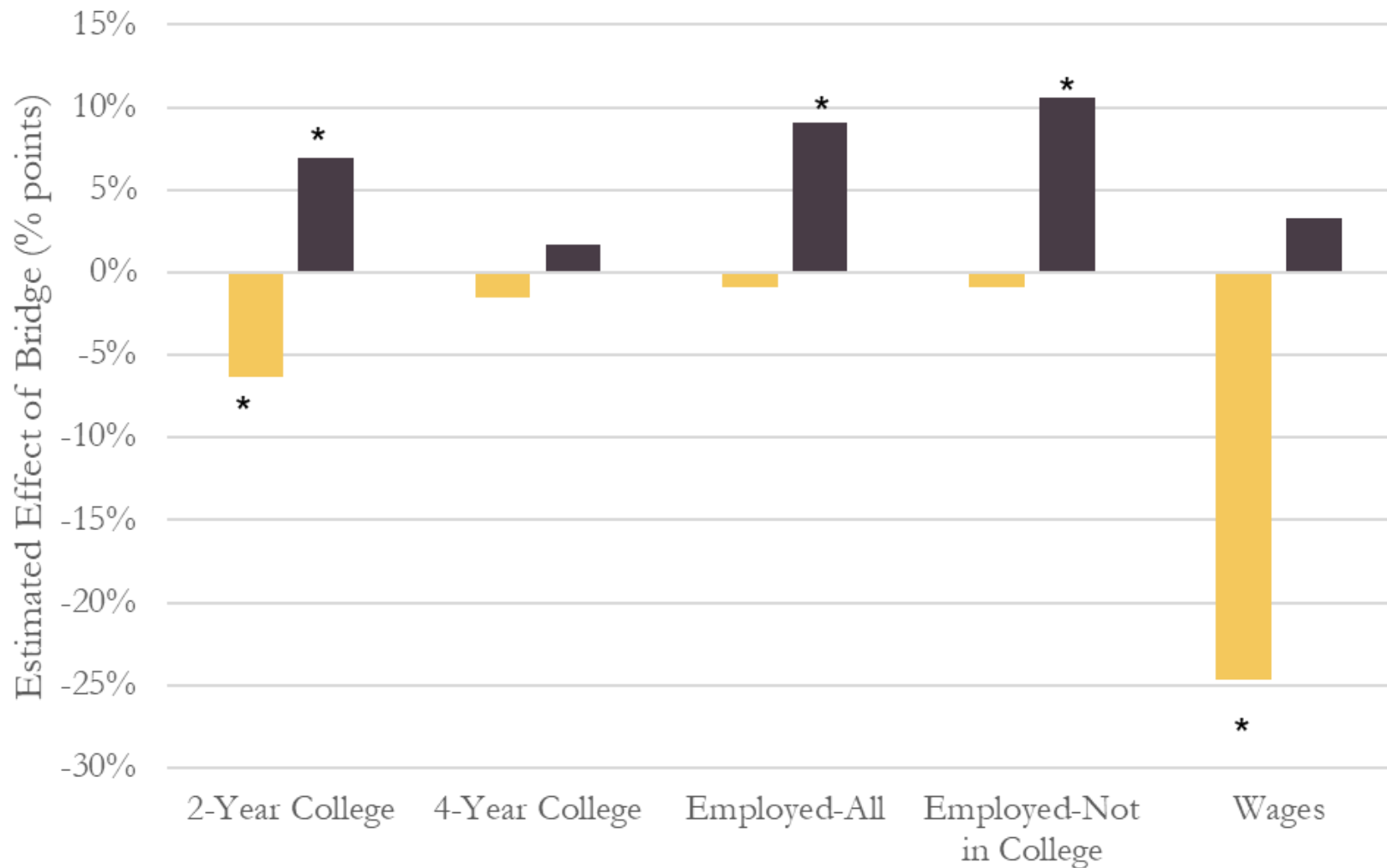
Results of cell-matched fixed effects regression. *p<0.05

Results: Black Students – Algebra



Results of cell-matched fixed effects regression. *p<0.05

Results: SPED Students – Algebra



Results of cell-matched fixed effects regression. * $p < 0.05$

■ Bridge v. Test-Passer

■ Bridge v. No Diploma

Key Findings

- Bridge students are ...
 - ✓ Less likely to go to college than similar students who retake exit exams
 - ✓ Have similar rates of employment to test-passers
 - ✓ More likely to go to 2-year college, work, and earn more than similar students who don't complete high school on time

- Bridge Program ...
 - ✓ Has positive effects relative to non-completion for subpopulations at most risk of dropout
 - ✓ Non-test alternative could serve as counterbalance to high exit exam failure rates.

Policy Implications

- With high exit exam failure rates, **Bridge is an important cushion for Maryland students**, with highest participation rates among populations most at-risk for dropout.
- Labor market effects vary by subject suggesting that **human capital is developed differently in different subjects**. States might want to consider where **exit exams vs. projects are most beneficial**.
- Removing Bridge would likely lead to more dropout, but reforms might improve access to college (if wanted) and job-market skills – particularly in math.

Immediate & Long-Term Impacts

- **Immediate Impacts**

- ✓ Presentation to MSDE Staff about effects and post-secondary outcomes of the Bridge Program participation
- ✓ Research and data available for internal use and to share about the Bridge Program to stakeholders and local partners

- **Long Term Impacts**

- ✓ Research evidence of the effects of the Bridge Program can be leveraged for future programmatic and policy decisions
- ✓ Criticisms and concerns about the Bridge Program can be better focused and crafted to incorporate the positive findings of this study moving forward.

Thank you!

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