

Incentivizing Equity? The Effects of Performance-Based Funding Equity Provisions on
Reducing Disparities in College Persistence and Completion

Monnica Chan
Harvard Graduate School of Education

Zachary Mabel
College Board

Preeya Pandya Mbekeani
Harvard Graduate School of Education

1. Background

The economic return to completing college is large and increasing (Autor, 2014; Avery & Turner, 2012; Carnevale, Jayasundera, & Gulish, 2016), yet low-income students and students of color are significantly less likely to graduate than their high-income and white peers and these disparities have widened over time (Bailey & Dynarski, 2011; Chetty, Friedman, Saez, Turner, & Yagan, 2017). With social mobility declining in the United States and the payoff to completing postsecondary education increasing, raising college completion rates among populations at high risk of dropout can create more equitable opportunities for economic prosperity.

Performance-based funding (PBF) policies, which tie state support for higher education institutions to performance on student outcomes, have proliferated over the last decade as one strategy to increase degree attainment rates. Some states have designed these policies to also address gaps in persistence and completion by race, age, and income by offering additional funding for graduating students from groups at higher risk of not completing college. Currently, 37 states have enacted or approved funding models that allocate a portion of state higher education appropriations based on institutional performance, and more than half of those states consider equity when determining funding levels.¹

Policies that tie funding to positive outcomes for historically underrepresented students appear to have null or very small positive effects on the enrollment of underrepresented student groups (Gandara & Rutherford, 2018; Kelchen, 2018). PBF policies in Tennessee and Ohio, two early adopters of PBF policies that include equity provisions, also do not appear to have increased bachelor's degree completion overall and decreased associate's degree production (Hillman, Fryar & Crespín-Trujillo, 2018). However, we are aware of no studies to date that analyze whether equity-based performance premiums in PBF regimes increase persistence and completion of underrepresented students or reduce persistence and degree completion gaps between traditional and underrepresented student groups.

2. Research Questions

This study contributes to the literature on college persistence and attainment by examining two research questions:

- i) Do PBF policies with equity provisions affect the persistence and completion of low-income, adult, and underrepresented minority students?
- ii) Do these policies reduce persistence and completion gaps between high- and low-income, traditional-age and adult, and over- and underrepresented minority students?

3. Setting

Like Hillman et al. (2018), we examine these questions by focusing on policy changes in Ohio and Tennessee. We focus on these states because both have embraced PBF policies with equity provisions since the early 2010s. Both states tie 80-100 percent of all state appropriations to performance outcomes and reward public institutions more for increasing persistence and completion rates for adult, minority, and low-income students. By comparison, the share of state

¹ Authors' calculation based on prior reports and own research.

appropriations allocated via performance funding does not exceed 25 percent in other states. Given the high-stakes nature of these policies in Ohio and Tennessee, these states offer the best opportunity to examine the potential for PBF-based equity provisions to reduce disparities in college outcomes.

4. Outcomes and Data

Our outcomes of interest are the total number of students who persist or complete a certificate, 2-year, or 4-year degree separately by race, income, and financial dependency status (a proxy for age). Both the Integrated Postsecondary Education Data System (IPEDS) and the College Scorecard contain administrative data on persistence and completion outcomes that is reported annually by institutions for nearly all public and private non-profit two- and four-year colleges and universities in the country. We rely on annual completion counts disaggregated by race and degree type from IPEDS and on enrollment, persistence, and completion counts disaggregated by income and financial dependency status from the College Scorecard. We also rely on these two sources and on the U.S. Bureau of Labor Statistics to construct several control measures, including the average net price of attendance, instructional expenditures per student, share of operating expenditures covered by state appropriations, unemployment rate in the commuting zone of the institution, and enrollment composition measures.

5. Research Design

We use a difference-in-differences (DD) research design to investigate our first research question, whereby we compare student outcomes at public institutions in Ohio and Tennessee to three different comparison groups: (1) institutions located in PBF states that do not have equity provisions, (2) institutions located in other states within the same geographic region, and (3) all private, non-profit institutions within the same state.

Our DD model takes the following general form:

$$Y_{it} = \alpha + \beta(postxtreat_{it}) + \gamma\mathbf{X}_{it} + \delta_i + \theta_t + \omega_{st} + \varepsilon_i, \text{ where}$$

Y_{it} represents subgroup-specific outcome variables at institution i in year t . $Postxtreat$ is an indicator of whether an institution is a public college or university in Tennessee or Ohio in years when the new performance-based regime was in effect. β captures the effect estimate of interest. In all models we control for a vector of institution-level characteristics (\mathbf{X}_{it}), institution (δ_i) and year (θ_t) fixed effects, and state-by-year linear trends (ω_{st}).

To answer our second research question, we use a triple difference (DDD) research design. The basic model, using under-represented minority and white students as an example, is as follows:

$$Y_{it} = \alpha + \beta_1(urm_{it}) + \beta_2(postxtreat_{it}) + \beta_3(treatxurm_{it}) + \beta_4(postxurm_{it}) + \beta_5(postxtreatxurm_{it}) + \gamma\mathbf{X}'_{it} + \delta'_i + \theta'_t + \omega'_{st} + \varepsilon_i$$

The coefficient of interest in this model is β_5 , which captures the extent to which race-based attainment gaps at public institutions in Ohio and Tennessee differ after versus before the

introduction of PBF equity provisions relative to comparison institutions over the same period. All other control variables in the model are defined as before.

6. Results and Conclusion

We find no evidence that persistence and completion gaps in Ohio or Tennessee narrowed after either state introduced PBF. As shown in Figure 1 and Table 1 below, we find suggestive evidence that the total number of degrees and certificates awarded to white students at public institutions in OH and TN increased by 15–16% after the passage of PBF, whereas the number of credentials awarded to underrepresented minority students did not change. Our findings therefore suggest that PBF policies with equity provisions may be an ineffective strategy for improving outcomes among traditionally underrepresented students and may even exacerbate college attainment gaps.

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Figure 1. Total degrees and certificates by student race and institutional control in Ohio and Tennessee before and after adoption of performance-based funding with equity provisions.

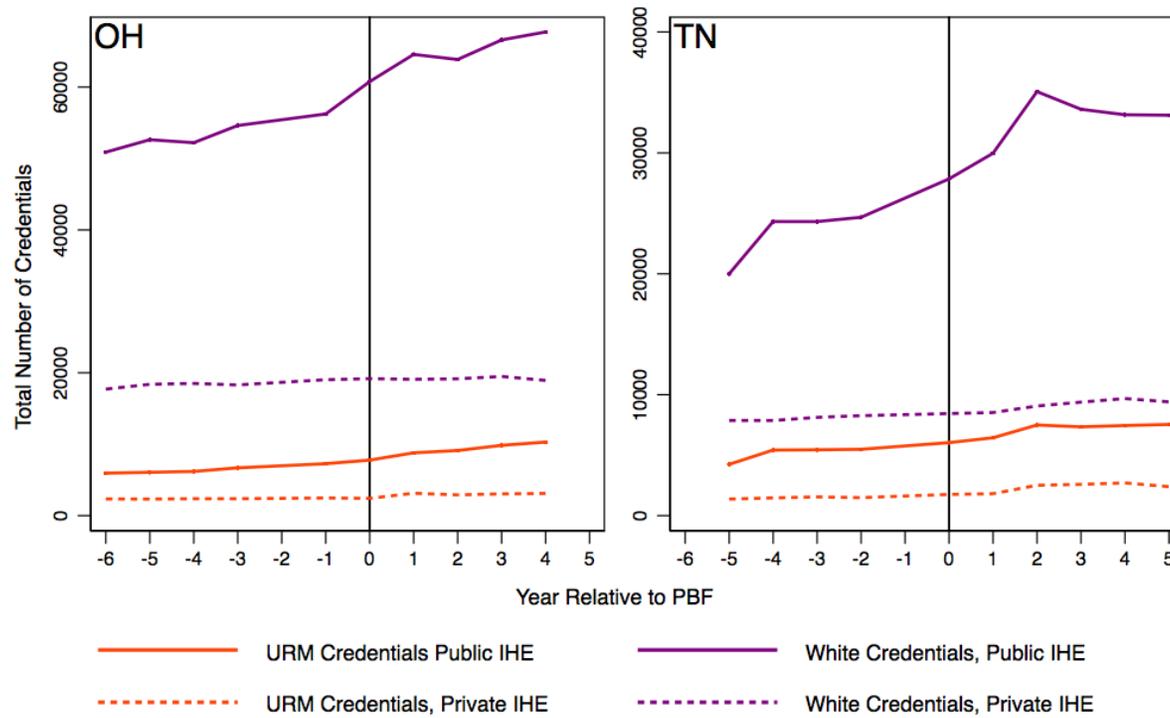


Table 1. *Effect estimates of PBF equity provisions on credential completion in Tennessee and Ohio*

	Ohio			Tennessee		
	Total	White	Under-represented Minorities	Total	White	Under-represented Minorities
All Degrees or Certificates	0.137* (0.060)	0.161* (0.074)	0.0124 (0.083)	0.174** (0.061)	0.153* (0.069)	0.0758 (0.089)
Bachelor's Degrees	0.180~ (0.100)	0.213* (0.105)	-0.143* (0.055)	-0.115~ (0.061)	-0.0938 (0.067)	-0.290*** (0.077)
Associate Degrees	-0.0219 (0.121)	-0.0319 (0.120)	0.0556 (0.102)	0.00942 (0.092)	0.01 (0.079)	0.0227 (0.058)
Certificates	0.390** (0.143)	0.365* (0.143)	0.243* (0.100)	0.549*** (0.150)	0.538*** (0.153)	0.589*** (0.126)

~ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: Clustered standard errors in parentheses. Each estimate represents a separate regression and reports the effect of performance based funding on the logged number of degrees or certificates at public institutions compared to private institutions within Tennessee or Ohio, with year and institution fixed effects. Underrepresented minorities include students who self-identified as Black, Latino and American Indian/Native American.