

A clearinghouse for policy analysis, original research, data, and rigorous evidence on the equity and effectiveness of state higher education funding policies.

## PERFORMANCE FUNDING FOR HIGHER EDUCATION: CURRENT EVIDENCE, UNANSWERED QUESTIONS, AND HOW NEW DATA CAN INFORM POLICY

Kelly Rosinger, Yahya Shamekhi, Junghee Choi, Nicholas Voorhees,  
Justin Ortagus, and Robert Kelchen

May 2021

States have increasingly turned to performance-based funding (PBF) in an effort to hold public colleges and universities more accountable for student outcomes. Under performance funding, states tie a portion of appropriations to public institutions to student outcome metrics, such as credit hour completion, retention, and completion. Tennessee launched what is considered the nation's first PBF system for higher education in 1979. PBF implementation since then has been broadly characterized in prior research by two waves: a first wave of adoptions in the 1990s that was largely abandoned as state budgets declined during the 2001 recession and a second wave in the mid-2000s.<sup>1</sup> In Fiscal Year 2020, 33 states had PBF policies that existed either through state legislation or higher education agency approval, and 41 states have had PBF policies in place at some point since 1997.<sup>2</sup>

Not surprisingly given the popularity and growth of PBF policies over time, a large body of literature has emerged that examines the intended and unintended consequences of PBF. This literature base largely indicates PBF policies have done little to improve degree completion and have resulted in unintended consequences that are likely to widen racial and economic educational disparities. In particular, research indicates PBF systems have led to restricted access for underserved students at selective colleges, an

---

<sup>1</sup> Dougherty, K. J., & Natow, R. S. (2015). *The politics of performance funding for higher education: Origins, discontinuations, and transformations*. Johns Hopkins University Press.

<sup>2</sup> Rosinger, K., Kelchen, R., Ortagus, J., Cassell, A., & Brown, L. (under review). New evidence on the landscape and evolution of performance funding for higher education.

emphasis on shorter-term programs over degrees, and exacerbated funding disparities across institutions.<sup>3</sup> Research has begun to examine how various features of PBF systems mitigate these unintended consequences.<sup>4</sup>

This brief summarizes literature that examines the intended and unintended consequences of PBF, highlights unanswered questions regarding these policies, and offers insight into how new data that our research team has collected can be leveraged to inform current PBF policy discussions.

## Evidence of the Intended and Unintended Consequences of PBF

To examine the impacts of PBF, researchers frequently draw on principal-agent theory under which the principal offers incentives to the agent for performing a task on behalf of the principal.<sup>5</sup> In the case of PBF, the state (the principal) ties a portion of funding for public colleges and universities (the agent) to student outcomes in an effort to incentivize colleges to improve credit hour completion, retention, completion, and other performance metrics. In creating these incentives, state policymakers hope to more closely align institutional behavior and outcomes with state goals. However, institutions may not always respond to incentives in ways states anticipate, and these responses can reduce the effectiveness of PBF policies in meeting their stated goals and can also lead to unintended consequences.<sup>6</sup> This brief summarizes studies investigating the intended and unintended consequences of PBF in the United States published in peer-reviewed journals between 1998 and 2020.<sup>7,8</sup> We focus on studies that examine certificate and degree completion, the primary (but not only) incentive across PBF systems, and on unintended consequences in three main areas: restricting access, focusing on shorter-term programs, and exacerbating funding disparities across institutions.

---

<sup>3</sup> Ortagus, J., Kelchen, R., Rosinger, K., Voorhees, N. (2020). Performance-based funding in American higher education: A systematic synthesis of the intended and unintended consequences. *Educational Evaluation and Policy Analysis*, 42(4), 520-550.

<sup>4</sup> Gándara, D., & Rutherford, A. (2018). Mitigating unintended impacts? The effects of premiums for underserved populations in performance-funding policies for higher education. *Research in Higher Education*, 59(6), 681-703.; Kelchen, R. (2018). Do performance-based funding policies affect underrepresented student enrollment?. *The Journal of Higher Education*, 89(5), 702-727.; Kelchen, R. (2019). Exploring the relationship between performance-based funding design and underrepresented student enrollment at community colleges. *Community College Review*, 47(4), 382-405.

<sup>5</sup> Jensen, M .C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.

<sup>6</sup> Kelchen, R. (2018). *Higher education accountability*. Johns Hopkins University Press.

<sup>7</sup> For the full review of this literature, see: Ortagus et al. (2020).

<sup>8</sup> For other reviews of PBF literature, see also: Bell, E., Fryar, A. H., & Hillman, N. (2018). When intuition misfires: A meta-analysis of research on performance-based funding in higher education. In *Research handbook on quality, performance and accountability in higher education*. Edward Elgar Publishing.; Li, A. Y. (2021). Four decades of performance funding and counting. In *Higher Education: Handbook of Theory and Research*. Springer Publishing.

## Intended Consequences of PBF

Descriptive analyses using various state and national datasets have generally found little association between early PBF efforts and improvements in student outcomes.<sup>9</sup> Researchers have also used quasi-experimental research designs to try to identify the causal impact of PBF on degree completion, comparing differences in degree completion in PBF-adopting states in years before and after PBF adoption to differences in degree completion over the same period in non-adopting states. These analyses offer mixed evidence regarding the impact of PBF on *associate's degree production* with one study showing increases in some states and decreases or no changes in others.<sup>10</sup> Recent research has not found evidence of changes in associate degree production in Washington<sup>11</sup> and across adopting states.<sup>12</sup> Several studies have reported that PBF adoption has a positive impact on shorter-term certificate production but no impact or occasionally a negative impact on associate degree production.<sup>13</sup>

When it comes to *bachelor's degree production*, quasi-experimental studies have not found evidence of changes in Pennsylvania,<sup>14</sup> Indiana,<sup>15</sup> Ohio, Tennessee,<sup>16</sup> or at historically Black colleges and universities (HBCUs)<sup>17</sup> in adopting states. A few national studies have reported positive impacts of PBF on degree outcomes, one on bachelor's degree production several years after PBF adoption,<sup>18</sup> one showed increases in

<sup>9</sup> Rutherford, A., & Rabovsky, T. (2014). Evaluating impacts of performance funding policies on student outcomes in higher education. *The ANNALS of the American Academy of Political and Social Science*, 655(1), 185-208.; Sanford, T., & Hunter, J. M. (2011). Impact of performance funding on retention and graduation rates. *Education Policy Analysis Archives*, 19(33).; Shin, J. C. (2010). Impacts of performance-based accountability on institutional performance in the US. *Higher Education*, 60(1), 47-68.; Shin, J. C., & Milton, S. (2004). The effects of performance budgeting and funding programs on graduation rate in public four-year colleges and universities. *Education Policy Analysis Archives*, 12(22).

<sup>10</sup> Tandberg, D. A., Hillman, N., & Barakat, M. (2014). State higher education performance funding for community colleges: Diverse effects and policy implications. *Teachers College Record*, 116(12), 1-31.

<sup>11</sup> Hillman, N. W., Tandberg, D. A., & Fryar, A. H. (2015). Evaluating the impacts of “new” performance funding in higher education. *Educational Evaluation and Policy Analysis*, 37(4), 501-519.

<sup>12</sup> Li, A. Y., & Kennedy, A. I. (2018). Performance funding policy effects on community college outcomes: Are short-term certificates on the rise?. *Community College Review*, 46(1), 3-39.

<sup>13</sup> Hillman, N. W., Hicklin Fryar, A., & Crespín-Trujillo, V. (2018). Evaluating the impact of performance funding in Ohio and Tennessee. *American Educational Research Journal*, 55(1), 144-170; Hillman et al. (2015); Li, A. Y., & Ortagus, J. C. (2019). Raising the stakes: Impacts of the Complete College Tennessee Act on underserved student enrollment and sub-baccalaureate credentials. *The Review of Higher Education*, 43(1), 295-333. .

<sup>14</sup> Hillman, N. W., Tandberg, D. A., & Gross, J. P. (2014). Performance funding in higher education: Do financial incentives impact college completions?. *The Journal of Higher Education*, 85(6), 826-857.

<sup>15</sup> Umbricht, M. R., Fernandez, F., & Ortagus, J. C. (2017). An examination of the (un) intended consequences of performance funding in higher education. *Educational Policy*, 31(5), 643-673.

<sup>16</sup> Hillman et al. (2018); Ward, J., & Ost, B. (2021). The effect of large-scale performance-based funding in higher education. *Education Finance and Policy*, 16(1), 92-124.

<sup>17</sup> Boland, W. C. (2020). Performance funding and historically black colleges and universities: An assessment of financial incentives and baccalaureate degree production. *Educational Policy*, 34(4), 644-673.

<sup>18</sup> Tandberg, D. A., & Hillman, N. W. (2014). State higher education performance funding: Data, outcomes, and policy implications. *Journal of Education Finance*, 222-243.

degree production but not corresponding increases in graduation or retention rates,<sup>19</sup> and another showed gains in STEM degrees when states incentivized this outcome.<sup>20</sup>

## Research Examining the Impact of PBF on Certificate and Degree Completion

Outcome	Effect of PBF	Location
Bachelor's degree production/graduation rate	No effect	<ul style="list-style-type: none"> <li>Public four-years (Shin, 2010)</li> <li>Public HBCUs (Boland, 2018)</li> <li>Public four-years when PBF states were compared to non-PBF states (Shin &amp; Milton, 2004)</li> <li>IN (Umbricht et al., 2017)</li> <li>PA State System of Higher Education institutions (Hillman et al., 2014)</li> <li>TN &amp; OH (Hillman et al., 2018; Ward &amp; Ost, 2021)</li> <li>TN (Sanford &amp; Hunter, 2011)</li> </ul>
	Increase	<ul style="list-style-type: none"> <li>Public four-years, increase in degree production with more recent policies but no evidence of change in graduation or retention rates (Favero &amp; Rutherford, 2020)</li> <li>Public four-years, several years after adoption (Tandberg &amp; Hillman, 2014)</li> <li>In STEM at public four-years when STEM degree metrics are included (Li, 2020)</li> </ul>
Associate's degree production	No effect	<ul style="list-style-type: none"> <li>TN community colleges (Li &amp; Ortagus, 2019)</li> <li>WA community colleges (Hillman et al., 2015)</li> <li>Community colleges (Li &amp; Kennedy, 2018)</li> </ul>
	Decrease	<ul style="list-style-type: none"> <li>TN &amp; OH (Hillman et al., 2018)</li> </ul>
	Mixed	<ul style="list-style-type: none"> <li>Mixed findings in different states (Tandberg et al., 2014)</li> </ul>
Certificate completion	Increase	<ul style="list-style-type: none"> <li>TN community colleges (Hillman et al., 2018; Li &amp; Ortagus, 2019)</li> <li>WA community colleges (Hillman et al., 2015)</li> <li>Public community colleges (Li &amp; Kennedy, 2018)</li> </ul>

<sup>19</sup> Favero, N., & Rutherford, A. (2020). Will the tide lift all boats? Examining the equity effects of performance funding policies in US higher education. *Research in Higher Education*, 61(1), 1-25.

<sup>20</sup> Li, A. Y. (2020). Performance funding policy impacts on STEM degree attainment. *Educational Policy*, 34(2), 312-349.

## Unintended Consequences of PBF

### Restricting Access

To improve performance, PBF policies may lead institutions to restrict access to underserved students who may be less likely to complete a degree than their more advantaged peers. Qualitative studies offer evidence that campus administrators face incentives under PBF to increase selectivity and admit students who are more likely to graduate.<sup>21</sup> There is also evidence of a negative association between PBF and institutional Pell grant revenue, indicating colleges subject to PBF may enroll fewer low-income students after PBF adoption.<sup>22</sup> Some quasi-experimental evidence indicates PBF has led to increased selectivity and decreased enrollment of racially minoritized and low-income students.<sup>23</sup>

### Focusing on Shorter-Term Programs

PBF may incentivize institutions to game the system by focusing on near-term improvements without substantially altering their activities to improve longer-term outcomes. For instance, colleges may focus on improving outcomes by encouraging students to pursue shorter-term certificate programs rather than associate's degrees; however, shorter-term certificates sometimes yield lower returns in the labor market than associate's degrees.<sup>24</sup> As indicated in the prior section, several quasi-experimental studies have shown that PBF has led to increases in certificates, sometimes coinciding with decreases in associate's degree production.<sup>25</sup>

### Funding Disparities Across Institution Types

Research has also shown that PBF can exacerbate funding disparities across institutions, leading to increased appropriations to higher-resourced and more selective institutions, and decreased appropriations

---

<sup>21</sup> Dougherty, K. J., Jones, S. M., Lahr, H., Natow, R. S., Pheatt, L., & Reddy, V. (2016). Looking inside the black box of performance funding for higher education: Policy instruments, organizational obstacles, and intended and unintended impacts. *RSF: The Russell Sage Foundation Journal of the Social Sciences*, 2(1), 147-173.; Dougherty, K. J., Jones, S. M., Lahr, H., & Pheatt, L. (2016). *Performance funding for higher education*. JHU Press.

<sup>22</sup> Kelchen, R., & Stedrak, L. J. (2016). Does performance-based funding affect colleges' financial priorities?. *Journal of Education Finance*, 302-321.

<sup>23</sup> Birdsall, C. (2018). Performance management in public higher education: Unintended consequences and the implications of organizational diversity. *Public Performance & Management Review*, 41(4), 669-695.; Gándara, D., & Rutherford, A. (2020). Completion at the expense of access? The relationship between performance-funding policies and access to public 4-year universities. *Educational Researcher*, 49(5), 321-334.; Umbricht et al., 2017.

<sup>24</sup> Dadgar, M., & Trimble, M. J. (2015). Labor market returns to sub-baccalaureate credentials: How much does a community college degree or certificate pay?. *Educational Evaluation and Policy Analysis*, 37(4), 399-418.; Liu, V. Y., Belfield, C. R., & Trimble, M. J. (2015). The medium-term labor market returns to community college awards: Evidence from North Carolina. *Economics of Education Review*, 44, 42-55.

<sup>25</sup> Hillman et al. (2018); Hillman et al. (2015); Li & Kennedy (2018); Li & Ortagus (2019).

to less selective, non-research, and rural institutions.<sup>26</sup> In addition, Black students, adult students, part-time students, and students placed into developmental coursework garnered less than their peers in performance funds for Texas community colleges.<sup>27</sup> This disproportionate allocation of resources may be exacerbated by the fact that less selective institutions typically do not have financial resources and data infrastructure to make substantial adjustments in strategies to accommodate PBF expectations.<sup>28</sup>

## Research Examining the Impact of PBF on Unintended Consequences

Outcome	Effect of PBF	Location
<b>Selectivity</b>	Increase	<ul style="list-style-type: none"> <li>IN public four-years (Birdsall, 2018; Umbricht et al., 2017)</li> <li>Public four-years (Gándara &amp; Rutherford, 2020)</li> </ul>
<b>Enrollment of racially minoritized students</b>	Decrease	<ul style="list-style-type: none"> <li>IN public four-years (Birdsall, 2018; Umbricht et al., 2017)</li> </ul>
	No effect	<ul style="list-style-type: none"> <li>General PBF provisions at public four-years (Kelchen, 2018)</li> <li>General PBF provisions at community colleges (Kelchen, 2019)</li> </ul>
<b>Enrollment of Black students</b>	Decrease	<ul style="list-style-type: none"> <li>Public four-years (Gándara &amp; Rutherford, 2020)</li> </ul>
<b>Enrollment of Latinx students</b>	Decrease	<ul style="list-style-type: none"> <li>Public four-years (Gándara &amp; Rutherford, 2020)</li> </ul>
<b>Enrollment of low-income students</b>	Increase	<ul style="list-style-type: none"> <li>TN community colleges (Li &amp; Ortagus, 2019)</li> </ul>
	No effect	<ul style="list-style-type: none"> <li>Public four-years (Gándara &amp; Rutherford, 2020)</li> <li>General PBF provisions at public four-years (Kelchen, 2018)</li> <li>General PBF provisions at community colleges (Kelchen, 2019)</li> </ul>
<b>Enrollment of adult students</b>	Decrease	<ul style="list-style-type: none"> <li>TN community colleges (Li &amp; Ortagus, 2019)</li> </ul>
	No effect	<ul style="list-style-type: none"> <li>General PBF provisions at public four-years (Kelchen, 2018)</li> <li>General PBF provisions at community colleges (Kelchen, 2019)</li> </ul>
<b>Enrollment of first generation students</b>	Decrease	<ul style="list-style-type: none"> <li>Public four-years (Gándara &amp; Rutherford, 2020)</li> </ul>
<b>Certificate production at the expense of associate degree production</b>	Mixed	<ul style="list-style-type: none"> <li>TN community colleges (Hillman et al., 2018; Li &amp; Ortagus, 2019)</li> <li>WA community colleges (Hillman et al., 2015)</li> </ul>

<sup>26</sup> Hagood, L. P. (2019). The financial benefits and burdens of performance funding in higher education. *Educational Evaluation and Policy Analysis*, 41(2), 189-213.

<sup>27</sup> McKinney, L., & Hagedorn, L. S. (2017). Performance-based funding for community colleges: Are colleges disadvantaged by serving the most disadvantaged students?. *The Journal of Higher Education*, 88(2), 159-182.

<sup>28</sup> Hillman, N., & Corral, D. (2017). The equity implications of paying for performance in higher education. *American Behavioral Scientist*, 61(14), 1757-1772.; Jones, T. (2014). *Performance funding at MSIs: Considerations and possible measures for public minority-serving institutions*. Southern Education Foundation.

<b>Funding for selective, research institutions</b>	Increase	<ul style="list-style-type: none"> <li>Public four-years (Hagood, 2019)</li> </ul>
<b>Funding for less-selective, non-research, rural institutions</b>	Decrease	<ul style="list-style-type: none"> <li>Public four-years (Hagood, 2019)</li> </ul>
<b>Funding for MSIs</b>	Mixed	<ul style="list-style-type: none"> <li>Mixed findings in different states. On average, funding decreased at public four-year MSIs (Hillman &amp; Corral, 2017)</li> </ul>
	No effect	<ul style="list-style-type: none"> <li>Public four-year MSIs (Hagood, 2019)</li> </ul>

Amid concerns associated with PBF policies, some states have built equity metrics into PBF systems that are designed to incentivize colleges to enroll and/or graduate underserved students. Recent research offers evidence that equity metrics may improve enrollment among some student groups.<sup>29</sup> Overall, existing research does not show consistent evidence of the effectiveness of PBF in improving degree completion across institution types and state contexts. Moreover, evidence points to several unintended consequences of PBF that exacerbate inequities.

## Future Directions for PBF Research

Policymakers across the ideological spectrum are grappling with how to improve student outcomes and close economic and racial gaps in educational attainment. As the current economic downturn associated with the COVID-19 pandemic makes sizable decreases in state funding imminent, public colleges and universities will face pressure to do more with less in the coming years. The combination of tying funds to student outcomes with reduced overall funding could exacerbate gaps in student outcomes if done poorly or mitigate some of the worst possible outcomes if equity metrics are prioritized.

Yet the insights that can be drawn from existing research on PBF policies are limited in two key ways. First, although PBF systems share the fundamental feature of tying state funding to student outcomes, the characteristics of PBF vary substantially from state to state as well as within individual states over time. For instance, PBF systems differ in which sector and/or institutions are subject to PBF, the share of funds linked to performance metrics, the metrics on which institutions are evaluated, whether states include equity metrics for institutions that enroll and/or graduate underserved students, and what student populations are included in equity metrics (for example, low income, racially minoritized, adult, academically underprepared).

---

<sup>29</sup> Gándara, D., & Rutherford, A. (2018). Mitigating unintended impacts? The effects of premiums for underserved populations in performance-funding policies for higher education. *Research in Higher Education*, 59(6), 681-703.; Kelchen, 2018.

This variation in policy design can be seen in the proportion of state funding that is tied to PBF, ranging from less than 2% for sectors subject to PBF in Arkansas, Michigan, North Carolina, Utah, and other states to more than 80% in Ohio, North Dakota, and Tennessee. In half of the states with PBF in 2020, fewer than 10% of funds were at stake under performance funding.<sup>30</sup> Some states, such as Kentucky and Ohio, have included stop-loss and hold harmless provisions to protect institutions from losing too much funding through PBF, and some states have a transition period during which the percentage of funds tied to performance gradually increases. While most current PBF systems include some type of equity metric in PBF, the included student populations differ, with just over half of PBF states explicitly incentivizing racial equity in 2020.<sup>31</sup> Such variation across multiple dimensions of PBF systems makes it difficult to describe PBF or explore its impacts through the use of a binary policy variable.

Second, to date, there have been sporadic efforts to document the existence of PBF policies across states, but no comprehensive, systematic data exists that captures both the presence of PBF and the characteristics of these policies across states over time. The current literature also lacks a consensus on the existence of PBF in some states and years. This is likely due to a variety of reasons, such as studies and reports not differentiating between the existence of a policy and the provision of funds or treating all policies relating to organizational performance (e.g., research incentives) as PBF rather than those that directly link funds to prior student outcomes.

Absent systematic and specific information on how states have implemented PBF and how they have included (or not included) equity in their funding systems, existing evidence on the impacts of PBF systems offers limited insight into the potential levers policymakers can use to design PBF systems to reduce inequities. As a result, policymakers are left with little information regarding how to design more equitable and effective funding policies. For instance, if state policymakers are seeking to design more equitable and effective PBF systems, existing research offers limited insight into:

- ***How much funding to tie to student outcome metrics***
- ***What institutions to include in PBF systems***
- ***What student outcome metrics to incentivize***
- ***What student populations to include in equity metrics***

---

<sup>30</sup> Rosinger et al. (under review).

<sup>31</sup> Rosinger et al. (under review).



Future research might consider how various design features of PBF systems relate to college access, student success, institutional funding, and other outcomes in an effort to inform how state policymakers can leverage funds to achieve more equitable and effective outcomes.

### InformEd States PBF Dataset

In response to existing data limitations, the InformEd States team spent nearly four years compiling the most extensive longitudinal dataset to date regarding the existence and characteristics of PBF systems from Fiscal Year 1997 to 2020. We reviewed more than 1,500 primary source state policy documents related to higher education funding and performance funding systems. These documents included state budgets and legislation and higher education agency board reports, meeting minutes, and presentations. When we were unable to locate information, we reached out to state higher education executive officers to clarify policy details. The resulting dataset, which will be posted to our website in the coming weeks, contains annual information by sector (and within sector for states where PBF policies apply to specific institutions within a sector) on:

- ***Whether a PBF policy exists “on the books” through legislation or board approval***
- ***Whether a PBF policy was funded***
- ***Amount of funds allocated based on performance***
- ***Percent of funds allocated based on performance***
- ***Total amount of general fund appropriations***
- ***Performance metrics on which institutions are evaluated***
- ***Whether a PBF policy includes an equity metric for specific student populations (low income, racially minoritized, adult, academically underprepared)***

Future research can leverage the InformEd States PBF dataset to rigorously examine how specific aspects of PBF policy design shape the equity and effectiveness of these policies and the extent to which PBF systems can be designed to reduce economic and racial inequities in educational attainment. Due to the COVID-19 pandemic, state legislatures have been forced to make difficult decisions brought on by declining revenues and limited resources. Higher education often serves as a balancing wheel during lean financial periods, and further work can leverage the InformEd States PBF dataset to examine the role PBF will play as states continue to make difficult decisions that may restrict the funding allocated to public higher education.

*The research reported here was supported by the William T. Grant Foundation. We are grateful to Lynneah Brown, Alexander Cassell, Garam Chu, Sam Riggs, and Jiayao Wu for their excellent research assistance. We are also grateful for the feedback and support our team has received from the InformEd States advisory board: Alisa Hicklin Fryar, Tiffany Jones, and David Tandberg. Any errors or omissions are our own, and the views expressed in this report are solely those of the authors. If you have any questions or comments related to this brief or the InformEd States project, please contact us at [info@informedstates.org](mailto:info@informedstates.org).*