



RESEARCH
for ACTION

Impact of OBF on Student Outcomes: Tennessee and Indiana

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Overview

From 2014-2016, Research for Action (RFA) worked closely with state officials in Tennessee and Indiana to obtain, verify, and analyze data obtained from Statewide Longitudinal Data Systems (SLDS) to determine the impact of each state's Outcomes-Based Funding (OBF) policy on student outcomes over time.ⁱ As is the case with all OBF policy, the formulas vary in terms of the specific outcomes rewarded, and also by the degree to which institutions were rewarded with "premiums" for disadvantaged students.

Utilizing SLDS allowed us to conduct robust analyses that track the impact of OBF on student-level outcomes over time and account for variation in key student characteristics. The analyses summarized in this document show the impact of OBF on state-specific outcome metrics and outcomes for all students, as well as for Pell Grant recipients (Pell) and Underrepresented Minority (URM) students. The analyses have been member-checked with officials in each state to ensure that our results are both comprehensive and accurate.

Major Findings

There is strong evidence that OBF in both Tennessee and Indiana has a positive impact on a range of student outcomes. These results have been realized as the percentage of overall enrollment comprised of Pell students has increased in both states.

1. Overall, full-time students do significantly better under OBF in terms of:
 - Credit accumulation in both 2- and 4-year sectors (TN)
 - Certificate completion (TN)
 - Degree completion (100% and 150%) in both the 2-year (TN) and 4-year (IN, TN) sectors
 - Declaring and obtaining a high impact degreeⁱⁱ in the 4-year sector (IN)
2. We also document significant positive impact on many of these metrics for full-time Pell and URM students.
3. Yet our analyses identify areas of concern as well. Part-time students in Tennessee's 2-year sector do not fare well under the state's OBF formula, and we see little effect on part-time students in Indiana. Specifically we find:
 - Significant negative impacts on credit accumulation and transfer for all part-time students in Tennessee
 - Significant negative impact on credit accumulation and transfer for part-time Pell and URM students in Tennessee
 - No impact on part-time students in Indiana's 4-year sector

In the remainder of this document, we provide summaries of enrollment trends and impacts across both states; and provide high-level findings for each state.

I. Overall Results: Tennessee and Indiana

Using student-level data from each state’s SLDS, we examined the impact of OBF policy on student outcomes aligned with metrics in each state’s formula. Analyses were conducted for all students, as well as historically underserved student groups targeted in OBF policies: Pell and URM. We also conducted disaggregated analyses for part-time and full-time students.

Table 1 summarizes statistically significant impact (positive or negative), measured at the 95% confidence level or above, on student outcomes included in each state’s OBF formula. Results are shown for the most recent cohort in which it is possible to measure the full effect of the policy.

Table 1. Evidence of Significant Impact of OBF Policies in Tennessee and Indiana on Key Student Outcomes

OUTCOME	TENNESSEE	INDIANA (FOUR-YEAR ONLY)
Degree 100% Time (On-Time)	+ Impact: All 4-Year	+ Impact FT
Declaring High-Impact Major	Not in Formula	+ Impact FT
Obtaining High-Impact Degree	Not in Formula	+ Impact FT
Degree 150% Time	+ Impact for 2-Year FT: All, Pell - Impact for 2-Year PT: All, Pell	Not in Formula
4-Year Credit Benchmarks (24/48/72)	Full-Time + Impact 24 Credits: All, URM + Impact 48 Credits: All	Unable to Measure
2-Year Credit Benchmarks (12/24/36)	Full-Time + Impact 12 Credits: All, Pell + Impact 24 Credits: All Part-Time - Impact 12 Credits: All - Impact 24 Credits: All, Pell, URM - Impact 36 Credits: All, Pell, URM	Unable to Measure
Certificate in 2 years	+ Impact 2-year FT: All, Pell, URM	Unable to Measure
Transfer	- Impact 2-year PT: All, Pell	Not in Formula

More detailed analyses of both quantitative and qualitative results are available in separate reports on Indiana and Tennessee; and in an IPEDS analysis presented at the 2016 annual meeting of the American Education Research Association.

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II. OBF Policy in Tennessee

Policy Overview

In 2010, Tennessee Governor Phil Bredesen signed the Complete College Tennessee Act (CCTA). The legislation established a robust outcomes-based funding model by directly linking an array of student attainment outcomes to the state’s base funding for higher education. Table 2 captures the implementation timeline for this policy.

Table 2. Timeline for Tennessee Implementation of OBF Policy

1979	2010	2015
Performance funding introduced in Tennessee; enrollment-based model	OBF 2.0 adopted in Tennessee; 2010-2015 model implemented	Revisions made to 2010-2015 outcomes-based model; introduced 2015-2020 model

The formula was largely stable for five years after implementation. In 2015, the formula was refined to better align with the state completion agenda by increasing credit benchmark levels from 24/48/72 to 30/60/90 in the four-

year sector and including premiums for academically underprepared students in the two-year sector, among other refinements. The analyses presented here measure outcomes under the initial 2010-2015 funding formula.

As can be seen in Table 3, the formula rewards both two-year and four-year institutions for increases in a wide array of outcomes; and provides additional resources when Pell and adult students achieve these outcomes. Institutions have the autonomy to customize the formula by assigning priority weights to key outcomes, within the boundaries of state guidelines. Eighty-five percent of state appropriations to public postsecondary institutions in Tennessee are determined via the state’s OBF formula.

Table 3. Tennessee’s 2010-2015 OBF Formula

OBF 2.0 PERFORMANCE METRICS/WEIGHTS	TENNESSEE	
	2-Year Sector	4-Year Sector
Degree/Certificate Completion	•	•
College Credit Accumulation	•	•
Degrees/Awards per 100 FTE	•	•
Graduation Rate (200% time/6-years)		•
Remedial and Developmental Success	•	
Transfer	•	•
Workforce Training	•	
Job Placement	•	
Dual Enrollment	•	
Research & Service		•
Premiums: Low Income	•	•
Premiums: Adult Students	•	•
% of State Funding based on Outcomes	85%	

Shaded = Outcomes tracked in RFA’s analyses

Tennessee Enrollment Trends

To determine whether Tennessee enrollment trends shifted in the wake of OBF, we tracked enrollment for three years prior to OBF, and four years post-OBF (2006-2013). Pell and Underrepresented minorities comprise a larger proportion of total enrollment under OBF. Specifically:

- The percentage of overall enrollment comprised of Pell students rose 14-16% in Tennessee’s 4-year and 2-year sectors. This represents an increase of close to 11,000 Pell students.
- There has been a more modest increase in the percentage of URM students overall. In the four-year sector, enrollment of this population grew by about 1,000 students, or 2%. The overall numbers of URM students also grew in the two-year sector by about 2,000.

Impact of Tennessee’s OBF Policy on Student Outcomes

Table 4 summarizes the impact of OBF on key student outcomes across both the two-year and four-year sectors in Tennessee. Analyses utilize three years of pre-OBF data, and four years of post-OBF data (2006-2013). Impact analyses are presented for the most recent cohort of students available.

Table 4. Evidence of Significant Impact of OBF Policies in Tennessee on Key Student Outcomes

	4-YEAR			2-YEAR, FULL-TIME			2-YEAR, PART-TIME		
	ALL	PELL	URM	ALL	PELL	URM	ALL	PELL	URM
Degree 100% Time	+	∅	∅	∅	∅	∅			
Degree 150% Time				+	+	∅	-	-	-
25% credit benchmark	+	∅	+	+	+	∅	-	-	-
50% credit benchmark	+	∅	∅	+	∅	∅	-	-	-
75% credit benchmark	∅	∅	∅	∅	∅	∅	-	-	-
Certificate in 2 years				+	+	+	∅	∅	∅
Transfer				∅	∅	∅	-	-	∅

+ = statistically significant, positive impact; 95% confidence or above

- = statistically significant, negative impact; 95% confidence or above

∅ = no statistically significant impact

Shaded = Not included in analysis

Tennessee: High Level Takeaways

Our analyses reveal the following important findings:

- Four-year, full-time students fare well under Tennessee’s OBF policy. Specifically we document:
 - Positive impact for all students for on-time bachelor’s degree completion and credit accumulation for 24 and 48 credit benchmark levels.
 - Full-time students in the 4-year sector are the only group that displays positive gains for on-time degree attainment.
- Full-time Pell student outcomes vary. Four-year, full-time Pell students were not significantly affected by OBF, but 2-year, full-time Pell students were. Specifically:
 - 4-year: No significant effect of OBF on any measurable outcome.
 - 2-year: Significant positive effects in certificate completion, 150% associates degree completion, and accumulation of 12 credits completed by the first semester.
- Two-year, full-time students show significant positive gains in:
 - 12- and 24-credit accumulation.
 - Certificate completion.
 - Associates degree completion in 150%-time.
- Tennessee’s part-time community college students do not fare well under OBF. Overall:
 - There is no positive impact on any measurable outcome for this population.
 - There are statistically significant, negative effects of OBF on degrees, certificates, and credit accumulation.
 - Pell and URM students are negatively affected by OBF across a range of outcomes.
 - There is also a negative effect on transfer.

III. OBF Policy in Indiana

Policy Overview

Indiana adopted its first OBF metric in 2003 with the goal of utilizing bonus dollars to incentivize research universities to obtain more federal research dollars. In 2007, the state began transitioning to a formula focused on base funding (OBF 2.0), fully adopting Indiana’s OBF model in 2009. Indiana’s timeline for OBF policy implementation is captured in Table 5.

Table 5. Timeline for Indiana Implementation of OBF 2.0 Policy

2003	2009	2013	2016
Performance funding (OBF 1.0) introduced in Indiana; incentive for research institutions only	OBF 2.0 adopted in Indiana for all public institutions; outcomes-based model	Formula refined; added metrics for progression; remediation, and high impact degree completion	Funding formula refined; removed institution-specific metric

Since implementation of Indiana’s OBF 2.0 model in 2009, the formula has been revised slightly in each biennium; yet for the most part it has been largely consistent since 2013. The analyses presented here measure outcomes under the 2013-2015 funding formula.

As can be seen in Table 6, the current formula rewards both 2-year and 4-year institutions for increases in a wide array of outcomes; and provides additional funding when Pell students achieve outcomes. In FY 2015, 6% of state appropriations to public postsecondary institutions in Indiana was determined via the state’s OBF formula. As of FY 2016 that percent dipped to 4%, although the state will increase appropriations based on the OBF formula back to 6.5% in FY 2017.

Table 6. Indiana’s 2013-2015 OBF Formula

OBF 2.0 PERFORMANCE METRICS/WEIGHTS	INDIANA	
	2-Year Sector	4-Year Sector
Degree/Certificate Completion	•	•
College Credit Accumulation	•	•
High Impact Degree Completion		•
On-Time Graduation	•	•
Remedial and Developmental Success	•	
Institutionally Defined Metric	•	•
Premiums: Low Income Students	•	•
% of State Funding based on Outcomes	6% - 4%	

Shaded = Outcomes tracked in analyses

Note: Robust analyses of the impact of OBF 2.0 in Indiana’s 2-year sector were not possible. Upon careful inspection, it was discovered that two-year sector data in Indiana’s SLDS did not meet the quality and consistency standards necessary for our analytic model. As a result, and in partnership with Indiana’s Commission for Higher Education, we decided to exclude the 2-year sector from our analyses.

Indiana Enrollment Trends

To determine whether Indiana enrollment trends shifted in the wake of OBF, we tracked enrollment for four years prior to OBF, and six years post-OBF (2005-2014). Enrollment of Pell and URM students is increasing overall, and as a percentage of total enrollment, in Indiana’s universities. Specifically:

- The percentage of overall enrollment comprised of Pell students rose 11% among full-time university students, and 20% among part-time university students. This represents an increase of close to 5,000 Pell students enrolled in Indiana’s universities.
- Increases in the number and percentage of URM university students were more modest. The overall percentage of URM among full-time university students grew 2%, and 6% among part-time students, for a total of about 1200 more URM students.

Impact of OBF Policy on Student Outcomes

Table 7 summarizes the impact of OBF on key student outcomes for full-time and part-time university students in Indiana. Analyses utilize four years of pre-OBF data, and six years of post-OBF data (2005-2014). Impact analyses are presented for the most recent cohort of students available.

Table 7. Evidence of Significant Impact of OBF Policies in Indiana on Key Student Outcomes

	4-YEAR, FULL-TIME			4-YEAR, PART-TIME		
	All	Pell	URM	All	Pell	URM
Degree 100% Time	+	∅	∅	∅	∅	∅
Declaring High Impact Major	+	∅	∅	∅	∅	∅
High Impact Degree 100% Time	+	∅	∅	∅	∅	∅

+ = statistically significant, positive impact; 95% confidence or above

- = statistically significant, negative impact; 95% confidence or above

∅ = no statistically significant impact

Indiana: High-Level Takeaways

Our analyses reveal the following important findings:

1. Four-year, full-time students fare well under Indiana’s OBF policy. Specifically we document:
 - Positive effects for the population as a whole on all three measurable outcomes: bachelor’s degree completion, declaration of a high-impact major, and graduation with a high impact major.
2. OBF in Indiana has no measurable impact on either Pell or URM students enrolled in the four-year sector.
 - While their numbers are increasing overall and as a percentage of the total population, these students are faring about the same as they were prior to OBF implementation.

ⁱ Results were produced by utilizing interrupted time series analysis, a quasi-experimental research design that measures the degree to which an outcome deviates from its historical trend following the implementation of a policy. Additionally, we controlled for student characteristics such as gender, race, socioeconomic status, ACT score, and choice of major, further isolating the effect of OBF on student outcomes. Cohorts are defined by students’ entering year. It is important to note that figures for overall students, Pell students, and underrepresented minority students were estimated using separate regressions for each population, which have unique pre-OBF trends, N-sizes, and student characteristics.

ⁱⁱ “High Impact” degrees are defined by Indiana and include Bachelor’s, Master’s and Doctoral Degrees for specific degree types granted in mostly STEM fields. Funding for this metric is only awarded to the following research institutions: Indiana University-Bloomington, Indiana University-Purdue University Indianapolis, Purdue University-West Lafayette and Ball State University.