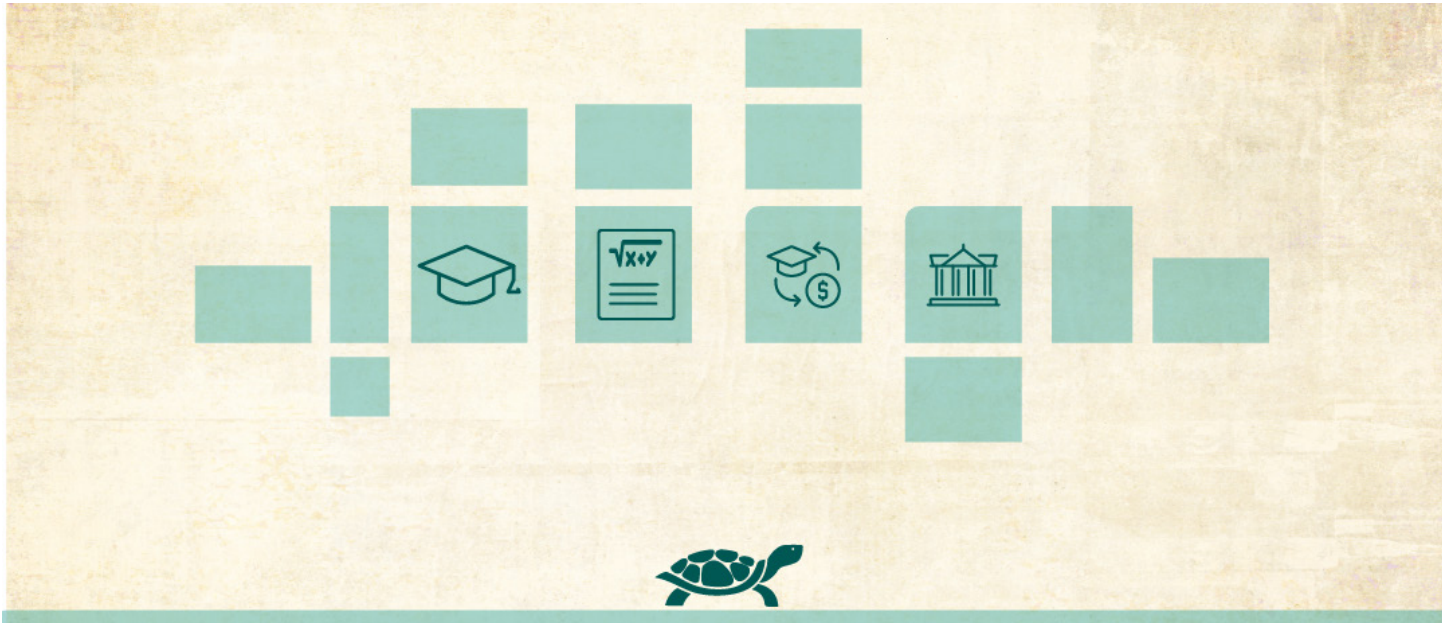


Higher Education Needs Funding Formulas

A Brief Series Examining State Higher Education Financing from a K-12 Perspective

By: Matt Richmond



Introduction

Stephen Hawking’s seminal book on cosmology, *A Brief History of Time*, begins with a well-worn anecdote:

A well-known scientist once gave a public lecture on astronomy. He described how the earth orbits around the sun and how the sun, in turn, orbits around the centre of a vast collection of stars called our galaxy. At the end of the lecture, a little old lady at the back of the room got up and said: “What you have told us is rubbish. The world is really a flat plate supported on the back of a giant tortoise.” The scientist gave a superior smile before replying, What is the tortoise standing on? ” “You’re very clever, young man, very clever,” said the old lady. “But it’s turtles all the way down!”

The phrase “turtles all the way down” is used in philosophical and legal circles to describe a concept with no logical base to rest upon, one that relies on limited interrogation to make sense.

In higher education, it perfectly encapsulates the current methodology for funding public colleges and universities in most U.S. states. Allocations this year are based on the prior year, which were based on the year prior to that, and so on. Yet, while the world turtle stands on the back of a rich **mythological past**, higher education funding is built upon a **history of discrimination** and inequality, one which has frustrated efforts to equalize student opportunity today.

K-12 schools were once served similarly. Things have changed considerably in the last 50 years, in part due to **a wave of litigation** starting in the 1970s, so that today every state in the country has some type of formula in place to identify the needs of schools relative to each other and allocate money accordingly. Formula effectiveness varies, with some states doing a better job than others, but they all have some form of cost-driven model in place which—crucially—drives the vast majority of state education spending to schools. These models use up-to-date data to estimate the best resource distribution

based on the needs of public-school students today. This approach means that lobbying from individual districts is limited, because the allocation of funds is objectively derived. Funding for higher education is several decades behind K-12 schools in both theory and practice. Less than a quarter of state governments have any formula in place for distributing funds to their universities, despite the fact that hundreds of millions, and in some cases billions, of dollars are on the line annually. Such a small amount of state funding is distributed through these mechanisms that they can hardly be called “funding formulas” at all, with most states using them to distribute new dollars only. As a percentage, this is typically in the (low) single digits of state funding for universities. Instead, the most common methodology used for allocating resources is known as *base-plus funding*. In this context, the base refers to the amount of money an institution received in the prior year, and the plus refers to any funding changes defined by the legislature. In practice, most institutions receive the same funding as the prior year, with a small adjustment up or down tied to enrollment and inflation.

But even momentary consideration of this approach raises red flags. In the second installment of this brief series, [Equity Before Adequacy in Higher Education Funding](#), we explored the deep resource inequities that exist today between public institutions serving large numbers of economically disadvantaged and racially minoritized students and their states’ flagship institutions. These inequities are rooted in a history of discrimination and policy decisions that prioritize certain advantaged groups over others. College and university leaders may be accustomed to the current funding model, learning to run their institutions with fewer resources while serving needier students, but managing to exist within an unjust system does not mean that the model is effective or worth perpetuating. Survival is not an endorsement.

It is excruciatingly difficult to create systems of opportunity for all when the frameworks we are basing our policy decisions on were designed to *prevent* opportunity for all but the most privileged. Our values have changed and so too must our method of distributing resources. An objective model is the only legitimate path toward equity and the best way to enable public institutions to support their states’ economic and social well-being.

The Problem: A Lack of Objectivity

To keep this piece focused and minimize confusion, unless otherwise noted the numbers and analysis presented will be for four-year institutions only. Community colleges and other two-year institutions present a distinct set of challenges that require separate consideration and analysis, though many of the problems and solutions laid out here are relevant to both systems.

The models used for funding universities today do not serve students, institutions, or states’ labor market needs. Any model should include three principles:

Efficiency. Public dollars should be directed in ways that maximize impact and align with both institutional needs and state priorities. This means directing additional funding to institutions serving students who require additional supports or those that offer programs deemed high-priority by the state.

Transparency. Taxpayers and institutions should be able to understand, with minimal effort, how decisions were made to distribute funds. This means both transparency in the process being used and a concerted effort to keep that process as simple as possible.

Stability. On a year-to-year basis, institutions should not have wild swings in funding levels. Neither are conducive to long-term planning or effective short-term budgeting.

As of today, there is not a single state successfully implementing all three principles in its funding systems. Most would be hard-pressed to claim even two. To explain why, we will score and describe each of the most common funding models currently used by states relative to these three principles. Models will receive one credit if they do an effective job in that category, zero credits if there are structural limitations that inhibit or are counterproductive to achieving the goal, or half a credit if they fall somewhere in between. The models we will consider, categorized using data from a 2022 report by the [State Higher Education Executive Officers Association](#), consist of (1) base plus, (2) institutional request, and (3) performance-based funding. [1] While all three come with relative strengths and weaknesses, each has unavoidable downsides that make them poor choices to build upon.

Base Plus

Base plus is by far the most common model used by states for funding higher education (see below scoring image and Figure 1). The *base* in the name refers to a set level of funding for each institution, typically the state’s allocation the prior year, while the *plus* refers to an adjustment—usually upwards—based on factors like enrollment, inflation, or tuition changes. Base plus is often paired with other models to calculate the plus component, but the base amount is, by definition, referential and not variable.

This distinction is important because some states use a cost-based formula to calculate the distribution of new funds each year. At the risk of foreshadowing the next section, this approach may erroneously imply strong, healthy frameworks, but this is not the case.

Base Plus Strength on Key Principles

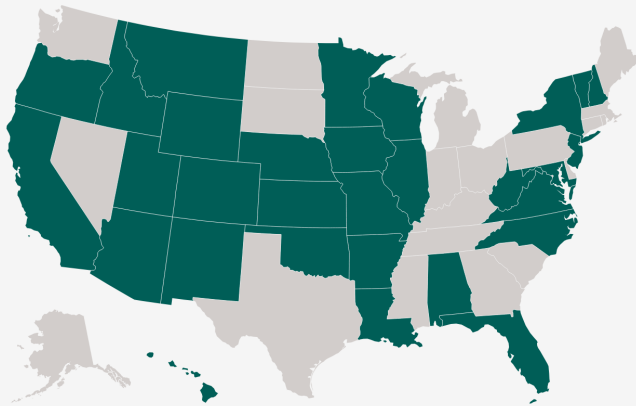
○ = No Credit ◐ = Half Credit ● = Full Credit

	Efficiency	Transparency	Stability
Credit on Key Principals	○	◐	●

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Figure 1 | Thirty States Use Base Plus as Their Primary Funding Model for Four-Year Institutions (2022)

■ Primary Funding Model: Base Plus



Note: To identify primary and secondary funding models, any state using base plus was automatically identified as using the model as their primary. Institutional request was identified as the primary if the state did not use base plus but did use institutional request at the time of data collection. If a state had no data in Table 1 of the Appendix, they were not included in categorizations.

Source: Approaches to Base Funding for Public Colleges and Universities

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Efficiency: Base-plus models distribute nearly all funding based exclusively on what was allocated in prior years. For a rough approximation of what this means: Between 2013 and 2023, state funding for higher education increased by **36.6 percent nationally** (adjusted for inflation). Assuming a constant increase, this amounts to just 3.7 percent per year. Based on this quick math, using a base-plus model, 96.3 percent of funding each year will have been distributed without any consideration for student need, the labor market, or any current need facing institutions or the state.

Worse, we know that funding for institutions serving primarily Black, Hispanic, and socio-economically disadvantaged students has **always been far lower** than their peers. Many of these historical disparities have carried into the modern day, with **nearly 30 percent** of both low-income and Black students attending the nation’s poorest-funded colleges, almost double the rate of white students. For Hispanics, that number is nearly 40 percent. Inequality is institutionalized by this funding

model, making it nearly impossible to quickly redirect resources to institutions that need it the most.

Transparency: On the one hand, it is very easy to understand the core components of a base-plus model. An institution can typically estimate within a few percentage points the amount of funding it will receive next year, assuming no major austerity measures hit the budget. On the other hand, with nearly the entire appropriation being decided based on decisions made in years past, the logic of those dollar amounts is opaque. Like the world turtle, current budget numbers rest on prior year numbers and prior year numbers rest on those from the prior decade, and so on.

Stability: If efficiency and transparency seem lacking, it is on the altar of stability that they were sacrificed. By basing nearly all state allocation decisions on prior year distributions, base-plus funding is an inherently stable option. Institutions understand each year how much funding they will receive and can, in most cases, make long-term projections that help them make strategic spending decisions. Unfortunately, it is not the only factor that matters when resourcing colleges and universities, and the severe imbalance in priorities makes this funding model a poor choice for states.

Institutional Request

The fact that institutional request exists as a primary funding mechanism for *any* state with more than a handful of four-year institutions is shocking. The model received a half credit for efficiency in the scoring below because it feels unreasonable to define a funding model used by 20 percent of the country (see scoring image below and Figure 2) as entirely without merit. And in the case of very small university systems, such as those in Alaska and Delaware, it may be a reasonable choice. Beyond those two states, however, this system benefits only lobbyists and those that can afford the best of them.

Institutional request means that institutions send representatives to the capital to make their case for how much money they need. There are variations on this theme. Baseline amounts may be set like base plus and state priorities may be factored in when considering arguments, but ultimately, funding levels are decided according to the whims of the legislature that year.

Institutional Request Strength on Key Principles

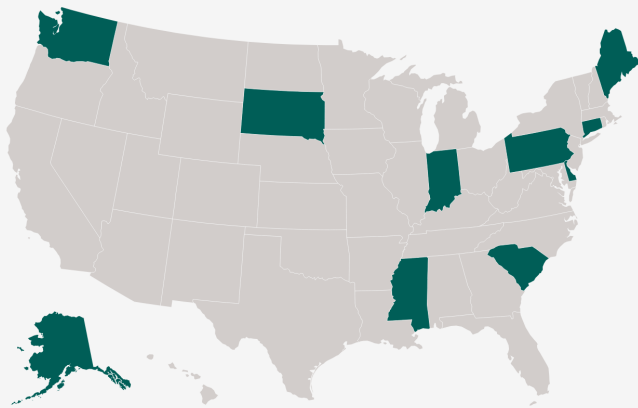
○ = No Credit ◐ = Half Credit ● = Full Credit

	Efficiency	Transparency	Stability
Credit on Key Principals	◐	○	○

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Figure 2 | Ten States Use Institutional Request as Their Primary Funding Model for Four-Year Institutions (2022)

■ Primary Funding Model: Institutional Request



Note: To identify primary and secondary funding models, any state using base plus was automatically identified as using the model as their primary. Institutional request was identified as the primary if the state did not use base plus but did use institutional request at the time of data collection. If a state had no data in Table 1 of the Appendix, they were not included in categorizations.

Source: Approaches to Base Funding for Public Colleges and Universities

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Efficiency: In states with a small number of four-year colleges and universities, institutional request makes sense. There is no need for a formula to sort the needs of two or three schools. And one could make the argument that in larger systems, legislators are able to prioritize state initiatives when making funding decisions independently each year. However, this assumes a high degree of knowledge and competency in the legislature on a topic that is typically far down the list of priorities. When lawmakers must make important decisions on topics they are not well versed in and without any existing policy support, lobbyists and activist stakeholders gain influence. And notably, students have no representatives in this scenario.

Transparency: There is little to no transparency when funding hinges primarily on subjective decision-making. Arbitrary allocations are the least transparent of all potential funding methods.

Stability: The stability of an institution’s budget hinges on how baselines are set, if they are set at all. This is a case where the model *could* be stable, depending on how the system is designed, but the core components of the model do not require or even facilitate stability. Basing state allocations on institutional request implies a high degree of potential instability, in fact, because of the need for goodwill in the legislature each year, which can change quickly based on elections and other political considerations. If state funding is typically stable in a state with this model in place, it is not because of the model, but despite it.

Performance-Based Funding

Performance-based funding (PBF) has a complicated history as a policy prescription for funding higher education. Research has [again](#) and [again](#) highlighted its ineffectiveness and negative impacts on marginalized communities, with little evidence that degree attainment is positively impacted. [Several studies](#) have found the number of degrees awarded [actually decreases](#) after implementation. Nonetheless, it has become a component in nearly half of all state formulas (see scoring image below and Figure 3). Only three—Tennessee, Kentucky, and Ohio—direct the majority of their funding through a PBF model, but the concept is gaining momentum.

On its face, the concept has some logic. By rewarding schools with greater student success, it incentivizes the institutional behavior that leads to better graduation rates, work placement, and other success markers, and it might encourage that success at other institutions. As states have grasped for ways to improve student outcomes, PBF has emerged as one of the only policy theories that directly achieves that aim.

This is likely why PBF has spread so widely despite its (ironically) poor performance. Without an alternative, liberal politicians and policymakers hoping to improve graduation rates for the poor and racially minoritized have joined with conservative colleagues who see an opportunity to introduce market dynamics to an inefficient government enterprise. Add to that the poor quality of alternative funding models and it is no surprise that policymakers keep returning to a funding model that has repeatedly failed to bring about the intended gains in performance.

Performance-Based Funding (PBF) Strength on Key Principles

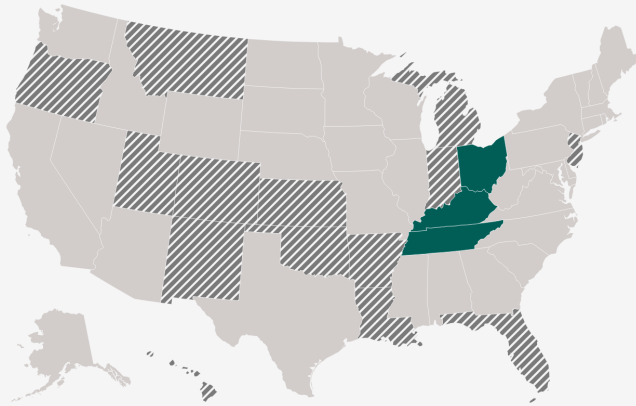
○ = No Credit ◐ = Half Credit ● = Full Credit

	Efficiency	Transparency	Stability
Credit on Key Principals	○	●	◐

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Figure 3 | Three States Use Performance-Based Funding (PBF) as Their Primary Funding Model for Four-Year Institutions (2022)

■ Primary Funding Model: Performance-Based
▨ Secondary Funding Model: Performance-Based



Note: To identify primary and secondary funding models, any state using base plus was automatically identified as using the model as their primary. Institutional request was identified as the primary if the state did not use base plus but did use institutional request at the time of data collection. If a state had no data in Table 1 of the Appendix, they were not included in categorizations.

Source: Approaches to Base Funding for Public Colleges and Universities

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Efficiency: While it is possible to improve PBF efficiency somewhat, its fundamental theory runs in direct contrast to the needs of both institutions and states. When an institution succeeds, it receives additional funding. Because of fungibility, this means less funding available for other institutions. Budget planners do not have a money tree. One dollar in one priority means one dollar less in another. Thus, institutions doing well have more money to continue their momentum, while those that are struggling are given even less to invest in improvements. Similarly, colleges and universities that provide training in priority areas but struggle to attract and graduate students receive fewer dollars than their counterparts, exacerbating the divide. Growing successful programs and eliminating those with problems may sound like sound market theory, but outside of the largest universities, most institutions still primarily serve students in their region. When a nursing or engineering **program is eliminated** from the only university in its area, the opportunity to save lives in the local hospital or design necessary infrastructure for the community may be taken away. This hurts students, the economy, and state training goals.

A recent approach adopted by policymakers to mitigate this glaring weakness is weighting outcomes as worth more when students possess certain characteristics, such as being low-income or Black/Hispanic. In Kentucky, for instance, 35 percent of the formula is at least partly calculated based on degrees earned by “minority and low-income students.” As these

students often require more academic supports and have lower graduation rates, the larger performance awards help offset the bias in the formula that would otherwise punish institutions with large, disadvantaged student populations. Unfortunately, this does not address the fact that most of these institutions have been historically, drastically underfunded. Success requires resources. Asking any school to achieve miracles as a prerequisite to funding is neither a sustainable nor logical way to efficiently distribute state dollars.

Transparency: The one major benefit that performance-based funding has over the other funding models is its clarity. Because PBF models use formulas to distribute dollars, it is far easier to understand both where the money is going and why. There are standards and/or goals laid out and an institution’s performance against those metrics defines the amount of money it will receive. These formulas can be complex—the **Tennessee comptroller’s guide** to its formula is 24 pages long, for example—but any math-based model has that potential. Funding formulas in general present far more transparency and objectivity than current alternatives.

Stability: PBF formulas receive a half credit for stability because, while theoretically highly unstable, they tend to be constructed in a way that is based on enrollment. For instance, an institution may receive funding for each student that passes a freshman English course, but the number of students taking the course is itself the greatest indicator of how many will ultimately pass. Passage rates are unlikely to shift significantly from semester to semester at larger institutions. PBF models also tend to calculate outcomes using a rolling multi-year average, further reducing the chance of large swings. So while there is more instability in PBF than there would be if the measurement was purely structured on an enrollment or base-plus model, these design decisions generally stabilize what would otherwise be a highly unpredictable formula.

The Solution: Formulas Based on Student and Institutional Need

Fixing the problems laid out thus far does not require a radical reinvention of state policy. Decades of litigation over K-12 finance have forced states to develop, implement, and iterate funding models that tick all three priority boxes described in the previous section. While each state’s implementation is different, cost-driven funding formulas have dramatically improved the efficiency, transparency, and stability of funding for K-12 school districts over time. Yet not a single U.S. state has adopted the model as its main distribution mechanism in higher education.

While the possible variables are endless, a funding formula is typically based on cost- and need-driving inputs, such as enrollment size, student demographics, courses taken, or outside income. A PBF-based formula would be *output-*

driven, as allocation levels are based on institutional outputs. The benefit of basing funding on relevant input costs is that need estimates can be adjusted fully based on changing circumstances (unlike a base-plus system), and they direct dollars where they are most needed.

Cost-Driven Funding Formulas

Performance-Based Funding (PBF) Strength on Key Principles

○ = No Credit ◐ = Half Credit ● = Full Credit

	Efficiency	Transparency	Stability
Credit on Key Principles	○	●	◐

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Efficiency: Funding formulas in K–12 were often introduced into state policy because of either a political movement or court-mandated requirement to improve equity in resource distribution. They are designed to identify target populations and direct resources to those students and/or the schools that serve them. In higher education, this can include marginalized and disadvantaged student populations, which are typically served disproportionately at smaller, regional colleges, and students enrolled in programs deemed a high priority by state leaders. Funding formulas allow for state allocations to adjust as outside funding for institutions grows or shrinks. In K–12, this funding primarily means property taxes. Sources in higher education include investment income from endowments and alumni giving, among other revenue streams. This adjustment *significantly* increases funding efficiency, as state allocations not only account for institutional need but how much revenue a college or university is able to raise from outside sources, preventing double funding and helping each tax dollar get to where it will have maximum impact.

Transparency: A thoughtfully crafted funding formula will be constructed to be just complex enough that money gets where it needs to go but without any additional pieces. Institutional leadership, state elected officials, and the public can all take the stated formula, input the relevant (publicly available) data, and know exactly how much an institution will be allocated, given the state budget that year. There is no guessing how effective the lobbyists will be that budget cycle, there is no black-box base amount derived from prior years that might no longer be relevant, and when a component of the formula is changed it cannot be hidden or done in secret to benefit a particular interest group. It must be done out in the open, and the legislature must explain why the change is better for the state’s citizens and its students.

Stability: While funding formulas are not quite as stable as base-plus models, this is generally a good thing. Stability is important, and most well-designed formulas include stability mechanisms like multi-year average enrollments or funding floors or ceilings that do not allow amounts to change by more than a set amount each year. But the ability to adjust funding based on new circumstances is also important for both the state and those institutions currently being under-resourced. A healthy adjustment, however, calls for an objective and predictable mechanism to guide the process. Funding formulas provide an impartial, nonpolitical way to identify where dollars should go. These are not based on which committee chair has which college in their district or where the governor went to law school. They also help to strip away systemic, historical bias that quietly influences perceptions of which institutions are the most and least deserving. In the best case, funding formulas provide the perfect balance of stability and flexibility in how state resources are distributed.

Implementation

A major strength of funding formulas is that they are flexible and can be adapted to a state’s needs and circumstances. This means it is difficult to write a prescriptive brief guiding states on how to build one. There are some broad considerations that will be generally applicable, however. To achieve the goals of efficiency, transparency, and stability, all formulas should include adjustments related to three areas:

- **Student need.** Some students require more support in college than others, since privilege and opportunity are not bestowed upon children evenly. If we expect colleges and universities to serve the least advantaged students at the same level as the most advantaged, additional resources are required. Formulas could include variables such as Pell Grant status, race, age, performance on state assessments, medical disability, or similar student-level characteristics. Many states include these variables in their performance funding, but few include student need as an independent measure of institutional expense.
- **Institutional need.** Costs are not always equivalent for the same number of students across different institutions. Program offerings at one four-year college or university may be more expensive than those offered at another, either because of program focus (like English literature versus robotics) or institutional characteristics. A remote, rural college, for instance, may struggle to attract instructors or staff and need to increase salaries as a result. Large research universities *may* have higher costs relative to their public peers (though there is a potential risk to differentiating funding in this way; for more, see sidebar, “A Warning Against Conflating Spending and Cost”). Potential

variables to include in the formula could be enrollment by program, number of separate campuses, or relative urbanity/rurality. Cost estimates attached to institutional need are relatively common among states that distribute new dollars with a formula. Louisiana, North Carolina, and Oregon are some examples, each with varying levels of complexity.

- **Outside funding.** To properly understand an institution's need, it is important to know how much it already has. If a university collects hundreds of millions of dollars a year in endowment revenue, receives massive alumni donations, and asks students to pay \$40,000 a year in tuition, state dollars are likely to have a much broader impact if redirected to a school with none of these privileges. Accounting for this variation in resources is tricky because the state wants to reduce allocations to universities that need less aid without disincentivizing revenue raising. A formula may therefore want to first sum student and institutional need and then deduct only a portion of the outside funding raised. The portion should be as large as possible but no larger, to maximize efficiency in state spending without distorting incentives.[2]

There are also three important things to do when constructing the funding formula and the general budget for higher education:

- **Spread changes over time.** To facilitate stability and improve short- and long-term budgeting practices, any major changes that might result in wild swings in funding should, optimally, be spread over several years. Student enrollment declines are an important, recent example. By averaging enrollment levels over three years, for instance, colleges and universities have a better sense of what their funding will look like in upcoming budgets. A one-year 15 percent drop in enrollment because of some unforeseen circumstance could have a catastrophic effect on an institution's budget. Spreading that impact over time allows for more gradual downsizing in order to reduce harm to students and the school's long-term fiscal health.
- **Simplify when possible.** While all the principles and concepts laid out here are important, a formula should never include two components when it could include one. When possible, always sum two numbers rather than multiply against an array. Run an average instead of a regression. Simplicity in the structure *is* transparency, as it is easier to hold policymakers accountable when the formula is easy to understand. The math should be just as complicated as it needs to be to get the job done, but no more. And all data used in a formula should be publicly available.

- **Avoid putting everything in the formula.** One of the frequently given reasons for why funding formulas are not appropriate in higher education is that different institutions have different needs. This is especially true for large research universities, which, it is argued, need more funding because of their expanded missions, including lab research, clinics and hospitals, and agricultural support. This is a fair point, yet the funds for those specializations can be detached as separate line items, away from the funding formula itself. Not even in K-12 education is everything included in a funding formula, because there are certain programs and needs that make more sense as separate line items. States should maximize the amount of money being distributed through the formula because of all the benefits that come with an objective model, but where it becomes more of a burden than a benefit, they should shift those funds outside the formula. That these situations exist is not a sufficient excuse to avoid adoption.

A Warning Against Conflating Spending and Cost

Differentiating formula funding by program and institution type has logical sense, but there is a trap here. Some formulas use spending, like the data provided by the Delaware Cost Project, to estimate variation in cost across different institution types. This approach forgets that wealthier institutions have more money to spend on their programs, which drives up spending and perceived cost. Building this variation into the formula will, like base-plus funding, continue to perpetuate inequities rather than alleviate them. More research needs to be done on how to properly estimate real cost (rather than spending) across institution types before this factor is implemented in working formulas. Or leave this concept out entirely.

Political Roadblocks and Conclusion

The most likely argument against funding formulas in higher education relates to the complexity of university systems. But their funding needs are not so complicated that implementing funding formulas would even be unusually difficult. Like many things in education, the problem lies less in policy and more in politics.

Large R1 flagships today (that is, those with very high research spending and doctorate production) **receive significantly more** state money than their smaller public counterparts, such that any reasonable cost-driven funding formula would result in a major redistribution of state resources. Colleges and universities that currently serve the vast majority of disadvantaged students (the same students who would be

prioritized if a funding formula was used) receive far less money than their prestigious peers, on average. They also tend to have much less support from donors and little income from endowments. Large flagship institutions, which tend to employ some of the most powerful lobbyists available, have every incentive to ensure that funding formulas are never implemented as the main distribution mechanism in their states.

Unfortunately, most small universities and colleges do not have the extra money or political capital to spend on driving such a major reform past powerful opposition. The incentive for smaller institutions is to work with their powerful peers and concentrate political firepower on increasing the budget each year, not fight for a new model. Updating the model will require either strong legislative champions who understand the potential of change and are willing to fight for passage, coordinated efforts from advocacy organizations able to educate legislative members and the public, or (more likely) both.

With the right advocates and messaging, cost-based funding formulas can replace performance-based funding as the focus of current reforms. Every stakeholder concerned with issues like graduation rates and work placement—whether politician, advocate, funder, or parent—needs to be worried about the ineffective, inefficient allocation systems that states currently rely on. Every state in the country has had at least one major lawsuit on the topic of K-12 finance, because it is that important. The same level of urgency needs to be brought to higher education, because colleges and universities cannot continue to rely on a turtles-all-the-way-down approach to funding. For institutions to serve students and their communities effectively, they require a solid foundation of resources to build upon, with mythological constructs relegated exclusively to the classroom.

Notes

[1] We do not include input-driven formulas as a model in this brief because our categorizations differ somewhat from those used in the [**State Higher Education Executive Officers Association \(SHEEO\) report**](#), especially on input- and performance-based funding.

[2] In public institutions, both endowments and wealthy alumni are associated with a history of large government investments. It is not unfair to "penalize" schools for outside revenue raising, as their success is at least partly due to payments from state and federal sources in the first place. [**Read more here.**](#)