Virginia Cost and Funding Need Study
Interim Report

(Pursuant to Contract Awarded by SCHEV Under RFP #245-04221)

The National Center for Higher Education Management Systems

December 1, 2021

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Background

During its 2021 session, the Virginia legislature tasked the State Council of Higher Education in Virginia (SCHEV) to undertake a review of higher education costs, funding needs, appropriations, and efficiencies. The review charged SCHEV, in consultation with representatives from House Appropriations Committee, Senate Finance and Appropriations Committee, Department of Planning and Budget, Secretary of Finance, and Secretary of Education (generally referred to as the OpSix), as well as representatives of public higher education institutions to "identify and recommend:

1. methods to determine appropriate costs, including a detailed cost analysis, of Virginia public institutions of higher education and peer institutions.
2. measures of efficiency and effectiveness, including identification of opportunities for mitigating costs, increasing financial efficiencies, and incorporating current best practices employed by Virginia institutions and other institutions nationwide.
3. provisions for any new reporting requirements, including a possible periodic review of cost and strategies employed to implement efficient and effective operational practices.
4. strategies to allocate limited public resources based on outcomes that align with state needs related to affordability, access, completion, and workforce alignment, and the impact on tuition and pricing.
5. the impact of funding on underrepresented student populations; and
6. a timeline for implementation."

SCHEV, in consultation with the OpSix staff members issued a Request for Proposals (RFP) in May and subsequently awarded the contract to the National Center for Higher Education Management Systems (NCHEMS), a private, non-profit 501(c)(3) organization headquartered in Boulder, Colorado, with extensive experience in state postsecondary finance policy.

SCHEV identified four major deliverables as part of the review.

- Deliverable 1: Review of funding policies: Conduct a review of policies nationally and compare them to Virginia's current funding model.

- Deliverable 2: Efficiency and effectiveness review: Inventory Virginia institutions' practices and research those in other states to identify opportunities for mitigating costs and increasing efficiencies for incorporation by Virginia institutions.

- Deliverable 3: Identification of trends in costs and determination of estimated costs for higher education: Gather and analyze data on funding and costs for higher education and create benchmarks for evaluating performance among Virginia institutions.

- Deliverable 4: Recommendations for a new funding model: Create or modify a funding model or models for use in Virginia

Three key dates specifying a schedule for submission of reports were established in the authorizing statute:

- By August 15, 2021, NCHEMS and SCHEV were obligated to submit a detailed project workplan to the Joint Subcommittee on the Future Competitiveness of Higher Education. That report was reviewed in draft form by OpSix and submitted in final form on the prescribed date.

- By December 1, 2021, the statute calls for submission of a preliminary report and any related recommendations to the Governor and the Chairmen of the House Appropriations and Senate Finance and Appropriations Committees. This document has been prepared and is submitted in response to that requirement. This report presents:
    - An overview of the current context for allocation of state resources to institutions of higher education—existing policies and practices and the structures that have shaped these practices.
    - Conceptual frameworks used by NCHEMS to guide the development of recommendations regarding state allocation models. These frameworks describe the major funding flows in higher education, an approach to assessing affordability to students, and a perspective on determining funding adequacy to institutions.
    - Findings from a 50-state survey of funding approaches used in the states and a comparison of these approaches to Virginia's current funding model.
    - Findings regarding efficiency measures being taken in other states. These findings will be augmented in the final report by information gathered through a survey of Virginia institutions regarding efficiency initiatives they have put in place. That survey will be circulated in December. This information will be used to identify opportunities for mitigating costs and increasing efficiencies that can be implemented by Virginia institutions.
    - The results of a wide variety of data analyses pertinent to an understanding of costs of providing higher education and funding institutions to carry out their missions.
    - A set of principles—that have been vetted by SCHEV, OpSix, and Fac-8 (a subset of SCHEV's Finance Advisory Council, which is comprised of finance officers from the institutions)—and will guide the design of the funding model(s) that will be the final product of the project.
    - A list of parameters that will be used in the creation of the model(s). These include such things as cost-sharing targets (the shares different institutions should contribute from NGF revenues) and the likely components of the model(s) to be developed.

  In most cases the material presented in this interim report will be augmented and refined in the final report.

- A final report to be submitted to the Governor and the Chairmen of the House Appropriations and Senate Finance and Appropriations Committees no later than July 1,

2022. This report will expand on the information presented in the interim report. It will include the complete findings from the review of funding policies in other states, findings from the efficiency review, and a compilation of information about trends in costs and determination of estimated costs of higher education that inform the assignment of values to the parameters utilized in the model. Most importantly, the final report will include recommendations regarding the design and implementation of a new funding model for Virginia.

The balance of this report is devoted to presenting the information described above.

The Context for Developing a New Funding Model

In developing a new funding model for the Commonwealth of Virginia, it is important to not only deal with the technical issues of sound design and implementation but also to recognize the broader array of policies and environmental factors that necessarily influence the ultimate form of a new funding model. Among these key factors are the following:

- The priorities established in the SCHEV strategic plan for higher education in Virginia, "Pathways to Opportunity." In this document the Council established three goals for higher education: it should be equitable, affordable and transformative.
    - Equitable: Close access and completion gaps. Remove barriers to access and attainment especially for Black, Hispanic, Native American and rural students; students learning English as a second language; students from economically disadvantaged backgrounds; and students with disabilities. Ensure that Virginia's public institutions continuously serve as drivers of social mobility.
    - Affordable: Lower costs to students. Invest in and support the development of initiatives that provide cost savings to students while maintaining the effectiveness of instruction; and
    - Transformative: Expand prosperity. Increase the social, cultural and economic well-being of individuals and communities within the Commonwealth and its regions.

  This plan was developed as a device to guide policy regarding higher education in the Commonwealth. As such it also provides a guide for designing elements of a new funding model.

- The strong tradition of institutional independence with final decision-making authority delegated to the institutions' Boards of Visitors. This has led to a situation in which the institutions have evolved in very different ways. This variation is celebrated by both institutional leaders and policymakers; diversity is valued.

- The historical nature of the relationships between state government and its universities. These relationships have been characterized by strong involvement of state government in functions more typically reserved to the institutions—for example, position control and the

requirement that institutional non-general funds (NGF) typically raised through tuition and fees be deposited in the state treasury with any earnings held by the state. This arrangement was changed in major ways by the Restructuring Act of 2005, which granted autonomy to institutions in numerous administrative areas in return for accountability for meeting performance objectives established by the state. The extent of autonomy granted to institutions varied in relation to the ability of institutions to demonstrate capacity to successfully manage various functions. The result has been a three-tiered structure that grants the most autonomy to the University of Virginia, Virginia Tech, Virginia Commonwealth, and William & Mary (designated as tier three). George Mason and James Madison more recently were granted tier three status, but with less authority in some areas (for example, they have no ability to maintain cash or establish banking relationships since cash is still required to be held by the state). The least authority is granted to Norfolk State, Richard Bland, and Virginia State (designated as tier one).

- The treatment by the legislature of the Virginia Community College System as a single entity rather than dealing with each college independently. For purposes of this project the allocation of a pool of resources to the State Board of Community Colleges for allocation by them to the individual colleges is an important factor in the design of the new funding model.

- The design and implementation of the "Base Adequacy" funding model put in place in 2000 with the cost share provision added in 2004. This model was intended to ensure that each institution received funding sufficient to carry out its mission. The model:
    - Reflected student credit hours at different levels and in different disciplines produced by each institution.
    - Calculated FTE faculty required to teach this mix of student credit hours.
    - Established faculty costs by multiplying calculated faculty FTE by a blended salary that mixes the salary cost of full-time and part-time faculty. The result generated the instructional cost at an institution.
    - Calculated support service costs based on ratios by institutional type.
    - Intended that the state cover 67% of the calculated amount, the institutions the balance.
    - Was not applied to institutions that had funding levels in excess of the amounts calculated by the Base Adequacy model. These institutions could receive additional funds only through special legislative appropriations.

  In recent years all institutions have been funded at levels above those determined by the Base Adequacy model. The consequence has been that the allocation model in Virginia has de facto become a Base Plus model in which each institution gets prior year's funding plus any additional amounts that can be gained through special allocations from the legislature. Since institutions vary widely in their abilities to successfully plead their cases to the Governor and General Assembly, the net effect can be creeping inequities in funding.

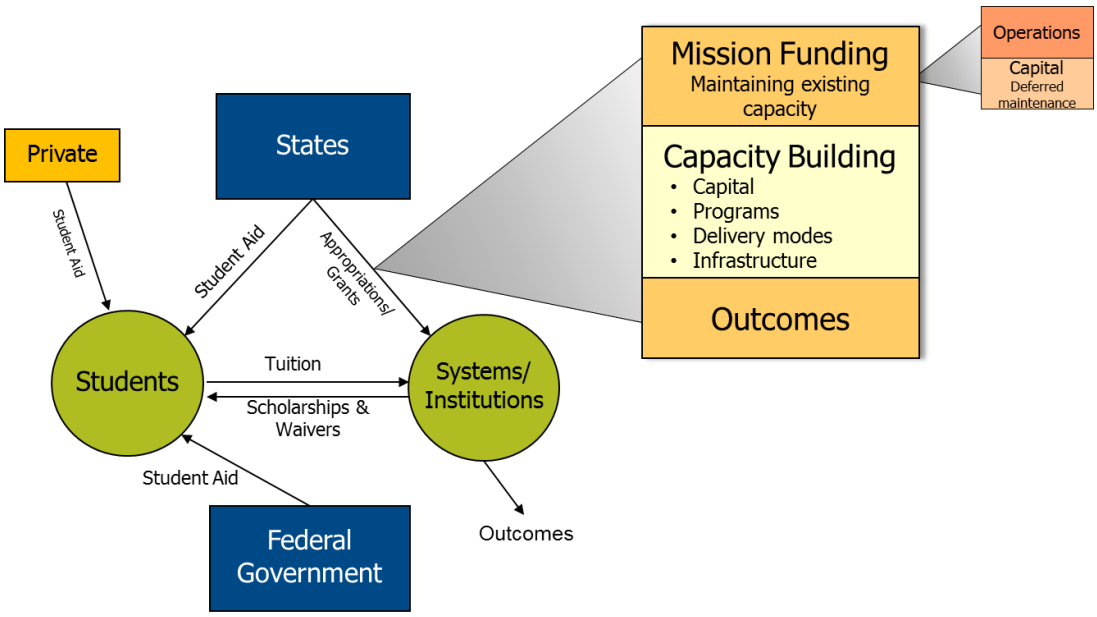
- A long-standing policy (reflected in statute) stating the intent that the Commonwealth's contribution should be 67% of total funding. In spite of this policy being in statute, the target level has never been reached. Currently the state contributes approximately 50 percent of the funds devoted to the policy's calculated base costs of institutional operations. The fact that the statutory target was never reached, but that institutions were seen as "fully funded" points to a failure in state finance policy.

- A legislative practice of making large, targeted appropriations to higher education for purposes deemed to be of high priority.

Guiding Frameworks

NCHEMS will approach this project from the perspective of three overlapping conceptual frames that will be useful in informing the analyses, surfacing findings, and generating recommendations. The overarching framework describes the flow of funds through the postsecondary ecosystem (Figure 1). This somewhat simplified view illustrates how the principal funding streams in higher education are deeply interconnected: appropriations levels, tuition prices, and state financial aid funds all simultaneously shape the resources available to public institutions and define the limits of affordability for students. Accordingly, this framework emphasizes the need for state higher education finance policy to be developed with a clear understanding of the interconnectedness of the funding streams. Considerations for how funding policies impact institutional financial health must simultaneously account for student affordability, and vice versa. Moreover, policies affecting all three principal funding streams under the state's purview—appropriations, tuition, and state financial aid—must work together to reinforce state priorities.

Figure 1. The Flow of Funds



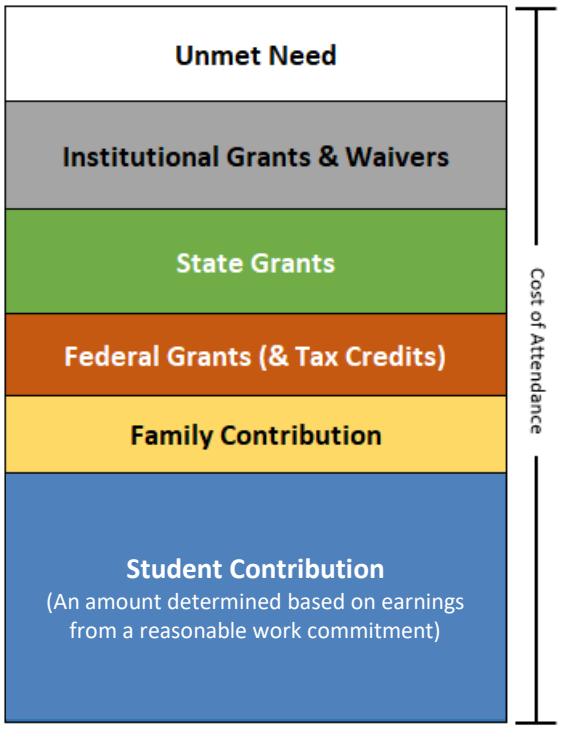
The second conceptual framework considers affordability for students, which is a term that means different things to different people. Lacking a consensus definition for affordability to provide a quantitative anchor for policymakers, the burden of financing college has drifted toward students and their families. A commonly accepted and measurable definition of affordability can promote a more meaningful discussion of resource allocation decisions and potentially lead to policies that better serve students' and state needs. The Shared Responsibility Model (SRM, depicted in Figure 2) offers a standard for measuring the affordability to students of the costs of attendance. Variations of this model are used in several states to assess eligibility for, or to distribute, state financial aid (e.g., Minnesota, Oregon). More broadly, the model is useful as a metric to monitor, report on, and to provide a framework for debating funding policy and rationing approaches. Key to the SRM are these elements:

1. SRM is based on the cost of attendance, recognizing that students have expenses other than tuition—fees, books and supplies, and living expenses. It then calculates the difference between the cost of attendance and the sum of the elements below.
2. At SRM's core is an amount tied to a work commitment that is not so onerous that it impedes students' progress toward a degree. This amount is based on research showing that full-time students working beyond 15-20 hours a week are less likely to succeed, and it represents a level that it is "reasonable" for student to contribute.[1] It assumes that students earn the state's minimum wage for their work hours. To be clear, students are not *required* to work; SRM simply sets the expected student contribution based on a reasonable amount of working. (Ideally, states might pair this expectation for self-support through working with policies and programs that help connect students—especially first-generation, low-income, and underrepresented minorities—with relevant, paid work-based learning experiences like internships or co-operative education programs.)
3. The next component is the student's family contribution, which is what makes the model sensitive to students' ability to pay and corresponding financial need.
4. All other government and institutional sources of grant aid (and potentially tax credits) are counted.
5. Any remaining amount is unmet need which must be covered by borrowing, additional work, or other means, which can be inimical to student success. A modification of this framework would be to specify an amount for a reasonable level of annual borrowing as part of the expected student contribution, with "reasonable" pegged to a cumulative debt level that can be discharged under standard repayment plans by a graduate employed as a teacher, social worker, or other occupation focused on society's needs.[2]

[1] Albert B. Hood, Andrew Craig, Andrew, and Bruce Ferguson, "The Impact of Athletics, Part-Time Employment, and Other Academic Activities on Academic Achievement," Journal of College Student Development, 33 (September 1992), 447–53; Ronald Ehrenberg and Daniel Sherman, "Employment While in College, Academic Achievement, and Postcollege Outcomes," Journal of Human Resources, 22, no. 1 (Winter 1987), 1–24.

[2] Oregon considers borrowing as part of the expected student contribution level for students enrolled in four-year institutions.

Figure 2. The Shared Responsibility Model



Given that the remaining need amounts calculated by the SRM will vary based on the income levels of students, and on state finance and institutional aid policies, the SRM provides insights to policymakers about how their resource allocation policies contribute to different levels of affordability for students in different financial circumstances.

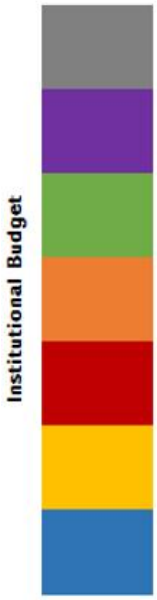
The third framework NCHEMS will use focuses on institutional costs. It is common for postsecondary institutions' costs to be expressed in terms of total expenditures or as a subset of those focused on instructional costs, such as "education and related expenses." The framework that will inform NCHEMS' work will complement these more common perspectives with a new lens for looking at institutional funding adequacy, particularly by adding a focus on the costs that comprise the most basic level of operational support an institution needs to simply exist. This framework (Figure 3) describes categories of financial need for public postsecondary institutions.[3] These categories are (starting at the bottom of the diagram):

- Foundational – expenses that are associated with employing senior institutional leaders and with performing core functions related to governance, information technology, audit/accounting and other compliance-related activities, human resources, etc.

[3] This framework was developed for a paper presented as part of SHEEO's Public Investment in Higher Education: Research, Strategies, and Policy Implications series, which can be found at https://sheeo.org/project/public-investment-in-higher-education-research-strategies-and-policy-implications/.

- Maintenance/renewal – expenses necessary to ensure that institutional assets are appropriately tended, including physical facilities, equipment needs, curricular relevancy, and human resources, as well as necessary planning activities to ensure the institution maintains its ability to serve its mission.
- Scope – expenses related to the breadth of the array of academic programs, recognizing differences in funding levels required for programs with different costs of delivery.
- Scale – expenses related to the size of the enterprise. More students require more classes, faculty/staff, support services, equipment, etc.
- Investments in innovation and performance – expenses that address the need to build capacity, implement new delivery models, scale effective best practices, etc.
- Distinctive mission-specific costs – expenses incurred for the pursuit of activities related to unique statewide academic programs, research, Land Grant and other public service activities, etc.

Figure 3. Institutional Funding Adequacy Framework



Category	Functions and Roles
Other	Advancement, auxiliaries, athletics, etc.
Research and Public Service	Grants management, community engagement, museums, arts, extension services
Innovation/Performance Enhancement & Equity	Investments in continuous improvement in all areas
Scale	Course sections, academic support, student services (tutoring, student health, organizations and activities, etc.)
Scope	Breadth of academic programming offered, variation in costs of delivering different programs
Maintenance/Renewal	Strategy and planning, deferred maintenance, program/curriculum renewal and relevancy, personnel and professional development
Foundational	Senior leadership, governance, compliance, debt obligations, foundational systems (LMS, public safety infrastructure, etc.)

Just as the SRM provides a measurable definition of affordability, the institutional adequacy framework is intended to help policymakers better understand the basic funding requirements of institutions to:

1. Preserve their value as state assets (as represented by the Foundational and Maintenance/Renewal categories in the above diagram).
2. Serve their educational missions (Scope, Scale, Research and Public Service, and Other).
3. Support improvements in student outcomes and reducing equity gaps (Innovation/Performance Enhancement & Equity).

While it can be difficult to draw a bright line between these categories (just as it is with other accounting schema), this framework is useful in identifying the most basic of institutional funding needs—the costs of simply "opening the doors" and assuring its value as a delivery site to student populations and communities that, in the institution's absence, would not be served effectively (or possibly at all). In other words, these "frugal" costs represent the level of funding sufficient to support each public institution's preservation as a state asset. In this view, a public institution does not need to enroll any students at all, or conduct any research, and it will still accrue costs that the state as the owner cannot avoid.[4] These are costs that may more properly fall under the responsibility of the state (and local governments) to support, while user fees (e.g., tuition) may more reasonably be expected to help support costs in the other categories. This conceptualization may also prove useful as a basis for strategic discussions about the balance of revenue sources of different institutions appropriate to their varied missions and the characteristics of their student bodies. For example, institutions face different conditions in their respective markets, leaving some more vulnerable than others to proportional cuts in state spending. Operational costs are also likely to vary based on local conditions. In any case, to the degree that data are available and sufficiently accurate to measure these categories, then the framework also provides quantitative guidance for allocating funding to institutions. Supplementing these frameworks is the expectation that Virginia's public institutions will contribute to state goals and student achievement by striving for increased operational efficiency, especially related to the foundational costs, and by boosting degree and certificate productivity rates.

Project Activities

To address the requirements of the project, NCHEMS and SCHEV are carrying out a series of activities designed to ensure that the final products are informed by evidence and through substantial engagement with stakeholders. As previously described, the first step in the project was to develop and submit a detailed workplan refining the original proposal and outlining the milestones to be achieved and opportunities for stakeholders to be engaged. This workplan can be found on SCHEV's website at www.schev.edu/coststudy.

[4] In some states that are facing bleak projected demographic and fiscal futures, there have been active discussions about whether the state may be overinvested in public higher education and might consider closing institutions as a way to make financial ends meet. Yet a decision to divest itself of an asset like a public institution inevitably imposes substantial direct costs on the state in the short term—costs that are rarely fully understood or acknowledged—even if divestment eliminates these liabilities over the longer term. Such a decision also creates permanent indirect costs to the affected communities and student populations. (Vermont's recent experiences are germane here, as described in the Final Report of the Select Committee on the Future of Public higher Education in Vermont at https://ljfo.vermont.gov/assets/Uploads/c2ef482057/Final-Report-of-the-Select-Committee-on-the-Future-of-Public-Higher-Education-in-Vermont-Submitted.pdf.)

Document Review

Immediately upon project initiation, SCHEV began supplying NCHEMS with important documents, including internal and external reports, statutes, and other materials. Among these and other relevant reports gathered by NCHEMS were:

- Policies such as the cost-sharing policy.
- Materials describing the base adequacy formula calculations and their use.
- Relevant SCHEV publications such as the strategic plan and its reports on higher education funding, tuition and fees, and financial aid.
- Studies by JLARC addressing public institutional funding.
- Documents and analyses from previous proposals to revise Virginia's funding model, e.g., former Governor McDonnell's Commission on Higher Education Reform, Innovation, and Investment[5] and the Higher Education Accountability Commission chaired by Linwood Rose that operated in 2011.
- Information collected in prior years by SCHEV about institutional initiatives undertaken to improve operating efficiency.
- Reports published by other organizations and media reports that address Virginia's funding approach, e.g., the Partnership for College Affordability and the Public Trust, Ed Reform Now.[6]
- Publications and data produced by national organizations on state funding of public postsecondary education, e.g., the State Higher Education Executive Officers (SHEEO), HCM Strategists, and InformEd States.

NCHEMS also developed two survey instruments, as required by the project specifications. The first was developed to gather information about how states across the nation allocate state funding to public institutions. It was designed and fielded in partnership with the SHEEO membership association; initial results are reported later in this report. The second survey has been developed to gather information on the efforts Virginia institutions are making to improve operational efficiency and effectiveness. This survey was developed collaboratively with SCHEV and a subset of SCHEV's Finance Advisory Committee. This survey will be put into the field in December. Information gathered from this survey will be presented in the final project report.

Data

To analyze current and historical funding patterns and spending levels at Virginia's institutions, and to assemble the information essential to developing the new funding model proposal,

[5] https://www.schev.edu/docs/default-source/institution-section/planning-and-performance/heoa-tj21/report-from-governor's-commission-on-higher-education.pdf

[6] Murphy, J., Dannenberg, M., & Riggins, K. (2021). *Higher Education School Finance Inequity and Inadequacy in Virginia* (Education Reform Now). http://edreformnow.org/wp-content/uploads/2021/07/VA-Issue-Brief-Update-7.9.pdf.

NCHEMS began gathering data from an array of sources. These sources and their expected uses are listed below:

- Virginia-specific data supplied by SCHEV. Even prior to project initiation, SCHEV anticipated many of the projects' data requirements and prepared a substantial dataset on institutional finances stretching back to FY2008, confirmed their data with the institutions, and provided the dataset to NCHEMS. In addition, NCHEMS developed a request for additional data from SCHEV covering:
    - Semester credit hour production by level and field for all students overall and disaggregated by residency, race/ethnicity, and Pell recipients.
    - Financial aid awards by income, race/ethnicity, and residency.
    - Course section sizes.
    - Detailed expenditure data from the state's accounting system (Cardinal).
- Integrated Postsecondary Education Data System (IPEDS).[7] NCHEMS has also gathered data from IPEDS for benchmarking Virginia institutions in comparison to similar institutions. A description of NCHEMS' methodology for selecting comparison groups and their intended use is presented later in this report and more extensively in Appendix D.

NCHEMS plans to use the SCHEV data wherever possible in this project. IPEDS data are mainly useful where information about finances and performance for institutions in other states is needed for benchmarking purposes.[8] In organizing and analyzing these data, VCCS institutions—together with the VCCS system office—are treated as a single unit and their data are aggregated. NCHEMS and SCHEV agreed that presenting and using these data in this manner is appropriate given that state funding goes to VCCS as a single line item, and VCCS subsequently makes allocations to its individual institutions.

Stakeholder Engagement and Project Communications

To ensure that the project deliverables are all adequately informed by the knowledge and perspectives of various stakeholders, and that those stakeholders are also kept abreast of project progress and develops, NCHEMS and SCHEV identified specific groups with whom to maintain regular communication and created opportunities for stakeholders to be engaged and to provide information and feedback. Two groups have been particularly helpful in providing guidance and feedback on the project as it has unfolded. The first of these is the OpSix workgroup, a leadership group composed of staff from the Secretary of Finance, the Secretary of Education, the Director of the Department of Planning and Budget, the Director of SCHEV, the Staff Director of the Senate Committee on Finance and Appropriations, and the Staff Director of the House Committee on Appropriations. NCHEMS and SCHEV have conducted biweekly project update conversations with

[7] IPEDS is administered by the National Center for Education Statistics (NCES), the agency in the federal government tasked with keeping official education statistics. IPEDS is the primary federal data source on postsecondary education; multiple annual data submissions are required of institutions as a condition for participating in Title IV financial aid programs.
[8] Due to differences in definitions and in the timing of the collection of data, data provided by SCHEV and IPEDS data will differ.

OpSix members. The second is a sub-group of the Finance Advisory Council, labeled FAC-8, that has reviewed and commented on work products at each stage of development. In addition, there have been weekly meetings between NCHEMS and SCHEV staff.

In September, NCHEMS staff made a site visit to Richmond in order to meet with a wide cross-section of stakeholders, including:

- SCHEV leadership—its Executive Director, Chair, and Vice Chair—and senior staff
- OpSix members and their staff
- Members of SCHEV's Finance Advisory Council (finance leaders at the institutions)
- External stakeholders with an interest in this project

In addition to these face-to-face meetings, a virtual meeting was conducted in which NCHEMS presented the project plan to institutional presidents and gathered their thoughts on the major issues the project should address.

As the project moves forward, NCHEMS and SCHEV are committed to continuing to provide opportunities for stakeholder engagement. These will only grow more important as the project proceeds to the design of the new funding model. To ensure the best opportunity for dialogue and feedback, NCHEMS plans to make two additional trips to Richmond to discuss and gather feedback on the funding model as it is developed, at which time NCHEMS and SCHEV staff will meet again with key stakeholders likely to include legislators and legislative staff, executive branch leaders, the new governor and his staff, institutional leaders and finance officers, and external parties. The submitted workplan details additional opportunities to engage stakeholders virtually.

Base Funding Approaches Across the Nation

As one of the first steps in developing an appropriate funding model for Virginia, SCHEV requested research on the strategies used to fund public postsecondary institutions by other states and to compare those policies and practices to Virginia's. To address this requirement NCHEMS reviewed available research and conducted a survey of finance officers in SHEEO agencies. This section of the report describes our findings to date.

Research on state higher education funding policies and practices is widespread. There is considerable research documenting how state funding to higher education tends to serve as a balance wheel for state budgets facing an economic downturn, research describing the responses of institutions to changes in state funding, and research on how state funding affects institutional expenditures and student accessibility and outcomes, among others.

In recent years, a growing number of states have adopted so-called performance-based funding approaches that distribute a portion of existing or new state money to institutions according to how well they perform on a set of measurements such as graduation numbers or rates, productivity measures, and workforce participation. This trend has spurred substantial research

on the parameters states use to allocate funds under these models. This research provides insights into common factors; it also points out that, in most states, the amount of funding tied to outcomes is insufficient to incentivize the desired changes in performance. It also finds evidence of perverse incentives when the performance that is incentivized is not sufficiently concentrated on improving the outcomes of low-income, underrepresented minorities, or adult learners.[9]

In contrast to the interest by the research community in documenting performance funding and its consequences, there has been surprisingly little effort to provide detail about how states appropriate money to institutions to support basic operations. This is in spite of the fact that nearly all states allocate the majority of their direct funding of institutions to base support. MGT Consulting Group once produced periodic reports on states' base funding approaches, but those reports were discontinued in the early 2000s. More recently, the researchers behind the InformEd States Clearinghouse released a brief about state funding policies that included base funding.[10] Using an intensive method of reviewing statutes, budget documents, and audit reports, they categorized state base funding approaches as Base+ Only, Enrollment Only, Performance Only, some combination of the preceding types, or No Funding Formula. The researchers also assessed whether states included provisions for Equity or Research in their approaches, with equity referring to extra funding intended to address additional resource requirements based on the characteristics of an institution or the students it serves, and research referring to additional funding or weights within the formula designed to provide support for overall research capacity. Figure 4 shows the number of states in each category according to InformEd States' research; Virginia is categorized as an Enrollment Only state for its funding of four-year institutions and as an Enrollment+Performance state for how it funds its two-year institutions.[11]

[9] Ortagus, J.C., 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; 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), 681-703; 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.

[10] Lingo, M., Kelchen, R., Rosinger, K., Baker, D., Ortagus, J., and Wu, J. (2021). *The Landscape of State Funding Formulas for Public Colleges and Universities.* InformEd States. Retrieved November 3, 2021 from https://static1.squarespace.com/static/5d9f9fae6a122515ee074363/t/612d9d7458f7db4cfd58baab/1630379382136/InformEdStates_Brief_LandscapeofStateFundingFormulas.pdf.

[11] This categorization reflects the fact that the VCCS allocates a portion of its state appropriation to its constituent institutions, as opposed to the state providing those dollars directly to institutions via a performance model.

Figure 4. InformEd States Categorization of State Funding Approaches

Type	Four-Year Institutions	Two-Year Institutions
Base+ Only	13	4
Enrollment Only	7	8
Performance Only	–	2
Base+Enrollment	6	10
Base+Performance	13	8
Enrollment+Performance	3	6
Base+Enrollment+Performance	3	9
Research	10	–
Equity	14	13
No Formula	9	2

Source: InformEd States

InformEd States' research also examined how state funding approaches had evolved over time, generally finding that more states moved to hybrid models (e.g., Base+Performance), typically by adding performance funding to their models, and that states were less reliant on enrollment as a driver of funds in the four-year sector. A roughly similar number of states maintained equity provisions in their state funding strategies throughout the period studied, 2004 to 2021.

Major Findings from a National Survey

To supplement this research, and as required by the RFP scope of work, NCHEMS conducted a national survey of state funding policies and practices. The survey, a collaboration between NCHEMS and the State Higher Education Executive Officers association (SHEEO), was intended to gather details about how states fund their public institutions with respect to state definitions of (and targets for) "base adequacy" and for sharing educational costs with students and families—what factors affect funding levels, how they monitor and assess progress toward achieving affordability goals, and special funding streams to pursue state priorities. In particular, we sought to gather information about the factors that influenced decisions about the amount of recurring funding states appropriated to their institutions to support operations, factors such as enrollment counts, employee counts, adjustments driven by changes in personnel costs or other input costs, operational expenses for facilities, and comparisons to peer institutions. More details about the survey, the survey instrument, and additional data and information culled from the survey can be found in Appendix A. Survey of Public Institutional Funding Policies

Definitions of Base Funding Adequacy

Three states in addition to Virginia reported having a definition of base funding adequacy: Alabama, Maryland, and Oregon. Alabama's Commission on Higher Education makes recommendations "derived directly from its assessment of the actual funding needs of each of the universities, as presented to it by the presidents, which assessment may include, but shall not be limited to, derived conclusions that may be based upon standard techniques of objective measurement, need and unit cost figures arrived at through the use comparative and verified data

secured from the various institutions, applied in an impartial and objective manner, and comparison shall be made not only between similar functions of institutions in Alabama but also between Alabama institutions and similar functions of institutions located in other states." While this definition implies that peer groups may play a role in the base adequacy definition, Alabama's response indicated that funding levels, in reality, were adjusted for retirement, retirees' health insurance benefits, and an overall 3 percent increase.

Maryland's definition of base adequacy is set at levels determined by the executive branch, which are then incorporated in the legislature's budget deliberations. Oregon calculates a measure known as Current Service Level (CSL), which effectively applies a series of assumptions about inflation in costs of factors of production, principally those associated with wages, retirement benefits, health care benefits, and capital costs to institutions' previous funding levels.[12]

Base Funding Approaches and Factors

The survey revealed considerable variation in how states support the base operations of their public institutions. Most states reported the use of a Base+ approach to determining institutional allocations, either singly or through a combination of approaches that also includes a formula or other approach in addition to Base+ (Figure 5). In these latter cases, the survey responses suggest that a portion of an institution's state appropriation is comprised of these respective approaches (i.e., some share of the base funding, but not the whole amount, is allocated using a formula, or a formula is used to inform the "+" part of the Base+ approach). Within the two-year sector, 18 respondents reported using a Base+ approach, with an additional four that reported relying exclusively on historical funding patterns or institutional requests to determine base funding; 17 states use a formula, with six using both Base+ and a formula to allocate base operational support to institutions.

In contrast, Base+ funding and historical funding patterns or institutional requests were substantially more common approaches to determining base appropriations levels to public four-year institutions. Overall, Base+ funding was reported by 26 respondents, 15 of which reported it was solely used in that sector. History and institutional requests were wholly or partially determinative in 13 states. States relied less heavily on formula funding; it alone drives four-year funding in only three states and is used in combination with another approach in six other states.

Five respondents responded "Other" regarding the funding approach for their two-year sectors; one reported "Other" as the funding approach for the four-year sector. In these states some approach other than Base+, formula funding, or funding history and institutional requests are instrumental in determining appropriations levels. Typically, these responses indicated that institutional appropriations were simply a product of the political process of budget development, or, in New Hampshire's case, the system board allocated its block grant without providing information about exactly what approach was used (Figure 31). However, a review of the

[12] Oregon Higher Education Coordinating Commission (nd). *Current Service Level (CSL) Calculations, Higher Education Support Funds, 2021-23 Biennium*.

descriptions of what constituted "Other" for respondents that selected that option suggests that many used it to indicate that some portions of institutional appropriations are made based on some type of formula, often including performance measures; adjustments driven by an assessment of rising input prices such as personnel costs; or one-time funding.

It is worth noting that it is difficult to compare these results with those reported by InformEd States. This difficulty can be attributed to quite different methods used to collect the data and to the NCHEMS/SHEEO survey's exclusion of performance-based funding. However, differences may also be due to variations in the written policy and in how they are interpreted or implemented.

Figure 5. NCHEMS/SHEEO Survey of Categories of State Funding Approaches

Category	Two-Year Sector		Four-Year Sector	
	Responses	States	Responses	States
Base+ Only	5	MN, MO, UT, VA, WV	15	AZ, CA, FL, IL, IA, KS, MN, MO, MT, NE, NM, NY, UT, VA, WV
Formula Only	6	IL, KS, NJ, OH, PA, TN	3	KY, OH, TN
History/Institutional Requests Only	4	CT, DE, IN, ME	10	AK, CT, DE, IN, ME, MS, PA, SC, SD, WA
Other Only	5	AZ, MD, MS, SC, VT	4	MD, MI, NH, VT
Base+ & Formula	4	ID, MT, NE, OR	4	ID, NJ, NC, OR
Base+ & Other	4	AR, NY, OK, WI	3	AR, OK, WI
Base+ & History/Inst. Requests	3	AL, HI, IA	3	AL, HI, WY
Base+, Formula, & Other	2	CO, WA	1	CO
Formula & Other	5	CA, KY, LA, SD, WY	1	LA

Source: NCHEMS/SHEEO Survey

Factors Affecting Appropriations Levels

A central purpose behind the NCHEMS/SHEEO survey was to determine the array of factors that states use to set institutional funding levels. This section of the survey may be the only recent detailed national analysis of state funding strategies focused on base operational support; these factors offer options and opportunities for Virginia's funding model design. Survey respondents who indicated that they used either a Base+ or Formula approach (alone or in combination) to funding base operations were subsequently asked to select from a list of factors that were influential in determining individual institutional base funding levels.

States that rely on a Base+ approach for both two- and four-year sectors most commonly take institutional initiatives into account when allocating funds to institutions, followed closely by considerations of the costs for maintaining/operating new assets (such as new facilities and new

programs being brought online), as well as enrollment levels (Figure 6). Particularly among four-year institutions, it was common for states to simply apply a fixed percentage increase (decrease) to all institutions. While average wage rates were only referenced by a few states, personnel costs were clearly commingled with "Input Costs." Of the five states that reported using input costs as a factor in determining Base+ funding levels, all of them indicated that fringe benefits were a factor and four reported using salaries. (Three states also reported considering the costs of utilities and equipment and one considers state risk insurance premiums.) In addition, several of those who reported "Other" factors as important described compensation-related increases as being what they meant. Far less commonly reported factors were employee counts and student/faculty ratios. "Other" responses otherwise most often indicated that Base+ funding levels were substantially driven by the political process (Figure 32).

Figure 6. Factors Affecting Funding Levels for States Employing a Base+ Policy

ure 7.		Two-Year Sector		Four-Year Sector	
Category		Responses	States	Responses	States
Fixed Percent		5	AL, AR, MO, NM, WA	8	Al, AR, CA, IL, MO, NJ, NM, NY
Enrollment		8	ID, MT, NM, NY, NC, UT, VA, WA	8	CA, ID, MT, NJ, NM, NC, UT, VA
Employee Count		0		2	NC, WY
Student/Faculty Ratios		1	MT	0	
Average Wage Rates		2	MT, UT	3	MT, NC, UT
Input Costs (Personnel, Equipment)		5	AL, MT, OR, UT, VA	5	MT, NC, OR, UT, VA
New Assets or Programs		9	AR, ID, IA, MT, NY, NC, OK, UT, VA	10	AL, AR, FL, ID, IA, MT, NY, OK, UT, VA
Institutional Initiatives		10	AL, AR, HI, ID, IA, OK, UT, VA, WA, WI	12	AR, CA, FL, HI, ID, IA, NC, OK, UT, VA, WI, WY
Peer Comparisons		1	MT	1	MT
Other		8	CO, MN, NE, NC, OK, WV, WI	11	AL, AZ, CO, FL, KS, MN, NE, NJ, OK, WV, WI

Source: NCHEMS/SHEEO Survey

States that reported using a formula approach to funding institutions' base operations often reported using similar factors across both two- and four-year sectors (Figure 8). For example,

among states that rely on a formula for base operations, Idaho, Kentucky, Louisiana, and Ohio reported using the same set of factors for both sectors. Overall, apart from "Other" factors, states typically used enrollment levels and cost differentials by program and level as factors in formulas in the two-year sector. Among four-year institutions, differential cost structures were most common. Additionally, factors accounting for differences in student characteristics and the use of completed credit hours were used by three states in each sector. Less common factors were headcount enrollment, facilities, and peer comparisons. "Other" descriptions (Figure 33) mostly indicate some additional detail, such as in how Louisiana uses peers, or to clarify that the formula applies just to new funding (in Pennsylvania[13]).

Figure 8. Factors Affecting Funding Levels for States Employing a Formula

	Two-Year Sector		Four-Year Sector	
Category	**Responses**	**States**	**Responses**	**States**
FTE Enrollment	6	CA, KS, LA, MT, OR, WA	2	LA, OR
Headcount Enrollment	1	NJ	0	
Completed Credits	3	IL, LA, OH	3	LA, OH, OR
Differential Costs	6	ID, KS, LA, MT, OH, WA	4	LA, ID, OH, OR
Student Characteristics	3	IL, LA, OH	3	LA, NJ, OH
Square Footage of Facilities	1	LA	1	LA
Institutional Mission	1	LA	2	LA, OR
Faculty/Staff Compensation	3	LA, MT, TN	2	LA, TN
Peer Comparisons	2	IL, LA	1	LA
Other	7	ID, IL, KY, LA, PA, TN, WY	3	ID, KY, LA

Source: NCHEMS/SHEEO Survey

The survey also sought information from states about streams of state funding provided to public institutions other than through recurring base funding support. Six states reported funding set asides for collaborations that are intended to create improved educational opportunities, service delivery, or efficiencies on operations and six states also reported that the state legislature typically reserves a portion of the total higher education appropriation for making investments directed to public institutions in pursuit of specific state priorities (Figure 9). Additionally, thirty-one states provide special purpose funding of some form. Respondents used the "Other" option to provide additional detail—for example, Alaska reported on the inconstancy of state funding approaches over time, an issue that may be common among other states had the survey queried them directly about it (Figure 34). Finally, a question asking whether state funding policies include a provision that explicitly incentivized improved efficiencies in institutional operations only yielded four positive responses, two of which referenced the use of outcomes or productivity metrics in

[13] Notwithstanding what this table seems to indicate, Pennsylvania's response did not indicate that its two-year sector relied on Base+ funding.

directing dollars. The others talked about financial incentives and divestment strategies and funding for "systemness."

Figure 9. Additional Components in Determining State Funding Levels

Category	Responses	States
Incentives to Encourage Cross or Multi-Institutional Partnerships for Services or Program Delivery	6	ID, IN, MN, OK, SD, VA
A Pool Taken "Off the Top" for Investments in State Priorities	6	AL, ID, MT, NM, OK, VA
Special Purpose Funding	31	AL, AZ, CA, CO, CT, FL, HI, ID, IN, IA, KY, LA, ME, MI, MN, MS, MO, MT, NJ, NM, NC, OH, OK, SC, SD, VA, WA, WI, WY
Other	7	AK, KY, LA, NM, OH, OR, VA

Source: NCHEMS/SHEEO Survey

Mid-Year State Funding Shortfalls

As a consequence of the pandemic, as well as past recessionary cycles, many states have experienced sudden and sharp declines in revenue collection. Resulting cuts to funding for public higher education imposed in the middle of a budget cycle have been challenging for systems and institutions to accommodate strategically; most frequently the responses have been opportunistic. Therefore, the survey asked respondents about any formalized approaches that their state uses to address impacts from funding shortfalls that occur during a fiscal year. Most commonly, respondents indicated that there was no formalized state response to such conditions, that the response was up to the governor and legislature to pass a revised budget, or that cuts would be imposed on a pro-rata basis with institutions generally receiving the same size percentage cut. By contrast, Alabama maintains an Education Trust Fund, to which it adds funds up to a specified limit during good times, and from which it authorizes withdrawals to offset cuts when state funding declines.

Affordability

State finance officers were also asked a series of questions about how their state policies seek to preserve or improve student affordability. The first question asked if there was a formal target for cost-sharing. Only four states, in addition to Virginia, responded that they employed such a policy. Minnesota seeks to provide two-thirds of the total from tuition and fees and state appropriations to public postsecondary institutions on a consistent basis.[14] In addition, Minnesota also utilizes a Shared Responsibility Model (similar to the framework described previously) to set the target for student out-of-pocket payments as a proportion of a recognized cost of attendance level, with the

[14] Minnesota Statutes, section 135A.01. According to SHEEO, of public institutions' revenue from state support and tuition revenue, the latter accounted for 55 percent of the total across all institutions in FY 2020.

remaining amount to be covered by the student's (or their family's) federally determined Estimated Family Contribution, Pell and other federal grants, and the state grant.[15] This target is operationalized through its student financial aid policy. Tennessee reported that its policy expects students attending public four-year institutions to pay 45 percent of total costs, students attending public community colleges to pay 33.3 percent, and student attending colleges of applied technology to pay 20 percent. Wyoming seeks to set tuition at its two-year institutions at a level such that tuition revenue accounts for 23-28 percent of total system-wide unrestricted revenue.[16] Finally, while Nebraska did not specify a numerical target, it does aim to ensure that most per-student educational costs are covered by state funding, with tuition rates set to be appropriate to the role and mission of each sector within the state.

Although few states report having a clear cost-sharing policy, 29 states reported that they regularly measure or report on affordability. Among respondents, 10 states require regular reports on affordability in adherence to a statute, board or agency policy, or statewide strategic plan. A closer look at the measures and strategies in use shows considerable variation across states. Some use consistent measures and issue a regular report. Others appear to have a less formalized approach but are aware that state policymakers pay close attention to the issue and use various reports from third parties to inform decisions about state budgetary allocations. The most common measures in use include tuition and fee levels, alone or in comparison to income, other institutions within a specific region or other states, or peer institutions; net prices; and student debt. In at least 17 states' reporting on affordability the metrics are sensitive to students' income levels and in at least two states—California and Illinois—affordability measures are calculated for racially/ethnically under-represented student populations.

Efficiency and Effectiveness

A recent report on strategic finance demonstrated that Virginia's public institutions collectively have a lower cost per degree than the national average.[17] Yet it also argued that improvements in efficiency and investment, as well as changes in how the Commonwealth makes investments, would be necessary to reach its attainment goals and to close equity gaps. As part of its efforts to identify strategies for improving efficiencies in institutional operations, NCHEMS reviewed reports of efficiency initiatives in other states—particularly Ohio and Texas—as well as a report done by SCHEV in 2017 that summarized initiatives in Virginia. This section provides a high-level summary of these reviews.

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[15] The Shared Responsibility Model is more fully described in Prescott, B.T. & Longanecker, D.A. (2014). *States in the Driver's Seat: Leveraging State Aid to Align Policies and Promote Access, Success, and Affordability*. (Boulder, CO: Western Interstate Commission for Higher Education). Retrieved November 6, 2021 from https://www.wiche.edu/wp-content/uploads/2020/09/Drivers_Seat_Executive_Summary.pdf. Details about Minnesota's State Grant are available at https://www.ohe.state.mn.us/mPg.cfm?PageID=138.

[16] Wyoming Community College System. https://2ky701279qlou23p6256zftv-wpengine.netdna-ssl.com/wp-content/uploads/2019/09/Tuition-Policy-after-Oct-16-2018-meeting.pdf.

[17] Lumina Strategy Labs & SCHEV (2019). *Strategic Finance Plan for Virginia: Aligning Higher Education Finances and Strategies*.

Ohio revised code section 3333.95 requires that "each institution of higher education must provide an 'efficiency report' updated annually to the Ohio Department of Higher Education. These reports are compiled by the chancellor into a statewide report shared at year end with the governor and legislature." These reports have been provided annually since 2015 and In FY 2018 Ohio institutions reported efficiency savings in excess of $250 million.[18] The efficiencies identified fall generally into the following categories:

- Affinity partnerships and sponsorships—arrangements with partners in such areas as bookstores and food services that yield both savings and revenues to the institution.
- Asset review and monetization—leasing unused space, selling parking garages, etc.
- Campus-wide purchasing contracts for high volume goods and services.
- Collaborative contracts—multi-institution purchasing contracts for technology, software licenses, etc. Examples of savings in this regard include:
    - At Cuyahoga Community College, the monetary savings from the joint contract in computer hardware was $463,000 in FY 2019.
    - Bowling Green State University reported a contract savings of $203,000 through the joint contract agreement for scientific supplies and equipment.
    - The Northeast Ohio Medical University currently uses State of Ohio and Inter-University Council (IUC) negotiated contacts as well as State Term Schedules (STS) for its computer hardware needs. In aggregate, this has yielded an approximate savings of $450,000 in FY 2019.
- Centralization of data centers, especially for disaster recovery.
- Energy efficiencies—a variety of strategies including joint purchasing contracts (including joint contracts with non-higher education entities such as school districts and hospitals) and efficiencies such as new HVAC control systems and transitioning to LED lighting. As examples:
    - The University of Akron has a performance contract with Johnson Controls to measure and verify energy reductions realized through capital improvement projects completed over the past several years and to identify additional opportunities for savings. The performance contract has yielded more than $3 million per year in utility savings.
    - Northwest State Community College has an RFP with Terra State Community College and Owens Community College for an additional five-year electric purchase on top of reduced energy rates previously secured through May 2021. Increased savings of nearly 20% annually are anticipated starting June 2021.
- Health-care costs—joint contracting for drug purchases, collaboration with local clinics/hospitals to provide student health services, and an increasing focus on mental health services.
- Review of operations and business processes—moving to paperless systems.

[18] They can be found at https://www.ohiohighered.org/affordability-efficiency.

- Organizational structure modifications—combining departments/units and eliminating positions.
- Improving academic productivity—reducing small classes and other strategies.
- Improved space utilization—eliminating/disposing of unnecessary space, adjusting academic schedules to better utilize existing space.
- Reducing time to degree.
    - Advising that prevents students from taking unnecessary courses
    - Incentives for enrolling for 15 credits per semester
    - Standardize credits to degree
    - Data-driven advising
    - Summer-session courses to alleviate bottlenecks
    - Guided pathways and improved articulation arrangements
    - Move to competency-based education

A useful feature of the approach in Ohio is a formal mechanism led by the Department of Higher Education that promotes sharing of ideas among the institutions. In addition, institutions in Ohio are obligated to develop five-year plans for efficiency initiatives with associated estimates of dollar savings.

In 2017 SCHEV compiled a summary of efficiency initiatives conducted by Virginia institutions.[19] In this brief document, SCHEV documented improvements in the following areas:

- Improvements made possible through the use of technology
    - Human resources
    - Finance (including procurement)
    - Academic/Academic Support and Student Service functions
    - Research
    - Facilities Management
    - Information Technology
- Improvements made possible through process/structure improvements—in all the same categories listed above
- Improvements made possible through external shared service agreements

The common thread in these two lists of improvements is that they almost universally focus on administrative and student support activities. With the exception of the initiative in Ohio dealing with reduced time to graduation, academic efficiencies gained through collaborations, changes in delivery models, and other innovations are absent from the materials.

The *Report of the Texas Higher Education Coordinating Board on Higher Education Cost Efficiencies* (November 2010) was prepared in response to an executive order that directed the Texas Higher Education Coordinating Board (THECB) to "undertake a broad and comprehensive

[19] SCHEV (2017). *Organizational Excellence Accomplishments: Process Improvements Implemented*. Unpublished report shared with NCHEMS by SCHEV staff.

review of the system-wide opportunities for achieving cost efficiencies and to conduct a review of higher education cost efficiencies implemented in other states and other countries." This report took a very different direction from those in Ohio and Virginia, focusing on steps the state (more than institutions) should take to promote efficiencies, particularly through mandates for adjustments in the delivery of courses and programs. Among the strategies recommended for adoption by the state were:

- Paying for performance
    - Incentivize and reward results.
    - Modify the Texas Grant Program to prioritize needy students who complete a rigorous high school curriculum but also achieve at relatively high academic levels.

  The estimated first-year savings from these initiatives were $4.5 million.

- Creating Clear Pathways for Successful Student Outcomes
    - Statewide articulation agreements
    - Legislate limiting the length of associate degree programs to 60 SCH
    - Require at least 10% of all campus SCH be delivered through means other than conventional on-campus classroom instruction
    - Increase credit hour production per FTE faculty member by 10%. (Note: this strategy was also implemented by the University System of Maryland as part of a larger Efficiency and Effectiveness initiative that involved centralization of several administrative functions and leveraging the power of the System to obtain more favorable procurement arrangements as well as campus-based efforts. This initiative was followed by the E&E 2.0 initiative. The University of Missouri System also had an "Efficiency and Effectiveness Accountability Report" that focused on shared services and intercampus course sharing.)

  Estimated first-year savings from these initiatives were $178.2 million.

- Meeting Demand with New Approaches to Delivery
    - Require the THECB to develop a statewide, user-friendly online delivery system for developmental education and associate degree programs.

  Estimated first-year savings from these initiatives were $28.6 million.

- Making Capital Financing Make Sense
    - Direct the THECB to develop a recommended approach to capital financing with special attention to developing an alternative to the use of Tuition Revenue Bonds.

- Making Productivity and Continuous Improvement a Cultural Change
    - Legislature mandates that each institution reduce the cost of producing a degree by 10 percent.

- Create a Statewide Higher Education Continuous Improvement Council within the THECB as a mechanism for promoting and institutionalizing efficiencies at all levels—state, system, institution.

Estimated first-year savings from these initiatives were $293.5 million.

In each case the four-year estimate of potential savings was calculated to be more than four times the estimated one-year savings.

The Texas report is noteworthy for the fact that it puts efficiency improvement in a much larger context and makes the state and executive branch agencies part of the community of solutions. It also contains a useful compilation of initiatives being undertaken in other states.

Taken together, our reading of these state-level reports on efficiencies in higher education leads to the following observations:

- Initiatives tend to concentrate on administrative efficiencies, rather than address savings to be found on the academic side of institutions, which tends to be harder to achieve due to shared governance.
- Efficiencies can be driven through multi-institutional collaborations, but initiatives that seek to do so are less common.
- The impact of efficiency initiatives can be hard to measure in dollar terms, in part because the savings are typically reinvested in other institutional priorities—often in student success initiatives—rather than being passed on to students through lower tuition.
- Having an *a priori* purpose for how the efficiency gains will be used is helpful for remaining disciplined; this as opposed to general goals for the achievement of savings.
- Much more emphasis was placed on efficiency than on effectiveness. A more balanced approach would be appropriate in Virginia.

A survey will be put in the field in December to collect data about steps being taken by Virginia institutions to improve efficiency and effectiveness. (The instrument is included in this report as Appendix B.) In addition to updating the 2017 compilation conducted by SCHEV, the survey results are expected to generate insights about the priority investment opportunities that motivate institutions to seek efficiencies, such as to bolster institutional aid awards to targeted student populations, to fund efforts to reduce equity gaps in student success, to attract an excellent and diverse faculty and staff, etc. Results will also provide an information base for SCHEV to share promising practices and lessons learned among Virginia's institutions.

Data Analyses

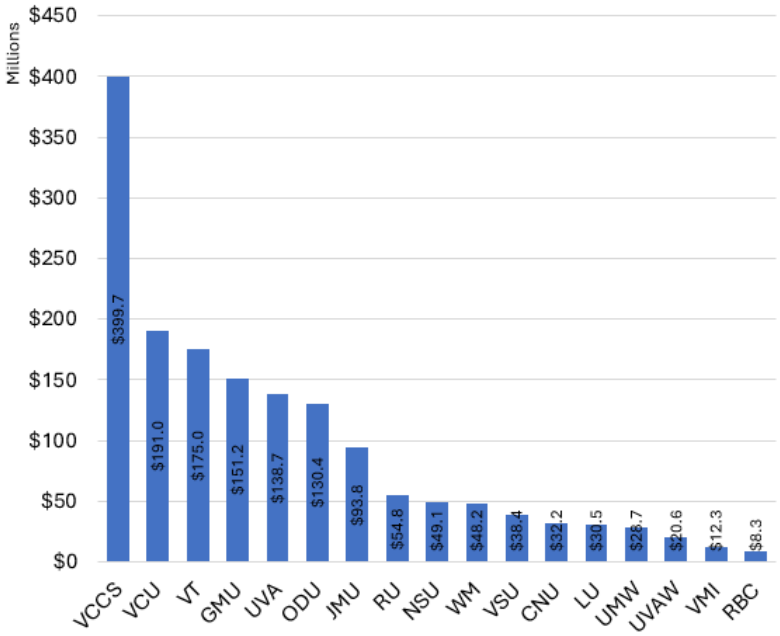
This study relies on extensive analyses of data to provide a foundation of facts to aid in identifying areas of focus for policymakers seeking to ensure that there is adequate funding to public

institutions and to support their efforts in achieving state priorities. This interim report provides the first set of these data, which will continue to be developed as the project proceeds.

Trends in Funding, Enrollment, Pricing, and Expenditures in Virginia

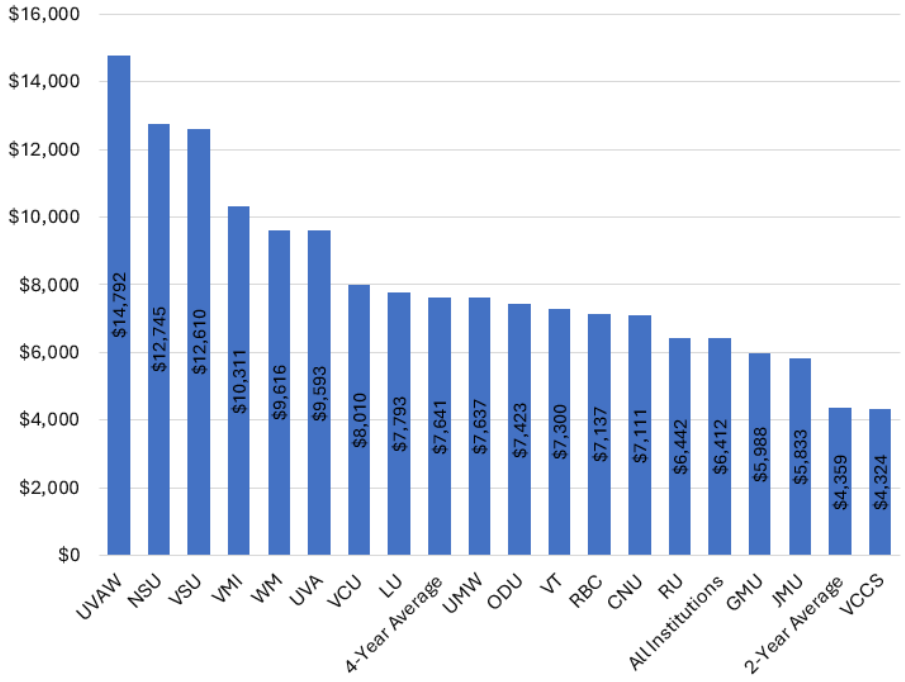
The initial analyses involved a review of trends in state funding, enrollment, pricing, and expenditures among Virginia's public institutions. Like many other states across the nation, state funding of public institutions has fluctuated over time as state revenues have followed the economic cycle. In FY2020, Virginia's E&G General Fund appropriations ranged from nearly $400 million received by VCCS to $8.3 million received by Richard Bland College (Figure 10); on a per-student (in-state students only) basis, general fund support ranged from $14,792 at UVA-Wise to $4,324 across the VCCS institutions (Figure 11). But state funding of public institutions in the years leading up to FY2020 was volatile. Virginia's public institutions in both sectors suffered a dramatic drop in total funding in the immediate wake of the Great Recession (Figure 12). By 2012, state funding stabilized and started recovering, albeit not steadily. When the pandemic struck during FY2020, state funding of Virginia's institutions in aggregate had reached a post-recession peak. This overall pattern played out across all of Virginia's public institutions, and while all of them saw their state funding support as measured by total dollars sharply reduced before substantial recovery in total, some were whipsawed more than others (Figure 13, which orders the institutions by their overall percent change between FY2009-20).

Figure 10. Virginia E&G General Fund Appropriations, by Institution, FY 2020



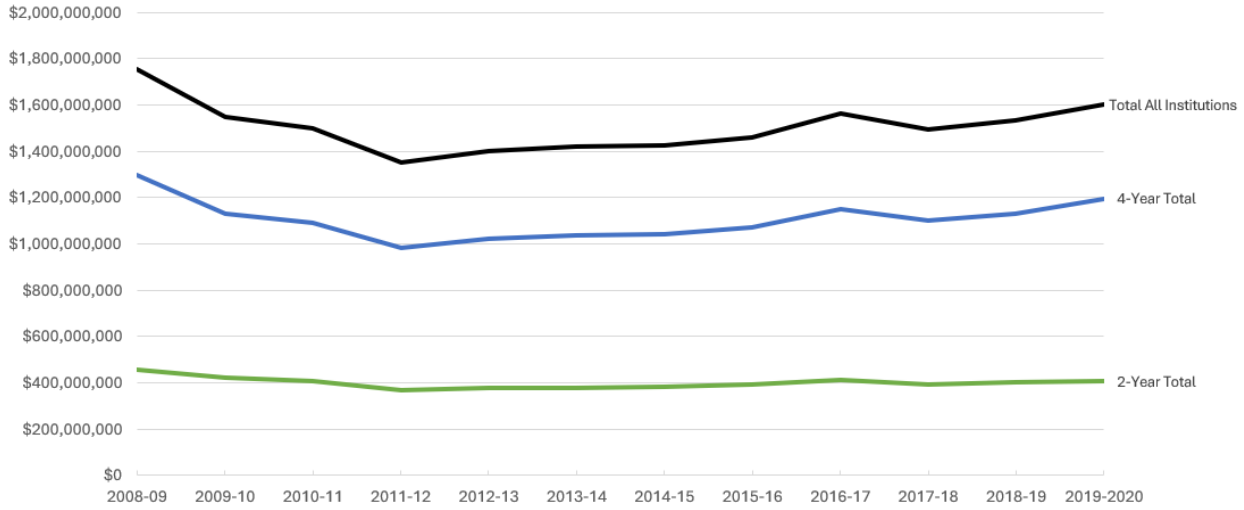
Source: SCHEV

Figure 11. E&G General Fund Appropriations per In-State FTE, FY2020



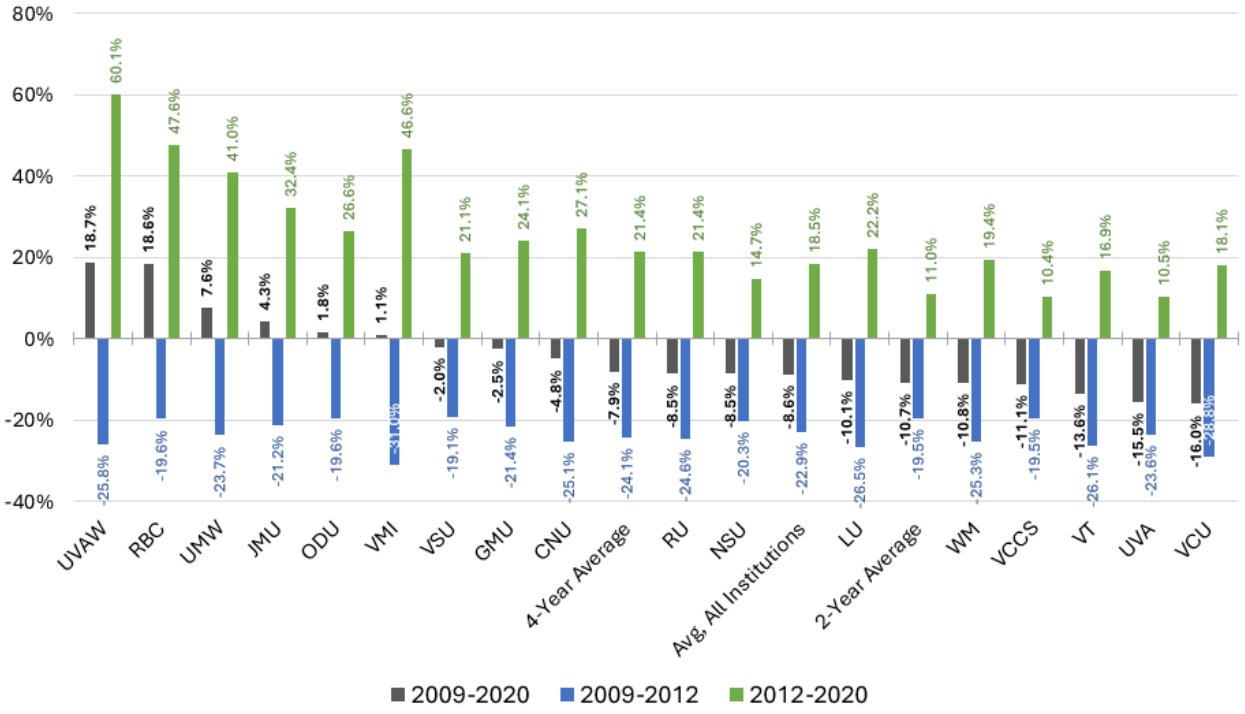
Source: SCHEV

Figure 12. Virginia E&G General Fund Appropriations, FY2009-2020 (in 2020 Dollars)



Source: SCHEV

Figure 13. Percent Change in E&G General Fund Appropriations



Note: Figures are adjusted for inflation using CPI-U.
Source: SCHEV

Figure 13 makes clear that, for most institutions, increased funding during the 2012-2020 period was insufficient to offset the cuts made during the Great Recession. With few exceptions funding was lower in 2020 than in 2009. Moreover, these patterns are especially volatile when looking at them on a per-student basis, as enrollment trends tend to be counter-cyclical—enrollment spikes occur at same time that the state's ability to provide resources is weakest, and tuition prices rise to partially offset the softening levels of per-student support. During this period, there were stark changes in undergraduate enrollment levels that differed by institutional sector. Among Virginia's public four-year institutions as a group, enrollments rose steadily among both in-state and out-of-state students throughout the period. By contrast, and in keeping with the patterns seen nationally, enrollments spiked at the onset of the Great Recession, with a speedy decline ensued after 2012 (Figure 14). By 2017, enrollments in the two-year institutions were lower than in the years preceding the recession, and they continued to fall even before the pandemic struck.

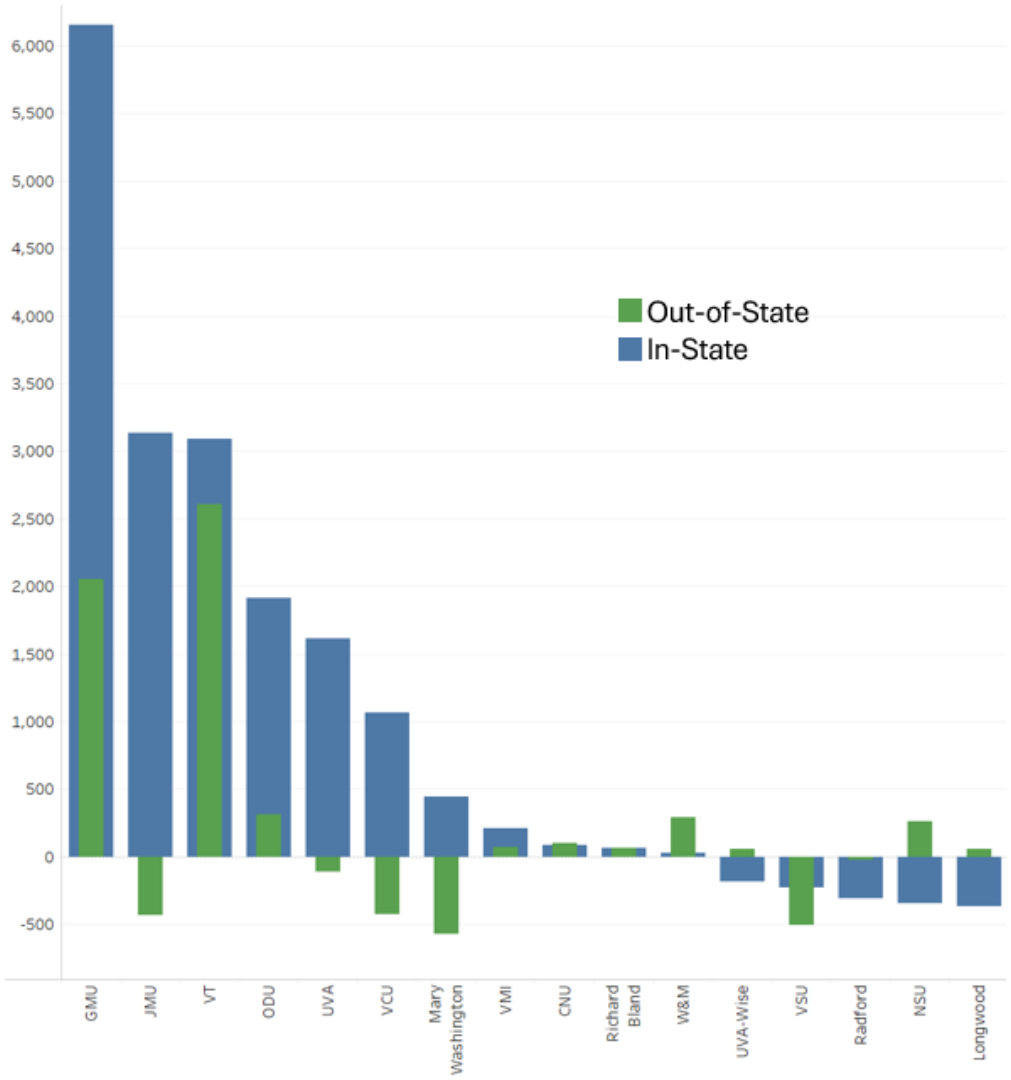
Once again, the experiences of individual institutions were quite different, and a subset of institutions were responsible for the vast bulk of the aggregate change in enrollment levels, including GMU, JMU, VT, ODU, UVA, and VCU (Figure 15). At the other end of the spectrum were institutions that lost undergraduate enrollments over the timeframe, including Longwood, NSU, Radford, and VSU. Moreover, the type of students institutions were able to attract (or not) has implications for a state increasingly reliant on tuition revenue. So even though JMU had a substantial influx of in-state students, their enrollment of the out-of-state students who pay their

full educational costs (and more) dropped sharply. This was also true at Mary Washington, VCU, VSU, and UVA. These changes helped lead to a varied mix of in- and out-of-state students at campuses across the Commonwealth, with out-of-state students comprising a substantially larger share of the total enrollment at VT, UVA, VMI and W&M and very few of them proportionately enrolled at Radford, Longwood, Mary Washington, and UVA-Wise (Figure 16).

Figure 14. Change in Undergraduate FTEs Relative to FY 2009, by Residency

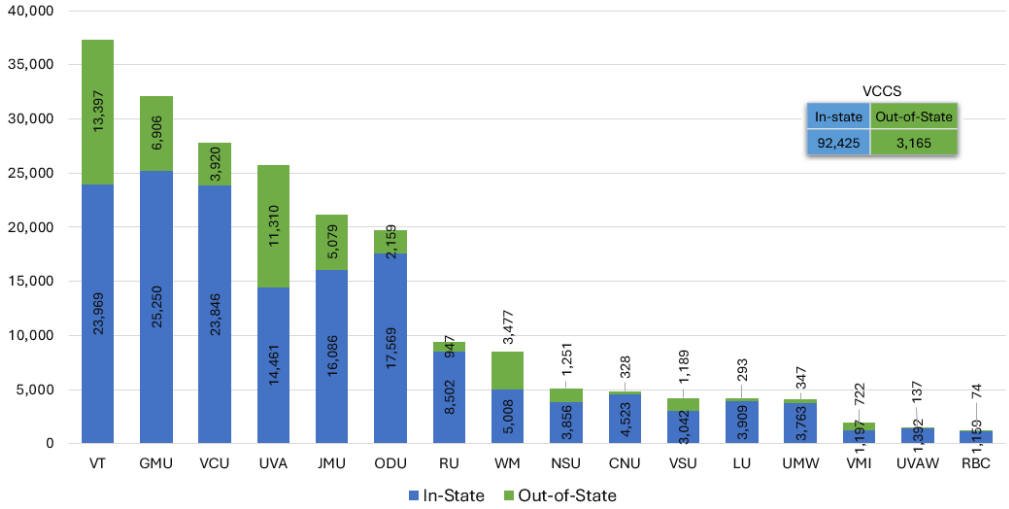
Note: Data are unduplicated FTEs during the full year.
Source: SCHEV

Figure 15. Change in Undergraduate FTEs from FY2009 to FY2020, by Residency



Note: Data are unduplicated FTEs during the full year.
Source: SCHEV

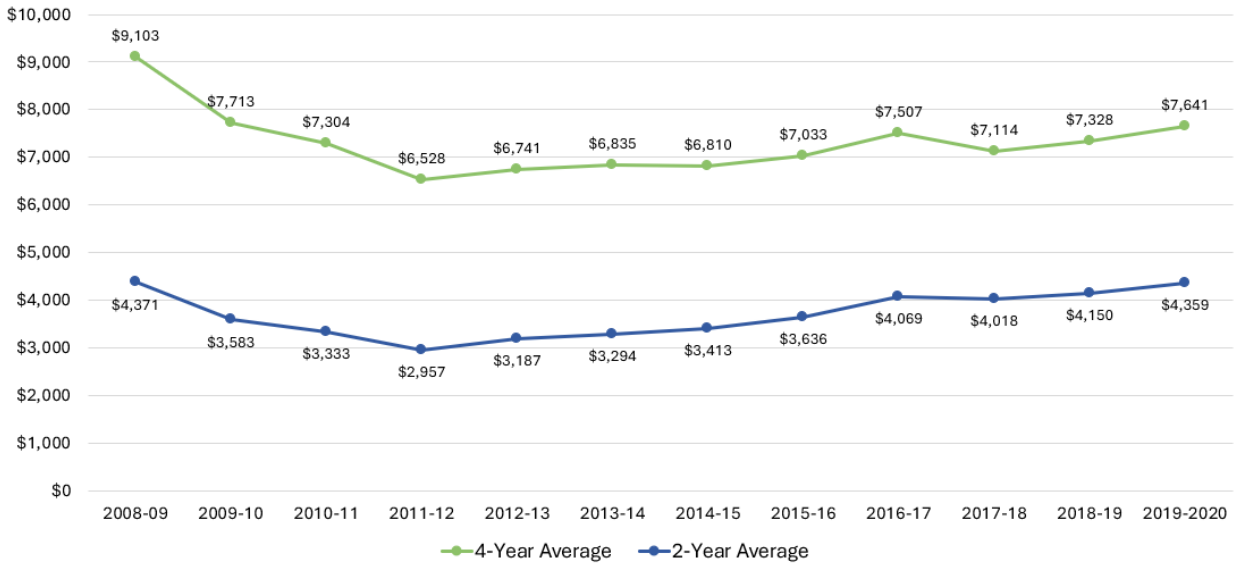
Figure 16. FTE Enrollment in FY 2020, by Residency



Source: SCHEV

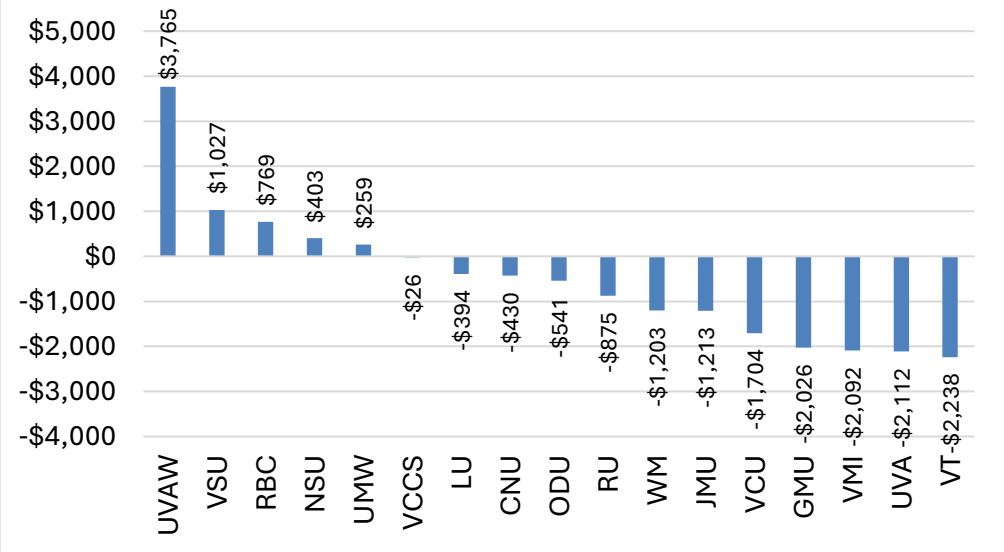
The sharp drop in state funding and the corresponding rise in enrollments combined to drive state funding per student rapidly lower at the outset of the Great Recession (Figure 17). By this measure, state support fell by nearly 40 percent between FY2009 and FY2012 among four-year institutions and by 48 percent in the two-year sector. Since then, the recovery has been significant in both sectors, but especially among the two-year institutions. There, funding per student has returned nearly to its FY2009 level due mainly to the ongoing decrease in enrollment. In the four-year sector where enrollment has been steadily climbing, the increase in per student funding is much more modest but still significant at 17 percent. Once again, this aggregate picture obscures the very different circumstances faced by the individual institutions (Figure 18). By 2020, just five institutions were receiving more funding per student (in inflation-adjusted dollars) than they were in FY2009: UVA-Wise, VSU, Richard Bland, NSU, and Mary Washington. For UVA-Wise, VSU, and NSU, this was partly driven by the decline in in-state enrollments over the same period. The remaining institutions saw their state funding relative to in-state enrollments fall, led by institutions that recorded the largest increases in in-state student enrollment over the same period. Notwithstanding these decreases and as previously shown (Figure 11), some still received generous support per in-state student in FY2020 relative to others.

Figure 17. E&G General Fund Appropriations per In-State FTE, FY2009-20



Note: Adjusted for inflation using CPI-U and expressed in 2020 dollars.
Source: SCHEV

Figure 18. Change in E&G General Fund Appropriations per In-State FTE, FY2009-20

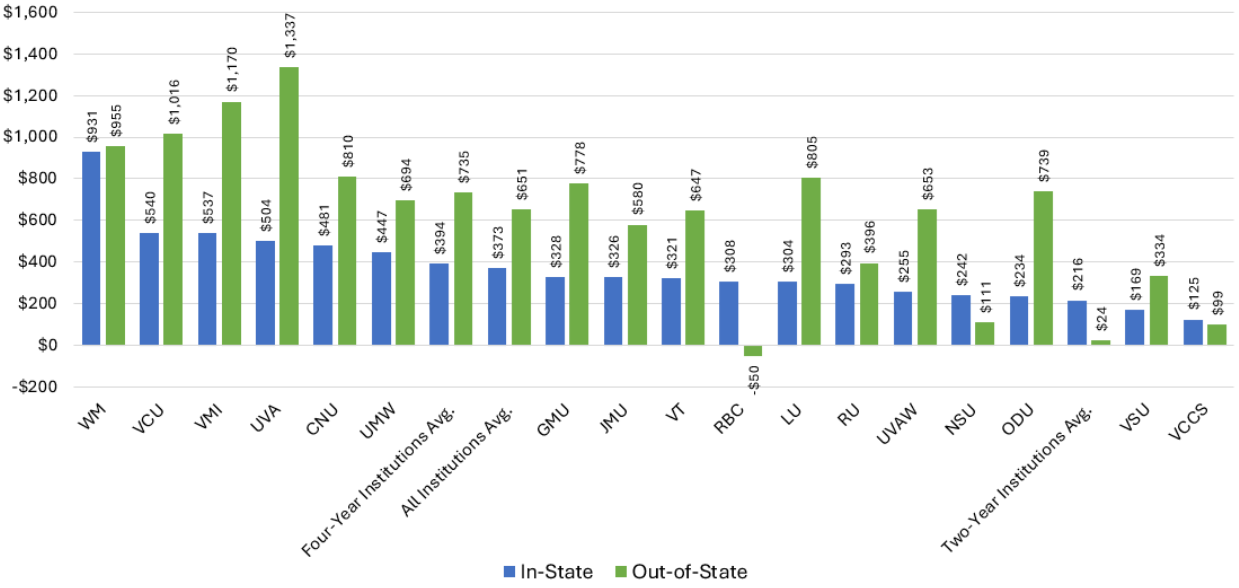


Note: Adjusted for inflation using CPI-U and expressed in 2020 dollars.
Source: SCHEV

As state support fell during the recession (before partially recovering after FY2012), Virginia's institutions made up for a portion of those losses with substantial increases in tuition prices in an effort to maintain revenue levels to the extent possible (Figure 19). The increases in sticker prices varied considerably across the institutions. Most institutions boosted their prices more for out-of-state students (at least in dollar terms). Of those that did not, VCCS and Richard Bland are two-year institutions and the latter's decline is due to a major decrease in prices enacted for the 2020-21 academic year. NSU also limited price increases to out-of-state students to a lower level than

the increases it charged to Virginians, while William and Mary kept price increases to residents and nonresidents to nearly the same magnitude.

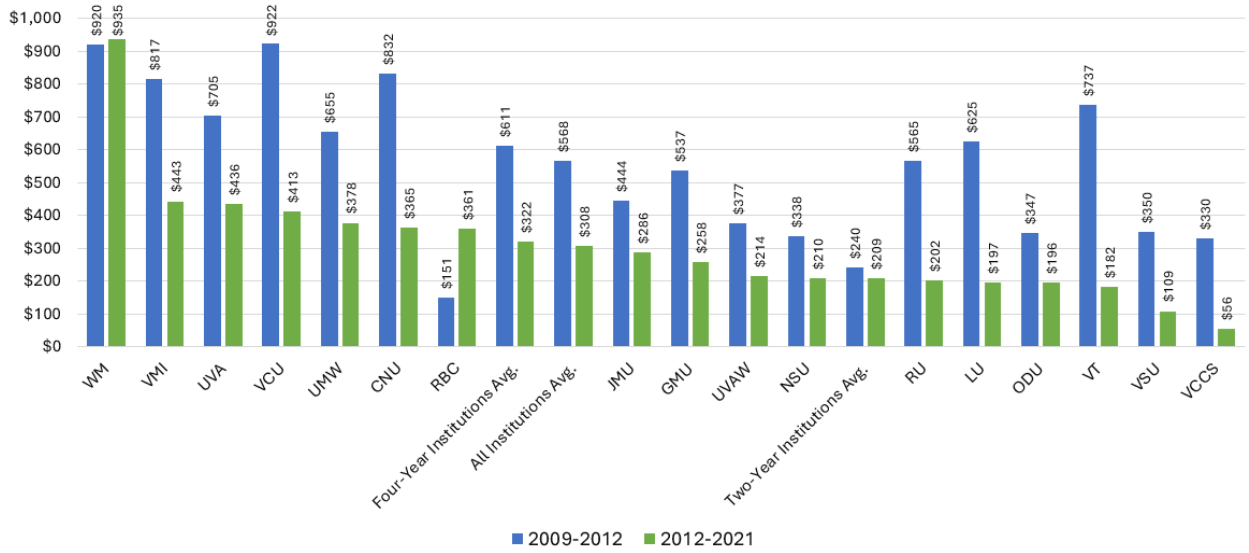
Figure 19. Average Annual Change in Undergraduate Mandatory T&F Prices by Residency, 2009-2021 (2020 Dollars)



Source: SCHEV

The price changes throughout the past decade were really a tale of two time periods for most Virginia institutions (Figure 20). In the main, institutions raised tuition and fees considerably in the period 2009-2012, the years during which state appropriations were cut dramatically as a consequence of the Great Recession. In the period since 2012, all institutions except William and Mary and Richard Bland cut their rates of tuition increases to levels well below the levels of the Depression years.

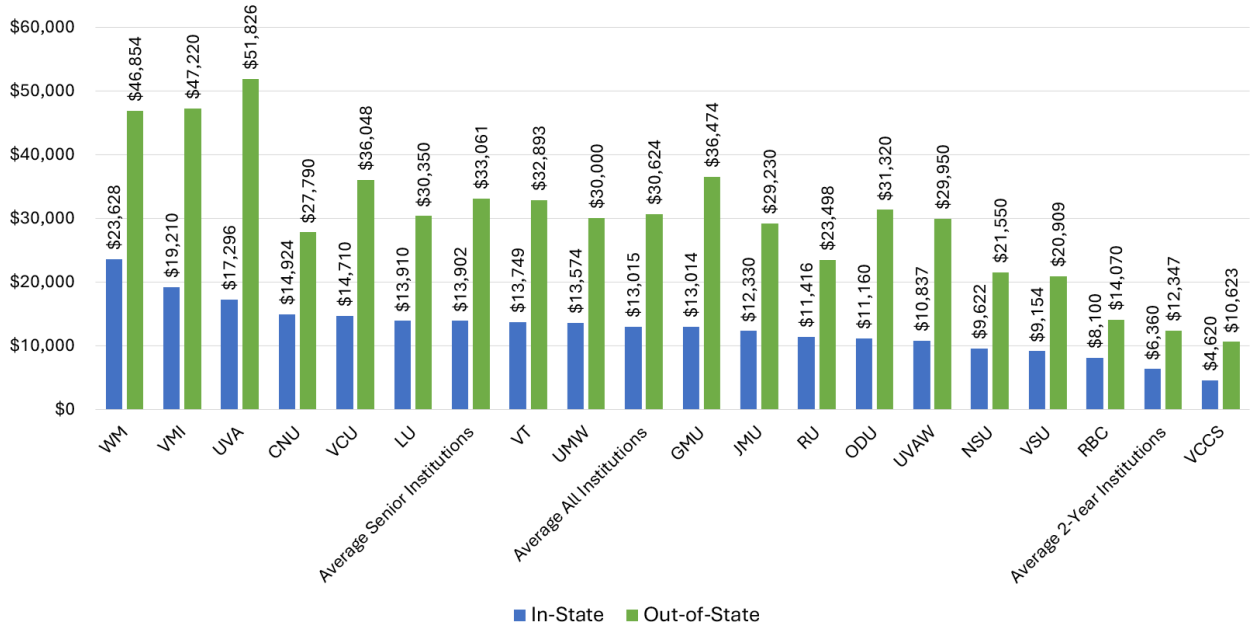
Figure 20. Average Annual Change in In-State Undergraduate Mandatory T&F Prices, 2009-2012 and 2012-2021 (2020 Dollars)



Source: SCHEV

By 2021, Virginia's public institutions published quite different tuition rates, ranging from $4,620 at VCCS institutions to $23,628 at William and Mary (Figure 21). Prices charged to out-of-state students varied even more across institutions. Moreover, the premium charged to out-of-state students relative to in-state students were notably different—UVA's strong international reputation meant that it could charge out-of-state students three times what it charges Virginians while the premium CNU charged its nonresidents was just 1.86 times its in-state rates, even though CNU was the fourth most-expensive of Virginia's institutions in 2021, just one spot below UVA's ranking.

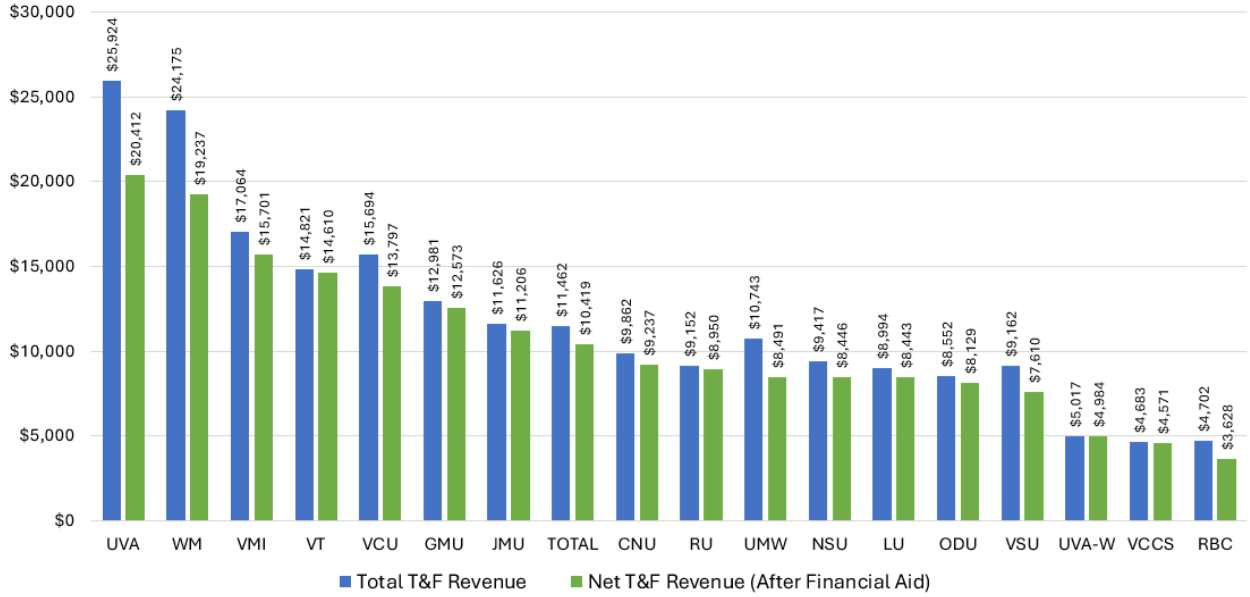
Figure 21. Undergraduate Mandatory T&F Prices by Residency, 2021



Source: SCHEV

Published tuition rates are only part of the pricing strategy used by institutions, of course. William and Mary's high tuition prices help make it possible for it to provide generous institutional aid to its students, for example, and not all of Virginia's institutions have access to a national market for students that allows William and Mary to employ such a strategy. It is therefore crucial to examine all the facets of the tuition and fee picture when revenues from those sources are considered. To begin with, Figure 22 shows the variation among Virginia's institutions in the amount of tuition revenue collected in FY 2021 both before (gross) and after (net) some of that revenue is reallocated for financial aid. Not only are some institutions able to collect far more in tuition revenue than others, but those that collect the most tend to use more of that revenue to support students with financial need. Mary Washington and VSU are among those that generate less gross revenue while reallocating a significant share to their financial aid budgets.

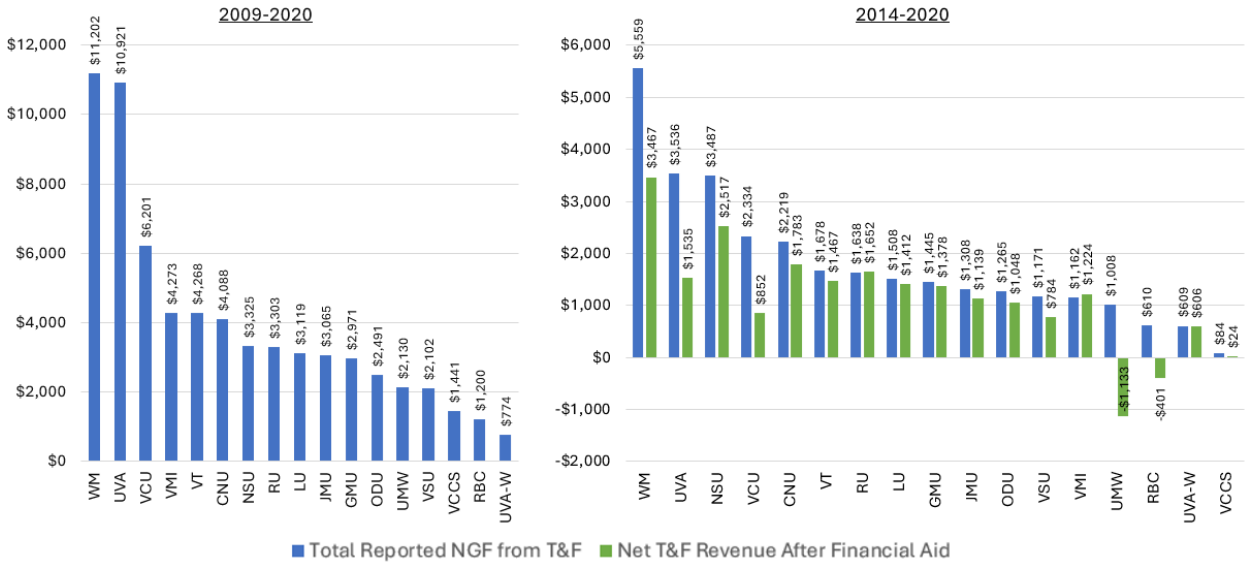
Figure 22. Total Revenue per FTE from Reported Tuition & Mandatory E&G Fees, FY2020



Note: Data include revenue collected from all students.
Source: SCHEV estimates reported by institutions.

As with tuition prices, changes in reported tuition and fee revenues varied considerably across the institutions with the largest increases as the most selective institutions. The data for the period 2014-2020 indicate that some institutions used substantial amounts of their tuition revenue to provide student financial aid for their students (as shown by the differences in the heights of the bar for total revenues vis-a-vis that for net tuition and fees revenue after financial aid).

Figure 23. Change in Reported T&F Revenue per FTE (2020 Dollars)

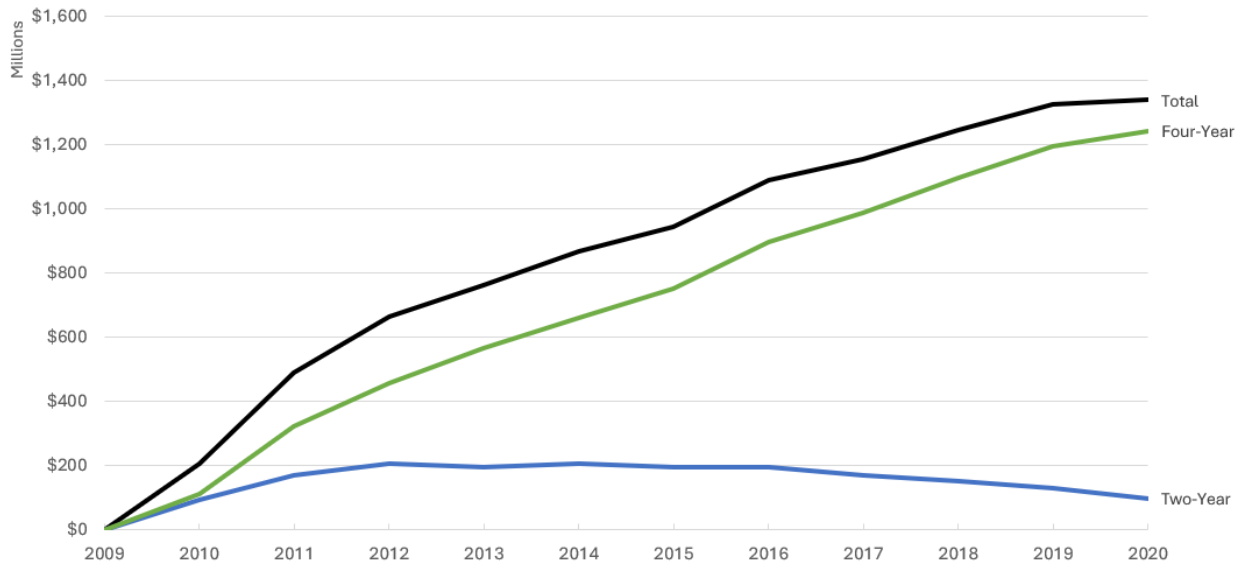


Notes: Data for net T&F revenue prior to FY2014 are unavailable. Net T&F revenue is calculated as the total revenue from T&F (excluding "other" NGF revenue) minus T&F revenue used for financial aid and total reported NGF from T&F is the subtotal for tuition and fees revenue only.

Source: SCHEV

Error! Reference source not found. illustrates the extent to which institutions varied greatly in t he revenue they were able to collect in FY2020. Figure 24 shows substantial (inflation-adjusted) increases that occurred in both sectors, but early increases in the two-year sector quickly plateaued and then started sliding back beginning in 2012, as enrollment started falling as the economy improved.

Figure 24. Change in Revenue from Reported Tuition & Fees, Relative to FY2009

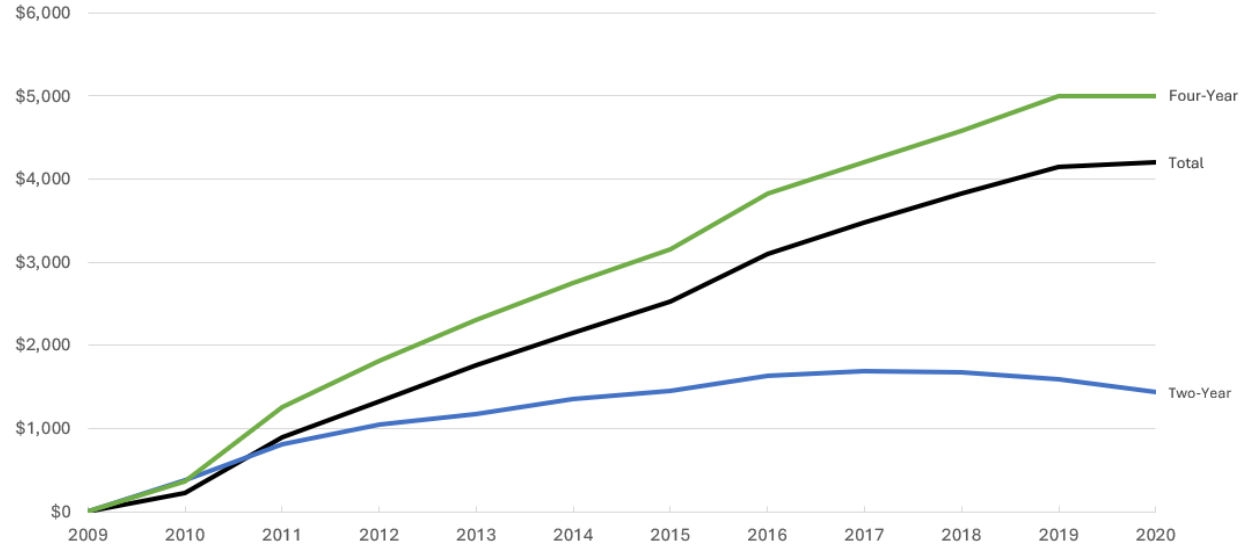


Note: Adjusted for inflation using CPI-U and expressed in 2020 dollars. These figures include T&F revenue that is ultimately used for financial aid.

Source: SCHEV

On an average per-student basis, increases in revenue from tuition and fees in the four-year sector by FY2020 climbed more than $5,000 above the level collected in FY2009 after accounting for inflation (and not counting revenue that is ultimately spent on institutional financial aid) (Figure 25). In the two-year sector, the increases were far more modest—less than $1,500. As usual, there were important variations in how the revenue sources for different institutions changed over the period. Data on net tuition revenue are only available beginning in FY2014. Due to the quite different strategies institutions use in making investments in institutional aid, it is not possible to do an analysis that is comparable across institutions prior to that date. Nevertheless, Figure 26, which is ordered by the change in per-student total revenue from tuition and fees and E&G General Fund appropriations, illustrates how much some institutions came to rely increasingly on tuition and fees support relative to what they received directly from the state (William and Mary, the University of Virginia, Virginia Tech, and George Mason stood out the most in fitting this pattern). Others, such as UVA-Wise, Mary Washington, VSU, and VCCS, became relatively more dependent on state support.

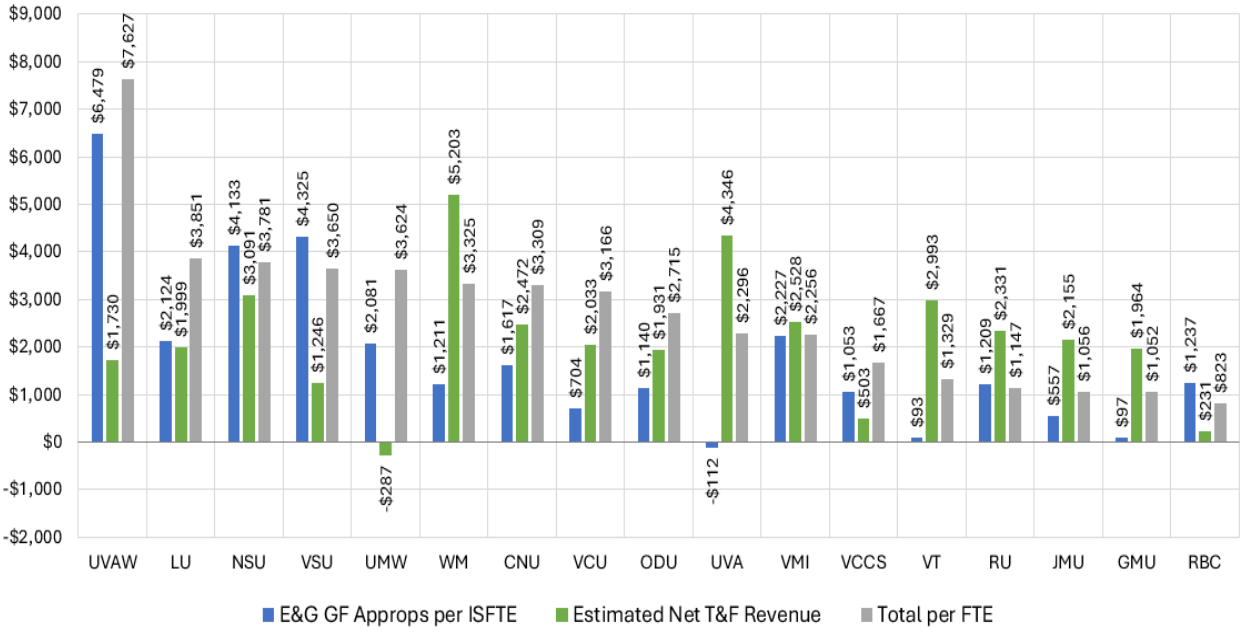
Figure 25. Increases in Revenue from Reported Tuition & Fees per FTE, FY2009-2020



Note: Adjusted for inflation using CPI-U and expressed in 2020 dollars. These figures include T&F revenue that is ultimately used for financial aid.

Source: SCHEV estimates as reported by institutions.

Figure 26. Change in Revenue per Student, FY2014-2020



Note: Adjusted for inflation using CPI-U and expressed in 2020 dollars. These figures include T&F revenue that is ultimately used for financial aid.

Source: SCHEV

These quite different patterns of revenue have important implications for the design of a state funding model that satisfactorily assures adequate support for institutions of all types. It may be unreasonable to assume that these past trends can carry on indefinitely into the future. For

example, institutions that have increased tuition substantially—even if significant proportions of the revenue generated from those increases were used to provide financial aid to students with financial need—may be at the point where the market will no longer allow further increases of this magnitude.

Benchmarking Analyses

A second important set of data analyses involved benchmarking Virginia's public institutions against corresponding sets of comparison institutions to compare revenue and expenditure patterns, and eventually to examine degree and certificate production, student outcomes, and affordability. A first step in these analyses was to identify appropriate comparison institutions for each of Virginia's institutions. Even though Virginia has long used peer institutions (to benchmark faculty salary levels against the state goal of reaching the 60th percentile of those peers), it is critical to emphasize that the intended use of comparison groups in this project is exclusively for providing background information. They are **not intended to be incorporated in any funding model** developed as part of Deliverable 4 of this project but will rather be used to develop findings and insights useful in addressing Deliverable 2 relating to efficiency and effectiveness, and Deliverable 3 relating to cost trends in higher education.

SCHEV maintains an approved peer group for each institution, the purpose of which in this context is to establish a basis for determining faculty salary increases, a significant driver of cost increases in higher education. But SCHEV's peer groups are not routinely updated. They also typically include diverse sets of public and private institutions, many of which have very different business models and revenue streams and offer a very different array of programs than the Virginia institution to which they are assigned. To identify an updated list of more similar comparison institutions, NCHEMS generated new groups for each of Virginia's public four-year institutions and for Richard Bland College. NCHEMS also identified a set of statewide systems of primarily two-year institutions to use as benchmarks for VCCS.

NCHEMS has a long history of developing comparison groups for institutions to use in benchmarking analyses; details concerning the methods for developing these groups may be found in Appendix D. In brief, NCHEMS uses IPEDS data to generate comparison groups using these broad steps:

1. Filter out institutions that are unlike each "target" institutions based on control (private institutions were excluded from comparison groups[20]), the presence or absence of a medical school, and the presence or absence of having a land-grant mission—these are high-level

[20] The use of institutional control to exclude private institutions from public institutions' comparison groups is appropriate given how different public and private institutions are in their sources of revenue and in their governance and oversight. Even for public institutions that derive a considerable proportion of their revenue from tuition (and gifts or endowment earnings) and which often compete with private non-profit institutions for students and faculty, these different characteristics have meaningful implications for institutional operations. These differences justify the selection of one type of institution—public or private—for a valid comparison group for benchmarking purposes.

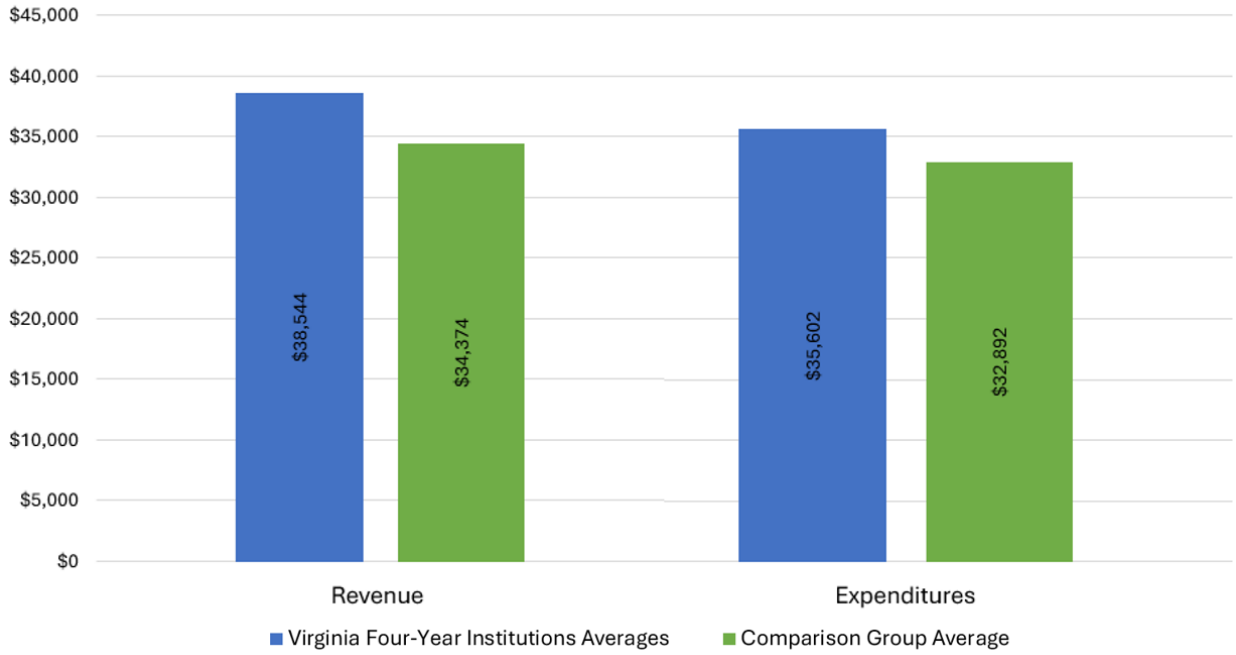
characteristics that determine the principal sources of revenue or necessitate unique expenditures.

2. Conduct a cluster analysis of the remaining institutions focusing primarily on characteristics of institutional mission and size—putting emphasis on selecting institutions with similar levels of overall enrollment, program offerings by field and level, research activity, and student characteristics in terms of part-time attendance and Pell recipients.
3. Review initially selected institutions for similarities based on additional characteristics such as geographic location to ensure a broad representation of states, the presence or absence of collective bargaining, institutional wealth, racial/ethnic population (not a primary focus since it tends to be heavily influenced by the institution's location), special mission characteristics (e.g., HBCU), and the degree to which it offers residential housing (using the Carnegie classification).

Importantly, NCHEMS' methodology does not employ any dependent variables of interest in selecting comparison institutions—no student success or finance metrics are incorporated into the development of the list. Selecting a comparison group is a data-informed activity to be as objective as possible, but there is inevitably subjectivity and judgment involved, given the great diversity of institutions throughout the U.S. We rely on group averages and medians to ensure that the comparisons are as valid as possible.

A first set of analyses confirmed that the groups selected in this manner are well suited for benchmarking institutional finances. These analyses compared the average of the Virginia institutions' revenues and expenditures per FTE compared to the aggregated average of each respective institution's peer groups (i.e., the average of each peer group's average). The results for revenue and total expenditures show that the comparison groups NCHEMS constructed based on similarities in the institutions' business models and program arrays are similar to the averages of the Virginia institutions in their total revenue and spending, in aggregate. Variations found for individual institutions are reasonably assured of reflecting actual differences in revenue and expenditure patterns (Figure 27).

Figure 27. Total Revenue and Expenditures per FTE, 2018-19

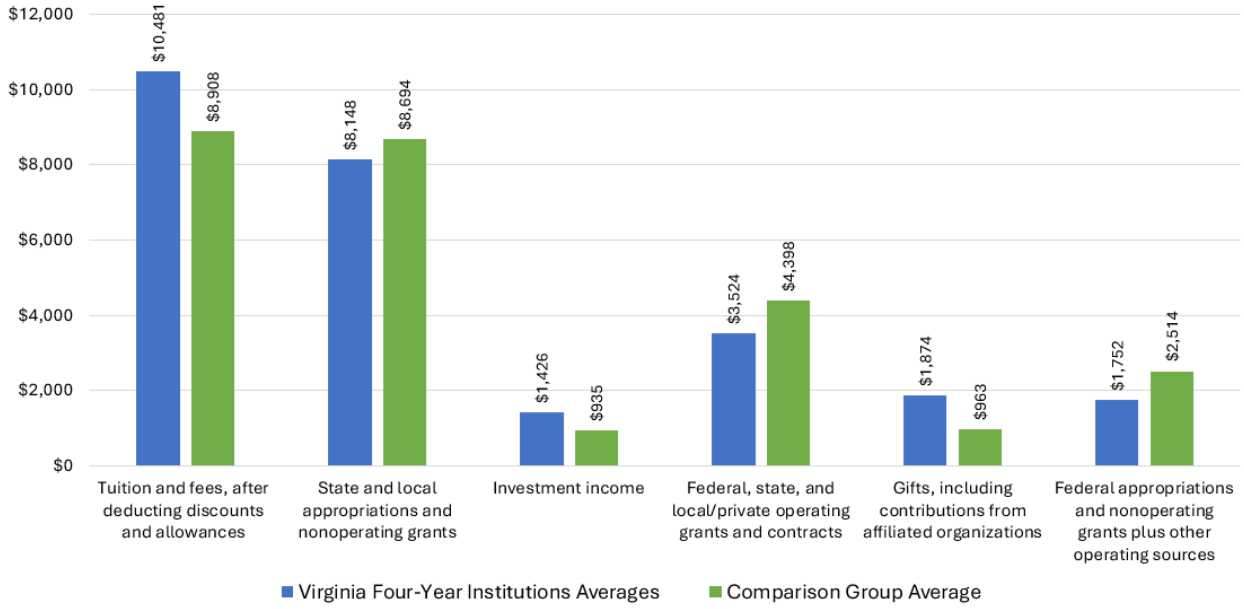


Notes: Revenue is calculated as total revenue minus revenue from hospital operations and independent operations. Expenditures exclude spending on hospital and independent operations. Data for the comparison group is the average of the average for each group.

Source: IPEDS

This comparison is more striking when revenue and expenditures are broken down into their components. On the revenue side (Figure 28), Virginia's institutions in aggregate generated more revenue from tuition than the average of their comparison groups, and received less from state appropriations.

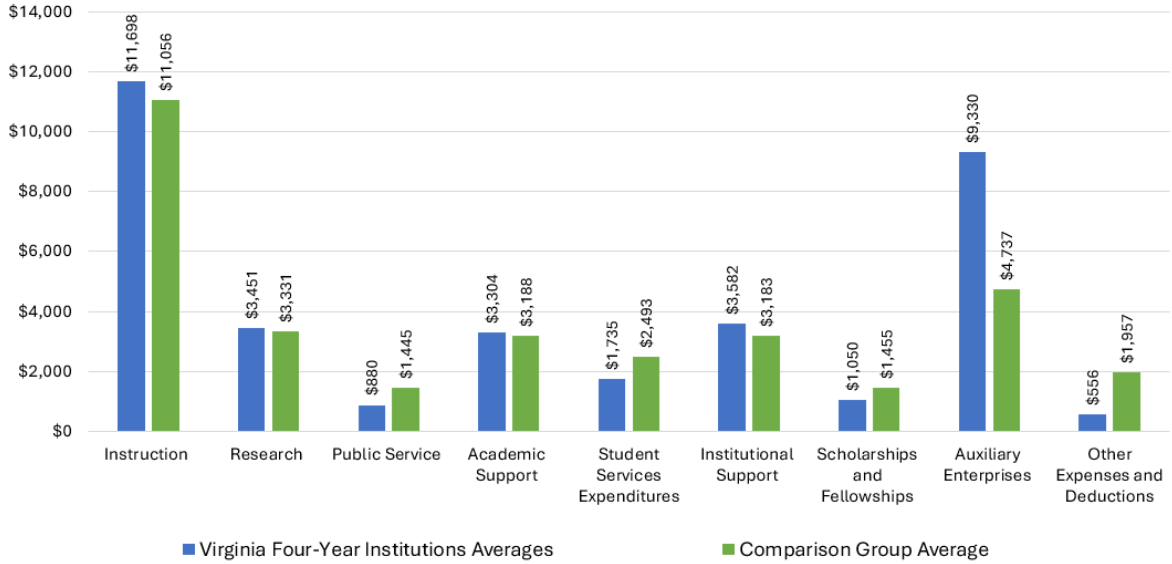
Figure 28. Revenue per FTE by Source, 2018-19



Source: IPEDS

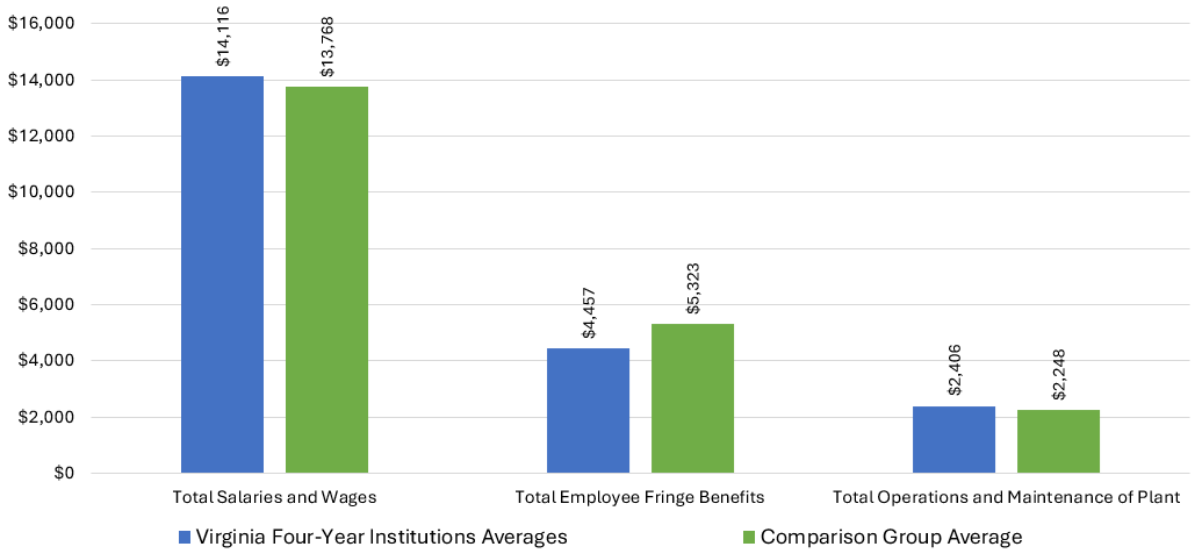
More interesting is the extent to which the groups differ in spending patterns, since the spending levels are not so inextricably tied to the institutions' governance arrangements as revenues are. Figure 29 breaks expenditures down by functional classification, while Figure 30 shows them by natural classification. Both charts show that Virginia institutions spend slightly more than the average of their comparison groups. Exceptions to this general observation are for spending on auxiliary services and on fringe benefits.

Figure 29. Expenditures per FTE by Functional Classification, 2018-19



Source: IPEDS

Figure 30. Expenditures per FTE by Natural Classification, 2018-19



Source: IPEDS

Balancing Funding Requirements of Institutions With Varied Cost Structures

As shown by the NCHEMS/SHEEO survey of state finance officers and by the InformEd States analysis of state funding policies across the nation, states routinely attempt to account for institutional costs in making an assessment of the funding requirements of different institutions. Frequently these provisions of state funding models are known as institutional funding equity provisions and their intent is to inject a measure of objectivity in determining the necessary level of core support for instruction. In general, such approaches seek to do so by factoring in the differential costs of offering courses and programs at different degree levels and across different disciplines, for which the input costs of faculty, equipment, classroom spaces, and pedagogy entail a varied cost structure. These efforts also commonly try to account for the real differences in the costs of effectively serving students with varied backgrounds, usually by using their status as Pell recipients as an (imperfect) proxy for income and other characteristics that are typically correlated with lower student success measures. States that use these approaches often rely on a schedule of weights that account for the differences in the costs of delivering credit hours at different levels in different disciplines and supplement the schedule with additional weights for credits earned by Pell recipients. Among the states that incorporate factors such as these are Massachusetts, Minnesota, Nevada, New Jersey, Oregon, Tennessee, and Texas. (Nevada's schedule of weights is provided as an illustration of this approach in Appendix C. Illustrative Schedule of Discipline/Level Weights) Virginia's reliance on student-faculty ratios that differ by discipline has been its way of tying its base adequacy calculation to real costs, although in doing so it links those costs tightly to faculty compensation levels (which are below levels established for comparison purposes through use of a set of peer groups approved by SCHEV). While faculty costs represent the largest source of variation in instructional costs across levels and disciplines, Virginia's approach ignores other important input costs.

Accounting for the real differences in the costs institutions incur to deliver different programs to students with varied needs key to their success is an important—but not the only—element of an effective funding model. Thus, **calculations based on weighted credit hours are expected to impact only a portion of the total state funding to public institutions** that the anticipated model will direct. Much more remains to be done to develop the design of the component of the funding model that will attempt to provide a cost-derived balance of institutional support, and to use that component to help ensure that balance is maintained from year to year.

Principles for the Design and Implementation of the Funding Model

As NCHEMS and SCHEV work to develop recommendations for a new funding model for Virginia's public postsecondary institutions over the next several months, the process will be strengthened by using a set of basic principles. These principles will provide a crucial foundation for building an understanding of the critical elements of the new model(s), and the values and priorities that lie at the heart of this effort. It is important to note that they do not address the specific measures to be used in allocating funding to institutions in detail. Rather, they are a high-level expression of criteria that have received a broad base of support among stakeholder groups that can be used to guide the development of the funding model(s)—including the metrics it uses—and to serve as criteria for evaluating the recommendations that come forward.

This section of the interim report outlines a first draft of principles for use in the design and eventual implementation of a new approach to institutional funding. Conversations with key agency and institutional leadership, including SCHEV and other critical executive branch agencies, staff at the legislature's money committees, institutional presidents, members of SCHEV's Finance Advisory Council (FAC), and other stakeholders, have informed the development of these principles. They also draw on NCHEMS' decades-long experience working on postsecondary finance in other states.

<u>Design Principles</u>

1. **Students first.** Virginia's funding policy should put the highest priority on the needs of students and the Commonwealth.
2. **Pathways to Opportunity: Equitable, Affordable, Transformative.** The model should reinforce the goals articulated in SCHEV's strategic plan, *Pathways to Opportunity: the Virginia Plan for Higher Education:*
    a. Equitable. Closing gaps in both access and success.
    b. Affordable to students while maintaining effectiveness of institutions
    c. Transformative—Increase social, cultural, and economic well-being of individuals and communities of the Commonwealth and its regions.

3. **Capitalize on institutional diversity and particular strengths.** The model should recognize different institutional missions (and the costs associated with those missions) as reflected in:
    a. Levels and disciplines of program offerings
    b. Characteristics of students served, particularly those students who must be served if equity gaps are to be closed.
    c. Special features of the institution, e.g., Land-Grant status, military programs, health science programs, research missions and expectations, and HBCU status.
    d. Appropriate expectations and incentives, e.g., for VCCS and RBC, the model should recognize and reward successful transfer to a four-year institution in addition to completion of a program of study.

    Since the mission components of program offerings and characteristics of students served are common to all institutions, these factors should be incorporated as inherent features of the model. Special features of institutions need not be incorporated—they may be handled through separate appropriation processes.

4. **Foster alignment among critical state finance policies.** The model must recognize the important relationships between the state's appropriations to institutions, tuition policies and the revenue consequences of those policies, and student financial aid policies and practices.

5. **Consider all facets of the state's funding responsibility.** The state must allocate its resources in ways that assures funding to each institution at a level adequate for preserving its value as a state asset and sufficient for its capacity to fulfill its mission and continuously seek improvements in operating efficiency and quality, while maintaining "affordability" to students. This may lead to a single model with multiple components to determine allocation of appropriations to institutions, or multiple, linked models that address base adequacy requirements and also incentivize the achievement of desired state objectives.

6. **Strategic investments in institutional improvements.** In addition to the funding formula(s), there should be a provision for state investments in institutional changes and improvements. This feature is necessary to create capacity that allows individual institutions to better serve their missions and enhance their abilities to serve the needs of the Commonwealth and its citizens. These state investments should not be considered as part of any institution's "base" funding in subsequent years.

7. **Clear and purposeful incentives and expectations.** The model should provide incentives for institutions to contribute to both the economic development and the workforce development needs of the Commonwealth. while advancing the goals of the Virginia Plan These incentives should reinforce institutional efforts to address the educational needs of traditionally underserved student populations and to commercialize research.

8. **Foster institutional flexibility and innovation.** The model should not be constructed in a way that it constrains the institutions' abilities to decide HOW allocated funds are to be utilized (i.e., not dictate assignments of funding to specific internal budgetary categories).
9. **Institutional contexts.** The model should yield "equitable" funding levels in relation to institutions' respective needs, which vary based on mission, student characteristics, and other unique features.
10. **Community colleges.** The funding model will recognize the authority of the Virginia Community College System to allocate funding to its constituent campuses in whatever manner the System elects to use. Therefore, the model will use these same principles in allocating funding to the VCCS as a single entity.
11. The model should:
    a. Be transparent—the incorporated calculations are clear and yield predictable results. The model is not a "black box."
    b. Be explainable to policymakers, institutions, and others. Taxpayers should be able to discern clear linkages between state priorities and how funds are allocated to institutions.
    c. Incorporate both General Fund and Non-General Fund revenues in a manner that acknowledges institutional capacities to raise revenue from diverse sources, as well as the shared commitment between the Commonwealth, its institutions, and students (and their families) in paying for the costs of education.
    d. Be actionable. It should provide guidance to the legislature to commit funding in specific directions, both when additional resources are available and when economic conditions and state budget challenges may require that strategic cuts be made to institutional funding. Identify both ideal and realistic targets applicable to all for the model to allow for full funding in the short term of at least realistic targets thereby enhancing model credibility and importance.
    e. Minimize administrative burden by relying on readily accessible metrics that are used for other purposes (where possible).
    f. Enable reasonably accurate forecasts of anticipated state funding based on known metric changes.

<u>Implementation Principles</u>

1. Any new funding model should be phased in over a period of 3-5 years so that no institution is subjected to a significant decrease in state funding nor benefits from a larger increase in state funding than it can effectively manage. In short, there should be both stop-loss and stop-gain features to the implementation.
2. A robust, deliberate, and well-document process for gathering, reviewing, and inputting data into the model(s) should exist. The data collection and review process should be completed sufficiently rapidly that the model results are contemporaneous with institutional policies, practices, and planning activities.

3. The new model should be utilized in both good times and bad—it should be utilized both when distributing new funds and when allocating budget cuts.
4. Implementation of the model should not abrogate the authorities and responsibilities of institutions and their Boards of Visitors regarding their role in establishing tuition and fee schedules. This does not mean, however, that the model should not take cognizance of the revenues raised from these sources in determining allocations of state funds to institutions. Nor does it mean that institutions should not be held accountable for their shared roles (along with state and federal governments and students themselves) in assuring affordability for students.
5. Any model(s) should be reviewed/evaluated on a regular basis, and any changes that result from those evaluations should be phased in according to a similar manner as the initial implementation so that institutions have a reasonable opportunity to adjust to new or revised incentives. SCHEV and the legislature should resist the urge to make significant changes to the model(s) in the interim between the reviews.

Anticipated Parameters for the Funding Model

This section of the report presents initial thinking on the features that will be incorporated into the model that will be recommended in the final report of the project. The developing concept assumes that the recommendations will collectively account for 100% of the total state appropriation to postsecondary institutions in any given year or biennium, although there is not an intention that a formula will adequately allocate all available dollars. More to the point, the recommendations will lay out a model that:

- addresses both recurring and non-recurring funding,
- can be used for the distribution of new revenue as well as providing guidance for making funding cuts when necessary, and
- does not impact funding for state financial aid—for two reasons: (1) any analysis of state financial aid funding is a significant endeavor on its own that is outside the scope of work for this project and (2) SCHEV just recently conducted such a review in 2019 and implemented changes. Nevertheless, Virginia should follow best practices in setting finance policy in carefully considering how its policies relating to direct appropriations, student financial aid, and tuition work in tandem.

As currently conceived, the model will have the components described below, many of which are drawn from the Institutional Adequacy Framework presented earlier. It is important to emphasize that this set of parameters represents options in a conceptual model for NCHEMS, SCHEV, OpSix, and SCHEV's advisory bodies to consider. During the coming months, NCHEMS and SCHEV will continue to seek input from these stakeholders, aided by the development of a model-building tool that will allow for these factors to be assessed utilizing actual data.

1. **"Frugal" base adequacy/foundational funding.** Not to be confused with the current mechanism for calculating base funding adequacy, what is envisioned here is a level of funding sufficient to support each public institution's preservation as a state asset. This reflects the fact that there are minimal costs associated with maintaining a state asset that are largely independent of its mission. These costs include the costs associated with providing the minimum administrative infrastructure of the institution and the costs of operating and maintaining the physical facilities. In general, these are costs that are fixed for each institution and relatively but not entirely impervious to enrollment size, and they will also vary somewhat based on institutional characteristics that impact the actual costs of operation (e.g., several institutions face regulatory compliance issues related to historic structures that add costs to maintenance activities).

   As this project proceeds, NCHEMS will propose that no tuition revenue be required to cover these "foundational" costs; they are wholly the responsibility of the state to pay for. Data to support the calculation of these costs is expected to be drawn from CARDINAL for categories most closely related to expenditures in areas related to institutional support, academic support, and operations and maintenance of physical facilities and equipment. Setting a "frugal" level for use in the application of the model will be necessary in order to ensure that institutions have an incentive to keep these costs to a reasonable minimum.

2. **Scale.** This component is related to the size of each institution, to be determined by enrollment and measured based on completed credit hours. There may be some utility in a metric that also includes headcount to better reflect caseload burden for functions such as academic advising and other student support services.

3. **Scope.** This component will allocate some portion of overall funding to institutions according to the instructional mission of the institution as measured by weights by discipline and level in the semester credit hour calculation. (Appendix C. Illustrative Schedule of Discipline/Level Weights provides an example of such a schedule, as employed in Nevada.) This component will also include funding for base-level costs for non-instructional characteristics of the institution, e.g., land-grant obligations, HBCU programs, health sciences programs, and core activities for managing the research enterprise of those institutions.

4. **Incentives.** A portion of the overall state appropriation will be allocated to institutions based on their performance in making progress against state priorities related to improving student success and degree and certificate production; maintaining affordability; eliminating gaps in educational access and achievement for Virginia residents of different races/ethnicities, income levels, and ages; and driving economic development. In keeping with the design principles and best practices, the set of measures to be used to create the incentives will be as few in number as possible. Efforts will be made to identify measures that are straightforward, transparently linked to state priorities, and explainable to institutional leaders, policymakers, and the public. The set of measures will recognize mission differences by modifying the specific variables to be used for each sector and

through adjustments in the weights applied for each variable. Finally, provisions in the incentive model will give additional weight to the enrollment and success of students from targeted populations, such as underrepresented minorities, first-generation students, rural students, older students, students with relatively weaker academic preparation, and low-income students.

Incentive measures that are likely candidates for inclusion in this component of the funding model include:

- Completed credit hours.
- Milestone events, such as the number of students who surpass 30 or 60 credit hours within an academic year.
- Completions by level, overall and in priority programs.
- Collaborative activities such as joint degree programs and increases in numbers of students succeeding along transfer and articulation pathways.
- Contributions to economic development through the commercialization of research and innovation spurred by the state's institutions. Possible measures may count registered patents, license income from Virginia firms tied to university research, employment in companies spun off from university research, and federal or corporate funding awarded.
- An institution-specific measure jointly determined by SCHEV and each institution as a way to reflect the distinct mission or character of each institution and to reward them for their success in achieving excellence in that regard. A measure that is selected by each institution and approved by the state is a common feature in other states that rely on a form of incentive-based funding.

Care must be taken in designing this component of the model in order to limit the degree to which institutions are subjected to volatility in funding levels due to changes in the calculated metrics relative to other institutions. Moreover, the goal of using incentives is expressly not to increase the competitive stakes among institutions where collaboration would be preferred—thus the proposed development of a metric designed to support collaborative efforts across institutions. Rather, the goal is to incentivize and reward institutions continuous improvement and excellence in the achievement of state priorities. It is inevitable that the total dollars to be allocated via this component of the funding model will be fixed based on legislative preferences. But it is possible to incorporate "guard rails" in the design of this component that preserve the incentives' capacity to steer institutional behavior while reducing the extent to which institutions are penalized for failing to keep pace with one another in ways that are inconsistent with the overall state goals. Design features that can help achieve that objective include stop/loss and stop/gain provisions, using a rolling average of multiple years to assess change, the overall proportion of state funding to be allocated through the incentive model, and other options.

In addition to the components that form the basis for the formula portion of the funding model described above, total state appropriations should also consider funding for these additional elements.

1. **A cost-sharing target**—the proportion of funding each institution should be expected to contribute to its operating budget from NGF funds.

   Virginia still has on the books a policy stating that the state should provide 67% of institutions' general fund support with the institutions providing the balance from tuition and fee revenues, receipts from philanthropy and other non-state sources. The fact that overall state funding is at 50 percent—and that the state share varies considerably from institution to institution—suggests that it is time to rethink this policy. More important than a rethinking of the overall share of state support is the need to rethink the notion that institutions with very different abilities to raise NGF funds should be expected to meet the same cost-sharing target. The reality as revealed by the data presented earlier in this document is that some institutions serve student bodies that are much more economically challenged than other institutions. Similarly, the data show that some institutions have a much greater capacity to raise funds than others.

   With these facts in mind, the recommended model will likely include different cost-sharing targets for different categories of institutions. Several possibilities regarding the basis for these differential targets are being considered, including categories based on:

   - The proportion of (in-state) Pell recipients in the undergraduate student body.
   - The cumulative unmet financial need of (in-state) undergraduate students in the lowest two quintiles of family income.
   - Proportions of tuition and fee revenues contributed by out-of-state students.
   - Other metrics that may be suggested during the development of the model.

2. **Strategic investments to be made by the state.** These are investments that are intended to build institutional capacity to better meet clearly defined state needs in priority areas and are intended to be non-recurring. NCHEMS envisions that there will be two mechanisms to drive these investments. First, some portion of the overall state appropriation to postsecondary education will be set aside for the legislature to commit to identified or specified priorities. These might include funding to support the growth of awards in specific programs of demonstrated workforce demand (such as the existing Tech Talent program), to boost enrollments and improved success rates among low-income or underrepresented student populations, or to buy down tuition.

   A second pool may be created for SCHEV (possibly in consultation with a review team made up on OpSix membership and other appropriate experts) to allocate to institutions for the purpose of supporting a strategic investment in an area of institutional weakness as identified through the incentives component of the funding model. This relatively small amount of funds to an institution or institutions to drive improvement in a narrowly defined

area, based on a performance improvement plan to be submitted to SCHEV by the institution. This plan would need to include a set of specified tasks and strategies to be undertaken by the institution along with detailed and measurable milestones. A lack of progress should place the investment at risk.

3. **Balancing Instructional Cost Differences.** This funding is conceived as a separate (relatively small) pool of resources that can be used to level the playing field and eliminate some of the funding inequities that have crept into the allocation of state resources over time. Provisions designed to preserve an appropriate balance in the funding of public institutions are a common feature in other states.[21] One possible avenue for achieving this is to weight completed semester credit hours according to the characteristics of different types of students. This general approach was suggested in recommendations made by JLARC in 2014.[22]

4. **Rainy day fund.** Efforts both nationally and prior efforts in Virginia[23] have argued for the accumulation of a reserve funds to help buffer public institutions for the sharp reductions in state support they have experienced in economic downturns. As Virginia's future funding model should include annual contributions to such an account when conditions permit, to be held in trust by the State Treasury to support public higher education when its funding is threatened by weak state revenue collections. It would be important for such a fund to be accompanied by a broader policy framework that works to restrict the use of that fund, or the consideration of its value, in setting state budgets during times of fiscal weakness. Adopting a trigger for when overall revenue declines exceed a certain threshold before the fund may be accessed may be one way to preserve that fund for its intended use.

[21] InformEd States (2021).

[22] "Given persistent state and institutional resource constraints, higher education experts have suggested that states allocate their level of investment across different segments of their public higher education system based on need for funding... Institutions' differing abilities to generate net tuition revenues are generally not reflected in the state's cost share goal. Accounting for these differences in the state's cost-share goal would better connect the state's goal of student affordability to overall funding for higher education operations." http://jlarc.virginia.gov/pdfs/reports/Rpt461.pdf

[23] Governor's Commission on Higher Education Reform, Innovation, and Investment (2011). https://www.schev.edu/docs/default-source/institution-section/planning-and-performance/heoa-tj21/report-from-governor's-commission-on-higher-education.pdf

Appendix A. Survey of Public Institutional Funding Policies

As required by the RFP scope of work, NCHEMS conducted a national survey of state funding policies and practices. The survey was intended to gather details about how states fund their public institutions with respect to state definitions of (and targets for) "base adequacy" and for sharing educational costs with students and families—what factors affect funding levels, how they monitor and assess progress toward achieving affordability goals, and special funding streams to pursue state priorities. NCHEMS collaborated with the State Higher Education Executive Officers association to field the survey. SHEEO reviewed early drafts of the survey, assisted NCHEMS with piloting the survey with a selected group of state finance officers, described and sought support from its members during its regular calls, and sent the survey to the distribution list it uses to collect responses to its annual State Higher Education Finance (SHEF) survey. SCHEV staff also reviewed the survey instrument. The survey was fielded online using Qualtrics; the instrument is included beginning on the next page. Ultimately, there were 48 responses from 46 states.[24,25]

In designing this survey, NCHEMS, SCHEV, and SHEEO sought to ensure that respondents would be able to provide answers that were specific to the base amount of funding provided to public institutions. The intent was for respondents to concentrate their answers on money appropriated to institutions on a recurring basis and that was not allocated on the basis of institutional performance against any measures of outcomes (such as graduation numbers or rates) or money directed to institutions for one-time only investments (unless those investments were subsequently rolled into the base). Rather, the survey sought to gather information about the factors that influenced decisions about the amount of recurring funding states appropriated to their institutions to support operations, factors such as enrollment counts, employee counts, adjustments driven by changes in personnel costs or other input costs, operational expenses for facilities, and comparisons to peer institutions. In order to signal particular interest in base funding, the survey first asked for information about the amount of funding allocated to institutions on the basis of performance so that subsequent questions would be more clearly applicable to base funding only. The survey also asked that funding allocated on the basis of completed credit hours be treated as base funding, rather than performance funding, if those counts were used in lieu of counts of enrollments. Since most questions asked for data and information for FY2021, respondents were also asked to include federal stimulus funds in their base funding levels insofar as those funds offset cuts in general fund support to institutions that had been budgeted before the onset of the pandemic.

Additional data and information culled from the survey responses are presented following the survey instrument.

[24] States with separate SHEF reporters for the four- and two-year sectors each sent separate responses, including North Carolina and Wyoming.
[25] This survey was in development when the InformEd States report was issued; there are differences in the findings for similar topics that are due to timing and to differences in the respective research designs.

Survey of Public Institutional Funding Policies

Although there has been substantial work done to document and study performance funding policies in recent years, less attention has been paid to allocation of base appropriations to public postsecondary institutions. This survey is an attempt to update our understanding about how states provide a basic level of support for operations at public institutions, particularly by requesting details about definitions of "base adequacy," factors affecting funding levels, targets for sharing the costs of public higher education between the state and students, and goals for achieving affordability.

Results from this survey will inform a research brief to be published in the coming months. This survey was developed by SHEEO working in partnership with NCHEMS. Questions may be directed to Sophia Laderman at SHEEO (sladerman@sheeo.org) or Brian Prescott at NCHEMS (brian@nchems.org).

General Questions

1. First and last name {text box}
2. Agency {text box}
3. Position title {text box}
4. State {drop down of states}
5. Are you completing this survey on behalf of your state's (select one):
    a. 4-year public institutions
    b. 2-year public institutions
    c. Both 4-year and 2-year public institutions

Definitions and Amounts

6. Does your state have a definition for base budget adequacy for each public institution (i.e., the frugal level of funding required for the institution to fulfill its mission)? {Yes/No}
    a. If Yes: Please share the definition. {Text box}
    b. If Yes: Please share the formula the state uses for calculating base budget adequacy (if such a formula exists). A link to a website or an attachment to your survey response are welcome. {Text box}
    c. If Yes: Please provide a reference to the statute or board policy where base adequacy is defined. {Text box}

7. Please provide the total support paid out of state general funds to support the operation of public postsecondary institutions in FY21. Include federal stimulus funding (i.e., CARES GEERF or CRF) that was used to offset cuts in state general fund support; for example, if your state cut general fund support to public institutions during FY21 but restored some or all of those cuts with stimulus funding, please include the amount of restored funding even if those funds were provided for a specific use (e.g., unbudgeted COVID-19 expenses). Exclude state funding for financial aid that supported students' tuition payments at public institutions and state funding for research. {Separate amounts for four-year and two-year sectors, dependent on response to question #5}

(Please note: the amounts given in answering this question should be equal to the sum of the amounts provided in responding to questions 8, 9a-d and 11 below.)

8. Please provide the total amount of state general fund support to public institutions that was allocated through a **performance funding formula or pool** in FY21. (For this survey, please treat funding allocated based on completed credits as being a component of a base funding adequacy formula, rather than as part of a performance-based policy, and include those amounts in response to question 10b below.) {Separate amounts for four-year and two-year sectors}

<u>Factors in Allocating Base Funding {Note: dependent on their response to question #5, ask these questions for only 4-year institutions, only 2-year institutions or in two columns for both 4-year and 2-year institutions.}</u>

9. What is your state's approach to allocating state general fund appropriations that support basic institutional operations (excluding amounts allocated through a performance-based funding formula or policy from new or recurring funds) to public colleges and universities? {Select all that apply.}
    a. A portion of our state's appropriation is made on a "Base Plus" approach.
        i. If selected, ask: What amount of the state operating appropriation was provided in this manner in FY2021?
        ii. If selected, then ask: What factors are formally considered (in statute or board policy) in determining additions to the base? {Select all that apply}
            1. A fixed percentage applied to all institutions.
            2. Enrollments or enrollment changes
            3. Numbers of employees:
                a. Faculty
                b. Other professionals
                c. Hourly/classified staff
            4. Student/faculty ratios
            5. Average rates of pay (overall or for category(ies) of employee)
            6. Changes in the prices/costs of inputs:

a. Salaries
b. Fringe benefits
c. Equipment and supplies
d. Utilities
e. Other (please specify)

7. Additions of new assets (e.g., new programs, facilities)
8. Institution-specific initiatives
9. Factors derived from peer group comparisons
10. Other (please describe)

iii. If selected: Please provide a reference to the statute or board policy where these factors are identified. {Text box}

b. A portion of our state's appropriation is distributed to institutions by a formula not based on performance (including formulas that are based on cost models).
   i. If selected, ask: What amount of the state operating appropriation was provided in this manner in FY2021?
   ii. If selected, then ask: Please provide a description of the formula. {Text box}
   iii. Which (if any) of the following factors are included in formulas that determine base budget adequacy calculations? {Select all that apply}
      1. Overall FTE enrollments
      2. Overall headcount enrollment
      3. Completed credits
      4. Enrollments linked to differential program costs (i.e., by level and field)
      5. Student characteristics (Income/Pell eligibility, underrepresented population status, etc.)
      6. Square feet of facilities to be maintained
      7. Special institutional mission requirements--Land Grant status, Research, etc.
      8. Numbers of faculty and staff and their compensation levels
      9. Funding levels of peer institutions
      10. Other (please describe)
   iv. If selected: Please provide the statute or board policy where the formula is indicated.

c. Our institutions' base budgets are determined by the legislature based on historical patterns and/or institution-by-institution requests.
   i. If selected, ask: What amount of the state operating appropriation was provided in this manner in FY2020?

d. Other {please describe}
   i. If selected, ask: What amount of the state operating appropriation was provided in this manner in FY2020?

10. Who establishes the factors in allocating these appropriations (factors listed in the previous set of questions: portion of state's appropriations made on "base plus" approach, other formula, etc.)? (select all that apply)
    a. Statewide higher education agency
    b. Governor's office
    c. Legislature
    d. System office
    e. Other (please describe)

Additional Components of General Fund Allocations to Institutions

11. In addition to provisions that support base funding and performance funding, does the state's approach to allocating general fund support to public institutions incorporate:
    a. Incentives to encourage cross- or multi-institutional partnerships for services or program delivery? {Yes/No}
    b. A pool taken "off the top" for investments in state priorities, e.g., STEM-H credentials. {Yes/No}
    c. Special purpose funding? {Yes/No}
    d. Other (please specify)

12. Does the funding policy explicitly incentivize improved efficiencies in the costs of operations? {Yes/No}
    a. If yes: How? {Text box}
    b. If yes: Please provide a link or other reference to the relevant policy(ies). {Text box}

13. In cases where the state encounters funding shortfalls in the middle of a fiscal year, what approaches to addressing their impacts on postsecondary institutions are used? Please also specify any formal policies that direct or guide those responses. {Text box}

Sharing Costs With Students

14. Has your state formally adopted a target (numerical or otherwise) for sharing the burden of the costs of public postsecondary education with undergraduate students who are state residents? {Yes/No}
    a. If yes, then ask: Please specify that target, including whether it is consistent across institution types or sectors. {Text box}
    b. If yes, then ask: Please identify the statute, board, or other policy where that goal is codified. {Text box}

15. Does the state measure and monitor student affordability?
    a. If yes, then ask: How is student affordability measured? {Text box}

b. Is the measure of student affordability sensitive to income level? {Yes/No}
c. Is the measure of student affordability sensitive to other student characteristics? {Yes/No}
    i. If yes, then ask: Please list these characteristics. {Text box}
d. If Yes: Is this review a requirement of state statute or board policy? {Yes/No}
    i. If Yes: Please provide a reference to the relevant policy(ies). {Text box}

Thank you for taking this survey. Results will be reported in a research brief to be published in the coming months and shared widely by SHEEO and NCHEMS.

Figure 31. "Other" Responses to Categories of State Funding Approaches

State	Sector (2-Year, 4-Year, or Both)	Response
Arizona	2	Operating State Aid provide each community college district with funds for continuing operating and maintenance expenses pursuant to A.R.S. §15-1466. The Operating State Aid formula adjusts state aid in an amount that reflects changes in the FTSE enrollment count.
Arkansas	Both	A portion of state revenues is distributed to institutions based on an allocation that was set when the special state fund was created. As the total funding increases or decreases, the allocations change on a pro rata basis for everyone included.
California	2	Categorical Programs--also identified as Special Services and Operations
Colorado	Both	A portion of institutional funding is determined based on an "institutional role and mission" amount.
Kentucky	2	Kentucky's funding model allocates state funds that can be used to educate students. The model allocates 35% of the allocable resources based on share of student success outcomes, 35% based on earned credit hours weighted for cost, 10% on share of square footage, 10% on instruction and student services spending, and 10% on FTE enrollment. In FY21, institutions could not lose more than 2% of their state General Fund appropriations because of the model.
Louisiana	Both	Louisiana distributes funds through an outcomes-based funding formula that includes an outcomes model (performance), a cost model, and a base (prior year funding) component.
Maryland	Both	Institutions' appropriation made by the Governor with input from the Department of Budget and Management and acted on by the state legislature.
Michigan	4	The formula has not been used in a few years.
New Hampshire	4	The Board determines allocation of State block grant through adoption of the annual budget.
New York	2	FTE/enrollment
Oklahoma	Both	The performance funding model is only applied to any new funds received by the legislature and as determined by the State Regents.
South Carolina	2	Institutions request funding from legislature
South Dakota	2	1. Maintenance and Repair (M&R): The Board of Technical Education is currently in Year 4 of a six-year plan to reach a 2% M&R funding strategy. Under this plan, the State of South Dakota would contribute 1 percent of the overall replacement value of technical college facilities and the technical colleges would locally contribute 1 percent. 2. Tuition Assistance: For every credit billed, the Tuition Assistance fund provides a $10 "buy-down." There are no restrictions on how technical college use these funds. 3. Bonding: Currently, the State of South Dakota contributes 27 percent of the Board of Technical Education's annual debt service. 4. Formula Distribution: The technical colleges receive state funding under a formula that distributes the overall appropriation as follows: First, 25 percent of the total state appropriation is distributed equally among the technical

State	Sector (2-Year, 4-Year, or Both)	Response
		colleges. Second, the remaining 75 percent is distributed within three program categories: high cost-low density programs, high-cost programs, and standard cost programs. The funds shall be distributed by determining each program's full-time equivalent students, multiplied by the weighted program factor multiplied by the weighted per student value. 5. Instructor Salary Support: Established in FY17, the purpose of the Instructor Salary Support is to increase instructor salaries to levels competitive with supervisory-level salaries in applicable industries. Funds are distributed to achieve equitable market values among the postsecondary technical colleges based on market analysis. 6. One-Time Funds: The Board of Technical Education may receive one-time general funds to support various instructional operations. For example, for the past two years, the Board of Technical Education has received $1.5-3 million in one-time funding for equipment purchases.
Vermont	Both	Described in the System annual Operating Budget Procedure https://www.vsc.edu/wp-content/uploads/2018/10/Policy-403-Annual-Operating-Budget-2018-09-26.pdf
Washington	2	The Legislature appropriates funding to the two-year college system. It is largely a block grant, but they include several priorities or special allocations that are listed in the budget bill. The system office (The State Board for Community and Technical Colleges) then allocates that funding to colleges based on an internal allocation formula that includes enrollment and other factors and allocates 5% of the base appropriations based on a performance funding formula.
Wisconsin	Both	Pay Plan funding provided by the state based on a payroll snapshot
Wyoming	2	The amount appropriated on a biennial basis is adjusted and distributed based upon a fixed amount for fixed costs (60% of total) and the remainder is distributed based on actual enrollment (FTE) 20% and the remainder is distributed based on each institution's proportionate share of successfully completed weighted credit hours (C grade and above) and successfully conferred weighted degrees and certificates.

Source: NCHEMS/SHEEO Survey

Figure 32. "Other" Responses to Factors in Base+ Funding

State	Sector	Response
Alabama	4	Benefit rate changes
Arizona	4	No formal factors exist in either statute or board policy. Additions to base are determined university priorities as determined by the board.
Colorado	Both	Certain institutions/programs that do not participate in performance funding receive an allocation tied to the overall increase/decrease in state funding.
Florida	4	Requests based on funds needed to improve performance metrics.
Kansas	4	Increased funding for four-year universities is requested by the Board each year based on a variety of factors and needs of the universities.
Minnesota	Both	There are different factors considered at each level – the system puts together their ask, and their ask is informed by a variety of factors. Additionally, the legislature may consider the same or other factors, but is not required to consider any specific factors.
Nebraska	Both	No funding formula. Appropriations are set based on available state revenue and legislative priorities. In the four-year sector, additions to the base are for across-the-board increases to systems to meet inflation, salary, and insurance increases along with line-item funding of certain educational programs, research projects, and strategic initiatives.
North Carolina	2	Legislative salary and benefit increases.
New Jersey	4	Currently refining these for this year and this has not been settled on.
Oklahoma	Both	Typically, state-wide special initiatives supported by the legislature and Executive branch through additional funding.
Wisconsin	Both	Other refers to our distributions based on estimated fringe benefit changes and payroll in accordance with state pay plan increases.
West Virginia	Both	The legislative process determines what is added to the base such as an increase for health insurance which would be added based upon the number of employees.

Source: NCHEMS/SHEEO Survey

Figure 33. "Other" Responses to Factors in Formula Funding

State	Sector	Response
Idaho	Both	Enrolled credits
Ohio	2	Instructional costs
Kentucky	2	We don't use any factors or formulas to determine funding adequacy. Rather, our model distributes 100% of available allocable resources. The General Assembly ultimately determines the level of state General Fund supporting institutional operations.
Louisiana	Both	BOR also includes peer data associated with academic support and general support services offered by the institutions.
Pennsylvania	2	A base level of funding based on what was received last year plus any increase distributed to colleges based on audited FTEs
Tennessee	2	Salary increases for the rest of state government
Wyoming	2	There is no "adequacy" calculation in the formulation of a legislative budget.

Source: NCHEMS/SHEEO Survey

Figure 34. "Other" Responses to Additional Components

State	Response
Alaska	We have used all of the approaches listed at some point, but none on a regular basis.
Kentucky	Funding model includes premiums for low income, STEM+H, and URM bachelor's degrees produced
Louisiana	Some institutions receive line-item appropriations during the legislative session for specific initiatives.
New Mexico	Awards to Financially At-Risk Students
Ohio	There are special supplements paid to two universities: Central State University (Ohio's only public HBCU) and Shawnee State (a university with a special service mission to the Appalachian region). In addition, there are numerous other special subsidies for clinical teaching, career technical education centers, agricultural research at land grant universities, and a host of other items. We can provide a list of line items if desired
Oregon	We do these things but as a part of the base and performance funding for the institutions.
Virginia	Mitigate tuition increases

Source: NCHEMS/SHEEO Survey

Appendix B. Efficiency and Effectiveness Survey Instrument

SCHEV Efficiency and Effectiveness Survey

In 2021, the General Assembly directed SCHEV to study higher education costs, funding needs, and efficiencies as part of a review of the base adequacy funding model in use for allocating state funding to Virginia's public institutions. As part of that effort, SCHEV is collaborating with NCHEMS (a national non-profit organization) to gather information about institutional initiatives to boost efficiency and effectiveness via this survey. The responses to this survey will help inform SCHEV and the project team about the efforts being undertaken by Virginia's public institutions to ease pressure on tuition prices and to be effective stewards of public funding. They will contribute to the context shaping recommendations for a new funding allocation formula, as well as to provide SCHEV with updated information about related institutional activities. Please note that this survey is not intended to gather comprehensive information—an undertaking that could require significant institutional effort; in an attempt to keep the burden of responding as light as possible, responses should be parsimonious and focused on the institution's priorities in seeking cost efficiency gains and improving student outcomes.

NCHEMS is asking for information about the individuals filling out the survey so that we can interpret the responses in their appropriate context and to follow up with any questions responses generate, but we will be collecting responses directly (as opposed to gathering information via SCHEV) and we pledge to keep responses strictly confidential.

One final note: when the word "savings" is used in the survey, we understand this to refer to actual savings and to cost avoidance that frees up money for reinvestment in other priorities—including improved student success rates; its use does not necessarily imply a reduction in the cost of education.

1. Please provide the following information, which will be kept confidential.

Name	
Title	
Institution	
Email Address	

Perceptions

2. My institution places a high priority on identifying opportunities to achieve efficiencies to reduce overall costs and to redeploy/reallocate resources to better pursue institutional or state priorities. {Strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, strongly disagree}

3. My institution has been successful at achieving cost efficiencies in the last 3-5 years and was well positioned for more when COVID-19 struck. {Strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, strongly disagree}

4. My institution places a high priority on finding ways to improve effectiveness in achieving:
    - Reductions in operating costs or improvements in targeting financial resources that contribute to student affordability. {Strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, strongly disagree}
    - Improvements in student success rates overall. {Strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, strongly disagree}
    - Increasing the number of enrolled students from underrepresented populations. {Strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, strongly disagree}
    - Reducing gaps in the rates at which students from underrepresented and low-income backgrounds graduate. {Strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, strongly disagree}
    - Reductions in administrative operating costs that lead to enhancements in institutional quality (e.g., better facilities, faculty recruitment, new programs or program updates, etc.)
    - Alignment between our supply of graduates and local, regional, or state needs. {Strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, strongly disagree}
    - Impact on economic development and civic well-being. {Strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, strongly disagree}

5. My institution has been successful at improving effectiveness in:
    - Reducing operating costs, reallocating or reprioritizing existing resources, or better targeting of financial resources in ways that contribute to student affordability. {Strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, strongly disagree}
    - Improving student success rates overall. {Strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, strongly disagree}
    - Increasing the number of enrolled students from underrepresented populations. {Strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, strongly disagree}
    - Reducing gaps in the rates at which students from underrepresented and low-income backgrounds graduate. {Strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, strongly disagree}
    - Reducing operating costs in order to make investments in enhancing institutional quality.

- Meeting the local, regional, or state needs for educated workers in high-demand fields. {Strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, strongly disagree}
- Boosting the economy and contributing to a productive civil society. {Strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, strongly disagree}

Goals and Priorities

6. Has your institution set a goal for achieving improved efficiency on an annual basis? This can take the form of a target for reallocations to higher priorities. {Yes/No/I don't know}
    - *If respondent selects 'Yes', respondent is asked Q7. If not, respondent is not asked Q7 and is asked Q9.*

7. You answered that your institution has set a goal for achieving improved efficiency on an annual basis. How does the institution define success in achieving improved efficiency? {Improvements in student outcomes, cost savings, other (please specify)}
    - *If respondent selects 'Cost savings', respondent is asked Q8. If not, next question is Q10*

8. If you included "Cost savings" in the question above, what is the target (expressed in dollars and percentage of total budget) for achieving savings? If possible, please provide some detail about where savings are expected to come from within the institutional budget.

9. Does your institution's strategic plan include specific measures toward assessing operational efficiency or student success? If so, what metrics are used?

10. Does your institution have a staffing plan that establishes targets for FTE personnel in various categories? Are there annual targets for adjustments to the staffing profile?

11. Please rank the priorities for the use of any savings that are generated from improved efficiency (by dragging the choices that follow to order them from the highest to the lowest). {ranked list}
    - Passed along to students in limiting the growth of resident tuition
    - Passed along to students in the form of institutional grant aid to meet unmet need
    - Passed along to students in the form of institutional grant aid to reward merit
    - Investments in the institution's technology and data capacity
    - Investments in improving or maintaining E&G facilities
    - Faculty and staff compensation
    - Investments in student success initiatives

- Investment in diversity, equity, and inclusion initiatives (e.g., faculty/staff recruitment, success of targeted student populations, etc.)
- Investments in academic excellence (e.g., modernizing curricula, expanding course offerings, improving class sizes, etc.)
- Research on and development of new academic programs (or courses)
- Investments in the retooling of existing programs
- Marketing and student recruitment efforts
- Other strategic priority - *please describe in the next question*

12. If you included "Other strategic priority" in the ranked list, please specify what it is in the following text box.

13. For each of the items you indicated as priorities above, please provide a rough estimate for any savings achieved over the past 2-3 years and the targeted goal for savings to be achieved over the next 1-2 years. (If you are unable to provide estimates at this time, please indicate that as your response.)
    - Passed along to students in limiting the growth of resident tuition
    - Passed along to students in the form of institutional grant aid to meet unmet need
    - Passed along to students in the form of institutional grant aid to reward merit
    - Investments in the institution's technology and data capacity
    - Investments in improving or maintaining E&G facilities
    - Faculty and staff compensation
    - Investments in student success initiatives
    - Investments in academic excellence (e.g., modernizing curricula, expanding course offerings, improving class sizes, etc.)
    - Investment in diversity, equity, and inclusion initiatives (e.g., faculty/staff recruitment, success of targeted student populations, etc.)
    - Research on and development of new academic programs (or courses)
    - Investments in the retooling of existing programs
    - Marketing and student recruitment efforts
    - Other strategic priority

Measurement

14. Which of the following efficiency metrics does your institution routinely monitor by department, school/college, or institution? (Please select all that apply.)
    - Faculty workload data
    - Faculty SCH production
    - Enrolled student-faculty ratios
    - Declared majors-faculty ratios
    - Course section sizes (with a target for a minimum threshold)

- Cost to recruit an in-state undergraduate student
- Cost to retain an in-state undergraduate student
- Cost to recruit an out-of-state undergraduate student
- Cost to retain an out-of-state undergraduate student
- Annual cost to educate a student
- Cost to produce a degree
- Change in total faculty, total staff
- Other efficiency/productivity measure - *please describe in response to the next item*

15. If you included "Other efficiency/productivity measures above, please describe in the following text box.

16. For each of the metrics you identified in the previous question, please provide the most recent measure(s) and a brief description of the calculation (s).
    - Faculty workload data by department
    - Faculty SCH production by department
    - Enrolled student-faculty ratios by department
    - Declared majors-faculty ratios by department
    - Course section sizes (with a target for a minimum threshold) by department
    - Cost to recruit an in-state undergraduate student
    - Cost to retain an in-state undergraduate student
    - Cost to recruit an out-of-state undergraduate student
    - Cost to retain an out-of-state undergraduate student
    - Annual cost to educate a student
    - Cost to produce a degree
    - Other efficiency/productivity measure

17. Which of the following effectiveness metrics does your institution routinely monitor? (Please select all that apply.)
    - Numbers of graduates by level and field
    - Time to degree
    - Credits to degree
    - Average accumulated payments by students who graduate
    - Graduation/transfer rate within a specified timeframe of initial enrollment
    - Achievement of milestones (surpassing 30-credit hours, 60-credit hours, etc.)
    - Post-graduate employment outcomes (placement in field and/or earnings gathered via survey)
    - Post-graduate employment outcomes (placement and/or earnings gathered via administrative data)
    - Subsequent enrollment in graduate school

- Median debt among graduates
- Percent of graduates with debt
- Median debt of non-graduates
- Percent of non-graduates with debt
- Research funding
- Number of patents
- Other effectiveness measures - please describe in response to the next item

18. If you included "Other effectiveness measures above, please describe in the following text box.

19. For each of the metrics you identified in the previous question, please provide the most recent measure and indicate the lowest level at which it is measured (department, school/college, institution). For any that are not linked to IPEDS reporting, please provide a brief description of the calculation.
    - Numbers of graduates by level and field
    - Time to degree
    - Credits to degree
    - Average accumulated payments by students who graduate
    - Graduation/transfer rate within a specified timeframe of initial enrollment
    - Achievement of milestones (surpassing 30-credit hours, 60-credit hours, etc.)
    - Post-graduate employment outcomes (placement in field and/or earnings gathered via survey)
    - Post-graduate employment outcomes (placement and/or earnings gathered via administrative data)
    - Subsequent enrollment in graduate school
    - Median debt among graduates
    - Percent of graduates with debt
    - Median debt of non-graduates
    - Percent of non-graduates with debt
    - Research funding
    - Number of patents
    - Other effectiveness measures

20. Are the above effectiveness measures calculated by program or school/college as well as for the institution as a whole? {Yes, No}

21. Are the above effectiveness measures also calculated for various student subpopulations such as:
    - Race/Ethnicity
    - Income/Pell Recipient
    - Age

- In-State/Out-of-State
- Rural/Underserved Counties)
- Other (please specify)

22. How does your institution assess whether investments in activities intended to yield cost reductions/efficiencies (e.g., process redesign initiatives) are paying off? Under what circumstances are these investments expected to generate revenue/savings at least equal to their costs (to students or the state)?

23. How does your institution assess whether investments in activities intended to improve effectiveness (e.g., student success programs) are paying off? Under what circumstances are these investments expected to create opportunities for reallocating resources to improve services (to students or the state)?

Activities & Initiatives

24. What strategies are being utilized to create efficiencies in the operations and maintenance of the physical plant (e.g., contracting for energy, pooled risk management)? Please provide an estimate for savings generated from these strategies over the past 2-3 years.

25. Have there been any significant efforts to collaborate with other institutions—or other organizations like other governmental entities (e.g., schools), hospitals, etc.—to achieve efficiencies? {Yes/No/I don't know}
    - If respondent selects 'Yes', respondent is asked Q25 and Q26.

26. You answered that there have been significant efforts to collaborate with other institutions. What has helped make such efforts successful? What has hindered success?

27. Please provide up to three examples of significant collaborations, including a description, anticipated or realized efficiencies or effectiveness improvements, and links or other content where more detail may be found.

28. Please use the matrix template provided with the invitation to complete this survey to share information about major efforts in recent years that were expected to lead to productivity improvements, reduce costs, or improve student success rates.

    Please upload the matrix with your responses.

    Text on Word document to be sent to survey participants along with link to survey:

Using the matrix below, please indicate major efforts in recent years that were expected to lead to productivity improvements, reduce costs, or improve student success rates. Respondents are encouraged to specify initiatives with the most demonstrable impact/savings—or for initiatives still underway, the total estimated impact—in each functional area indicated. For each entry, please briefly describe the initiative, specify the actual (or expected) cost "savings," and the timeframe of the effort. Columns in this matrix indicate types of efficiency/productivity initiatives; rows indicate functional areas. The intent of this question is NOT to gather all possible relevant activities, but rather to focus on the highest-impact ones in a variety of areas. Respondents are encouraged to limit entries to the most impactful and/or innovative initiatives. It is not necessary to provide entries for all rows, multiple initiatives can be entered for the same functional area (e.g., an institution may have accomplished multiple cost reduction initiatives in procurement), and additional or other rows that better fit their organization structure or specific initiatives may be used. Initiatives that span multiple functional areas should note the areas impacted. Some examples are provided to offer a sense of the kind of information being sought through this question.

Functional Area	**Type of Initiative (Policy, Structure/Organization, Process Redesign (e.g., technology-aided redesign, eliminating a redundancy), Multi-institutional Partnership, Outsourcing, Revenue Enhancement (e.g., asset monetization)**	**Description of initiative**	**Timeframe (Initiative start and end dates)**	**Anticipated or realized savings and/or efficiency gains**
Institutional Support				
• Procurement	EXAMPLE: Multi-institutional partnership	Entered into a consortium contract with a regional hospital to obtain energy.		$XM annually, reallocated to achieve sustainability goal by increasing solar power usage
• Human Resources Management	EXAMPLE: Process redesign	Moved to an automated system for processing and integrating payroll, benefits enrollment/administration, etc.		Anticipated annual savings = $X00,000 or about XX% of administration budget.

Functional Area	Type of Initiative (Policy, Structure/Organization, Process Redesign (e.g., technology-aided redesign, eliminating a redundancy), Multi-institutional Partnership, Outsourcing, Revenue Enhancement (e.g., asset monetization)	Description of initiative	Timeframe (Initiative start and end dates)	Anticipated or realized savings and/or efficiency gains
• Personnel & Professional Development				
• Financial services				
• Legal services				
• Facilities/Facilities Management				
• Information Technology				
• Other				
Academic Affairs				
• Academic Support				
• Curriculum/Programs (e.g., program review, organization, course sequencing, etc.)				

Functional Area	Type of Initiative (Policy, Structure/Organization, Process Redesign (e.g., technology-aided redesign, eliminating a redundancy), Multi-institutional Partnership, Outsourcing, Revenue Enhancement (e.g., asset monetization)	Description of initiative	Timeframe (Initiative start and end dates)	Anticipated or realized savings and/or efficiency gains
• Instruction (e.g., scheduling, delivery mode, etc.)	EXAMPLE: Policy	Adjusted minimum requirements for course contact hours per academic year, as well as eligibility criteria for sabbaticals.		Anticipated annual savings = $X00,000, along with expectations of improved outcomes from sabbatical investments, reallocated to add student coaching/tutoring resources
• Learning				
• Libraries				
• Faculty Complement & Workload				
• Quality Assessment & Accreditation				
• Research/Grant-Funded Centers				
Student Services				
• Student Affairs				
• Enrollment Management & Financial Aid				

Functional Area	Type of Initiative (Policy, Structure/Organization, Process Redesign (e.g., technology-aided redesign, eliminating a redundancy), Multi-institutional Partnership, Outsourcing, Revenue Enhancement (e.g., asset monetization)	Description of initiative	Timeframe (Initiative start and end dates)	Anticipated or realized savings and/or efficiency gains
• Student Health				
• Other				
Student Success & Affordability				
• Open Educational Resources				
• Credit Recognition & Transfer				
• Time-to-Degree				
• Equity				
Auxiliaries				
• Housing				
• Athletics	EXAMPLE: Revenue enhancement	Increased usage and rental/leasing revenue for athletic facilities and conference		XX% at an added cost of XX%, yielding a surplus of XX%
• Other (bookstores, student union)				

Interaction with State Policies

29. How should the state's funding model incorporate incentives that will lead to efficiency improvements (e.g., by providing funding to support the adoption of Open Educational Resources (OER), the creation of joint programs or other forms of multi-institutional collaborative delivery (like the Online Virginia Network), the adoption of shared services, etc.)?

30. How are the Commonwealth's approaches to appropriating operating, capital, and financial aid funds to public institutions aligned to support the institutions' abilities to effectively serve students? Do the approaches for allocating these three streams of funding create incentives that lead to operational inefficiencies or inflexibility in institutional budgeting (in the case of capital, sometimes years later)? If so, please explain.

31. Apart from budgetary constraints, what major state-level regulatory barriers to achieving efficiency improvements can the state (or SCHEV) address?

32. What, if any, other policies or practices related to the methods of allocating resources/expenses to public institutions (as opposed to regulatory requirements) are in use by the Commonwealth that contribute to inefficiency in institutional operations (e.g., employee compensation, risk management, financial aid, etc.)?

Reports

Please provide (via email or by providing links) any reports made within the past three years to institutional leadership (president or board) on efforts to achieve greater efficiencies, productivity, or effectiveness.

Appendix C. Illustrative Schedule of Discipline/Level Weights

(Weights as used by the Nevada System of Higher Education to assess instructional costs differentiated by discipline and level)

University Weights

	Lower Division	Upper Division	Master's	Doctoral
Liberal Arts, Math, Social Science, Languages, Other	1.0	2.2	4.4	5.5
05 Area, Ethnic, Cultural & Gender Studies	1.0	2.2	4.4	5.5
09 Communication, Journalism and related programs	1.0	2.2	4.4	5.5
16 Foreign Languages, Literature and Linguistics	1.0	2.2	4.4	5.5
19 Family and Consumer Sciences/Human Sciences	1.0	2.2	4.4	5.5
23 English Language & Literature/Letters	1.0	2.2	4.4	5.5
24 Liberal Arts & Sciences, General Studies and Humanities	1.0	2.2	4.4	5.5
25 Library Science	1.0	2.2	4.4	5.5
27 Mathematics & Statistics	1.0	2.2	4.4	5.5
28 Reserve Officer Training Corps	1.0	2.2	4.4	5.5
29 Military Technologies	1.0	2.2	4.4	5.5
30 Multi/Interdisciplinary Studies	1.0	2.2	4.4	5.5
38 Philosophy & Religious Studies	1.0	2.2	4.4	5.5
42 Psychology and Applied Psychology	1.0	2.2	4.4	5.5
45 Social Sciences	1.0	2.2	4.4	5.5
54 History	1.0	2.2	4.4	5.5
99 Honors Curriculum and Other	1.0	2.2	4.4	5.5
Basic Skills Cluster	1.5			
32 Basic Skills	1.5			
Business Cluster (Business, *Public Administration)*	1.0	2.2	4.4	6.6
44 Public Administration & Social Service Professions	1.0	2.2	4.4	6.6
52 Business Management, Marketing & related support services	1.0	2.2	4.4	6.6
Education Cluster	1.5	2.2	2.8	5.5
13 Education	1.5	2.2	2.8	5.5
Services Cluster *(Personal, Protective, Recreation)*	1.5	2.2	3.3	4.4
31 Parks, Recreation, Leisure & Fitness Studies	1.5	2.2	3.3	4.4
36 Leisure and Recreational Activities				
12 Personal & Culinary Services	1.5	2.2	3.3	4.4
43 Security and Protective Services	1.5	2.2	3.3	4.4
Visual and Performing Arts Cluster	1.5	2.75	5.5	5.5
50 Visual & Performing Arts	1 5	2.75	5.5	5.5
Trades/Tech Cluster *(Construction, Mechanic Tech, Precision Production)*	2.0	2.75		
46 Construction Trades	2.0	2.75		
47 Mechanic Repair Technologies/Technicians	2.0	2.75		
48 Precision Production	2.0	2.75		
49 Transportation & Materials Moving	2.0	2.75		
Sciences Cluster *(Agriculture, Computer, Biology, Physical)*	2.0	3.3	5.5	8.8
01 Agricultural, Agriculture Operations & related sciences	2.0	3.3	5.5	8.8
03 Natural Resources & Conservation	2.0	3.3	5.5	8,8
11 Computer & Information Sciences & Support Services	2.0	3.3	5.5	8.8
26 Biological & Biomedical Sciences	2.0	3.3	5.5	8.8
40 Physical Sciences	2.0	3.3	5.5	8.8
Law Cluster	2.0	2.2	4.4	4.4
22 Legal Professions and Studies	2.0	2.2	4.4	4.4
Engineering/Architecture Cluster	2.0	3.3	5.5	8.8
04 Architecture	2.0	3.3	5.5	8.8
14 Engineering	2.0	3.3	5.5	8.8
15 Engineering Technologies/Technticlans	2.0	3.3	5.5	8.8
Health Cluster	2.0	2.2	5.5	8.8
51 Nursing, Allied Health. Health Professions	2.0	2.2	5.5	8.8

College Weights

	Lower Division	Upper Division
Liberal Arts, Math, Social Science, Languages, Other	1.0	2.0
05 Area, Ethnic, Cultural & Gender Studies	1.0	2.0
09 Communication, Journalism and retated programs	1.0	2.0
16 Foreign Languages, Literature and Linguistics	1.0	2.0
19 Family and Consumer Sciences/Human Sciences	1.0	2.0
23 English Language & Literature/Letters	1.0	2,0
24 Liberat Arts & Sciences, General Studies and Humanities	1.0	2.0
25 Library Science	1.0	2.0
27 Mathematics & Statistics	1.0	2.0
28 Reserve Officer Training Corps	1.0	2.0
29 Military Technologies	1.0	2.0
30 Multi/Interdisciplinary Studies	1.0	2.0
38 Philosophy & Religious Studies	1.0	2.0
42 Psychology and Applied Psychology	1,0	2.0
45 Social Sciences	1.0	2.0
54 History	1,0	2.0
99 Honors Curriculum and Other	1.0	2.0
Basic Skills Cluster	1.5	
32 Basic Skills	1.5	
Business Cluster (Business, Public Administration)	1.0	2.0
44 Public Administration & Social Service Professions	1.0	2.0
52 Business Management, Marketing & related support services	1.0	2.0
Education Cluster	1.5	2.0
13 Education	1.5	2.0
Services Cluster (Personal, Protective, Recreation)	1.5	2.0
31 Parks, Recreation, Leisure & Fitness Studies	1.5	2.0
36 Leisure and Recreational Activities	1.5	2.0
12 Personal & Culinary Services	1.5	2.0
43 Security and Protective Services	1.5	2.0
Visual and Performing Arts Cluster	1.5	2.5
50 Visual & Performing Arts	1.5	2.5
Trades/Tech Cluster (Construction, Mechanic Tech, Precision Production)	4.0	4.5
46 Construction Trades	4.0	4.5
47 Mechanic Repair Technologies/Technicians	4.0	4.5
48 Precision Production	4.0	4.5
49 Transportation & Materials Moving	4.0	4.5
Sciences Cluster (Agriculture, Computer, Biology, Physical)	2.0	3.0
01 Agricultural, Agriculture Operations & related sciences	2.0	3.0
03 Natural Resources & Conservation	2.0	3.0
11 Computer & Information Sciences & Support Services	2.0	3.0
26 Biological & Biomedical Sciences	2.0	3.0
40 Physical Sciences	2.0	3.0
Law Cluster	2.0	2.0
22 Legal Professions and Studies	2.0	2.0
Engineering/Architecture Cluster	2.0	3.0
04 Architecture	2.0	3.0
14 Engineering	2.0	3.0
15 Engineering Technologies/Technicians	2.0	3.0
Health Cluster	2.0	2.0
51 Nursing, Allied Health, Health Professions	2.0	2.0

Appendix D. Institutional Comparison Groups

NCHEMS' Comparison Group Selection Methodology and Groups

NCHEMS' Comparison Group Selection Service (CGSS) is designed to aid institutions in selecting a group of institutions which are similar in mission to be used in comparative data analyses. CGSS has been in use at NCHEMS since 1982 and has been used by hundreds of institutions.

CGSS consists of two primary components. The first is a large database containing indicator variables on each of more than 7,000 higher education institutions. This database is constructed from data files derived from the various surveys which make up the Integrated Postsecondary Education Data System (IPEDS) survey system administered by the National Center for Education Statistics (NCES, a part of the U.S. Department of Education in Washington, D.C.). The indicator database contains variables covering institutional characteristics, faculty, finance, degrees awarded, academic programs, enrollments, research and other expenditures, and other miscellaneous data.

The second component of the CGSS is a set of algorithms designed to condense the 7,000+ institutions in the indicator database down to a useable list of potential peers for the target institution. These algorithms use a set of selected criteria to determine which institutions appear on the possible comparison institution list and their associated relative rankings within the list. Depending on the selection criteria described below, this list can be 100 institutions or more, with each institution assigned a ranking based on the criteria used.

In order to avoid selecting peers on the basis of the key variables of interest such as funding levels or student outcomes, NCHEMS only relies on data that describe institutions' relative similarities on the basis of mission, size, program array (by level and field), student body characteristics, faculty characteristics, geographic location, and other special characteristics like an institution's status as a minority-serving institution. Only after finalizing a set of peers does NCHEMS pull data on other key characteristics like funding and student outcomes.

Part I: Selection Criteria

The selection criteria work as a filtering mechanism to eliminate characteristically dissimilar institutions from the institution comparison list. An institution that does not satisfy any one of the selection criteria is excluded from further consideration as a comparison institution. For the set of Virginia institutions, selection criteria included sector (public), the 2018 Basic Carnegie Classification (the Carnegie group an institution belongs to, generally Doctorate, Masters, Bachelor's, or Associates), whether an institution is Land Grant or not, and whether it has a medical school or not. Institutions not meeting the specified criteria selected for each Virginia institution were eliminated from consideration as potential peers.

Part II: Weighting Criteria

Once the universe of possible comparison institutions has been reduced by the selection criteria specified in Part I, the Weighting Criteria can be used to rank the remaining institutions from most similar to most dissimilar with respect to the weighting criteria (variables) selected.

There are two ways that the Weighting Criteria affect the rankings of possible comparison institutions. The first way is through the specification of a range for each variable. The range for each weighting variable is set according to the target institution value. An institution which falls within the set range of values is not affected by that variable in terms of its order/placement on the comparison institution listing. An institution whose value for a particular variable falls outside of the range specified will accumulate "distance points" and will be moved lower in the listing than an institution which falls within the range.

The second way that weighting variables have an effect is through the level of importance assigned to them, which determines the number of distance points assigned to an institution for being outside the range of values for a given weighting variable. Those that fall outside of the range on a variable which has been assigned "Very Important" will receive 100 distance points and those that fall outside the range on a variable which has been assigned "Important" will receive 50 distance points. Institutions that fall within the specified range receive 0 distance points. Since institutions are ranked in ascending order by the number of distance points they accumulate, institutions with a higher accumulation of points across the weighting variables selected will be viewed as less similar than the target institution and appear lower on the list.

The weighting criteria selected for the Virginia peer analysis included fall and annual enrollment characteristics (FTE, time-status of students), distribution of awards conferred by award level, number of programs offered by award level, program array and associated distribution of awards, total research expenditures and research expenditures relative to instruction expenditures, endowment per FTE, and percent of undergraduates receiving Pell assistance.

Part III: Additional Adjustments

At this point, NCHEMS has a list of candidates to be selected as peers for the target institution, ordered by their distance scores. But the mechanics of creating that ordering may have overlooked important characteristics that make each candidate institution either a stronger or weaker match for the target institution, necessitating a further review to make additional adjustments to the list of peers. Institutions can be excluded due to known special characteristics not available/included in the selection criteria or for whom critical criteria fall farther outside the target than is acceptable (an institution may have a low distance score but fail on one or two critical criteria which would be grounds for exclusion from the final list of peers). Among the characteristics receiving special additional consideration include student body characteristics like race/ethnicity, location—both in terms of setting (urban/suburban/rural) and state (in part to ensure a reasonable

diversity of environmental characteristics like state funding policies, NCHEMS tends to avoid selecting more than two institutions from the same state, and we also avoided choosing other institutions in the same state), Carnegie classifications schema, and other special characteristics such as HBCUs.

Once the list is final with observed distance scores, a set of institutions most-like the target institution can be selected and used for comparative data analyses. Generally, 10-20 institutions were selected depending on the distribution of distance scores and how well institutions matched on critical criteria.

Part IV: Triangulation of Results

To enhance the previous methodology used, NCHEMS also employed a Hierarchical Cluster Analysis and associated proximity matrix with proximity scores to help triangulate the appropriateness of each set of potential peers. This process led NCHEMS to determine that a given institution not previously selected was a better match than originally assessed or that an institution previously selected as a peer was not as good a choice as an alternative. In those rare cases, peer groupings were adjusted accordingly to fine-tune the final set of peers selected.

Selecting System Peers for VCCS

NCHEMS altered this methodology to gather a peer group for VCCS to accommodate the need to identify and gather data on similar systems. Rather than look for institutions to match each constituent institution in the VCCS, NCHEMS surveyed the nation for systems of primarily two-year institutions for those with a mix of institutions with similar characteristics. Having identified candidate systems, NCHEMS gathered information about the number of institutions within each system that offered bachelor's degrees (and above), were located in similar geographic locales, and were categorized in similar Carnegie classifications using the Basic classification and the Undergraduate Instructional Program classification. Subsequent analyses aggregated all relevant data to the system level, with any values assigned to the system office itself included as well.

Peers for Each Virginia Institution

Virginia institution	Peers
Christopher Newport University	SUNY College at Geneseo Eastern Connecticut State University SUNY Oneonta Truman State University Ramapo College of New Jersey University of Wisconsin-River Falls California State University-Monterey Bay Westfield State University Humboldt State University The University of Tennessee-Martin
William & Mary	University of Oregon Binghamton University SUNY at Albany Miami University-Oxford University of New Hampshire-Main Campus University of California-Santa Cruz University of California-Santa Barbara University of Colorado Boulder
George Mason University	University of Oklahoma-Norman Campus University of Memphis University of North Texas Florida State University University of Houston The University of Texas at San Antonio Texas State University University of Delaware Georgia State University University of Wisconsin-Milwaukee The University of Texas at Dallas University of Massachusetts-Amherst
Norfolk State University	Delaware State University Bowie State University Fayetteville State University Texas A & M International University Frostburg State University SUNY Buffalo State Alabama State University University of North Carolina at Pembroke Lincoln University William Paterson University of New Jersey Missouri Western State University North Carolina Central University The College of New Jersey

Virginia institution	Peers
James Madison University	Stockton University University of Wisconsin-La Crosse West Chester University of Pennsylvania Florida Gulf Coast University California State University-Sacramento University of North Carolina Wilmington Appalachian State University Eastern Washington University Illinois State University Miami University-Oxford
Longwood University	Truman State University Ramapo College of New Jersey Eastern Connecticut State University Westfield State University SUNY at Fredonia Worcester State University SUNY College at Plattsburgh California State University-Channel Islands The University of Tennessee-Martin Indiana University-South Bend Winthrop University Fayetteville State University
Old Dominion University	Northern Illinois University Cleveland State University University of Colorado Colorado Springs Indiana State University Western Michigan University University of Memphis University of North Carolina at Charlotte Georgia Southern University University of Louisiana at Lafayette Bowling Green State University-Main Campus Eastern Michigan University

Virginia institution	Peers
Radford University	Salisbury University University of Wisconsin-La Crosse Kean University State University of New York at New Paltz Coastal Carolina University Stockton University SUNY College at Brockport California State University-Stanislaus Salem State University Southern Connecticut State University University of North Carolina at Pembroke SUNY Cortland University of North Alabama Worcester State University Sonoma State University
University of Mary Washington	Eastern Connecticut State University SUNY College at Geneseo Ramapo College of New Jersey SUNY Oneonta Truman State University Western Colorado University Westfield State University Concord University University of Wisconsin-River Falls University of Montevallo SUNY at Fredonia California State University-Monterey Bay Western Oregon University Southern Oregon University Winthrop University The University of Tennessee-Martin University of South Florida-St Petersburg
University of Virginia	University of North Carolina at Chapel Hill University of Iowa University of Utah University of Kansas University of California-Los Angeles University of Michigan-Ann Arbor University of Washington-Seattle Campus University of California-San Diego University of Maryland-College Park The University of Texas at Austin University of Pittsburgh-Pittsburgh Campus University of Wisconsin-Madison

Virginia institution	Peers
University of Virginia – Wise	University of Science and Arts of Oklahoma University of New Hampshire at Manchester University of South Carolina Beaufort University of North Carolina at Asheville University of Hawaii-West Oahu Massachusetts College of Liberal Arts St. Mary's College of Maryland Fort Lewis College University of Maine at Farmington Dickinson State University Concord University University of Wisconsin-Parkside
Virginia Commonwealth University	University of Kansas Florida State University University of Iowa University of New Mexico-Main Campus University of Louisville University at Buffalo University of South Carolina-Columbia University of Utah Indiana University-Purdue University-Indianapolis Florida International University University of Illinois at Chicago Wayne State University University of Mississippi University of California-Irvine University of Kentucky Temple University
Virginia Military Institute	University of New Hampshire at Manchester University of Pittsburgh-Johnstown University of North Carolina at Asheville Fort Lewis College Massachusetts Maritime Academy Maine Maritime Academy Lander University California State University Maritime Academy SUNY College of Agriculture and Technology at Cobleskill Citadel Military College of South Carolina Florida Polytechnic University West Virginia University Institute of Technology

Virginia institution	Peers
Virginia State University	Delaware State University South Carolina State University Alabama A & M University New Jersey City University Bowie State University Fayetteville State University Texas A & M International University Alcorn State University Alabama State University Winthrop University Savannah State University Lincoln University The University of Tennessee-Martin Fort Valley State University
Virginia Tech	Iowa State University North Carolina State University at Raleigh The University of Tennessee-Knoxville University of Maryland-College Park Auburn University University of Illinois at Urbana-Champaign Colorado State University-Fort Collins Washington State University Oregon State University Michigan State University Kansas State University Purdue University-Main Campus Texas A & M University-College Station Rutgers University-New Brunswick University of Kentucky University of California-Davis University of Florida
Richard Bland College	University of South Carolina-Union Northeast Lakeview College Pierce College-Puyallup University of South Carolina-Sumter University of South Carolina-Salkehatchie Kent State University at Trumbull Clovis Community College Los Angeles Harbor College South Mountain Community College New Mexico Junior College Sussex County Community College CUNY Stella and Charles Guttman Community College

Virginia institution	Peers
Virginia Community College System	Colorado Community College System Community College System of New Hampshire Illinois Community College Board Ivy Tech Community College Kentucky Community and Technical College System Louisiana Community and Technical College System Minnesota State University (Two-Year Institutions Only) North Carolina Community College System Oregon Community College Association SUNY Community Colleges Tennessee Board of Regents Community Colleges Washington State Board for Community and Technical Colleges