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The dreaded "P" word

An examination of productivity in public postsecondary education

By Patrick J. Kelly

Delta Cost Project white paper series

Supported by Making Opportunity Affordable, an initiative of Lumina Foundation for Education

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As state legislatures convened again this spring, many public postsecondary education leaders were busy trying to prepare more compelling versions of the same old story: We need more state support—or at least an inflationary adjustment—or we must raise tuition and fees. It is an argument that couples a plea with an ultimatum, and contains the underlying assumption that resources are directly associated with performance. Often absent from this assertion is any information about current levels of funding compared to similar institutions across the United States and, more importantly, how well their institutions are performing with the resources they already have. Some make a legitimate case, but far more give ultimatums.

The topic of performance relative to funding (i.e. productivity) is one of the most strained conversations in postsecondary education. Those called on to support the enterprise—policymakers and business leaders—routinely ask productivity-related questions, just as they do of any other public entity that seeks their support. In return, postsecondary education leaders provide well-crafted but often unrelated responses. Understandably, they are trying to avoid the difficult question: Are we productive relative to what?

Many have labored to address productivity in postsecondary education. However, most productivity studies have focused on the internal costs of producing degrees at the institutional level *(see Figure 1, left side)* rather than the total volume of production. Very little progress has been made at the state level—the level at which state policymakers can gauge the overall return on the public's investment in postsecondary education against that of other states.

In 2005, the National Center for Higher Education Management Systems (NCHEMS) produced a report entitled *A New Look at the Institutional Component of Higher Education Finance: A Guide for Evaluating Performance Relative to Financial Resources*.[1] It gauged the performance of state public postsecondary education sectors (i.e. research, bachelor's and master's, and two-year institutions) on a variety of measures relative to the resources made available to them through state and local appropriations, and tuition and fees. Measures of performance included graduation rates and degree production for each sector of postsecondary education, and research expenditures at the public research universities. While the findings were not conclusive enough to determine which state systems (and sectors within them) are over- or under-funded, they clearly point to the reality that some perform better than others with the resources they have. This analysis also refutes the argument that more funding always leads to better performance.

There are undoubtedly state systems of postsecondary education (as well as institutions) that would benefit from pursuing the analytic framework of productivity relative to resources and the story it would yield; however, it is difficult. The postsecondary education community is not equipped with a wide variety of productivity measures that are directly comparable across institutions. And this is particularly the case for measures associated with quality. Colleges and universities have a variety of missions and the most important mission for one institution

[1] For a copy of this report, see www.higheredinfo.org/specialanalyses.

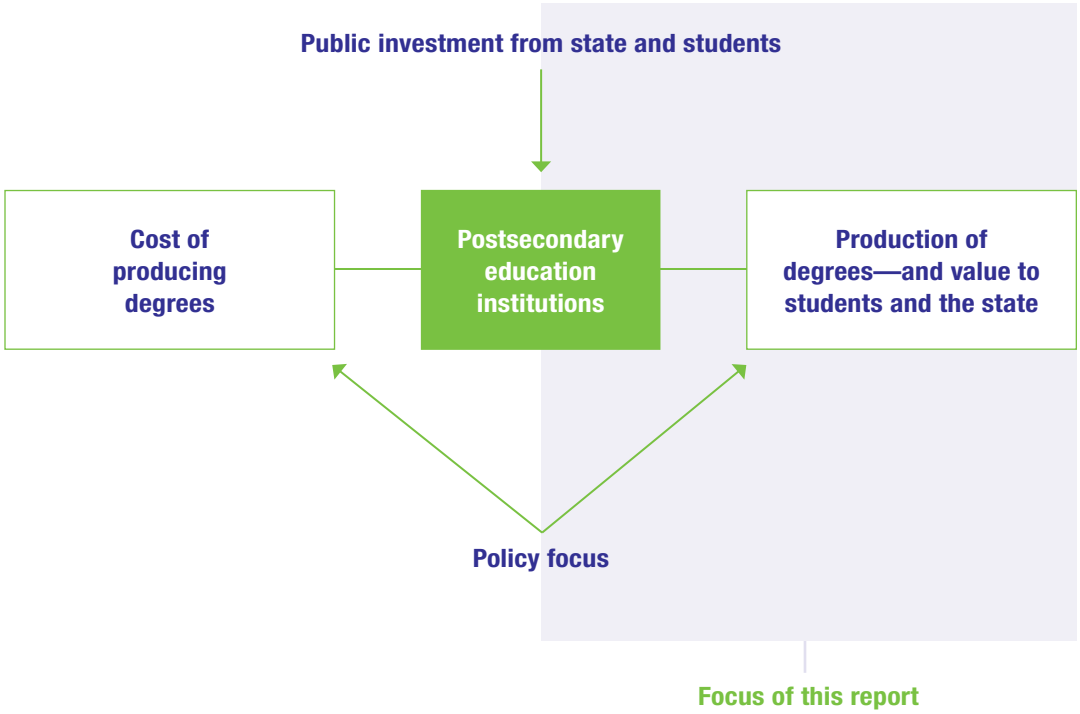
may be entirely different from that of another. In many cases, researchers and policy analysts struggle to address the "value-added" of institutions. For example, a 60 percent graduation rate at an institution that serves high proportions of low-income and minority students probably deserves more applause than an institution with an 80 percent graduation rate that is highly selective and serves students from predominately privileged families. Despite many of these challenges, efforts to address productivity in postsecondary education should not be abandoned.

The most difficult barrier to conducting sound productivity analyses in postsecondary education, however, is the lack of available data on the institutional costs of producing college degrees. Expenditure data for institutions, by degree program and degree level, are not available in public databases. Therefore, the analytic capabilities associated with calculating costs of producing college graduates across institutions—and programs within them—have never been present. This is particularly true for state systems of postsecondary education.

Although data to calculate the costs of producing different college credentials across state systems of postsecondary education are not widely available, it is possible to calculate the production of credentials in relation to the monetary value of these credentials in each state's employment market. For example, despite the lack of available data about the cost of producing engineering degrees, we know how many are produced in each state and that there is a substantial monetary return on an engineering degree relative to other types of degrees. This is the case for both the individuals, in the form of increased personal income, and for the state, in the form of tax revenues. The same is true for different levels of credentials awarded

Figure 1

Conceptual framework



(e.g. bachelor's degree holders earn more on average than associate's degree holders). Data on the market value of degrees is used in this report to develop an alternate methodology for measuring and comparing postsecondary productivity—funding per degree or certificate—across the states *(see Figure 1, right side)*.

Performance measures for state and system-level completions

A number of measures are used to compare performance in higher education across institutions or states. The most basic measure, the numbers of certificates and degrees produced by postsecondary institutions in each state (provided by the National Center for Education Statistics—NCES), is only useful for tracking the volume of postsecondary production in states or systems over time. Better indicators of performance are those that show the magnitude by which production changes. Aside from the general completion numbers, there are two commonly used performance measures for state and system-level completion:

- Graduation rates—the percentage of first-time, full-time, degree-seeking students who graduate within 150 percent of program time (six years at four-year institutions and three years at two-year institutions).
- Credentials awarded as a percent of students enrolled—a measure of output relative to the number of students pursuing credentials.

Graduation rates are the most common performance measures of completion. They are easy for policymakers to understand, and they answer one of the most common questions in postsecondary education: What percentage of students graduate? However, they have several shortcomings. First, they do not account for the success rates of students who begin part-time (a substantial proportion of students at two-year institutions and at four-year institutions that serve high proportions of students who work in addition to attending college) or who begin as transfers. Second, they are institution-specific—not accounting for students who transfer to other institutions prior to graduation. In many states, there is no incentive for students at two-year colleges to earn an associate's degree prior to transferring to a four-year institution. There is also increasing evidence that more and more students are attending multiple four-year institutions in their course of completing a bachelor's degree. In both cases, students who successfully transfer are considered dropouts.

For these reasons, graduation rates are not particularly good measures for gauging the overall productivity of state systems of postsecondary education. Some state postsecondary education agencies have the ability to include transfer activity (within state boundaries) in their calculation of graduation rates. But the comparative data provided by NCES—the only data that can be summarized to make state-to-state comparisons—do not allow for these adjustments.

The measure "certificates and degrees awarded as a percent of the number of students enrolled" provides a better assessment of the ability of systems of postsecondary education to produce college credentials. It can be strengthened by adjusting enrollments to account for

students attending part-time by creating a denominator that reflects the number of full-time "equivalent" students based on the number of credit hours generated by the system. It gauges the number of full-time equivalent (FTE) students needed to produce a certificate or degree. State systems of postsecondary education that produce few certificates and degrees relative to the size of their student body are less productive.

This measure of productivity, however, is not sensitive to the types and levels of credentials produced. For example, a state can achieve a high ranking by producing large numbers of less than one-year certificates instead of bachelor's degrees—the latter of which is typically more valuable in the marketplace. It also does not take into account the investments needed to produce certificates and degrees—i.e. the unrestricted revenues postsecondary education receives from the state and students.

This report expands work previously conducted by NCHEMS to incorporate a more general measure of degree and certificate productivity, gauging the levels of unrestricted resources made available to state public colleges and universities and the corresponding production of degrees and certificates—taking into account the value of these credentials in each state's employment market. Degree and certificate production is a mission held in common by all institutions with distinctions based on levels (e.g. certificate, associate's, bachelor's, master's, etc.) and types (e.g. liberal arts, engineering, computer science, etc.). The report addresses two questions relevant to many policymakers:

1. What is the value to individuals and the state of producing college credentials—by level and type?

2. How well are our institutions utilizing the public's investment to produce them?

This report is not intended to highlight past efforts to address productivity in postsecondary education. It provides a new approach for addressing productivity that utilizes publicly available data, provides comparable information for systems of postsecondary education across all states, and sets the topic in a contextual framework that is easy to understand.

Methodology

This report uses a variety of data resources and calculations to address the productivity of state systems of public postsecondary education. The data are from the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS), the U.S. Census Bureau's American Community Survey (ACS), and the State Higher Education Executive Officers' State Higher Education Finance Survey (SHEF). Sources are noted below each of the figures throughout the report. For the productivity measure, the market value is used to "adjust" certificate and degree production in states and create an alternate productivity measure that accounts, in effect, for the varying production costs that states face in generating their particular mix of credentials.

In the calculations below (using Alabama as an example) productivity estimates are shown using both reported data on completions, and completions adjusted with market-value weights.

Figure 2

Calculating public higher education productivity (using Alabama as an example)

1. Total funding $2,394,572,347

Total state and local appropriations and tuition revenues for public higher education

2. Certificates and degrees awarded	**Reported**	**Weighted**
Annual degrees and certificates awarded in public colleges and universities (reported vs. weighted for market value)	40,326	42,548

Median earnings in the state employment market, and certificates/degrees weighted by value to the state and individuals:

Certificate/degree level	Median earnings	Indexed to bachelor's degrees	Awards	Weighted awards
Certificates*	$27,423	0.68	3,682	2,485
Certificates STEM	$44,690	1.10	250	275
Associate's	$32,502	0.80	6,977	5,582
Associate's STEM	$47,737	1.18	466	548
Bachelor's	$40,627	1.00	15,590	15,590
Bachelor's STEM	$67,035	1.65	2,909	4,800
Master's	$44,893	1.11	8,270	9,138
Master's STEM	$76,176	1.88	825	1,547
Doctoral	$66,019	1.63	485	788
Doctoral STEM	$71,097	1.75	200	350
First professional	$87,348	2.15	672	1,445
Total			40,326	42,548

Note: STEM includes credentials awarded in computer science and technology, architecture and engineering, mathematics and statistics, and biological and life sciences.

* "Some college, but no degree" was used as a proxy for median earnings of certificate holders.

3. Productivity	**Reported**	**Weighted**
Total funding per certificate and degree produced (reported vs. weighted for market value)	$59,380	$56,280

4. Effective "increase" in productivity from weighting $3,100

In developing the productivity estimates shown in Figure 2 *(see previous page)*, the funding measure includes the two primary sources of unrestricted funds provided to postsecondary institutions—state and local appropriations, and tuition and fee revenues. Combined, these revenues represent the vast majority of operating funds in public postsecondary institutions.[2] In the standard (unweighted) productivity calculation, funding is divided by the states' total credentials awarded.

In the alternate productivity measure, the numbers of certificates and degrees awarded by level are weighted by the median earnings associated with each in the state's employment market. The median earnings for each state come from the 2006 ACS Public Use Microdata Samples. The index score used in the weighting is calculated by dividing median earnings (for each certificate/degree level) by the median earnings of bachelor's degree holders. For example, the median earnings of associate's degree holders in Alabama is $32,502 versus $40,627 for bachelor's degree holders, so the index score for associate's degrees is .80. The actual numbers of awards are then multiplied by the index score to generate weighted awards. Higher degree levels generate larger weights because, on average, they have more value in the state's labor market. In all states, certificates and associate's degrees generate smaller weights than bachelor's degrees, and graduate and professional degrees generate larger weights.

Larger weights are also applied to certificate and degree production in the areas of science, technology, engineering, and mathematics (STEM). Policymakers in many states are increasingly interested in STEM credentials because of their value in the knowledge-based economy and their strong association with global economic competitiveness. STEM credentials also provide more to individuals and the state in the form of higher earnings—and in many states, certificates and associated degrees in STEM fields generate higher earnings than bachelor's degrees in non-STEM fields *(see Figure A1 for state median earnings for each of the above certificate and degree levels)*.

So for Alabama, using weighted awards to calculate "productivity" shows the cost per completion (i.e. funding per degree or certificate) is $56,280—that is, $3,100 *less* than the $59,380 cost per completion calculated using reported (unweighted) completion counts. The difference arises because after weighting the completion data, a smaller share of all awards are accounted for at the sub-baccalaureate level (21 percent) than when using the reported share of certificates and associate's degrees (28 percent). Thus, when using market values as a proxy to differentiate between credentials, the "productivity" of Alabama's public higher education system is higher (i.e. cost of completion is lower) than would be expected when using reported data *(see Figure A2 for state unweighted and weighted degree counts, and Figure A3 for differences in productivity)*. So, if two state higher education systems have similar funding levels and credentials awarded but one state produces more bachelor's degrees and the other state produces more certificates, the state that awards more bachelor's degrees would be considered more "productive" relative to the other state.

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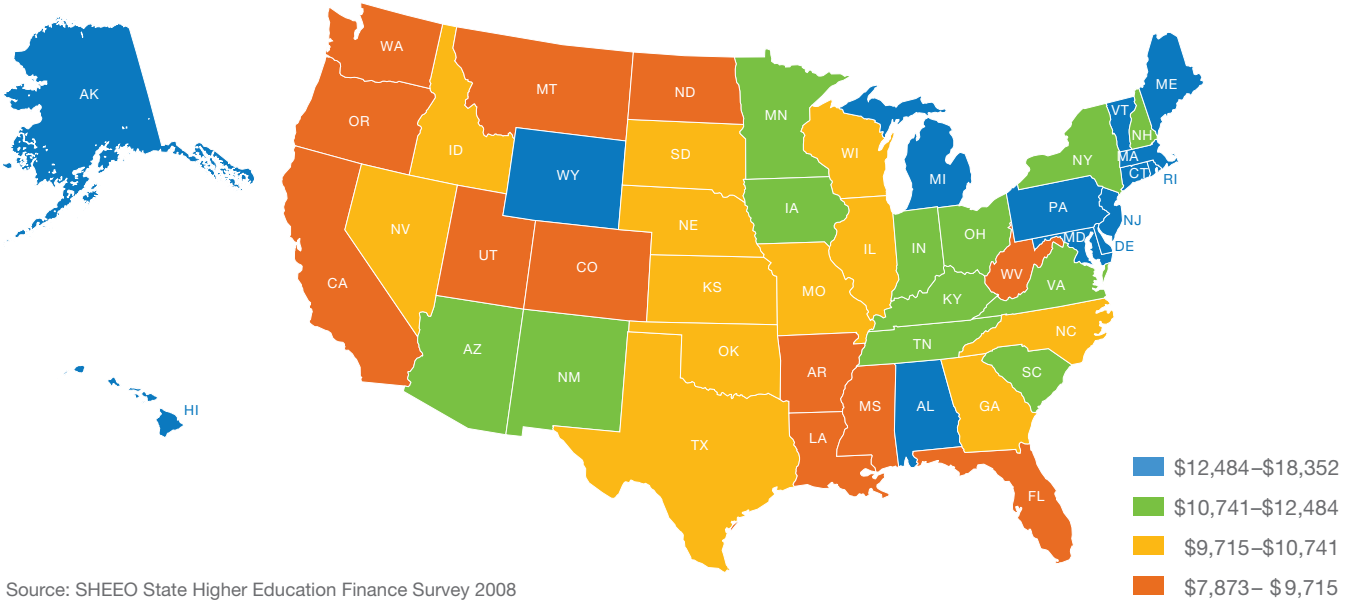
[2] Expenditure data—rather than revenue data—can also be used in productivity measures. Estimates of institutional spending on direct education and related services (i.e. instruction, student services, and a portion of administrative and maintenance costs) are funded largely through tuition and appropriations, and thus productivity measures using expenditures should yield results similar to those using revenues.

An expansion of this methodology could also apply more weight to credentials produced in other professions, such as allied health, that may be in high demand. In order to do so, however, there must be a proven link between the types and levels of degrees and the occupations typically associated with them. For example, it is reasonable to assume that associate's degree holders who are employed as nurses received their degrees in nursing, so the median earnings associated with them can be linked to a degree. However, this is not possible for many occupations/professions because there is little certainty regarding the training required and the types of degrees associated with them. Such occupations/professions include sales managers, customer service representatives, and administrative support.

Additional factors also should be considered when gauging the productivity of state public systems of postsecondary education. First, there is wide variation in the institutional composition of state systems of postsecondary education. Some serve many more students in community and technical colleges than in four-year institutions and some the reverse. Second, some states have high proportions of undereducated adults than other states. Here the importance of having a productive system of postsecondary education is even more critical. Finally, some state systems produce large numbers of certificates and degrees relative to their resources, but lose many of their graduates to other states. In such cases, the productivity of the public postsecondary education system is less an issue than the ability of the state to create and sustain an economy that can retain the graduates they produce.

Figure 3

Total funding per FTE student (2006-2007)



Source: SHEEO State Higher Education Finance Survey 2008

Patterns in state funding, completions, and productivity

Looking across all states, public higher education systems appear quite diverse, with a wide range of public funding levels and differing degree and certificate production—both in absolute numbers and in the mix of the types of credentials awarded. As expected, higher education productivity also differs among the states.

Funding

A wide range of resources is available to state public systems of postsecondary education. Total public funding ranges from $7,873 per full-time equivalent (FTE) student in Florida to $18,352 in Alaska *(see Figure 3, preceding page)*. With a few exceptions, the higher-funded public systems are concentrated in the northeast.

States, however, have very different policies with respect to the sources of funds made available to their systems of postsecondary education *(see Figure 4)*. Vermont, Delaware, Rhode Island, and New Hampshire have well-funded systems of public postsecondary institutions—with large proportions of the revenues coming from students and families instead of direct appropriations from the state. On the flip side, the well-funded systems in Alaska, Wyoming, and Hawaii are funded largely by the state.

The same patterns of state and student cost shares exist at the lower end of the spectrum—e.g., California has a large state share and Colorado has a large student share. These patterns raise a question that will be addressed later in the report: To what extent are students and families investing in an unproductive system of postsecondary education?

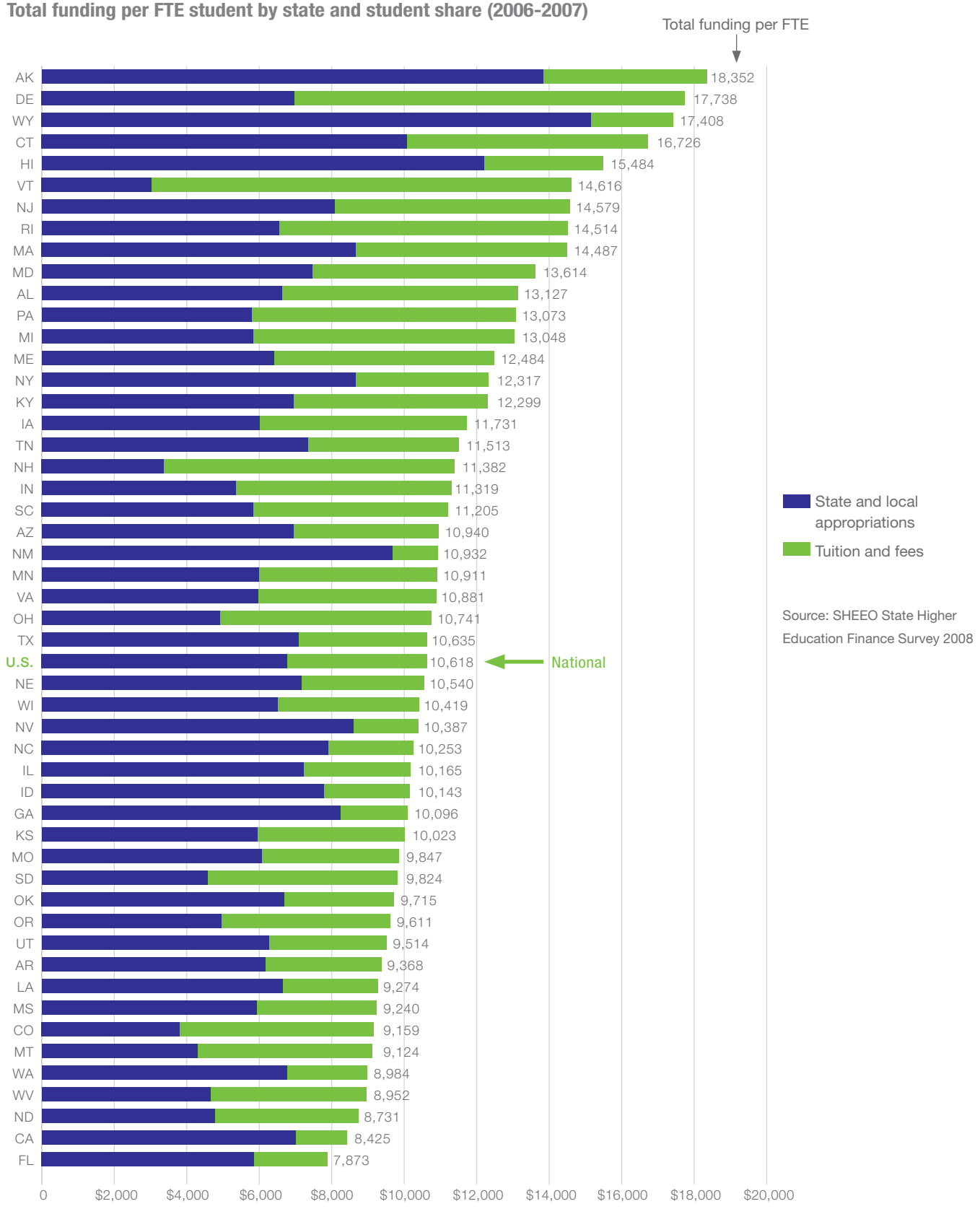
Enrollments and completions

To some degree, the funding patterns described above reflect variations in state structures of public postsecondary education. States with large community college systems (e.g. California, Washington, and Florida) are more likely to be funded at lower levels per FTE student. The utilization of a large two-year system to provide the bulk of the state's lower-division instruction has been the policy framework explicitly sought in California and Washington. However, a substantial number of community college students must earn certificates and associate's degrees, or transfer to four-year institutions to earn bachelor's degrees, in order to achieve high levels of productivity (performance relative to funding). The annual FTE enrollment by sector for each state's public postsecondary system is shown in Figure 5 *(see page 14)*.

After adjusting the numbers of certificates and degrees awarded on the basis of their associated median earnings in each state, the number of certificates and degrees awarded per 100 FTE students ranges from 16 in California to 30 in Colorado *(see Figure 6, page 15)*. Additional top-performers include Utah, Oklahoma, Kentucky, Florida, and Washington. Others that award the fewest credentials per FTE include Nevada, Rhode Island, North Carolina, and New Mexico.

Figure 4

Total funding per FTE student by state and student share (2006-2007)



Source: SHEEO State Higher Education Finance Survey 2008

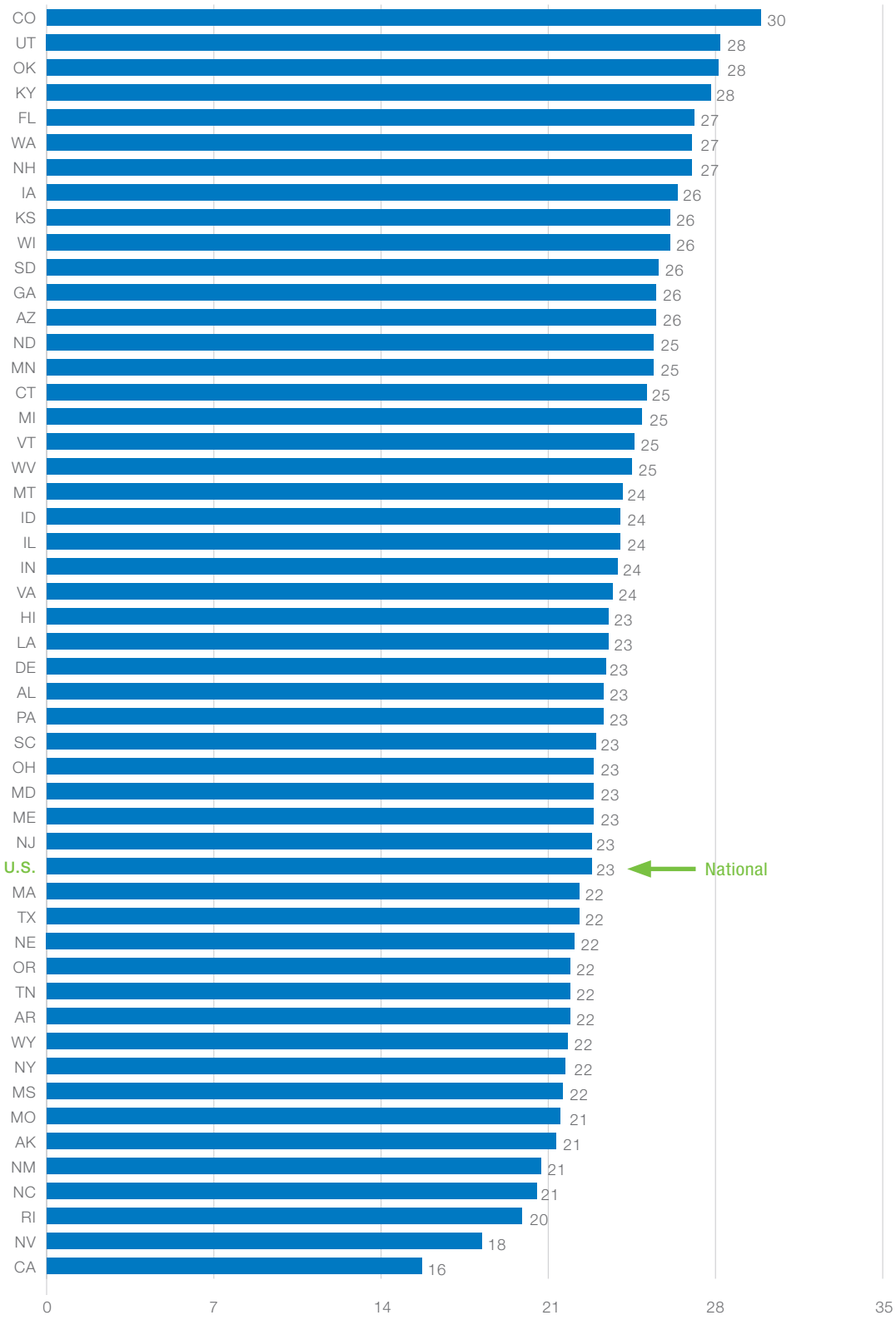
Figure 5

Annual FTE enrollment by public sector (2006-2007)

Source: NCES, IPEDS Fall Enrollment Survey

Figure 6

Degrees and certificates awarded (weighted)[3] per 100 FTE students (2006-2007)

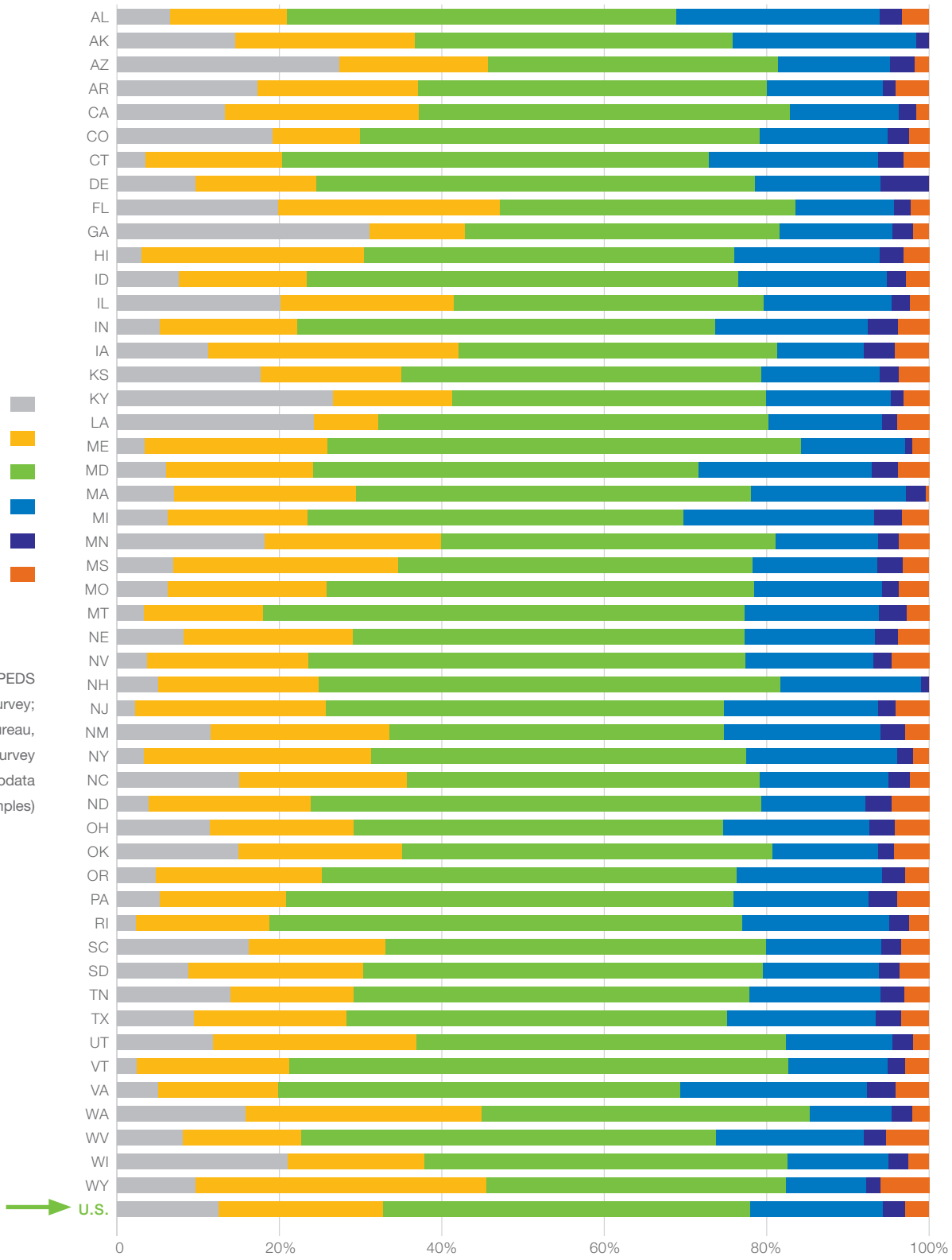


Sources: SHEEO State Higher Education Finance Survey 2008; NCES, IPEDS Completions Survey; U.S. Census Bureau, American Community Survey (Public Use Microdata Samples)

[3] Adjusted for value of degrees and certificates in the state employment market (median earnings by award type and level).

Figure 7

Degrees and certificates awarded (weighted)[4] by level (2006-2007)



Sources: NCES, IPEDS Completions Survey; U.S. Census Bureau, American Community Survey (Public Use Microdata Samples)

[4] Adjusted for value of degrees and certificates in the state employment market (median earnings by award type and level).

Because state systems of public postsecondary education serve students through a variety of institutions, it is not surprising to see that states vary substantially with respect to the mix of credentials they award *(see Figure 7)*. Public systems in Arizona, Georgia, and Kentucky produce more undergraduate certificates than other states. The same states—along with Illinois, Iowa, Washington, and Wyoming—produce more lower-division credentials (certificates and associate's degrees) than other states. Proportionately more graduate-level degrees are produced in Alabama, Connecticut, Maryland, Michigan, and Virginia. Because of the differences in median earnings associated with each level of credential, the mix of credentials awarded in each state undoubtedly makes a difference in the calculation of productivity.

As noted earlier, states are additionally rewarded for producing certificates and degrees in STEM fields. Some state systems of public postsecondary education produce more credentials in STEM fields than others *(see Figure 8, next page)*. The highest proportions of STEM credentials are produced in North and South Dakota, Maryland, Indiana, Montana, Michigan, and Colorado; while Florida, Arizona, Arkansas, Tennessee, and Rhode Island produce the fewest STEM credentials relative to other types of credentials.

It is important to note that some state systems of postsecondary education produce more graduates in STEM fields than their economy can absorb. For example, from 1995 to 2000, Indiana was a net exporter of more than 1,400 engineers. South Dakota experienced a net loss of nearly 500 engineers, and the same was true in North Dakota (a net loss of more than 400 engineers). These three states rank very well among states in STEM production and, therefore, the larger issue they face is the creation of an economy that can employ their graduates.[5]

Productivity

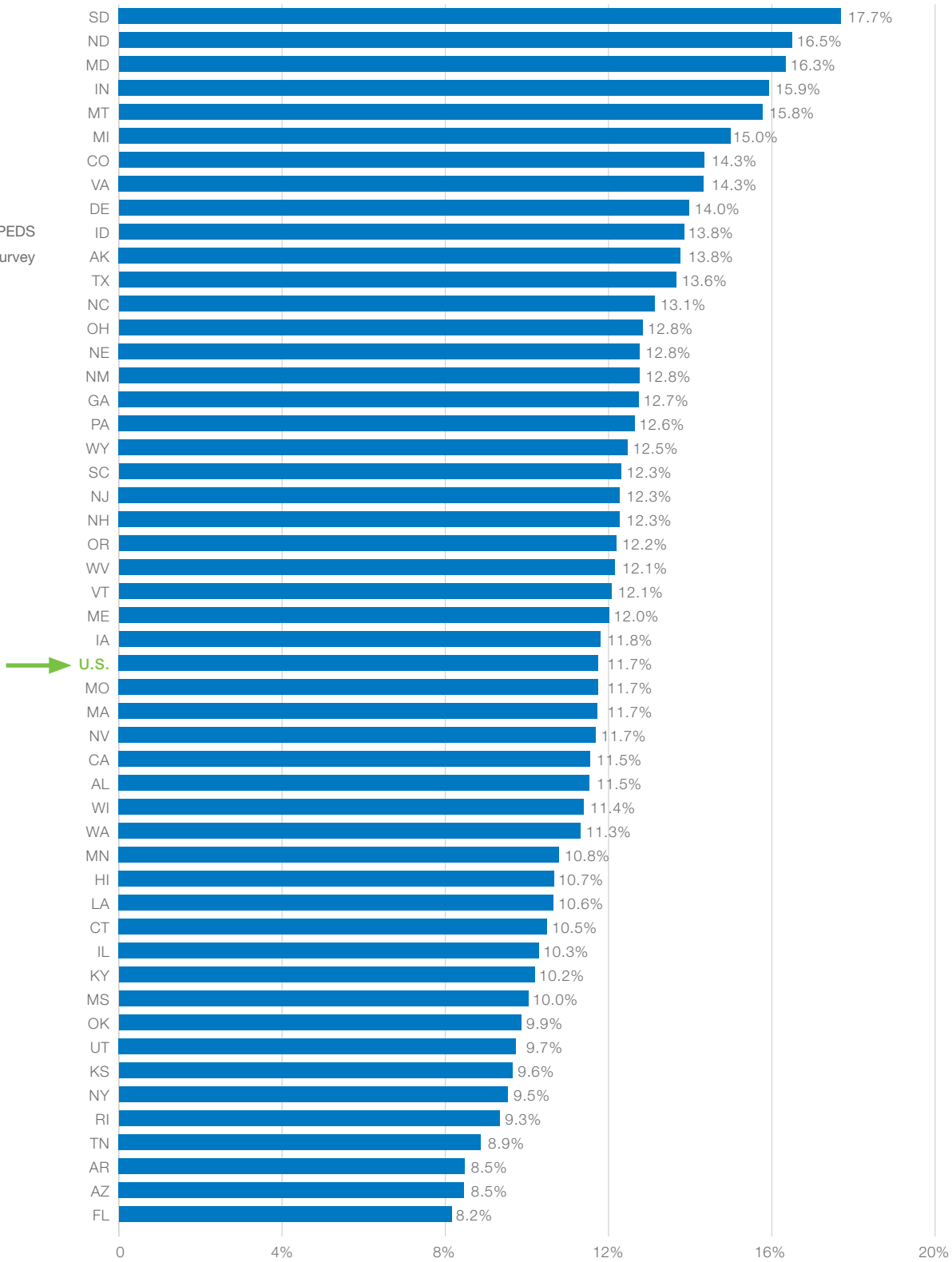
Figure 9 *(see page 19)* shows degrees and certificates awarded (weighted by market value) per FTE student (performance), relative to the total funding per FTE student (resources) by state. Several conclusions can be drawn from this display.

First, there is no evident relationship at the state level between resources and performance: higher levels of resources do not result in more credentials awarded per student. The public postsecondary education systems in Colorado, Utah, Florida, Oklahoma, and Washington perform very well relative to other states with low levels of resources. In fact, many of the top-performing state systems have average and below-average levels of total funding per student. The public systems in California and Nevada have relatively low levels of funding but are also among the poorest performers. The bottom right quadrant in Figure 9 contains the states that have relatively high levels of resources and low levels of performance. The public systems in Rhode Island, Wyoming, and Alaska are among the worst performers with high levels of resources.

[5] These migration data, by degree level and occupation, can be accessed at www.higheredinfo.org/analyses/.

Figure 8

Percentage of degrees and certificates awarded in STEM fields (2006-2007)



Source: NCES, IPEDS Completions Survey

Figure 9

Productivity: Degrees and certificates awarded per FTE vs. total funding per FTE (2006-2007)

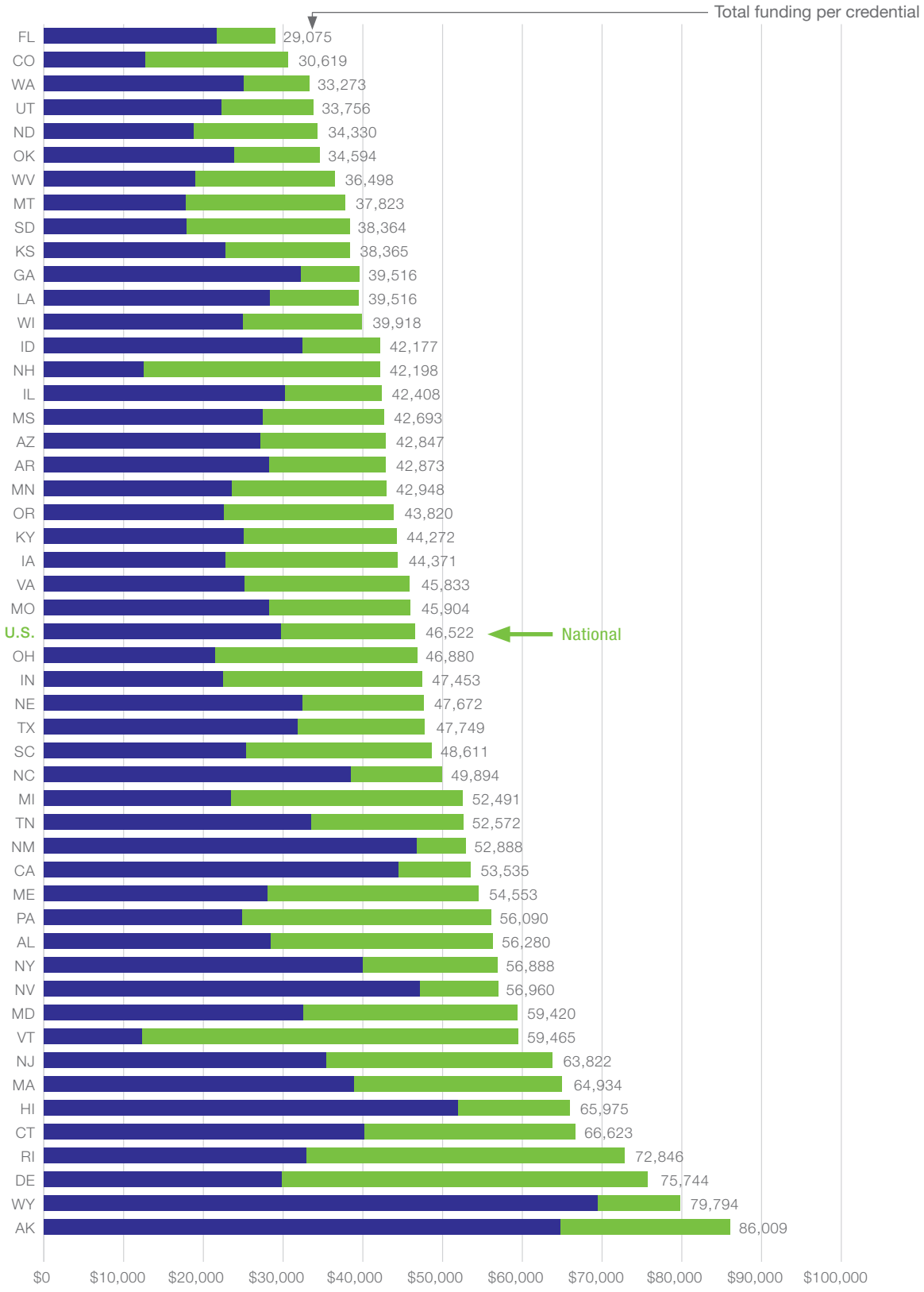
Source: SHEEO State Higher Education Finance Survey 2008; NCES IPEDS Completions Survey.

The combination of funding and certificate and degree production *(see Figure 10, next page)* is what drives the calculation of productivity: total funding per certificate/degree (weighted here by the value of various certificates and degrees). The costs per credential awarded are lowest in Florida, Colorado, Washington, Utah, and North Dakota. The least productive states—those with the highest cost per credential—are Alaska, Wyoming, Delaware, Rhode Island, and Connecticut. The differences between the weighted and the actual "total funding per certificate/degree" show that Indiana, New Hampshire, and Virginia benefit the most from weighting credentials by their market value, while Kentucky, Illinois, and Florida benefit the least *(see Appendix Figure A3, page 33).*

To what extent do students and families directly invest in an unproductive system through the tuition and fees they pay? They contribute a great deal to the public systems in Delaware, Rhode Island, and Vermont—providing the bulk of revenues to high cost-per-degree institutions *(see Figure 10, next page)*. Conversely, the less productive systems in Alaska, Wyoming, and Hawaii are supported largely by state and local appropriations. At the opposite end of the spectrum, students and families provide a substantial portion of the revenues in the low cost-per-degree systems in Colorado, West Virginia, Montana, and South Dakota—systems that with so little state support probably have to rely on tuition and fee revenues to stay afloat.

Figure 10

Productivity: Total funding per degree/certificate (weighted,[6] 2006–2007)

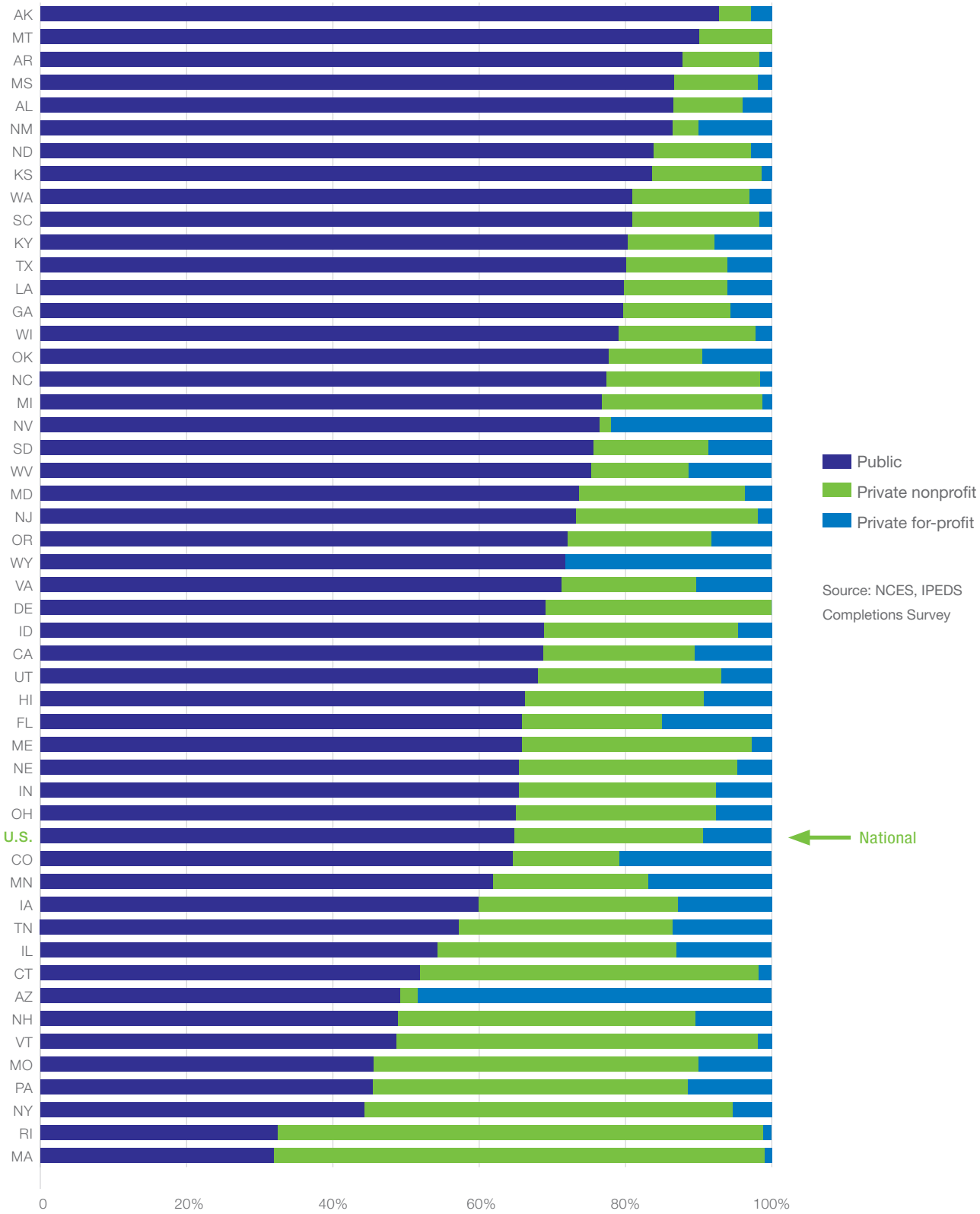


Sources: SHEEO State Higher Education Finance Survey 2008; NCES, IPEDS Completions Survey; U.S. Census Bureau, American Community Survey (Public Use Microdata Samples)

[6] Data are adjusted for value of degrees and certificates in the state employment market (median earnings by award type and level).

Figure 11

Annual certificates and degrees awarded (weighted) by control/sector (2006-2007)



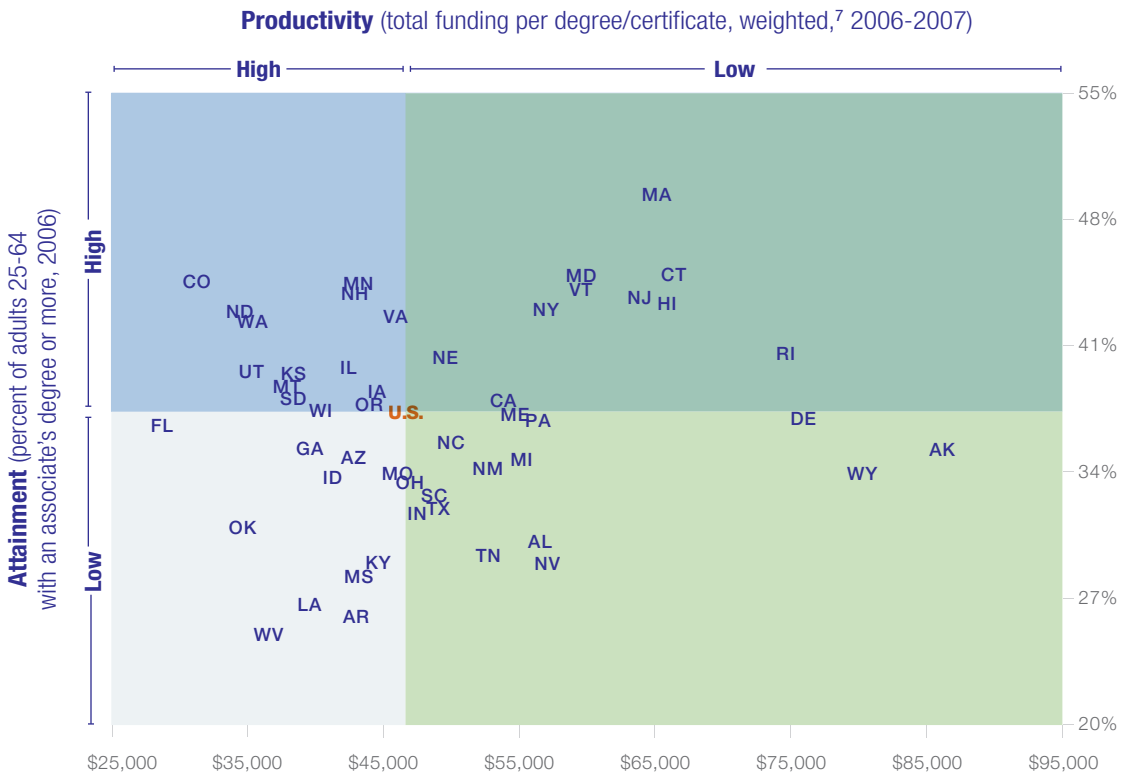
While it is impossible to draw the line precisely, some state systems need more resources in order to produce more certificates and degrees, while others need to produce more with the resources they already have. The extremes are on the top and bottom of Figure 10 respectively.

Other productivity considerations

Public systems of postsecondary education are of varying importance across states in producing the overall number of certificates and degrees *(see Figure 11, preceding page)*. In many of the New England states and New York, Pennsylvania, and Missouri, large portions of the states' production occur in the private sector. While this report does not address the productivity of private colleges and universities, many of these states have probably benefited from the contributions of the private sector to the educational attainment levels of their adult residents. However, because many private institutions are national and international in scope, the public sectors in many of these states serve the majority of in-state residents. So, the presence of highly selective private institutions does not diminish the importance of productivity within the public sector.

Figure 12

Productivity vs. educational attainment of the adult population



Source: SHEEO State Higher Education Finance Survey 2008; NCES IPEDS Completions Survey; U.S. Census Bureau, American Community Survey (Public Use Microdata Samples).

[7] Data are adjusted for value of degrees and certificates in the state employment market (median earnings by award type and level).

Overall levels of educational attainment in the young adult population are important considerations when gauging the productivity of public postsecondary education systems. States that have low levels of educational attainment can least afford to have less productive systems. Tennessee, Alabama, Nevada, Wyoming, and Alaska are states that fall into this category *(see Figure 12)*. Each has lower than average levels of educational attainment and produces relatively few degrees with the resources they have. Conversely, Colorado, North Dakota, Washington, Minnesota, and New Hampshire are among the best-educated states and exhibit high levels of productivity. Several of the least-educated states—West Virginia, Louisiana, Arkansas, Mississippi, and Kentucky—also produce large numbers of certificates and degrees relative to their resources.

One drawback associated with any approach to gauging productivity at the state and system level is the difficulty of accounting for extraneous factors that influence the level at which the state benefits from a productive postsecondary education enterprise. One of these is the state's ability to keep all of its graduates within its boundaries. While exploring factors like economic conditions, employment opportunities, tax structures, cost of living, and climate is beyond the scope of this report, the interstate movement of college degree holders is a good proxy for many of them. Figure 13 *(see next page)* presents the average annual migration rate of college-degree holders in each state from 2004-05 and 2005-06.

In recent years, Nevada, Arizona, and Washington experienced the largest rates of in-migration of college-educated adults. In these states, the pressure to produce large numbers of college graduates is somewhat alleviated by their ability to attract them from outside the state. However, policymakers in some states have relied on outside talent for decades. For example, policymakers in Colorado and Washington are beginning to realize the importance of doing a better job of educating their own residents. This realization is based partially on fairness—those who have contributed should share in the benefits—and partly arises from a concern that opportunities in historically out-migrant states will eventually reduce the flow of talent.

Despite producing a relatively large number of degrees with low levels of resources, North Dakota and West Virginia lose a substantial number of graduates to other states that have more vibrant economies. It is important to note that Louisiana's high migration rate was probably affected by hurricane Katrina. Also important to note is the fact that interstate migration has diminished in recent years with the waning economy and housing markets.[8]

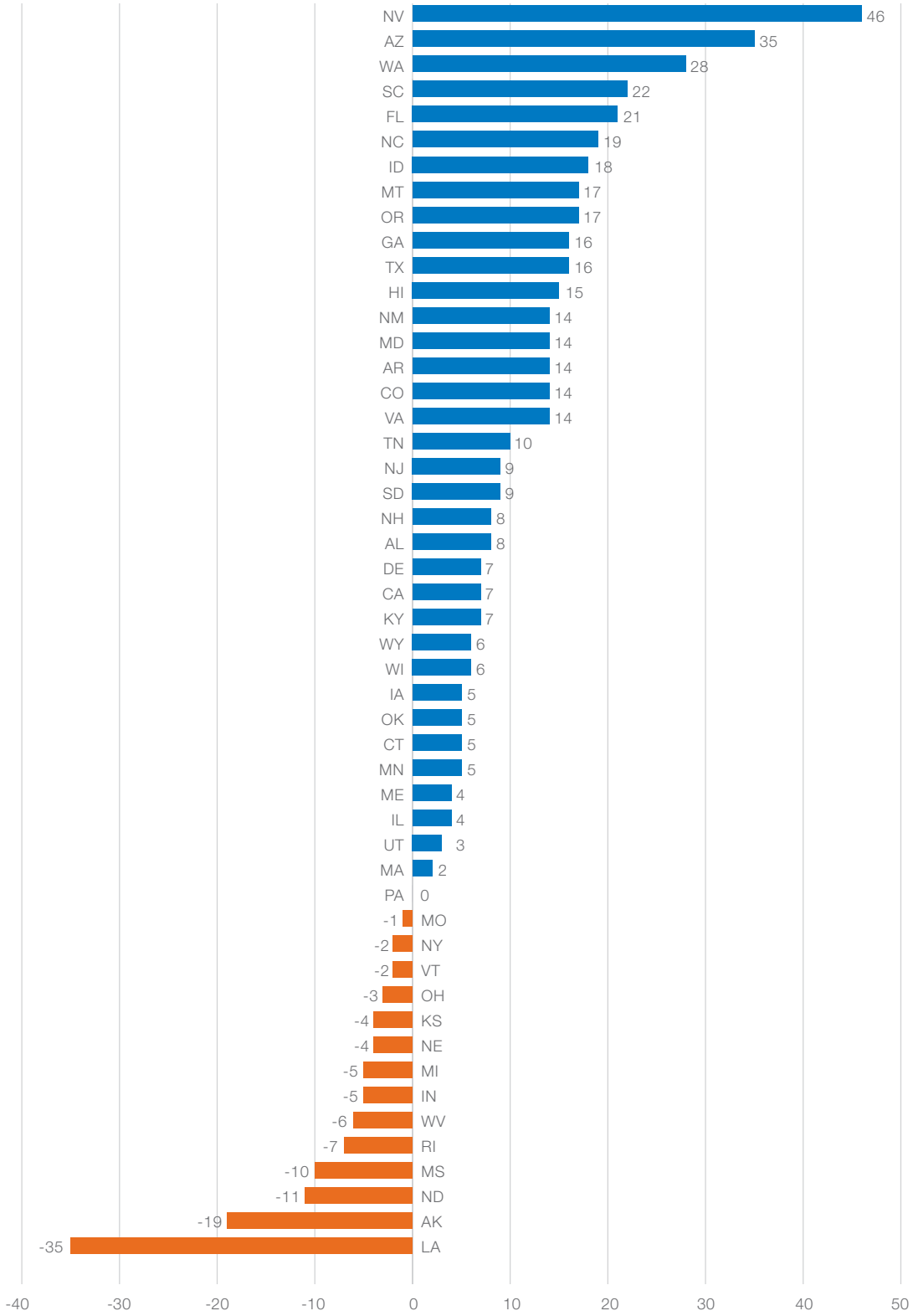
Productivity in public bachelor's and master's institutions

This productivity analysis can also be applied to specific sectors within state postsecondary education systems. NCHEMS' previous work—using a slightly different methodology—has shown that certain sectors within states (e.g. two-year, bachelor's and master's, and research

[8] For more information on the migration of college-educated residents, visit www.higheredinfo.org.

Figure 13

Average annual migration rate[9] of college graduates aged 22 to 64 (2005-2006)

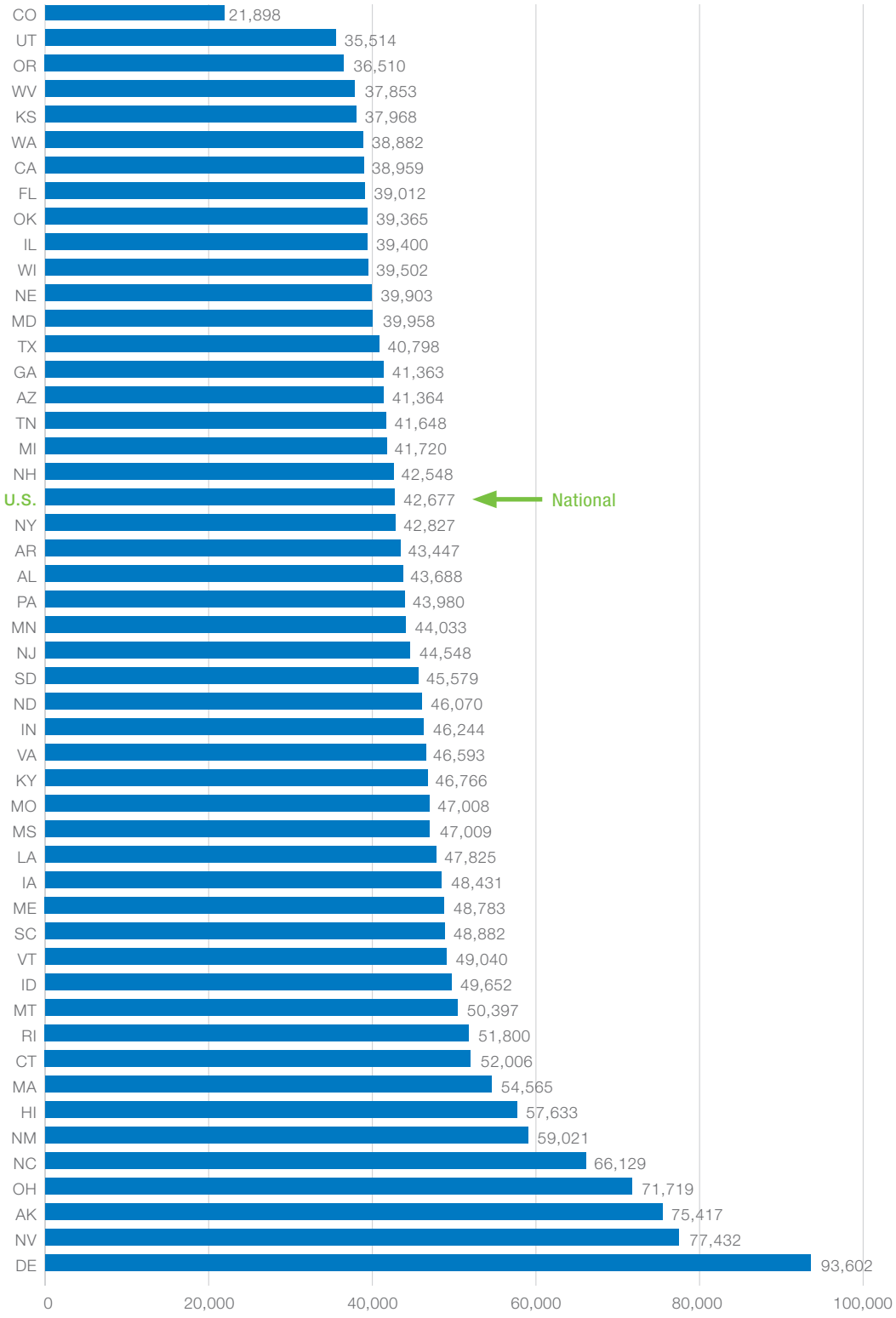


Sources: 2005 and 2006 American Community Surveys (Public Use Microdata Samples)

[9] Net migration of adults (entrants minus exits) with college degrees per 1,000 adults with college degrees in the population.

Figure 14

Productivity of bachelor's and master's institutions: Total funding per degree/certificate (weighted,[10] 2006-2007)



Sources: NCES, IPEDS Finance and Completions Surveys; U.S. Census Bureau, American Community Survey (Public Use Microdata Samples)

[10] Adjusted for value of degrees in the state employment market (median earnings by degree type and level).

Note: Wyoming does not have any public bachelor's or master's institutions; among public four-year institutions, it only has a public research institution.

institutions) utilize their resources much more effectively to achieve high levels of outcomes than others. Of the three primary sectors, bachelor's and master's institutions are the most amenable to this analysis because of their general mission to produce large numbers of credentials.

Bachelor's and master's institutions in Colorado, Utah, and Oregon have the lowest cost per degree and those in Delaware, Nevada, and Alaska the highest *(see Figure 14, preceding page)*. It is interesting to note that California does not have a productive overall system of public postsecondary education *(see Figure 10, page 20),* but its bachelor's and master's institutions produce large numbers of degrees relative to their resources. This is a case where the state's large community college system produces few credentials, and thus drives the productivity for the overall system down. Conversely, Louisiana has a relatively productive overall system (ranked 12th among states) but its bachelor's and master's institutions slip to 33rd among the states.

Relevance to policymakers

Before conducting detailed studies that gauge the institutional and programmatic costs of producing degrees by discipline and level, it is important to understand the overall productivity of the state's system of postsecondary education (and the sectors within it) relative to other states. In many states, policymakers and analysts tend to address productivity without any attempts to establish external benchmarks to compare how well their systems of postsecondary institutions are producing certificates and degrees with the resources they have, relative to similar systems and institutions across the United States. Analyses such as those provided in this report offer a framework for these more detailed analyses. In particular, the productivity framework presented—which adjusts for certificate and degree output depending on the market value of credentials—suggests a way to compare state higher education productivity, while also factoring in the different mix of credentials produced within states.

It is particularly difficult to address productivity in states where postsecondary institutions are poorly funded. For example, in the state of Colorado, applying those methods suggests that an agenda focused on institutional productivity would be an unnecessary diversion. Colorado's public institutions already produce relatively large numbers of certificates and degrees with very few resources. A better course of action would be to focus on targeted investments to increase quality, the production of more degrees in high-demand fields, and increasing the levels of degree completion needed to ensure the state's overall competitiveness in the knowledge-based economy.

Along with state-level data on occupational demand, the results of analyses like these could be utilized to determine which disciplines might be considered for increased state investment and/or differential tuition policies. For example, many community colleges around the country are reluctant to expand enrollment capacity in high-demand fields like nursing, health technologies, engineering, and computer technologies because programs in those fields are much more expensive to operate and because the state and the students often provide the same

levels of resources for these disciplines as they do for other less expensive ones. Weighted productivity data could reveal that increases in the "return on investment" from many of these programs—because of substantially higher wages—may warrant greater investment from the state (and perhaps students) as long as low-income students are provided the financial aid needed for equal opportunity. States benefit from addressing critical shortages in high-demand fields, and both states and students benefit from higher personal incomes.

Conclusion

Given the brevity of this report, the analysis presented serves more as a prototype than a definitive body of work. It could be expanded to incorporate productivity analyses at the postsecondary sector and institutional levels. Trend data[11] could be used to determine productivity over time and whether or not state systems (or sectors and institutions within them) are moving in the right or wrong direction. Finally, more attention could be given to the production of credentials and degrees in certain high-demand areas and their associated weights relative to the earnings they yield in the employment market. However, as noted earlier, going beyond a few key fields might jeopardize the integrity and simplicity of the analysis.

When trying to gauge productivity in postsecondary education, the complexities of the enterprise and the lack of publicly available data and information have created a maze that has never been completely navigated. The framework for measuring productivity presented here charts a new course. Even though it does not reach the finish line, it may go as far toward it as any other approach, but with fewer twists and turns than most. Like any other methodology, it has strengths and weaknesses. The strengths are:

- It starts the conversation in the right place, with a focus on how well the state systems of postsecondary education (and the sectors within them) produce degrees relative to the resources available to them. In some states, policymakers intervene in internal institutional resource allocation in the absence of comparative information.
- It is a relatively simple approach that focuses on the external value of college credentials and avoids the complexities of institutional programmatic costs. Institutions are able to operate as they choose, as long as they produce large numbers of graduates relative to the resources they have, and as long as graduates in fields that are associated with a globally competitive economy are especially valued.
- At the state system level, it takes the two- to four-year transfer mission into account. This is very important in states that have overtly designated this role to community colleges, such as California, Florida, and Washington. If transfer is successful for many students, then the system is rewarded for the production of bachelor's degrees.

[11] Much of this data is housed on the Delta Project's website at www.deltacostproject.org.

The weaknesses are:

- It focuses on one mission for all institutions—the production of certificates and degrees.
- It does not address quality—although the lack of comparable data and information makes it impossible to do so.
- It needs continuous reference to how well the state's residents are being served. Given the "investment vs. return" principle that underlies this approach and nearly all productivity analyses, it is possible to have a productive system of postsecondary education that does not serve students at the scale needed to achieve a highly educated populace. But the data are available to answer this question if it is posed.
- It does not arrive at firm conclusions about whether or not state postsecondary systems are over- or underfunded. Some states work their way into high levels of productivity by running their systems "on the cheap." At what level are their resources depleted to the point of diminished quality? And at what level are more resources needed to operate more effectively?

In addition to this more general approach to addressing productivity (i.e., resources vs. performance), detailed analyses on how institutions spend their resources and the outcomes they achieve as a result still beg for attention. The work produced by the Delta Project on Postsecondary Education Costs, Productivity, and Accountability has identified many of the overall trends in spending, but the link between spending and performance is very difficult to establish with data from publicly available sources. It requires access to the types of detailed data and information that have been used in states like Florida and Illinois—two states that have addressed productivity in a more holistic way using institutional data on system resources, instructional costs, and student-related outcomes.[12]

As global economic competition continues to mount, and as state support for postsecondary education continues to be squeezed by competing state interests like K-12 education, health care, and corrections, the topic of productivity is rising to the top of many conversations in postsecondary education. In order to achieve the levels of education needed to compete with the best-performing states and countries, many state policymakers are focusing on lofty goals. Arizona, Colorado, and Kentucky aspire to "double the numbers" of colleges graduates in the state. Similarly, Oregon aims to achieve much higher educational attainment levels among adults—40 percent with bachelor's degrees or higher, and an additional 40 percent with postsecondary certificates and associate's degrees. Texas, in turn, is striving to close the racial/ethnic education gaps between whites and minorities, and to raise educational attainment levels to the U.S. average. In each of these states, "business as usual"—at current costs per degree—would require substantial new investments. How well higher education institutions perform with the resources they have, and how they can improve performance with few or no new resources, are uncomfortable questions that are here to stay. Fortunately, the method presented here can give us some answers.

[12] See the report "What Does a College Degree Cost?: Comparing Approaches to Measuring Cost per Degree" by Nate Johnson, accessible at www.deltacostproject.org/analyses/delta_reports.asp.

Appendix: Detailed tables

Figure A1

State median annual earnings of 25–64 year olds by degree level (2006) and derived weights

State	Some college, no degree		Some college, no degree STEM		Associate's		Associate's STEM		Bachelor's		Bachelor's STEM	
	Value	Weight	Value	Weight	Value	Weight	Value	Weight	Value	Weight	Value	Weight
Alabama	$27,423	0.68	$44,690	1.10	$32,502	0.80	$47,737	1.18	$40,627	1.00	$67,035	1.65
Alaska	$32,502	0.80	$48,752	1.20	$35,549	0.88	$45,705	1.13	$40,627	1.00	$66,019	1.63
Arizona	$30,470	0.75	$48,752	1.20	$34,533	0.85	$47,737	1.18	$40,627	1.00	$62,972	1.55
Arkansas	$25,900	0.67	$44,690	1.16	$30,470	0.79	$40,627	1.05	$38,596	1.00	$55,862	1.45
California	$35,549	0.70	$54,846	1.08	$38,596	0.76	$56,878	1.12	$50,784	1.00	$73,129	1.44
Colorado	$32,502	0.80	$55,862	1.38	$35,549	0.88	$55,862	1.38	$40,627	1.00	$68,050	1.68
Connecticut	$36,564	0.72	$60,941	1.20	$40,018	0.79	$57,893	1.14	$50,784	1.00	$73,129	1.44
Delaware	$34,533	0.76	$66,019	1.44	$37,580	0.82	$55,862	1.22	$45,705	1.00	$56,878	1.24
Florida	$30,470	0.75	$45,705	1.13	$32,502	0.80	$48,752	1.20	$40,627	1.00	$60,941	1.50
Georgia	$30,470	0.71	$50,784	1.19	$34,533	0.81	$60,941	1.43	$42,658	1.00	$66,019	1.55
Hawaii	$30,470	0.75	$56,878	1.40	$36,463	0.90	$52,815	1.30	$40,627	1.00	$56,878	1.40
Idaho	$25,392	0.69	$40,627	1.11	$29,861	0.82	$50,784	1.39	$36,564	1.00	$55,862	1.53
Illinois	$32,502	0.71	$52,815	1.16	$34,533	0.76	$50,784	1.11	$45,705	1.00	$65,003	1.42
Indiana	$30,470	0.76	$46,721	1.17	$33,822	0.85	$51,799	1.29	$40,018	1.00	$60,941	1.52
Iowa	$28,439	0.74	$44,690	1.16	$32,502	0.84	$50,784	1.32	$38,596	1.00	$57,893	1.50
Kansas	$28,439	0.70	$50,784	1.25	$31,486	0.78	$50,784	1.25	$40,627	1.00	$62,972	1.55
Kentucky	$27,626	0.68	$49,768	1.23	$31,486	0.78	$48,752	1.20	$40,525	1.00	$60,941	1.50
Louisiana	$28,439	0.74	$44,182	1.14	$30,470	0.79	$36,564	0.95	$38,596	1.00	$58,909	1.53
Maine	$26,712	0.73	$42,658	1.17	$32,502	0.89	$50,276	1.38	$36,564	1.00	$60,941	1.67
Maryland	$38,393	0.76	$62,972	1.25	$40,627	0.80	$60,941	1.21	$50,479	1.00	$71,097	1.41
Massachusetts	$35,345	0.73	$54,846	1.13	$37,580	0.77	$61,956	1.27	$48,752	1.00	$69,066	1.42
Michigan	$30,470	0.70	$56,878	1.30	$33,517	0.77	$54,846	1.26	$43,674	1.00	$67,035	1.53
Minnesota	$31,486	0.74	$50,784	1.19	$35,549	0.83	$49,768	1.17	$42,658	1.00	$66,019	1.55
Mississippi	$25,392	0.71	$44,690	1.25	$28,439	0.79	$51,799	1.44	$35,853	1.00	$58,909	1.64
Missouri	$29,455	0.73	$50,784	1.25	$32,502	0.80	$50,784	1.25	$40,627	1.00	$60,941	1.50
Montana	$24,376	0.80	$40,932	1.34	$25,392	0.83	$36,361	1.19	$30,470	1.00	$45,705	1.50
Nebraska	$27,423	0.71	$57,893	1.50	$30,470	0.79	$45,705	1.18	$38,596	1.00	$54,846	1.42
Nevada	$34,533	0.77	$49,768	1.11	$37,682	0.84	$45,705	1.02	$44,690	1.00	$66,019	1.48
New Hampshire	$35,549	0.88	$55,862	1.38	$35,955	0.89	$60,941	1.50	$40,627	1.00	$76,176	1.88
New Jersey	$37,580	0.74	$59,925	1.18	$40,627	0.80	$55,862	1.10	$50,784	1.00	$71,097	1.40
New Mexico	$25,392	0.66	$48,752	1.26	$30,470	0.79	$45,705	1.18	$38,596	1.00	$60,941	1.58
New York	$33,822	0.69	$53,831	1.10	$35,549	0.73	$50,784	1.04	$48,752	1.00	$63,988	1.31
North Carolina	$27,728	0.68	$45,705	1.13	$31,689	0.78	$50,784	1.25	$40,627	1.00	$60,941	1.50
North Dakota	$24,376	0.69	$32,502	0.91	$28,439	0.80	$55,862	1.57	$35,549	1.00	$45,909	1.29
Ohio	$30,470	0.71	$50,581	1.19	$34,127	0.80	$50,784	1.19	$42,658	1.00	$60,941	1.43
Oklahoma	$26,408	0.72	$40,627	1.11	$30,470	0.83	$50,784	1.39	$36,564	1.00	$60,941	1.67
Oregon	$29,455	0.76	$46,721	1.21	$30,470	0.79	$50,784	1.32	$38,596	1.00	$59,925	1.55
Pennsylvania	$30,470	0.73	$50,784	1.22	$33,517	0.80	$50,784	1.22	$41,643	1.00	$60,941	1.46
Rhode Island	$31,486	0.70	$66,019	1.48	$35,549	0.80	$56,878	1.27	$44,690	1.00	$66,019	1.48
South Carolina	$28,439	0.74	$50,784	1.32	$30,470	0.79	$52,815	1.37	$38,596	1.00	$62,972	1.63
South Dakota	$25,392	0.75	$30,470	0.90	$30,470	0.90	$36,564	1.08	$33,822	1.00	$41,643	1.23
Tennessee	$28,439	0.70	$43,674	1.08	$30,470	0.75	$49,565	1.22	$40,627	1.00	$60,941	1.50
Texas	$30,470	0.71	$51,799	1.21	$34,533	0.81	$50,784	1.19	$42,658	1.00	$69,066	1.62
Utah	$29,455	0.81	$47,534	1.30	$30,470	0.83	$45,705	1.25	$36,564	1.00	$59,925	1.64
Vermont	$25,392	0.71	$39,611	1.11	$34,127	0.96	$55,862	1.57	$35,549	1.00	$60,941	1.71
Virginia	$32,502	0.71	$61,956	1.36	$35,549	0.78	$55,862	1.22	$45,705	1.00	$71,097	1.56
Washington	$31,689	0.73	$53,831	1.23	$35,549	0.81	$55,862	1.28	$43,674	1.00	$71,097	1.63
West Virginia	$24,376	0.71	$50,784	1.47	$30,470	0.88	$48,752	1.41	$34,533	1.00	$51,799	1.50
Wisconsin	$30,470	0.75	$50,784	1.25	$34,533	0.85	$46,721	1.15	$40,627	1.00	$56,878	1.40
Wyoming	$27,423	0.75	$40,322	1.10	$30,470	0.83	$35,549	0.97	$36,564	1.00	$52,815	1.44
US Total	$30,470	0.71	$50,784	1.19	$34,533	0.81	$50,784	1.19	$42,658	1.00	$66,019	1.55

Master's		Master's STEM		Doctoral		Doctoral STEM		Professional		State
Value	Weight	Value	Weight	Value	Weight	Value	Weight	Value	Weight	
$44,893	1.11	$76,176	1.88	$66,019	1.63	$71,097	1.75	$87,348	2.15	Alabama
$52,815	1.30	$81,254	2.00	$91,411	2.25	$60,941	1.50	$71,097	1.75	Alaska
$49,768	1.23	$74,144	1.83	$66,019	1.63	$86,332	2.13	$76,176	1.88	Arizona
$44,690	1.16	$60,941	1.58	$60,941	1.58	$62,972	1.63	$72,113	1.87	Arkansas
$63,988	1.26	$86,332	1.70	$76,176	1.50	$86,332	1.70	$91,411	1.80	California
$50,784	1.25	$79,223	1.95	$58,909	1.45	$76,176	1.88	$73,129	1.80	Colorado
$62,972	1.24	$76,176	1.50	$81,254	1.60	$90,395	1.78	$79,223	1.56	Connecticut
$55,862	1.22	$60,941	1.33	$81,254	1.78	$103,599	2.27	$69,066	1.51	Delaware
$48,752	1.20	$62,972	1.55	$62,972	1.55	$69,066	1.70	$71,097	1.75	Florida
$50,784	1.19	$71,097	1.67	$66,019	1.55	$82,270	1.93	$71,097	1.67	Georgia
$50,784	1.25	$76,176	1.88	$60,941	1.50	$81,254	2.00	$61,956	1.53	Hawaii
$45,705	1.25	$74,144	2.03	$58,909	1.61	$52,815	1.44	$63,988	1.75	Idaho
$55,862	1.22	$71,097	1.56	$71,097	1.56	$71,097	1.56	$84,301	1.84	Illinois
$50,784	1.27	$66,019	1.65	$63,988	1.60	$76,176	1.90	$71,097	1.78	Indiana
$44,690	1.16	$66,019	1.71	$60,941	1.58	$69,066	1.79	$76,176	1.97	Iowa
$46,721	1.15	$58,909	1.45	$60,941	1.50	$58,909	1.45	$73,129	1.80	Kansas
$42,760	1.06	$66,019	1.63	$58,909	1.45	$61,956	1.53	$60,941	1.50	Kentucky
$42,658	1.11	$62,972	1.63	$58,909	1.53	$69,066	1.79	$71,097	1.84	Louisiana
$40,627	1.11	$65,003	1.78	$52,815	1.44	$53,831	1.47	$71,097	1.94	Maine
$60,941	1.21	$81,254	1.61	$76,176	1.51	$81,254	1.61	$91,411	1.81	Maryland
$57,893	1.19	$81,254	1.67	$74,144	1.52	$87,348	1.79	$81,254	1.67	Massachusetts
$58,909	1.35	$76,176	1.74	$69,066	1.58	$91,411	2.09	$83,285	1.91	Michigan
$53,831	1.26	$69,066	1.62	$61,956	1.45	$74,144	1.74	$91,411	2.14	Minnesota
$44,690	1.25	$60,941	1.70	$60,941	1.70	$81,254	2.27	$71,097	1.98	Mississippi
$45,705	1.13	$60,941	1.50	$66,019	1.63	$69,066	1.70	$73,129	1.80	Missouri
$36,564	1.20	$47,737	1.57	$62,972	2.07	$81,254	2.67	$52,815	1.73	Montana
$46,721	1.21	$50,784	1.32	$53,831	1.39	$39,611	1.03	$69,574	1.80	Nebraska
$50,784	1.14	$60,941	1.36	$74,144	1.66	$75,160	1.68	$83,285	1.86	Nevada
$52,815	1.30	$76,176	1.88	$60,941	1.50	$67,035	1.65	$86,332	2.13	New Hampshire
$70,082	1.38	$81,254	1.60	$81,254	1.60	$91,411	1.80	$91,411	1.80	New Jersey
$45,705	1.18	$79,223	2.05	$60,941	1.58	$101,568	2.63	$67,035	1.74	New Mexico
$55,862	1.15	$71,097	1.46	$71,097	1.46	$76,176	1.56	$88,364	1.81	New York
$45,705	1.13	$72,113	1.78	$60,941	1.50	$76,176	1.88	$79,223	1.95	North Carolina
$42,658	1.20	$47,737	1.34	$60,941	1.71	$35,549	1.00	$71,097	2.00	North Dakota
$51,799	1.21	$71,097	1.67	$63,988	1.50	$76,176	1.79	$74,144	1.74	Ohio
$40,221	1.10	$66,019	1.81	$58,909	1.61	$82,270	2.25	$78,207	2.14	Oklahoma
$45,705	1.18	$60,941	1.58	$60,941	1.58	$85,317	2.21	$66,019	1.71	Oregon
$51,799	1.24	$70,082	1.68	$73,129	1.76	$83,285	2.00	$76,176	1.83	Pennsylvania
$55,862	1.25	$71,097	1.59	$73,129	1.64	$65,003	1.45	$76,176	1.70	Rhode Island
$44,690	1.16	$74,144	1.92	$63,988	1.66	$78,207	2.03	$67,035	1.74	South Carolina
$40,627	1.20	$42,658	1.26	$50,784	1.50	$142,195	4.20	$52,815	1.56	South Dakota
$45,705	1.13	$62,972	1.55	$65,003	1.60	$81,254	2.00	$66,019	1.63	Tennessee
$50,784	1.19	$76,176	1.79	$66,019	1.55	$96,489	2.26	$81,254	1.90	Texas
$51,799	1.42	$66,019	1.81	$62,972	1.72	$60,941	1.67	$76,176	2.08	Utah
$40,627	1.14	$54,846	1.54	$59,925	1.69	$71,097	2.00	$52,815	1.49	Vermont
$60,941	1.33	$84,301	1.84	$76,176	1.67	$96,489	2.11	$91,411	2.00	Virginia
$50,784	1.16	$73,129	1.67	$69,066	1.58	$82,270	1.88	$76,176	1.74	Washington
$40,627	1.18	$76,176	2.21	$72,113	2.09	$145,242	4.21	$60,941	1.76	West Virginia
$50,784	1.25	$60,941	1.50	$66,019	1.63	$58,909	1.45	$91,411	2.25	Wisconsin
$40,627	1.11	$57,893	1.58	$47,229	1.29	$73,129	2.00	$91,411	2.50	Wyoming
$52,815	1.24	$75,160	1.76	$69,066	1.62	$81,254	1.90	$81,254	1.90	US Total

Source: U.S. Census Bureau 2006 American Community Survey (Public Use Microdata Samples)

Figure A2

Difference between actual credentials awarded and weighted credentials (2006–2007)

State	Actual degrees and certificates produced	Weighted by level and type	Difference	Difference (%)
Alabama	40,326	42,548	2,222	5.5
Alaska	3,750	3,981	231	6.2
Arizona	58,469	56,590	(1,879)	-3.2
Arkansas	23,769	22,588	(1,181)	-5.0
California	275,910	265,463	(10,447)	-3.8
Colorado	43,694	47,080	3,386	7.7
Connecticut	17,971	18,817	846	4.7
Delaware	7,097	7,323	226	3.2
Florida	148,519	140,295	(8,224)	-5.5
Georgia	79,027	76,076	(2,951)	-3.7
Hawaii	7,732	8,217	485	6.3
Idaho	9,827	10,473	646	6.6
Illinois	98,452	92,945	(5,507)	-5.6
Indiana	48,400	53,336	4,936	10.2
Iowa	29,612	29,858	246	0.8
Kansas	34,339	33,244	(1,095)	-3.2
Kentucky	43,579	40,451	(3,128)	-7.2
Louisiana	39,865	39,114	(751)	-1.9
Maine	7,676	8,127	451	5.9
Maryland	42,374	45,254	2,880	6.8
Massachusetts	31,106	31,166	60	0.2
Michigan	87,845	95,507	7,662	8.7
Minnesota	48,742	48,639	(103)	-0.2
Mississippi	24,496	25,049	553	2.3
Missouri	36,550	37,466	916	2.5
Montana	7,788	8,513	725	9.3
Nebraska	16,092	16,348	256	1.6
Nevada	10,707	11,183	476	4.4
New Hampshire	7,823	8,657	834	10.7
New Jersey	48,931	51,642	2,711	5.5
New Mexico	16,897	17,160	263	1.6
New York	115,314	110,189	(5,125)	-4.4
North Carolina	71,997	70,700	(1,297)	-1.8
North Dakota	8,508	9,011	503	5.9
Ohio	85,593	87,817	2,224	2.6
Oklahoma	36,783	37,096	313	0.8
Oregon	26,301	27,441	1,140	4.3
Pennsylvania	73,751	78,643	4,892	6.6
Rhode Island	5,499	5,763	264	4.8
South Carolina	32,919	33,589	670	2.0
South Dakota	7,251	7,485	234	3.2
Tennessee	37,752	36,831	(921)	-2.4
Texas	168,087	176,887	8,800	5.2
Utah	27,975	28,854	879	3.1
Vermont	4,367	4,782	415	9.5
Virginia	58,555	64,820	6,265	10.7
Washington	59,476	58,010	(1,466)	-2.5
West Virginia	16,397	17,826	1,429	8.7
Wisconsin	56,777	56,142	(635)	-1.1
Wyoming	4,963	4,924	(39)	-0.8
US Total	2,296,203	2,336,734	40,531	1.8

Source: NCES, IPEDS Completions Survey

Figure A3

Difference between weighted and actual total funding per degree/certificate (2006–2007)

State	Weighted cost per degree/certificate	Actual cost per degree/certificate	Difference	Difference (%)
Alabama	$56,280	$59,380	$3,100	5.5
Alaska	$86,009	$91,298	$5,290	6.2
Arizona	$42,847	$41,470	($1,377)	-3.2
Arkansas	$42,873	$40,742	($2,131)	-5.0
California	$53,535	$51,508	($2,027)	-3.8
Colorado	$30,619	$32,991	$2,373	7.7
Connecticut	$66,623	$69,757	$3,135	4.7
Delaware	$75,744	$78,151	$2,407	3.2
Florida	$29,075	$27,465	($1,610)	-5.5
Georgia	$39,516	$38,040	($1,476)	-3.7
Hawaii	$65,975	$70,111	$4,136	6.3
Idaho	$42,177	$44,951	$2,774	6.6
Illinois	$42,408	$40,036	($2,372)	-5.6
Indiana	$47,453	$52,293	$4,840	10.2
Iowa	$44,371	$44,740	$368	0.8
Kansas	$38,365	$37,142	($1,224)	-3.2
Kentucky	$44,272	$41,094	($3,178)	-7.2
Louisiana	$39,516	$38,772	($744)	-1.9
Maine	$54,553	$57,758	$3,205	5.9
Maryland	$59,420	$63,458	$4,038	6.8
Massachusetts	$64,934	$65,059	$125	0.2
Michigan	$52,491	$57,070	$4,579	8.7
Minnesota	$42,948	$42,858	($90)	-0.2
Mississippi	$42,693	$43,657	$963	2.3
Missouri	$45,904	$47,055	$1,151	2.5
Montana	$37,823	$41,345	$3,522	9.3
Nebraska	$47,672	$48,431	$759	1.6
Nevada	$56,960	$59,491	$2,532	4.4
New Hampshire	$42,198	$46,695	$4,497	10.7
New Jersey	$63,822	$67,359	$3,537	5.5
New Mexico	$52,888	$53,711	$823	1.6
New York	$56,888	$54,359	($2,529)	-4.4
North Carolina	$49,894	$48,995	($899)	-1.8
North Dakota	$34,330	$36,358	$2,028	5.9
Ohio	$46,880	$48,098	$1,218	2.6
Oklahoma	$34,594	$34,888	$294	0.8
Oregon	$43,820	$45,720	$1,900	4.3
Pennsylvania	$56,090	$59,810	$3,720	6.6
Rhode Island	$72,846	$76,344	$3,498	4.8
South Carolina	$48,611	$49,601	$990	2.0
South Dakota	$38,364	$39,602	$1,237	3.2
Tennessee	$52,572	$51,289	($1,283)	-2.4
Texas	$47,749	$50,249	$2,500	5.2
Utah	$33,756	$34,817	$1,060	3.1
Vermont	$59,465	$65,122	$5,657	9.5
Virginia	$45,833	$50,737	$4,904	10.7
Washington	$33,273	$32,453	($820)	-2.5
West Virginia	$36,498	$39,679	$3,181	8.7
Wisconsin	$39,918	$39,472	($446)	-1.1
Wyoming	$79,794	$79,164	($630)	-0.8
US Total	$46,522	$47,343	$821	1.8

Sources: SHEEO State Higher Education Finance Survey 2008; NCES, IPEDS Completions Survey; U.S. Census Bureau, American Community Survey (Public Use Microdata Samples)


DELTA PROJECT
on Postsecondary Education Costs,
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MAKING
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