DOCUMENT RESUME

ED 352 892 HE 026 092

AUTHOR Layzell, Daniel T.; McKeown, Moary P.
TITLE State Funding Formulas for Higher Education: Trends and Issues. ASHE Annual Meeting Paper.
PUB DATE Oct 92
NOTE 47p.; Paper presented at the Annual Meeting of the Association for the Study of Higher Education (Minneapolis, MN, October 28-November 1, 1992).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Budgeting; *College Outcomes Assessment; Educational Equity (Finance); *Financial Support; *Higher Education; National Surveys; Peer Institutions; *Policy Formation; Resource Allocation; State Aid; State Colleges; State Universities; Trend Analysis
IDENTIFIERS *ASHE Annual Meeting; *Funding Formulas

ABSTRACT

This study examined changes in use of funding formulas for higher education among the states, the use of information about peer institutions in funding decisions, and the use of outcome or quality measures. The study used data from surveys of all states in 1984, 1988, and 1992. The most recent survey showed that 33 states were using formulas in 1988 and 1992, down from 36 in 1984. The number of states using peer data or comparisons in their funding formulas or guidelines grew from 3 in 1984 to 27 in 1988 to 28 in 1992. These peer data were used for salary determinations, for tuition and fee setting, and for determining funding for libraries. The number of states using outcome or quality measures declined from 20 in 1988 to 10 in 1992. Overall the data indicated that formulas are becoming more complex with more factors and the use of peer data. In addition, institutions are attempting to protect base budgets at the expense of using formulas as evidenced by the rapid decline in the number of states that incorporate quality or outcome measures in their formulas. In addition, states are attempting to address equity (both vertical and horizontal) concerns through funding formulas. (Contains 10 references.) (JB)

STATE FUNDING FORMULAS FOR HIGHER EDUCATION: Trends and Issues

Daniel T. Layzell
Arizona Joint Legislative Budget Committtee

Mary P. McKeown
Arizona State University

A Paper Presented at the
1992 Annual ASHE Conference
Minneapolis, Minnesota
October, 1992

Texas A&M University
Department of Educational
Administration
College Station, TX 77843
(409) 845-0393

ASSOCIATION FOR THE STUDY OF HIGHER EDUCATION

This paper was presented at the annual meeting of the Association for the Study of Higher Education held at the Marriott City Center, Minneapolis, Minnesota, October 29 - November 1, 1992. This paper was reviewed by ASHE and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC collection of ASHE conference papers.

ABSTRACT

STATE FUNDING FORMULAS FOR HIGHER EDUCATION
Trends and Issues

States have used funding formulas or guidelines for public higher education since the 1940s. Since that time, funding formulas have been in a state of constant evolution. This study examines changes in funding formula use among the states, the use of peers in funding decisions, and the use of outcome or quality measures, and is based on surveys of all states in 1984, 1988, and 1992. The most recent survey showed that 33 states were using formulas in 1988 and 1992, down from 36 in 1984. The number of states using peer data or comparisons in their funding formulas or guidelines grew from 3 in 1984 to 27 in 1988 to 28 in 1992. Peer data were used for salary determinations, for tuition and fee setting, and for determining funding for libraries. On the other hand, the number of states using outcome or quality measures declined from 20 in 1988 to 10 in 1992. This is particularly surprising given the recent emphasis by state policy makers regarding quality and assessment.

Three major findings and trends were that formulas are becoming more complex, institutions are attempting to protect base budgets at the expense of using formulas, and states are attempting to address equity concerns in funding institutions of higher education through funding formulas. Formulas are gaining complexity through the use of more formulas, more factors within formulas, and the use of peer data. It is likely that the purpose of this additional complexity is to better recognize differences among institutions within the states. Protection of base budgets is indicated by the rapid decline in the number of states that incorporate quality or outcome measures in their formulas, and thus reduce state restrictions and requirements for funds. Two types of equity, vertical and horizontal, appear to be addressed in the formulas.

STATE FUNDING FORMULAS FOR HIGHER EDUCATION

Trends and Issues

Introduction

The use of state funding formulas or guidelines for public higher education will reach the half-century mark in the 1990s. Despite this long history, it is clear that the only point upon which experts would agree is that there is no perfect formula. Originally envisioned as simply a means to distribute public funds for higher education in a rational and equitable manner, funding formulas have evolved over time into complicated methods with multiple purposes and outcomes. Although funding formulas provide some rationale and continuity in allocating state funds for higher education, users design and utilize formulas for many purposes. And while the genesis of funding formulas may lie in rational public policy formation, the outcome may not. Formulas are products of political processes, which means they result from compromise. Indeed, as noted by one observer of state higher education funding processes, "formula budgeting in the abstract, is neither good or bad, but there are good formulas and bad formulas" (Caruthers 1989, p. 1)

State governments provide substantial support for higher education every year. According to data collected by the Center for Higher Education at Illinois State University, states appropriated $40.1 billion in state tax funds for higher education

operating expenditures in fiscal year 1992 (Hines 1991). According to figures compiled by the National Conference of State Legislatures (NCSL), on average, state spending on higher education comprised 13 percent of total state general fund spending in FY 1992 (Eckl, Hutchison, and Snell 1991). This was second only to state spending on K-12 education (36.9%).

Without a doubt, however, state resources for higher education have become scarcer in recent years. Data from an annual survey of legislative fiscal officers conducted by the NCSL indicate that while the average percent change in total state general fund budgets between FY 1992 and FY 1993 was 4.8 percent, the average change in state general fund appropriations for higher education was 1.6 percent (Eckl, Hutchison, & Snell 1992). NCSL data from this same survey indicate that the annual percent change in state general fund appropriations for higher education was less than the annual percent change in total state general fund budgets in three of the past four years. According to the NCSL data and other reports, much of higher education's declining share is due to increased demands on state budgets by health programs (e.g., Medicaid) and corrections (prisons) programs. Thus, for those states employing funding formulas or guidelines, the importance of these formulas in the allocation of scarce(r) state resources has been magnified in recent years.

The objective of this study was threefold: (1) to determine the recent status of funding formula use among the states and to examine changes in formula usage over the last eight years; (2) to determine the extent to which funding formulas were used by those

states employing formulas or guidelines; and (3) to examine if and how states were using innovations in funding formulas such as incentive funding and quality/outcome measures.

State Funding Formulas and The Funding Literature

The Development of Funding Formulas

The terms "funding formulas" or "guidelines" refer to a mathematical basis for allocating dollars to institutions of higher education using a set of rates, ratios, and/or percentages derived from cost studies and peer analyses. Generally, states have provided operating funds using expenditure categories developed by the National Association of College and University Business Officers (NACUBO): Instruction, Research, Public Service, Academic Support, Student Services, Institutional Support, Operation and Maintenance of Plant, and Scholarships & Fellowships. There are two other NACUBO expenditure categories, Auxiliary Enterprises and Hospitals, but these typically are not state funded and thus are excluded from funding formulas (McKeown 1989). States use funding formulas for both the request and allocation of state resources to public universities, state colleges, community colleges and vocational institutes, and private institutions. Although there are similarities among states as to formula use, no two state funding formulas are exactly the same in structure (Caruthers 1989). States can have as few or as many formulas and funding categories as desired, and can use their formula for part or all of the total higher education budget.

A recent survey of 44 state university system offices found that of 37 respondents, 7 indicated that they used a formula, 13 indicated that they used an incremental method of funding, and 17 indicated that they used a combination of formula and incremental budgeting (AASCU 1991). The fact that the majority of the respondents were funded in an incremental manner for all or a portion of their budget may be indicative of institutional funding strategies aimed at protecting base budgets. However, all 7 formula systems and 9 of the combination formula/incremental systems indicated that between 50 percent and 100 percent of their education and general (E&G) expenditures were covered by a formula. This includes the NACUBO expenditure categories such as instruction, academic support (including libraries), and physical plant operations and maintenance (O&M). In addition, many systems indicated that enrollment growth was funded through a formula.

Caruthers (1989) notes that formulas have undergone constant evolution since their inception. He identified four long-term trends in formula use and development:

- More detailed budget categories (e.g., more subcategories of instruction)

- More budget control and monitoring of formula categories by state boards of higher education and legislative/ executive budget staff in response to increased demands for accountability

- More non-formula components such as categorical grants for equipment and economic development and incentives for quality improvement

- Lessening the importance of enrollments in formulas in response to anticipated enrollment declines

The trend toward more detailed budget categories within funding formulas is in part the result of the perennial concern that formulas fail to fully recognize differences among public colleges and universities through the reliance on institutional averages (e.g., average costs). The trend toward non-formula components may reflect a recognition among policy makers that some state higher education policy objectives may be met more effectively outside of the funding formula approach.

The Funding Formula Literature

In general, the treatment of higher education funding formulas in the literature has been primarily descriptive or mechanical in nature, unlike the relatively sophisticated analyses of elementary-secondary education funding formulas in the education finance literature. This may be due to the fact that such analyses have been used as the basis for challenging the equity and/or constitutionality of state support for K-12 education in the courts. As noted by McKeown, "The issues of student and taxpayer equity are not addressed very often in the literature of higher

education finance, and certainly are not driving forces in state funding formulas" (1989, pp. 102-103). It should be noted that state higher education funding formulas have taken on at least some legal significance in recent years as the federal government initiated higher education discrimination litigation in several states. All but one of the states against which a federal discrimination case was filed was a formula state, and some have argued that in these states funding formulas may serve to perpetuate past inequities that existed among previously segregated institutions of higher education (McKeown 1986).

The first significant work on funding formulas was conducted in the early 1960s by James Miller at the University of Michigan. Miller defined formulas as:

> "... an objective procedure for estimating the future budgetary requirements of a college or university through the manipulation of objective data about future programs, and relationships between programs and costs, in such a way as to derive an estimate of future costs." (1964, p.6)

He also noted that formulas had been developed as a means of achieving a sense of adequacy, stability, and predictability in institutional funding levels.

In the thirty years since Miller's work, the literature on state higher education funding formulas has become voluminous.

Interestingly, as the popularity of and experience in formula use among the states also grew, the perception in the literature of funding formulas as "objective procedures" shifted more to one of a mix of analytics and politics (Jones 1984 & Caruthers 1989). Caruthers defines a budget formula as a, "... subjective judgment expressed in mathematical terms ... which tends to be regarded as an objective evaluation ... when applied over a long period of time in a relatively mechanical way" (p. 3). Despite the volume of literature on this topic, one observer wryly notes:

> "... one senses an increasing lack of clarity regarding what formulas are designed to do, what their characteristics are, and how they are supposed to relate to state policy. Instead the focus has shifted to the mechanistic ... There is little evidence in the literature of a fundamental reassessment of formulas..." (Jones 1984, p. 46).

In short, despite concerns about current formula usage, researchers and states have generally attempted to deal with these problems in a disjointed fashion.

Data Sources and Methodology

This study is based on data collected by mail and telephone surveys of the state governing or coordinating boards for higher education in 1984, 1988, and 1992. The most recent survey was sent directly to the designated State Higher Education Finance Officer (SHEFO) in each state, the District of Columbia, and Puerto Rico.

Survey responses were obtained for all states, D.C., and Puerto Rico. A major caveat in this survey is that what one state considers a formula or guideline may not be considered as such by another state or even by individuals within the same state. Indeed, in some states one respondent to the survey replied that their state did not use formulas while another respondent from the same state stated they did.

Aside from determining whether or not a state used a funding formula for part or all its higher education budget, the most recent survey collected information on a broad range of issues related to funding formulas including:

- How long the state had used funding formulas or guidelines
- For what purpose(s) and sectors of higher education formulas were used
- How formulas were developed
- If the formula were under revision or was scheduled to be revised in the near future
- If peer data were used in formulas and how peers were developed

- If incentive funding (e.g., matching funds) were used in allocating resources

- If quality/outcome measures were used in formulas

Analysis of the Data

Comparison of Formula Usage in 1984, 1988, and 1992

Overall, the number of states using formulas dropped from 36 in 1984 to 33 in 1988 where it remained in 1992 (see Table 1). However, during this period, some states which had reported not using formulas in 1984 or 1988 (i.e., Idaho) did report using formulas or guidelines in 1992. Further, 18 of the 33 states that reported using formulas or guidelines in 1992 indicated that they were in the process of or planning to revise their funding formulas or guidelines. Of the 18 states that indicated they did not currently use formulas or guidelines, only 1 (Massachusetts) indicated that they were studying the implementation of a funding formula. From a geographic standpoint, of the 33 states that reported formula/guideline usage in 1992 all but five (Connecticut, Illinois, Maryland, Ohio and Puerto Rico) were located either in the Southern/Southeastern U.S. or west of the Mississippi River (see Figure 1).

As shown in Table 1, the number of states using peer data or comparisons in their funding formulas or guidelines grew from 3 in

1984 to 27 in 1988 to 28 in 1992. Of these states, 26 used peer data for salary purposes, 17 for tuition and fee setting, 10 for overall funding levels (e.g., per FTE funding), and 6 for determining funding for libraries. Other peer data usage included plant O&M funding and faculty credit hour production.

The number of states that reported using quality or outcome measures in funding formulas or guidelines grew from 14 in 1984 to 20 in 1988, but dropped to 10 in 1992. These measures have been used in two ways: by linking levels of appropriations to outcomes; and by setting aside state funds to encourage "desirable" institutional behavior (Hines 1988). The decline from 1988 to 1992 is surprising given the recent emphasis by state policymakers regarding "quality" and assessment. However, some of the states that responded "no" to this question in the 1992 survey indicated that they were in the process of developing quality or outcomes measures.

The 33 states that indicated formula/guideline usage in the budget process also reported on what sectors of higher education (e.g., universities, community colleges, etc.) were affected by the formulas/guidelines (see Table 2). Seven states indicated that all sectors of higher education were funded through one formula while five states indicated that all sectors were formula funded, but each through its own formula. For states that use formulas for certain sectors only, the most frequently reported sector was the universities (20/33) followed by state colleges and community

colleges (both 14/33), vocational/technical institutes (5/33) and private institutions (2/33). The breadth of institutional types and funding patterns/arrangements within a state have a significant impact on the extent of formula/guideline usage.

Points in The Budget Process When Funding Formulas are Used

States were asked at what point funding formulas or guidelines were used in the budget process. Virtually all of the states that reported using formulas (32/33) used them in making recommendations to the Governor and/or Legislature. (See Table 3.) Formulas were used less in the development of the Governor's Budget (15/33), legislative staff budget (14/33), and the final appropriation (16/33). Thirteen states reported using formulas to allocate appropriations.

Seven of the 33 states reported using formulas for mid-year reduction or reversion exercises. Only 3 states (Arkansas, Illinois, and Tennessee) used formulas or guidelines at all 6 stages of the budget and resource allocation process. However, 20 of the 33 states reported using formulas or guidelines at 2 or more of the 6 stages of the budget process.

Formula Approaches and Base Factors

All funding formulas are, in fact, mathematically similar. There is variety among the states in the number of formulas used to

allocate funds and in the functional or budget areas for which formulas are used. The formulas reflect one of two approaches: the all-inclusive approach, where the total for the budget area is determined by one calculation; and the itemized approach, where more than one calculation or formula is used in each budget area. Formulas use base factors that can be classified as head count, number of positions, square footage, or full-time equivalent students.

Computational Methods

Three computational methodologies are used in funding formulas: rate per base factor unit (RPBU), percentage of base factor (PBF) and the base factor-position ratio with salary rates (BF-PR/SR). The rate per base factor unit method starts with an estimate of a given base factor, such as credit hours or full-time equivalent students, and then multiplies that factor by a specific unit rate. The unit rates generally have been determined previously by cost studies and can be differentiated by discipline, level of instruction, and type of institution.

The percentage of base factor method assumes that there is a specific relationship between a certain base factor (for example, faculty salaries) and other areas (for example, departmental support services). The percentage of base factor method also can be differentiated (Miller, 1964).

The base factor-position ratio with salary rates method is based on a predetermined optimum ratio between a base factor and the number of personnel, for example, a student-faculty ratio, or credit hour per faculty member ratio. The resulting number of positions determined at each salary level is multiplied by the salary rate for that level, and summed to give a total budgetary requirement. For four-year institutions this is the most complex methodology.

Differentiation

Formulas may differentiate among academic disciplines (e.g., social sciences, education, agriculture), levels of enrollment (freshman and sophomore, junior and senior, masters, professional and doctoral), and type of institution (community college, comprehensive institution, research university). Many states have found it necessary to introduce factors that differentiate among institutions in funding formulas because of differing missions and the mix of program offerings.

The number of formulas used by each of the states in each of the eight functional NACUBO areas is displayed in Table 4. Only eight functional areas are displayed because Hospitals and Auxiliary Enterprises are two areas that are not included in what are called "Educational and General Expenditures" (E and G). E and G expenditures are those that result from expenditures for the three basic missions of colleges and universities: instruction,

research, and public service.

Among the states there is some variety in the functional areas for which funding formulas are used. Arkansas has at least one formula for each functional area while West Virginia, on the other hand, has only one basic formula. Missouri has formulas for the areas of Instruction, Academic Support, Institutional Support, and Plant only. Each of the states has at least one computational formula in these four areas. Only Arkansas, Kentucky, Mississippi, Montana, South Carolina, and Virginia have a formula for Scholarships and Fellowships, while Alabama, Arkansas, Florida, Kentucky, South Carolina, and Tennessee are the only states with formulas for Public Service expenditures.

Texas employs 15 formulas to compute budget requirements for E and G expenditures and South Carolina uses 12. On the other end of the continuum Idaho and Louisiana use only 1 formula. In twelve of the states, more than one computational formula is used to determine Academic Support needs. Since most states have a separate formula for determining Library needs, the Academic Support area, which includes Libraries, Academic Computing Support, and Academic Administration, usually will have expenditure needs computed by more than one formula. Academic Support is an area for which the itemized approach generally is used.

State funding formulas can also provide for equity among institutions depending on how they are structured. Two types of

equity achieved through formulas are horizontal equity and vertical equity. Horizontal equity is defined as the equal treatment of equals, while vertical equity is defined as the unequal treatment of unequals.

In the following sections, the use of funding formulas by the states in each of the E & G expenditure categories will be discussed.

Instruction. This category includes all expenditures for credit and non-credit courses; for academic, vocational, technical, and remedial instruction; for remedial and tutorial instruction; and for regular, special, and extension sessions. Excluded are expenditures for academic administration when the primary assignment is administration, i.e., deans (NACUBO, 1988).

Each of the states that uses formulas has at least one formula for instructional allocations. Summary information on the instruction formulas used by the states is displayed in Table 5. Since the instruction program is the major component of expenditures at institutions of higher education, formulas for this activity are quite complex. Most states provide differential funding for activities within the instruction program to recognize differences in costs by level of instruction and among academic disciplines.

In the formula(s) for instruction, the majority of the states recognize differences in institutional roles and missions, in the

mix of classes by level and by academic discipline, and in teaching method. Explicitly, the states have attempted to distribute in an equitable manner state funds for the instructional operations of public institutions within the state.

Since these formula allocations provide varying amounts based on enrollments by level and discipline, each institution in the state will receive differing total amounts for instruction and different amounts per student from the formulas. Moreover, the recognition of the differences promotes achievement of vertical equity, i.e., the unequal treatment of unequals.

Research. Included in this category are expenditures for activities designed to produce research outcomes (NACUBO, 1988). Alabama, Arkansas, Florida, Kentucky, Mississippi, Oklahoma, Oregon, South Carolina, Texas, and Tennessee each have a formula that provides funds for the research functional area (See Table 6). Florida's formula is complex and involves computations related to the magnitude of research activity engaged in at each institution. The number of research positions is calculated based on a ratio by specific department, and is then multiplied by a specified salary rate. Kentucky uses a formula that calculates a level of support that recognizes differing roles and missions in research among institutions.

Oklahoma provides a specified percent of instructional expenditures for research, depending upon institutional type, while

South Carolina allocates 25 percent of the prior year sponsored and non-general fund research expenditures. Arkansas allocates a percentage of teaching salaries for research, while Texas provides an amount equal to the number of full-time equivalent faculty times $1,300. Alabama's budget formula for research provides two percent of Instruction and Academic Support allocations, plus five percent of sponsored research dollars expended in the last year for which actual data were available.

Most of these formulas incorporate horizontal and/or vertical equity features. Formulas that provide a set amount per position (e.g., Texas) or matching funds for each dollar of sponsored research (e.g., Alabama and South Carolina) provide horizontal equity, i.e., the equal treatment of equals. Formulas that provide research support based on institutional type (e.g., Kentucky and Oklahoma) or on a percentage of instructional or other expenditures (e.g., Arkansas) meet the goals of vertical equity, i.e., the unequal treatment of unequals.

Public Service. This category includes funds expended for activities that primarily provide noninstructional services to individuals and groups external to the institution (NACUBO, 1988). Among the states, Alabama, Arkansas, Florida, Kentucky, Oklahoma, and South Carolina use a formula approach for the funding of Public Service activities (see Table 7). Arkansas specifies a percentage of teaching salaries to be allocated for Public Service. In Florida, public service positions are generated based on ratios

specific to disciplines, and then multiplied by a salary amount per position. Oklahoma provides three to four percent of instructional allocations for public service, depending upon institutional type. South Carolina provides 25 percent of prior year sponsored and non-general fund public service expenditures, while Alabama's funding formula for public service is two percent of the combined allocations for instruction and academic support.

Academic Support. Table 8 displays summary information on the Academic Support formulas used by the states. The Academic Support category includes funds expended to provide support services for the institution's primary missions of instruction, research, and public service. The area includes expenditures for libraries, museums, and galleries; demonstration schools; media and technology, including computing support; academic administration, including deans; and separately budgeted course and curriculum development (NACUBO, 1988). However, costs associated with the office of the chief academic officer of the campus are included in the Institutional Support category.

To fund the library component of the academic support category, Alabama, Arkansas, Florida, Georgia, Mississippi, Missouri, Montana, New Mexico, Ohio, Oklahoma, Oregon, South Carolina, Texas, and Virginia have at least one formula. South Carolina provides ten percent of total instructional costs while Texas allocates an amount per credit hour differentiated by level of instruction.

Arkansas, Florida, Missouri, South Carolina, Texas, and Virginia each have at least one formula for other components of the academic support category. South Carolina calculates an amount based on a percentage of instructional costs. Since the instructional cost allocation includes vertical equity components, Academic Support calculations based on instruction implicitly also include vertical equity components to provide an unequal amount for unequals.

Institutional Support. This category includes expenditures for the central executive level management of the institution, fiscal operations, administrative data processing, employee personnel services, space management, planning, development, and other support services (NACUBO, 1988). Table 9 displays information on the institutional support formulas used by the states. Alabama, Arkansas, Kansas, Kentucky, Mississippi, Missouri, Oklahoma, South Carolina, and West Virginia multiply a specified percentage by all other E and G expenditures to calculate institutional support needs. Florida includes some differentiation and a base amount to recognize economies of scale and complexity of operation. Texas and Virginia multiply a specified rate by a measure of enrollment to determine institutional support amounts. All of these methods achieve vertical equity given that unequals are treated unequally.

Plant Operations and Maintenance. Table 10 displays information on the plant formulas in use by the states. The plant

category contains all expenditures for current operations and maintenance of the physical plant, including building maintenance, custodial services; utilities, landscape and grounds, and building repairs. Not included are expenditures made from plant fund accounts, or expenditures for hospitals, auxiliary enterprises, or independent operations (NACUBO, 1988).

South Carolina uses four formulas and Texas uses six formulas to calculate detailed plant needs. These complicated methods differentiate among types of building construction, usage of space, and size of institution. Horizontal equity is achieved in that equal dollars are provided for equal components of the physical plant. Moreover, differences among buildings are recognized and the unequal costs of maintaining, cooling, heating, and lighting each building are built into the formulas, resulting in vertical equity.

Student Services. This expenditure category includes funds expended to contribute to a student's emotional and physical well-being and intellectual, social, and cultural development outside of the formal instruction process. This category includes expenditures for student activities, student organizations, counseling, the registrar's and admissions offices, and student aid administration (NACUBO, 1988) (see Table 11).

The Student Services formulas used by Alabama, Arkansas, Kentucky, South Carolina, and Texas provide a different amount per

headcount or FTE student. As the size of the institution increases, the rate per student decreases to recognize economies of scale. The formula implicitly does this by adding an amount per weighted student credit hour to a base. Such a calculation inherently recognizes economies of scale.

Each of these formulas attempts to provide vertical equity in the distribution of resources by allocating unequal amounts to institutions of unequal size.

Scholarships and Fellowships. This category encompasses all expenditures for scholarships and fellowships, including prizes, awards, federal grants, and tuition and fee waivers awarded to students for which services to the institution are not required (NACUBO, 1988). Only Arkansas, Kentucky, Mississippi, Montana, South Carolina, and Virginia calculate an allocation for Scholarships and Fellowships (see Table 12). In each case, this amount is equal to a dollar value times the number of enrolled students, full-time equivalent students, or credit hours. These approaches all provide horizontal equity but fail to provide vertical equity in that neither the cost to the student nor the institution nor the student's ability to pay are considered in the formula.

Discussion of Results and Conclusions

The data from this and the previous surveys indicate three

major findings and trends:

- Formulas are becoming more complex;
- As state support for higher education stagnates, institutions are attempting to protect their base budgets, often at the expense of funding formulas.
- States are attempting to address equity concerns in funding institutions of higher education through formulas.

These three findings are discussed in detail below.

Increased complexity. As indicated earlier in this paper, Caruthers (1989) had identified increased complexity in funding formulas as one of several long-term trends in formula development and usage. One of the major ways in which formulas are gaining complexity found in this analysis is through the number of formulas used by and within the functional categories (e.g., instruction) and the differentiation within these formulas. The purpose of this added complexity is clear: to recognize differences as to role and mission among institutions and different costs among academic programs. Another way in which formulas are becoming more complex is through the increasingly widespread use of peer analysis/data. Again, the purpose of using such peer data is to better account for differences in role and mission among institutions.

From a technical or public policy standpoint, this increased complexity is good. Formulas that more closely model reality or at least that which is considered reality are always preferable to

more simplistic models. However, in designing and revising funding formulas, state and institutional budgeteers should always be mindful of legislators, governors, and the other state policymakers who are the ultimate "consumers" of these formulas. Funding formulas, or at least the major components and results of the formulas, should be understandable to those making funding decisions for higher education at the state level.

Protection of base budgets. It also appears as if institutions are attempting to protect their base budgets. One indicator of this is the rapid decline in the number of states that incorporate quality or outcome measures in their formulas. These performance measures are typically tied to incentive or additional funding for institutions. As state funding for higher education becomes scarcer, institutions of higher education are understandably concerned about maintaining the funding they have with minimum restrictions and requirements from the state. Performance measures add a level of uncertainty to already uncertain funding for higher education. The AASCU (1991) study also suggested that institutions may develop funding strategies that are aimed at protecting base budgets.

Achieving equity through formulas. The final major finding of this study is that states appear to be attempting to address equity concerns among and within institutions through their funding formulas. For many states, especially in the south, this is directly related to desegregation orders filed by the federal

government. It is also possible that these equity features are spillovers from state concerns with equity in K-12 funding formulas. As was discussed previously, two types of equity are achieved through formulas: horizontal (equal treatment of equals) and vertical (unequal treatment of unequals). The analysis of the formulas indicated that current formulas incorporated both horizontal and vertical equity features. An added equity dimension is the increased use of peer comparisons in formulas. This provides for equity not just within the state but also with similar institutions in other states.

In conclusion, while it does not appear that funding formula usage will necessarily grow, it does appear that formula usage will continue to become more sophisticated. If state resources for higher education remain constrained, it is likely that formula usage and refinement will become more creative in the 1990s. Institutions probably will attempt to devise ways in which their base budgets are held harmless. However, it is also likely that legislators, governors, and other state policymakers in their concern for productivity and quality in higher education will look to base budgets for savings and increased efficiencies in institutional operations. It is likely that they will look to funding formulas as a means to meet these goals.

References

AASCU (1991). A study of the funding process for state colleges and universities. Washington, DC: American Association of State Colleges and Universities.

Caruthers, J.K. (1989, November). The impact of formula budgeting on state colleges and universities. Paper presented at the meeting of the American Association of State Colleges and Universities, San Francisco, CA.

Eckl, C.L., A.M. Hutchison, and R.K. Snell. (1991, October). State budget and tax action: 1991 (Legislative Finance Paper #79). Denver, CO: National Conference of State Legislatures.

Eckl, C.L., A.M. Hutchison, and R.K. Snell. (1992, July). State budget and tax action 1992 (Preliminary Report). Denver, CO: National Conference of State Legislatures.

Hines, E. R. (1988). Higher Education and State Governments ASHE-ERIC Higher Education Report No. 5. Washington, D.C.: Association for the Study of Higher Education.

Hines, E. R. (1991). State Appropriations for Higher Education Operating Expenditures, 1991-92. Washington, D.C.: AASCU.

Jones, D. (1984). Higher education budgeting at the state level: concepts and principles. Boulder, CO: National Center for Higher Education Management Systems.

Miller, J.L. (1964). State budgeting for higher education: the use of formulas and cost analysis. Ann Arbor, MI: Institute of Public Administration, University of Michigan.

McKeown, M.P. (1986). Funding Formulas. In M.P. McKeown and K. Alexander (Eds.), Values in conflict: funding priorities for higher education (pp. 63-90). Seventh Annual Yearbook of the American Education Finance Association. Cambridge, MA: Ballinger Publishing Company.

-----(1989, Summer). State funding formulas for public institutions of higher education Journal of Education Finance, 15, 101-112.

2-JEF

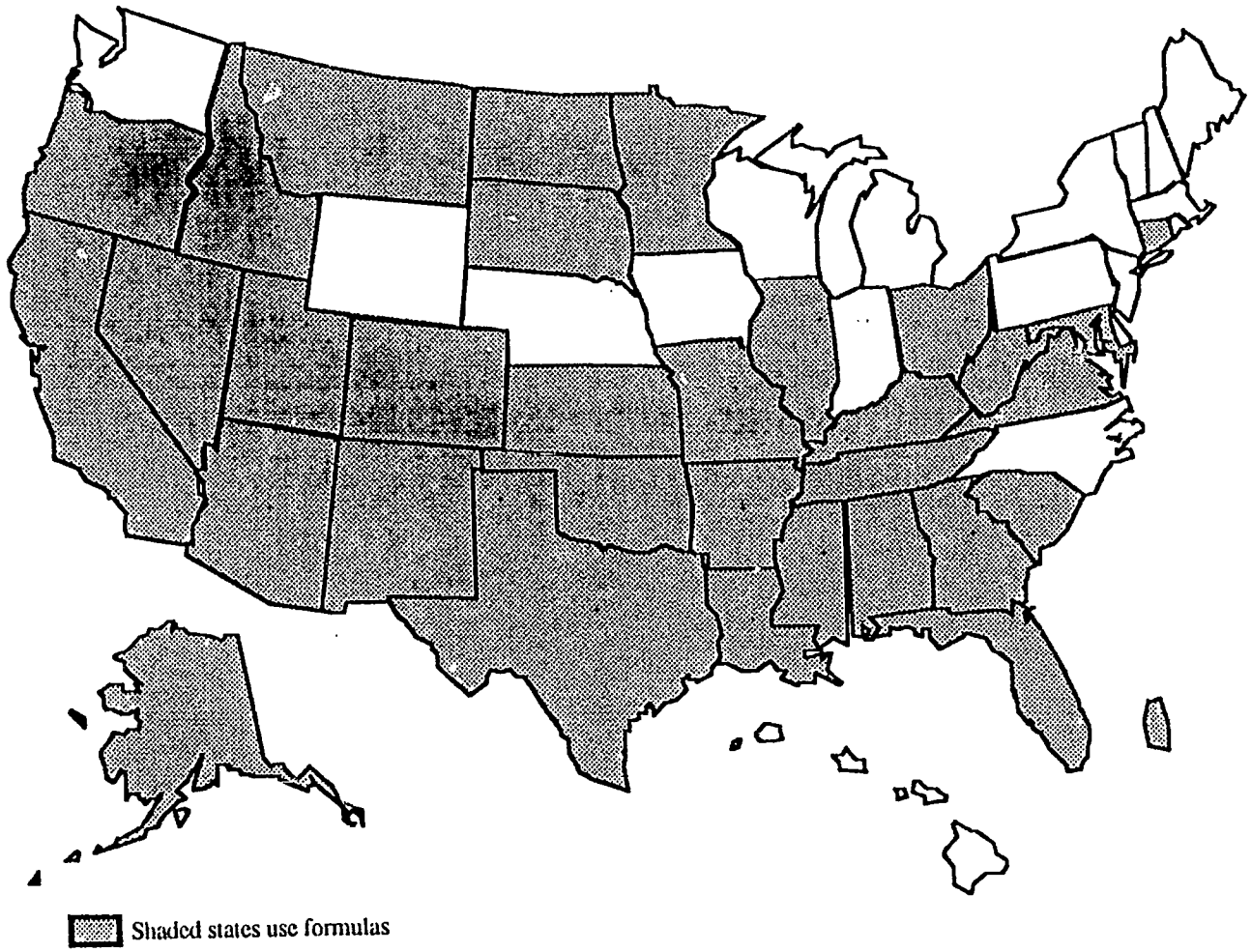

Figure 1
STATES USING FORMULAS IN 1992

TABLE 1
COMPARISON OF FUNDING FORMULA USAGE AMONG THE STATES
1984, 1988, & 1992

State	Using Funding Formulas/ Guidelines			Use Peer Analysis/ Comparisons in Formulas			Use Quality/Outcome Factors In Formulas		
	1984	1988	1992	1984	1988	1992	1984	1988	1992
Alabama	x	x	x		x	x			
Alaska			x						
Arizona	x	x	x		x				
Arkansas	x	x	x		x	x		x	
California	x	x	x			x		x	
Colorado	x	x	x		x			x	
Connecticut	x	x	x		x	x		x	
Delaware					x				
Florida	x	x	x		x	x	x	x	
Georgia	x	x	x		x		x	x	
Idaho			x				x	x	
Illinois	x	x	x	x	x	x			
Indiana						x			
Iowa						x			
Kansas	x	x	x		x	x		x	
Kentucky	x	x	x	x	x	x	x	x	x
Louisiana	x	x	x		x	x	x	x	
Maryland	x	x	x				x	x	
Massachusetts	x	x						x	
Michigan	x								
Minnesota	x	x	x				x	x	
Mississippi	x	x	x		x	x			x
Missouri	x	x	x			x	x	x	x
Montana	x	x	x		x	x			
Nebraska		x				x			
Nevada	x	x	x		x		x		
New Jersey	x						x	x	x
New Mexico	x	x	x		x				
New York	x								
North Carolina						x			x
North Dakota	x	x	x		x	x			x
Ohio	x	x	x				x	x	x
Oklahoma	x	x	x		x	x			
Oregon	x	x	x		x	x			
Pennsylvania	x	x							
Rhode Island						x			
South Carolina	x	x	x		x	x			
South Dakota	x	x	x						
Tennessee	x	x	x		x	x	x	x	x
Texas	x	x	x		x	x		x	
Utah		x	x		x	x			
Virginia	x	x	x		x	x	x	x	x
Washington	x			x	x	x	x	x	
West Virginia	x	x	x		x	x			
Wisconsin	x				x	x			
Puerto Rico			x						x
N	36	33	33	3	27	28	14	20	10

TABLE 2
SECTORS AFFECTED BY FORMULA /GUIDELINE USAGE

State	All Under One Formula	All, But Different Formulas For Each Sector	Universities	State Colleges	Community Colleges	Vocational/ Technical Institutes	Private Institutions
Alabama			x	x	x	x	
Arizona			x		x		
Arkansas			x	x	x		
California 1/		x					
Colorado	x						
Connecticut			x	x	x	x	
Florida			x				
Georgia	x						
Idaho			x	x			
Illinois			x		x		x
Kansas			x				
Kentucky			x		x		
Louisiana			x	x	x		
Maryland		x					
Minnesota	x						
Mississippi			x	x			
Missouri			x	x	x		
Montana			x	x	x		
Nevada		x					
New Mexico 2/			x	x	x	x	
North Dakota	x						
Ohio	x						
Oklahoma		x					
Oregon			x	x			
South Carolina 3/	x						
South Dakota	x						
Tennessee 4/			x	x	x	x	x
Texas			x	x	x	x	
Utah		x					
Virginia			x	x	x		
West Virginia			x	x	x		
Puerto Rico			x				
N	7	5	20	14	14	5	2

1/ CALIFORNIA - Public institutions only.
2/ NEW MEXICO - There are two formulas: one for 4-Year institutions and one for 2-Year institutions.
3/ SOUTH CAROLINA - Universities, State Colleges, and Vocational /Technical Institutes only.
4/ TENNESSEE - Universities, State Colleges, and Community Colleges funded through 1 formula; Vocational /Technical Institutes and Private Institutions have separate formulas.

Note: **No detail provided for Alaska**

TABLE 3
POINTS IN THE PROCESS WHEN FUNDING FORMULAS/GUIDELINES ARE USED

State	Recommendation To Governor & Legislature	Governor's Budget	Legislative Staff Budget	Final Appropriations	Allocation of Appropriations	Mid-Year Budget Reductions	N
Alabama	x					x	2
Alaska	x						1
Arizona	x	x	x	x		x	5
Arkansas	x	x	x	x	x	x	6
California	x						1
Colorado	x				x		2
Connecticut	x						1
Florida	x						1
Georgia	x	x	x				3
Idaho	x	x	x		x		4
Illinois	x	x	x	x	x	x	6
Kansas	x						1
Kentucky	x	x	x	x		x	5
Louisiana	x						1
Maryland	x	x					2
Minnesota	x			x			2
Mississippi	x			x	x	x	4
Missouri	x						1
Montana	x	x	x	x	x		5
Nevada	x	x	x	x			4
New Jersey	x						1
New Mexico	x	x	x	x			4
North Dakota							3
Ohio	x	x	x	x	x		5
Oklahoma	x						1
Oregon	x				x		2
South Carolina	x				x	x	3
South Dakota	x	x	x	x	x		5
Tennessee	x	x	x	x	x	x	6
Texas	x	x	x	x	x		5
Utah	x						1
Virginia	x	x	x	x			4
West Virginia	x				x		2
Puerto Rico							1
N	32	15	14	16	13	7	

TABLE 4
NUMBER OF FORMULAS USED BY THE STATES IN 1992 BY FUNCTIONAL AREA

State	Instruction	Research	Public Service	Academic Support	Institutional Support	Plant Operations	Student Services	Scholarships & Fellowships
Alabama	1	1	1	2	1	2	1	
Arizona	x					2		
Arkansas	3	1	1	2	1	2	1	1
California	2x	x	x	x	x	x	x	
Colorado	x							
Connecticut	2			1		5		
Florida	2	x	x	3	1	3	1	
Georgia	1	x		1	x	1	x	
Idaho	x							
Illinois	x							
Kansas	x	x	x	x	x	x	x	
Kentucky	2	1	1	1	1	1	1	1
Louisiana	x	x		x	x	x	x	
Maryland	x	x		x				
Minnesota	x	x						
Mississippi	2	1		2	1	2	1	1
Missouri	1			2	1	1	x	
Montana	2	x	x	x	x	x	x	1
Nevada	1			1	1	1	1	
New Mexico	1			2	1	2	1	
North Dakota	1			x	x	3	x	
Ohio	1			x	x	3	x	
Oklahoma	1	1	1	2	1	1	1	
Oregon	4	1		5	2	5	1	
South Carolina	1	1	1	2	1	4	1	1
South Dakota	1							
Tennessee	1	1	1	2	1	1	1	
Texas	3	1		2	1	6	2	
Virginia	1			4	1	2	1	
West Virginia	x	x	x	x	x	x	x	

x = in one formula.

Note: Although Alaska and Puerto Rico reported using formulas, no details on the formula(s) used were p in either state's survey response.

TABLE 5
INSTRUCTION FORMULAS

State	Calculation Method			Approach		Base			Differentiation			Costs	
	RPBU	PBF	BF-PR/SR	All-Inclusive	Itemized	Credit Hours	Head Count	FTES/FTEF	Discipline	Level	Type of Instit.	Fixed	Variable
Alabama	x			x		x			x	x			x
Arizona			x		x	x		x					x
Arkansas			x		x	x		x	x	x	x		x
California			x		x	x		x	x	x	x	x	x
Colorado			x		x	x			x	x	x		x
Connecticut		x	x		x	x		x	x	x	x	x	x
Florida	x		x		x	x			x	x	x		x
Georgia			x		x	x		x	x	x			x
Idaho	x			x		x			x	x	x		x
Illinois			x		x	x			x	x	x		x
Kansas	x				x	x			x	x	x		x
Kentucky	x				x	x		x	x	x	x		x
Louisiana	x				x	x			x	x	x		x
Maryland	x				x	x			x	x		x	x
Minnesota			x		x	x		x	x	x			x
Mississippi		x	x		x	x			x	x			x
Missouri	x				x	x			x	x			x
Montana	x		x		x	x		x	x	x			x
New Mexico			x		x	x		x	x	x	x		x
North Dakota			x		x	x		x		x			x
Ohio	x					x			x	x	x		x
Oklahoma			x	x				x	x	x	x		x
Oregon	x	x	x		x	x		x	x	x	x		x
South Carolina		x	x		x	x		x	x	x	x		x
South Dakota		x	x		x	x		x	x	x			x
Tennessee		x	x			x		x	x	x	x		x
Texas	x	x			x	x	x		x	x	x	x	x
Virginia			x		x			x	x	x	x		x
West Virginia			x	x		x		x	x	x	x		x

39

TABLE 6
RESEARCH FORMULAS

State	Calculation Method			Approach		Base			Differentiation			Costs	
	RPBU	PBF	BF-PR/SR	All-Inclusive	Item-ized	Credit Hours	Resrch. Funding	Doc. Degrees	Disci-pline	Level	Type of Instit.	Fixed	Vari-able
Alabama		x		x		x			x	x			x
Arkansas		x	x		x	x			x	x	x		x
Florida			x		x	x			x	x	x		x
Kentucky		x		x			x						x
Mississippi			x		x			x	x				x
Oklahoma			x	x				x	x	x	x		x
Oregon		x		x							x	x	x
South Carolina		x		x			x						x
Tennessee		x			x						x		x
Texas		x		x			x						x

TABLE 7
PUBLIC SERVICE FORMULAS

State	Calculation Method			Approach		Base			Differentiation			Costs	
	RPBU	PBF	BF-PR/SR	All-Inclusive	Item-ized	Credit Hours	Head Count	FTES/ FTEF	Disci-pline	Level	Type of Instit.	Fixed	Vari-able
Alabama		x		x		x			x	x			x
Arkansas		x	x		x	x		x	x	x	x		x
Florida			x		x	x			x	x	x		x
Kentucky		x			x	x			x	x	x	x	x
Oklahoma		x		x		x					x		x
South Carolina		x		x									x
Tennessee		x		x							x	x	x

TABLE 8
ACADEMIC SUPPORT FORMULAS

State	Calculation Method			Approach			Base		Differentiation			Costs	
	RPBU	PBF	BF-PR/SR	All-Inclusive	Item-ized	Credit Hours	Head Count	FTES/FTEF	Disci-pline	Level	Type of Instit.	Fixed	Vari-able
Alabama	x	x			x	x			x	x			x
Arkansas	x				x			x			x	x	x
California			x		x	x			x	x	x		x
Connecticut	x						x	x		x	x	x	x
Florida	x		x		x	x	x	x	x	x	x		x
Georgia		x			x	x			x	x			x
Kansas	x	x			x	x			x	x		x	x
Kentucky	x	x			x	x			x	x	x	x	x
Maryland	x			x			x				x	x	x
Mississippi	x	x			x	x	x				x	x	x
Missouri	x				x	x			x	x			x
Montana	x			x									x
New Mexico	x	x			x	x			x	x	x		x
Oklahoma			x	x				x	x	x	x		x
Oregon	x	x	x		x	x	x	x		x		x	x
South Carolina		x			x	x							x
Tennessee	x	x			x	x			x	x			x
Texas	x	x			x	x	x			x		x	x
Virginia			x		x	x		x	x	x	x	x	x

TABLE 9
INSTITUTIONAL SUPPORT FORMULAS

State	Calculation Method			Approach			Base		Differentiation			Costs	
	RPBU	PBF	BF-PR/SR	All-Inclusive	Item-ized	Credit Hours	Head Count	FTES/FTEF	Disci-pline	Level	Type of Instit.	Fixed	Vari-able
Alabama		x		x		x			x	x			x
Arkansas		x		x							x		x
California			x		x	x			x	x	x		x
Florida		x			x							x	x
Georgia		x		x		x			x	x			x
Kentucky		x			x	x			x	x	x		x
Mississippi		x		x		x			x	x	x		x
Missouri	x				x	x			x	x			x
Montana	x			x									
Nevada													x
New Mexico		x		x		x			x	x	x	x	x
North Dakota	x				x	x		x			x		x
Oklahoma			x	x				x	x	x	x		x
Oregon	x	x			x		x	x			x	x	x
South Carolina		x		x		x						x	x
Tennessee		x		x								x	x
Texas	x			x		x						x	x
Virginia			x		x			x	x	x	x		x
West Virginia			x	x		x		x	x	x	x		x

TABLE 10
PLANT FORMULAS

State	Calculation Method			Approach			Base		Differentiation			Costs	
	RPBU	PBF	BF-PR/SR	All-Inclusive	Item-ized	GSF	Type of Const.	Acres	Type of Const.	Level	Type of Instit.	Fixed	Vari-able
Alabama	x				x	x			x	x			x
Arizona	x				x		x						x
Arkansas	x				x	x		x					x
California		x	x		x	x	x	x			x		x
Connecticut	x	x	x		x	x	x	x	x				x
Florida	x				x	x	x				x		x
Georgia	x				x	x							x
Kentucky	x			x	x	x		x			x		x
Louisiana	x				x	x							
Mississippi	x				x	x							x
Missouri	x				x	x			x	x			x
New Mexico	x		x		x	x							x
North Dakota	x	x			x	x	x		x				
Ohio	x				x	x		x					x
Oklahoma			x	x				x	x	x	x		x
Oregon	x	x	x		x	x	x	x	x		x		x
South Carolina	x	x	x		x	x	x	x	x		x		x
Tennessee	x			x		x							x
Texas	x	x	x		x	x	x		x			x	x
Virginia			x		x	x							x
West Virginia			x	x		x		x	x	x	x		x

TABLE 11
STUDENT SERVICES FORMULAS

State	Calculation Method			Approach		Base			Differentiation			Costs	
	RPBU	PBF	BF-PR/SR	All-Inclusive	Itemized	Credit Hours	Head Count	FTES/FTEF	Discipline	Level	Type of Instit.	Fixed	Variable
Alabama	x			x			x					x	x
Arkansas	x				x		x	x		x		x	x
California			x		x	x			x	x	x		x
Florida	x				x		x	x		x	x		x
Georgia		x			x	x			x	x			x
Kentucky	x				x		x					x	x
Mississippi	x				x		x	x				x	x
Missouri	x				x	x			x	x			x
New Mexico	x		x		x		x					x	x
Oklahoma			x	x				x	x	x	x		x
Oregon	x						x				x	x	x
South Carolina	x				x	x	x					x	x
Tennessee	x			x			x	x					x
Texas	x	x			x		x					x	x
Virginia			x		x			x					x

TABLE 12
SCHOLARSHIPS AND FELLOWSHIPS FORMULAS

State	Calculation Method			Approach		Base		Costs	
	RPBU	PBF	BF-PR/SR	All-Inclusive	Itemized	Tuition	Head Count	Fixed	Variable
Arkansas		x		x		x			x
Kentucky	x	x			x	x			x
Mississippi		x		x		x			x
Montana		x			x	x			x
South Carolina	x			x			x	x	x
Virginia	x			x			x		x