

# Grapevine

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## TIMELY DATA CIRCULATED WHILE CURRENT

Reports on state tax legislation; state appropriations for universities, colleges  
and community colleges; legislation affecting education beyond the high school.

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## GRAPEVINE

Edward R. Hines, Editor

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Table 1. RANKINGS OF THE STATES ON APPROPRIATIONS OF STATE TAX FUNDS FOR OPERATING EXPENSES OF HIGHER EDUCATION, PER STUDENT (TWO VERSIONS), FY1989-90

| States         | Appropriations<br>(In \$1,000s) | Approps/<br>Total Enroll | Rank | Approps/<br>Public Enroll | Rank |
|----------------|---------------------------------|--------------------------|------|---------------------------|------|
| (1)            | (2)                             | (3)                      | (4)  | (5)                       | (6)  |
| Alabama        | 776,641                         | 3,162                    | 18   | 3,457                     | 31   |
| Alaska         | 178,188                         | 6,224                    | 1    | 6,782                     | 1    |
| Arizona        | 553,547                         | 2,191                    | 45   | 2,313                     | 49   |
| Arkansas       | 320,613                         | 3,620                    | 10   | 4,196                     | 15   |
| California     | 5,487,892                       | 3,142                    | 19   | 3,573                     | 26   |
| Colorado       | 505,994                         | 2,496                    | 41   | 2,851                     | 45   |
| Connecticut    | 511,567                         | 3,004                    | 24   | 4,626                     | 8    |
| Delaware       | 115,541                         | 2,849                    | 30   | 3,497                     | 27   |
| Florida        | 1,557,091                       | 2,714                    | 32   | 3,238                     | 37   |
| Georgia        | 884,669                         | 3,698                    | 8    | 4,737                     | 7    |
| Hawaii         | 279,241                         | 5,153                    | 2    | 6,398                     | 2    |
| Idaho          | 158,247                         | 3,232                    | 14   | 4,116                     | 16   |
| Illinois       | 1,712,850                       | 2,413                    | 43   | 3,192                     | 40   |
| Indiana        | 814,021                         | 2,951                    | 27   | 3,761                     | 21   |
| Iowa           | 528,499                         | 3,111                    | 22   | 4,521                     | 9    |
| Kansas         | 435,609                         | 2,695                    | 33   | 2,938                     | 43   |
| Kentucky       | 550,328                         | 3,315                    | 12   | 4,008                     | 19   |
| Louisiana      | 527,037                         | 2,929                    | 28   | 3,473                     | 29   |
| Maine          | 173,534                         | 2,980                    | 26   | 4,284                     | 12   |
| Maryland       | 822,337                         | 3,166                    | 16   | 3,704                     | 23   |
| Massachusetts  | 815,998                         | 1,913                    | 47   | 4,346                     | 11   |
| Michigan       | 1,408,006                       | 2,513                    | 40   | 2,935                     | 44   |
| Minnesota      | 946,779                         | 3,741                    | 6    | 4,767                     | 6    |
| Mississippi    | 432,971                         | 3,721                    | 7    | 4,202                     | 14   |
| Missouri       | 582,557                         | 2,092                    | 46   | 3,029                     | 41   |
| Montana        | 109,416                         | 2,905                    | 29   | 3,296                     | 36   |
| Nebraska       | 293,242                         | 2,694                    | 34   | 3,211                     | 39   |
| Nevada         | 146,636                         | 2,597                    | 36   | 2,610                     | 48   |
| New Hampshire  | 69,035                          | 1,178                    | 50   | 2,099                     | 50   |
| New Jersey     | 1,124,367                       | 3,580                    | 11   | 4,435                     | 10   |
| New Mexico     | 296,410                         | 3,644                    | 9    | 3,735                     | 22   |
| New York       | 3,185,045                       | 3,113                    | 21   | 5,258                     | 4    |
| North Carolina | 1,458,516                       | 4,223                    | 3    | 5,264                     | 3    |
| North Dakota   | 129,756                         | 3,216                    | 15   | 3,460                     | 30   |
| Ohio           | 1,427,041                       | 2,588                    | 37   | 3,457                     | 32   |
| Oklahoma       | 453,090                         | 2,576                    | 38   | 2,992                     | 42   |
| Oregon         | 395,898                         | 2,447                    | 42   | 2,802                     | 46   |
| Pennsylvania   | 1,370,011                       | 2,245                    | 44   | 4,088                     | 17   |
| Rhode Island   | 139,174                         | 1,819                    | 48   | 3,428                     | 34   |
| South Carolina | 612,508                         | 4,203                    | 4    | 5,163                     | 5    |
| South Dakota   | 86,064                          | 2,635                    | 35   | 3,432                     | 33   |
| Tennessee      | 709,116                         | 3,240                    | 13   | 4,245                     | 13   |
| Texas          | 2,624,288                       | 2,989                    | 25   | 3,354                     | 35   |
| Utah           | 292,720                         | 2,549                    | 39   | 3,676                     | 24   |
| Vermont        | 57,596                          | 1,602                    | 49   | 2,752                     | 47   |
| Virginia       | 1,089,276                       | 3,164                    | 17   | 3,787                     | 20   |
| Washington     | 796,400                         | 3,114                    | 20   | 3,598                     | 25   |
| West Virginia  | 252,180                         | 3,058                    | 23   | 3,479                     | 28   |
| Wisconsin      | 795,383                         | 2,736                    | 31   | 3,234                     | 38   |
| Wyoming        | 116,183                         | 3,984                    | 5    | 4,069                     | 18   |
| Total          | 39,109,108                      | 2,923                    |      | 3,724                     |      |

Sources: Appropriations, revised from Grapevine data.

Enrollment: U. S. Department of Education, Enrollment in Higher Education, Fall 1989.

DEVELOPING A PER STUDENT MEASURE--CONCEPTUAL AND METHODOLOGICAL ISSUES  
by Edward Hines and Sara Wills\*

Considerable interest has been shown in a measure of state higher education appropriations per student. This interest has been expressed to GRAPEVINE for several years, but we have not moved ahead with developing a per student measure because of methodological problems. Rather, GRAPEVINE has continued to utilize two widely-accepted comparative measures of state higher education support -- state tax appropriations per capita and appropriations per \$1,000 of personal income. These two measures are used commonly in higher education finance, and they are recognized as appropriate indices of state support.

The December-January 1992 issue of GRAPEVINE (Number 379) included FY1992 appropriations per capita and per \$1,000 of personal income measures were calculated. In this issue, two different versions of the per student measure were calculated. We solicit the reactions of GRAPEVINE readers as to which of the two measures portrays a more valid indicator of state support. Readers are invited to use the form provided on the last two pages in this issue of GRAPEVINE for this purpose.

Conceptual Issues. There is substantial support for utilizing a per student measure when comparing states' effort in supporting higher education. The interest in using this measure has increased because of the realization that enrollment growth is not consistent across the states. In fact, some states, such as California, still are experiencing strong enrollment growth. Most states, however, have seen enrollment increases dwindle to the point of very small annual enrollment gains, or even declines, or declines in some sectors of higher education and stabilization or modest gains in other sectors. At a time when enrollment growth is inconsistent and uneven, it is especially advisable to include a per student measure in a complete analysis of the fiscal situation for higher education in a state.

When examining patterns of state higher education support, it is necessary to adjust for variations in population size, wealth, and other such differences across states. Using a per capita measure adjusts for differences in state resident population, and using a per \$1,000 of personal income measure adjusts for fundamental differences in states' wealth, as measured by personal income. These two measures, per capita and per \$1,000 of personal income, have been sufficient for comparison purposes. However, they can be enhanced with a per student measure, which is included in this issue of GRAPEVINE for the first time.

Methodological Issues. There are methodological problems in constructing a per student measure. There needs to be a consistent definition of a full-time student in different states. Enrollment data are not published and available until a substantial period of time after students actually attend. Still another issue is whether or not to utilize total enrollment data by state or to use only public sector enrollment. While GRAPEVINE data represent the total amount of state tax revenue appropriated to colleges and universities, both public and private, state tax funds are the principal revenue source in the public sector, but are only one of several revenue sources in the private sector.

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Procedure. Enrollment data were obtained from the National Center for Education Statistics (July, 1991). Two major decisions had to be made in constructing the per student measure. One decision was to use the most recent enrollment data available even though those data were two years old. The second decision was to use GRAPEVINE data for that same year. It made no sense to use current appropriations data and two-year old enrollment data.

Next, a decision had to be made whether or not to use total state enrollment or enrollment in the public sector only. The RANKINGS table displays the per student measure both ways, column (3) uses total state enrollment, including private colleges and universities, and column (5) uses enrollment only in public colleges and universities.

In order to decide which of the per student measures was more accurate, a chart was constructed showing, in rank order, the 10 states having the largest private college and university enrollment. In six of the 10 states, rank order improved by utilizing public sector enrollment, rather than total state higher education enrollment. The explanation for this occurrence is that by eliminating private sector enrollment, the dollars per student increased markedly in states with large private sectors. This artificially skewed the ranking of these states. This phenomenon appeared to be especially evident in New York, Pennsylvania, and Massachusetts, the three states having the largest private sector enrollment. In fact, the private sector enrollment in these three states is larger than the private sector enrollment in the seven remaining states.

TABLE A

| Rank on<br>Size of<br>Pvt Sector | State         | Enrollment<br>Pvt Sector | Change in Rank<br>Using Public<br>Enrollment |
|----------------------------------|---------------|--------------------------|--|
| (1)                              | (2)           | (3)                      | (4)  |
| 1                                | New York      | 417,593                  | 21 to 4                                      |
| 2                                | Pennsylvania  | 275,256                  | 44 to 17                                     |
| 3                                | Massachusetts | 238,704                  | 47 to 11                                     |
| 4                                | California    | 210,670                  | 19 to 26                                     |
| 5                                | Illinois      | 173,294                  | 43 to 40                                     |
| 6                                | Ohio          | 138,656                  | 37 to 32                                     |
| 7                                | Texas         | 95,364                   | 25 to 35                                     |
| 8                                | Florida       | 92,843                   | 32 to 37                                     |
| 9                                | Missouri      | 86,183                   | 46 to 41                                     |
| 10                               | Michigan      | 80,606                   | 40 to 44                                     |

Source: U.S. Department of Education, National Center for Education Statistics, "Fall Enrollment" Survey, 1989, Table 12, page 13 (July 1991).

It would appear that the column using total state enrollment provides a more valid and useful measure of state tax appropriations per student.

Analysis. The validity of the per student measure can be judged, also, by comparing state rankings on the per student measure with those of per capita and per \$1,000 of personal income measures. The per capita and per \$1,000 of personal income table uses FY1990 population and income data, and revised appropriations data. (See the next page) Thus, rankings can be compared using all three measures -- per student (appropriations divided by total enrollment, using the rankings in column 4 in Table 2), per capita, and per \$1,000 of personal income.

Table 2. RANKINGS OF THE STATES ON APPROPRIATIONS OF STATE TAX FUNDS FOR OPERATING EXPENSES OF HIGHER EDUCATION, PER CAPITA AND PER \$1,000 PERSONAL INCOME, FISCAL YEAR 1989-90

| States         | Higher Education Appropriations (\$1,000s) | Appropriations Per Capita (\$) | Appropriations Per \$1,000 income (\$) | Rank  | Rank |
|----------------|--|--------------------------------|--|-------|------|
| (1)            | (2)  | (3)                            | (4)                                    | (5)   | (6)  |
| Alabama        | 776,641                                    | 192.24                         | 8                                      | 12.78 | 7    |
| Alaska         | 178,188                                    | 323.98                         | 1                                      | 14.90 | 2    |
| Arizona        | 553,547                                    | 151.04                         | 27                                     | 9.39  | 19   |
| Arkansas       | 320,613                                    | 137.54                         | 39                                     | 9.60  | 18   |
| California     | 5,487,892                                  | 184.40                         | 11                                     | 8.86  | 26   |
| Colorado       | 505,994                                    | 153.61                         | 25                                     | 8.11  | 33   |
| Connecticut    | 511,567                                    | 155.63                         | 23                                     | 6.10  | 47   |
| Delaware       | 115,541                                    | 173.48                         | 16                                     | 8.62  | 29   |
| Florida        | 1,557,091                                  | 120.35                         | 46                                     | 6.44  | 43   |
| Georgia        | 884,669                                    | 136.57                         | 41                                     | 7.98  | 36   |
| Hawaii         | 279,241                                    | 252.02                         | 3                                      | 12.32 | 8    |
| Idaho          | 158,247                                    | 157.15                         | 22                                     | 10.26 | 14   |
| Illinois       | 1,712,850                                  | 149.84                         | 28                                     | 7.33  | 41   |
| Indiana        | 814,021                                    | 146.83                         | 30                                     | 8.68  | 27   |
| Iowa           | 528,499                                    | 190.31                         | 9                                      | 11.04 | 12   |
| Kansas         | 435,609                                    | 175.79                         | 14                                     | 9.67  | 17   |
| Kentucky       | 550,328                                    | 149.34                         | 29                                     | 9.94  | 16   |
| Louisiana      | 527,037                                    | 124.89                         | 43                                     | 8.61  | 30   |
| Maine          | 173,534                                    | 141.31                         | 34                                     | 8.21  | 32   |
| Maryland       | 822,337                                    | 172.00                         | 17                                     | 7.86  | 37   |
| Massachusetts  | 815,998                                    | 135.64                         | 42                                     | 6.19  | 45   |
| Michigan       | 1,408,006                                  | 151.48                         | 26                                     | 8.23  | 31   |
| Minnesota      | 946,779                                    | 216.41                         | 5                                      | 11.51 | 11   |
| Mississippi    | 432,971                                    | 168.27                         | 19                                     | 13.12 | 6    |
| Missouri       | 582,557                                    | 113.85                         | 48                                     | 6.50  | 42   |
| Montana        | 109,416                                    | 136.94                         | 40                                     | 8.96  | 24   |
| Nebraska       | 293,242                                    | 185.83                         | 10                                     | 10.57 | 13   |
| Nevada         | 146,636                                    | 121.99                         | 45                                     | 6.29  | 44   |
| New Hampshire  | 69,035                                     | 62.25                          | 50                                     | 2.98  | 50   |
| New Jersey     | 1,124,367                                  | 145.45                         | 31                                     | 5.83  | 48   |
| New Mexico     | 296,410                                    | 195.65                         | 7                                      | 13.67 | 3    |
| New York       | 3,185,045                                  | 177.05                         | 12                                     | 8.01  | 35   |
| North Carolina | 1,458,516                                  | 220.02                         | 4                                      | 13.46 | 4    |
| North Dakota   | 129,756                                    | 203.06                         | 6                                      | 13.40 | 5    |
| Ohio           | 1,427,041                                  | 137.92                         | 38                                     | 7.48  | 39   |
| Oklahoma       | 453,090                                    | 144.02                         | 33                                     | 9.32  | 20   |
| Oregon         | 395,898                                    | 139.30                         | 36                                     | 8.05  | 34   |
| Pennsylvania   | 1,370,011                                  | 115.30                         | 47                                     | 6.16  | 46   |
| Rhode Island   | 139,174                                    | 138.76                         | 37                                     | 7.37  | 40   |
| South Carolina | 612,508                                    | 175.71                         | 15                                     | 11.56 | 10   |
| South Dakota   | 86,064                                     | 123.66                         | 44                                     | 7.83  | 38   |
| Tennessee      | 709,116                                    | 145.40                         | 32                                     | 9.15  | 23   |
| Texas          | 2,624,288                                  | 154.49                         | 24                                     | 9.21  | 22   |
| Utah           | 292,720                                    | 169.89                         | 18                                     | 12.10 | 9    |
| Vermont        | 57,596                                     | 102.30                         | 49                                     | 5.82  | 49   |
| Virginia       | 1,089,276                                  | 176.06                         | 13                                     | 8.91  | 25   |
| Washington     | 796,400                                    | 163.67                         | 20                                     | 8.64  | 28   |
| West Virginia  | 252,180                                    | 140.65                         | 35                                     | 10.24 | 15   |
| Wisconsin      | 795,383                                    | 162.62                         | 21                                     | 9.23  | 21   |
| Wyoming        | 116,183                                    | 255.91                         | 2                                      | 15.75 | 1    |
| Total          | 39,109,108                                 | 160.59                         |  | 8.53  |      |

Sources: Revised appropriations data from Grapevine.

1990 Population, U. S. Department of Commerce, Bureau of Census.

Personal Income, U. S. Department of Commerce, Bureau of Economic Analysis

The top 10 and bottom 10 states on each of the three measures are shown in Table B below. There appears to be considerable similarity in the states which appear in either the top or the bottom grouping. In the top grouping, Alaska, Hawaii, North Carolina, Wyoming, and New Mexico appeared in all three rankings. Minnesota was high on all three measures, just missing the top 10 on appropriations per \$1,000 of personal income by one point (ranked 11th). In the bottom grouping, Pennsylvania, Missouri, Massachusetts, Vermont, and New Hampshire appeared three times.

Table B

| Rank  | Approp<br>Per Student | Approp<br>Per Capita | Approp<br>Per \$1,000 |
|-------|-----------------------|----------------------|-----------------------|
| (1)   | (2)                   | (3)                  | (4)                   |
| 1     | Alaska                | Alaska               | Wyoming               |
| 2     | Hawaii                | Wyoming              | Alaska                |
| 3     | North Carolina        | Hawaii               | New Mexico            |
| 4     | South Carolina        | North Carolina       | North Carolina        |
| 5     | Wyoming               | Minnesota            | North Dakota          |
| 6     | Minnesota             | North Dakota         | Mississippi           |
| 7     | Mississippi           | New Mexico           | Alabama               |
| 8     | Georgia               | Alabama              | Hawaii                |
| 9     | New Mexico            | Iowa                 | Utah                  |
| 10    | Arkansas              | Nebraska             | South Carolina        |
| ----- |                       |                      |                       |
| 41    | Colorado              | Georgia              | Illinois              |
| 42    | Oregon                | Massachusetts        | Missouri              |
| 43    | Illinois              | Louisiana            | Florida               |
| 44    | Pennsylvania          | South Dakota         | Nevada                |
| 45    | Arizona               | Nevada               | Massachusetts         |
| 46    | Missouri              | Florida              | Pennsylvania          |
| 47    | Massachusetts         | Pennsylvania         | Connecticut           |
| 48    | Rhode Island          | Missouri             | New Jersey            |
| 49    | Vermont               | Vermont              | Vermont               |
| 50    | New Hampshire         | New Hampshire        | New Hampshire         |
| ----- |                       |                      |                       |

There were other states, some of which appeared in either the top or bottom grouping once or twice, which had similar rankings on two measures, but a much different ranking on the third measure. For instance, South Carolina and Mississippi, were in the "top 10 grouping" in both per student and per \$1,000 of personal income, but were lower in per capita support. Alabama, Nebraska and North Dakota were high on both per capita and per \$1,000 of personal income, but were mid-range to low on per student support. Maryland was mid-range on per student and per capita, but low on per \$1,000 of personal income.

The states exhibiting an extremely varied pattern included Georgia which ranked 8th on per student, 41st on per capita and 36th on \$1,000 of personal income. Arkansas was 10th on per student, 39th on per capita, and 18th on \$1,000 of personal income. Utah was 39th on per student, 18th on per capita, and 9th on \$1,000 of personal income. New York was 21st in per student, 12th in per capita, and 35th in per \$1,000 of personal income.

Reactions to these patterns and to the use of these measures are invited from GRAPEVINE readers and others interested in state higher education finance.

PLEASE REPLY BEFORE APRIL 1, 1992.

GRAPEVINE NEEDS ASSESSMENT SURVEY

We want your reaction to the per student measure as well as your views about Grapevine. Please answer the questions below. Remove this page and return the completed questionnaire to the address at the end of the survey.

1. What is your reaction to the "per student" measure which is presented in this issue?
  - a. Do you agree that using tax appropriations divided by total student enrollment is more accurate than appropriations divided by public sector enrollment for your state?
  - b. Is your state more accurately represented on the per student measure by using only public student enrollment data?
  
2. Would you like Grapevine to include information on sources of revenue other than state tax funds?

Yes  No  
 (If Yes, indicate your preference below. Check all that apply)

| Source of Funds                                      | Name and address of person who can supply this information in your state: |
|--|---|
| <input type="checkbox"/> Federal Sources             | _____   |
| <input type="checkbox"/> Student Tuition and Fees    | _____   |
| <input type="checkbox"/> Local Taxes                 | _____   |
| <input type="checkbox"/> Non-tax Sources             | _____   |
| <input type="checkbox"/> Other, Please Specify _____ | _____   |
|  | _____   |

3. What information in Grapevine is most useful to you?

4. What information in Grapevine is least useful to you?

THANK YOU FOR YOUR TIME AND ASSISTANCE.

Your identity will not be used in any way. You may remove the mailing label below if you wish to remain anonymous. Return your completed questionnaire to the Grapevine address below. Thank you.

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