

# Public Rates Of Return On Higher Education Investments, By State

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## ABSTRACT

*Public rates of return on higher education expenditures are calculated by state. Benefits accruing to states from their investments in higher education are measured by differential tax revenues collected from college-educated citizens versus high-school-educated citizens. For most states we find an adequate rate of return on such investments. However, we conclude that in addition to monetary returns, state governments likely consider other factors when deciding upon expending resources for higher education needs.*

## INTRODUCTION

Economic research has clearly established the view that individuals regard personal higher education expenditures as investments. Accordingly, individuals investing in higher education expect to receive a positive return over their lifetimes on the time and resources devoted to obtaining post-secondary schooling. Indeed, this expectation of receiving a favorable private return is a primary motivating factor for individuals choosing to enroll in higher education institutions. The human capital model indicates that individuals become more productive as they obtain more education. Firms are willing to compensate more productive workers with higher earnings. Thus, on average, college graduates earn more than their less educated counterparts.

While a sizeable amount of research has been written regarding private monetary returns on individual education expenditures, in this paper we present findings regarding monetary returns that state governments receive from investing in higher education programs and institutions, referred to as public returns. The topic of public returns has been given much less attention than the aforementioned private return model.

Naturally, we acknowledge that many non-pecuniary factors provide motives for governments to invest in higher education. Positive social returns such as decreased crime, improved cultural opportunities, enhanced economic growth, and greater social and political equality may be just a few of these qualitative benefits. However, our research focuses on the more obvious monetary returns that states receive from investing in higher education.

We assume that states, like individuals, expend funds toward higher education anticipating a favorable monetary return on such investments. We propose that states receive these returns in the form of higher tax revenues from the augmented incomes of college graduates. We offer a method for calculating public rates of return and present these returns across states. Finally, we examine alternative investments to higher education otherwise available to governments.

We begin in Section II by discussing the background literature that serves as a foundation for this study. Section III contains the methodologies and formulas used in calculating public returns for each state. Section IV includes a discussion of our empirical results. We end in Section V with conclusions and suggestions for additional research.

**LITERATURE REVIEW**

Various studies serve as a foundation for current research on public rates of return on government investments in higher education. For example, numerous theorists have endeavored to measure the impact of education on the public sector. Theodore W. Schultz (1961) explained that economic growth during the 20<sup>th</sup> century was a result of education and not merely technological change, concluding that 36 to 70 percent of the changes in national income were attributable to changes in the nation's stock of human capital. In addition, Schultz (1962) concluded that since the ratio of physical stock to income had remained virtually unchanged throughout the 20<sup>th</sup> century, much of the economic growth had in fact come from human capital investments. However, Schultz was unable to define the exact amount of economic growth that occurred because of increased human capital investment in the form of education.

A decade later, Edward Denison (1971) found that 23 percent of the total economic growth occurring between 1925 and 1957 could be explained by increased productivity resulting from additional education. In a later study, however, Denison (1974) concluded that the percentage had fallen to 15 percent. Using similar methodology, George Psacharopoulos (1972) explored economic growth in Hawaii during the 1950s and concluded that 16 percent of the economic growth in that state was derived from changes in labor quality due to increased educational attainment.

Psacharopoulos (1973 and 1985) later attempted to calculate social rates of return on education investments by including both private costs and public costs of education and computing the return in terms of real gross income (including tax revenue). Collecting data from 61 countries, he discovered that social rates of return varied according to the overall importance of attaining specific levels of education in those countries. For example, he discovered that social returns in poorer countries were significantly higher for primary-level graduates than for secondary-level or higher-level graduates principally because primary-level graduates were considerably separated from the illiterate, non-graduating population.

As evident from the literature, efforts were made to measure both the impact of education on economic growth and the return to society from educational advancement; however, no attempts were made to calculate monetary returns to government from their expenditures on higher education. Thus, perhaps the most relevant study regarding public returns was conducted by Edwin A. Sexton and Jay Highfill (1993), who sought to measure monetary returns rather than social returns to state governments on higher education investments. Public returns were computed for each state by estimating income differentials between secondary and post-secondary graduates and measuring the additional amount of tax revenues that government received from the higher earnings of college graduates. While we follow a similar methodology to that of Sexton and Highfill, there are important differences in the current study. For example, the previous study contained only estimates of income differentials between high school and college graduates while we use actual data on income differentials by state. Furthermore, in adjusting monetary returns for migration behavior, we use migration data specific to college graduates whereas previous studies used only general U.S. migration rates.

Subsequent to Sexton and Highfill's study, Australian economists Peter Johnson and Rachel Lloyd (2000) used comparable methodology in calculating public returns to the Australian federal government on higher education expenditures. They concluded that college graduates pay significantly more taxes than secondary-level graduates over their lifetimes. In addition, they determined that the Australian government receives a return of approximately 9 percent over a college graduate's lifetime.

## METHODOLOGY AND DATA

The return on a given investment is equal to the benefits received from the investment relative to the costs incurred in obtaining the benefit. In applying this principle to our study, public returns on higher education are calculated by comparing the monetary investment required to fund higher education to the monetary benefit derived from such outlays. Determining the amount of government expenditures on higher education is rather simple and straightforward. Conversely, measuring the benefits of these expenditures is a seemingly more complex task. The steps employed in calculating public rates of return are described in detail in the following paragraphs.

We begin calculating public returns by determining each state's monetary expenditures toward higher education. The expenditures examined in this study include the following: (1) operating, relating to current needs such as salaries, supplies, housing, maintenance, etc.; (2) capital, involving the acquisition of or addition to an institution's property, plant, and equipment. Such outlays should be considered investments as they potentially generate future monetary benefits for the states incurring these expenses. Given the impracticability of calculating opportunity costs for public expenditures, these costs are solely out-of-pocket, although alternative investments are discussed near the conclusion of our analysis. Data on individual states' higher education disbursements during 2001-2002 was derived from the *Digest of Educational Statistics*, and are found in Table 1.

We now calculate the monetary benefit associated with higher education expenditures. Again, we assume the monetary benefit can be measured by calculating the additional tax revenue collected by states from college graduates compared to non-college graduates. Thus, it is first necessary to find income differentials between secondary and post-secondary school graduates. We include in our calculations the average income differentials between (1) high school and bachelor degree graduates, and (2) high school and advanced degree graduates. Average income figures by educational attainment for each state were taken from the 2000 U.S. Census. Income differentials are then computed using this data, and are presented in Table 2.

The average income differential is then multiplied by the state's highest marginal income tax rate in order to derive the monetary benefit. Although the marginal tax rate seems the most logical figure to apply when calculating the monetary benefit, it does present a problem. Seven states did not have income taxes in 2001, and a number of states charged income tax solely on dividend and interest income or as a percentage of federal income tax liability. Therefore, in addition to calculating the monetary benefit based on marginal tax rates, we also calculate the monetary benefit based on total tax rates for each state. Total tax rates are computed as the sum of state tax collections (income, property, sales, and other taxes including license fees) divided by aggregate personal income per state. Data on state tax revenues and marginal tax rates for 2001 were obtained from the *Statistical Abstract of the United States*. Marginal and total income tax rates for each state are displayed in Tables 4 and 5, respectively.

Recognizing that college graduates tend to be a very mobile group, we take into account state migration rates as a final step in our calculations. Table 3 exhibits total migration numbers from 1995-2000 of the young, single, and college educated, again taken from the U.S. Census. These 5-year figures are prorated into an average annual number in order to find estimated net migration by state during 2000. We then adjust the total number of bachelor degree graduates per state according to the net migration figures described above. In doing this, we are assuming the majority of young, single, and college educated people are bachelor degree graduates as opposed to advanced degree graduates. Thus, we do not adjust the total advanced degree graduate population for migration; rather, we exclusively adjust bachelor degree graduate population only.

Using data on income differentials, marginal and total tax rates, and college graduate populations, we calculate the total monetary return. The monetary return is defined as the additional tax revenues each state collects due to income differentials between high school and college graduates. It is calculated as follows:

$$M = (I_1 \times P_1 \times T) + (I_2 \times P_2 \times T)$$

where M is the monetary return,  $I_1$  is the average income differential between high school and bachelor degree graduates,  $I_2$  is the income differential between high school and advanced degree graduates,  $P_1$  is the migration-

adjusted population of bachelor degree graduates,  $P_2$  is the population of advanced degree graduates, and  $T$  is the total or marginal tax rate.

Finally, we compute the rate of return for each state. The rate of return is:

$$ROR = M/C$$

where ROR is the rate of return,  $M$  is the monetary return, and  $C$  is the total higher education expenditures per state.

## **EMPIRICAL RESULTS**

The monetary returns and rates of return are calculated and presented using both marginal and total tax rates in Tables 6 and 7, respectively.

From an initial glance, some states may appear to have significantly higher rates compared to other alternative investments. For example, Massachusetts, Connecticut, New Jersey, and New York each have returns exceeding 35 percent when using total tax rates. We will analyze two possible reasons for some of these seemingly high returns exhibited in the data.

First, various high risks are inherent in higher education investments, including brain drain, labor market surpluses, and tax law modifications. In addition, human capital assets are characteristically very illiquid. Thus, the relatively high-risk, low-liquidity nature of higher education investments will result in larger returns than high-liquidity, low-risk alternative investments.

Second, it is obvious that a portion of the additional tax revenue collected by states from college graduates is derived from graduates of private institutions. Because this study focuses on public returns, a superior methodology would be to exclusively apply the number of public institution graduates per state to our calculations. However, no data was available to quantify the number of public school graduates residing in each state. Consequently, the returns presented in this paper capture benefits accruing from heightened incomes of *both* private and public university graduates, resulting in the rates being somewhat higher than if monetary benefits were measured solely using data on the number of public school graduates per state.

We further analyze this finding by using correlation analysis to examine the relationship between the rate of return and the percentage of students currently enrolled in private institutions. Table 8 displays the percentage of students per state attending private colleges and universities. We find the simple correlation coefficient between the rate of return using total tax rates and the percentage of students currently enrolled in private institutions to be .58, with a  $t$  statistic of 4.92. Given the critical  $t$  value of 3.505 at the .05% significance level, we find a significant positive correlation between a state's rate of return and the percentage of students enrolled in private institutions in that state.

## **CONCLUSIONS**

Our findings lend support to the view that states reap actual monetary returns on higher education investments. However, it is likely that, given the data and the analysis above, quantitative returns are merely one of many factors influencing governments to expend funds for higher education. Indeed, it would be presumptuous to conclude that monetary returns play the chief role in motivating governments to make such outlays because other alternative comparable investments may yield similar returns.

To elaborate on this point further, we compare rates of return on alternative investments available to states. Higher education expenditures are generally thought of as long-term investments since governments collect taxes on incomes of college graduates over a prolonged period of years. We acknowledge, of course, that this study measures monetary returns during a fixed, short-term period rather than over a stream of years where benefits and costs are discounted. Nevertheless, state expenditures on higher education tend not to fluctuate significantly, and tax revenue

collected from college graduates will likely remain fairly stable over an extended period of time. Hence, yields on 30-year treasury bonds, conventional mortgages, long-term corporate bonds, and long-term stock market investments serve as satisfactory comparisons to higher education investment returns.

From 2000 to 2001, 30-year treasury bonds averaged constant maturity rates of 5.76 percent, while conventional mortgage rates averaged approximately 7.52 percent. Furthermore, long-term corporate bonds yielded returns of 7.35 percent, while returns on stock market investments averaged approximately 10.7 percent over a 75-year period from 1926-2001. Thus, it may appear that many states have considerably higher returns on education investments than alternative investments; however, by taking into account the analysis explained in Section IV, we find that potential alternative investments may in fact yield only slightly lower returns than those calculated in the study. Therefore, we again conclude that monetary gain is not the foremost objective underlying government disbursements toward higher education. Nonetheless, it is important to note that potential profits may in fact play a factor in decisions regarding higher education expenditures.

We naturally recognize a number of complexities in estimating exact public rates of return on higher education investments. First, more accurate rates of return could be calculated if, as stated previously, additional data on migration rates of college graduates and the number of public institution graduates were available for each state. Second, because college graduates earn a wide range of incomes, we recognize the weakness in using top marginal tax rates in calculating the monetary returns. Data regarding average income tax rates by state for college graduates would make the returns more precise. Third, we acknowledge the limitations in computing rates of return exclusively during a one-year period because of the possibility that the rates capture unusual phenomenon that occurred during the time scope of the study. Consequently, we suggest that future studies measure average expenditures and revenues over a three-year period and calculate monetary returns accordingly. Finally, we admit that opportunity costs, given their complexity with regards to public returns, are not accounted for in our study and thus result in potentially distorted rates of return.

Despite these limitations we find this study practical for both theoretical and empirical purposes as this relatively new research topic is further investigated. Given the current emphasis on enhanced government efficiency, we expect the study of public returns to become more crucial to the public sector when engaging in economic and financial decisions. This study provides both public administrators and policy analysts with a framework of methodologies and computations necessary to measure public returns on higher education investments. We hope the current study will contribute to the literature exploring this topic.

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**Table 1**  
**Direct General Expenditures Of State And Local Governments For Higher Education, By State: 2001**

<b>State</b>	<b>Total Expenditures</b>	<b>Operating</b>	<b>Capital</b>
Alabama	\$2,720,196,000	\$2,361,807,000	\$358,389,000
Alaska	487,283,000	427,546,000	59,737,000
Arizona	2,702,906,000	2,427,259,000	275,647,000
Arkansas	1,438,001,000	1,271,914,000	166,087,000
California	20,375,753,000	19,152,138,000	1,223,615,000
Colorado	2,856,236,000	2,549,389,000	306,847,000
Connecticut	1,554,972,000	1,316,708,000	238,264,000
Delaware	629,493,000	606,467,000	23,026,000
Florida	5,791,614,000	5,096,145,000	695,469,000
Georgia	3,890,955,000	3,378,749,000	512,206,000
Hawaii	792,210,000	707,298,000	84,912,000
Idaho	692,076,000	608,834,000	83,242,000
Illinois	6,506,274,000	5,639,461,000	866,813,000
Indiana	3,614,096,000	3,292,824,000	321,272,000
Iowa	2,327,927,000	2,064,984,000	262,943,000
Kansas	1,770,463,000	1,601,085,000	169,378,000
Kentucky	2,402,629,000	2,045,482,000	357,147,000
Louisiana	2,092,465,000	1,908,861,000	183,604,000
Maine	559,307,000	498,425,000	60,882,000
Maryland	3,531,280,000	3,152,731,000	378,549,000
Massachusetts	2,516,945,000	2,217,938,000	299,007,000
Michigan	7,296,108,000	6,292,679,000	1,003,429,000
Minnesota	2,946,707,000	2,609,701,000	337,006,000
Mississippi	1,841,358,000	1,591,160,000	250,198,000
Missouri	2,645,247,000	2,328,927,000	316,320,000
Montana	506,367,000	465,173,000	41,194,000
Nebraska	1,192,051,000	1,101,836,000	90,215,000
Nevada	810,417,000	720,812,000	89,605,000
New Hampshire	560,879,000	476,990,000	83,889,000
New Jersey	4,027,545,000	3,484,260,000	543,285,000
New Mexico	1,461,831,000	1,347,375,000	114,456,000
New York	7,982,926,000	6,856,926,000	1,126,000,000
North Carolina	5,147,632,000	4,639,646,000	507,986,000
North Dakota	510,270,000	477,134,000	33,136,000
Ohio	5,833,807,000	5,152,120,000	681,687,000
Oklahoma	2,227,866,000	1,994,649,000	233,217,000
Oregon	2,538,085,000	2,150,741,000	387,344,000
Pennsylvania	5,770,486,000	5,042,225,000	728,261,000
Rhode Island	479,719,000	408,079,000	71,640,000
South Carolina	2,130,103,000	1,913,852,000	216,251,000
South Dakota	362,050,000	321,487,000	40,563,000
Tennessee	2,957,768,000	2,633,198,000	324,570,000
Texas	12,481,739,000	10,815,502,000	1,666,237,000
Utah	2,131,325,000	1,879,778,000	251,547,000
Vermont	428,518,000	392,591,000	35,927,000
Virginia	4,154,135,000	3,593,778,000	560,357,000
Washington	3,982,261,000	3,477,391,000	504,870,000
West Virginia	1,000,161,000	883,732,000	116,429,000
Wisconsin	3,710,116,000	3,375,456,000	334,660,000
Wyoming	360,402,000	329,542,000	30,860,000

**Table 2**  
**Income Differentials Of High School And Bachelor Or Advanced Degree Graduates, By State: 2000**

<b>State</b>	<b>Average High School Graduate Annual Income</b>	<b>Average Bachelor Degree Graduate Annual Income</b>	<b>Average Advanced Degree Graduate Annual Income</b>	<b>High School/ Bachelor Differential</b>	<b>High School/ Advanced Differential</b>
Alabama	\$24,942	\$39,768	\$45,024	\$14,826	\$20,082
Alaska	31,758	45,963	55,390	14,205	23,632
Arizona	26,430	41,749	51,418	15,319	24,988
Arkansas	23,181	35,394	42,180	12,213	18,999
California	29,821	50,305	65,101	20,484	35,280
Colorado	28,765	42,237	53,528	13,472	24,763
Connecticut	32,447	51,283	62,279	18,836	29,832
Delaware	29,136	43,778	57,912	14,642	28,776
Florida	25,305	40,296	50,806	14,991	25,501
Georgia	26,636	43,128	52,090	16,492	25,454
Hawaii	26,562	40,561	50,550	13,999	23,988
Idaho	25,195	38,129	49,542	12,934	24,347
Illinois	29,579	45,689	59,146	16,110	29,567
Indiana	28,445	41,169	50,564	12,724	22,119
Iowa	26,293	36,337	46,958	10,044	20,665
Kansas	26,500	38,560	46,846	12,060	20,346
Kentucky	25,645	38,972	42,571	13,327	16,926
Louisiana	25,135	36,930	44,630	11,795	19,495
Maine	25,147	36,449	44,913	11,302	19,766
Maryland	30,439	47,265	61,105	16,826	30,666
Massachusetts	31,276	46,926	58,625	15,650	27,349
Michigan	30,291	46,647	60,072	16,356	29,781
Minnesota	29,666	42,069	53,540	12,403	23,874
Mississippi	23,381	34,411	41,816	11,030	18,435
Missouri	25,647	38,452	47,560	12,805	21,913
Montana	23,029	31,389	40,782	8,360	17,753
Nebraska	25,121	35,435	45,141	10,314	20,020
Nevada	28,322	41,190	51,925	12,868	23,603
New Hampshire	28,902	43,511	51,883	14,609	22,981
New Jersey	32,389	51,657	69,597	19,268	37,208
New Mexico	23,503	36,339	46,878	12,836	23,375
New York	29,586	46,776	58,477	17,190	28,891
North Carolina	25,508	29,711	50,577	4,203	25,069
North Dakota	22,725	31,225	41,610	8,500	18,885
Ohio	28,482	42,249	52,411	13,767	23,929
Oklahoma	23,468	34,978	42,067	11,510	18,599
Oregon	27,620	41,766	50,956	14,146	23,336
Pennsylvania	27,894	42,287	55,402	14,393	27,508
Rhode Island	28,278	42,397	53,572	14,119	25,294
South Carolina	25,093	37,763	45,505	12,670	20,412
South Dakota	23,029	30,749	41,881	7,720	18,852
Tennessee	25,342	39,293	46,994	13,951	21,652
Texas	25,729	42,426	52,655	16,697	26,926
Utah	27,154	41,171	53,538	14,017	26,384
Vermont	26,159	35,534	45,264	9,375	19,105
Virginia	26,605	44,455	61,253	17,850	34,648
Washington	30,628	45,367	52,188	14,739	21,560
West Virginia	23,531	34,862	41,485	11,331	17,954
Wisconsin	28,652	40,408	51,206	11,756	22,554
Wyoming	26,433	34,381	42,002	7,948	15,569



**Table 3**  
**Number Of Migration-Adjusted Bachelor Degree Graduates And Advanced Degree Graduates, By State: 2000**

State	Bachelor Degree Graduates by Number	Net Migration of Young, Single, College Graduates, 1995-2000	Prorated Net Migration Per Year	Migration Adjusted Bachelor Degree Graduates by Number	Advanced Graduates by Number
Alabama	217,135	-7,780	-1,556	215,579	119,120
Alaska	32,210	386	77	32,287	17,310
Arizona	272,090	9,264	1,853	273,943	141,070
Arkansas	116,040	-2,638	-528	115,512	55,860
California	1,990,735	73,037	14,607	2,005,342	1,104,350
Colorado	358,115	17,862	3,572	361,687	178,645
Connecticut	250,635	-6,315	-1,263	249,372	179,830
Delaware	50,445	-231	-46	50,399	29,105
Florida	834,425	10,454	2,091	836,516	432,240
Georgia	532,370	24,667	4,933	537,303	269,820
Hawaii	78,920	-2,157	-431	78,489	36,250
Idaho	65,815	87	17	65,832	30,170
Illinois	832,095	3,834	767	832,862	462,405
Indiana	313,580	-14,334	-2,867	310,713	168,245
Iowa	182,685	-11,691	-2,338	180,347	73,080
Kansas	184,950	-5,025	-1,005	183,945	89,245
Kentucky	170,080	-3,411	-682	169,398	109,760
Louisiana	205,530	-9,731	-1,946	203,584	102,390
Maine	74,530	-1,706	-341	74,189	36,895
Maryland	397,695	4,358	872	398,567	293,735
Massachusetts	516,980	-1,062	-212	516,768	347,770
Michigan	542,000	-16,018	-3,204	538,796	304,515
Minnesota	391,775	1,719	344	392,119	161,015
Mississippi	117,835	-4,972	-994	116,841	59,840
Missouri	239,025	-4,686	-937	238,088	169,680
Montana	54,160	-2,750	-550	53,610	22,585
Nebraska	118,330	-4,211	-842	117,488	49,505
Nevada	89,440	6,788	1,358	90,798	44,290
New Hampshire	93,310	-3,154	-631	92,679	48,110
New Jersey	662,110	-2,784	-557	661,553	376,400
New Mexico	80,795	-2,887	-577	80,218	59,510
New York	1,159,355	-6,611	-1,322	1,158,033	836,375
North Carolina	503,470	7,219	1,444	504,914	220,080
North Dakota	43,635	-3,706	-741	42,894	13,095
Ohio	638,455	-18,409	-3,682	634,773	330,700
Oklahoma	178,380	-5,973	-1,195	177,185	85,510
Oregon	194,595	6,356	1,271	195,866	100,490
Pennsylvania	717,570	-29,574	-5,915	711,655	411,195
Rhode Island	65,470	-4,225	-845	64,625	37,425
South Carolina	210,385	-2,546	-509	209,876	104,665
South Dakota	48,445	-2,731	-546	47,899	16,735
Tennessee	302,890	-1,317	-263	302,627	153,235
Texas	1,251,180	16,813	3,363	1,254,543	577,985
Utah	119,615	-2,113	-423	119,192	58,610
Vermont	41,730	-2,252	-450	41,280	24,430
Virginia	519,520	6,475	1,295	520,815	327,975
Washington	384,725	11,669	2,334	387,059	194,560
West Virginia	66,330	-4,691	-938	65,392	44,340
Wisconsin	336,905	-11,224	-2,245	334,660	147,840
Wyoming	26,325	-814	-163	26,162	12,455

**Table 4**  
**Top Marginal Income Tax Rates, By State: 2001**

State	Tax Rate
Alabama	5.00%
Alaska	No state income tax
Arizona	5.04%
Arkansas	7.00%
California	9.30%
Colorado	4.63%
Connecticut	4.50%
Delaware	5.95%
Florida	No state income tax
Georgia	6.00%
Hawaii	8.50%
Idaho	8.20%
Illinois	3.00%
Indiana	3.40%
Iowa	8.98%
Kansas	6.45%
Kentucky	6.00%
Louisiana	6.00%
Maine	8.50%
Maryland	4.80%
Massachusetts	5.60%
Michigan	4.20%
Minnesota	7.85%
Mississippi	5.00%
Missouri	6.00%
Montana	11.00%
Nebraska	6.68%
Nevada	No state income tax
New Hampshire	Income tax limited to interest and dividends only
New Jersey	6.37%
New Mexico	8.20%
New York	6.85%
North Carolina	7.75%
North Dakota	12.00%
Ohio	6.98%
Oklahoma	6.75%
Oregon	9.00%
Pennsylvania	2.80%
Rhode Island	25.5% Federal tax liability
South Carolina	7.00%
South Dakota	No state income tax
Tennessee	Income tax limited to interest and dividends only
Texas	No state income tax
Utah	7.00%
Vermont	24.0% Federal tax liability
Virginia	5.75%
Washington	No state income tax
West Virginia	6.50%
Wisconsin	6.75%
Wyoming	No state income tax

**Table 5**  
**Total tax rates computed, by state: 2001**

State	Personal Income	Total Tax Revenue	Total Tax Rate
Alabama	\$111,000,000,000	\$6,368,026,000	5.74%
Alaska	20,100,000,000	1,428,698,000	7.11
Arizona	138,000,000,000	8,456,739,000	6.13
Arkansas	62,100,000,000	4,911,035,000	7.91
California	1,135,800,000,000	90,453,746,000	7.96
Colorado	150,600,000,000	7,566,919,000	5.02
Connecticut	146,100,000,000	10,590,296,000	7.25
Delaware	25,100,000,000	2,174,440,000	8.66
Florida	478,300,000,000	24,938,748,000	5.21
Georgia	239,700,000,000	14,368,505,000	5.99
Hawaii	35,100,000,000	3,507,770,000	9.99
Idaho	33,000,000,000	2,558,098,000	7.75
Illinois	410,300,000,000	23,150,229,000	5.64
Indiana	169,200,000,000	10,204,197,000	6.03
Iowa	80,200,000,000	5,158,780,000	6.43
Kansas	76,900,000,000	4,993,526,000	6.49
Kentucky	101,500,000,000	7,850,908,000	7.73
Louisiana	109,500,000,000	7,193,998,000	6.57
Maine	34,900,000,000	2,668,938,000	7.65
Maryland	190,300,000,000	10,785,695,000	5.67
Massachusetts	249,200,000,000	17,225,270,000	6.91
Michigan	295,100,000,000	22,263,874,000	7.54
Minnesota	163,100,000,000	13,534,585,000	8.30
Mississippi	62,800,000,000	4,749,481,000	7.56
Missouri	157,400,000,000	8,837,196,000	5.61
Montana	21,800,000,000	1,495,805,000	6.86
Nebraska	49,400,000,000	3,028,204,000	6.13
Nevada	63,600,000,000	3,832,227,000	6.03
New Hampshire	42,500,000,000	1,775,810,000	4.18
New Jersey	332,300,000,000	19,253,297,000	5.79
New Mexico	43,800,000,000	4,002,246,000	9.14
New York	679,600,000,000	44,855,582,000	6.60
North Carolina	225,400,000,000	15,625,133,000	6.93
North Dakota	16,400,000,000	1,231,049,000	7.51
Ohio	325,900,000,000	19,617,950,000	6.02
Oklahoma	88,200,000,000	6,341,714,000	7.19
Oregon	99,000,000,000	5,892,963,000	5.95
Pennsylvania	372,900,000,000	22,562,195,000	6.05
Rhode Island	31,900,000,000	2,243,295,000	7.03
South Carolina	101,800,000,000	6,147,594,000	6.04
South Dakota	20,400,000,000	977,469,000	4.79
Tennessee	154,700,000,000	7,821,984,000	5.06
Texas	617,700,000,000	29,422,936,000	4.76
Utah	55,600,000,000	4,065,364,000	7.31
Vermont	17,800,000,000	1,552,739,000	8.72
Virginia	232,500,000,000	13,085,329,000	5.63
Washington	193,400,000,000	12,679,410,000	6.56
West Virginia	41,600,000,000	3,422,875,000	8.23
Wisconsin	158,700,000,000	11,768,235,000	7.42
Wyoming	14,900,000,000	1,124,296,000	7.55

**Table 6**  
**Monetary returns and rates of returns on investments in higher education using income differentials,**  
**marginal tax rates, and migration-adjusted college graduate population, by state: 2000-2001**

State	Total Monetary Return	Total Expenditures	Rate of Return
Alabama	\$279,417,104.70	\$2,720,196,000	10.27%
Alaska	-----	487,283,000	-----
Arizona	\$389,168,134.84	2,702,906,000	14.40
Arkansas	\$173,042,253.72	1,438,001,000	12.03
California	\$7,443,617,098.10	20,375,753,000	36.53
Colorado	\$430,424,866.37	2,856,236,000	15.07
Connecticut	\$452,783,679.84	1,554,972,000	29.12
Delaware	\$93,740,324.46	629,493,000	14.89
Florida	-----	5,791,614,000	-----
Georgia	\$943,751,961.36	3,890,955,000	24.26
Hawaii	\$67,308,263.44	792,210,000	21.12
Idaho	\$130,053,646.40	692,076,000	18.79
Illinois	\$812,680,063.65	6,506,274,000	12.49
Indiana	\$260,947,394.48	3,614,096,000	7.22
Iowa	\$298,279,991.43	2,327,927,000	12.81
Kansas	\$260,203,027.82	1,770,463,000	14.70
Kentucky	\$246,921,894.36	2,402,629,000	10.28
Louisiana	\$263,841,979.80	2,092,465,000	12.61
Maine	\$133,258,805.08	559,307,000	23.83
Maryland	\$754,270,360.90	3,531,280,000	21.36
Massachusetts	\$985,520,532.08	2,516,945,000	39.16
Michigan	\$751,014,960.82	7,296,108,000	10.29
Minnesota	\$683,540,639.26	2,946,707,000	23.20
Mississippi	\$119,595,331.50	1,841,358,000	6.49
Missouri	\$406,014,880.80	2,645,247,000	15.35
Montana	\$93,404,421.55	506,367,000	18.45
Nebraska	\$147,151,136.98	1,192,051,000	12.34
Nevada	-----	810,417,000	-----
New Hampshire	-----	560,879,000	-----
New Jersey	\$1,704,095,673.53	4,027,545,000	42.31
New Mexico	\$198,499,408.84	1,461,831,000	13.58
New York	\$3,018,815,371.56	7,982,926,000	37.82
North Carolina	\$592,048,777.31	5,147,632,000	11.50
North Dakota	\$73,427,769.00	510,270,000	14.39
Ohio	\$1,162,326,365.33	5,833,807,000	19.92
Oklahoma	\$245,011,489.20	2,227,866,000	11.00
Oregon	\$460,417,956.84	2,538,085,000	18.14
Pennsylvania	\$603,512,069.30	5,770,486,000	10.46
Rhode Island	-----	479,719,000	-----
South Carolina	\$335,688,563.00	2,130,103,000	15.76
South Dakota	-----	362,050,000	-----
Tennessee	-----	2,957,768,000	-----
Texas	-----	12,481,739,000	-----
Utah	\$225,195,635.28	2,131,325,000	10.57
Vermont	-----	428,518,000	-----
Virginia	\$1,187,962,969.13	4,154,135,000	28.60
Washington	-----	3,982,261,000	-----
West Virginia	\$99,907,412.28	1,000,161,000	9.99
Wisconsin	\$490,633,626.60	3,710,116,000	13.22
Wyoming	-----	360,402,000	-----

**Table 7**  
**Monetary returns and rates of returns on investments in higher education using income differentials,**  
**total tax rates, and migration-adjusted college graduate population, by state: 2000-2001**

State	Total Monetary Return	Total Expenditures	Rate of Return
Alabama	\$320,600,970.73	\$2,720,196,000	11.79%
Alaska	6,167,616,445.05	487,283,000	12.66
Arizona	47,318,457,319.21	2,702,906,000	17.51
Arkansas	19,549,495,387.57	1,438,001,000	13.59
California	637,420,121,967.14	20,375,753,000	31.28
Colorado	46,710,065,417.75	2,856,236,000	16.35
Connecticut	72,935,024,617.46	1,554,972,000	46.90
Delaware	13,648,445,620.61	629,493,000	21.68
Florida	122,857,165,691.87	5,791,614,000	21.21
Georgia	94,286,641,465.45	3,890,955,000	24.23
Hawaii	19,670,819,749.60	792,210,000	24.83
Idaho	12,294,529,665.13	692,076,000	17.76
Illinois	152,845,313,000.50	6,506,274,000	23.49
Indiana	46,286,306,144.66	3,614,096,000	12.81
Iowa	21,365,862,267.64	2,327,927,000	9.81
Kansas	26,195,917,070.85	1,770,463,000	14.80
Kentucky	31,831,873,165.95	2,402,629,000	13.25
Louisiana	28,890,086,377.43	2,092,465,000	13.81
Maine	11,989,195,641.75	559,307,000	21.44
Maryland	89,062,555,396.79	3,531,280,000	25.22
Massachusetts	121,645,388,497.63	2,516,945,000	48.33
Michigan	134,905,862,902.45	7,296,108,000	18.49
Minnesota	72,257,955,011.87	2,946,707,000	24.52
Mississippi	18,089,673,714.90	1,841,358,000	9.82
Missouri	37,992,726,392.91	2,645,247,000	14.36
Montana	5,826,305,286.76	506,367,000	11.51
Nebraska	13,503,468,617.42	1,192,051,000	11.33
Nevada	13,339,075,551.99	810,417,000	16.46
New Hampshire	10,276,981,926.23	560,879,000	18.32
New Jersey	154,999,147,840.16	4,027,545,000	38.48
New Mexico	22,119,486,162.61	1,461,831,000	15.13
New York	290,876,815,562.95	7,982,926,000	36.44
North Carolina	52,957,271,018.56	5,147,632,000	10.29
North Dakota	4,593,149,471.53	510,270,000	9.00
Ohio	100,240,201,121.52	5,833,807,000	17.18
Oklahoma	26,098,812,315.79	2,227,866,000	11.71
Oregon	30,451,470,080.74	2,538,085,000	12.00
Pennsylvania	130,411,801,252.73	5,770,486,000	22.60
Rhode Island	13,073,475,480.03	479,719,000	27.25
South Carolina	28,959,823,123.31	2,130,103,000	13.60
South Dakota	3,283,474,095.23	362,050,000	9.07
Tennessee	38,122,911,504.10	2,957,768,000	12.89
Texas	173,907,931,358.80	12,481,739,000	13.93
Utah	23,522,667,744.72	2,131,325,000	11.04
Vermont	7,447,347,545.37	428,518,000	17.38
Virginia	116,277,784,316.54	4,154,135,000	27.99
Washington	64,902,164,156.53	3,982,261,000	16.30
West Virginia	12,646,841,117.16	1,000,161,000	12.64
Wisconsin	53,899,897,936.76	3,710,116,000	14.53
Wyoming	3,032,184,592.32	360,402,000	8.41

**Table 8**  
**Percentage of higher education students enrolled in private institutions, by state: 2001**

State	Public Enrollees by Number	Private Enrollees by Number	Percentage of Private Enrollees
Alabama	208,385	27,761	11.76%
Alaska	26,550	1,206	4.35
Arizona	294,174	72,311	19.73
Arkansas	108,950	13,332	10.90
California	2,043,182	336,908	14.16
Colorado	222,815	46,477	17.26
Connecticut	104,066	60,961	36.94
Delaware	36,510	10,594	22.49
Florida	588,921	164,633	21.85
Georgia	298,215	77,883	20.71
Hawaii	45,994	16,085	25.91
Idaho	56,673	13,001	18.66
Illinois	534,280	214,164	28.61
Indiana	259,258	79,457	23.46
Iowa	140,227	54,595	28.02
Kansas	164,173	20,770	11.23
Kentucky	178,349	36,490	16.98
Louisiana	194,790	34,081	14.89
Maine	42,425	18,702	30.60
Maryland	236,795	51,429	17.84
Massachusetts	186,891	238,180	56.03
Michigan	482,154	103,844	17.72
Minnesota	225,941	82,292	26.70
Mississippi	125,656	12,226	8.87
Missouri	206,721	124,859	37.66
Montana	39,368	5,564	12.38
Nebraska	89,639	24,178	21.24
Nevada	86,790	6,578	7.05
New Hampshire	37,224	27,807	42.76
New Jersey	275,655	70,852	20.45
New Mexico	103,758	9,103	8.07
New York	584,607	473,187	44.73
North Carolina	350,684	77,100	18.02
North Dakota	38,560	4,283	10.00
Ohio	425,265	143,958	25.29
Oklahoma	163,336	26,449	13.94
Oregon	162,645	28,733	15.01
Pennsylvania	353,950	276,349	43.84
Rhode Island	39,149	38,086	49.31
South Carolina	158,661	32,929	17.19
South Dakota	37,310	8,224	18.06
Tennessee	194,696	63,838	24.69
Texas	935,826	140,852	13.08
Utah	133,790	43,255	24.43
Vermont	20,480	15,871	43.66
Virginia	326,758	63,095	16.18
Washington	277,023	48,109	14.80
West Virginia	78,304	13,015	14.25
Wisconsin	257,888	57,962	18.35
Wyoming	29,545	1,550	4.98