

# **Tuition Pricing and Higher Education Participation in Colorado**

**October 19, 2000**

***NORED***

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**By**

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## **Executive Summary**

This report was prepared in parallel with the NORED study of higher education governance in Colorado. The focus is on the relationship between tuition pricing policies and participation in public higher education in Colorado. The objectives of the report are to: summarize the relevant research on tuition pricing policies, financial aid, and college participation; examine the recent history of tuition pricing and financial aid policies in Colorado, and relate these to regional and national trends; identify alternative tuition and financial aid policies for consideration with the goal of increasing college participation in the state; and, recommend one or more alternatives for implementation. An important goal of this report is to stimulate discussion among policymakers, institutional leaders, and other interested observers in Colorado about ways that the state can use its tuition and financial aid policies to achieve the goal of increasing college participation.

The research on the demand for higher education in this country over the last three decades has reached a number of commonly-accepted conclusions, including:

- Like most goods and services, the demand curve for higher education is downward sloping, i.e., as price increases, consumers are likely to consume less of it.
- College enrollments tend to respond more to changes in tuition price than they do to equivalent-sized changes in financial aid awards, and different forms of student aid (grants, loans, and work study) have differing effects.
- Poor and minority students tend to be more price responsive than wealthier and white students.

However, it is important to note that most of these conclusions have been drawn from studies that have examined the behavior of large samples of students, and thus, one must proceed with caution when applying conclusions from the literature to specific policy settings.

Public college and university tuition prices in Colorado are characterized by two features when compared to the nation as a whole: 1) prices in 4-year institutions are lower than the national average, and have dropped relative to prices in other states over the last two decades; and, 2) tuition in community colleges is higher than the national average (Figure 1). These two factors together lead to a third distinguishing characteristic: the gap between tuition prices in 4-year institutions (both the state colleges and state universities) and community colleges is lower than in most other states (Figure 2). Even with this tuition structure, however, Colorado is a net importer of students into the state, and has a higher in-migration rate than neighboring states (Table 1). Data from the U.S. Department of Education indicate that among first-time freshmen students, Colorado has a net migration rate of 11 percent in its community colleges (compared to five percent in the neighboring states), and 21 percent in the state's public 4-year institutions (compared to 15 percent in neighboring states).

Colorado's state-run student financial aid programs for undergraduates award approximately \$200 per enrolled undergraduate in the state, above the national median of \$155 per student (Figures 5 and 6). In 1998-1999, approximately 23 percent of the \$54 million awarded to undergraduates in the state was awarded through merit-based programs, as compared to 19 percent nationally (Table 2). The remainder was provided through programs that use financial need as a criterion in determining award eligibility.

While 4-year college participation rates in the state exceed the national average (in public institutions alone, as well as in public and private institutions combined), the community college participation rate in Colorado has fallen below the national average (Figures 7 and 8). The evidence is clear that there is an important link between the price of college and participation rates. This evidence can be found in both the empirical studies described earlier, as well as in an examination of the relationship between tuition prices and participation rates in all fifty states (Figure 9).

The stated interest in increasing college participation rates in Colorado, along with the current tuition and financial aid structure in the state, leads to the following policy alternatives for consideration:

1. Cut tuition at all community colleges

2. Increase tuition at the 4-year institutions
3. Cut tuition at selected community colleges only
4. Raise tuition at selected 4-year institutions and cut tuition at selected community colleges
5. Target specific populations for aggressive financial aid and enrollment management policies

The recommendation in this report is that the state pursue policy alternative number 5. The analysis I conducted for this report indicates that this strategy of targeting financial aid and other enrollment management policies at populations that historically have had low college participation rates is likely to be the best means of moving the state towards the goal of increasing overall college participation.

Lowering the price of college for everybody attending one or all public institutions only very indirectly addresses the core goal of increasing college participation. It more directly addresses the perception of college affordability. There are plenty of citizens of Colorado for whom college affordability is *not* a problem, and in an era of constrained public resources, returning money to them does not help the state attain its college participation goals. Targeting financial resources at individuals who are currently *not* attending college (for financial and/or other reasons) is likely to be a more efficient and effective way of increasing college participation in Colorado.

The primary policy used to target financial aid to low-income students is need-based aid programs. While the state has shifted more of its state-provided aid toward need-based programs in recent years, it still spends a significant share on merit programs. The state should evaluate all of its undergraduate programs, both need-based and merit, to determine if they are supporting the goal of increasing college participation in the state.

Besides considering more targeted uses of financial aid (as an alternative to broad-scale tuition reductions), the state and individual institutions should also examine non-financial outreach, recruitment, academic support, and retention programs for underrepresented populations. These other types of programs, a number of which are undoubtedly already in place in the state, are beyond the scope of this report. They have been proven, however, to be successful at getting students from underrepresented groups into college and helping to make them successful once there.

Again, I wish to reiterate that an important function of this report is to stimulate conversation among policymakers, institutional leaders, and other interested observers in Colorado about ways that the state can use its tuition and financial aid policies to increase college participation. It should not be the final word on the subject, but rather, as a catalyst towards further discussion and analysis.

# **Tuition Pricing and Higher Education Participation in Colorado**

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## **I. Introduction**

This report was prepared in parallel with the NORED study of higher education governance in Colorado. The focus is on the relationship between tuition pricing policies and participation in public higher education in Colorado. The report deals only with undergraduate education in the state; no analysis of post-baccalaureate education was conducted.

The objectives of this report are to:

- Provide a summary of the relevant research on the relationship between tuition prices, financial aid, and the decisions students make whether or not to enroll in college, and what type of institution to attend;
- Provide a summary of how these relationship differ for students with varying background characteristics and for different types of financial aid;
- Examine the current and recent history of tuition prices in Colorado's 4-year and community colleges, and compare that to national and other trends;
- Summarize the status of Colorado's state-funded student financial aid programs;
- Examine the recent history of college participation patterns in Colorado, and how those trends compare to the nation as a whole and other states;
- Analyze the relationship between tuition prices and college participation in Colorado;
- Identify other issues that should be taken into account when considering changes to tuition and financial aid policies;

- Propose alternative tuition pricing and financial aid policies for the state to consider, with an articulation of possible impacts on college participation; and,
- Recommend one or more policy alternatives for implementation.

Information used in this report was collected from a variety of sources. Data were provided to me by staff from the Colorado Commission on Higher Education (CCHE), as well as from the NORED consulting team working on the higher education governance study. Additional data were collected from governmental and non-governmental organizations across the country. In order to maintain the flow of the report, a list of the data sources and other references used are included at the end of the report (and have been cited in the text).

The casual reader is invited to skip the next section, which summarizes the conceptual and theoretical underpinnings regarding the relationship between tuition pricing, financial aid availability, and college enrollment.

## II. Existing Research on Student Price Responsiveness

There is a long and rich history of research studies that have examined the relationship between college tuition prices, financial aid availability, and the decisions that potential students make about enrolling in college. This research is often referred to as “student price responsiveness,” “student demand,” or “student price elasticity” studies. Reviews of much of this research have been published over the last three decades by Heller (1997), Jackson and Weathersby (1975), and Leslie and Brinkman (1988).

While these studies have utilized a broad range of research methodologies, have used different samples of students, and have been conducted at different times, there are a number of tenets that are generally accepted by both researchers and higher education policymakers alike. These include:

- Higher education is like most goods and services in our economy – as its price rises, individuals are likely to consume less of it, all other things being equal.

- Higher education is what economists refer to as a “normal” good – all other things being equal, as real incomes rise, more students will enroll in college.
- Tuition price changes and financial aid changes have differing effects on students – a \$100 increase in price is likely to have a greater impact on college enrollment behavior than is a \$100 decrease in financial aid (the “sticker price phenomenon”).
- Different types of financial aid have varying impacts on college enrollment behavior. In general, grants tend to have a stronger influence on college enrollment than do college loans or work study.
- Students with varying characteristics have differing reactions to changes in tuition prices and financial aid offers. In general, African American, Hispanic, and low income students tend to be more price responsive (i.e., are less likely to enroll in college, or change the type of institution in which they enroll, in the face of tuition increases) than are White and middle- and upper-income students.
- Enrollments in community colleges tend to be more price responsive than enrollments in 4-year institutions, though much of this effect appears to be because of the disproportionate share of lower-income students who enroll in community colleges.
- Tuition and financial aid policies in one college sector can influence enrollments in a different sector (“cross-sector price elasticities”), though these effects are generally not as large as the reaction to same-sector price changes.

Leslie and Brinkman (1988), in their review of over two dozen studies that examined the relationship between tuition prices and college enrollment, came to the conclusion that a \$100 increase in tuition prices (in 1982 dollars) was related to a decrease in the college enrollment rate of 0.7 percent. It should be noted that this change, which they named a “student price response coefficient” (SPRC), was an average among many types of institutions. Given that the overall college participation rate in the country in 1982 was approximately 33 percent, Leslie and Brinkman estimated that a \$100 price increase was associated with a 2.1 percent decrease in enrollments (0.7 percent divided by 33 percent).



More recently, I conducted a study of the enrollment effects of public college tuition price increases between 1976 and 1994 (Heller, 1999a). Utilizing data on enrollments, tuition prices, and state aid spending, I analyzed how price changes affected enrollments separately in both the 4-year and community college sectors of public higher education. The results of the analysis were used to compare to the earlier findings of Leslie and Brinkman. The \$100 tuition increase Leslie and Brinkman used was converted to \$160 in 1994 dollars (i.e., public college tuition prices increased on average 60% between 1982 and 1994). This study found that a \$160 tuition increase was associated with an enrollment decrease of 0.5 percent in public 4-year institutions, and a decrease of 2.3 percent in community colleges.

The results of this study can be updated to reflect current public college and university prices nationally. Average tuition prices at public 4-year institutions have increased approximately 28 percent in 4-year institutions and 15 percent in community colleges since 1994. Thus, inflating the 1994 tuition increase of \$160 to 1999-2000 prices would indicate that a \$205 increase in 4-year tuition would be associated with an enrollment drop of 0.5 percent, and a \$184 increase in community college tuition would be associated with a 2.3 percent drop in enrollments at community colleges.

There are a number of important caveats to be aware of when considering these findings. First, the reader should remember that these effects are generally consistent when you are examining the behavior of large populations of students. You cannot use these to predict with certainty how a particular policy change may affect the behavior of any single student, or the aggregate behavior of a relatively small group of students, or even enrollment in a single state.

Second, it is also important for policymakers and other observers to keep in mind that the research shows that college pricing and financial aid factors play a relatively small part of the decisions made by most students about enrolling in college. Other factors, when taken together, tend to play a much more important role in influencing college enrollment behavior. These factors include: the student's academic aptitude and achievement; course-taking patterns in high school and earlier grades; the role of parents, siblings, peers, and others in promoting college as a post-high school option; proximity of postsecondary education institutions; and economic conditions such as the status of the local economy and labor markets. Nevertheless, college pricing and financial aid policies are important levers in influencing college-going behavior for one critical reason: they are among the only factors that are under the direct control of postsecondary education policymakers in state governments, the federal government, and in public and private colleges and universities.

Third, researchers do not know whether the effects of price changes on enrollment are symmetrical, i.e., whether the findings outlined above regarding the effects of price increases would be the same size in the opposite direction in the case of a price decrease. Until the last few years, when some states (including Arkansas, California, Massachusetts, and Virginia) have experimented by cutting the tuition price at public institutions, the trend for decades had been one of price increases. Thus, the bulk of the research on student price responsiveness has examined the effect of price increases on enrollment, with little evidence of the effect of price reductions. While intuitively it may seem reasonable to expect a price cut to have an opposite, yet similar-sized, effect as a price increase, there is no empirical evidence to support this.

Fourth, and perhaps most important, all other things are *not* equal. When economists and other researchers analyze the effects of a particular policy change, it is generally done with the assumption that all other factors are held constant or unchanged, or what economists refer to as *ceteris paribus* (Latin, “other things being equal”). However, in real life, it is rare for the researcher to truly assure that all other things are truly equal, especially when examining changes over time.

For example, it has been well documented that tuition prices in both public and private colleges experienced unprecedented increases during the 1980s and 1990s, increases that far outpaced the change in the ability of students and their families to pay for them (details of these increases are presented in the next section of this report). In addition, the 1980s and early 1990s were the “baby bust era” when many observers expected college enrollments to decline due to the shrinking pool of high school graduates. Yet even in the face of escalating prices and declining demographics, college enrollments continued to rise during this era. The reason? Most analysts point to changes in the labor market, and specifically, the increase in the college wage premium (the higher wages earned by college graduates relative to those without a college degree) over the last 20 years. Most youth understand that to earn a decent wage in today’s global and information economy, a salary that used to be described as one with which you could support a family in a middle-class lifestyle, you have to go to college. Thus, today’s students are more willing to endure higher relative prices to go to college (and earn the requisite rewards in the labor markets) than were students a generation earlier.

The lesson to remember from this caveat is that the predictions about how a particular policy change may impact college participation are made with the assumption of *ceteris paribus*. If other factors that affect college participation change

simultaneously with the targeted policy change, the overall impact on college-going behavior may be quite different from what one would expect.

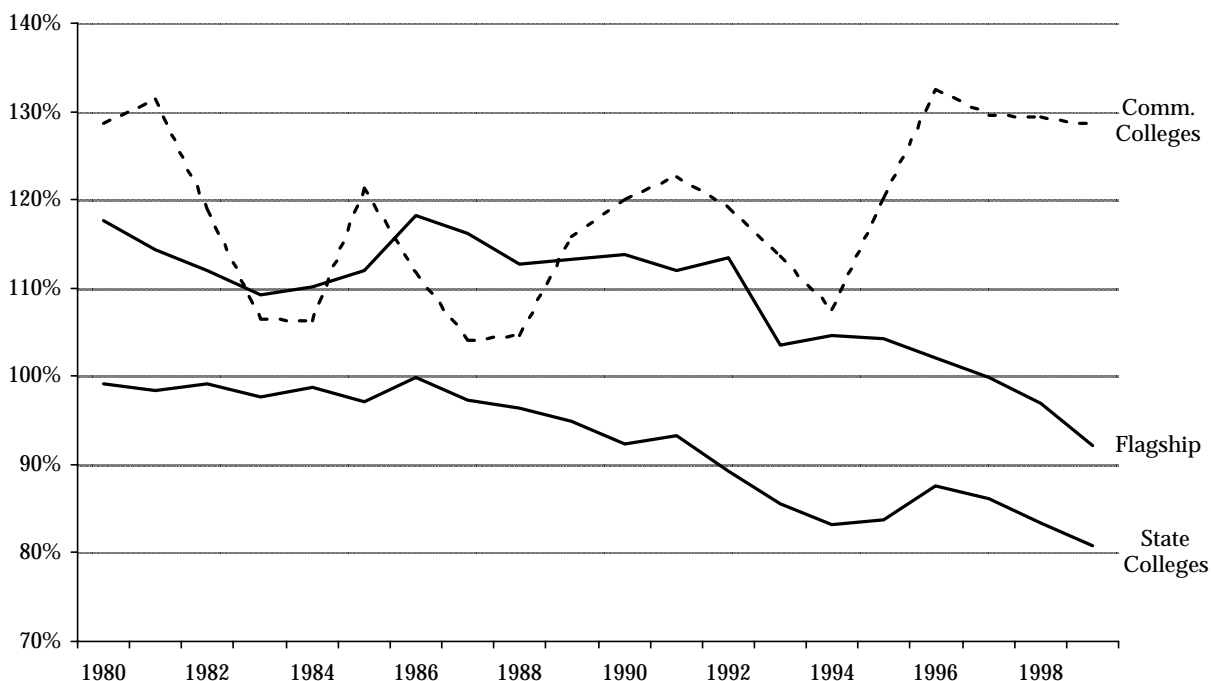
### **III. Tuition Prices and State Financial Aid**

#### *Tuition Prices in Colorado*

Twenty years ago, Colorado would have been considered a mid- to high-tuition state. Tuition prices in many of Colorado's public institutions of higher education were well above the national averages.<sup>1</sup> The last two decades, however, have seen important changes in tuition prices in Colorado when compared to the national trends.

Figure 1 displays tuition prices in Colorado in each sector of higher education, expressed as a percentage of the national median over the last two decades. In 1980, tuition at the University of Colorado at Boulder (UCB) was 18 percent above the median; by the 1999-2000 academic year it had dropped to eight points below the median. A similar pattern is seen when examining tuition at state colleges. Two decades ago, average state college tuition in Colorado was just below the national median. Over the ensuing 20 years, other states increased their tuition prices at a higher rate than did Colorado, so that by last year, state college tuition in Colorado was only 80 percent of the national median.

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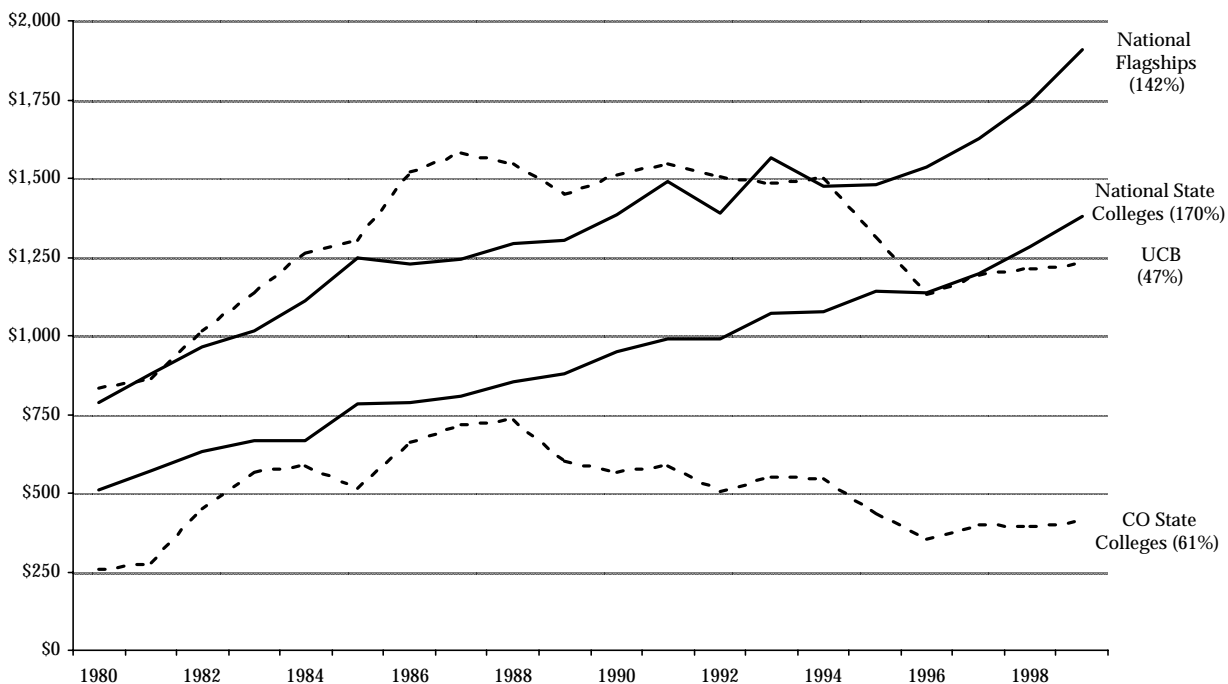


**Figure 1: Colorado Tuition as a Percentage of the National Median**

The trend in community colleges has been different, however. The community colleges in Colorado have historically had prices that were further above the national averages than were the other two sectors. While the 1980s and early 1990s saw Colorado's price drop relative to other states, since 1994 community college tuition in the state has regained almost exactly the position it held two decades ago at approximately 128 percent of the national average.

The net effect of these two trends has been a narrowing of the gap between tuition in both 4-year sectors in Colorado and the price charged in the community colleges, relative to what has happened nationally. Figure 2 shows this gap in Colorado and nationally, expressed in constant dollars. In 1980, the average gap nationally between state college and community college tuition was \$500; Colorado's was half this level. Today, state colleges nationally charge an average of \$1,377 more than community colleges, an increase of 170 percent. In Colorado, state colleges charge approximately \$400 more than community colleges, an increase of only 61 percent.

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Note: The increase in the gap from 1980 to 1999 in each sector is shown in parentheses

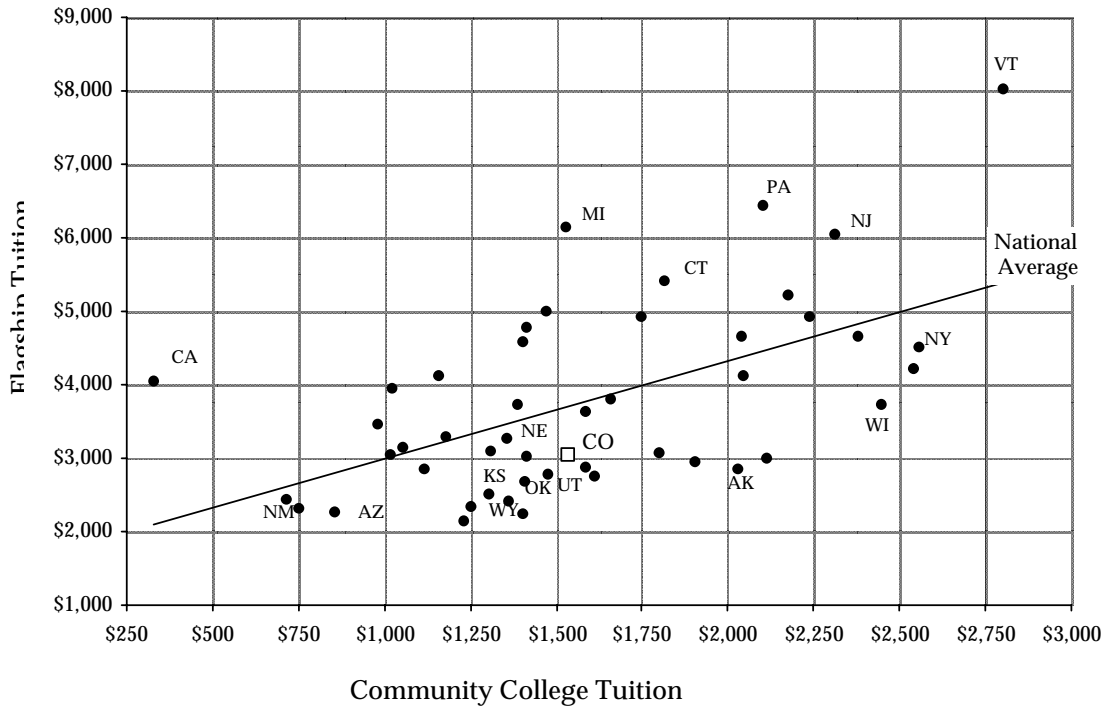
**Figure 2: Gap Between 4-year Sector Tuition and Community College Tuition in Constant (1999) Dollars**

The story in flagship institutions is similar. In 1980, the gap between the flagship and community college tuition in Colorado and nationally was approximately \$800 (in 1999 dollars). The national average increased 142 percent over the last two decades, while the gap in Colorado increased only 47 percent. While today flagship institutions nationally charge almost \$2,000 more than community colleges, in Colorado this difference is approximately \$1,250.

While the tuition gap in the 4-year and community college sectors is clearly smaller than the national average (and has declined relative to the nation over the last two decades), Colorado is by no means an outlier in pursuing this path. Figure 3 shows the flagship university and community college tuition prices in each of the states in the most recent academic year. The average flagship and community college tuition prices last year were \$3,381 and \$1,473, respectively. Each dot represents a state; some of the more extreme states, as well as Colorado and its neighbors, have been marked. A line designates the average relationship between community college and flagship prices

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nationally. States that lie below the line have sectoral price gaps that are below the national average; states above the line have gaps that are above the average.



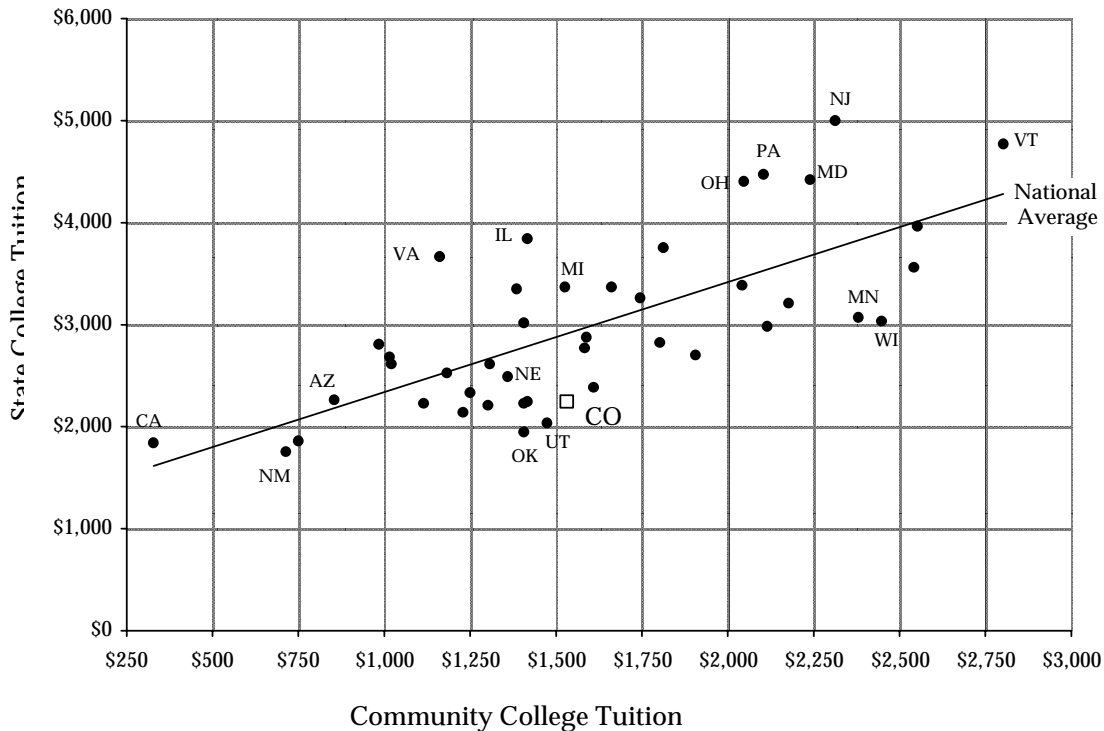
**Figure 3: Flagship and Community College Tuition Price, 1999-2000**

Figure 3 shows how states have pursued different policies with respect to pricing higher education. California, for example, has a very low community college tuition price, but charges more than the national average at the University of California. Arizona prices both its flagship and community college educations at below the average in each sector, while states such as Pennsylvania, New Jersey, and New York charge more than the average in each. In Michigan, which charges only \$50 above the national average at its community colleges, tuition at the University of Michigan is almost \$3,000 above the national average. Colorado also charges about \$50 above the average community college tuition, but is almost \$400 below the flagship average. Some of Colorado's neighbors, including Utah, Oklahoma, Kansas, and Wyoming, have pursued similar policies in the relationship between flagship and community college tuition prices.

The horizontal and vertical distances between each state and the national average line shown in Figure 3 represents the gap between the price charged in one sector, and what one would expect the price in the other sector to be if the state adhered to the national average of the relationship in price between the two sectors. For example, for Colorado's community college price of just over \$1,500 last year, it should have charged about \$3,700 at UCB if it wanted to adhere to the national average. Conversely, for the tuition price of just over \$3,000 charged at UCB, Colorado should have charged \$1,038 at its community colleges if it had wanted to adhere to the average gap.

Figure 4 shows the same relationship between state college and community college prices in each state. The average state college tuition in 1999-2000 was \$2,850. The average \$2,239 tuition charged in Colorado state colleges was well below the \$2,900 price it would have charged if it had chosen to set the gap at the national average. Again, many of Colorado's neighbors have chosen similar policies, establishing a lower gap between the two sectors than the national average.

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**Figure 4: State College and Community College Tuition Price, 1999-2000**

### *Colorado Tuition Prices Compared to its Neighboring States*

The information gathered by the NORED consulting team points to a number of concerns regarding tuition policies in Colorado. There is a perception that community college tuition is too high, not just in relation to the 4-year institutions in the state, but also compared to institutions in neighboring states.

Public sector tuition prices in Colorado are higher than in neighboring states, with the gap the greatest for community colleges. Colorado's community colleges charge approximately 50 percent, or \$600, more than the average resident tuition in the states bordering Colorado. However, a more appropriate comparison if one is concerned with the relative price of a community college education for Colorado



residents is to compare Colorado resident tuition with what students would pay as an out-of-state student in the other states. This comparison shows that the Colorado community colleges are priced approximately \$1,400 below the average of what students would pay to attend an out-of-state institution, though in two states (Nebraska and New Mexico) non-resident tuition and fees are actually below what Colorado charges its own students.<sup>2</sup>

At 4-year institutions, Colorado's resident tuition is much closer to what other states charge their residents. The gap between Colorado resident tuition and the average non-resident tuition charged by the other states is approximately \$3,900 at state colleges and \$5,200 at the flagship institutions.

The data on the migration of first-time college freshmen collected by the National Center for Education Statistics (1998) can be used to examine whether Colorado and its neighboring states are net importers or exporters of students. Table 1 shows the net migration rates of Colorado and its neighboring states, based on the patterns of first-time college freshmen in the fall of 1996.

Table 1 demonstrates that Colorado is a larger net importer of students in both the community college and 4-year sectors than are its neighboring states taken as a group. Colorado's net student importation rate in community colleges is greater than all but Wyoming, and greater than all but Arizona and Utah in 4-year institutions. The fact that Colorado is a net importer of students to community colleges is impressive given that the average non-resident tuition price in Colorado's community colleges is over \$6,000 greater than the average price non-resident students could pay if they stayed in their own states. The same dollar gap exists for non-resident students in Colorado's state colleges, and an even greater gap exists at UCB.

## Tuition Pricing and Higher Education Participation in Colorado

**Table 1: Net Migration Rates of First-time Freshmen in Public Institutions**

State	Net Migration Rate	
	Community Colleges	4-year Institutions
Arizona	6.1%	31.5%
Kansas	4.8	11.7
Nebraska	(1.2)	4.3
New Mexico	9.1	(2.1)
Oklahoma	0.7	6.3
Utah	5.5	24.1
Wyoming	13.5	(9.0)
Total – 7 States	4.7	14.5
Colorado	10.8	21.2

Note: These rates were calculated as:

$$\frac{\# \text{ of freshmen entering state} - \# \text{ of freshmen leaving state}}{\text{Total \# of freshmen}}$$

While Colorado public higher education institutions are expensive relative to those in neighboring states, this does not appear to have stopped students from coming from out of state to attend college in Colorado, nor does it appear to be driving Colorado's residents to attend college elsewhere. It is likely that other features of Colorado's institutions are working successfully to attract students.

### *State Financial Aid*

As described in Section II, the availability of student financial aid is an important part of what helps determine whether individuals attend college. While it has not been found to have as strong an effect on college enrollment as do tuition prices, it nonetheless needs to be taken into account when analyzing college affordability.

States have a number of options to pursue to ensure that public higher education remains affordable for the greatest number of students. One option is to simply charge a relatively low tuition price to every student, assuming that financial aid available

from other sources (such as the federal Pell Grant system) will be sufficient to ensure that the price charged will not be a barrier to enrollment for the neediest students. This policy has generally been labeled a “low tuition/low aid” approach. Another option is to charge a much higher tuition price, while protecting the interests of financially needy students by supplementing the amount of financial aid available from other sources through a state-run aid program. This latter policy is known as “high tuition/high aid.”

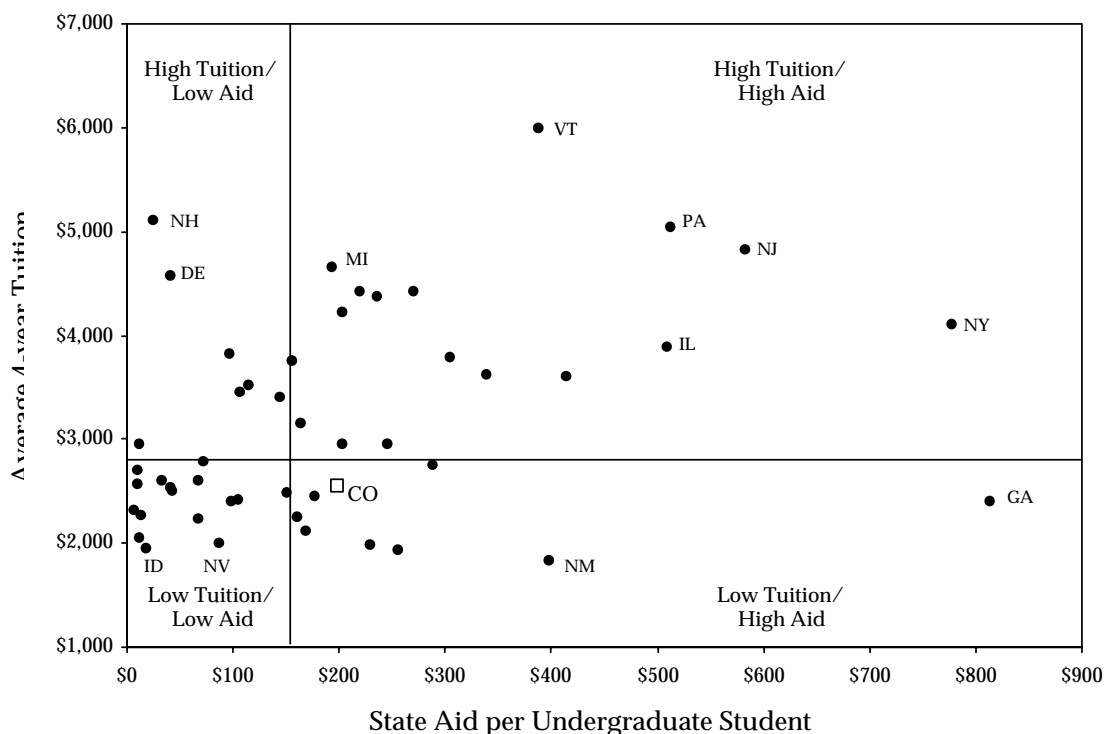
The states are an important source of financial aid for undergraduate students. While much of the attention is given to the federal Pell Grant program, the states as a group award approximately \$1 in aid for every \$2 awarded through the Pell Grant program.<sup>3</sup> As with tuition pricing, the states pursue very different policies with respect to the funding of state financial aid programs. In the 1997-1998 academic year, the 50 states appropriated an average of \$64 million to need-based and non-need financial aid for undergraduate students. The range ran from a low of no funding, in South Dakota, to a high of \$643 million in New York.

Because states differ so greatly in the number of students enrolled in college, a better measure of states’ support for financial aid is to express the amount appropriated per undergraduate student. This adjusts for the size of the enrolled base of undergraduates in each state. Because many state aid programs provide awards to students attending both public and private institutions, undergraduate enrollment in both sectors is used in this analysis.<sup>4</sup>

Figure 5 displays the relationship between tuition prices and state aid per student for the 1997-1998 academic year. The amount of state aid per student ranged from a low of \$0 in South Dakota, to a high of \$814 per student in Georgia. The lines indicate the national median 4-year tuition price (the average of the flagship and state college tuition in each state) of \$2,790, and the median aid per undergraduate of \$155. Colorado and a number of outlying states are marked.

The lines demarcating the average tuition and aid per student create four quadrants. States in the upper right quadrant have both tuition prices and aid levels that are above the national medians. These are the states that can be characterized as implementing a “high tuition/high aid” policy. Conversely, the states in the lower left quadrant have both tuition prices and aid levels that are low. Colorado is fairly close to the national average in both measures, being slightly below the median in tuition and above the median aid level.

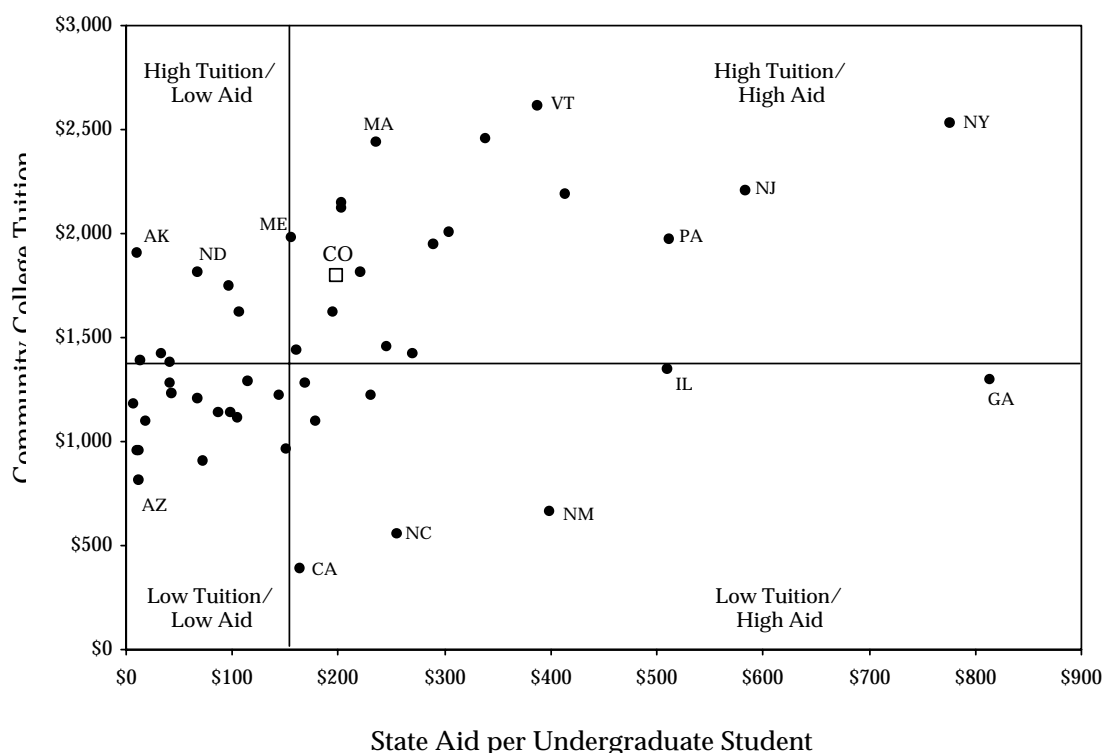
## Tuition Pricing and Higher Education Participation in Colorado



**Figure 5: Average 4-year Tuition Price and Undergraduate Aid per Student, 1997-1998**

Figure 6 shows the same information for community college tuition prices. Those states that pursued a high tuition/high aid policy in 4-year institutions (New Jersey, New York, Pennsylvania, and Vermont) followed the same policy in pricing community colleges. Because tuition at Colorado’s community colleges is above the national average, it appears to be practicing more of a high tuition/high aid policy in this sector than in the 4-year sector.

## Tuition Pricing and Higher Education Participation in Colorado



**Figure 6: Average Community College Tuition Price and Undergraduate Aid per Student, 1997-1998**

One factor to be noted is the type of aid provided by the state aid programs. Most of the state programs award the bulk of their scholarship dollars to students based on financial need (83 percent in 1997-1998). However, the trend in recent years in many states is the development and growth of non-need based, or merit, scholarship programs. Georgia's HOPE Scholarship Program is the most well-known of these, but many states have followed suit by developing broad-based merit programs in the years since HOPE was first implemented in 1993. For example, while Georgia awarded the highest level of state scholarships in 1997, over \$800 for every undergraduate enrolled in college in the state, over 99 percent of this was in the form of merit-based awards. The Georgia HOPE program has no income cap, so all students who meet the minimum grade point average, irrespective of their financial need, qualify for a scholarship. Similar merit-based programs with no income eligibility cap have been implemented in many states, including Louisiana, New Mexico, Florida, and Michigan, since 1997. In

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many of the other states that fall into the high tuition/high aid category in Figures 5 and 6, such as New Jersey, New York, Pennsylvania, and Vermont, the bulk of the state scholarship aid is awarded based on financial need.

Colorado has historically placed more emphasis on merit-based financial aid programs than have most states, though in recent years, the state has begun to shift the balance back towards need-based programs. Table 2 shows the spending for undergraduate aid programs in Colorado reported by the National Association of State Scholarship Grant and Aid Programs, along with the portion of the aid targeted for merit programs. Also shown is the portion of aid nationally that was awarded through merit programs.

During the early years of the 1990s, Colorado awarded approximately 40 percent of its financial aid to undergraduates through merit programs. This proportion began to decline in 1996, as the state put more money into its need-based programs. This is counter to the trend in the nation, where, as described above, many states have begun to shift their financial aid resources towards merit programs.

**Table 2: State Awards for Undergraduate Financial Aid Programs**

Year	Colorado Awards	Percentage Allocated to Merit Programs – Colorado	Percentage Allocated to Merit Programs – Nationally
1990-1991	\$20,545,000	45.1%	10.9%
1991-1992	\$20,577,000	39.8%	9.8%
1992-1993	\$23,764,000	42.5%	9.6%
1993-1994	\$27,992,000	41.1%	10.1%
1994-1995	\$31,885,000	39.6%	12.8%
1995-1996	\$36,401,000	42.1%	14.4%
1996-1997	\$39,446,000	28.4%	15.2%
1997-1998	\$41,750,000	24.1%	16.8%
1998-1999	\$54,151,000	22.7%	18.6%

The battles between funding for need-based and merit programs are hotly-contested. Most policy researchers, however, believe that merit programs award many

of their dollars to students who would be attending college even without financial assistance from the state.<sup>5</sup> Thus, these programs are likely to do little to increase college participation rates as compared to programs which target their dollars at students with financial need. As Thomas Mortenson, a long-time observer of financial aid policy in the nation, so cogently explains it:

In the economic world of highly constrained social welfare maximization, giving scarce financial aid resources to people who do not need them is wasteful, unnecessary, unproductive, and comes at the price of adequate and appropriate student financial aid for others who could not afford to attend college without such assistance (1997, p. 2).

How state financial aid is distributed is an important public policy issue. The gap between the college participation rates of students from wealthy families, and those from poorer families, has historically been large and continues to be so today. In its annual survey of college prices, the College Board (1999) reported on the college entry rates of high school graduates in different income quartiles since the 1970s. In 1997, 89 percent of high school graduates from families in the top income quartile (family income above \$74,584) attended postsecondary education by age 24. For students in the poorest families (income below \$25,063), the college entry rate was only 53 percent. This gap of 36 percentage points has actually *increased* over the last three decades, even with the availability of billions of dollars annually in federal and state financial aid programs. As described in Section II, while many factors besides finances play into students' decisions whether to attend college, it is evident that the nation has a long way to go to eliminate financial need as a barrier to college entry.<sup>6</sup>

#### **IV. College Participation Patterns**

##### *College Participation in Colorado and the Nation*

There are a variety of ways to measure college participation rates. In order to compare the experiences in Colorado with the nation as a whole, the method used in

this report is to measure college participation as the ratio of the number of undergraduates enrolled in college divided by the 18 to 24 year-old population.<sup>7</sup> These calculations can be done for all students in a state or in the nation, or they can be made for particular college sectors (public and private, 4-year and 2-year).

Figure 7 shows the public college participation rates in the 4-year and community college sectors.<sup>8</sup> Colorado's public 4-year participation rate is higher than the nation's, though the gap has declined since 1990 by approximately two percentage points. Community college participation rates in Colorado have been much closer to the national average. Both the 4-year and community college rates have declined in Colorado since 1992, while rates nationally have increased slightly or held steady. The gap between Colorado's overall public participation rate (the sum of the community college and 4-year rates) and the national rate has declined since 1990 from 9.4 percentage points to 4.3 percentage points.

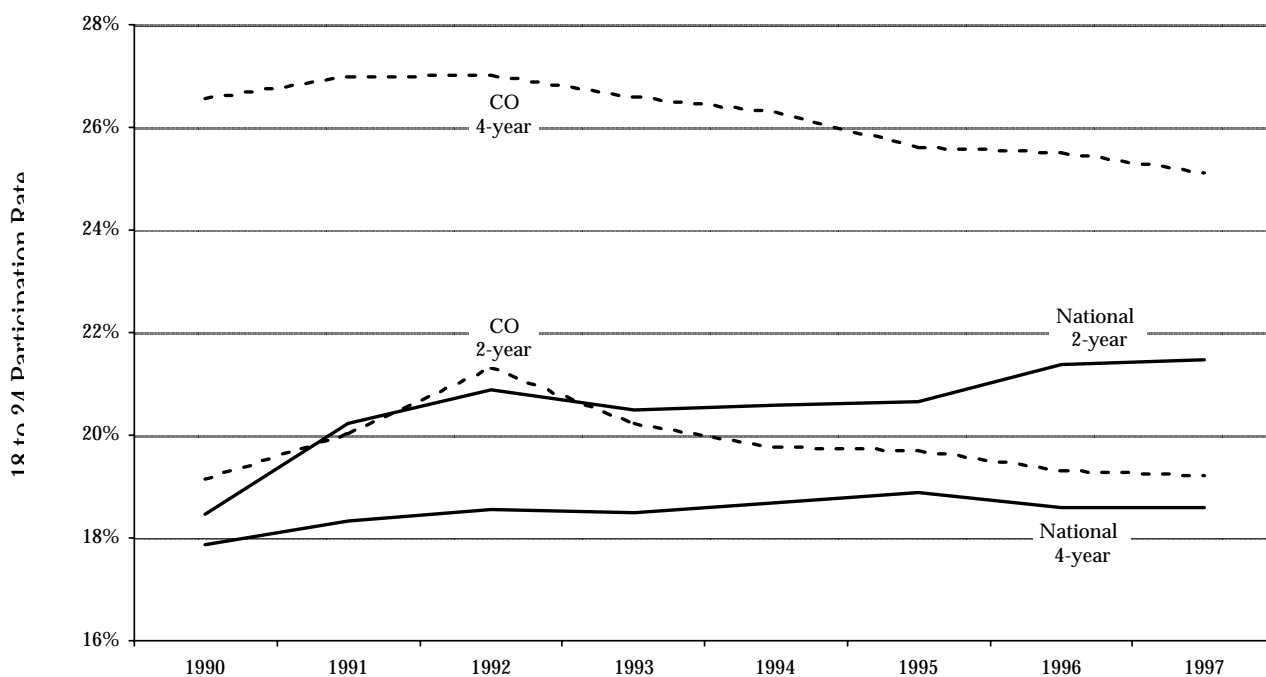


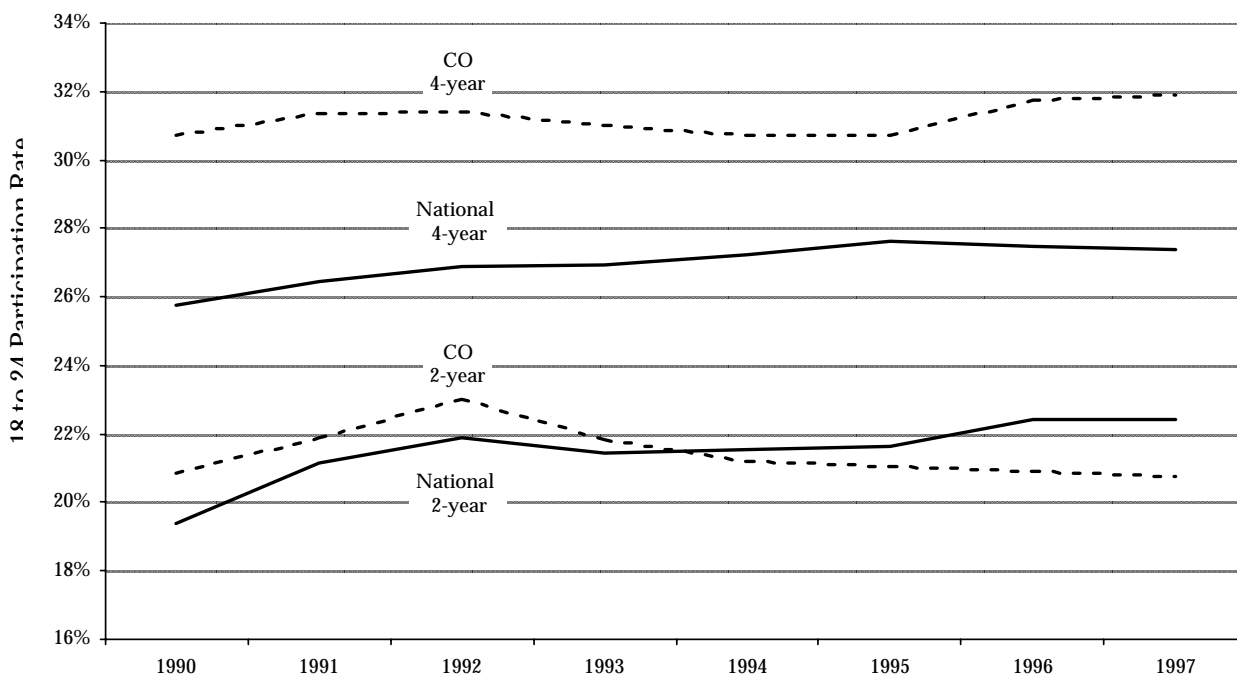
Figure 7: Undergraduate Public College Participation Rates, Colorado and the Nation



## Tuition Pricing and Higher Education Participation in Colorado

To get a better overall picture of college participation in any state, one needs to examine the role of private colleges and universities. Approximately 20 percent of all undergraduates nationally attend private institutions. In many states, particularly in the northeast region of the country, private institutions enroll a much larger share of the total undergraduate enrollment (in Colorado, approximately 13 percent of all undergraduates attended a private institution in the most recent year for which data are available).

Figure 8 shows the combined public and private participation rates in Colorado and the nation. While Colorado still leads the nation in 4-year participation rates, its 2-year rate has fallen below the national average. The difference between Colorado's total college participation rate (public and private, 2-year and 4-year) and the national rate has declined from 6.4 percentage points in 1990 to 2.8 percentage points.

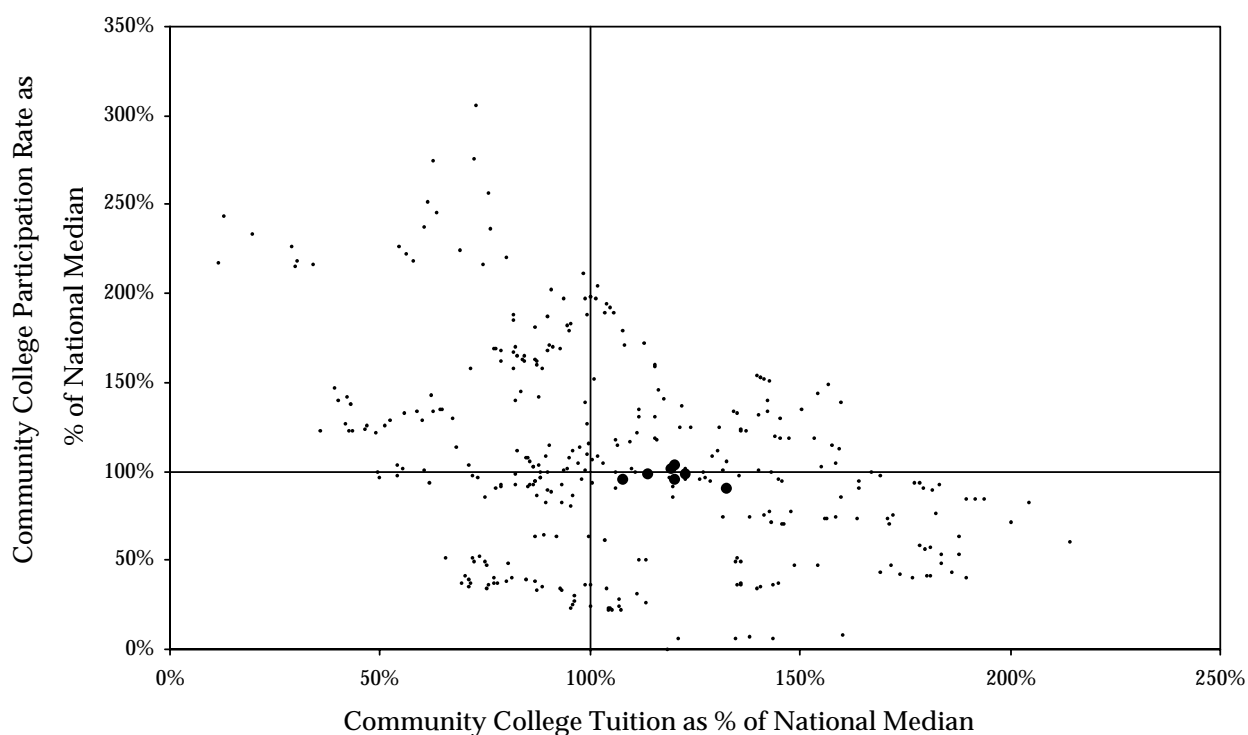


**Figure 8: Undergraduate Public and Private College Participation Rates, Colorado and the Nation**

### *The Relationship Between Price and Participation*

As described in Section II, we know from the research on student price responsiveness that tuition prices are an important determinant of whether students attend college and where they attend. This information can be used to analyze the relationship between the tuition policy in a particular state, and the college participation rates in that state.

Figure 9 displays a scatterplot of each state's community college tuition price and community college participation rate, each expressed as a percentage of the national median.<sup>9</sup> Data for each year from the 1990-1991 through 1996-1997 academic years are shown, with each dot representing one state in one year. Colorado is designated by the larger dots. As one can see from the pattern, there is a negative relationship between relative tuition prices and participation rates – in general, states with higher tuition prices have lower participation rates. For example, in only one case is there a state that had a participation rate that was at least twice the national average *and* had a tuition price that was at the national average or greater. Conversely, 84 percent of the states that had a community college tuition rate at least 50 percent above the national average had participation rates below the median.



**Figure 9: Relationship Between Tuition Prices and Community College Participation**

Many factors besides tuition policy and financial aid availability help determine how many of a state's residents attend college. But there does appear to be a clear relationship between prices and participation. While not shown here, a similar relationship can be demonstrated between prices and participation in the public 4-year sector.

### V. Other Issues for Consideration

There are a number of other issues that should be taken into account when considering changes to tuition and financial aid policies. This section will describe

some of these and relate them to the issues of tuition pricing and college participation in Colorado.

### *Geography and Program Distribution*

Colorado has many parts of the state that are largely rural and do not provide as many postsecondary education choices as are available in more densely-populated states. The research on demand for higher education indicates that an important factor in the college access and choice function is geographic proximity to desired programs. In considering any changes to tuition pricing policy, the state will need to consider the issue of program distribution, as providing affordable access to college will not serve to increase college participation rates if students cannot find the program they want at a distance they are prepared to travel.

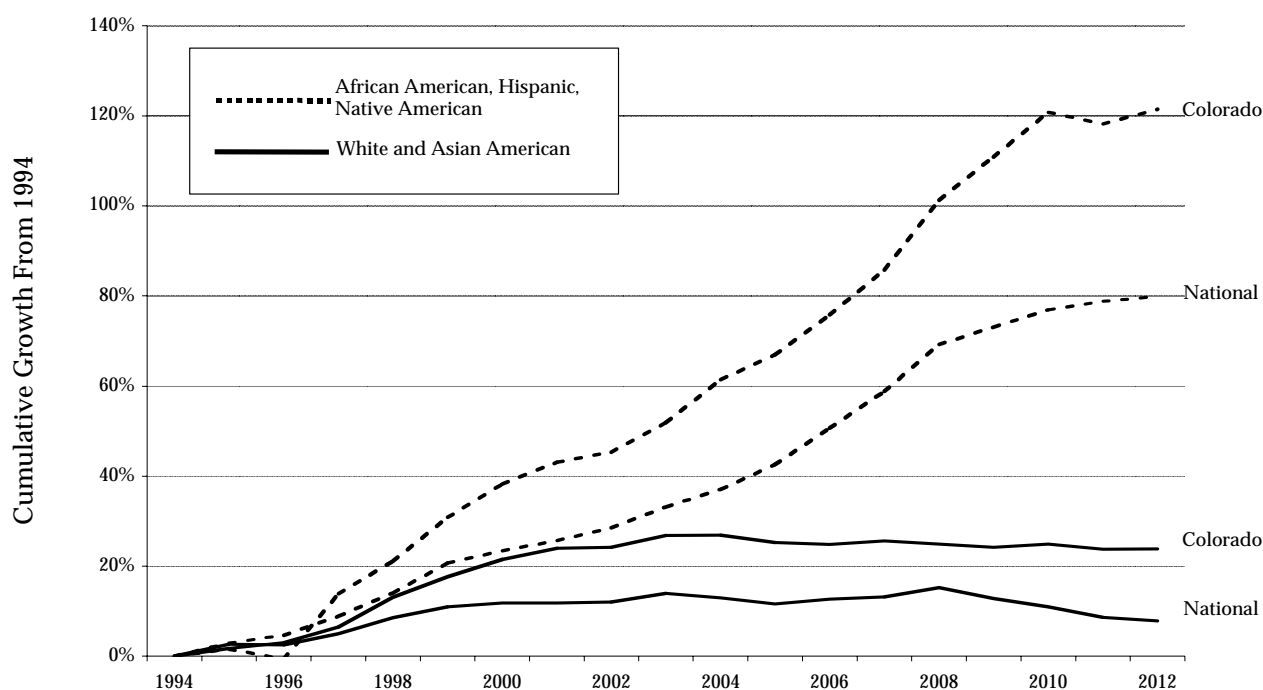
### *TABOR*

The Taxpayers Bill of Rights (TABOR) Amendment places constraints on the ability of governmental organizations in Colorado to raise revenues. While there has been a grace period before the full weight of TABOR is felt by public higher education institutions in the state, there is great uncertainty about how much it will affect these institutions. There has been some discussion about the possibility of shifting a portion of the state support for higher education from the institutions, in the form of direct state appropriation, to the students, in the form of vouchers. No other state has implemented a broad-based voucher program of this type for higher education, so the policy implications of such a move are hard to predict.

### *Demographic Changes*

Colorado is expected to experience higher rates of growth in the traditional college-age pool than the nation as a whole over the next dozen years. And this growth is going to be concentrated among racial/ethnic groups who have traditionally been underrepresented in higher educational nationally. Figure 10 shows the growth rates of

the actual number of public high school graduates and the projected number through the year 2012 for Colorado and the nation as a whole (data are from the Western Interstate Commission on Higher Education, 1998).



**Figure 10: Actual (1994 – 1997) and Projected Growth of Public High School Graduates**

Two pools of students are shown: white and Asian-American students, who historically have had similar college-going rates, and African Americans, Hispanics, and Native Americans, groups who have had rates well below those of white and Asian American students.<sup>10</sup> High school graduates in the underrepresented groups are projected to grow at the fastest rates, both nationally and in Colorado. While nationally the number of underrepresented high school graduates is expected to increase 80 percent over the 1994 level, in Colorado this group is expected to increase 121 percent. The overall growth of public high school graduates in Colorado is projected to be 41 percent by 2012, well above the national growth rate of 24 percent. While in 1994 18 percent of all public high school graduates in the state were in the underrepresented groups, by 2012 this is projected to increase to 28 percent.

## Tuition Pricing and Higher Education Participation in Colorado

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The implications of these changes on tuition policy are quite clear. Those groups that have historically been underrepresented in postsecondary education also have lower incomes. Data from the U.S. Census Bureau show that in 1998, median family income in the nation was as follows:<sup>11</sup>

Race/Ethnicity	Median Family Income
White	\$51,607
Asian American	52,826
African American	29,404
Hispanic	29,608

The large gaps in income translate to differences in the ability to pay for college. Compounding this issue is the fact Census Bureau data also demonstrate that on average, African American and Hispanic family sizes are larger. As these groups grow in proportion to the overall college-age pool in Colorado, this will place additional pressures on the public higher education system to ensure the affordability of postsecondary education. As described earlier, affordability can be maintained (or hampered) through tuition policy and/or financial aid policy.

### *Distance and Virtual Education*

Distance and virtual education has become a prominent part of the higher education landscape in Colorado. Former Governor Roy Romer, as co-founder of the Western Governors University, proclaimed that, “This is a revolutionary idea. Many people can’t afford the traditional way of getting a higher education degree, which is learning by sitting in the classroom. Technology can be an effective and cheaper way to help people learn” (quoted in Twigg, 1996, p. 28). Many Colorado public institutions have implemented successful distance learning programs, often targeted at helping to bridge the geographic distance between programs and potential learners.

Report 1 under House Bill 1289, prepared by the Colorado Commission on Higher Education, recognized both the potential for and limitations of distance learning in the state. While recommending that both the CCHE and institutional governing boards should work cooperatively to promote distance learning in the state, the report

acknowledged that, “Distance learning is best suited to mature students with developed learning skills who can work independently” (chapter 12). The report also appropriately notes that access to computers and the Internet is not universal in Colorado.

The postsecondary education access and choice issues revolving around distance and virtual education are not unlike those for traditional “bricks-and-mortar” education. When considering new policy initiatives, policymakers need to ask themselves how those policies will impact different types of students, as well as different institutions. For example, if the state is going to promote a policy of providing access to a wide variety of programs for all eligible students, it needs to ensure that the choice set includes both distance learning as well as campus-based programs. Similarly, student financial aid policies need to be implemented that provide adequate access to assistance for college expenses for all needy students, irrespective of the type of program in which the student is enrolled.

## **VI. Policy Alternatives for Consideration**

### *The Context in Colorado*

Colorado enjoys higher college participation rates than the national averages, but this status is tempered by at least three facts. First, Colorado’s advantage over the rest of the nation has declined during the 1990s. As shown in Figure 7, public college participation rates in Colorado declined during the last decade in absolute terms, as well as relative to the nation. As shown in Figure 8, while overall (public and private) participation rates have increased in Colorado, they have not increased as fast as in the rest of the other nation.

Second, incomes in Colorado are greater than the nation as a whole. According to 1998 data from the Census Bureau, median household income in Colorado was \$46,599, 20 percent greater than the national average and 28 percent greater than the average of the seven neighboring states. As described in Section III, there is a strong relationship between income and college participation in the nation. All other things

being equal, individuals from upper-income families attend college at higher rates than do those from poorer families. Thus, one would expect Colorado to have higher participation rates, based on its position as a relatively high-income state.

Third, Colorado has fewer underrepresented minorities than the nation as a whole. Data from the National Center for Education Statistics (2000) indicate that approximately 26 percent of public K-12 students in Colorado are African American, Hispanic, or Native American, groups that have historically been underrepresented in higher education (particularly in 4-year institutions). The corresponding national figure is 33 percent. Because of the differences in college participation rates among the racial/ethnic groups described in Section V, the lower proportion of minority students in Colorado would also cause one to expect the state's participation rates to be higher than the national average.

Comments expressed to the NORED consulting team, as well as to me in a meeting with commissioners and staff of CCHE, indicate that there is an interest in increasing college participation rates in Colorado. CCHE's first report under House Bill 1289 acknowledged the legislature's interest in this goal: "Recognizing the connection between a strong state economy and the educational level of Colorado citizens, the legislative leadership has challenged higher education to increase the percentage of high school graduates attending college" (chapter 9). Both the CCHE and other observers have correctly pointed out that even though overall participation rates in the state are high relative to national averages, there is still a concern that some groups are being left behind in the race to improve the educational attainment and skills of the citizens of Colorado.

As shown in Section III, and as mirrored in concern expressed to the NORED consulting team, the gap between tuition prices in the community college and 4-year sectors of public higher education in Colorado is smaller than in most other states. Yet Colorado's situation is not that distant from the pattern in other states, including some of its neighbors, as demonstrated in Figures 3 and 4.

The alternatives discussed in this section of the report are framed by these two considerations: the goal of increasing college participation in the state, and the current tuition and financial aid structure. These options are presented to stimulate discussion among higher education policymakers and other interested parties in Colorado about ways in which tuition and financial aid policy can be used to influence participation. The reader is reminded of one of the caveats outlined in Section II, that financial considerations play only one part in the college access and choice process. Many other steps that are beyond the scope of tuition and aid policies can be taken to encourage



individuals to attend college, and CCHE acknowledged these in Report 1 under House Bill 1289. However, while changes to tuition and related policies are not the only way to influence college enrollment, they are nonetheless an important policy lever.

### *Policy Alternatives*

#### 1. Cut Tuition at all Community Colleges in Colorado

To widen the price gap between the community colleges and 4-year institutions, one has to: 1) lower the price of community colleges; or, 2) increase the price of 4-year institutions; or, 3) both. Lowering the price at community colleges is the obvious first alternative. The proportional difference between community college prices in Colorado and both the national and regional averages is greater than in 4-year institutions. In other words, community colleges in the state are more “over-priced” than the 4-year institutions are “under-priced.”

The advantage of a broad-based price cut is that it is an easily understood message to sell to constituents such as higher education administrators and policymakers, legislators, the general public, and potential students. States such as California, Massachusetts, and Virginia which have implemented broad-based price cuts in recent years have received much publicity and have reported positive results in terms of the perception of increased affordability, as well as the reality of higher enrollments. One need only look at how profit-making organizations market price cuts, whether in the form of sales, rebates, or “special offers,” to understand how consumers respond to price reductions.

Given our knowledge of student price elasticities, tuition changes in community colleges tend to generate the largest enrollment response. As described in Section II, there has been little research on the effects of price cuts (as compared to price increases), so it is difficult to predict the expected enrollment response. However, if one were to extrapolate from the findings of the study I conducted that was discussed in that section, by assuming that price cuts have a symmetrical enrollment response to price increases, then one could expect a tuition decrease of \$184 (based on 1999-2000 tuition rates) to be associated with an enrollment increase in community colleges of 2.3 percent.<sup>12</sup>

A key disadvantage of this alternative is that it will lower the price of community college for many students who have no problem paying for it at current tuition levels. In economic terms, the state would be foregoing revenue by increasing the consumer surplus enjoyed by higher-income students who already pay less for their education than what they can afford.

Another disadvantage is that reducing tuition prices in isolation of other policy changes will reduce the overall revenue available to the institutions. Unless revenues from other sources are increased to offset the tuition drop (or cost savings are identified and captured), institutions will find themselves with fewer resources. This problem could be compounded if the lower tuition rates achieve the goal of increasing enrollment in these institutions. Depending upon the magnitude of the enrollment increases, and the specific educational production function at each institution, the marginal costs associated with the expansion could exceed the marginal revenues generated.

Another possible effect of this option is that implementing it would simply cause students who would otherwise attend a 4-year institution to enroll in a community college instead, while inducing few if any additional community college enrollees. Thus, the net effect on overall college participation could be zero.

### 2. Increase Tuition at 4-year Institutions

This is the corollary to lowering the prices in community colleges. The theory behind this alternative is that by increasing the gap between the two sectors, community colleges in Colorado would be relatively more affordable to students who were considering attending college, but who were undecided about what type of institution to attend. Because Colorado's 4-year institutions are generally more affordable than similar institutions in other states, there may be an opportunity to increase prices.

This alternative would allow the state to capture more of the consumer surplus of the higher-income students at the 4-year institutions, who are paying less than what they presumably are willing to pay. In order to protect the interests of students who are less well-off, state and/or institutional financial aid would have to be raised to offset the tuition increases so that these students would, at a minimum, be held harmless. Presumably at least some of the increased tuition revenue could be used for this purpose. Even with increased financial aid for needy students, policymakers still need to be aware of the possibility that some students may be driven away from enrolling by the "sticker shock" phenomenon.

The question that must be addressed is whether increasing tuition prices at 4-year institutions will lead to enrollment declines at those institutions, and whether these declines will be more than offset by increases at community colleges.<sup>13</sup> There is much

less evidence on cross-sector price elasticities, but what we do know is that enrollments in one sector of public higher education tend to respond less to price changes in the other than they do to changes in their own sector. In other words, if the goal is to increase enrollments in community colleges, increasing prices at 4-year institutions may not be the most efficient way to accomplish this. However, if increasing tuition at 4-year institutions helps accomplish other goals, such as increasing overall revenue to the institutions and/or state, then this alternative may be used as one piece of a larger set of changes that can help meet the goal of increasing overall college participation in the state.

Tuition price rises that greatly exceed the increases of recent years would likely require some well-managed explanations on the part of CCHE and the institutions in order to avoid a public relations nightmare.

### 3. Cut Tuition at Selected Community Colleges

This is in essence what the CCHE has already chosen to do through its SMART (Supporting More Access by Reducing Tuition) program. The SMART proposal approved by CCHE in August called for \$400 tuition cuts at three community colleges and \$800 cuts at six institutions (it also included a \$400 tuition reduction at two of the state colleges). The proposal calls for half of the \$10 million reduction in revenues to the institutions to be replaced by the Colorado legislature through increased appropriations; the institutions pledged to make up the remaining \$5 million through cost-cutting initiatives.

This approach allows the state to identify specific community colleges in which there is an access problem, and address the issue through price cuts at these institutions. Again, using the data from the study described earlier, the enrollment response expected from an \$800 price reduction in community colleges would be in the range of 10 percent ( $\$800 / \$184 * 2.3$  percentage points = 10 points).

The same disadvantage described in alternative 1 would apply here, that some students who did not need the price cut in order to enroll would be able to take advantage of it. The state would therefore be foregoing additional revenue from some students who would otherwise be willing and able to provide it.

A possible effect of this alternative would be that existing or future community college students would simply shift among the community colleges, i.e., move from the

six institutions whose tuitions were holding steady (or would presumably increase as they have annually in recent years) to the nine whose prices were being cut. This could result in no net increase in college participation. The possibility of this occurring is tied up in many other issues, including students' proximity to their institutions and program availability, but it is something that should be considered by policymakers.

Another risk of the SMART proposal as it stands is that the cost savings pledged by the institutions will be more elusive than they had anticipated. Higher education in general does not have a very good track record for finding ways to cut costs (while maintaining the same or increasing levels of service), so there is a risk that the community colleges will find themselves in the unenviable position of having less revenue, more students, and higher costs.

#### 4. Raise Tuition at Selected 4-year Institutions and Cut Tuition at Selected Community Colleges

This alternative is a combination of the three previous. The CCHE could analyze particular groups of institutions (community colleges and 4-year institutions) to determine if there were specific situations where geographic, price, and programmatic proximity were causing access problems. For example, if in one metropolitan area there were both community colleges and 4-year institutions that had overlapping programs and were close in price, the state could step in to both increase the price at the 4-year institutions (to perhaps encourage some students to begin their postsecondary education in the community colleges instead) and decrease tuition in the community colleges (to encourage additional participation).

This option would attempt to take advantage of the same-sector and cross-sector price elasticities. The likely impacts and possible disadvantages of the first three options would apply here as well.

#### 5. Target Specific Populations for Aggressive Financial Aid and Enrollment Management Policies

This alternative would perhaps be the most difficult to implement, but could potentially have the most impact in the long run, as well as be the most efficient and effective. There are a large number of outreach, recruitment, and retention strategies

that go beyond the realm of tuition and financial aid policy, but those are beyond the scope of this report. I will attempt to outline here those that are relevant.

If there is a concern that the overall college participation rates in the state are too low, then policymakers and institutional leaders should identify what populations need to be targeted in order to increase their participation. For example, we know from the research on college access and choice that high-achieving students from wealthy families have extremely high college-going rates, over 95 percent in some studies. Thus, it makes little sense to target resources and efforts at getting more students from this group to enroll in college.<sup>14</sup> Other groups, however, such as students from poorer families, have much lower college participation rates. These are the groups with which the state can get the most impact in terms of inducing the largest increases in participation rates for the marginal dollar spent (either in the form of foregone revenues or increased costs).

One way to implement this alternative would be to target additional state financial aid dollars at low-income students, a group that nationally has among the lowest college participation rates. If the state can identify other populations with low college-going rates, programs can be developed to reach these students also. The goal would be to find ways to expand existing state financial aid programs or develop new ones that would focus the money on individuals not attending or unlikely to attend college, yet have the interest and academic qualifications (which for most community colleges simply means a high school diploma or GED certificate) necessary to attend college and be successful.

I used the SMART proposal from CCHE and the research I previously conducted on student price elasticities to calculate the expected enrollment response in the state (if all the assumptions and caveats are appropriately taken into account). The enrollment effects of the \$10 million spent on SMART (from foregone tuition revenue and cost savings at the affected institutions) can be estimated to predict a total increase of approximately 2000 students at the nine affected institutions. The cost per newly-enrolled student would be approximately \$5,000, and would represent an increase in the total college participation rate in the state of approximately one-half of one percent.<sup>15</sup>

An appropriate exercise for higher education policymakers would be to examine how that \$10 million could be used in other ways to induce the enrollment of 2,000 or more students. For example, that sum would represent approximately a 25 percent increase in the state's need-based financial aid programs for undergraduate students (based on the 1998-1999 funding level). If the state developed a new scholarship

program targeted at the most needy students, could it be successful in inducing 4,000 additional students to enroll in college by offering each of them \$2,500 scholarships (for the same \$10 million cost)?

The disadvantage of this approach is that it would likely not capture the media and other attention that a broad-based tuition rollback would. In addition, financial aid for needy students is not the most politically-popular policy proposal these days, when tuition relief for middle- and upper-income families in the form of merit scholarships, colleges savings plans, and tax credits and deductions are more prominent on the policy agenda. Nevertheless, it is an alternative that deserves examination.

### *Recommendation*

Earlier I provided a quote from Thomas Mortenson, who wrote of “an economic world of highly constrained social welfare maximization.” All can agree that public funds are a scarce resource today, and it is the responsibility of government officials to identify ways in which those scarce resources can be used to maximize the overall well being of the society. If the goal of the state of Colorado is to increase college participation rates, then the resources should be narrowly targeted through policies that provide, in non-economic parlance, “the most bang for the buck.”

Lowering the price of college for everybody attending one or all public institutions only very indirectly addresses the core goal of increasing college participation. It more directly addresses the perception of affordability. There are plenty of citizens of Colorado for whom college affordability is *not* a problem, and in an era of scarce resources, returning money to them does not help the state attain its college participation goals. Even if only 20 percent of the SMART dollars end up in the hands of students who currently have no problems paying for college (what I would describe as a very conservative estimate), that represents a \$2 million income transfer from public funds to these individuals and their families. The jury is still out on the overall enrollment impact of the broad-based tuition cuts in the states described earlier. The motivation for most of those actions was not necessarily a desire to increase college participation, but rather, to make college more affordable. Targeting financial resources at individuals who are currently *not* attending college (for financial and/or other reasons) is likely to be a more efficient and effective way of increasing college participation rates.

My recommendation is that the state pursue alternative 5, the targeting of specific populations for aggressive financial aid and enrollment management policies. This is a recommendation that, as noted above, may not be the most politically popular nor one that will garner the most media attention. It is one, though, that I believe will be most effective at helping the state attain its goal of increasing college participation.

There is an important aspect of the example of the SMART proposal I outlined under alternative 5 earlier (estimating an enrollment increase of approximately 2,000 students) that should be considered. The enrollment effects described in Section II were averages across all types of students. We know from the research that lower-income students have consistently been found to be more price responsive (have higher SPRCs) than most other groups. Thus, a fixed amount of money targeted at lowering the college costs of poorer students (either through tuition price reductions or financial aid increases) would likely result in a larger enrollment impact than would the same amount spent on all students.<sup>16</sup>

One also needs to keep in mind another finding from the research that financial aid dollars generally do not generate as large an enrollment response as do tuition changes. Grants, though (as compared to loans and work study) have been found to have an important impact on students' college access and choice decisions.

I recommend that the state investigate ways to target tuition reductions and financial aid increases at students likely to have the strongest enrollment response for the dollars spent. Low-income students are the most obvious target for these policies, though the research described earlier indicates that African American and Hispanic students also have higher than average SPRCs.<sup>17</sup>

The primary policy used to target financial aid to low-income students is need-based aid programs. While the state has shifted more of its state-provided aid toward need-based programs in recent years, it still spends a significant share on merit programs. The state should evaluate all of its undergraduate programs, both need-based and merit, to determine if they are supporting the goal of increasing college participation in the state. Using the \$10 million allocated for SMART (assuming the legislature approves the proposal) in combination with a reallocation of the state's existing financial aid programs could increase the overall pool of money available for the goal of increasing participation rates.

Besides considering more targeted uses of financial aid (as an alternative to broad-scale tuition reductions), the state and individual institutions should also examine non-financial outreach, recruitment, academic support, and retention



programs for underrepresented populations. These other types of programs, a number of which are undoubtedly already in place in the state, are beyond the scope of this report. They have been proven, however, to be successful at getting students from underrepresented groups into college and helping to make them successful once there.

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An important function of this report is to stimulate conversation among policymakers, institutional leaders, and other interested observers in Colorado about ways that the state can use its tuition and financial aid policies to increase college participation. It should not be as the final word on the subject, but rather, as a catalyst towards further discussion and analysis.

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**Notes**

- <sup>1</sup> The data on tuition prices is from an annual survey conducted by the (Washington State Higher Education Coordinating Board, 2000). This is the best source of comparative, longitudinal data on tuition prices in the country. The report groups public higher education into three sectors: flagship institutions, state colleges and universities, and community colleges. In Colorado, the institutions represented in the 4-year sectors are the University of Colorado at Boulder (flagship), and Adams State, Fort Lewis State, Metropolitan State, University of Northern Colorado, and Western State (state colleges and universities). Unless otherwise specified, all prices referred to in this report represent the price for tuition and required fees only (excluding room, board, and other non-mandatory charges) for in-state students.
- <sup>2</sup> If students moved to the neighboring states in order to gain resident status, they would realize the savings from the less expensive institutions in the neighboring states.
- <sup>3</sup> All data on state financial aid appropriations are from the annual surveys of the National Association of State Scholarship Grant and Aid Programs (NASSGAP).
- <sup>4</sup> In the 1997-1998 academic year, 45 percent of all state aid was awarded to students attending public institutions in the state, 36 percent was awarded to students attending private institutions in the state, and 1 percent was awarded to students attending out-of-state colleges and universities. The remainder was awarded to graduate students. Unfortunately, the NASSGAP reports do not tally the amounts awarded to students in each sector of public higher education, 4-year and community colleges. Thus, these amounts are the total dollars awarded in each state, divided by the total undergraduate enrollment in all sectors, public and private, 4-year and community colleges.
- <sup>5</sup> Further information on the policy debate regarding merit and need-based financial aid programs is available from the author.
- <sup>6</sup> The Census Bureau data used to calculate the college entry rates by income are for the nation as a whole. The sample sizes are too small to allow comparisons among

the states, so there is no way to tell how Colorado compares to the national averages on this measure of college access.

- <sup>7</sup> I acknowledge that many undergraduates are older than 24. A wider base, such as the 18 to 34 population, can also be used, but the net effects *when doing state and national comparisons* are negligible (other than to reduce the calculated participation rates, as compared to using the 18 to 24 population in the base). This is because there are not large differences in the age distribution of students enrolled in college from state to state. For a discussion of this issue, see (Heller, 1999a). Data on college enrollments were collected from the Integrated Postsecondary Education Data System fall enrollment surveys (National Center for Education Statistics).
- <sup>8</sup> The Colorado rates have been adjusted for estimates of in-migration of students to Colorado from other states (students subtracted from the numerator in the participation rate calculation) and out-migration of Colorado students to other states (added to the numerator). Migration estimates were calculated from data provided by CCHE and (National Center for Education Statistics, 1998).
- <sup>9</sup> Community colleges are a good sector in which to examine the relationship between price and participation because the vast majority of students (approximately 95 percent) stay in their home state to attend a community college. Thus, the effect of state-to-state migration on community colleges is minimal, as compared to public 4-year institutions or private institutions.
- <sup>10</sup> For more information about college participation rates by racial/ethnic group, see (Heller, 1999b).
- <sup>11</sup> The Census Bureau does not provide estimates of the income of Native Americans in non-census years, because of small sample sizes in the Current Population Survey, which is used to estimate income. It also does not provide state-level estimates of income by racial/ethnic group.
- <sup>12</sup> I will repeat here the warning regarding using the results from a national, longitudinal study to estimate the enrollment change in one year in one state; the reader does so at his or her own risk, and also needs to remember the assumption of *ceteris paribus*. This same warning applies to the subsequent projections made in this section.

- 13 Enrollment management professionals at the 4-year institutions will also be concerned that increasing their prices may push students to examine other alternatives, such as attending private institutions in Colorado or out-of-state institutions.
- 14 It is likely that nothing the state could do with respect to tuition or financial aid policy could induce the remaining five percent to enroll in college.
- 15 Details of this calculation are available from the author. This also assumes that all 2,000 students are new enrollees, i.e., not transfers from other institutions or students who would otherwise have enrolled in one of the other state institutions.
- 16 An important point to make here is that knowing the *absolute* SPRCs the state is likely to encounter through a policy change such as SMART is not as important as knowing the *relative* SPRCs among different types of students. For the same \$10 million (or \$20 million or \$50 million or \$100 million) spent on encouraging the enrollment of all students, the state is likely to generate a larger enrollment response (no matter the magnitude of the SPRC in absolute terms) when the funds are targeted at lower-income students.
- 17 Targeting financial aid based on racial/ethnic group is a policy that clearly has very strong political implications, given the trends in other parts of the country. However, there are no legal decisions in Colorado or the federal 10<sup>th</sup> circuit that I am aware of that would prohibit such programs in the state.