A Study and Recommendations on Fixing Colorado Higher Education Funding

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A Study and Recommendations on Fixing Colorado Higher Education Funding

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Topic Overview

This research analyzes the impact of variations in state funding models for higher education on per capita, per full-time enrollment, and per 1000 dollars personal income spending for higher education; the goal is to identify a more sustainable funding model for Colorado. Colorado is currently among the lowest in the nation in per capita state funding for higher education. It is becoming increasingly more expensive to attend a Colorado institute of higher education. “Largely because of these funding cuts, tuition prices at public institutions have skyrocketed…The average tuition price nationally among public four year institutions increased 26 percent” from 2001-2004 and 18 percent at community colleges (Priest and St. John, 2006:11). As of 2009 these cuts have caused in-state tuition to raise 9 percent for the University of Colorado in order to make up for a lack of state funds. Across the nation, “Governors and
legislators have reported that they see higher education as a prime area to cut because it has other revenue sources” (Lyall and Sell, 2006: 9).

State governments see higher education as a discretionary fund. They cut from public institutions because they believe tuition revenues can make up for the lost funds. But in reality the tuition cannot make up for the lost funds at the current rate, so tuition increases, putting a greater burden on students while at the same time reaffirming the state’s perception that schools can get funds elsewhere. This eventually creates a vicious cycle of increases in tuition and cuts to state funding; schools can raise tuition, so the state cuts more, tuition is raised more, states feel they can cut more, all while this burden lands in the hands of students and families. Tuition increases are the most readily available “solutions” to make up for a lack of state funding. These increases make affordability very hard to achieve for colleges, putting a large onus on students and families to get through school on their own, incurring debt and hardships along the way. Affordability can be defined as the ability of students to attend institutions at reasonable costs without undue burden to the families sending them there. Affordability can be examined through tuition levels and a student’s ability to receive aid. In order to ensure that our colleges and universities are affordable this issue needs to be addressed as soon as possible.

Higher education is becoming increasingly necessary in order to have a reasonable wage job in the United States and for the United States to compete globally. Funding cuts inhibit the ability of Americans to attend institutions of higher education, leading to a less able workforce for the future. A major reason for going to college is to enter the workforce with the proper skills to contribute back to the economy and to those who invested in education. These cuts run the risk of lowering the capabilities of the future workforce and drastically decreasing the
number of highly educated citizens. “We could face the loss of a key national asset” (Lyall and Sell, 2006: xi). It is fair to assume this is not a desirable situation for the future.

The overall long run consequences of these cuts are decreased opportunity for students in relation to programs and financial aid, lower educational prosperity of the school, and the long-term risk to the economy of not having properly qualified students able to enter the workforce. This is why now is the time to address the issue of lack of state funding not only in Colorado but nationwide. Since Colorado is among the lowest in funding and has a unique funding situation it is a prime case to assess and hopefully change. Right now Colorado’s higher education funding cannot be improved or sustained because of Colorado’s unique funding structure, restrictions on increased taxation such as the Tax Payer’s Bill of Rights (TABOR), and continuing cuts to higher education. My goal is to look at other state funding models for higher education in the hope that one or more could be adapted to Colorado to provide better, more reliable state higher education funding.

**Research Plan**

My research answers the following question: What is associated with viable state funding for higher education? My dependent variables are 1. Annual appropriations per student based off of full-time enrollment (FTE), 2. Annual appropriations per $1000 personal income, 3. Annual appropriations per capita, and 4. Percent change in funding over time (2000-2010) for each appropriation measure. I look at state funding (my dependent variable) in all fifty states then run a regression analysis with each independent variable (also found in all fifty states) to see its effect on annual higher education state funding. The independent variables include
governance structures and funding models, specifically performance funding and vouchers. These structures will be coded to determine whether their existence has an impact on funding. Other independent variables I will be looking at are unemployment rates and socioeconomic conditions in order to gauge the state of the economy, political context (i.e. political ideology of the legislature and strength of the governor), population, specifically age and education structures, the effect of ballot initiatives pertaining to education, and tax and expenditure limitations. Viable funding will be determined by comparing percent change in state funding to the Higher Education Price Index.

These data were collected from the years 2000 to 2010. I use the regression results to discover what variables impact higher education funding. Using my data set I find states comparable to Colorado, analyze their funding and governance models as well as the other independent variables as they exist in the state, and then determine whether their models could be successfully adapted in Colorado. I will need to determine which of these, or a mixture of these, will be the most viable in Colorado and the most sustainable, meaning the funding has the potential to last for a significant period of time (more than ten years) and keep up with the rate of inflation for higher education costs.

After looking at these factors I will make recommendations for the state of Colorado to adopt in order to improve higher education funding. This may require policy recommendations, governance structural changes, a funding model overhaul, or a mixture of these factors.

**Colorado Context**

Colorado has consistently been ranked among the last in higher education funding in the United States. For being “one of the most educated states in the nation” it “does not perform
well in educating its own citizens” (Michelau, 2010:141). This is known as the Colorado Paradox. This paradox is partly in place because of the lack of state funds allocated to higher education institutions. Colorado has a unique structure when it comes to funding education, particularly the measures in place that contribute to the poor funding of higher education. These measures, TABOR, Amendment 23, and the Gallagher Amendment, “affect the amount of general funds available for higher education and leave it as the largest discretionary budget item that can be cut” (Michelau, 2010:117). The Gallagher Amendment was passed in 1982 and decreases the amount of residential property subject to taxes when statewide residential property grows faster than nonresidential properties (117). Property taxes are a main funding source for all levels of education, so this measure inhibited a major funding source of higher education. The next amendment passed was TABOR, the Tax Payers Bill of Rights, in 1992, which restricts government revenues and also restricted (until the passage of the College Opportunity Fund in 2005) public higher education institution revenues and expenditures (117). This measure returned $2 billion back to taxpayers from 1992 until 2005, when Referendum C was passed in order to suspend revenue limits from 2006-2010 and to readjust it for the future (117). Also in line with tax payers’ rights is the fact that any increase in taxes, no matter how minute, must go to a vote of the people. Amendment 23, passed in 2000, guarantees a minimum level of funding for K-12 education (not higher education) to keep pace with inflation (117). This means that if K-12 funds are not meeting those levels money can be taken from elsewhere. Seeing as higher education is the most discretionary of any of the general fund allocations, money is likely taken from its budget. These measures have and continue to have a negative impact on higher education funding and make it very difficult to increase that funding within the current structure.
Added on to the debilitating measures, there have been unexpected changes in leadership in the governor’s office and Colorado Department of Higher Education (CDHE), particularly the executive director position. These changes have left the future of higher education policy change uncertain (159). Changes, especially the CDHE’s Strategic Plan, that were being considered before the leadership shift were taken off the table in a sense. Rather than focusing on long-term solutions to the higher education funding crisis, the Sustainability Subcommittee was forced to recommend short-term solutions to respond to the pending budget shortfall due to the loss of federal stimulus funds that the state had already used up (160). This short-term solution was tuition flexibility, which I will discuss later. Basically this measure gave institutions a lot of autonomy in setting tuition rates, which contributed to a lack of collaboration between institutions and the state. In Colorado,

the financial challenges that exist in tandem with a rigid tax structure, a unique higher education financing mechanism, and an extremely decentralized system, produces a context in which politics are unstable and powerful higher education institutions are concerned primarily with seeking more autonomy and additional financial support in order to maintain their survival. Absent significant change in the tax structure in Colorado, this is likely to continue. (160)

This context has created a situation in Colorado that cannot be fixed without an overhaul of the system and mending the relationship between institutions and the state. Without a change in state funding soon Colorado institutions will continue to increase tuition for both in-state and out-of-state students to make up for the lack of state funds. Until this change happens students will bear the brunt of the financial situation, paying higher tuition to institutions that have lost trust in the state to give them the funding they need to be successful, even to survive. To ensure that the situation does not worsen, and for it to improve, it is crucial for policy makers to address the situation now and start finding long-term, sustainable funding options for higher education in Colorado.
Literature Review

The literature on state higher education funding generally comes to the same conclusion: it is on the decline. Some may believe this is not a large issue, that funding can be supplemented by tuition and federal aid to students and the state. But it seems that most agree that something more needs to be done. Specifically in Colorado there is much discussion on the need for better state funding but there is a lack of initiative in finding that funding model and taking the necessary steps to implement it. That being said there is a lack of comprehensive literature on sustainable funding models for higher education that could be implemented in Colorado based on successful models in other states. This is what I am hoping to contribute. My research intends to move forward on ideas for better higher education funding structures to implementation of a better funding structure for Colorado that will help ensure the success and affordability of our higher education institutions.

Rising Costs of Higher Education

The cost of higher education has been rising since the 1980s. Prices are continuing to rise more rapidly than the prices of other goods and services (College Board, 2011:8). From 2001-2011 published tuition and fees for in-state students at public four-year institutions have increased at an average of 5.6 percent per year beyond the rate of general inflation (3). This number was 4.5 percent in the 80s and 3.2 percent in the 90s (3). The table at the end of this section shows the rate of tuition inflation compared with the rate of general inflation from 1980 to 2006. Based on these figures “it would be reasonable to expect an average college inflation rate of 7 or 8 percent per year for the next ten years” (FinAid Page, LLC, 2011). For the 2011-2012 school year tuition and fees have increased 7 percent (excluding California) for public four-
year institutions and 8.3 percent including California (College Board, 2011:3). At two-year institutions tuition and fees have increased 7.4 percent without California, 8.7 percent with California (3). In dollar amounts, in-state tuitions at public four-years average $8,244 across the nation for the 2011-2012 school year, $631 more than 2010-2011 (3). Out-of-state averages $20,770, $1,122 more than the previous year (3). Net tuition and fees at four-year institutions, which does not include money from grant aid or federal tax credits and deductions, increased an average of 1.4 percent per year beyond the rate of inflation from 2006 to 2011 (4). This number may seem significantly lower than total tuition and fees paid, but it must be taken into consideration that “about one-third of full-time students pay the full published tuition price with no grant assistance” (8). These students pay “an average of 8.3 percent more in tuition and fees at public four-year colleges this year than they paid last year” (8).

Not only are tuition and fees increasing but other costs associated with higher education are increasing as well, such as textbooks and room and board, and grant aid is rarely sufficient to cover these costs as well (8). A final factor that contributes the rising cost of education is the fact that people are just not bringing in as much income as they used to. “In 2010, average income was lower at all levels of the income distribution than it had been” in 2000 (4). Since the costs of education are constantly increasing and many states are continuing to cut funding and underfund education it is necessary to find funding models that can help students fund their education. (Figure below is Figure 1: College Tuition Inflation Rates)
General State Higher Education Funding

Statistics and trends in state higher education funding are compiled by higher education boards, such as the State Higher Education Executive Officers, regional higher education commissions such as the Western Interstate Commission for Higher Education (WICHE), and higher education institutions themselves, like the Colorado State University system. These reports give statistics on funding per student, revenue sources for higher education, state resources that affect higher education, and sometimes interstate comparisons in funding. These
Tuition, state appropriations, and financial aid all interact to fund higher education (Baum, Bell, and Sturtevant, 2010). While federal programs (i.e. financial aid) may be an aspect of higher education funding, the issue needs to be thoroughly addressed at the state level. Federal loans, grants, and aid can no longer be relied upon to finance higher education. “Despite the increased federal involvement, states maintain primary responsibility over higher education” (Michelau, 2010:5). Unfortunately, however, “state appropriations to higher education have not kept pace with increasing enrollments; tuition has increased and grant aid has not kept up” (Baum, Bell, and Sturtevant, 2010). “State funding for higher education institutions was 23% lower in inflation-adjusted dollars in 2010-11 than it had been a decade earlier” (College Board, 2011:4). A decrease in state appropriations has led to an increase in tuition at many institutions, which then leads to a disproportionate reliance on federal aid to fund higher education.

The NCSL Fiscal Affairs Program report “State Funding for Higher Education in FY 2009-FY2010” gives a general overview of the reduction of state funding. In general, per full-time enrollment (FTE) student funding has decreased from $7961 in 2001 to $6928 in 2009 (NCSL 2010). It also describes that higher education is largely looked at as a discretionary fund because of its abilities to compensate for lack of state support by bringing in its own revenue i.e. tuition. But it is clear that raising tuition to make up for state funding does not help make college more affordable and puts a greater burden on students and families to fund education. The report also outlines some measures states have had to take because of reduced funding, including
cutting programs, abolishing student aid, and decreasing enrollment. Some states, however, have adopted more beneficial programs to protect higher education funding, such as creating higher education commissions to conduct studies, increasing tax revenues temporarily, and looking into operation efficiencies and tuition policies. The report does not show how these programs have affected higher education funding yet. The report also shows how the American Reinvestment and Recovery Act (ARRA) money has affected higher education funding; in states like Arizona and Colorado the money has made a significant difference in funding. However, this reliance on federal funds causes problems. The problem for Colorado is that these funds are rapidly running out. These funds have backfilled previous year shortfalls rather than been new sources of revenue. Reliance on federal funds and higher education as a discretionary fund will not lead to viable higher education funding. This is especially true in Colorado’s case.

**Colorado Higher Education Funding**

Figure 2: Colorado compared to the rest of the nation’s funding
In 2006-2007 Colorado ranked 49th in total funding per degree/certificate, with the majority of the funding coming from tuition and fees, not state support (Colorado Department of Higher Education, 2010). Colorado also ranked 49th in 2008-2009 for average per student funding, again with most of our funding coming from tuition and fees (CDHE, 2010). As the above figure shows Colorado ranked 49th in state appropriations as of 2010 per income funding, funding about half of the national average (College Board, 2011:19). Since 2001 tuition as a funding source has nearly doubled for all institutions in Colorado (CDHE, 2010). In 2009-2010 the ARRA higher education appropriation made up $377 million of our $706 million dollar budget, while the state general fund made up $329 million (CDHE, 2010). In making up more than half of the higher education budget the 2009 ARRA money, which was supposed to last until 2012, was depleted by the 2010-2011 fiscal year. It was used to backfill the lack of state funds. According to the CDHE, Colorado is on the path of accelerated erosion, which means, “Funding continues to decline, with other state needs taking priority. On this course, funding would be less than $550M and could go to zero. Any available funds should be targeted to financial aid. Schools and programs may either close or be privatized, with no state support. Access will be limited.” This is enough evidence to prove that there is a higher education funding issue in Colorado.

Now that we have assessed the dire situation, how can we move forward? Numerous reports have emphasized the need for Colorado to look at alternative higher education funding models in order to benefit the state (Colorado State University 2007, Supporting Excellence 2010, Penley 2006, CDHE 2010, Higher Education Strategic Planning Steering Committee
2010). The Colorado Department of Higher Education has set forth recommendations to get Colorado back on track. It has laid out some specific measures that may increase revenue, all of which rely on raising taxes and implementing surcharges or mill levies. While these alternatives seem feasible, it takes a vote of the people to do so because of the Tax Payer’s Bill of Rights (TABOR). This, in Colorado, is no simple feat. Even if a ballot initiative this election to increase sales and income taxes passes these, raises would only last five years. Then another initiative will have to be passed. This is not sustainable.

The Higher Education Strategic Planning Steering Committee set a number of goals to help increase state funding:

- Lessen geographic, economic, and demographic disparities in access, attainment, and opportunity to complete a broader array of quality educational programs.
- Strengthen the link between undergraduates and research programs and the state’s economy.
- Ensure fiscal stability and affordability of Colorado public higher education into the future.
- Provide recommendations for systemic governance reform. (HESP Forum 2010)

Again, as with many other reports, these recommendations are quite vague. This explains what could be done but does not give steps on how to do them. The problem with these recommendations, besides their vagueness, is the lack of concrete, realistic steps to take to accomplish these goals. The first recommendation is basically to increase access to college. But how? The second recommendation implies that research opportunities could benefit the economy. But where will we get the money to do research? Will the state pay for it? The final two recommendations are where my research will try to find actions to support them and
hopefully ensure stability, since this forum does not ultimately do that. This plan “served as a starting point for discussion between the new executive director and the governor, but thus too did not serve as the primary framework for the process (Michelau, 147).

Colorado also has a unique voucher program, the Colorado Opportunity Fund, which provides stipends to Colorado residents attending participating public (and a few private) in-state institutions, fee-for-service contracts to pay institutions to fulfill some state needs, and performance contracts with institutions as the principle mechanism for financing higher education rather than funding it through direct state appropriations (Prescott, 2010; WICHE COF Evaluation, 2010:i). The system had three objectives. One was for higher education institutions to be exempted from TABOR limitations on revenue and expenditure in order to be able to obtain more revenue, which would typically occur through tuition increases. The second was the possibility that institutions would become more “disciplined and efficient in their operations” and recognize the need to recruit in-state residents (WICHE COF Evaluation, 2010:i). The third was to promote access to higher education for underrepresented communities (i).

The required 2010 evaluation shows that the COF has not lived up to its expectations except for granting higher education institutions exemption from TABOR, which is beneficial but essentially means institutions can raise tuition, something could not be beneficial for students and their families. The stipend itself, at $2400 a year per full-time student, or $80 per credit hour, is relatively low considering the cost of education has continued to rise. It is also only good for 145 credit hours, which inhibits students from pursuing more education if they wish, at least in the state of Colorado.

Besides its logistical shortcomings WICHE describes multiple negative factors related to the implementation of the COF. Colorado institutions have seen a drop in enrollment since the
implementation of the COF in 2005, although WICHE cautions that it is not necessarily a causal relationship. In discussions with institutions they also discover that institutions will not be rewarded for higher enrollment and “did not perceive there were any real rewards or penalties for performance” therefore the COF has had a “negligible affect on institutional decision making” (ii). This shows how the performance aspect of the COF is not functional. The fee-for-service contracts were basically set up to encourage competition among institutions to meet state needs and be subject to “market forces”, but in actuality they turned out to be “a balancing tool to keep institutions whole with respect to the overall funding levels prior to the implementation of the COF legislation” leading to “no change in institutional behavior” (27). The fee-for-service and performance funds can even be used to supplement a shortage of enrollment funds. The Department of Higher Education is required to “provide estimated enrollment figures to the legislature upon which the COF stipend amount for the subsequent academic year is set” (28). More funds can be requested if enrollment exceeds the estimate, but the legislature is not obligated to provide these. Overall, total revenue from the state remains the same, so some institutions take money from other aspects of the COF to fund the excess enrollment, further lowering the effectiveness of those two provisions.

In reality, according to Prescott’s 2010 evaluation, the COF generally led to higher out of pocket expenses for families and “necessitated a new apparatus to divert tax dollars through students and procurement contracts in order to give institutions the same amount of money they would have received if the state had continued subsidizing them directly. Though not terribly expensive to operate once implemented, this work-around process is not revenue-neutral and may ultimately cost the state graduates and widen gaps in educational attainment—exactly counter to its expressed purpose”. The COF has created a new bureaucracy to circumvent
TABOR that has “diverted institutional resources away from student services, has not had the hoped-for effects on college participation, and is not revenue-neutral” (WICHE COF Evaluation, 2010:32). COF essentially will not solve the state’s funding issues and may contribute to them more. It either needs to be gotten rid of or amended, as leaving it as-is is not a sustainable option.

Another option that has recently been implemented in Colorado to solve the funding issue is tuition flexibility. Tuition flexibility involves giving universities autonomy from the state when setting tuition; “public colleges and universities would be allowed to raise tuition rates by 9 percent annually. If an institution wants to raise tuition rates by more than 9 percent, it must submit a plan to the Colorado Commission on Higher Education that would show how the institution would make sure lower- and middle-income students would still be able to afford to go to school” (Goodland, 2010). Tuition could rise up to 9 percent a year if this was allowed. One of the provisions is that a good portion of the increased tuition would have to go to financial aid, but how closely will these provisions be followed? Frank Watrous of the Bell Policy Center voiced these concerns despite their support of the bill; “The bill’s efforts to provide protection for access and affordability, and to reduce student debt load, also won the center’s favor. Watrous said the Center still had concerns about the 9 percent tuition ‘floor’ which in the past had been a ‘ceiling,’ and that a state model of high tuition, high aid doesn’t work when the aid comes only from the institutions. ‘The state still has to provide additional aid,’ he said” (Goodland, 2010). It is not the most favorable option for students and would cause implications pertaining to cost increases at colleges, cost that could increase every year. “’This isn’t a fix,’ said Sen. Rollie Heath, D-Boulder. ‘We’re last in the country on funding higher education.’ SB 3 will get the state through another year, he said, but the revenue problems that caused the need for
The bill still remain. ‘We need to deal with the long-term problem,’ Heath said” (Goodland, 2010). The bill, passed in 2010, is up for review in five years, which was another reason why the bill largely passed. This is another short fix for Colorado. It is not sustainable and is a measure that could further encourage decreased state support if institutions are able to raise more revenues and prove they can function without state support at the expense of students.

It is time for research to develop a concrete model that can be adapted to Colorado to provide viable higher education funding; it is time to be proactive in this situation rather than reactive (Baum, Bell, Sturtevant, 2010). That is where my research comes in and fills this gap between ideas and implementation. The ideal situation would be to get rid of TABOR, the root of many of the funding issues in Colorado. But, as mentioned before, convincing taxpayers to raise taxes is easier said than done. And even if TABOR was abolished there is no guarantee that the legislators would pass initiatives to raise taxes to support higher education. But, if a sustainable, viable, adaptable model for higher education funding in Colorado can be provided to the state legislature it will make it a lot harder for them to say no to funding higher education at a rate that ensures the success and affordability of Colorado’s institutions.

**What is associated with viable state higher education funding?**

There is a vast amount of literature pertaining to what affects state funding for higher education. The following are variables I will be using to see their effects on higher education funding. After assessing the literature and collecting my own data my goal is to find what factors can be most beneficial to state funding while also being viable for Colorado.

*Governance Structures*
Governance structures pertain to the governmental arrangements states use to determine funds for higher education. Aims McGuinness (2010) provides a classification of state higher education governance structures that will help with my classification. He classifies all of the states by the boards and agencies that they have that have authority over higher education academic policy and budget. The three broad categories are “states with consolidated governing boards, states with coordinating boards, and states with higher education service agencies” (McGuinness, 2010). Consolidated governing boards have authority over both the academic policy and budget pertaining to the institutions they oversee. Coordinating boards can be split into regulatory, where they have program approval authority, or advisory, where they only have program review authority. These can be further split into their discretion over the budget, whether consolidated, review and recommendation, or no authority. Finally there are service agencies, which have no program or budget authority, as well as one state (Michigan) that has no state higher education board. Using McGuinness’ classification of each state I will determine the funding each state gives to higher education and see if there is a structure that better funds higher education. Below is a table of McGuinness’ classifications.

Table 3: McGuinness’ Classification of Higher Education Governance Structures

<table>
<thead>
<tr>
<th>States with Statewide Consolidated Governing Boards and No Coordinating Board (except as noted *)</th>
<th>Regulatory Coordinating Boards and Agencies Boards with Program Approval Authority</th>
<th>Advisory Boards/Agency Boards with No Program Approval Authority – Only Authority to Review and make Recommendations on Academic Programs</th>
<th>Higher Education Service Agencies</th>
<th>No State Higher Education Board or Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>One Board for All Public Institutions</td>
<td>Two Boards Encompassing All Public Institutions</td>
<td>Consolidated or Aggregated Budget (f)</td>
<td>Budget Review and Recommendation (f)</td>
<td>No Statutory Budget Role</td>
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<tr>
<td>= 8 plus 1*, and (DC and Puerto Rico)</td>
<td>= 13, plus 2* (MN and NH )</td>
<td>= 14</td>
<td>= 6</td>
<td>= 1</td>
</tr>
<tr>
<td>States=2, plus 3* and DC and Puerto Rico</td>
<td>States=1</td>
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</tbody>
</table>

(a) State board/agency responsible for all levels of education (P/K-16/20). State boards/agencies in Florida, New York and Pennsylvania have coordinating, not governing authority for public institutions. State board in Idaho has governing authority.

(b) State has both consolidated governing board(s) and coordinating or planning/service agency.

(c) One of the two boards is a statewide coordinating body for community colleges and/or postsecondary technical institutions.

(d) Kansas Board of Regents is a consolidated governing board for universities and coordinating board for locally governed community colleges and Washburn University.

(e) Maine Maritime Academy is the only public institution with its own governing board outside a system.

(f) Several states, e.g., Texas Coordinating Board for Higher Education) develop the formulae for allocation of state appropriations and/or make recommendations for overall system funding but do not review and/or make recommendations on individual institutional budgets.

(g) Michigan State Board of Education has Constitutional authority for overall planning and coordination of the state’s education system, but because of the Constitutional autonomy of the state universities and local governance of community colleges, the State Board does not function as a statewide higher education coordinating agency. State Board is the licensing authority for non-degree vocational-technical education and proprietary institutions and approves charters for private degree-granting institutions within the state.

(h) The New Mexico entity is a cabinet-level department headed by a Secretary of Higher Education. The department has authority to review, adjust and approve public university budgets prior to submission to the department of finance and administration and limited authority primarily to review and study but not to take formal action to approve academic programs or other institutional decisions.

(i) Pennsylvania State Board of Education’s program approval authority is limited to specific areas (e.g., teacher education). Board also must approve new campuses or sites. Department of Education has budget responsibility for community colleges and regulatory responsibilities regarding for-profit institutions.

(j) State-level governing boards in Massachusetts include the Board of Trustees, University of Massachusetts and the Board of Higher Education for other public institutions including community colleges. The latter board is also the coordinating board for whole public system.

(k) Vermont has no statutory planning/coordinating entity. Vermont Higher Education Council is voluntary.
Florida State Board of Education has responsibility for policy direction and coordination of state’s education system, P-20. Constitutional amendment passed in November 2002 created a Board of Governors for Universities, but the State Board of Education retains overall responsibility for policy coordination for all education. State Board of Education, through a chancellor for community colleges, coordinates locally governed community colleges.

Constitutional amendment passed in November 2002 eliminated most powers of the Arizona State Board of Directors of Community Colleges except for data collection and preparing an annual report.

The two boards in these states include a statewide governing board for universities and a statewide governing board for community colleges and/or technical institutions.

Authority of the California Postsecondary Education Commission related to budgets is limited response to requests from the Governor and General Assembly for review and recommendations of budget requests of the segments (Community Colleges, California State University and the University of California).

West Virginia has two state-level coordinating boards: the Higher Education Policy Commission for four-year institutions and the Council for Community and Technical Education for community and technical colleges. The council and commission share coordinating responsibilities including developing a public policy agenda that is aligned with state goals and objectives and the role and responsibilities of each coordinating board.


Funding Models

Funding models that the governance structures work with will also be considered. Daniel T. Layzell’s assessment of current and emerging approaches in higher education funding models will be a basis of my classification of current state systems as well as of the creation of a new funding model for Colorado. Layzell emphasizes the need for flexible systems that are consciously thought out, not the result of inaction or default (Layzell, 2007:18). He also briefly explains and assesses current funding approaches. My job here will be to put the states in these respective categories and use his table to assess their efficacy. The funding approaches Layzell discusses are incremental budgeting (the most traditional), funding formulas, performance funding, performance contracting, and vouchers (least traditional). Incremental budgeting involves using the current year budget to start to set next year’s budget with adjustments being made “to allow for differences in activities planned for the next year and expected changes in revenues and expenditures” (2007:6). It is practiced in some form by most state governments and uses line-item allocation. Funding formulas “are mathematical algorithms used to allocate
some or all of the funding for public colleges, universities, and other higher education programs” and has been used in some way by 38 states as of 2006 (6). Performance funding ties the allocation of funds to institutional performance on certain indicators, for example retention rates, graduation rates, and minority student enrollment rates (6). If institutions meet targets then they receive a certain amount of funding.

Currently about 14 states have implemented performance-based funding (PBF), but several others have considered it. It has been promoted by notable organizations such as the National Conference of State Legislatures (NCSL), National Governors Association (NGA), and College Board as an option that will improve campus productivity and boost college completion (Harnisch, 2011: 2). “The theory postulates that [leaders of public colleges] will take the measures necessary to retain or enhance their institutions’ funding.” (2) I am weary of this theory, as I am not convinced institution leaders see the need for state funds when they are able to supplement them with tuition revenues. Harnisch reports key advantages and disadvantages of PBF. Advantages may be greater awareness of campus performance, clarifying the relationship between institutions and the state so that state can set state priorities above institutional needs, enhanced transparency and accountability, and increased productivity (6-7). Disadvantages may be a limited view of university performance, distortion of university missions which could include limiting access to some students, stressing efficiency over quality, lack of program support, and increased inequality and instability between institutions (8). Despite some causes for concern performance funding may be a viable option in many states and cannot be ruled out. Performance contracting is similar to performance funding, but it requires a more specified service to the state from participating institutions (Layzell, 2007:7).
The final possible model is a voucher system under which schools would no longer receive direct funds from the state but rather eligible state residents admitted to a public college or university would receive a voucher to put towards the cost of attendance (7). This may allow schools to set tuition and fee levels without state approval or even involvement (7). The hope is basically that this system would increase competition for students between institutions and thus institutions would improve quality, cost, and programs (8). As mentioned before, Colorado implemented this through the Colorado Opportunity Fund. Its success is questionable and therefore it is unclear whether this model will be viable. These models need not be used exclusively and may be mixed and matched.

Layzell also includes a table of desired characteristics that funding models should have. The table below describes them. This table will help assess which characteristics are most needed and viable in Colorado and, once those are found, help decipher which funding model (or models) would be best to implement. The table listed below is Figure 4.
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Summary Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equitable</td>
<td>The funding approach should provide both horizontal equity (equal treatment of equals) and vertical equity (unequal treatment of unequals) based on size, mission, and growth characteristics of the institutions.</td>
</tr>
<tr>
<td>Adequacy driven</td>
<td>The funding approach should determine the funding level needed by each institution to fulfill its approved mission.</td>
</tr>
<tr>
<td>Goal based</td>
<td>The funding approach should incorporate and reinforce the broad goals of the state for its system of colleges and universities, as expressed through approved missions, quality expectations, and performance standards.</td>
</tr>
<tr>
<td>Mission sensitive</td>
<td>The funding approach should be based on the recognition that different institutional missions (including differences in degree levels, program offerings, student readiness for college success, and geographic location) warrant different rates of funding.</td>
</tr>
<tr>
<td>Size sensitive</td>
<td>The funding approach should reflect the impact of relative levels of student enrollment on funding needs, including economies of scale.</td>
</tr>
<tr>
<td>Responsive</td>
<td>The funding approach should reflect changes in institutional workloads and missions and changing external conditions in measuring the need for resources.</td>
</tr>
<tr>
<td>Adaptable to economic</td>
<td>The funding approach should be applicable to a variety of economic situations, such as when the state appropriations for higher education are increasing, stable, or decreasing.</td>
</tr>
<tr>
<td>conditions</td>
<td></td>
</tr>
<tr>
<td>Concerned with stability</td>
<td>The funding approach should not permit shifts in funding levels to occur more quickly than institutional managers can reasonably be expected to respond.</td>
</tr>
<tr>
<td>Simple to understand</td>
<td>The funding approach should effectively communicate to key participants in the state budget process how changes in institutional characteristics and performance and modifications in budget policies will affect funding levels.</td>
</tr>
<tr>
<td>Adaptable to special</td>
<td>The funding approach should include provisions for supplemental state funding for unique activities that represent significant financial commitments and are not common across the institutions.</td>
</tr>
<tr>
<td>situations</td>
<td></td>
</tr>
<tr>
<td>Uses valid and reliable</td>
<td>The funding approach should rely on data that are appropriate for measuring differences in funding needs and can be verified by third parties when necessary.</td>
</tr>
<tr>
<td>data</td>
<td></td>
</tr>
<tr>
<td>Flexible</td>
<td>The funding approach should be used to estimate funding needs in broad categories; it is not intended for use in creating budget control categories.</td>
</tr>
<tr>
<td>Incentive based</td>
<td>The funding approach should provide incentives for institutional effectiveness and efficiency and should not provide any inappropriate incentives for institutional behavior.</td>
</tr>
<tr>
<td>Balanced</td>
<td>The funding approach should achieve a reasonable balance between the sometimes competing requirements of each of the criteria listed above.</td>
</tr>
</tbody>
</table>


Higher Education Institutional Structures

Higher education structures are the way in which individual institutions are governed. It is relevant to look at this information because it may show whether institutions are compelled to compete with each other for funding or if systems are more integrated. It may also show the relationship between institutions and the state. Institutions with strong decentralized governance may seek autonomy from the state in funding matters, or the state may assume these institutions have better funding capabilities and therefore may not be as hesitant to cut their funds. More centralized structures however may have more oversight from the state and may have to or want to rely on state funds. For example, Colorado has several systems of higher education: the University of Colorado system, the Colorado State system, Four-Year state colleges, and community colleges. I would argue that these systems do compete for funding and while all would appreciate more funding, the larger systems (CU and CSU) have more ability to increase tuition revenues (relying less on state funds) than do the other state colleges and community colleges. (That is not to say the CU and CSU do not need or would not benefit from more state funding). Looking at these structures in the states may be a factor in determining why funding levels are where they are.

Ballot Initiatives

Ballot initiatives are important to look at because many of them pertain to fiscal policy within the state, especially in Colorado where any increase in taxes must go to a vote of the people. The National Conference on State Legislatures has a database of all initiatives or referenda that states have passed on higher education and education for decades. Thirty states have had initiatives that affect higher education. The next step would be to look at the states
annual funding before and after the initiative (if it was passed) and see what effects, if any, it had on higher education funding. It also may be interesting to look at if K-12 ballot measures took away from higher education funding when/if they were enacted. Ballot initiatives also provide a unique opportunity for citizens to help dictate higher education policy, rather than relying on state legislators to vote on legislation. “A New Funding Paradigm for Higher Education” mentions the importance of ballot measures within states; “Voters in 21 states considered the passage of several significant fiscal ballot measures in November 2010” (Pattison, et. al. 2011: 6). This “underscores the influence of the electorate in making major state fiscal policy” (6). The fact that voters could be more embroiled in the process brings in the possibility of political organizations, interest groups, and institutions themselves making more of an effort to impact policy through grassroots movements rather than lobbyists. This civic participation could have its own impact on higher education funding.

_Political Context_

This includes the effect of partisanship, lobbying, and governor strength on state higher education funding. The work by McLendon, Hearn, and Mokher entitled _Partisans, Professionals, and Power: The Role of Political Factors in State Higher Education Funding_ finds “strong imperial evidence that partisanship, legislative professionalism, term limits, interest groups, and gubernatorial power influence appropriations levels” (2009:686). They explicitly say what many may forget, that “public postsecondary institutions are embedded within a larger political environment...that environment will likely influence policy adaptation patterns in postsecondary education (688). To summarize, McLendon, Hearn, and Mokher found that Democratic control is associated with positive funding levels, while Republican or unified control are associated with more negative funding levels (688). “On average, a 1% increase in
Republican legislators is associated with a $0.05 decline in state appropriations per $1,000 of personal income, while a partisan change to a Republican governor is associated with a $0.23 decline when other factors are held constant” (701). They also find a positive correlation in funding when there are registered higher education lobbyists, equaling to about a five-cent increase per $1,000 of personal income (701). This study also looked at gubernatorial power, finding that states whose governors have greater institutional power fund higher education at lower levels (704).

Tandberg has similar findings. He mentions that higher education lobbying “is acquiring greater influence within states. Most universities, acting as a type of interest group, have either an in-house lobbyist or an outside contract lobbyist, and all public institutions engage in some form of lobbying” (2009). This lobbying may have helped get more funding for higher education. (Note: I decided not to look into lobbying efforts in the states for this project.) He too finds than an increase in gubernatorial power tends to limit funding for two reasons, “first, governors often serve as a check against legislative spending; second, governors may divert funds away from higher education and toward other policy areas. Hendrick and Garand (1991) found that governors with greater powers were more willing to engage in expenditure tradeoffs (funding one area at the expense of another)” (2009).

**Tax and Expenditure Limitations**

Tax and expenditure limitations (TELs) limit state tax revenues and/or the expenditures of state revenues. Most of these limitations are amendments to state constitutions, meaning they are firmly in place and hard to change (Archibald and Feldman 2006:619). Colorado has a TEL known as TABOR, which severely limits both spending and tax revenues “to the previous year’s
allowed collections plus a percentage adjustment equal to the percentage growth in population
plus the inflation rate” and requires any excess revenues to be given back to the people instead of
utilized by the state, unless citizens vote to allow the state to keep excess revenue (Waisanen
2008). This has caused problems in years following recessions, which have lower revenue
collections (known as the ratchet effect). The spending growth limitation limits “general fund
expenditures to 6 percent more than the previous year or 5 percent of personal income,
whichever amount is lower” (Waisanen 2008) and can only be amended by a vote of the people.
In 2005 voters approved Referendum C, which allowed the state to retain all revenues collected
between 2006 and 2011, when a new revenue base was to be selected. TABOR is considered the
most restrictive TEL in the nation. Some advocate TELs because they decrease the size of
government and contain spending and taxes (Waisanen). Others fear that TELs inhibit “a
government’s ability to fund public services adequately” (Waisanen), services that include higher
education.

The Bell Policy Center conducted a 10-year review of TABOR that decided that it has
certainly limited government and that “education and health programs have borne a
disproportionate share of cuts” (Waisanen). Archibald and Feldman in their 2006 study found
that provisions (TELs) coming out of the “tax revolt” of the 1970s do affect higher education
spending (637). They claim the necessity of acknowledging TELs when studying higher
education spending because “tax revolt provisions account for a significant portion of the
slowdown in taxpayer effort directed toward higher education” (638). They also note the
Colorado case as illustrative of the problems with severe TELs and higher education. The
problems are an increasing disconnect between states and public higher education institutions,
since some state governments alone can no longer guarantee adequate funding, and the need to
compete for a diminishing budget, which requires arguing that higher education is more important than other state services such as K-12 education and healthcare, a difficult argument to make (640). TELs seem to have a negative impact on higher education funding, but due to their rigidity they may be difficult to change in a timely manner to achieve better funding within a reasonable time frame.

State Demographics

State demographics include migration patterns, socioeconomic conditions, and unemployment rates. Migration patterns are relevant because they will indicate who is coming into the state and whether the state is attracting previously educated citizens or attracting students, which could gauge the state’s priorities in funding education. It could be the case that states that already attract educated people would see funding as a lesser priority; why pay for our students when we already have other states’ smart people coming to us? Patterns will also show the age structures within states. Seeing these age structures could indicate how the state funds higher education; if there is a large student-age population (18-25 years of age) maybe the state would better fund higher education, or maybe there would be extra burdens to fund more students. Socioeconomic conditions and unemployment are important to gauge the state of the economy in each state. The economy will determine the size of state budgets and where that money is allocated. It is clear that the nation as a whole is facing hard economic times, but some states could be further recovered than others and therefore more able to fund higher education.

Sustainability Measure

Since I am looking for a sustainable higher education funding model it is necessary to define sustainability. In order to be considered sustainable, funding will need to keep up with the
price of higher education. Higher education has its own price index that is more accurate than using the general Consumer Price Index. The Higher Education Price Index (HEPI) differs from the tuition inflation shown in the table in the rising costs of higher education section. The HEPI is “designed specifically to track the main cost drivers in higher education. It is an essential planning tool…helping schools to understand the future budget and funding increases required to maintain real purchasing power” (Commonfund Institute 2012). It measures goods and services that higher education institutions purchase each year, which include “salaries for faculty, administrative employees, clerical employees, and service employees, fringe benefits, utilities, supplies and materials, and miscellaneous services” (Commonfund Institute). (For more information on how the HEPI is calculated visit [http://www.commonfund.org/CommonfundInstitute/HEPI/Pages/default.aspx](http://www.commonfund.org/CommonfundInstitute/HEPI/Pages/default.aspx)). This will be the tool by which I measure sustainability. It will not be calculated by using a regression analysis. Instead I have created a graph comparing my case study’s percent change in funding over ten years to the HEPI yearly percent change (see figures 11 and 12).

**Research Design**

My design is a mixed method analysis that required me to find data on all 50 states in order to pick out states that can be compared to Colorado. Independent variables include ballot initiatives, tax expenditure limitations, governance structures, funding structures, strength of the governor, politics of the legislature, educational attainment, educational enrollment, average household income, unemployment rate, in-migration, and age structures. There are four dependent variables that will be assessed: annual state higher education funding per capita, state funding per 1000 dollars personal income, state funding per full-time-enrolled student, and the
percent change in this funding over ten years (2000-2010). Each of the variables will be measured in the following manner:

Figure 5: Variables descriptions, measures, and data sources

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Description</th>
<th>Measure</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per Capita State Funding (2000-2010)</td>
<td>This is the appropriation states give to higher education each year per capita.</td>
<td>It is the dollar amount that a state appropriates per capita for higher education. It is adjusted for inflation based on 2005 dollars.</td>
<td>Grapevine of the Illinois State University (2000-2009), <a href="http://www.ccpe.state.ne.us/PUBLICDOC/CCPE/Reports/budget/2011-2013/Appendix%201.pdf">http://www.ccpe.state.ne.us/PUBLICDOC/CCPE/Reports/budget/2011-2013/Appendix%201.pdf</a> for 2010 data</td>
</tr>
<tr>
<td>Percent Change in State Funding per year (2001-2010)</td>
<td>This will measure how state funding has changed from year to year. I will be calculating this measure based off of the data I obtain.</td>
<td>Measures the percent change in funding year to year or over the course of several years</td>
<td>Calculated from Grapevine and SHEEO data</td>
</tr>
<tr>
<td>State Appropriations per FTE (2003-2010)</td>
<td>This is a common measure of state funding based on student enrollment</td>
<td>Appropriations allocated based on FTE (Full Time Enrollment). Also adjusted for inflation at 2005 dollars.</td>
<td>SHEEO</td>
</tr>
<tr>
<td>State Appropriations per $1000 personal income (2000-2010)</td>
<td>This is another common measure of state funding.</td>
<td>It measures the amount the state appropriates to higher education per $1000 personal income and is adjusted for inflation using 2005 dollars.</td>
<td>Grapevine</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Description</th>
<th>Measure</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Higher Education Governance Structure</td>
<td>This is how states make higher</td>
<td>The states will be coded according to</td>
<td>Aims McGuinness “Classification of</td>
</tr>
<tr>
<td>(2000-2010)</td>
<td>education policy decisions. There are 5 possible categories of structures, with subcategories for three of them. They are defined in the figure from Aims McGuinness’s work.</td>
<td>their structure as 0, 1, or 2 in comparison to Colorado (Colorado=1). In the regressions structures are coded as more Colorado (more=1, CO=0), Colorado (CO=1, not CO=0), and less Colorado (less=1, not less=0)</td>
<td>Higher Education Structures”, State higher education websites</td>
</tr>
<tr>
<td>---</td>
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<td>---</td>
<td>---</td>
</tr>
<tr>
<td>State Higher Education Funding Model (2000-2010)</td>
<td>Funding models are the ways in which state governments fund higher education. There are several types: Incremental Budgeting, Formula funding, Performance Funding, Performance Contracting, and Vouchers.</td>
<td>I will determine which states fund with which model(s) using a coding system similar to governance structure. I will code for only Performance funding and vouchers (0 being nonexistent, 1 being existent), as all states have some sort of formula funding.</td>
<td>Layzell’s “State Higher Education Funding Models. Daniel T. Layzell provides a comprehensive assessment of each approach, State higher education websites, AASCU Policy Matters report on Performance Based Funding</td>
</tr>
<tr>
<td>Higher Education Structure</td>
<td>This pertains to how higher education institutions are organized, for example in a centralized state system or several decentralized systems.</td>
<td>This variable was actually not used in regression analysis but considered during the case study.</td>
<td>Various State websites, Grapevine</td>
</tr>
<tr>
<td>Migration/Population Structures (2000-2010)</td>
<td>Includes in-migration numbers and age populations.</td>
<td>The amount of people in each age cohort, which is condensed to two measures, age 14 to 24 and age 25 and up, as well as the number of people that have migrated to the state that year.</td>
<td>U.S. Census Data, Tax Foundation</td>
</tr>
<tr>
<td>State Socioeconomic Conditions (Household)</td>
<td>Provides a measure of state wealth and can</td>
<td>Average household income (adjusted for U.S. Census (ACS Survey Data)</td>
<td></td>
</tr>
<tr>
<td><strong>State Socioeconomic Conditions (Household income data from 2000-2010, educational attainment data from 2005-2010)</strong></td>
<td>Provides a measure of state wealth and can give a sense of the economic status of the state. Educational attainment is also considered here.</td>
<td>Average household income (adjusted for inflation using 2005 dollars) and educational attainment, which includes measures from less than 9th grade to graduate degree.</td>
<td>U.S. Census (ACS Survey Data)</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Enrollment (2005-2010)</strong></td>
<td>Since one of the measures of funding is based on student enrollment it may be relevant to see how many people are enrolled at all levels in school in each state.</td>
<td>This is the number of students enrolled in school, broken down from Kindergarten to College.</td>
<td>U.S. Census (ACS Survey)</td>
</tr>
<tr>
<td><strong>State Unemployment Rate 2000-2010</strong></td>
<td>The unemployment rate within a state will gauge the economic status of the state.</td>
<td>The unemployment rates will be input as is.</td>
<td>Bureau of Labor Statistics Database</td>
</tr>
<tr>
<td><strong>Gubernatorial Strength (years 2000, 2001, 2002, 2004, 2005, 2007 from source, years 2003 and 2006 found using the average between previous and following years’ numbers)</strong></td>
<td>A governor’s strength may affect higher education funding allocation, whether it is because of his party affiliation or political agenda.</td>
<td>This will be measured based upon the governor’s overall influence in state government, which includes power over the budget. This is measured on a 1-5 scale, 1 being weak, 5 being strong.</td>
<td>Thad Beyle</td>
</tr>
<tr>
<td><strong>Party Control within the State Legislature (2000-2010)</strong></td>
<td>This will determine whether the state legislature is dominated by one party or bipartisan.</td>
<td>This will be measured using a 0-1 scale, 0 equals a Republican majority, 1 equals Democratic majority, and 0.5 equals split. Both the lower and upper house will be measured separately, but the lower house.</td>
<td>The Council of State Governments, State Elective officials and the Legislatures, now known as the National Conference of State Legislatures</td>
</tr>
</tbody>
</table>
After compiling all of the data I ran regressions to determine which factors contribute most to variations in state funding. These factors are looked at in my case study. State compatibility with Colorado is determined by similarities between the states, like population, as well as factors that affect state funding and whether those factors can or already exist in Colorado. It is also necessary that the state chosen funds higher education at a higher level than Colorado and at a sustainable level. The goal is that this will result in a sustainable and viable funding and governance model that Colorado could adopt in the coming years.

**Caveats to Data**
I have tried to be as thorough as possible with the data I have collected, particularly with the socioeconomic measures and dependent variable numbers. Some of the variables I have coded, however, are extremely simplistic, particularly the codes for governance structure, performance based funding, and TELs. Governance structures are more complicated than better than, equal to, or less than Colorado. When looking at the case study, however, I will delve further into the comparison state’s governance structure to make more solid recommendations. For some coded variables it was hard to tell exactly when the variable occurred and whether that was before the 2000 to 2010 period or during it. I did my best to look at legislation that enacted these variables, but some of the dates after enactment were assumed to have the same conditions as previous years rather than officially confirmed. For the governor strength data, as mentioned above, some numbers were extrapolated from the existing data. There were also some years that I could not retrieve values for, which may have skewed my regression analysis. Finally, most of the data on appropriations were state reported and thus may be slightly skewed based on how the state reported their numbers. It should also be noted that all dollar amounts used in my regressions were adjusted to equal 2005 dollars and that the percent change in appropriations were calculated from the 2005 adjusted numbers as well.

Hypotheses

For many of my independent variables I have hypotheses on what their effect on funding will be. They are listed and here briefly explained below.

*H1* - *The more consolidated a governance structure is the more funding there will be to higher education.*
The governing structure in Colorado consists of a coordinating board (the Colorado Commission on Higher Education) that regulates the relationship between institutions and the state government. When it comes to the budget this board really only has recommendation, not policy, authority. They do not have to approve the state budget nor do they have to approve institutional tuition increases under nine percent. Because of its lack of authority it has less control over the budget situation, and this type of governance structure will result in less funding for higher education. States with consolidated boards with broad authority over the budget will tend to fund education better because the institutions have more of a direct relationship with the state (they do not go through a coordinating board).

H2- States with higher populations between ages 14 to 24 (high school and college aged) will fund higher education more, while states with higher older populations (25 and up), will spend less on higher education

States with more of their populations outside of the student age population (age 14 to 24) will have to devote more resources to the other age cohorts, such as funds for elementary education or funds for healthcare, which are generally not utilized for the student age population.

H3- States with higher average household income will have increased higher education funding levels.

If average household income can be a measure of state wealth, it can be assumed that states with higher incomes (more state wealth) have more ability to fund higher education at higher levels. It is another assumption to say that because of this ability they will fund higher education better.

H4- A state with higher educational attainment rates will fund higher education at higher levels.
States may see the benefit of educating their own citizenry. However, Colorado attracts an educated citizenry thus it may not see the necessity in educating its own citizens, which may be detrimental to higher education funding in the state.

*H5- States with higher numbers of enrollment at the college level will fund higher education more.*

This hypothesis is similar to the age structures hypothesis. If a state has a higher college student population it may be more inclined to fund higher education more, while if elementary and secondary enrollment is higher that may take more of the focus.

*H6- A higher unemployment rate will correspond with lower levels of funding.*

Unemployment rates help to determine the economic health of the state; if the rate is high the state is likely struggling if it is low they are likely thriving. Thus, if the state is struggling it will not fund higher education at high levels, whether it is because the state cannot financially or whether higher education is not a priority if unemployment is high.

*H7- States with a predominately Republican legislature will fund higher education at lower levels; states with a Democratic majority will tend to fund at higher levels. Bipartisan legislatures may lead to lower funding.*

Republican ideologies tend to favor lower taxes and less government intervention. Higher education funds from the state come from taxes and the state funding institutions is a form of government intervention. Therefore, a Republican legislature may reduce taxes and therefore reduce funding to higher education. It also may be more in favor of institutions providing more of their own funding than relying purely on state funding. Democratic ideologies generally
support taxation and government support of services and therefore may be more willing to raise taxes to support higher education. If states face competition between these two parties within the legislature funding may be in jeopardy because of the general ideologies discussed above and because a split legislature may have trouble coming to agreement on any policy, which can lead to little or no action by the state.

H8- States with more higher education funding initiatives will fund at higher levels.

Ballot initiatives allow citizens to get more involved with higher education funding decisions, taking some of the power from the legislature. Assuming that citizens see the benefits of funding higher education, more initiatives may mean more funding. More initiatives at least mean that higher education is on the citizen radar as an issue that needs to be addressed.

H9- States with TELs will fund higher education at lower levels than states without them.

Tax and expenditure limitations limit the state’s ability to raise and spend taxes. Higher education funding is supported by tax revenues, thus if tax revenues are limited and the ability to spend them is as well, higher education funding will suffer. With these limitations on spending, state governments must be careful with their allocations and must meet federally mandated funding in areas such as Medicaid/Medicare. Since higher education institutions have the ability to raise their own revenue (tuition) rather than use the state’s limited revenue, higher education will receive fewer allocations as time goes on.

H10- Performance based funding will have a positive effect on higher education funding.
Performance funding is the new trend in higher education, suggesting that there is something right going on with this funding model. Louisiana, my case study, uses performance based funding and has significantly higher funding than Colorado.

*H11-In-migration will have a negative effect on funding.*

An influx of migrants can indicate that people are moving after they have gotten an education for jobs. These people are likely already educated, so the state, like Colorado, is already attracting educated citizens and thus may not see the need in funding higher education.

*H12-A stronger governor will have some impact on higher education funding.*

Governors have a significant role in the budget process that states must go through. Although the governor’s budget does have to be approved by the legislature, if the governor is strong he or she may have more ability to get his or her particular budget through the legislature. Depending on their support for higher education they could fund, or not fund it, accordingly.

**Data Analysis and Findings**

To analyze my data I used Stata and conducted regressions to see the different relationships between funding and the various independent variables. Age structure, enrollment, and educational attainment were highly inter-correlated; I used educational attainment in my model because it is a more useful and creates a stronger model than the other two. Per capita funding and per $1000 personal income correlated highly as well, but I use models for both variables. FTE funding did not provide as strong a model as per capita or per income funding, thus the regressions I ran are based off of those two funding measures. Below I have restated my
hypotheses and explained what the results showed after running the regressions. Directly below are the regression models. (See Appendix 1 for descriptions of the variable names).

Figure 6: Effects of the independent variables on annual state higher education appropriations per capita

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>Number of obs</th>
<th>F( 10, 137) = 3.02</th>
<th>Prob &gt; F = 0.0027</th>
<th>R-squared = 0.1842</th>
<th>Adj R-squared = 0.1224</th>
<th>Root MSE = 65.454</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>129860.275</td>
<td>10</td>
<td>12986.0275</td>
<td>148</td>
<td>129860.275</td>
<td>129860.275</td>
<td>129860.275</td>
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</tr>
<tr>
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<td>58934.454</td>
<td>137</td>
<td>4284.1931</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>71678.729</td>
<td>147</td>
<td>4878.0797</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| percapitag-d | Coef.  | Std. Err. | t     | P>|t| | Beta |
|--------------|--------|-----------|------|------|------|
| hincgpadj-d  | -0.000592 | 0.008281 | -0.072 | 0.475 | -0.066487 |
| performanc-g | 4.993565 | 17.68934 | 0.28 | 0.778 | 0.233255 |
| unemployme-e | -4.3828 | 5.904721 | -0.74 | 0.469 | -0.0664757 |
| partyideol-e | 8.234821 | 11.81304 | 0.70 | 0.486 | 0.0384792 |
| govestrength | 40.36524 | 14.97762 | 2.70 | 0.008 | 0.2384691 |
| fundinginit-e | 2.080888 | 23.58048 | 0.09 | 0.930 | 0.0072705 |
| tels         | -16.07723 | 12.30981 | -1.30 | 0.194 | -0.1123825 |
| morecolo     | 20.81749 | 12.48997 | 1.67 | 0.098 | 0.1481949 |
| hsdiploma    | -0.000313 | 7.999e-06 | -3.91 | 0.000 | -0.546329 |
| nohsdiploma  | 0.001396 | 0.000339 | 3.83 | 0.000 | 1.487729 |
| _cons        | 158.9061 | 73.70806 | 2.16 | 0.033 | 1.596485 |

Figure 7: Effects of the independent variables on annual state higher education appropriations per $1000 personal income

<table>
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<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>Number of obs</th>
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<th>Prob &gt; F = 0.0000</th>
<th>R-squared = 0.3662</th>
<th>Adj R-squared = 0.3199</th>
<th>Root MSE = 1.9948</th>
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<td>Model</td>
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<td>10</td>
<td>31.4943292</td>
<td>148</td>
<td>314.943292</td>
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<td>314.943292</td>
<td>314.943292</td>
<td>314.943292</td>
</tr>
<tr>
<td>Residual</td>
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<td>137</td>
<td>3.97906889</td>
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<tr>
<td>Total</td>
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<td>147</td>
<td>5.85085959</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

| percapitag-d | Coef.  | Std. Err. | t     | P>|t| | Beta |
|--------------|--------|-----------|------|------|------|
| hincgpadj-d  | -0.0000999 | 0.000252 | -3.96 | 0.000 | -0.332388 |
| performanc-g | 0.090292 | 0.300676 | 0.37 | 0.711 | 0.031418 |
| unemployme-e | 0.017097 | 0.279951 | 0.10 | 0.924 | 0.0075861 |
| partyideol-e | 0.269023 | 0.260738 | 0.47 | 0.640 | 0.035169 |
| govestrength | 1.277451 | 0.419464 | 3.02 | 0.003 | 0.2248643 |
| fundinginit-e | 0.181835 | 0.378538 | 0.53 | 0.801 | 0.0180278 |
| tels         | -5.186294 | 0.751523 | -6.64 | 0.000 | -1.0457053 |
| morecolo     | 0.7429357 | 0.680429 | 1.09 | 0.053 | 0.1526835 |
| hsdiploma    | -1.3736-06 | 2.44e-07 | -5.05 | 0.000 | -1.754996 |
| nohsdiploma  | 4.87e-06 | 1.03e-06 | 4.72 | 0.000 | 1.6339313 |
| _cons        | 8.289324 | 2.246318 | 3.69 | 0.000 | 8.289324 |

_H1-The more consolidated a governance structure is the more funding there will be to higher education._

Governance structures that are considered stronger (more consolidated) than Colorado (coded more Colorado) are just below being statistically significant to both per capita and per $1000
personal income funding using the models shown above. Using an alternate model that accounts for age instead of educational attainment, however, governance structures stronger than Colorado did have a significant positive relationship to both per capita and per $1000 personal income funding (see Appendix 2). The model not shown here supports my hypothesis that a stronger governance structure funds higher education better than a weaker one.

H2- States with higher populations between ages 14 to 24 (high school and college aged) will fund higher education more, while states with higher older populations (25 and up), will spend less on higher education.

Although this measure was statistically significant in some models (see Appendix 2) it did not result in the strongest model, so it will not be considered further after this discussion. The age population data was condensed into two categories, ages 14 to 24 and ages 25 and up. This variable proved to be statistically significant. Ages 14-24 have a positive relationship to both per capita and per income funding. Ages 25 and up has a negative relationship to both funding measures. This supports my hypothesis. This model supports my hypothesis that an older age population would have a negative impact on funding. This may be due to the need to provide other services, particularly healthcare, to older populations. It is also possible that older groups do not support higher education funding as much as younger groups do. (Note: If I were to do this regression again I would use more specific age cohorts, like age 65 and up and age 18 to 24 in the models to strengthen this hypothesis.)

H3- States with higher average household income will have higher education funding levels.

Average household income had a statistically significant relationship to per $1000 personal income funding but not to per capita funding. The relationship to per $1000 personal income
funding, however, was negative, not positive as I hypothesized. As income goes up funding goes down slightly. This finding is also supported by my case study between Louisiana and Colorado. Louisiana has a significantly lower average income than Colorado but funds at higher levels. This underscores that higher education funding is a political choice, not determined by state wealth.

*H4-A state with higher educational attainment rates will fund higher education at higher levels.*

Educational attainment was also condensed into two categories: No high school diploma and high school diploma or more, which includes everything up to a graduate degree. The high school diploma variable had a statistically significant negative relationship to funding. The no high school diploma variable had a positive relationship with both funding measures. This suggests that states with larger numbers of less educated peoples fund at higher levels. This is opposite of my hypothesis. I would assume that less educational attainment would correlate with less funding. It seems that states with low educational attainment may see the need to fund education at higher levels to create a more educated citizenry. This measure is interesting to think about when looking at my case study because Louisiana and Colorado support these findings. Louisiana has a greater population with less educational attainment than Colorado and funds at higher levels.

*H5- States with higher numbers of enrollment at the college level will fund higher education more.*

Enrollment proved not to be statistically significant, but it was highly correlated with educational attainment and age, which did have significant relationships.

*H6-A higher unemployment rate will correspond with lower levels of funding*
When controlling for all variables unemployment rate did not have a statistically significant effect on funding levels, which counters my hypothesis. This is interesting because it may suggest that the state of the economy does not necessarily result in lower funding for higher education. However, another measure of the state of the economy may provide different results.

H7- States with a predominately Republican legislature will fund higher education at lower levels; states with a Democratic majority will tend to fund at higher levels. Bipartisan legislatures may lead to lower funding.

Party control of the legislature did not have a statistically significant effect on funding.

H8- States with more higher education funding initiatives will fund at higher levels.

Funding initiatives did not have a statistically significant effect on funding according to these models. This suggests that funding initiatives do not generally make a difference in funding, proving that other actions need to be taken to make changes in higher education funding policy.

H9- States with TELs will fund higher education at lower levels than states without them.

TELs did not have a statistically significant effect on funding according to the models.

H10- Performance based funding will have a positive effect on higher education funding.

Performance funding was not statistically significant. In regard to other funding models, I decided not to include vouchers into my model because Colorado is the only state that uses the system for higher education.

H11- In-migration will have a negative effect on funding.

In migration was not significant.
**H12-A stronger governor will have some impact on higher education funding.**

Governor strength was statistically significant having a positive relationship with both funding measures. This means that stronger governors tend to fund higher education in higher numbers.

Several of my variables have shown to have no direct effect on funding. However, I believe some of these factors may have a significant effect on funding in indirect ways, particularly party control of the state legislature, unemployment, and TELs. These factors likely have significant direct impacts on state budgets and how the process works. Higher education is a part of the overall state budget and while these factors may not shed light directly on higher education their impact on other parts of the budget may cause indirect effects for higher education. Funds mandated by state constitutional amendments or by the federal government or TELs shrink the amount of money left in the budget for higher education, a sector that has already been established as easy to cut because of its seeming ability to raise its own revenue through tuition. Unemployment hurts the economy, which also likely shrinks the size of the budget. Partisanship may influence where legislators believe funds should go. If higher education is not at the top of the list it may be cut or ignored. Partisanship could also influence the legislatures willingness to adopt measures such as TELs that limit the budget. While the model does not show the significance of these factors, further research into the budget processes of states may reveal this indirect impact on higher education funding.

**-Other Analyses**

In attempts to see if variables were interacting I created several interaction variables: TELs and years, performance based funding and years, funding initiatives and years, party ideology and years, and governance structures with performance based funding. Interacting
variables with years was an attempt to see if the effect of these variables over time had an impact on funding. Interacting governance structure with performance based funding was an attempt to see if the interaction of the two would lead to better funding. None of these interactions had statistically significant relationships with funding.

Case Study

Louisiana is an interesting case to compare to Colorado for several reasons. It is comparable to Colorado on several contextual measures and has similar college enrollment numbers but has consistently higher, sustainable funding for higher education. Louisiana also has a similar governance structure to Colorado (according to Aims McGuinness’ classification) and has a TEL, albeit a less restrictive one. Despite its similarities however Louisiana has significantly better higher education funding than Colorado and has also kept up with the higher education rate of inflation (see figures below). Its differences from Colorado make it an even more interesting case. It has a slightly weaker governor than Colorado, a lower average household income, higher unemployment, and less educational attainment compared to Colorado, factors that would seemingly lead to less funding. But my regressions show that lower average income and less educational attainment actually positively impact higher education, making Louisiana a good state to look at since its situation supports those results. While I would not advocate for Colorado to lower its average income or de-educate its population, it seems that if a state with less wealth and education can fund higher education at a better rate, a wealthy and educated state like Colorado should be able to figure something out. Louisiana’s governor strength mixed with its higher funding levels runs counter to my results, which is interesting because despite this seeming setback it still funds at a higher level than a state with a stronger
governor. Because of its similarities and differences Louisiana provides a solid case study to see what Colorado could do to improve funding.

Figure 8

![Colorado v. Louisiana Total State Funding for Higher Education](image1)

Figure 9

![Colorado vs. Louisiana Per Capita Funding](image2)
Figure 10

**Colorado v. Louisiana Per $1000 Personal Income Funding**

Y-axis: Per $1000 personal income funding
X-axis: Years 2000-2010
Legend:
- Colorado
- Louisiana

Figure 11

**Per Capita Percent Change v HEPI Change**

Y-axis: Percent change in per capita funding
X-axis: Years 2000-2010
Legend:
- Colorado
- Louisiana
- HEPI National Percent Change
The independent variables as they manifest themselves in Louisiana that proved to be statistically significant in my regressions (age structure, educational attainment, and average household income) show that they do have the suggested effects on funding. Louisiana’s governance structure and governor strength (other statistically significant factors) run counter to my regression results, but this makes the case all the more interesting. It should be noted however that changing governor strength in Colorado will not be recommended because Colorado has a stronger governor so that is likely not the cause of less funding in the state. Louisiana’s governance structure is slightly different than Colorado’s, so looking into it more can hopefully give some insight into why its differences may result in more funding. Higher education institutional structures are looked at in conjunction with governance structure because it is another factor that differs from Colorado and thus may contribute to better funding. Other factors that were not significant in my regressions, such as performance based funding and TELs,
will be considered because they are factors that do not appear or are significantly different in Colorado. They are also factors I feel can be adopted and/or altered. Therefore, governance structure mixed with higher education institutional structures, performance based funding, and less restrictive TELs appear to be important factors in understanding Louisiana’s sustainable higher education funding model.

A significant factor that Colorado lacks that may contribute to Louisiana’s better funding is performance based funding. Louisiana has used performance based funding throughout the ten years of focus in this study. Its funding model for higher education is a cost and performance model, calculated 25 percent based on performance metrics, 75 percent based on cost metrics. The cost metric consists of the costs of educating students in various disciplines at different levels in various types of colleges (Presentation to Louisiana Association of Institutional Researchers 2010), costs of general institutional support and student services, and operation and maintenance. The performance metric is based off of student access and success, meaning completions, articulations and transfers, and competitiveness and workforce training. Colorado uses a cost model and does not yet have the performance aspect, but there are multiple reports and studies being done that suggest that Colorado is seriously considering adopting performance based funding measures (see CCHE’s 2011 discussion item “Examples of State Performance Models).

The way budgets are formed and funds are distributed in each state may also be a factor in funding. This distribution brings in the governance structures and institutional structures of each state. Louisiana has four systems that run 34 public institutions. The Board of Regents, a body made up of 15 volunteer members appointed by the Governor and one student member, oversees all of the systems “through statewide academic planning and review, budgeting and
performance funding, research and accountability” (Board of Regents website), setting statewide standards for higher education, and representing higher education in front of the government and the public. The board also works with students directly through the Council of Student Body Presidents. Funds in Louisiana are distributed by the systems to the institutions after the division and finance administration of the Board of Regents overlooks “annual budget proposals for the operating and capital needs of each public institution” and then makes its budget recommendation to the governor. Then the governor’s budget must be passed by the state legislature (Board of Regents State of Louisiana website). This body is comparable to the Colorado Commission on Higher Education, whose responsibility is to “develop long-range plans for an evolving system of higher education,” which consists of two state systems (CU and CSU) and state colleges and community colleges (which are not under a unified system). CCHE does not however work officially with students and it seems quite disconnected from the institutions in making policy. It also seems less active than the Louisiana Board of Regents in creating institutional budgets. The CCHE sets a rigid protocol detailed in the Budget Data Book (found on the CCHE website) which individual institutions are required to fill out after they figure out their budget requests, submit it to the CCHE, which reviews it and makes recommendations to the governor whose budget has to be passed by the state legislature as well. The Louisiana Board of Regents clearly lays out their uniform funding matrices that all institutions use and provide data for those measures in their formula presentation. The CCHE does not have such a clear-cut resource available.

Colorado has some extremely limiting spending amendments, such as TABOR and Amendment 23, an amendment that mandates an increase in funding for K-12 education as long as personal income grows by more than 4.5 percent (Colorado Fiscal Policy Institute 2011). This
amendment limits the funds available to other services supported by the general fund budget. Louisiana’s TEL is not nearly as restrictive as Colorado’s, as it is mainly a limit on spending rather than taxation (it limits some sales taxes, not a wide variety of taxes like TABOR) and can be changed by a two-thirds vote in the state legislature rather than going through voters (Justia US Law). The relatively weak role of the CCHE and Colorado’s budget restrictions limit its ability to fund higher education. Louisiana’s Board of Regents has a more authoritative role over the institutions and seems to work much more interactively with them than the CCHE does in Colorado. Louisiana is also not as restrained by its TEL.

**Recommendations**

Comparing these two states one can see differences that can contribute to the differences in funding, particularly in governance structure, higher education institutional structure, performance based funding, and tax and expenditure limitations. Colorado could benefit from altering these aspects in the following ways.

1. Make CCHE a stronger body with more authority that works more directly with institutions to fix the disconnect between institutions and the state. CCHE should create a student board like Louisiana does to have more of an interaction with institutions. The CCHE should also develop a database with institutional information such as enrollments, graduation rates, and tuition levels like the Louisiana Board of Regents provides and provide these data consistently, not on a need-to-know basis. These data will need to be collected by such a body if performance funding is going to be an effective model.

2. Organize all of Colorado’s institutions under unified systems as Louisiana does. This may help with reporting and universalizing the needs of similar schools, especially the community
colleges and state universities, which as of now are on their own when making budget requests. Organizing these schools under their own systems may also allow them to work with each other more to determine funding needs and share strategies.

3. Adopt a performance based funding aspect mixed with the cost model approach that Louisiana uses. Abandoning funding formulas based on incremental or base budgeting is not realistic. It is realistic to adopt a mixed model though. I would suggest abolition of Colorado’s voucher program, but right now working under the constraints of TABOR it may be the only way for institutions to maintain some exemption from TABOR and ensure funding. The COF thus needs to be amended to work with this mixed approach. It needs to be adjusted each year to keep up with the rate of tuition inflation in order to provide adequate funding in relation to rising costs of tuition.

This mixed model could meet the criteria of desired characteristics for funding models (see Figure 4, Layzell’s table of desired characteristics). The cost approach would provide equity between institutions if calculated as Louisiana does, that is to account for “size, mission, and growth characteristics of the institutions”. The cost model and performance funding would be adequacy driven, allowing institutions to determine what funding they need to achieve their goals. They both would also be size and mission sensitive, responsive to changing institutional factors, and adaptable in the way that Louisiana lays out its funding measures. Performance funding meets the goal based and incentive based standards. The voucher aspect, if amended, may actually provide more of a concern with stability because it is an amount allocated directly to students at institutions and is not subject to drastic changes quickly. Performance funding may bring an aspect of flexibility to the budget; funding can be denied if the institution does not live up to its performance goals, while the cost formula and voucher could stay the same from
year to year. Vouchers also could provide supplemental funding for unique activities, particularly under its fee-for-service aspect.

The mixed approach as Louisiana presents it is relatively easy to understand. Colorado should make its funding strategies more transparent, which would allow for its simplification. (I could not find a breakdown of Colorado’s model similar to the one found from Louisiana.) Or it could simply adopt Louisiana’s model as much as possible. This model seems to use reliable data obtained by the Board of Regents data systems, the Southern Regional Education Board Data Exchange, and institutional reports on their individual needs. CCHE does do a lot of research, but they do not have their own data systems on Colorado’s institutions. This could be a beneficial addition to CCHE’s work. Adopting a mixed model using multiple approaches can provide flexibility and balance. Colorado should seriously consider adopting a performance funding aspect with its cost model and, if amended to keep up with the rising costs of higher education and not solely relied on to fund higher education, the voucher system could be a working addition to the funding model. This interactive approach, if it adopts Louisiana’s cost and performance matrices as well, could actually meet most if not all of Layzell’s desired characteristics for a sustainable funding model.

4. Lightening the restrictions under TABOR, possibly making them more like Louisiana’s TEL, or amending or abolishing spending restrictions altogether could help create more funding. Institutions have to jump through hoops to try and become exempt from some TABOR restrictions. That is what the COF was meant to do for higher education, but as the evaluation suggests it is not really working as it was meant to. As mentioned above, the COF can be amended to work within TABOR restrictions but to keep up with rising educational costs. If Colorado is forced to work under a TEL, since abolishing it would be an extremely difficult feat,
TABOR could be amended to be less rigid with spending and taxation limitations. Referendum C was a step in the right direction, but it did not manifest into more funding for higher education thus more TABOR reform will be necessary if higher education funding is going to survive and improve under a limitation that restricts state budgets.

**Additional Research Suggested**

While my recommendations make a stride towards finding a way to improve funding in Colorado, specifically in suggesting structural changes that work within limitations to the state budget, more needs to be done. Ultimately TABOR and its subsequent amendments need to be seriously revised to allow for a more flexible state budget. But since this is such a large feat there are other areas where research could be done to work around TABOR. Current evaluations of the Colorado Opportunity Fund suggest that Colorado needs to look at other ways to work around the limitations of TABOR because the current voucher system is not doing enough. If this voucher system is the answer, more research needs to make a more dynamic system, particularly one that keeps up with rising tuition.

Another area of research necessary to be done to work within TABOR would be to look into state budget allocations and see how those could be rearranged to provide more equal funding for higher education. I am predicting this will require reallocating funds from portions of the general fund such as corrections and transportation. This research could constitute a thesis in itself, so I will end with saying that state budget priorities may need to change if higher education funding is to improve.

**Conclusion**
This project was meant to shed light on the diminishing state of higher education funding in the United States and the rising costs of higher education, specifically in Colorado. It was also meant to offer some solutions to this worsening problem for Colorado specifically, but the ideas and regression results are applicable to all states. The idea is that incremental changes in the higher education structures and funding models can contribute to improving state higher education funding, even if states are working within certain factors that are hard to change, such as socioeconomic factors and tax and expenditure limitations.

My research required me to research variables and funding in all 50 states, run regressions on those variables to see their effect on higher education funding, and apply those variables to my case study (see table under Research Design). Two of my hypotheses were confirmed, two were reversed, confirming the alternate hypothesis, and five were not significant according to the regression models. I argue, however, that a few of the statistically insignificant factors have a direct impact on state budgets and thus an indirect impact on higher education funding, so they are still important to consider.

To choose my case study I had to analyze the data set I created to find a state comparable to Colorado but with higher, sustainable funding for higher education. I found that Louisiana has a more dynamic funding model and a stronger coordinating board in its governance structure that worked closely with the institutions to create a strong connection between the state and higher education systems and institutions. Louisiana is working within a TEL like Colorado, but is able to be successful in doing so in part due to the fact that their TEL is much less restrictive than Colorado’s TABOR. I then proceeded to make recommendations for Colorado to implement to improve higher education funding, which include strengthening the Colorado Commission on Higher Education, putting all of Colorado’s institutions under systems, adopting performance
based funding in addition to a cost model, amending its current voucher system or abolishing it altogether, and considering actions to amend TABOR to lighten the limitations it puts on the state budget if it cannot be gotten rid of. Finally I outlined some additional research that could be done to further help the funding situation in Colorado.

My hope is that this research contributes to solving the problem of higher education funding in Colorado and in the United States. It shows specific factors that affect funding and factors that can be altered to improve funding. The ultimate confirmation of this study would be for Colorado to implement my recommendations and in doing so funding would be improved. Higher education is vital to the success of the United States. It should be accessible to as many people as possible. With decreased state support tuition have increased which hurts higher education accessibility. All states need to ensure adequate higher education funding to support institutions and citizens. Colorado in particular needs to focus on this issue and find a solution soon to avoid further detriment to higher education funding in the state.

**Appendix 1: Explanation of Regression Variables**

<table>
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<tr>
<th>Independent Variable Name</th>
<th>Measure</th>
<th>t w/ Per $1000 income</th>
<th>t w/ Per capita</th>
<th>Beta w/ Per $1000 income</th>
<th>Beta w/ Per Capita</th>
</tr>
</thead>
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<td>hincgdpadjusted</td>
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<td>-.3232</td>
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<td>morecolo</td>
<td>Governance Structure considered stronger than Colorado’s</td>
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<td>NS</td>
<td>NS</td>
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<td>nohsdiploma</td>
<td>Educational Attainment of no high school diploma</td>
<td>4.72</td>
<td>3.83</td>
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</table>

*Dependent Variable Name* | *Meaning* | *Adjusted R²*
------------------------|-----------|------------
perincgdpadjusted       | State funding measured per $1000 personal income adjusted for inflation | 0.3199
percapitagdpadjusted    | State funding measured per capita adjusted for inflation | 0.1214

NS=Not Statistically Significant
Appendix 2: Significance of morecolo and age structures in alternative model

<table>
<thead>
<tr>
<th>Variable</th>
<th>t w/ Per $1000 income</th>
<th>t w/ Per capita</th>
<th>Beta w/ Per $1000 income</th>
<th>Beta w/ Per Capita</th>
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<tr>
<td>morecolo</td>
<td>2.06</td>
<td>2.12</td>
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<td>.1141</td>
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<tr>
<td>Age 14 to 24</td>
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<td>2.300</td>
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<tr>
<td>Age 25 and up</td>
<td>-6.59</td>
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<td>-2.815</td>
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</table>

Adjusted $R^2$ for Per $1000$ personal income model= 0.2278

Adjusted $R^2$ for Per capita model=0.1079

Works Cited


