



TEXAS' HIGHER EDUCATION SYSTEM: Success or Failure?

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Texas Public Policy Foundation
Center for Higher Education Policy

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Texas' Higher Education System: Success or Failure?

By Richard Vedder and Matthew Denhart¹



Introduction

Texas has long prided itself on what some perceive to be one of the finest systems of higher education in the country. Aside from having a number of nationally or regionally recognized private schools of quality (e.g., Rice, Southern Methodist, Trinity), the state has invested aggressively with public funds and endowment monies provided to the University of Texas and Texas A&M Universities in the Texas Constitution. Both of these institutions are considered among America's leading public universities. In a recent ranking of colleges done by our organization, for example, the University of Texas ranked ninth among national public universities in terms of quality.

State government appropriations for higher education in general have risen over time, even after adjusting for both considerable amounts of inflation and robust population growth. Politicians in both political parties have argued that universities were an engine for economic growth, and also the primary way in the modern era in which ordinary citizens, even those disadvantaged by low income, minority ethnic status, or the like, could achieve the American Dream. Higher appropriations were successfully promoted on the grounds that this will increase the access of students to college and enhance the state's economic condition.

However, our objective analysis of the data suggests that another interpretation of higher education public policy is possible. The state lags behind the national average in the proportion of adults with college degrees. Tuition costs have soared—even more than has typically been the case nationally. A huge and growing portion of resources have been devoted to non-instructional activities. A lack of transparency prevents some of the most elementary questions from being answered. For example, how many hours per week is the typical professor in the classroom? Or, more fundamentally, what have students graduating from a Texas university gained during their years in attendance? Do they have a demonstrably larger body of useful knowledge and skills? Has their ability to think critically improved? Have their values and personal characteristics improved—are they more honest, harder working, more tolerant of others, etc.? In general, both the colleges and general public are clueless as to the answers to these questions. Thus, one could say that the higher education system lacks transparency, accountability, and is increasingly costly and inefficient. Productivity is hard to measure without good measures of outcomes, but it is more likely *falling* rather than rising in Texas higher education.²

¹ The Texas Public Policy Foundation and the Center for College Affordability and Productivity would like to thank the Center for Excellence in Higher Education for generously providing the financial support for this study. This study draws heavily from an earlier CCAP publication: "North Carolina's Higher Education System: Success or Failure?" The authors were ably assisted by Andrew Gillen, Research Director of CCAP and a team of undergraduate Ohio University students, including Jonathan Robe, James Coleman, and Thomas Ruchti, and Ohio University graduate student Daniel Bennett. A former Ohio University undergraduate, Jonathan Leirer, now a graduate student at Florida State University, also assisted in the preparation of this study.

² The problems facing Texas, of course, are not unique to the Lone Star State. They are discussed extensively in the report of the Spellings Commission. See the Secretary of Education's Commission on the Future of Higher Education, *A Test of Leadership: Charting the Future of U.S. Higher Education* (Washington, D.C., 2006) <http://www.ed.gov/about/bdscomm/list/hiedfuture/index.html> It is noteworthy that Texans played a prominent role in that commission—it was created by a Texan, Margaret Spellings, and chaired by a Texan, Charles Miller, with several other Texans as members, including now Under Secretary of Education Sara Martinez Tucker, and Arturo Madrid.

Moreover, Texans who claim “we have great, world class universities” are guilty of the exaggeration that residents of the Lone Star State are often accused of having. Looking at the 10 largest states, we asked, how many schools in the top 50 *U.S. News & World Report* national listings did each state have for every 10 million residents? Texas had 0.84, fewer than any other large state except Florida, and less than one-half the average for the 10 states. Indeed, for a state with its economic might, Texas is noted for not having any schools ranked at the highest levels (say the top 10 universities). Using a different methodology than used by *U.S. News*, our research center places three Texas schools in the top 50 national universities—Rice, Baylor (not in the *U.S. News* top 50), and The University of Texas, but none of them rank among the top 20 schools. The prowess of Texas collegiate teams may well exceed that of its best academic programs.

This study is not a comprehensive blueprint for reform in the system of higher education in Texas. Its purpose is to present factual evidence that suggests that the system of universities is deserving of greater public scrutiny. The evidence also shows areas where reform is needed the most—cost containment, for example. And we will make some suggestions of areas where cost containment might legitimately occur. And while the system has many defects, we are the first to acknowledge that it is possible to have a wonderful collegiate experience in Texas and that some very fine research is conducted in the state that has had positive social benefits. Yet the issue is: Can Texas use

its resources in a better way, one that will improve the quality and affordability of its higher educational services?

The Rationale for State Support: Is It Valid?

Before getting into the specifics of higher education in Texas, it is worth reviewing: why do we give special treatment to colleges and universities? Why do we heavily subsidize the University of Texas at Austin, while we tax others providing goods and services to people, such as computer manufacturers, oil and gas producers, car dealers, and motels? Why are universities given special privileges and resources in our society?

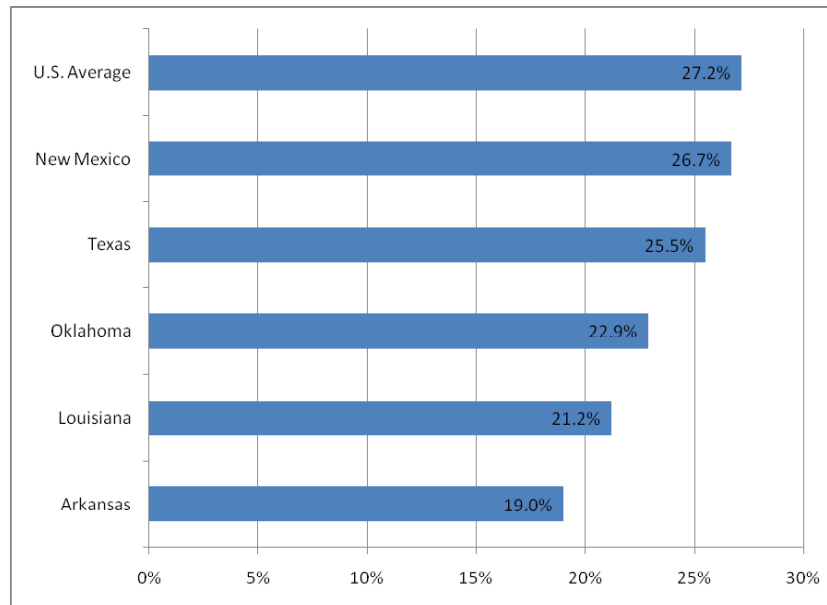
The two major cases for public subsidy are the equality of opportunity and externality arguments. The equality of opportunity argument suggests that universities are potent vehicles for promoting the egalitarian ideal that has permeated American society since its beginning. Any person, even from the humblest beginnings, can rise to the top in our meritocracy-driven society. College degrees have become a near prerequisite for economic success. Yet college is costly, and public subsidies enable poor individuals to attend college that otherwise would not have the opportunity.

It is also argued that education has important positive spillover effects. Supposedly, society will function better and make better collective decisions if the bulk of the populace is highly educated, because we will understand our common cul-

ture and heritage, and know about those things that bind us together as Americans. Education promotes national unity and identity, or so it is argued. Higher education leads to improved patterns of human behavior—college graduates commit fewer crimes, smoke less, and live longer. They give more to society (through taxes and philanthropy) than they take from it.

Above all, it is argued that there are positive economic spillover effects from supporting higher education. These spillover effects are hypothesized to result in higher productivity. Higher spending on schools supposedly means more college graduates. College graduates inspire their non-college educated co-workers, often teaching them things on the job and stimulating productivity. By educating person A, we indirectly stimulate the output and incomes of persons B, C, and D.

All of this is interesting theorizing, but there are problems with the analysis. For a long time, the national growth in higher education public funding did lead, as predicted, to vastly more students and graduates from universities. Yet the data show a sharp slowing in the rate of growth in these factors—despite continued rising funding. The U.S. spends more on colleges than any other nation (both absolutely and as a percent of national output), but we have fallen behind several other nations in the proportion of adults with college degrees, and trends indicate that we will fall further in coming years. The data for Texas are likewise disturbing, as **Chart 1** shows.

Chart 1 - Percent of Each State's Adult Population with a Bachelor's Degree, 2006

Sources: U.S. Census Bureau. CCAP calculations.

Moreover, the data suggest that the best of Texas' schools are largely "gated communities" with low proportions of students from families at—or only modestly above—the poverty line. There are 130 schools on the *U.S. News & World Report* rankings list of top American national universities, and 125 schools on their list of top liberal arts colleges. Of these 255 colleges, eight are in Texas, two public (The University of Texas at Austin, and Texas A&M University), and six private (Rice, Southern Methodist, Baylor, and Texas Christian University) as well as two liberal arts schools (Southwestern University and Austin College).³ Nationally about 35% of American undergraduate students receive Pell Grants. Yet, as **Chart 2** shows, none of these top Texas institutions have

even close to such a percentage of their student bodies receiving Pell Grants—making them among the least economically inclusive schools in the nation. The University of Texas at Austin ranks the best at 21.7% and Rice University the worst with only 9.8% of their students receiving Pell Grants.⁴

While it is true that there are colleges with large numbers of Pell Grant recipients (e.g., University of Texas-El Paso with 53%, University of Texas-Pan American with 61%, and Texas A&M International with 62%), the evidence suggests that the schools in the state on which the most resources are showered are rather exclusionary, with below average participation by students from low-income background, raising the

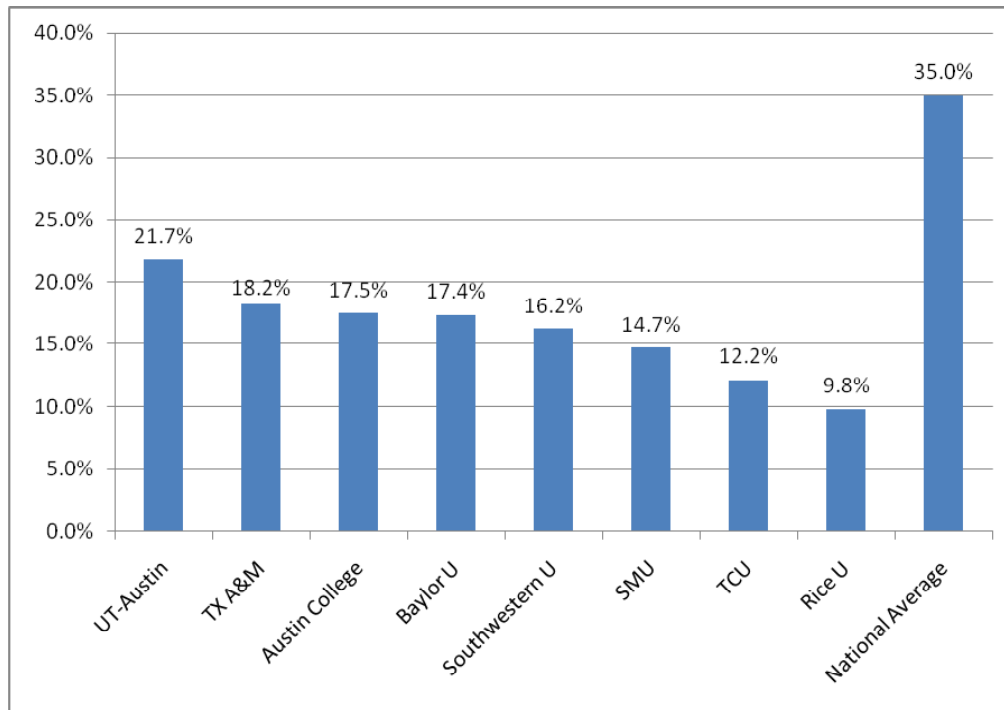
possibility that public funding of higher education in Texas subtracts rather than adds from equality of economic opportunity.

Our CCAP colleague Daniel Bennett has devised an "educational equality index" that looks at variations in educational attainment among adult Texans. Mr. Bennett finds that the amount of variation in educational attainment among Texans is the largest of any big state—the gap between the educational "haves" and "have nots" is quite large. Part of this is explainable by the high concentrations of foreign born population in the state. Nonetheless, the notion that education works to provide equal economic opportunity in the Lone Star State is not supported by the evidence.

³"2008 Annual Rankings of America's Best Colleges," *U.S. News & World Report*, http://colleges.usnews.rankingsandreviews.com/usnews/edu/college/rankings/rankindex_brief.php.

⁴ Pell Grant data obtained from the U.S. Department of Education: Common Origination and Disbursement (COD). *US News and World Report* college rankings, http://colleges.usnews.rankingsandreviews.com/usnews/edu/college/rankings/rankindex_brief.php.

Chart 2 - Percentage of Students Receiving Pell Grants at Top Texas Institutions, 2006



Sources: U.S. Department of Education: Common Origination & Disbursement, Postsecondary Education Opportunity, US News and World Report, Integrated Postsecondary Education Data System (IPEDS). CCAP calculations..

This study shows some of the reasons why this is so. For example, there is a huge attrition rate between the time Texas students begin high school and, a decade later, the proportion of those who have college degrees.

Chart 3 shows that for every 100 Texas high school entering freshmen, only just over 12 will have graduated from any level of college within a decade. Nationally, Texas ranks among the worst in this regard.

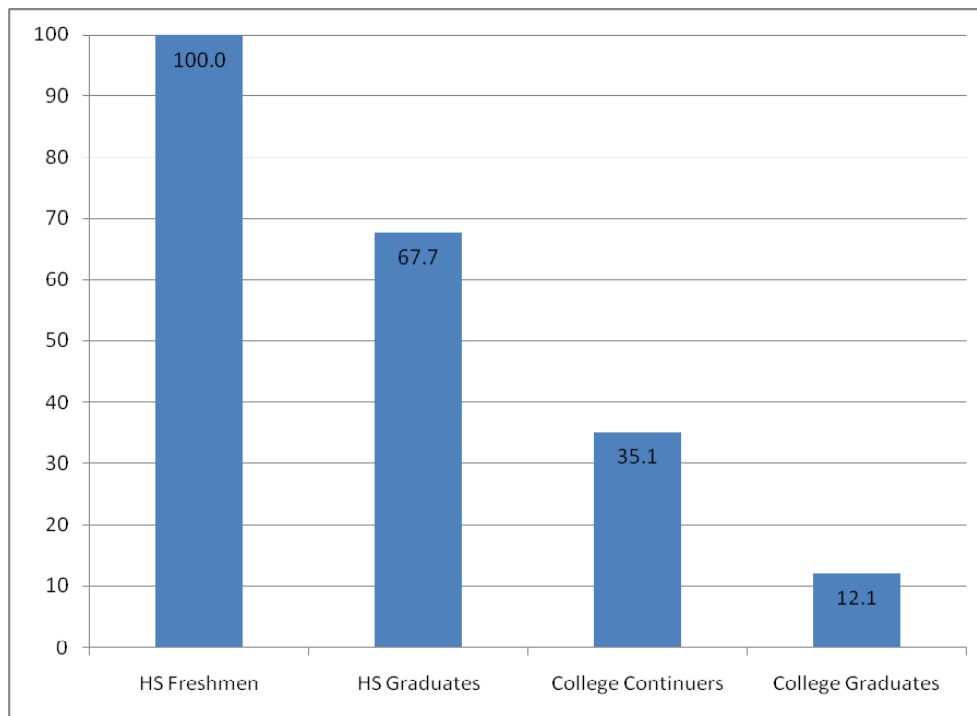
There is evidence that some of the incremental funds that Texas gives public universities through higher appropriations ends up in higher salaries for key staff, especially faculty. There are huge variations in spending per student between the public schools in the state, with little evidence that the high spending

schools offer a significantly higher quality educational service for its students. In short, the arguments for public subsidies are undercut by the realities of how resources are actually allocated.

Moreover, even the externality arguments are suspect after close empirical scrutiny. It is empirically difficult to measure such things as “promoting national cohesiveness” or finding evidence showing that college students have an unusually good appreciation for our civic institutions. Indeed, the one study we know that nationally examines this issue suggests that college students do very poorly on a standardized test of basic issues in American history, political institutions, and economics—and that, in general,

seniors in colleges do little better than freshmen. The study conducted by the Intercollegiate Studies Institute measures the value added of attending college by measuring knowledge difference between freshmen and seniors at 50 colleges. The areas tested are: American history, American political thought, America and the world, and the market economy. Freshmen averaged a score of 50.4% while seniors averaged 54.2%, resulting in a value added gain of just 3.8%. Two Texas schools were included in the study, Texas A&M International University and Texas State University-San Marcos. Texas A&M International seniors averaged 41.14%, demonstrating a 2.71% gain in knowledge over their freshman counterparts, while Texas State University-San Marcos seniors

Chart 3 - Texas College Graduates within 10 Years of Beginning High School



Sources: *Postsecondary Education Opportunity*, National Center for Education Statistics (NCES), *Integrated Postsecondary Education Data System (IPEDS)*. CCAP calculations.

averaged 43.99% demonstrating a 2.74% gain.⁵ These admittedly very limited findings do not inspire confidence that public universities are contributing importantly to the civic literacy of young Texans.

If there are positive economic spillover effects on expending resources on universities, we should see, perhaps after a lag of several years, a positive correlation between state spending on higher education and economic growth, yet in reality we do not. Indeed, there is pretty good

evidence the opposite is the case: higher spending on universities is negatively correlated with growth. For those readers interested in the intricate statistical results, one such regression model is included in **Table 1**.⁶ In two of three regressions, there is a statistically significant negative correlation between spending on universities and economic growth some years later—despite the fact that states with a high proportion of college graduates tend to have high growth rates.

The complicated econometric results are confirmed by individual case studies. Take the states in **Table 2** for example, which compares the appropriations for higher education and the economic growth of similar states. Over the past 25 years, Texas has spent on average somewhat less on higher education (relative to income or population) than Oklahoma—but has experienced more robust growth rates. The same is true of New Hampshire and Vermont, South Dakota and North Dakota, or Tennessee and Kentucky.

⁵ All data in this paragraph was taken from the following source: Intercollegiate Studies Institute's National Civic Literacy Board, "Failing Our Students, Failing America" (Wilmington, Delaware: Intercollegiate Studies Institute, 2007).

⁶ We have examined this issue extremely thoroughly, with increasingly sophisticated models using panel data with well over 1,000 observations. Most of the variables in the model are non-university determinants of growth added for control purposes.—e.g., the results also show that tax burdens and unionization are negatively associated with growth. Variables come from a variety of data sources, most notably the Bureau of Economic Analysis, the *Grapevine Data System* at Illinois State University, and the U.S. Census Bureau.

Table 1 - Economic Growth Regression Results

Dependant Variable: Growth in Real Personal Income _{s,t}			
	5-Year Growth Obs: 1400	10-Year Growth Obs: 1200	15-Year Growth Obs: 950
Age of State	0.006*** (14.70)	0.008*** (13.65)	0.007*** (11.61)
Real Personal Income (t-n)	-0.00002*** (-20.30)	-0.00003*** (-18.65)	-0.00003*** (-27.19)
n-Year Growth in Unions	-0.04*** (-7.10)	-0.07*** (-8.75)	-0.00002 (-0.003)
n-Year Growth in Population	1.31*** (29.36)	1.34*** (37.62)	1.20*** (37.01)
n-Year Growth in Tax Burden	-0.09*** (-3.04)	-0.07*** (-4.03)	-0.14*** (-9.90)
Real Per Capita Appropriation on Higher Education	-0.0003*** (-9.74)	-0.0002*** (-4.04)	-0.00006 (-1.31)
Real Per Capita Non Higher Education Expenditures	-0.000007** (-2.04)	0.000013** (2.31)	0.000009** (2.18)
Percentage of Population 25+ With BA or Higher	0.005*** (7.38)	0.003** (2.49)	0.0039*** (4.15)
Weighted Adjusted R2	0.72	0.89	0.96
F-Stat Redundant Fixed Effects	12.14 (0.00) [†]	11.68 (0.00) [†]	23.38 (0.00) [†]

Notes: Values in parentheses are t-statistics.
 ***, ** and * denote statistically significant at the 1, 5 and 10 percent levels, respectively.
 † denotes values in parentheses are p-values.

Table 2 - Economic Growth & Appropriations, State Comparisons

State	*Average Appropriations	**Economic Growth
Texas	\$7.54	39.24%
Oklahoma	8.14	32.74
New Hampshire	2.67	62.1
Vermont	4.68	60.3
South Dakota	7.18	70.6
North Dakota	12.22	66.7
Tennessee	7.16	58.1
Kentucky	9.57	46.1

*Average Appropriations defined as average state appropriations per \$1000 of personal income, 1980-2005.

**Economic Growth defined as the growth in real per capita personal income, 1980-2005.

Sources: Bureau of Economic Analysis, Grapevine Data System Illinois State University. CCAP calculations.

Table 3 - Higher Education Statistics for Texas and Neighboring States

State	Percent of 18-24 Population Enrolled (2005)	Average Tuition 4-year Public (2005)	Average Tuition 4-year Private (2005)	Average Loan Debt of Graduates (2005)	State Appropriations per Capita (2005)	Economic Growth Rate (1980 -2005)
Texas	33.8%	\$4,666	\$16,809	\$18,334	\$213.57	39.2%
Arkansas	37.5	4,643	12,691	19,256	246.11	49.4
Louisiana	30.6	3,679	11,264	18,012	280.08	*34.6
New Mexico	38.4	3,701	13,256	28,770	351.56	41.1
Oklahoma	40.0	3,806	14,033	17,680	214.71	32.7
US Average	40.6%	\$5,351	\$19,292	\$19,200	\$212.96	43.8%

*Louisiana's Economic Growth Rate is for 1980-2004 to account for the devastating effects of Hurricane Katrina on the state's economy in 2005.

Sources: IPEDS, Digest of Education Statistics, Census Bureau, Project on Student Debt, Grapevine Data System Illinois State University, Bureau of Economic Analysis. CCAP calculations.

Other preliminary work we have done raises doubts about the notion that research appropriations positively impact growth. For example, there is actually a negative correlation between federal appropriations to universities (mostly for research) and economic growth.

In short, there are considerable reasons to question the very first principles on which university public support is based. The assumption that if we spend a lot on universities we will have a more prosperous population is questionable. It is even questionable how *much* students learn in college. And far from serving as a bastion of promoting economic equality, our public universities may be promoting the opposite—a growing elitist society, where obtaining an education at the top universities is largely open *only* to those with considerable resources.

The basic statistics shown in Tables 3 and 4 will help put the rest of the report in context, though we will review many of them in greater detail in later sections. From **Table 3**, a couple of things stand out. First, Texas has among the smallest percentage of its college age population actually enrolled in college. Furthermore, while average tuition charges for both public and private schools are less than the national average, they are higher than any neighboring state, especially tuition at private schools.

The statistics reported for the largest public and private schools in **Table 4** also reveal a number of points of interest. Public schools tend to be larger and charge less tuition than private schools, though there is considerable variability among such variables even within categories. Tuition growth even from 2000-06 has been explosive

at both types of schools, but even more so at public institutions. Private schools on average have slightly higher graduation rates, but there is enormous variation in this statistic within each category. For example among private schools, the range is between 33% at Wayland Baptist University and 89.9% at Rice. Similarly, at the University of Texas at San Antonio the graduation rate is much less than at UT at Austin or at Texas A&M. Most worrying is that the state's overall graduation rates are terribly low.

Table 4 - Higher Education Statistics for the Largest Texas Institutions

Institution	FTE Undergraduate Enrollment (2006)	Average Tuition (2006)	*Percent Increase in Tuition (2000-2006)	Graduation Rate (2005)
Public Institutions				
Sam Houston State University	13,761	\$5,566	113.4%	38.7%
Texas A&M University	36,580	7,335	85.7	77.3
Texas State University-San Marcos	23,568	6,528	68.2	52.1
Texas Tech University	22,851	6,783	68.2	54.8
The University of Texas-Austin	37,037	7,670	83.3	75.1
The University of Texas-Dallas	9,375	7,330	90.5	55.9
The University of Texas-San Antonio	24,398	6,677	105.6	30.2
University of Houston	27,400	6,909	138.3	40.3
University of North Texas	26,598	\$6,320	117.9%	43.4%
Private Institutions				
Abilene Christian University	4,145	\$17,410	36.3%	57.4%
Baylor University	11,831	24,490	75.2	72.2
Dallas Baptist University	3,610	14,940	39.5	46.1
Rice University	3,049	26,106	40.0	89.9
Saint Edward's University	4,229	20,400	46.5	53.8
Southern Methodist University	6,296	30,880	34.4	71.5
Texas Christian University	7,267	24,868	61.8	69.2
Trinity University - Texas	2,467	25,867	39.8	73.6
University of The Incarnate Word	4,435	19,060	28.5	35.3
Wayland Baptist University	962	\$11,250	22.4%	33.0%

Sources: IPEDS, US News and World Report. CCAP calculations.

Background: Texas' Higher Education Facts and Figures

State Appropriations for Higher Education

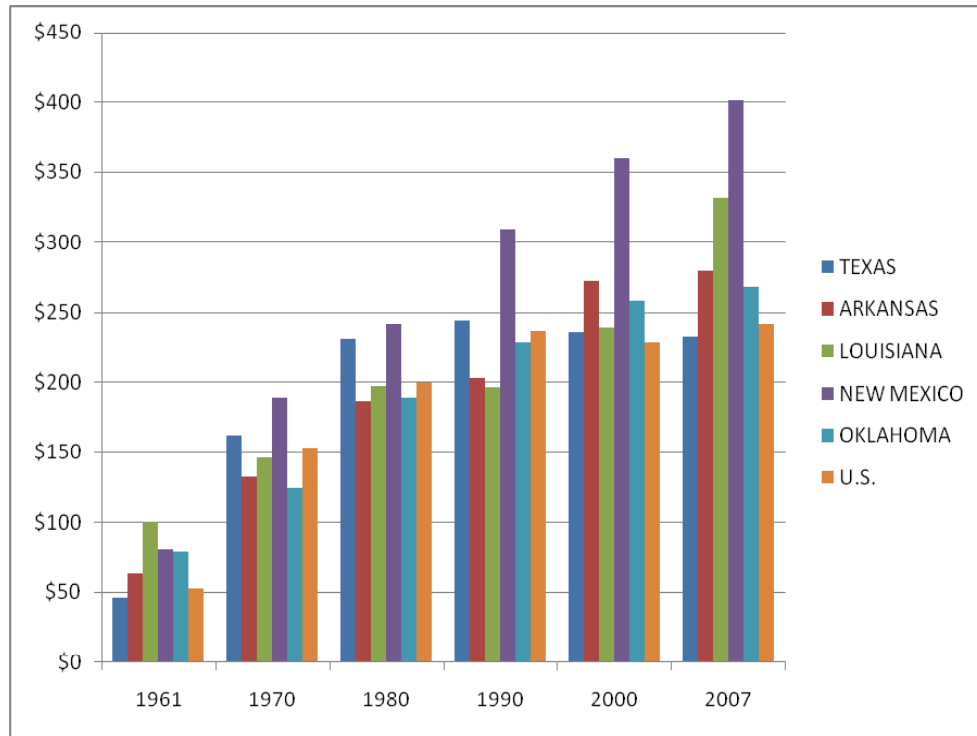
In regards to higher education appropriations, Texas' funding is fairly average by most measures. **Chart 4** shows that appropriations in Texas grew relative to its neighbors and the U.S. average during the 1970s and '80s. However, by 1990 appropriation growth had greatly slowed

and actually declined in per capita terms in 2000 and 2007. In fact by 2007 Texas' appropriations were slightly lower than the national average and all neighbors.

It is certainly reasonable to argue that some states have a larger, or smaller, proportion of students in college than other states, and thus it is more useful to adjust spending by enrollment. To account for this, we have calculated spending per full time equivalent (FTE) student. The

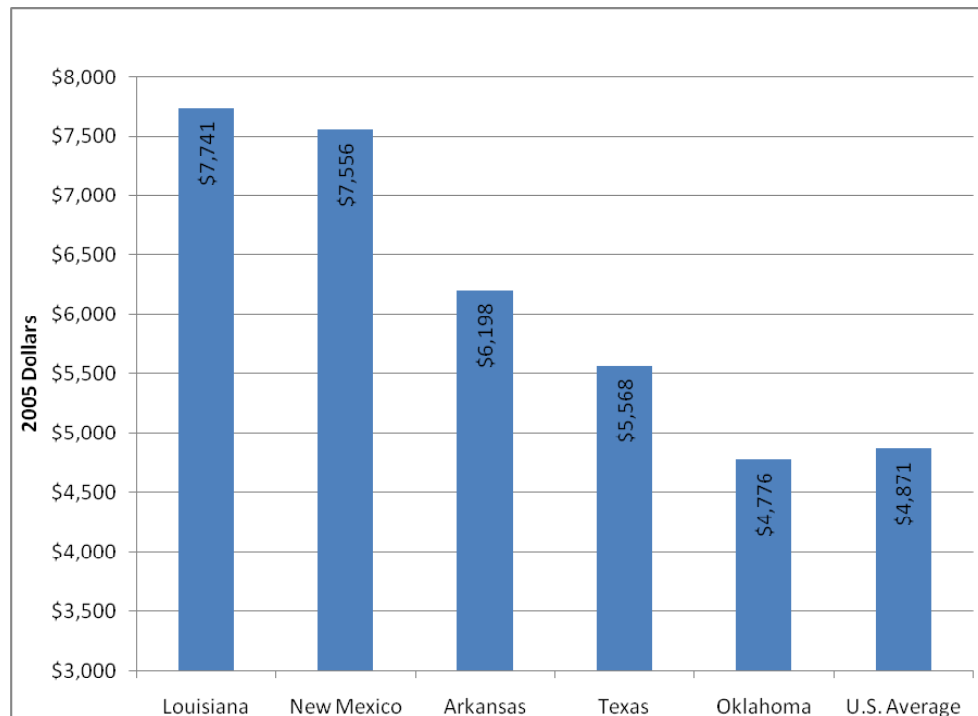
full time equivalent, or FTE, measure is used to include a proportion of part-time students in total enrollment. **Chart 5** shows that in 2005 Texas' spending per FTE still ranked below most neighbors. However, spending does exceed the national average by a moderately sizable amount, suggesting that Texas provides its public universities with a fairly generous amount of per student subsidy.

Chart 4 - State Appropriations per Capita Devoted to Higher Education, Texas & Peer States, 1961-2007



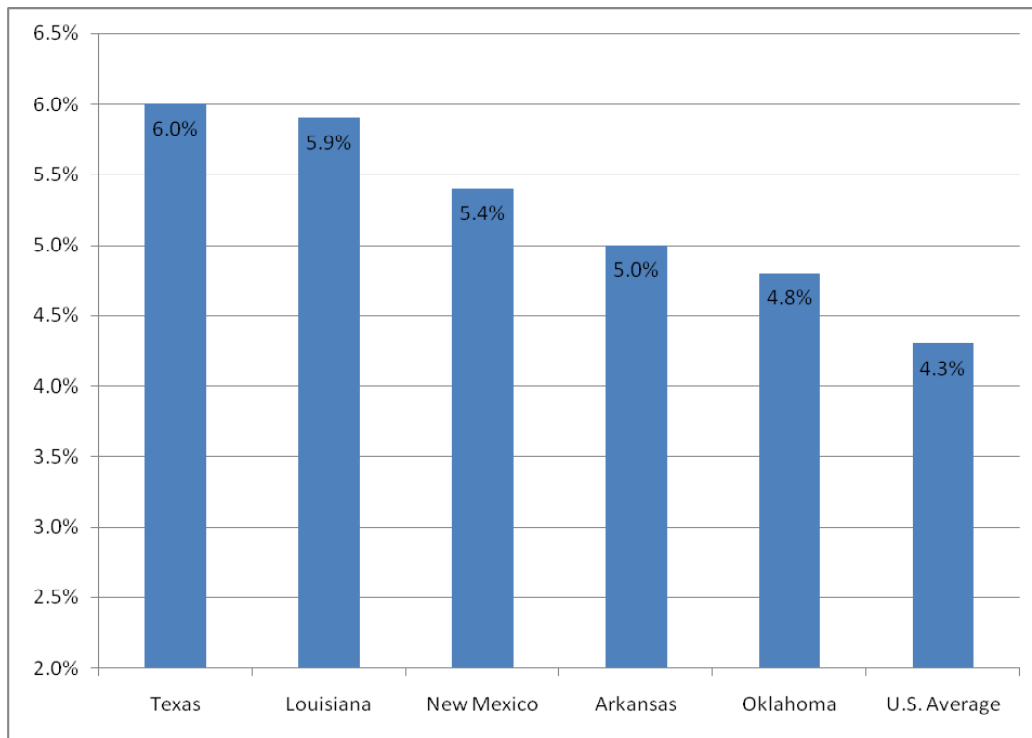
Sources: Grapevine Data System Illinois State University, CCAP calculations.

Chart 5 - State Appropriations per FTE Student at All Institutions, 2005



Sources: Grapevine Data System Illinois State University, Digest of Education Statistics, Table 196. CCAP calculations.

Chart 6 - Percentage of Total State and Local Appropriations Devoted to Higher Education, Texas & Peer States, 2005



Sources: U.S. Census Bureau. Grapevine Data System Illinois State University. CCAP calculations.

Chart 6 shows that nationally in 2005, higher education appropriations accounted for 4.3% of total state and local expenditures. Yet, in Texas the figure was 6.0%, outpacing every neighboring state—all of which also exceed the national average. Texas places a relatively high emphasis on higher education, suggesting that any deficiencies in the Texas higher education system are probably not the result of serious public funding deficiencies.

Another possible explanation for differing spending levels among states is differences in average incomes. It could be that as states get richer, they devote a proportionally

smaller (or greater) share of resources to higher education. To test this, we developed a statistical model (using multiple regression analysis) to try to explain interstate variations in state higher education appropriations as a percentage of personal income. **Table 5** offers a detailed look at these regression results.⁷ Based on variables in the model, estimates are derived for each state as to the predicted level of state appropriations. Texas actually spends slightly less (6.1% less) as a proportion of average income than the model predicts. Contrasting greatly are New Mexico and Louisiana that overappropriate by the greatest percentages of any state in the country

(32% and 27% respectively). In considering all these spending measures, it seems most accurate to conclude that Texas' spending and educational effort is roughly average by both regional and national standards.

Enrollment Trends

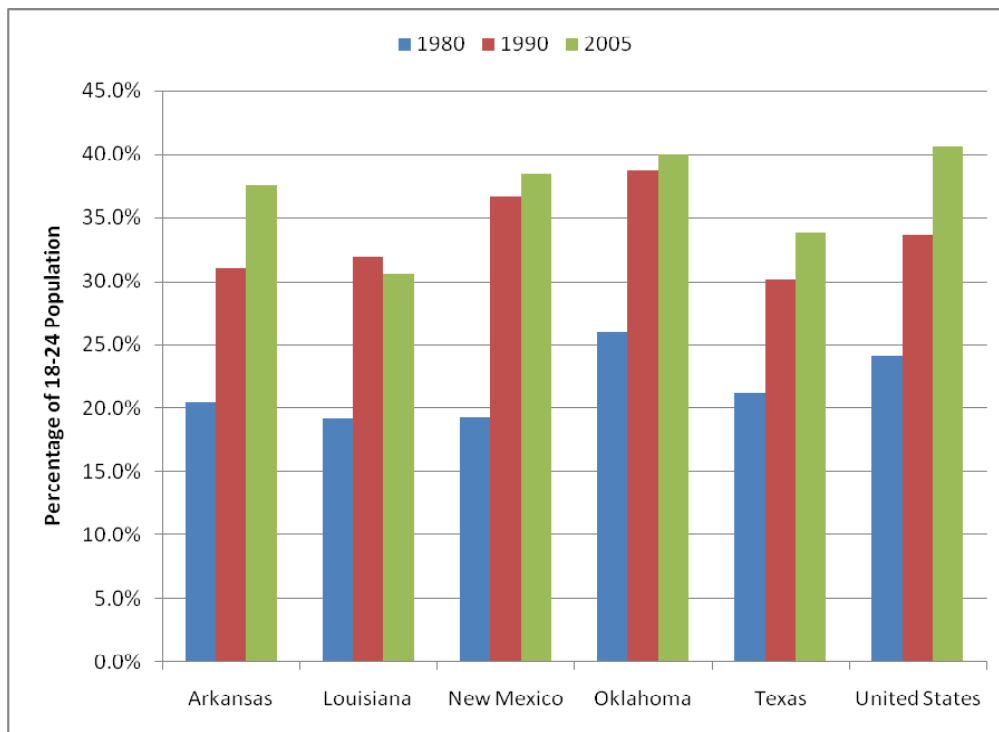
The discrepancy between Texas' higher spending per FTE student than per capita is probably somewhat explained by the state's low enrollment. Texas enrolls the smallest percentage of its 18-24 population of any neighbor and falls significantly below the national average (see **Chart 7**).

⁷ Dependent variable data from the *Grapevine* Data System, Regional Economic Information System, Bureau of Economic Analysis, and U.S. Department of Commerce. Independent variables come largely from the U.S. Census Bureau and National Center for Education Statistics (NCES).

Table 5 - Appropriations per \$1,000 Personal Income Regression Results

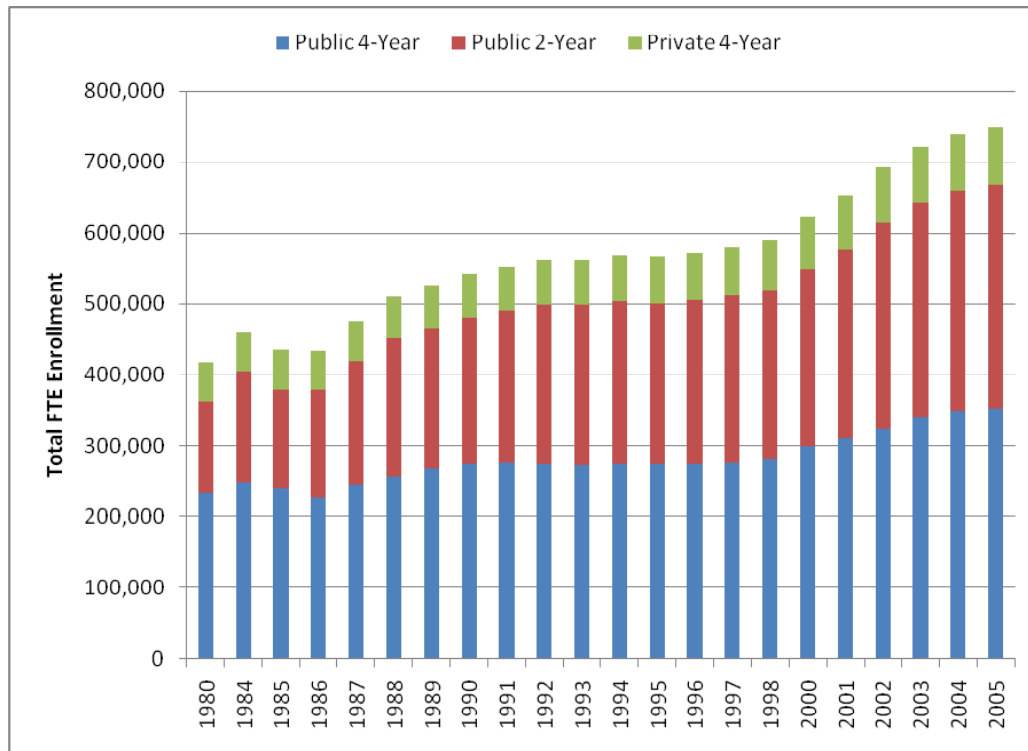
Dependent Variable: Appropriations per \$1,000 of Personal Income Method: Least Squares Included Observations: 50				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	14.07472	1.587478	8.866084	0.0000
% Voting Kerry in 2004	-4.476267	3.427777	-1.305880	0.1984
Personal Income per Capita	-0.000155	5.27E-05	-2.949922	0.0051
Percent Private Enrollment	-4.281367	2.199477	-1.946538	0.0580
State & Local Expenditures per Capita	0.000556	0.000155	3.594272	0.0008
Average Public Tuition	-0.000378	0.000171	-2.204292	0.0328
R-squared	0.643492		Mean dependent var	6.828972
Adjusted R-squared	0.602980		S.D. dependent var	2.300084
S.E. of Regression	1.449273		Akaike info criterion	3.692167
Sum Squared Resid	92.41720		Schwarz criterion	3.921610
Log Likelihood	-86.30418		F-statistic	15.88388

Chart 7 - Texas & Neighboring States: Undergraduate FTE Enrollment per 18-24 Population



Sources: IPEDS, U.S. Census Bureau. CCAP calculations.

Chart 8 - Texas FTE Undergraduate Enrollment by Control & Level of Institution, 1980-2005



Sources: IPEDS. CCAP calculations.

Likewise, Texas' enrollment growth of its 18-24 population from 1980 to 2005 lags behind all neighbors and the national average. While Texas' neighbors rapidly increased their enrollments between 1980 and 1990, most notably New Mexico at 91.1%, Texas experienced much more modest growth at 42.7%. Nationwide from 1990-2005 enrollment growth cooled with an average growth of 20.8%. During this same time Texas' enrollment grew 12.3%, falling significantly below the national rate but was greater than any neighbor save Arkansas.

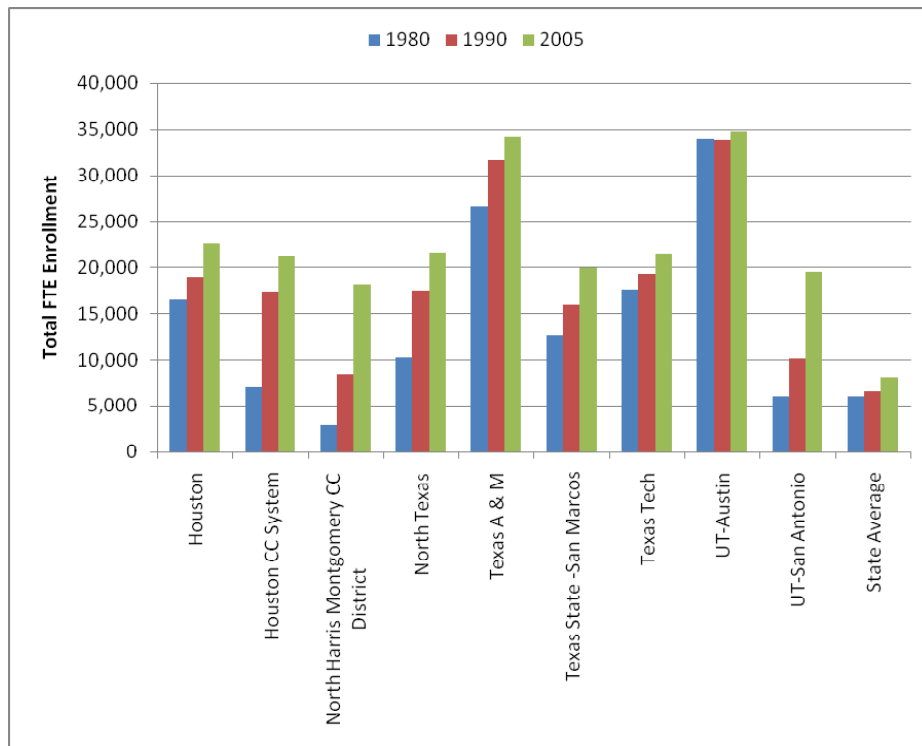
Overall, total enrollment in Texas institutions of higher education has increased by over 79% over the last two and a half decades (**Chart 8**). In

absolute terms the biggest increases came from public 2-year schools, whose enrollment jumped from 128,484 in the 1980-81 school year to 313,492 in 2005-06. Enrollment at public 4-year schools increased by just less than 120,000 during this same time period: 234,077 were enrolled in 1980-81 and enrollment reached almost 354,000 in 2005-06. While enrollment jumped by 144% in public 2-year schools, such growth was much smaller at 4-year public and 4-year private schools at 51% and 44% respectively. While Texas' enrollment and enrollment growth lags behind all neighbors and the national average over the past two and a half decades, it appears that the growth the state has experienced has been in the form

of 2-year community colleges and not the prestigious 4-year public and private universities.

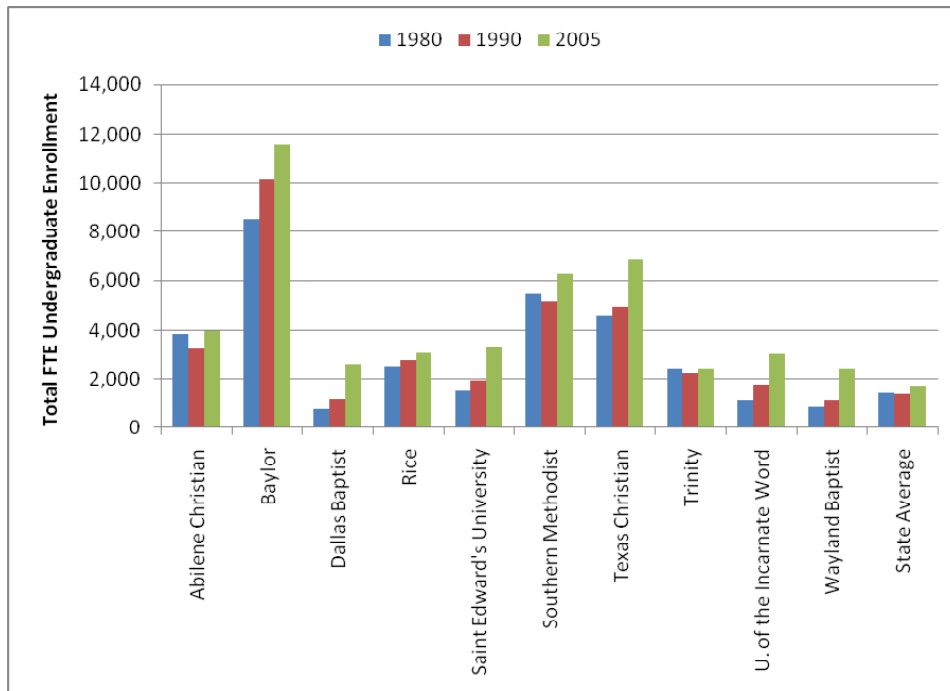
Chart 9 shows the great variability of enrollment increases among individual public institutions since 1980. It is interesting to note that the elite schools have had drastically smaller increases than other, less prestigious universities. For example, from 1980-2005 Texas A&M University increased enrollment only 28.4% and The University of Texas at Austin only 2.4% compared with over 110% at North Texas and over 225% at The University of Texas at San Antonio. **Chart 10** shows small increases for all private 4-year schools, including the most prestigious such as Rice University and Southern Methodist.

Chart 9 - Texas: FTE Undergraduate Enrollment for the 9 Largest Public Institutions

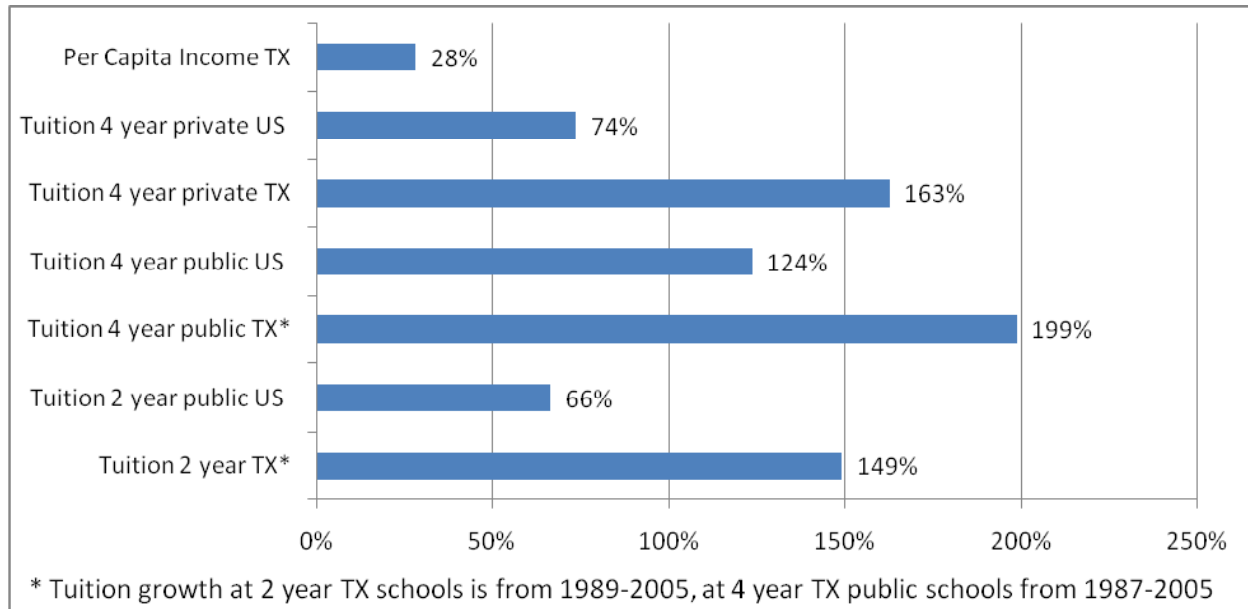


Sources: IPEDS. CCAP calculations.

Chart 10 - Texas: FTE Undergraduate Enrollment for the 10 Largest Private Institutions



Sources: IPEDS. CCAP calculations.

Chart 11 - Real Tuition & Personal Income Growth, 1985*-2005

Sources: Bureau of Labor Statistics, Digest of Education Statistics, IPEDS, Bureau of Economic Analysis, CCAP calculations.

Tuition Trends

There is growing concern over the costs of higher education. Perhaps the main concern is exploding tuition charges. Table 3, presented earlier in the study, shows that while Texas' tuition charges were below the U.S. average in 2005, they were higher than all neighbors. On average, Texas public schools charged almost \$1,000 more than Louisiana and New Mexico public schools and at least \$3,000 more than any neighbor for private school tuition.

While average tuition in Texas was lower in 2005 than the national average, **Chart 11** shows Texas tuition has experienced explosive growth from 1985 to 2005 and outpaced personal income, inflation, and the national average—a daunting figure in itself. Published tuition at Texas 4-year public schools grew 199% beyond inflation compared with 124% for the U.S. The comparison holds for 4-year private schools (163% in Texas, 74% for the U.S.) and 2-year schools (149% in Texas, 66% for the U.S.).

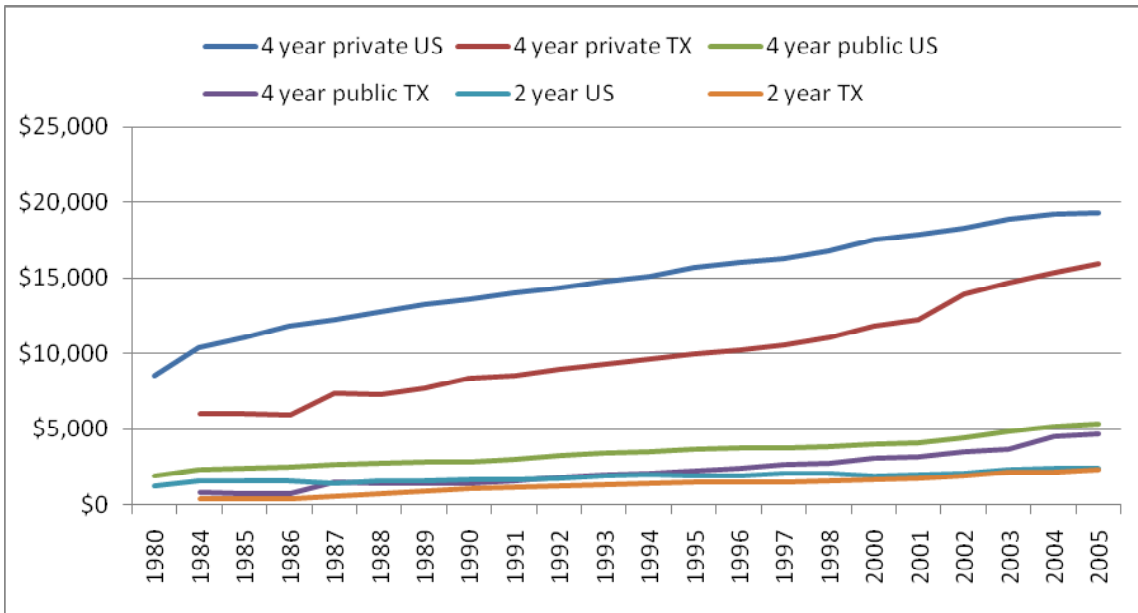
What Has Happened to the Costs of Attending College and Why?

The costs of attending an institution of higher education have been exploding across the nation, and the data for Texas is particularly troubling. **Chart 12** shows the average real (inflation adjusted) tuition and required fees for in-state students by year⁸ and the level of the school.⁹

⁸ Note that in this, and other charts that use IPEDS data, the years are not continuous. Specifically, the years 1981-83 and 1999 are not included.

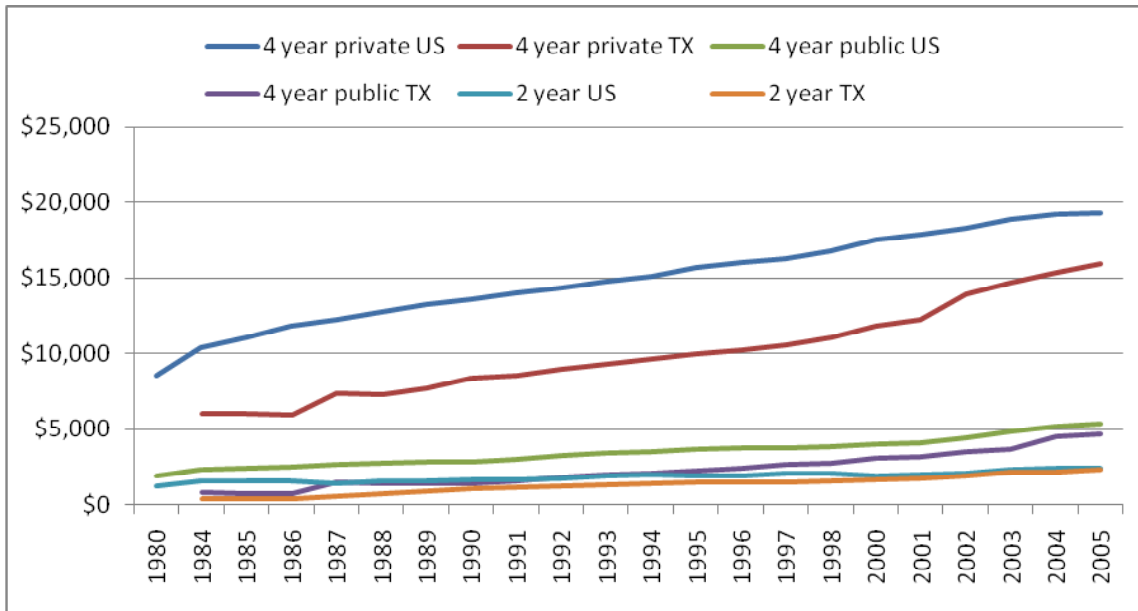
⁹ Note that figures are "FTE weighted." This means that each school's figures are weighted by the proportion of full time equivalent students at the school in the fall of 2005. Thus the number reported is the weighted average, fixing the proportion of students at each school at its 2005 level.

Chart 12 - Average Tuition & Fees, Real (2005 \$) FTE Weighted



Sources: Bureau of Labor Statistics, Digest of Education Statistics, IPEDS. CCAP calculations.

Chart 13 - Average Tuition & Fees by School Type, % of per Capita Income, FTE Weighted, 1980-2005



Sources: Bureau of Labor Statistics, Digest of Education Statistics, IPEDS. Bureau of Economic Analysis. CCAP calculations.

In general, it appears that Texas tuition growth at 4-year private and 2-year schools mirrored the growth nationally until around the year 2001. From 2001 to 2005, tuition at these Texas schools seems to have grown at an even faster rate than the national average. For 4-year public schools it appears that Texas tuition growth also mirrored national growth, but with increased growth rates relative to the national average around the years 1995 and 2003.

Recent news out of Austin reports that tuition increases are planned to continue through 2010. In November of 2007, the Tuition Policy Advisory Committee at the University of Texas at Austin recommended average increases in cost of attendance of \$318 per semester next school year and another \$303 per semester increase for the 2009-10 school year.¹⁰ However, a December 2007 news release from the Board of Regents for the University of Texas System announced it will limit tuition growth to 4.95% or \$150 per semester—whichever is greater—for the next two school years.¹¹ While it is disheartening for students and their parents to see tuition continue to increase, the Board of Regents has attempted to somewhat limit such increases.

The ability of Texas to pay for schooling, as measured by the state's per capita income, has not kept up with the increases in tuition, as shown in **Chart 13**. In fact, tuition at 4-year schools has more than doubled as

a percentage of per capita income since 1984, meaning that the typical resident would need to pay over 21% of his or her income per year in tuition. Also alarming is the trend among Texas' 2-year schools. Tuition as a percentage of state per capita income at these institutions has historically been below the national average. However, this figure has grown relative to the national average, and in 2005 was nearly equal the national average of 7.3%.

Some people will argue that the financial burden on students and their families is not nearly as bad as these figures suggest, because schools will often provide scholarships and other discounts to students. This is a valid point, but schools are reluctant to release information about the actual average tuition and fees they charge, perhaps a sign that their aid packages are not entirely offsetting tuition increases. Moreover, when students apply to schools, they often do not know if they are going to receive any aid at all, or how much. Thus the "sticker price" (stated tuition fee) is potentially a very important factor in deciding where or whether to attend college at all.

In spite of a lack of transparency in the provision of data (not unique to Texas schools), we can estimate what we will call the net tuition and required fees. We have constructed two versions of net tuition and fees (for brevity we will just refer to it as net tuition, though it also includes required fees). Unfortunately, our analysis of this issue is limited as the

federal data source used (the Integrated Postsecondary Education Data System, or IPEDS) only allows for these "net tuitions" to be calculated from 2000 to 2004.

The first net tuition is the figure for schools. This is derived by subtracting average institutional aid (scholarships and fellowships) from quoted sticker price tuition. Thus, this figure tells how much revenue the school receives on average from each student's tuition fees.

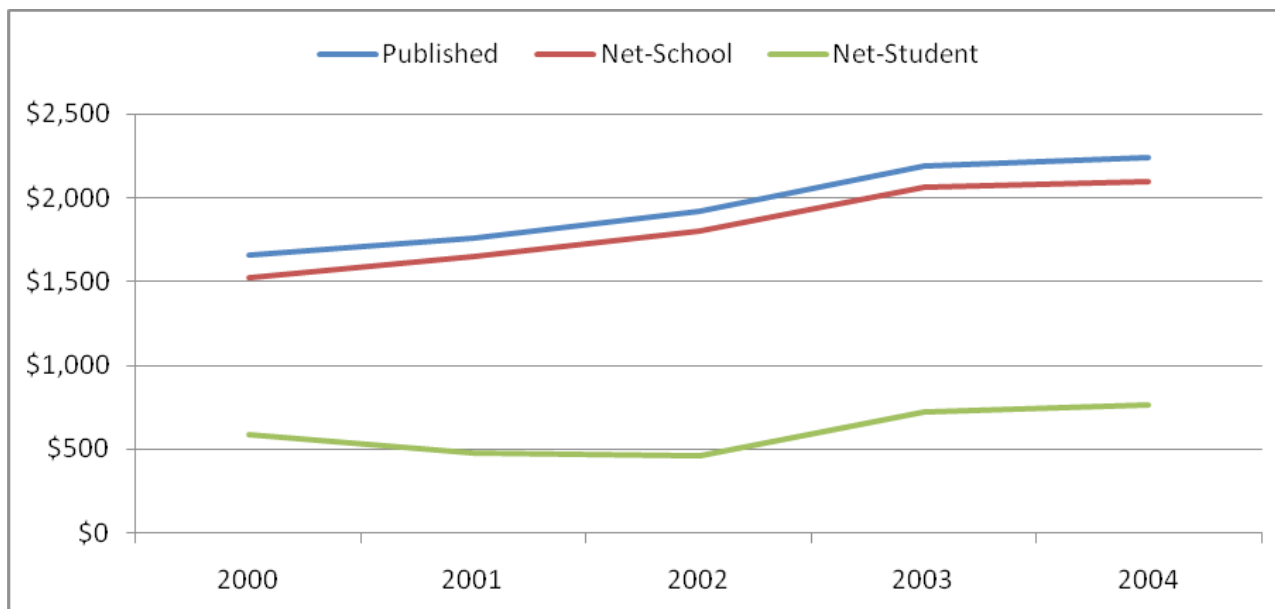
Also calculated is net tuition *for students*, or the average amounts students actually pay in tuition. To find this figure, we must also account for state and federal aid. Thus net tuition for students is equal to published tuition minus institutional as well as federal, state, and local grants. Student loans are not subtracted because students are required to pay them back. Net tuition for students is the best estimate of the actual financial burden for students.

There are factors that would tend to bias the figures in either direction. For example, the U.S. Department of Education database does not include private scholarships that the schools do not know about. Therefore, we would tend to overestimate the financial burden of students. Yet it seems much more likely these figures are a very conservative estimate. This derived figure assumes all aid is spent on tuition when in reality it is not. Much of the grant money that is awarded goes toward paying for other legitimate expenses.

¹⁰ Press Release, The University of Texas at Austin (Nov. 13, 2007) <http://www.utexas.edu/tuition/tpac/> (accessed Jan. 2008).

¹¹ Press Release, University of Texas Board of Regents (Dec. 6, 2007) <http://www.utexas.edu/tuition/tpac/regents071206.html>.

Chart 14 - Real (2005 \$) Tuition at 2-year Texas Schools



Sources: Bureau of Labor Statistics, Digest of Education Statistics, IPEDS. CCAP calculations.

es such as room and board, books, and transportation. This suggests that these figures tend to greatly underestimate the actual total financial burden of attending college. While this methodology is obviously not perfect, in the absence of greater disclosure by schools, we believe it is the most accurate estimate possible.

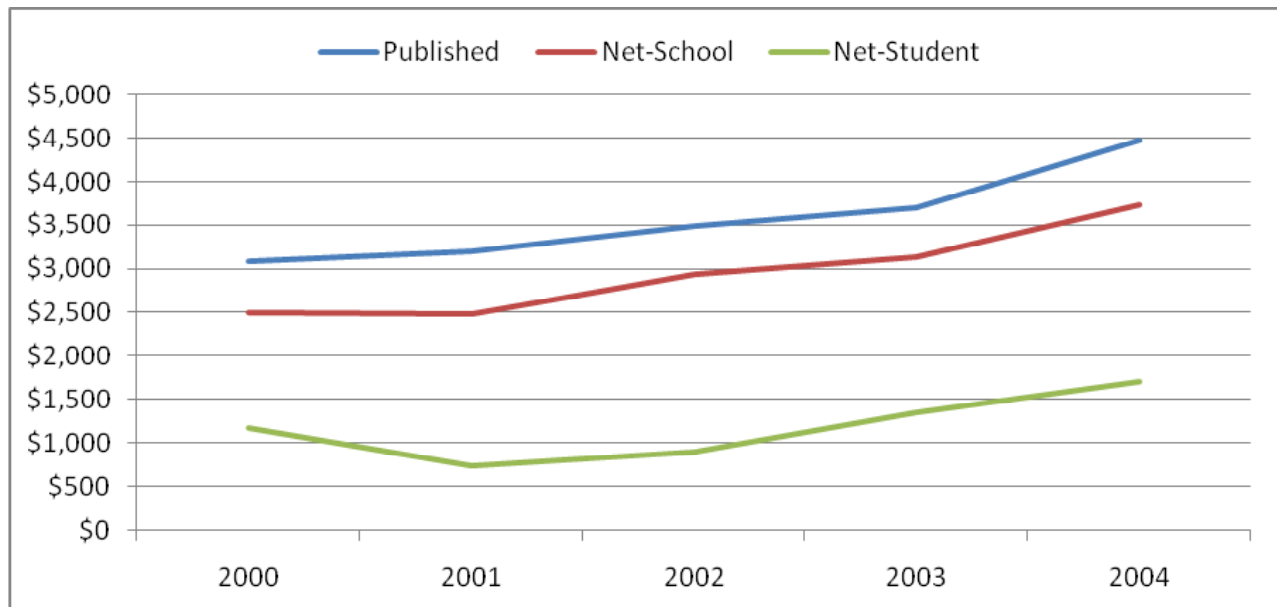
Charts 14, 15, and 16 show published, net-school, and net-student tuition and required fees in inflation adjusted dollars at 2-year, 4-year public, and 4-year private Texas schools, respectively.

At 2-year Texas schools (**Chart 14**), published tuition and the net-school

tuition track each other very closely, and have both risen by about \$580 from 2000-04. This means that the published tuition, and the tuition revenue per student for the school track each other very closely. A very different story emerges when we look at what students themselves pay (net student). While the financial burden for students decreased during the years 2000-02, it increased 58% from 2002 to 2003 (\$460 to \$718). This trend continued into 2004 whereas students at 2-year Texas schools paid \$760 per year in tuition. This figure is even more startling when compared to a 2007 national average net tuition of \$320, as reported by The College Board.¹²

Chart 15 shows that at 4-year public schools, published tuition and the net school tuition again track each other, but the gap between them is larger. This means that schools typically get about \$550-\$750 less per student they enroll than is suggested by published tuition rates. It also suggests that schools typically increase financial aid to students at about the same rate that they increase published tuition. The most interesting thing to note is what occurs with net-student tuition, or what the students actually pay. While this figure decreased between 2000 and 2001, it increased rapidly from 2002 to 2004. Net-student tuition increased 132% from \$738 in 2002 to \$1,713 in 2004.

¹² The College Board, *Trends in College Pricing: 2007*, p. 16. This and the companion publication, *Trends in Student Aid: 2007* both provide comparable statistics concerning net tuition, and are accessible through The College Board website, <http://www.collegeboard.com>.

Chart 15 - Real (2005 \$) Tuition at 4-year Public Texas Schools

Sources: Bureau of Labor Statistics, Digest of Education Statistics, IPEDS. CCAP calculations.

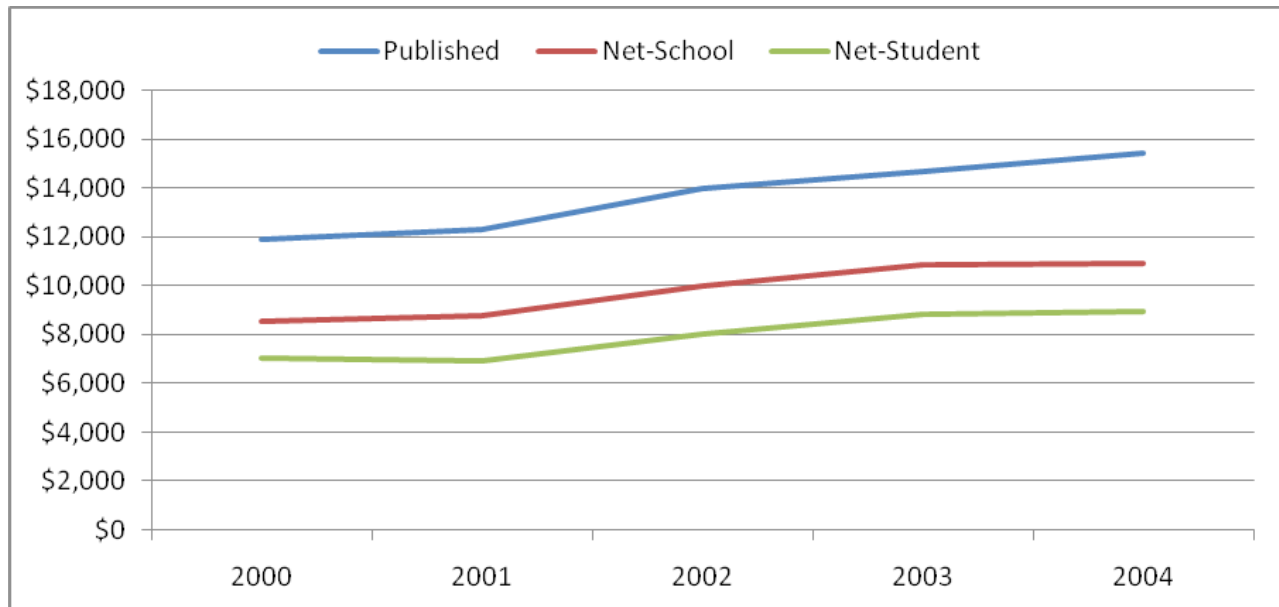
Over this five year period, students paid around 32.4% of published tuition out of pocket. The remaining amount was funded through institutional aid (17.6%) and federal/state/local grants (50%).

At 4-year private schools (**Chart 16**), published and net-school tuition no longer track each other. Rather it is net school and net student that appear to be more closely associated with one another. Schools typically receive between \$3,300 and \$4,500 less than published tuition rates, with students paying, on average, \$4,500 to \$6,500 less than published rates. On average over this period, students paid 58.2% of published tuition rates while institutional aid and federal/state/local grants covered the remaining 28% and 13.8% respectively.

While one might take comfort in the fact that the net tuition figures show that students do not personally bear the full burden of published sticker price tuition it is noteworthy that this figure has grown during the period of 2000 to 2004. Perhaps what is most shocking is that these numbers are not decreasing. With all of the claims our governments make that they are working to make higher education more affordable, we would certainly expect net tuition for students to be decreasing or remaining constant. This obviously is not the case as the financial burden on students at Texas schools was greater in 2004 than it was in 2000, even after accounting for all of the aid by federal, state, and local governments, and the institutions themselves.

While this information is certainly revealing, a significant drawback is that there is such a lag in the reporting of data. It would be much more useful to know what is happening today in 2008 than what happened in 2004, but until there is greater transparency in higher education, we are forced to report these numbers as is. Unless schools decide to make the data available in a timely manner, we have no choice but to assume that relationships between published and net tuition—that have been observed in the past—hold in the present as well.

Chart 16 - Real (2005 \$) Tuition at 4-year Private Texas Schools



Sources: Bureau of Labor Statistics, Digest of Education Statistics, IPEDS. CCAP calculations.

How Can Students Afford to Attend?

The previous section showed that published tuition—the “sticker price”—has been increasing rapidly, and especially in Texas. With more and more students enrolling in college, how can they afford these ever increasing tuition charges?

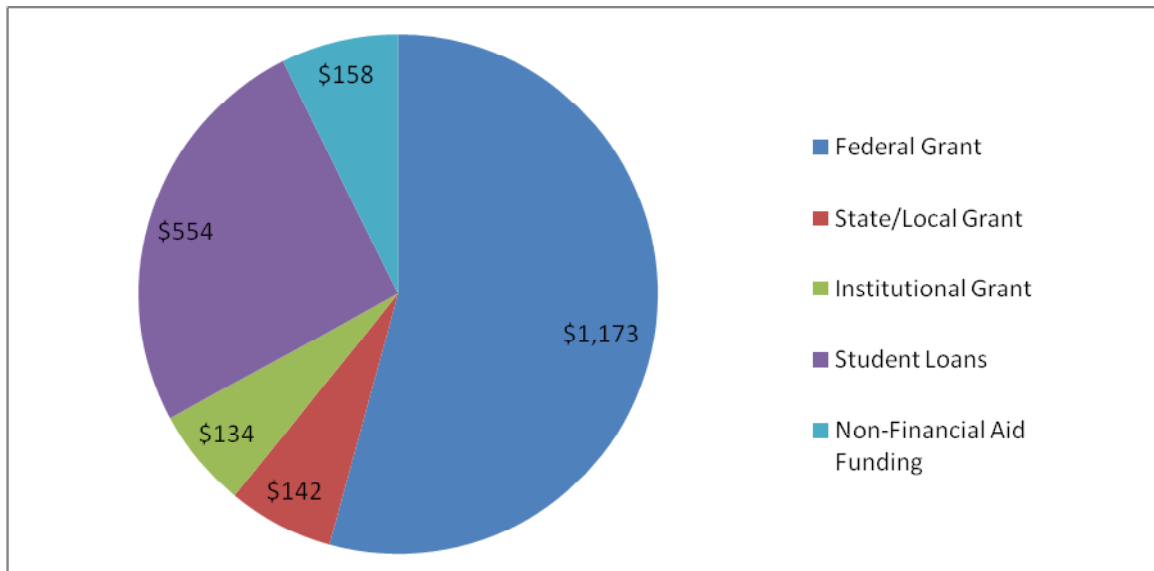
Charts 17, 18, and 19 show where financial aid funding comes from for the average student. For 2-year schools, the pie represents the average tuition and required fees at the type of school, and at 4-year schools the pie represents the total cost of attendance, which includes tuition, fees, room, and board. The slices represent the magnitude of each of the sources of funding. Note that “Student Loans” only account

for the loans that a student takes out through their school’s financial aid office, thus they do not include private student loans. In addition to out of pocket payments, the category “Non-Financial Aid Funding” includes any outside funds that the school does not know about, such as private scholarships not awarded by or reported to the school.

At 2-year schools, federal grants alone cover about 55% of the cost of tuition and fees, on average. However, state/local, and institutional grants combined cover only 12.8% of tuition and fees. This helps to explain the somewhat high net-student tuition figures presented in the previous section. Since these state/local and institutional grants at 2-year schools are so small, students are forced to turn to other funding

sources, especially student loans. On average, Texas’ 2-year students have a \$158 of tuition and fees remaining to be paid after subtracting out these financial aid categories. Of course some of this \$158 may be covered by private scholarships and loans not reported to the school. Yet it is still important to note that, on average, traditional financial aid—including loans—does not entirely cover the cost of tuition and fees at Texas’ 2-year schools. Also, **Chart 17** does not include room and board charges. It can be argued that these costs are part of living expenses one would occur if not in college, so they do not represent part of college expenses. However, they are true expenses for college students, and do add to the financial burden of attendance.

Chart 17 - Average Financial Aid by Source for 2004: 2-year Texas Schools, FTE Enrollment Weighted



Sources: IPEDS, CCAP calculations.

At 4-year public Texas schools (**Chart 18**) state/local and institutional grants account for 12.8% of the total cost of attendance. While this is almost identical to the relative size of such grants compared to tuition and fees at 2-year schools, federal grants at public 4-year schools are much smaller, accounting for only 8.2% of total costs. In addition, students borrow almost \$1,600 in loans, which means that the typical student needed to find \$8,433 outside of normal financial aid packages.

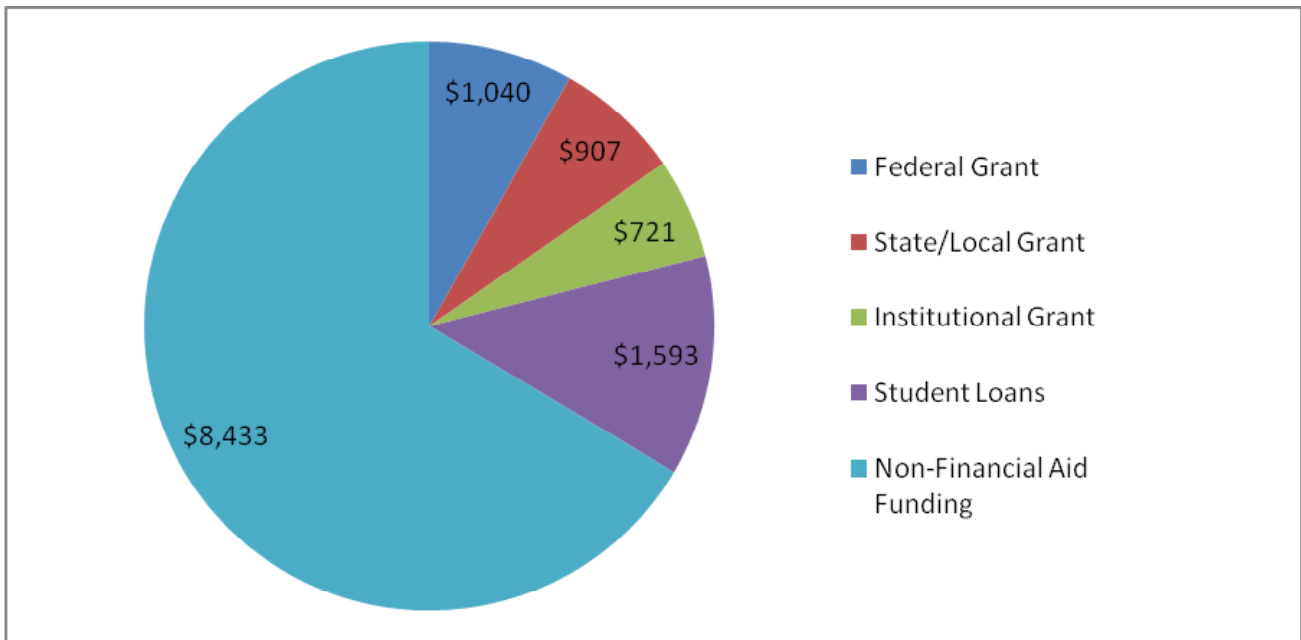
At 4-year private Texas schools (**Chart 19**), federal and state/local grants are larger in total dollars than for students at 4-year public schools, but they cover a lesser percentage of the total cost of attendance. Institutional grants are much larger than at public schools,

and together with federal/state/local grants cover more than a quarter of total costs. Students at these schools take out more in loans in total dollars, \$2,528, but even so, financial aid packages do not cover as much of the cost (as a percent) as at public schools. In spite of the much larger financial aid packages, students at private schools need to find even more outside money to cover their education than those at public schools (\$12,620 compared to \$8,433).

Given the increasing importance of student loans, it is quite revealing to examine the average student loan debt at graduation. **Chart 20** is constructed from the reported average student loan taken out by students (not including private loans). It reports the estimated average debt of students that take out student

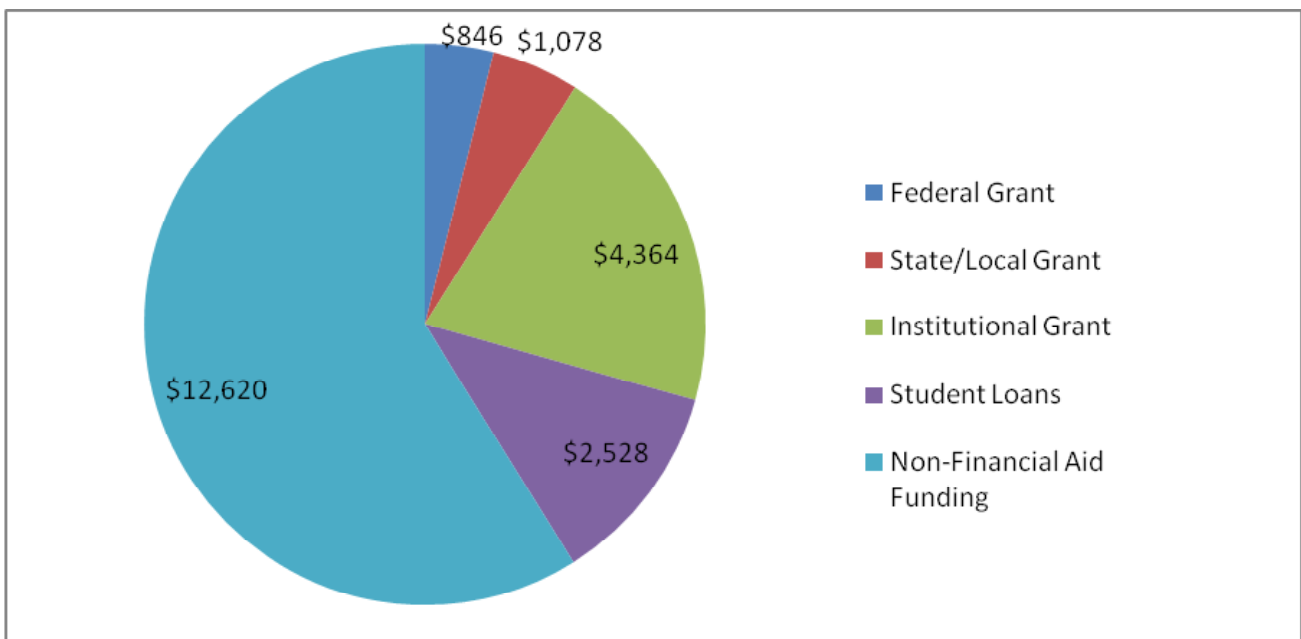
loans, assuming that they take out the average loan each year, and graduate in four years. Keep in mind that the proportion of students taking out loans varies considerably by school, and these calculations are not an average across all students, but only those that took out loans. It is interesting to note that despite similar tuition charges at some of the schools, the estimated student debt at graduation is very different. Average debt at The University of Texas at Dallas is significantly less than that for students at schools with similar tuition charges, such as The University of Texas at Austin and Texas A&M University. The calculations assume 4-year graduation rates, while in fact the average time to graduation is typically longer, and varies from school to school.

Chart 18 - Average Financial Aid by Source for 2004: 4-year Public Texas Schools, FTE Enrollment Weighted



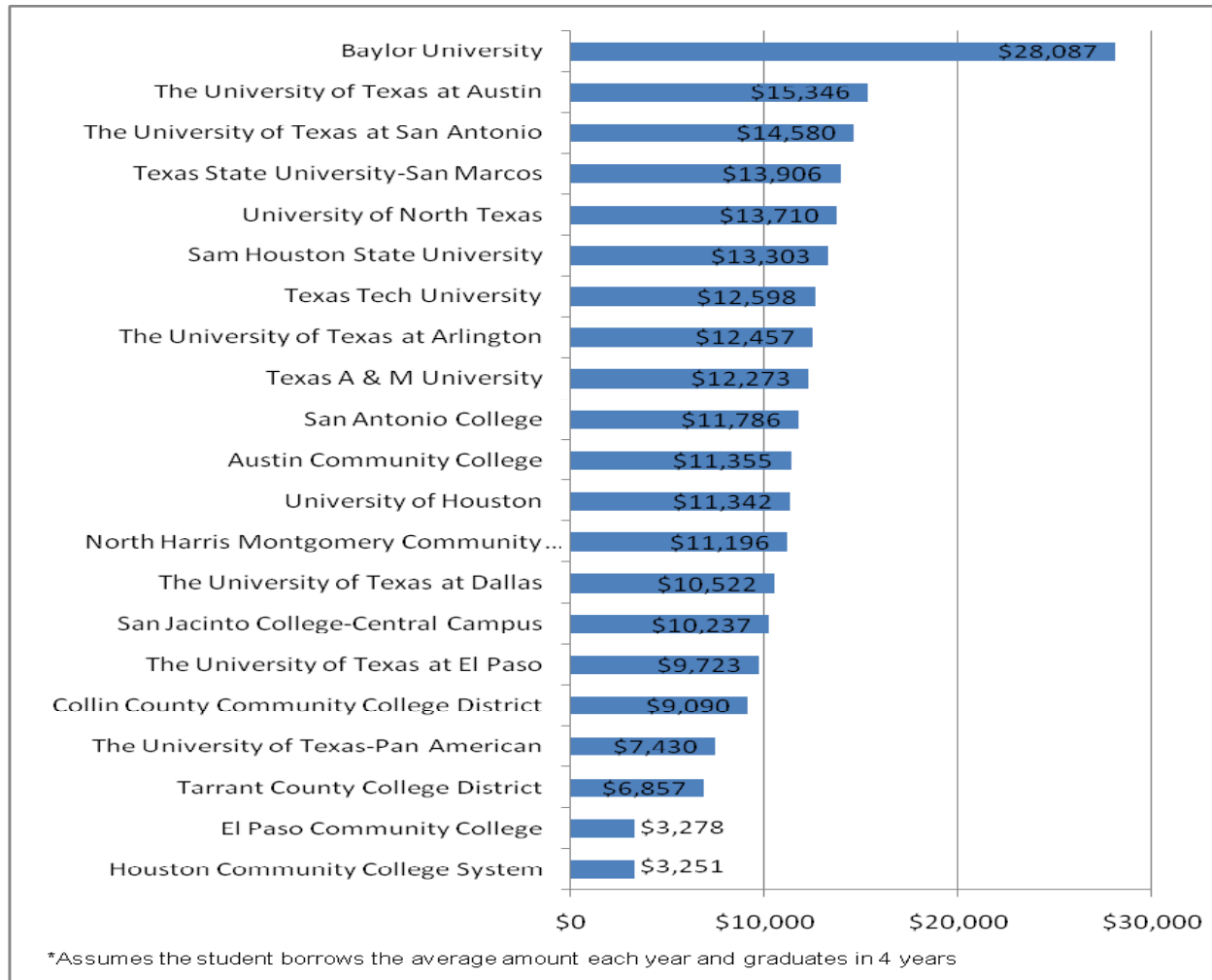
Sources: IPEDS. CCAP calculations.

Chart 19 - Average Financial Aid by Source for 2004: 4-year Private Texas Schools, FTE Enrollment Weighted



Sources: IPEDS. CCAP calculations.

Chart 20 - Estimated Debt of the Typical Borrower*



Source: IPEDS.

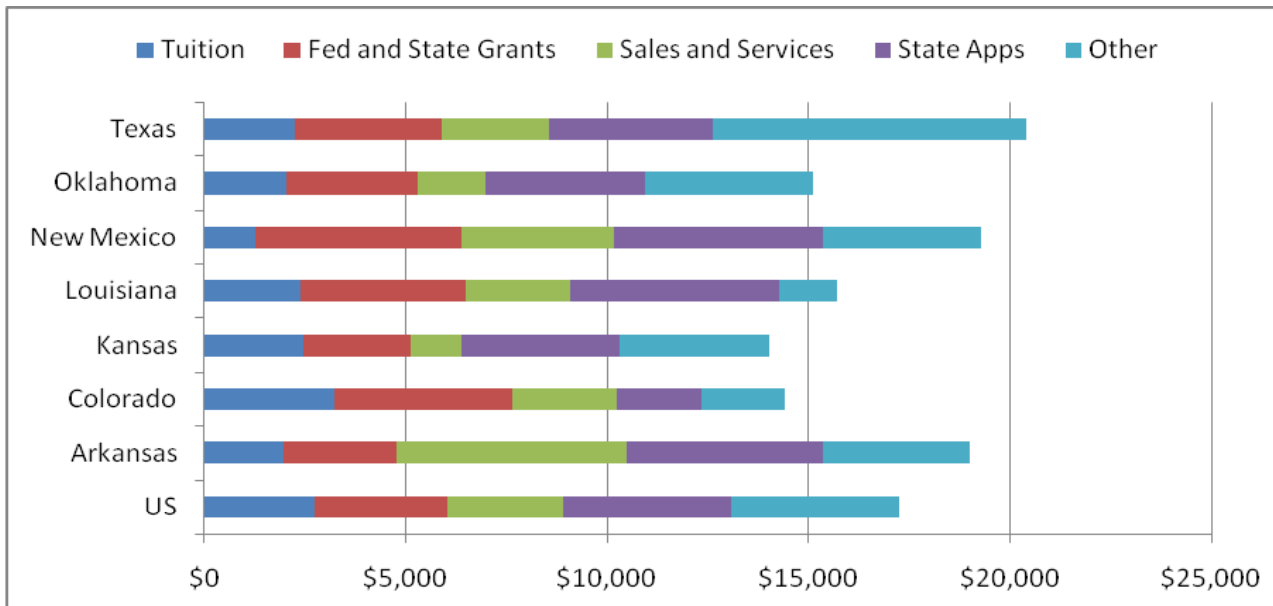
Where Do Schools Get Their Money?

While much of the commentary in the public focuses on tuition, it turns out that, in general, tuition is not a dominant source of revenue for schools. **Chart 21** shows the importance of the various sources of revenue. As you can see, Texas schools have the highest total revenue per student of any neighboring or regional peer state as well as exceeds the national average. Yet they

do not depend heavily upon tuition charges or state appropriations as sources of funding. Tuition only accounts for 11% of total revenue and state appropriations only 20%. Texas has the smallest dependence on state appropriations of any state in Chart 21 except Colorado and is also smaller than the national average. *Texas schools get \$3,131 more in total revenue per student than the national average, even though they get \$500 less in tuition revenue per student.*

While Texas schools rely less on tuition and state appropriations, they rely more on what is termed "Other" sources of revenue. As Chart 21 shows, this category accounts for \$7,753 (38%) of total per student revenues, a figure \$3,572 greater than the national average and more than 10 percentage points more than the next closest neighbor, Oklahoma. It is hard to define what constitutes "Other" revenue, and is just another example of lack of transparency in higher education.

Chart 21 - Revenue per Student by Source, Public Degree Granting Institutions, 2003-2004



Sources: Digest of Education Statistics. CCAP calculations.

Two large institutions, The University of Texas and Texas A&M, benefit importantly from unusually large endowment incomes, one component of the “Other” category.

Looking at the sources of revenue for each of the schools separately (Chart 22), it is interesting to note the institutional diversity. While tuition seems to be a somewhat dominant source of core revenue (excluding, for example, revenue for commercial and auxiliary enterprises) at schools such as Baylor and the University of North Texas, the premier state schools rely less heavily upon it. For example, the University of North Texas receives 41% of revenue from tuition while The University of Texas at Austin only 17% and Texas A&M University only 11%.

One might ask the question: Why do students at North Texas pay almost four times the proportion of the cost of running the institution relative to Texas A&M?

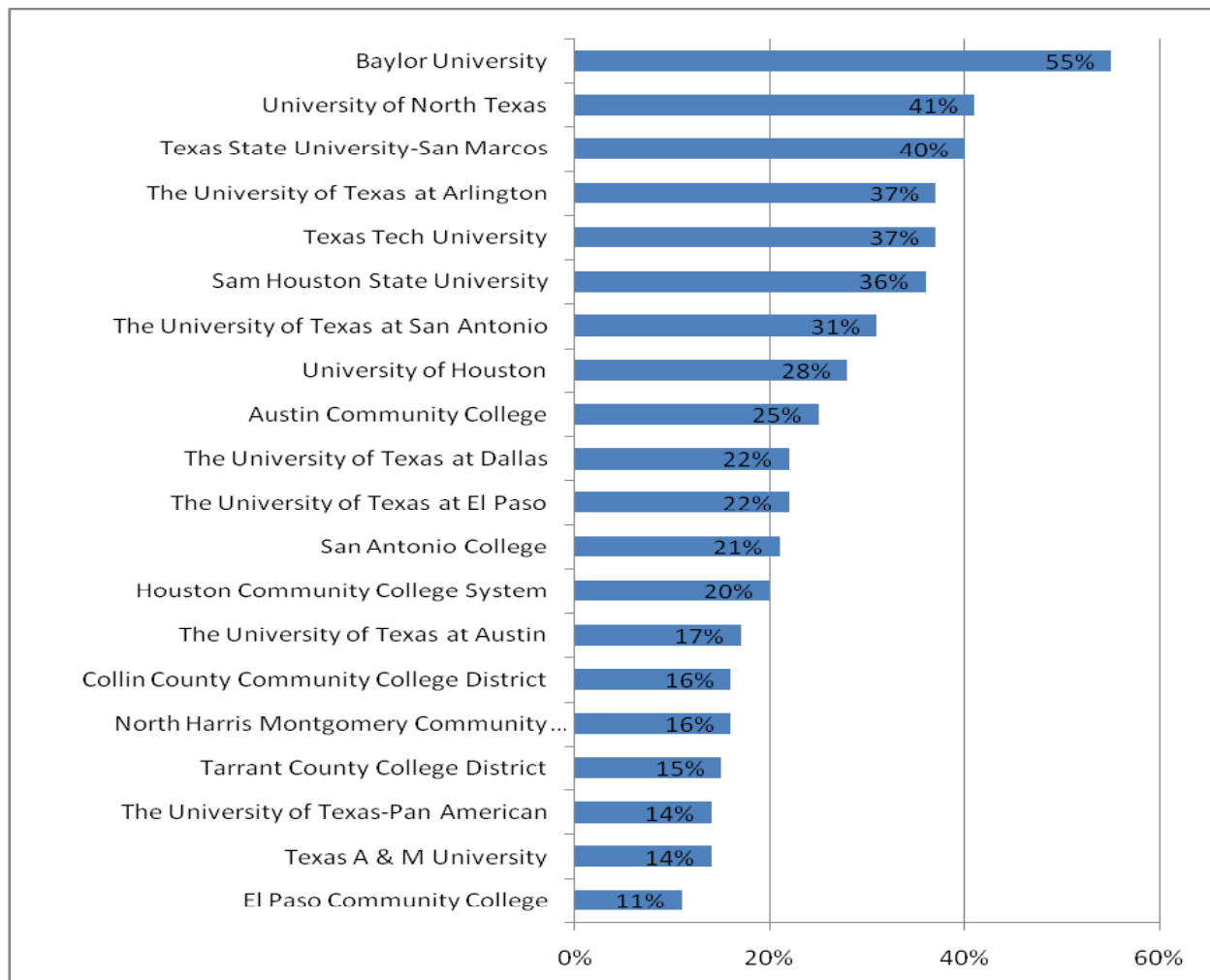
Given the small size of tuition as a percent of revenue at most schools, even large increases in tuition revenue would not have a proportional impact on total revenue. In other words, while changes in tuition can have a dramatic effect on students, they would not have dramatic effects on the overall finances of most of the schools unless they were truly substantial in magnitude.

Endowments

Somewhat unique to Texas are the massive endowments of many institutions in the state. The Texas Con-

stitution established the Permanent University Fund through land grants that had previously been designated to The University of Texas. These lands—which now constitute approximately 2.1 million acres—are managed through the UT System Board of Regents and provide income that is restricted to pay principal and interest on bonds for capital construction at UT System and Texas A&M System schools. The great success of returns on these university controlled lands, which are rich in oil and other natural resources, has allowed both the UT System and Texas A&M System to amass impressive endowments.¹³ UT is the highest endowed public institution in the country, and Texas A&M the third highest. Of both public and private institutions, UT has the

¹³ Explanation of Constitutional provisions outlining university endowments obtained from: University of Texas System News Release, “UT System Regents Revise Distribution Policy of the Permanent University Fund” (Feb. 7, 2008) <http://www.utsystem.edu/news/2008/UTS-PUFDistribution-02-07-08.html> (accessed Feb. 22, 2008).

Chart 22 - Tuition & Fees as a Percent of Core Revenues, 2004

Sources: IPEDS. CCAP calculations.

fifth greatest endowment, beating out schools M.I.T., Columbia, and even rivaling Princeton. **Chart 23** shows the enormous endowments of these schools, as well as several other Texas institutions.

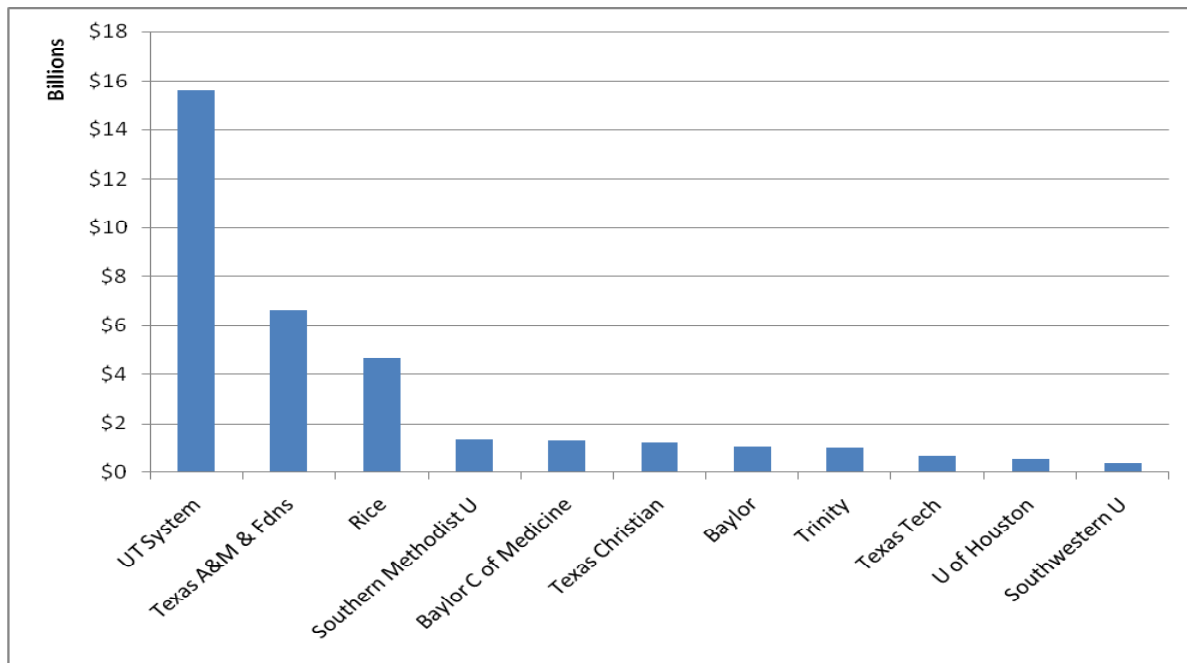
Every school listed in Chart 23 is among the top 200 highest endowed institutions in the country. Furthermore, eight are in the top

100, and three (UT System, Texas A&M System, and Rice University) are all in the top 20. One could make a good case that Texas' private institutions' endowments are especially impressive considering their relatively low enrollments. Rice has over \$1.5 million endowment per student, one of the highest totals in the nation, and Trinity more than \$400,000.¹⁴

At their February 7, 2008 meeting, the University of Texas System Board of Regents voted to increase endowment spending by approximately \$27 million, from 4.75% to 5.0% of the total endowment. As much of the institution's endowment spending is restricted, the Board of Regents has made it clear that this increased spending will be used largely to "meet strategic goals

¹⁴ Endowment data provided by the National Association of College and University Business Officers (NACUBO), and accessed through the *Chronicle of Higher Education* database: <http://chronicle.com/premium/stats/endowments/results.php?year=2008&sort=market&state=&limit=> (accessed February 8, 2008).

Chart 23 - 2007 Market Values of Texas Endowments



Source: National Association of College and University Business Officers (NACUBO).

such as growing and retaining faculty and infrastructure needs.¹⁵ It is evident that endowment revenues are a significant funding source not necessarily available to many institutions in other states.

What Do Schools Spend the Money On?

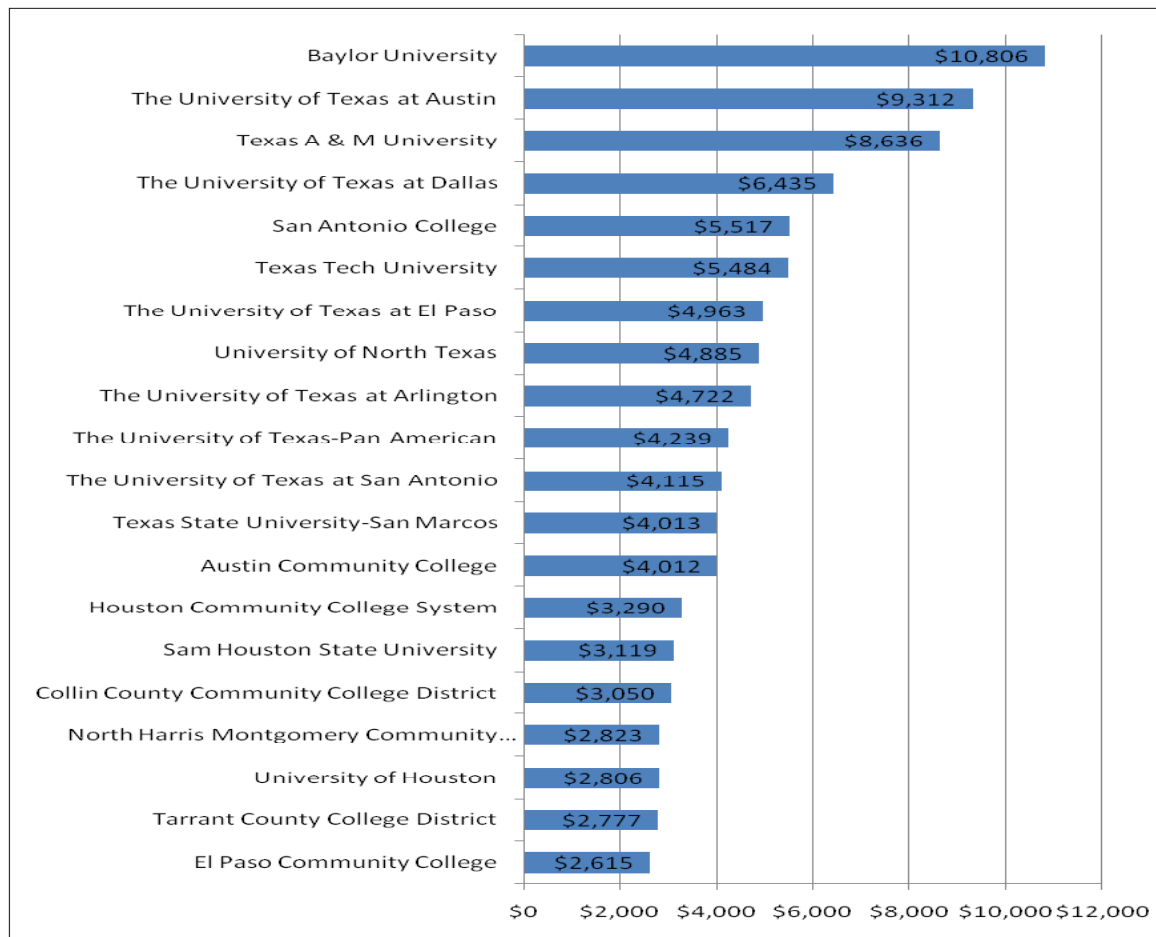
Now that we have a sense of the source of funds for schools, we can look at how the money is spent. Instructional costs per student, shown in **Chart 24**, vary somewhat, ranging from about \$2,800 at the University of Houston to about \$10,800 at Baylor. This is based on self-reported

data from the schools to the U.S. Department of Education, and some of the discrepancies between institutions may reflect differences in how certain expenditures are categorized by the institutions themselves. Nonetheless, even with this caveat, the inter-institutional variations in spending are enormous, even if one confines the analysis to public institutions. Does the huge differential between the University of Houston and Baylor imply that students get nearly four times more instruction at Baylor? Our surmise is that the answer is probably not. Baylor may or may not have smaller class sizes, which would require more instructors, but one thing that it probably

has is more distinguished (and costly) professors. It is important to note that they distinguish themselves through their research, not through their teaching. Thus some “instructional costs” likely include research activities, at least those funded by the institution through low teaching loads for faculty (data on faculty teaching loads are not published, to our knowledge, another sign of a troubling lack of transparency in the operations of universities).

Even more relevant than the Baylor-Houston comparison are the differences within the public universities. Why are the instructional expenses per student at UT-Austin *triple* those

¹⁵ University of Texas System News Release, “UT System Regents Revise Distribution Policy of the Permanent University Fund” (Feb. 7, 2008) <http://www.utsystem.edu/news/2008/UTS-PUFDistribution-02-07-08.html> (accessed Feb. 22, 2008).

Chart 24 - Instructional Expenses per Student (FTE), 2004

Sources: IPEDS. CCAP calculations.

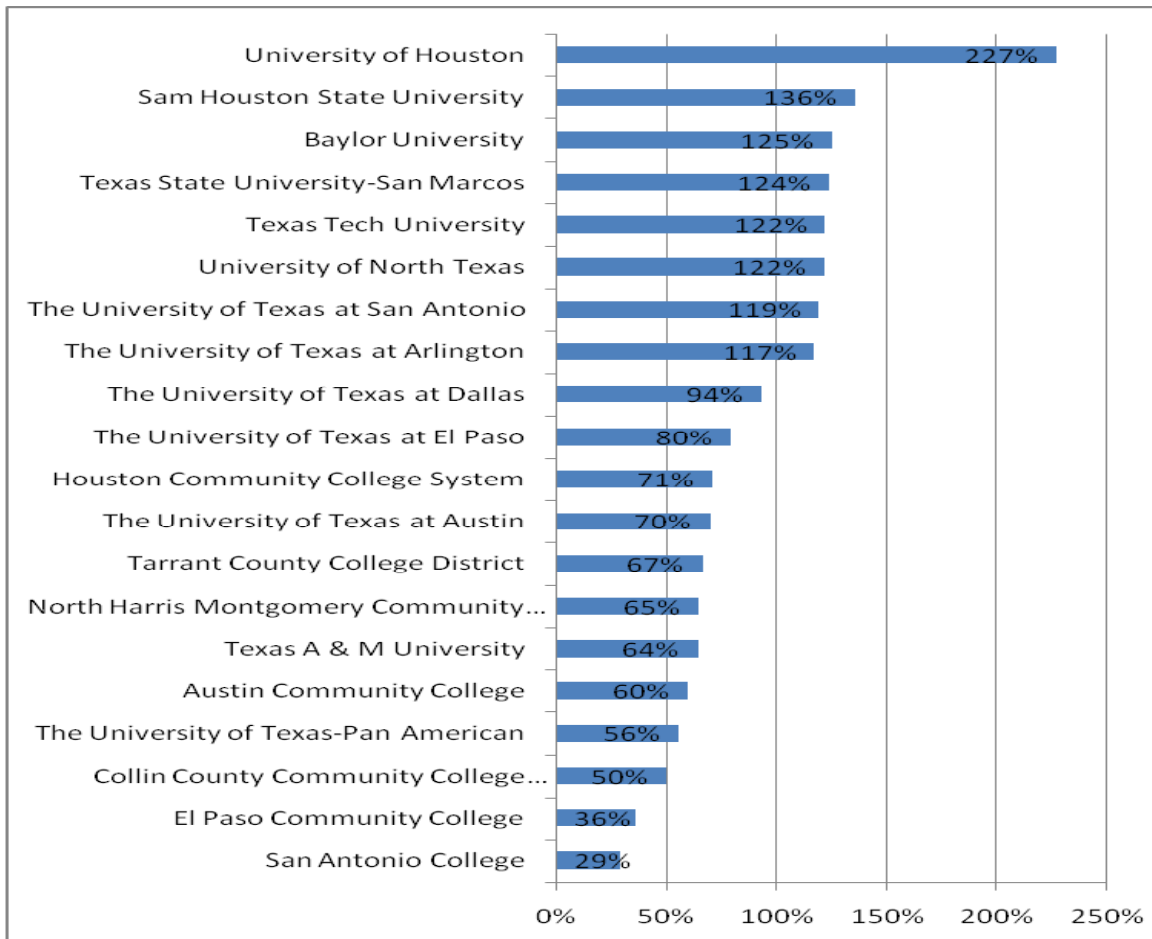
at the University of Houston or Sam Houston State? Part of the answer, no doubt, relates to graduate instruction, which is vastly more costly than undergraduate instruction. What does it cost to train a graduate student at UT-Austin? The available data do not tell us, but it is plausible it exceeds \$50,000 a year. The taxpayers of Texas might ask: Are we overdoing our subsidization of graduate education, particularly since almost certainly a large portion of graduate students are non-Texans? While graduate education brings prestige, and often federal research grants, given the extremely

high costs, is all of it justifiable on cost-benefit grounds?

We can also examine how much of instructional costs are covered by tuition and fee revenue (**Chart 25**). Tuition charges at a number of schools actually exceed instructional expenditures. This suggests that many Texas schools are somewhat devaluing instruction by spending student tuition dollars in other areas of university expenditures. However, the diversity of these figures poses another question: Why is instruction largely financed by tuition charges at schools like Texas

State University-San Marcos, but not at UT-Austin? The answer, of course, is that instructional costs are vastly higher at Austin than at San Marcos, but tuition charges vary far less. It can be argued, we suspect, that at Austin external grants and gifts along with somewhat larger state appropriations are used to finance graduate education and research. That is in keeping with the pattern at other major state research universities. Nonetheless, taxpayers who ultimately fund most of the incremental costs of UT-Austin must ask: Are we getting the best bang for the buck from this expensive research

Chart 25 - Tuition & Fee Revenue as a Percentage of Instructional Expenses, 2004



Sources: IPEDS. CCAP calculations.

and graduate education, especially if it has not significantly increased undergraduate enrollment over the past 25 years?

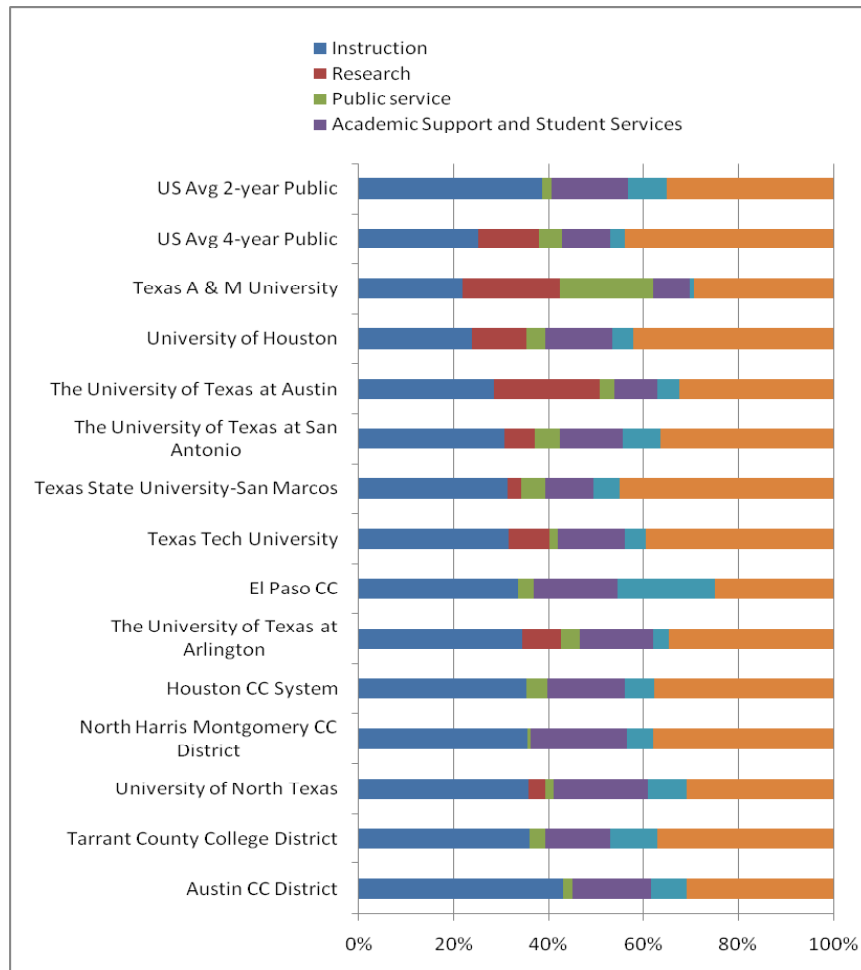
Chart 26 breaks down the expenditures of schools by category. It should be noted that the breakdown between instruction and research is not as clear as one might think. Research refers to “expenses associated with activities specifically organized to produce research outcomes and commissioned by an agency either external to the institution or separately budgeted by an organizational unit within the

institution. The category includes institutes and research centers and individual and project research.” What this means is that most professors salaries are counted under instruction, even though for many of them, the majority of their time is spent on research. We also need to clarify what falls into the category of “Other.” The category includes institutional support, operation and maintenance of plant, depreciation, auxiliary enterprises, hospital services, independent operations, and other expenses deductions.

Unfortunately, many schools, especially private ones, do not report their expenses broken down by category. Nevertheless, we can gain some important insight by examining those that do.

The first thing to note from Chart 26 is the shockingly low percentage of expenditures that goes toward instruction, especially in light of the fact that much research is counted as instruction. At Texas 4-year schools, the figure is around 27%, and even at 2-year schools, the figure is only 37%. Instruction appears to be almost a secondary claimant

Chart 26 - Core Expenditures of Texas Schools, FY 2005



Sources: IPEDS. CCAP calculations.

on scarce resources at many institutions. Another surprising fact is that the “Other” category accounts for so much of spending. At the University of Houston, over 40% of all spending goes toward “Other.”

It seems clear that institutions of higher education have strayed from their mission, which is to educate students through instruction. While Texas’ community colleges seem to devote more of their spending to instruction, they still spend less than half of their funds on this core function. Given this sad state of af-

airs, it should not be surprising that schools are constantly raising tuition. It seems almost as if they are treating their customers as accounts to fund “auxiliary enterprises” and “independent operations.”

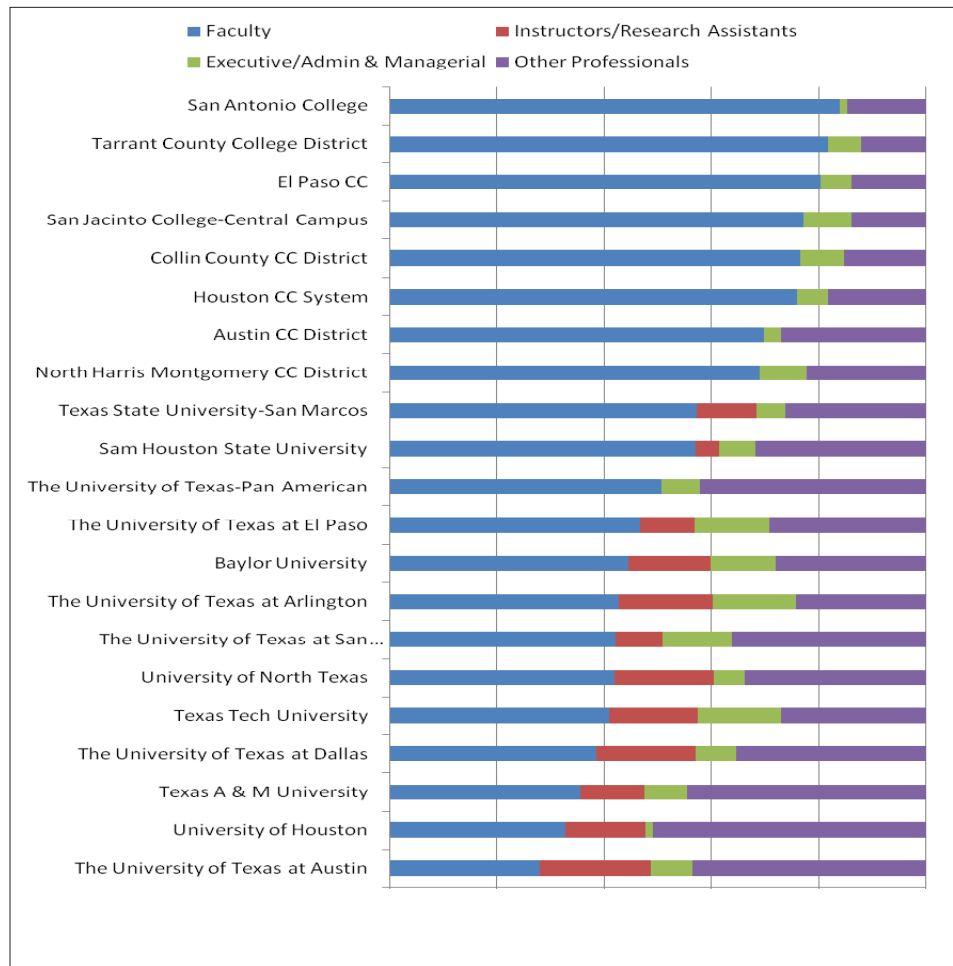
If So Little Money Is Spent on Instruction, Where Is the Rest of It Going?

So if large chunks of money are not going to instruction, or going to things beyond instruction, where is all this money going? One thing

we can look at is the proportion of staffing levels by position. **Chart 27** shows the staff of schools by position. The “Other Professionals” category includes non-faculty professionals, technical, paraprofessional, clerical, secretarial, skilled craftsmen, service, and maintenance staff.

While some caution is warranted in drawing conclusions, (medical schools for example require many staff other than faculty) Chart 27 clearly shows that faculty are not as dominant among the staff as one might expect. On average, at the

Chart 27 - FTE Staff by Position, 2005



Sources: IPEDS, CCAP calculations.

listed public 4-year schools, faculty do not make up even 50% of the workforce. Two-year schools on the other hand routinely reach 75%.

Instruction and Research assistants make up a sizeable chunk of the labor force at many of the 4-year schools. This suggests a trend of the increasing tendency for classes to be taught by assistants rather than the faculty. Another point to emphasize is that the category of “Executive/Admin & Managerial” staff is surprisingly large at many schools. **Chart 28** takes a closer look at this

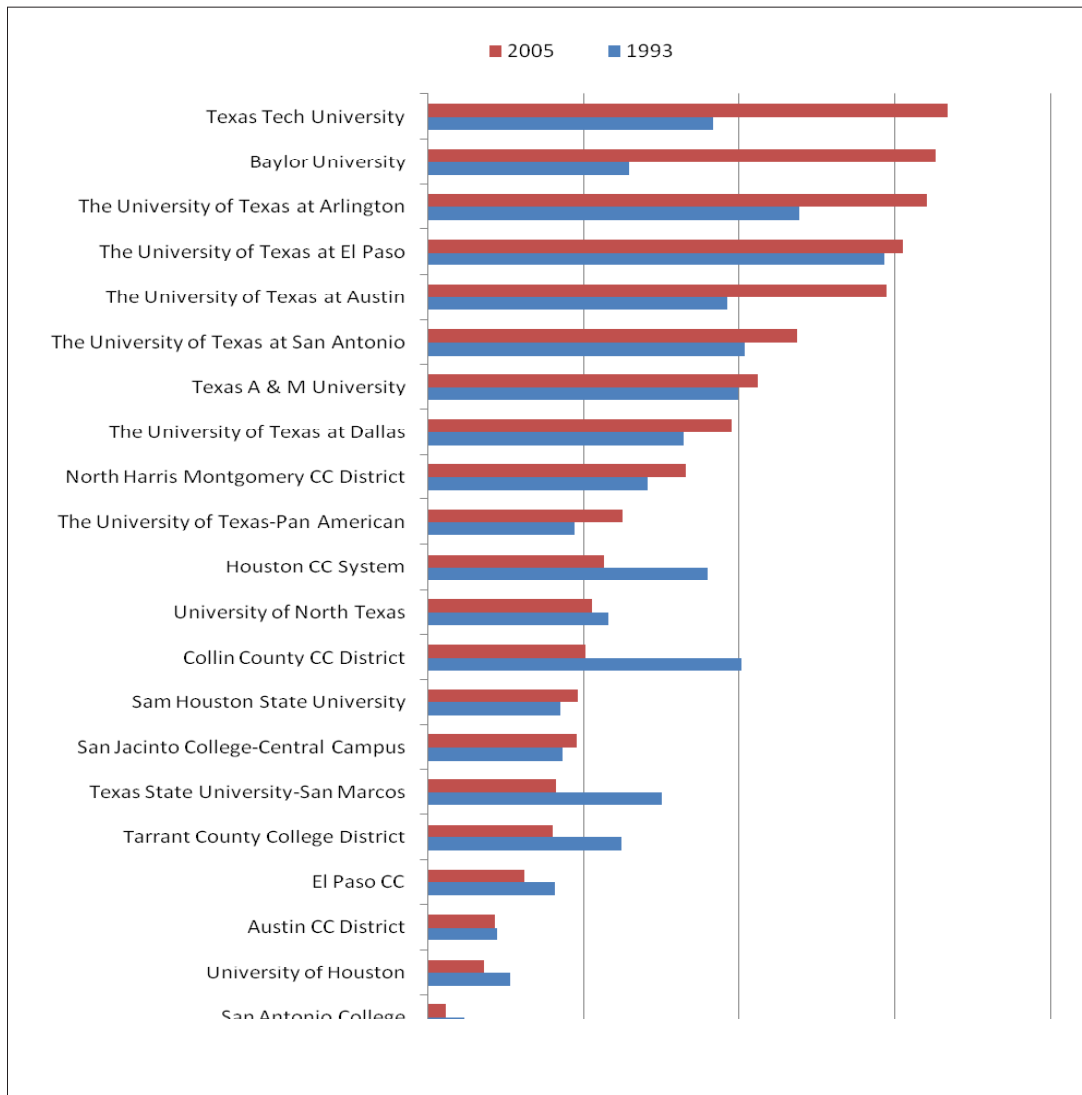
category, reporting the number of executive staff per student in 1993 and 2005.

The change in executive/managerial/administrative staff per 100 FTE students from 1993 to 2005 is shown in Chart 28. There is a real dichotomy of results. The administrative staffs and their 4-year public schools listed in Chart 28 experienced an 18% increase in administrative staff while 2-year schools saw a 24% decrease. The salaries of these added staff members at Texas public 4-year institutions are quite expen-

sive, which further drives up university costs. Note the iconic flagship schools—The University of Texas at Austin and Texas A&M University—both had sizable increases in the number of administrators relative to the number of students—especially UT-Austin.

Over the same period, **Chart 29** shows that at those schools listed, on average, the number of full time faculty per 100 FTE decreased slightly. As Texas 4-year public schools were adding additional administrators, they were holding faculty staff-

Chart 28 - FTE Executive/Managerial/Administrative Staff per 100 FTE Students



Sources: IPEDS. CCAP calculations.

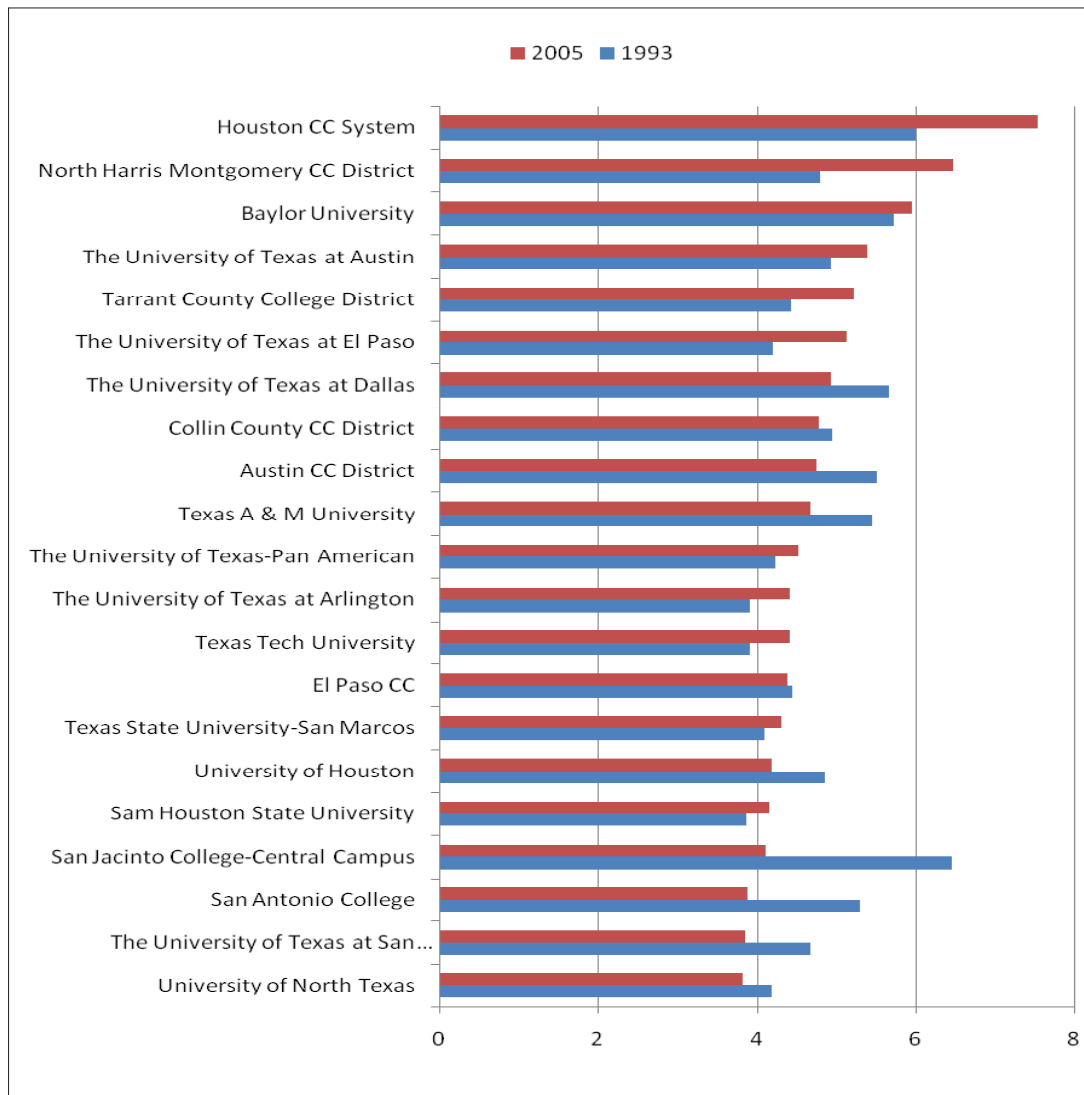
ing levels constant, or even slightly decreasing them. It is a particularly egregious practice at Texas A&M, but observable elsewhere.

It is interesting to compare the enrollment trends with the change in the number of executive/managerial/administrative staff per student over the last decade. As was noted earlier, the largest increase in enrollment occurred at 2-year schools.

Thus, enrollment is increasing faster at those schools which appear to be cutting back on administrative staffing levels per student. Why are there almost three times more administrative staff per student at Texas Tech University than at the Houston Community College System? And why have administrative staffing levels increased rapidly at Texas Tech while those same staffing levels have *decreased* at the Houston

Community College System? It's certainly not due to rapid increases in enrollment because while enrollment at Texas Tech increased by only 22% from 1980 to 2005, it increased by 205% within the Houston Community College System during this same time period. As an average, the 4-year public schools shown in Chart 28 increased executive/administrative staff per student by 19% from 1993-2005, while those

Chart 29 - FTE Faculty per 100 FTE Students



Sources: IPEDS. CCAP calculations.

2-year schools listed *decreased* such staff 24% over the same period.

Faculty Salaries

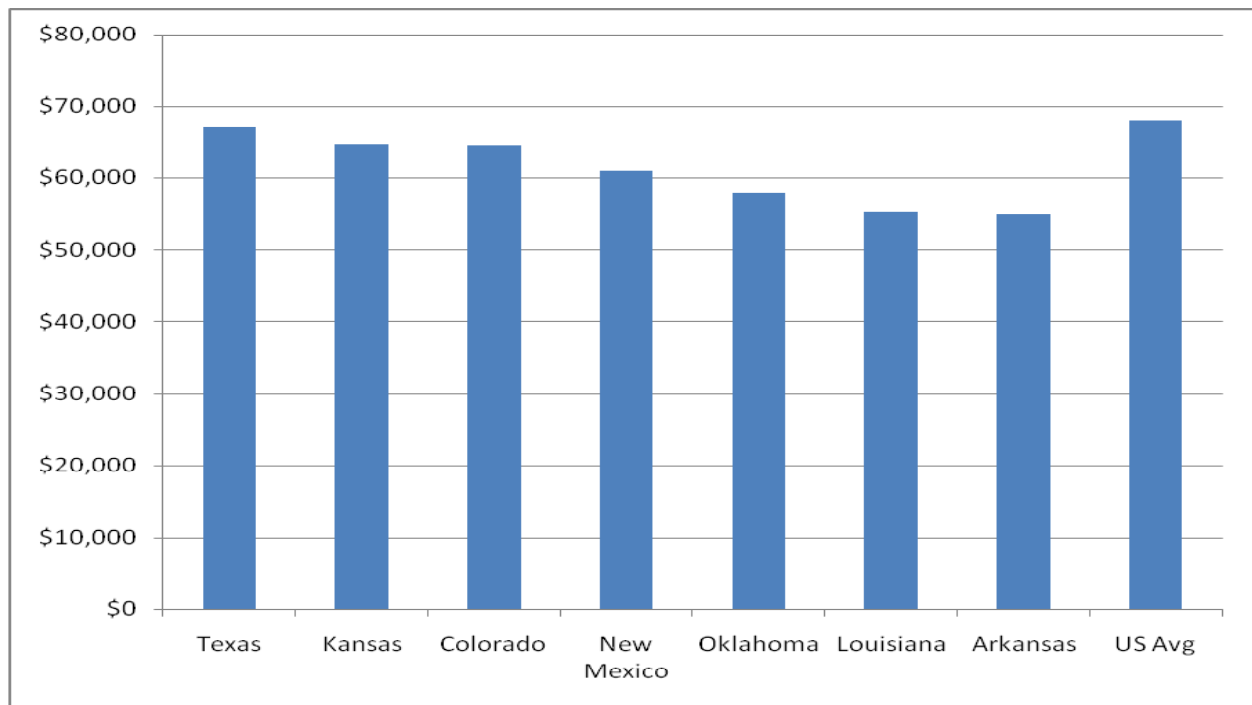
Chart 30 shows that the average salary of faculty (on 9/10 month contracts) at Texas 4-year public institutions are higher than any neighboring state. However, they

fall about \$1,000 below the national average of \$68,000 per year. The same case holds when examining salaries by faculty rank. Salaries of full, associate, and assistant professors all were higher in 2005 than any neighbor, but still below the national average. Regression analysis (Table 6) attempts to predict inter-

state variation of average salary levels of full professors at 4-year public institutions.¹⁶ Residual results of this equation suggest that full professors at Texas public 4-year schools are actually underpaid by around \$9,300 per year of what would be expected of other states with similar variables. However, as noted

¹⁶ Regression results for inter-state variations among full professor salaries at public 4-year universities. Dependent variable data from the Digest of Education Statistics (Table 244). Data for independent control variables is from a variety of sources, notably the *Grapevine* Data System, the Bureau of Economic Analysis, the *Digest of Education Statistics*, Postsecondary Education Opportunity and the U.S. Census Bureau.

Chart 30 - Average Salary by State, Full-Time Faculty at 4-Year Public Institutions, 2005-06



Source: Digest of Education Statistics.

above, the University of Texas System Board of Regents has pledged increased endowment spending to the 5% level, with much of this \$27 million increased spending designated to producing and retaining quality faculty.¹⁷ This and other initiatives will likely augment salaries, pushing Texas faculty salaries further beyond that of neighbors, and at least somewhat more in line with national averages.

Table 6 reveals some other interesting information. On average nationally, every one dollar of new tuition revenue per student is associated with roughly two dollars higher annual salaries for full professors; similarly, a dollar more in state appro-

priations per student is associated with a \$1.46 higher annual salary for full professors. This suggests that the push by colleges for greater resources through tuition hikes and state appropriations is likely at least partially motivated by a desire to improve the economic status of the faculty and staff.

Chart 31 shows the growth in faculty salaries over time. Overall, real faculty salaries in Texas have experienced fairly significant increases over the past 25 years. Of the schools listed, overall salaries increased 33% from 1980-2005. Salaries at public 4-year schools had slightly higher growth, averaging 36%, while 2-year schools experienced slightly smaller growth

at 27%. It is interesting to note that there was only small growth in salaries from 1980-1990, but much more substantial increases between 1990 and 2005. At some schools—notably Texas A&M—the increases were truly quite large—well over one-third in a 15 year period.

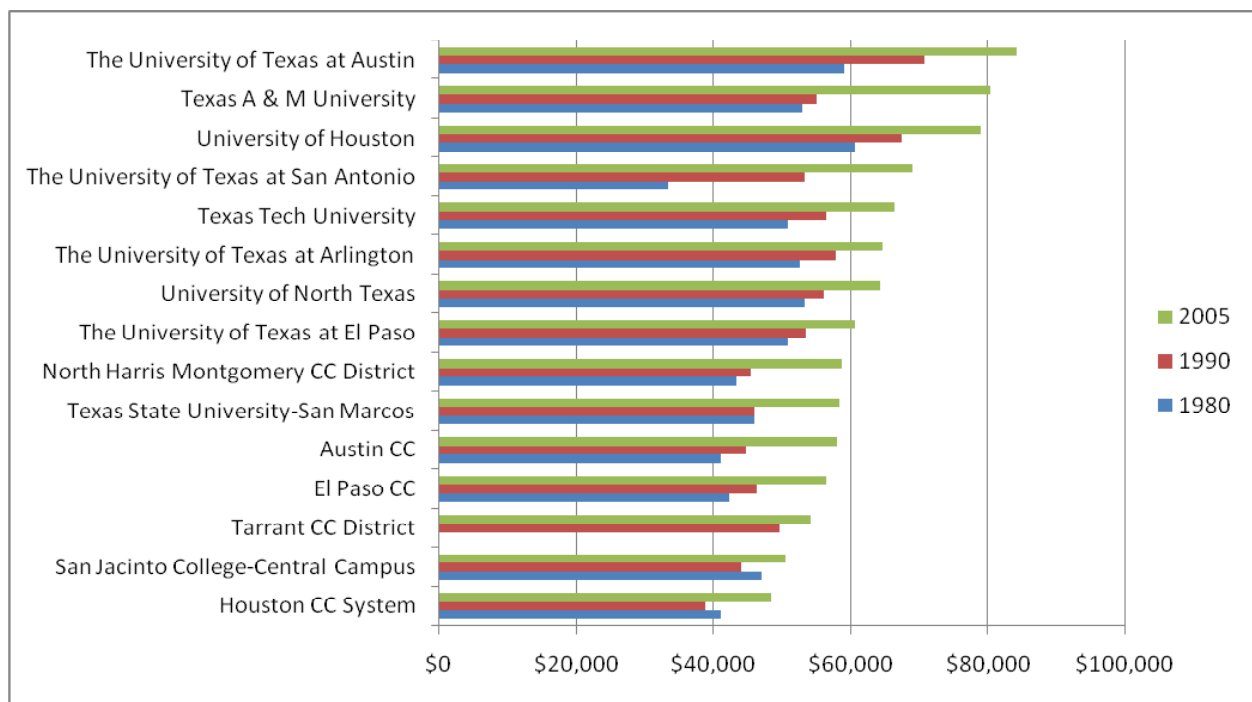
While the faculty at The University of Texas at Austin is the highest paid, the greatest increases were at UT-San Antonio with growth of 109%. Other schools with growth from 1980-2005 greater than 40% were Texas A&M (52%), UT-Austin (42%), and Austin Community College (41%).

¹⁷ University of Texas System News Release, "UT System Regents Revise Distribution Policy of the Permanent University Fund" (Feb. 7, 2008) <http://www.utsystem.edu/news/2008/UTS-PUFDistribution-02-07-08.html> (accessed Feb. 22, 2008).

Table 6 - Professor Salary Regression Results

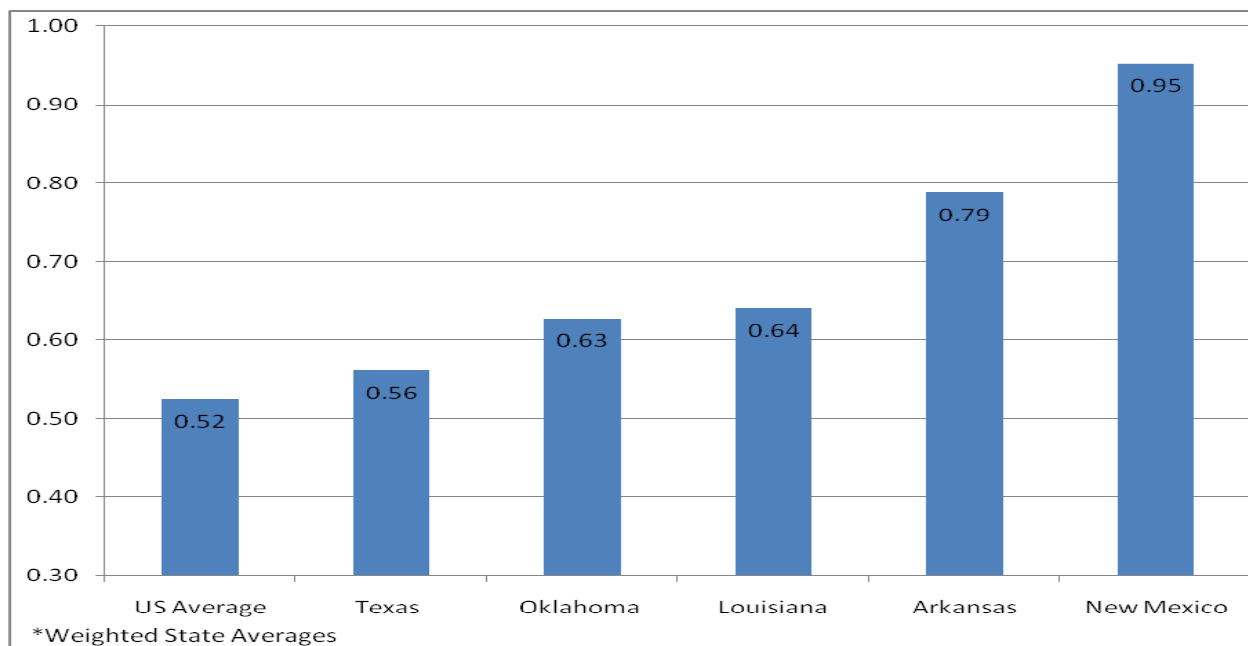
Dependent Variable: FULL PROFESSOR SALARY (PUBLIC) Method: Least Squares -- Sample: 150 -- Included Observations: 50				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	26075.59	16082.87	1.621327	0.1128
Avg Public Tuition	2.011977	0.981492	2.049917	0.0470
State Appropriations per FTE	1.462817	0.516790	2.830584	0.0072
Personal Income RPC	0.621130	0.389430	1.594971	0.1186
% Union Membership	-45976.21	27799.67	-1.653840	0.1060
FTE Students	0.058081	0.012164	4.774992	0.0000
Student-Faculty Ratio	931.7130	573.2044	1.625446	0.1119
% Private Enrollment	-13900.79	12191.17	-1.140234	0.2610
% Voting for Kerry	47208.80	21916.64	2.154016	0.0373
Pell Grant Dollars per FTE	-6.354957	3.689424	-1.722479	0.0927
R-squared	0.705111		Mean dependent var	96998.22
Adjusted R-squared	0.638761		S.D. dependent var	13212.94
S.E. of Regression	7941.400		Akaike info criterion	20.97442
Sum Squared Resid	2.52E+09		Schwarz criterion	21.35683
Log Likelihood	-514.3606		F-statistic	10.62713

Chart 31 - Average Faculty Salary, Real (2005 \$), 9/10 Month Contracts



Sources: IPEDS, CCAP calculations.

Chart 32 - Ratio of Faculty Salary to Dollar of Tuition Revenue for Public 4-year Institutions: Texas & Neighboring States (2004-05 School Year), *Weighted Average



Sources: IPEDS. CCAP calculations.

Overall, both real salaries and salary growth of Texas faculty have been rather typical for American universities. Since faculty salaries have increased at somewhat moderate rates, and since there has not been an explosion of faculty relative to students, it is unlikely that faculty salaries have been the leading contributor to exploding tuition charges in the state.

Since the cost of a university education for students comes largely in the form of tuition, one would expect that student tuition dollars should largely be spent to pay the salaries of faculty members actually teaching them. After all, universities have a number of revenue sources besides tuition that help finance other areas such as new buildings,

sponsored research, etc. However, an interesting exercise is to observe the actual ratio of a school's tuition revenue to faculty salary outlays. Evidence shows that faculty salaries are only a modest proportion of tuition revenues. Nationwide, during the 2004-05 school year, the salaries of full-time faculty accounted for only 52 cents of every tuition dollar at public schools, and roughly only 26 cents per tuition dollar at private schools. **Chart 32** shows that while Texas public schools have spent more of student tuition on faculty salaries than the national average, the state has the lowest figure among neighbors. **Chart 33** shows that this figure is improved for Texas private schools as they spend, on average, 44 cents per tuition dollar on faculty salaries, greatly outpac-

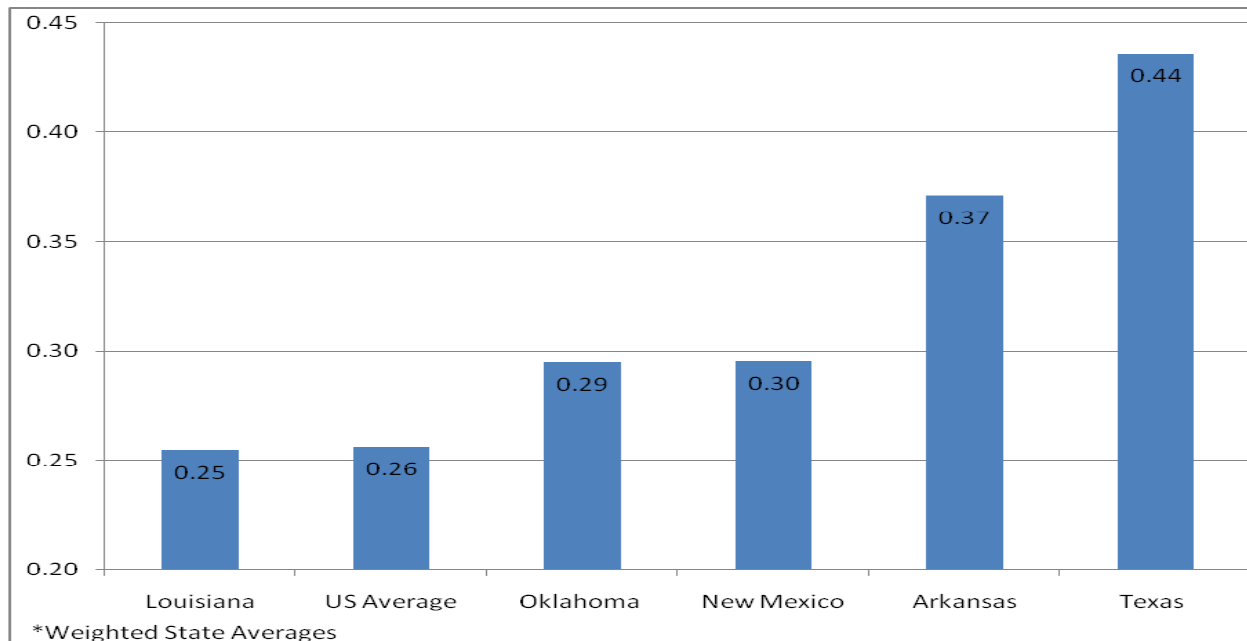
ing both the national average and all neighboring states. Yet, 44 cents at public and 56 cents at private institutions are used for something other than paying the professors that teach.

Does the State Get Its Money's Worth Out of Its Appropriations?

State Attainment and Effectiveness of Appropriations

With Texas' many well known public and private institutions of higher education one would expect the state's population at large to be highly educated. However, this is not the case. The proportion of a state's 25+ year old population possessing at least a bachelor's degree

Chart 33 - Ratio of Faculty Salary to Dollar of Tuition Revenue for Private 4-year Institutions: Texas & Neighboring States (2004-05 School Year), *Weighted Average



Sources: IPEDS. CCAP calculations.

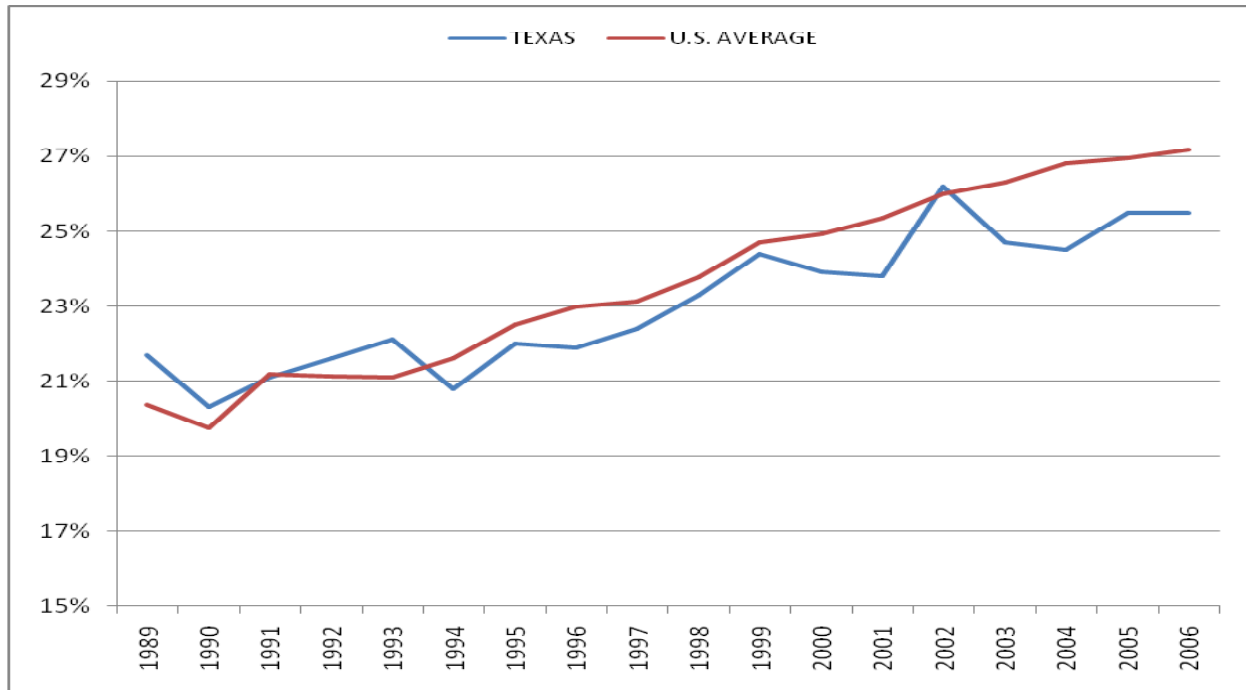
is commonly referred to as a state's educational attainment rate. In 2006, just over one in four (25.5%) of adult Texans possessed college degrees, falling noticeably (slightly less than one and a half standard deviations) below the national average of 27.2%. Furthermore, Texas' attainment rates have generally lagged behind the national average since 1989 (**Chart 34**), especially after 1994. It must also be considered that the national average is an embarrassing statistic in itself as across the nation less than one in three American adults is a college graduate.

State legislatures appropriate taxpayer dollars to public universities in an attempt to benefit the state at large by attaining a higher level of citizen education. To measure the

effectiveness of a state's appropriations in maintaining a high educational attainment level among its population, we have calculated a statistic called the "Appropriations Effectiveness Ratio." This is an index figure calculated by dividing a state's attainment rate by the amount of state appropriations per capita devoted to higher education. It is then indexed around a national average of 100. As is evident from **Chart 35**, Texas' index score of 95.1 ranks higher than all neighbors, but still falls below the national average. This score means that Texas spends \$8.31 per capita on higher education for each 1% of its population possessing a bachelor's degree, whereas the average state spends only \$7.52 per capita to accomplish the same thing.

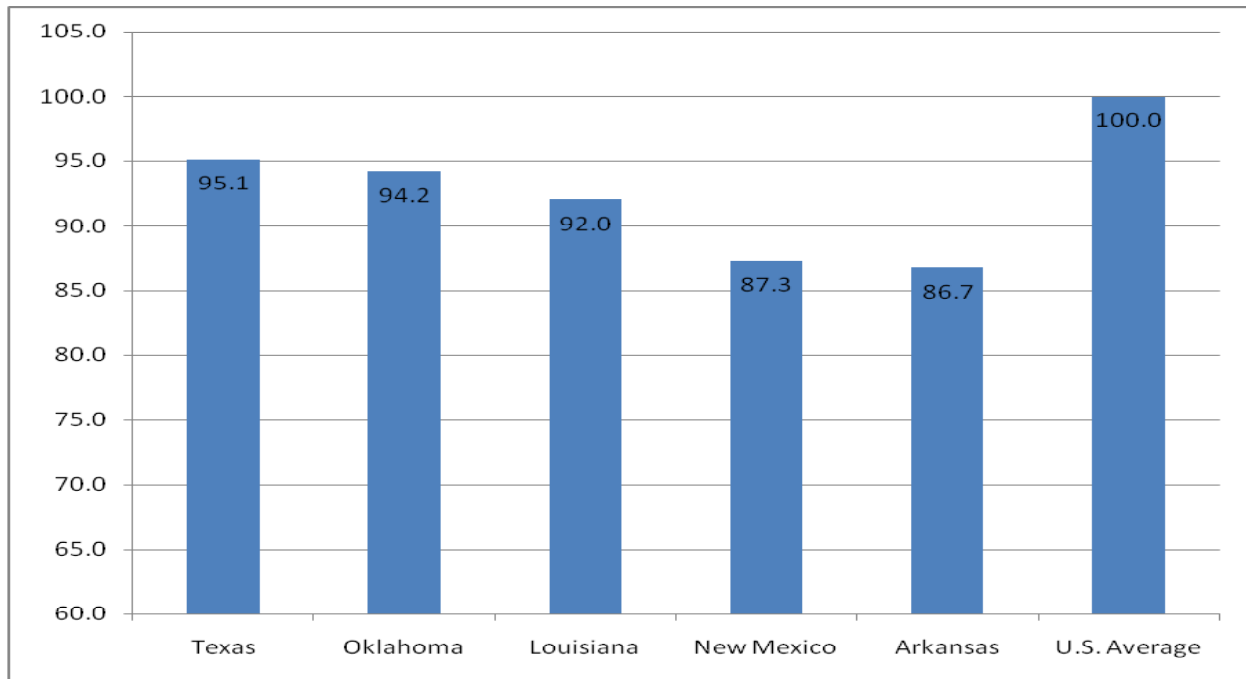
This analysis assumes that appropriations are the only significant factor in explaining a state's educational attainment. In reality this certainly is not true, but such an assumption allows us to analyze output per public dollar spent. To gain a more accurate and complete view of interstate variation among educational attainment levels, we ran a least squares regression equation controlling for a number of variables including personal income growth, SAT scores, and migration rates. The results are included in **Table 7**, and actually show that state appropriations are not a significant factor in explaining educational attainment. Similar to economic growth—as discussed earlier—state appropriations *do not* appear to have any positive impact on a state's educational attainment.

Chart 34 - Texas vs. U.S. Average: Educational Attainment, 1989-2006



Sources: U.S. Census Bureau. CCAP calculations.

Chart 35 - Texas & Peer States, Appropriations Effectiveness Index, 2006



Sources: Grapevine Data System Illinois University, U.S. Census Bureau. CCAP calculations.

Table 7 - Educational Attainment Regression Results¹⁸

Dependent Variable: ATTAINMENT_2006				
Method: Least Squares -- Sample: 150 -- Included Observations: 50				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-0.192214	0.194486	-0.988320	0.3291
Avg Appropriations (real per capita)	4.40E-05	9.60E-05	0.458053	0.6495
Dummy Private Tuition	-0.025700	0.016953	-1.515976	0.1376
Migration Rate	-0.361961	0.126854	-2.853377	0.0069
Growth in Real per Capita Personal Income	0.096102	0.032358	2.969940	0.0051
% of 18-24 Population Enrolled in College	0.132610	0.104186	1.272827	0.2106
Avg SAT Composite Score	0.000353	0.000172	2.051185	0.0470
% Who Take SAT	0.129383	0.046340	2.792028	0.0081
Hispanic Population	0.138476	0.049452	2.800189	0.0079
Avg Poverty Rate	-0.741848	0.181734	-4.082046	0.0002
Avg Unmarried Households	0.632664	0.315794	2.003410	0.0521
R-squared	0.766965	Mean dependent var		0.271820
Adjusted R-squared	0.707212	S.D. dependent var		0.052325
S.E. of Regression	0.028313	Akaike info criterion		-4.099438
Sum Squared Resid	0.031264	Schwarz criterion		-3.678793
Log Likelihood	113.4859	F-statistic		12.83566
Durbin-Watson Stat	1.361253	Prob(F-statistic)		0.000000

The above regression equation predicts a level of educational attainment that would be expected for each state based on the different variables controlled for. By examining residual values (deviation of appropriations from that predicted) for this equation we can see how the state's actual attainment rates compare with what national behavioral norms predict. **Chart 36** below shows the percentage at which Texas and its neighbors fall above or below such predicted attainment rates. Texas is the most underachieving state of any neighbor. While the

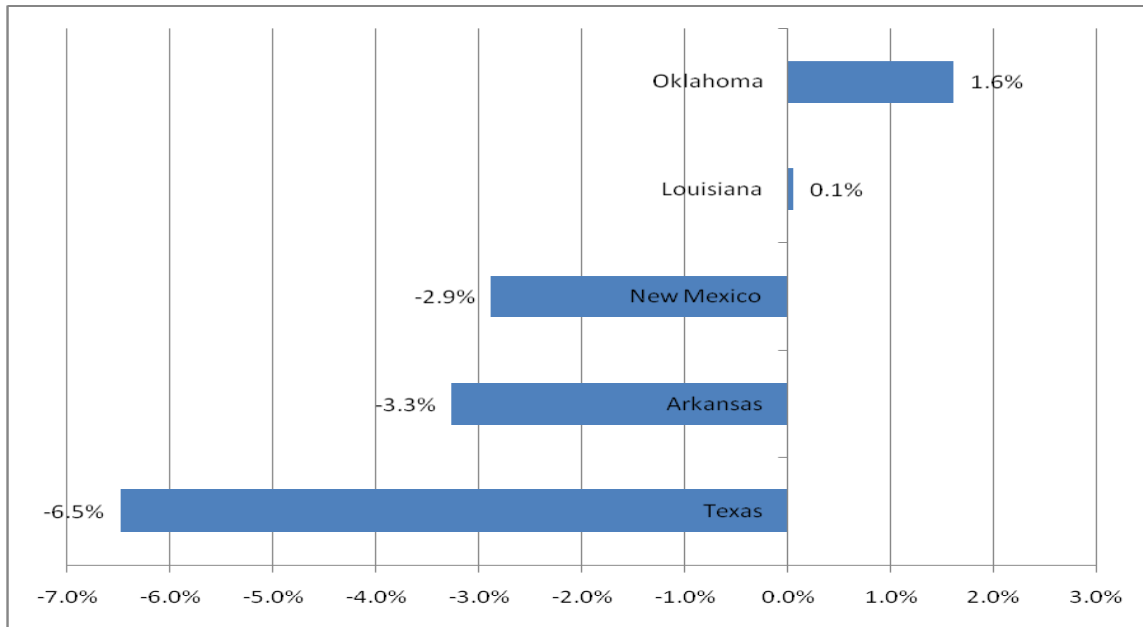
model predicts that 27.3% of Texas' adult population would have a college degree, in reality the figure is only 25.5%.

One factor for underachieving attainment rates is likely the state's poor graduation rate. **Table 8** shows that the 6-year graduation rate at Texas schools was only 43.3% in 2005 compared with 52.2% nationally. The national average itself is frightfully low—and that allows students six years to graduate from a 4-year college. This suggests that vast resources are being wasted trying to

educate people who are unwilling or unable to grasp the opportunity of college. The sharp institutional variation in graduate rates suggests the cost effectiveness of schools cannot be ascertained by looking at per student spending data alone—the inputs into learning (cost of schooling) has to be related to outputs (whether students graduate, and ideally what they learned). Such high attrition is also quite costly to both students and taxpayers. Completing half the requirements of a degree does not generally render a student much—or any—better off economically than

¹⁸ Regression Data from a number of sources including: U.S. Bureau of the Census, the *Grapevine Data System*, the Bureau of Economic Analysis, the *Digest of Education Statistics*, and The College Board.

Chart 36 - Percent Difference of Predicted and Actual Educational Attainment Rates Based on Regression Modeling, 2006



Sources: Residual results from Table 7 regression equation. For regression data see footnote 18. CCAP calculations.

had he/she not even begun pursuing that degree. Thus, there is little or no benefit gained from the investment of resources into that student's education. A 2007 draft study by the Higher Education Research/Policy Center estimates that non-graduating students cost the state of Texas, and in turn the state's taxpayers, approximately \$748 million per year.¹⁹ It is clear that vast resources are being wasted financing students who never graduate.

A press release²⁰ from The Board of Regents for the University of Texas System indicates the system has attempted to address such low graduation

rates. They launched an initiative in 2006 to increase 6-year graduation rates at system schools with some success. According to the release, six of nine institutions recorded gains in 5-year graduation rates, averaging a 4% increase. While this is an encouraging sign, much more needs to be done throughout the state to help address what may be the biggest problem facing higher education in Texas.

Earlier in the study, Chart 2 showed that for every 100 Texas high school freshmen, just over 12 will have graduated from any level of college within 10 years. This ranks the state

among the worst in the union—44th of the 50 states. Certainly the state's poor college graduation plays a part in this statistic. However, data suggests that part of the problem also lies in the state's secondary education system. Texas' high school graduation rate in 2004 of 67.7% is lower than the national average and all neighboring states beside New Mexico. The college continuation rate is even worse with only 51.9% of high school graduates continuing on to college compared with 55.5% nationally. These poor figures for Texas' high schools likely explain part of the state's problem concerning low enrollment of col-

¹⁹ Data from a draft report on Texas public institutions of higher education by Dr. Harry C. Stille of the Higher Education Research/Policy Center, Inc. in Due West, SC.

²⁰ Press Release from the University of Texas System Board of Regents, http://www.utsystem.edu/news/features/grad_rates_summer07.htm (accessed Jan. 2008).

Table 8 - Texas 6-year Graduation Rates of Selected Public and Private Institutions Compared to State and National Averages, 2005

Selected Public Institutions	2005	Selected Private Institutions	2005
Sam Houston State University	38.7%	Abilene Christian University	57.4%
Texas A&M University	77.3%	Baylor University	72.2%
Texas State University-San Marcos	52.1%	Dallas Baptist University	46.1%
Texas Tech University	54.8%	Rice University	89.9%
The University of Texas-Austin	75.1%	Saint Edward's University	53.8%
The University of Texas-San Antonio	30.2%	Southern Methodist University	71.5%
University of Houston	40.3%	Texas Christian University	69.2%
University of North Texas	43.4%	Trinity University-Texas	73.6%
The University of Texas-Dallas	55.9%	University of the Incarnate Word	35.3%
		Wayland Baptist University	33.0%
State Average*		43.3%	
U.S. Average**		52.9%	

*State average derived from sample of 61 public and private institutions in the state.

**U.S. average derived from sample of 1,464 public and private institutions.

Sources: The Education Trust: College Results Online. CCAP calculations.

lege aged citizens. When combining all these figures it is apparent that many Texas students are falling through the cracks and indeed being left behind.

Equality of Educational Attainment

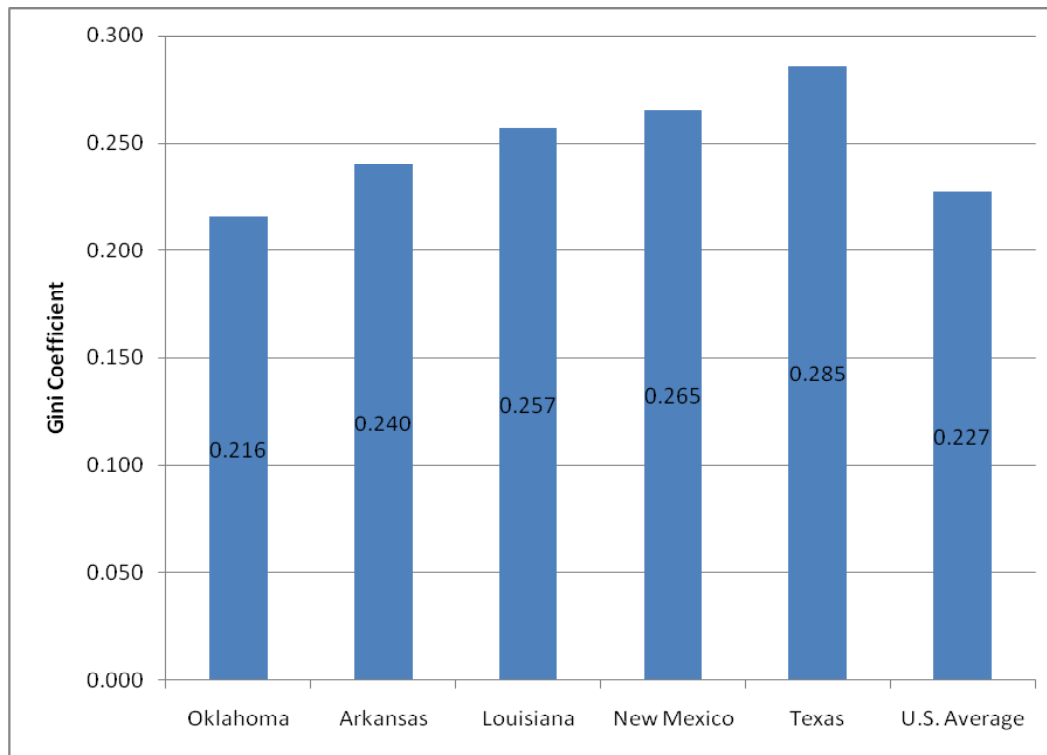
We have shown that Texas falls below both the national average and predicted levels of educational attainment. Yet, an internal assessment of attainment within the state itself demonstrates that the educational inequality among Texans is also above average. A gini coefficient is a statistical measure of inequality ranging from zero to one. A figure of zero indicates complete equality (educational attainment is equally distributed among all people), while a figure of one indicates complete inequality (one person

possess all the educational attainment in Texas).

Historically, Texas has had a larger than average level of inequality in educational attainment. While this inequality has decreased since 1980, the state has consistently remained more unequal than other states. In 2000, Texas had a gini coefficient of 0.285, compared with the national average of 0.227. As indicated by **Chart 37**, Texas' figure was also greater than every neighboring state. Certainly demographic issues are factors in Texas' unusually high inequality. However, this is an issue for continuing scrutiny and concern if the state is to promote a higher level of educational attainment for all Texans.

Rankings: Assessing Texas Institutions

A popular method of assessing institutions of higher education is through annual rankings. Magazines such as the *U.S. News & World Report* (hereafter *USNWR*) annually rate colleges on a number of different variables in attempt to indicate the perceived quality of institutions to potential student customers. As discussed early in the study, *USNWR* ranks the top 130 National (i.e. research oriented) universities and the top 125 liberal arts colleges. Of these combined 255 schools, eight are located in Texas.

Chart 37 - Equality of Educational Attainment as Measured by Gini Coefficients, 2000

Sources: U.S. Census Bureau. CCAP calculations.

In assessing schools, *USNWR* largely uses input based variables. Things such as peer assessment survey results, entering student SAT/ACT test scores, faculty resources and institutional selectivity are considered. Missing from this equation are variables that measure outputs of a school.

CCAP believes that the value added by an institution—as determined by a number of output variables—should be the basis for assessing the quality and ranking of an institution. Measuring the quality of something based solely on inputs is the equivalent of judging the quality of a car based on the amount of steel used in production. In this spirit we have gathered data for all

the top 255 *USNWR* schools and created a new ranking system. We measure outputs through post-graduate career success through listings in the 2008 edition of *Who's Who in America*, student satisfaction with instruction through student ratings of professors on the popular *ratemyprofessors.com* website, nationally competitive award winners by institution and an institution's 4-year graduation rate. Data from *Who's Who in America* and *ratemyprofessors.com* each account for 40% of a school's final ranking. Nationally competitive award winners and a school's graduation rate constitute the other 20%. While the CCAP and *USNWR* rankings are similar in some cases, the rankings do deviate in many cases when us-

ing output variables. **Table 9** below shows the top 10 national public universities and liberal arts colleges as ranked by both CCAP and *USNWR*. **Table 10** specifically lists Texas institutions and their ranks as determined through both ranking mechanisms. Note that rankings of national universities in Table 10 includes both public and private institutions, while Table 9 only examines public schools. Also, Texas' two liberal arts schools appearing on the *USNWR* 2008 rankings—Southwestern University and Austin College—are omitted by the CCAP rankings because neither school had any "hits" in our sample of *Who's Who* listings.

Tables 9 and 10 show mixed results for Texas institutions. A number

Table 9 - Top 10 National Public Universities and Liberal Arts Colleges, Ranked by CCAP & USNWR, 2008

National Universities	CCAP Rank	USNWR Rank	Liberal Arts Colleges	CCAP Rank	USNWR Rank
U of Virginia	1	2	Williams College	1	1
U of California-Berkeley	2	1	Amherst College	2	2
U of North Carolina-Chapel Hill	3	5	Wellesley College	3	4
College of William & Mary	4	6	Swarthmore College	4	3
U of California-Los Angeles	5	3	Haverford College	5	10
U of Michigan	6	3	Washington & Lee University	6	15
U of Alabama	7	42	U.S. Military Academy	7	22
U of Washington	8	11	Barnard College	8	30
U of Texas-Austin	9	13	Whitman College	9	37
U of Georgia	10	20	Wabash College	10	52

Table 10 - Texas Universities, Ranked by CCAP & USNWR, 2008

National Universities	CCAP Rank	USNWR Rank
Rice University	24	17
Baylor University	34	75
Southern Methodist University	43	67
U of Texas-Austin	44	44
Texas A&M University	49	62
Texas Christian University	81	108

Sources: USNWR Best Colleges 2008, 2008 Edition Who's Who in America, ratemyprofessors.com website, Nationally Competitive Awards websites, IPEDS, CCAP calculations.

of schools fare much better when ranked by CCAP. Under the CCAP rankings the University of Texas-Austin ranks as the 9th best national public institution in the country as opposed to the 13th when ranked by USNWR. Although not listed in Table 9, Texas A&M also experiences enhanced rankings among national public institutions ascending from 23rd on the USNWR list to 11th under the CCAP ranking scheme. Table 10 shows that many Texas schools also rank better according to CCAP.

Most dramatic is Baylor whose high *ratemyprofessors.com* scores help catapult the school from 75th to 34th. However, while Rice University is the state's top ranked school under both methods, the school suffers somewhat under the CCAP rankings due to a low number of *Who's Who* hits in our sample.

While it is true that a number of Texas schools appear on these rankings—and many do even better under the CCAP rankings—as indicated ear-

lier the state is underrepresented in "top schools" compared with other high population states. Texas' eight schools appearing on the USNWR list pales in comparison with California's 21, New York's 25, and even Illinois' 11. In fact, of the five most populous states in the Union, Florida is the only state with fewer top schools (as defined by appearing on the USNWR list) than Texas.

Texas places a relatively high emphasis on higher education, suggesting that any deficiencies in the Texas higher education system are probably not the result of serious public funding deficiencies.

18 Ways to Reduce Spending on Higher Education in Texas

This report has suggested that the cost of a higher education in Texas is expensive. Average tuition charges at both public and private schools are higher than those of any neighboring state, and tuition has experienced explosive growth even beyond what has been experienced nationally. Total revenues per student are likewise higher in Texas than in neighboring states. Despite this, the state suffers from a low percentage of its adult population possessing college degrees and has an unusually high attrition rate.

What we have failed to do to this point, however, is delineate some ways which can be used to reduce per student costs without reducing educational quality. In other words, we have said that productivity is lagging, but have not had specific suggestions how that might change. We remedy that omission below by listing 18 ideas for reducing the cost of Texas' higher education system to students and society.

1) *Stop increasing institutional subsidies—indeed begin reducing them.*

We have argued strongly that the alleged externalities justifying public subsidies for universities are far smaller than is usually claimed. Similarly, the notion that public subsi-

dies promote economic equality is likewise questionable. The most lavish subsidies per student are concentrated on schools, most notably UT at Austin and Texas A&M, with comparatively small populations of lower income students. Thus the benefits to taxpayers of the large and growing subsidies to state universities are somewhat dubious, and probably less compelling than providing for other public needs—or even tax relief to Texas taxpayers.

As with health care, a major reason for the cost explosion in higher education is that third parties—such as the State of Texas—pay many of the bills. When someone other than the consumer or producer is providing funds to maintain an operation, there are few if any incentives for the primary parties to want to conserve resources or even improve quality. The non-profit nature of most higher education adds to the problem—there is no “bottom line” that provides goals for providers to achieve.

As other public needs grow, in particular medical care for the aging and indigent, the pressures on state government budgets will accelerate as well. While taxes in Texas are not uncharacteristically high, raising taxes to fund a relatively inefficient higher education sector is not a recipe for economic success. For example, pressures for great higher education spending almost certainly increase the need for income

taxation, which a good deal of empirical evidence suggests would be harmful to the state's economy. Hence natural tendencies that are at work to reduce the higher education share of state budgets we think is a good, not bad, thing.

2) *Move to funding students rather than institutions.*

There is considerable evidence that when states give money to universities, they use a large portion of the funds for purposes other than those that the policymakers assume the funds will promote. This report has documented this with respect to Texas. In particular, the leading *d'être* of most state universities is providing postsecondary training to young residents of the state. In a model where tuition levels are relatively high but where the state provides financial assistance in the form of vouchers or scholarships to students, schools are likely to be far more student oriented. The bias in favor of research and against teaching which prevails in most four year universities is likely to be modestly reduced. Schools that are tuition driven will try harder to please their clientele—or lose revenues.

Vouchers can be tailored to meet social objectives. They can be made progressive, as once proposed by Robert Reich.²¹ Students from higher income families would receive small or even no vouchers, whereas those from low income families

²¹ Robert Reich, “The Case for Progressive Vouchers,” *The Wall Street Journal*, September 6, 2000.

would receive generous scholarships that would lower the cost of college to levels at or lower than under the current system. Done appropriately, the progressive voucher approach can lower state outlays for higher education while expanding student access.

Vouchers can also be made performance-based. They can be cut off after four years of full-time study—providing enormous incentives for students to finish school in a timely fashion—and leading to reduced demand for schools that make it difficult for students to graduate within four years. Vouchers (which for political reasons probably should be called something else, such as scholarships) can be enhanced for superior academic performance. Student subsidies can be made proportionate to the expected gains the students are receiving from the education. Vouchers can grow over time by the general inflation rate—no more, reducing the incentives for schools to raise tuition by larger amounts.

3) Provide market incentives to increase utilization of facilities and equipment.

University physical facilities are typically far less utilized than similar facilities in the for profit sector (either education or non-education related). For example, classroom buildings typically seldom operate at more than 25% of capacity in the summer months, or at other vacation periods (breaks at Christmas or in the spring). At many campuses, the facilities are only modestly used on Fridays, early in the morning, or in the evening. As a consequence,

the capital costs to universities are higher than they could be with greater facility utilization.

Universities should be encouraged to charge various campus units for use of space. For example, suppose UT at Austin gives its various units an additional \$40 million a year in budget funds, but makes them pay rent on those facilities—rent that based on previous usage would total \$45 million. Then the central administration would charge high rental charges for use of classrooms from 9 to 4 p.m., Mondays through Thursdays, but low rents for use at other times. Large offices with nice views would have higher rents than small inside offices without windows. Units would have to rent space more in non-prime times to stay within the \$40 million of rental funds. Units insisting on providing prime time classes exclusively would have to reduce spending on something else. Units willing to teach lots of off-hours and summer classes could actually make money on the deal—paying less out in rent than the rental allocation. Of course, experience over time would force some fine-tuning in rents, but the idea would provide incentives to use facilities more efficiently. The same could be done with dormitory facilities—charge lower rents for use in summer months than during the year.

4) Align tuition charges more closely with demand and supply conditions.

There is always an issue whether state university tuition rates should be set centrally or by leaders at each individual institution. In principle, we favor the latter approach, as the de-

mand for, and cost of, education varies significantly from campus to campus. Beyond that, however, the same thing applies within campuses. A strong case can be made to have differential tuition charges for each college within universities or, more radically, even for each course selected by students. It would cost less to take large lecture classes taught by assistant professors than small senior or graduate seminars taught by senior (and expensive) faculty.

In a free market economy, the price of an engineering education would almost certainly be more than that of getting a degree in English. On the supply side, the cost of offering courses in English is relatively low—professors are relatively cheap, and there is virtually no supplemental high cost equipment needed to carry out instruction. Engineering, by contrast, is more costly. Professors are higher paid. There are substantial equipment requirements. On the demand side, since engineers command greater salaries than English majors, we would expect demand to be more robust for engineers. For engineers, demand is high and supply is low, so we would expect higher equilibrium prices (where demand and supply are equal). For English majors, supply is high but demand is somewhat lower—factors leading to relatively low equilibrium prices. To try to get some of the efficiency emanating from market signals, universities might well increase tuition for engineering students, but lower it for English majors.

Of special importance, graduate tuition fees should rise relative to undergraduate ones, since in virtually every discipline the costs of offering graduate instruction is higher—classes are smaller and professors tend to be the most highly paid. The heavy subsidization of graduate education that currently occurs would become more transparent in a system of pricing services more in keeping with market forces.

5) Increase the proportion of students attending community colleges.

A significant reduction in per student costs in Texas could be obtained by simply increasing the portion of students attending 2-year as opposed to 4-year schools. Costs are dramatically lower per student in the 2-year institutions, and an increase in the relative importance of 2-year schools would dramatically reduce costs.

This can be illustrated by a little hypothetical but realistic example. Suppose it costs \$10,000 per student to educate community college attendees, but \$20,000 to educate students at 4-year institutions. Suppose originally one-third of students attended 2-year institutions, and two-thirds attended 4-year institutions. Suppose over the course of a few years, the ratio became one-half of students attending each type of institution. For every six students, originally it cost \$100,000 to educate them (\$20,000 the two 2-year students, \$80,000 the four 4-year ones), or an average of \$16,667 per student. After the shift in enrollment, it costs \$90,000 to educate the same students—\$30,000

for the three in 2-year institutions, and \$60,000 for the three in 4-year schools. Average aggregate per student costs fall 10%, to \$15,000 per student.

The shift towards 2-year schools is already occurring in Texas, as evidenced by the largest enrollment increases being experienced at such schools. However, it could be expanded dramatically. The case for doing so is enhanced by the high attrition rates among entering students at all types of institutions, as outlined above. Lots of students go to expensive 4-year schools and then quit or flunk out. There is abundant evidence that things like high school grades and college examination scores (ACT or SAT) are good predictors of college success. Why not force students of low predicted success to attend 2-year schools—or to pay a higher tuition if they insist on attending right out of high school—and then make it easy for them to transfer to 4-year colleges after two years if they have done an acceptable job academically? The mechanics of freezing 4-year undergraduate enrollment are easy—simply refuse state subsidies for more than the current level of enrolled students, forcing increases in enrollment to show up in the 2-year institutions.

6) Make it easy and not-costly to transfer between Texas public institutions.

Following from the previous point, students correctly perceive that it is costly to transfer from college A to college B. Typically, the second institution denies credit for some of the work taken at the first school—

prolonging the student's education and increasing the cost of a degree. Often the reasons for the denial of credit have little true academic rationale. For example, institution A might require students to take a course in American history as part of its general education requirement, while institution B requires a course in Ethics. A student transferring from A to B must now take Ethics, even though she has a superior background in American history. Both subjects are solid, legitimate parts of a general education curriculum, but a student is, in effect, penalized by the non-conformity of the curriculums of the two schools. New Jersey recently required state schools to accept all courses with passing grades from other state institutions—period. There are some arguments against this, but on the whole we should be promoting greater mobility of students. Greater mobility, in turn, should lead to higher ultimate graduation rates and greater competition between institutions—all good.

There are various ways other than a legislative edict similar to New Jersey's to address this problem. Schools could work together on a common core curriculum, or at least on a list of courses that are acceptable as replacements for required core courses. Schools could move to a common numbering system—elementary microeconomic theory will be called Economics 1 at all schools, for example.

We are aware that institutions typically resist this recommendation on the ground it infringes on institutional autonomy, and leads to over-

centralization of curricular decisions. These claims have some validity. Selective institutions like UT at Austin might think it cheapens their degree if they have to accept two years of credit from 2-year schools which teach courses that are less rigorous and use less demanding standards to measure performance. And probably some limits need to be placed on transfer of credit to deal with the most egregious possible problems. For example, courses that are remedial in nature and essentially offering material taught in high school should not be subject to transfer or credit (or, we would argue, award of initial credit in the first place). If a student transfers from Education at one school to Engineering at another (which, to be sure, is highly unusual), it is not unreasonable for the second institution to require a bevy of math and science courses traditionally required of all engineering students. Having said all of that, however, there should be a bias in the direction of accepting credit, a policy of liberal transfer, and an acute awareness of the costs that institutional rules have on desirable educational objectives, such as timely finishing of degrees and the promotion of both competition and cooperation between institutions.

7) Provide incentives to both students and institutions for timely degree completion.

Texas has a relatively low proportion of adults with college degrees. One factor is high attrition—college drop-out rates. Earlier, we suggested that with student vouchers incentives could be provided for good performance, and vouchers

could be withdrawn after, say, four years of full-time attendance. Similarly, institutional subsidies should be cut off for all students with greater than four year attendance.

The problem also exists at two year colleges and in graduate schools. The long time to complete a Ph.D. degree is a national scandal. Harvard dramatically reduced the time for humanities students receiving a Ph.D. by simply penalizing departments with large numbers of Ph.D. candidate of eight, nine, ten or even more years standing. At the state level, subsidies should be withdrawn for Ph.D. candidates after no more than four years. Charging higher tuition for fifth or sixth year students is another option—these students tend to take large numbers of moderately costly advanced classes.

8) Promote good high school students taking college courses for concurrent credit.

The Advanced Placement program is an excellent opportunity for Texans to take high school courses for college credit, and participation in AP courses should, in general, be encouraged for high school students with reasonably high probabilities for success in AP classes. Beyond that, however, an expanded opportunity for good high school students to take actual college courses during their junior and senior years in high school would potentially save dramatically on college costs, not only to the student, but the taxpayer as well. Some states have generally reported above average college level performance from the thousands of students who annually take college courses while in high school,

and have recently announced expansions of the program. Incentives need to be placed on colleges to admit such students, and also high schools should not be allowed to impede such dual enrollments by penalizing participating students.

9) Encourage schools to get out of non-academic activities.

Universities and colleges are created to promote the production and dissemination of knowledge and ideas. Yet many schools devote vast resources and energies into doing other things—offering housing services, feeding thousands of students, entertaining the community in various ways, etc. As a rule, most of these activities can and are often provided in highly efficient manners by private providers. It is particularly inappropriate to subsidize these activities from general university funds, or, vice versa, to force students to pay high room and board charges and use surpluses to fund academic programs.

Universities can divest themselves of these programs in a variety of ways. For example, they can sell or engage in long-term lease arrangements with respect to dormitories or contract out food services to private providers. Some activities, of course, have both an entertainment and educational value—music and theater concerts and presentations may help students in those areas learn and mature, but also are a revenue source. Intercollegiate athletics are the most controversial area. This study is not the venue to evaluate the efficacy of these programs in detail. It is very difficult to justify on any externality grounds, howev-

er, taking funds provided by tuition or taxpayer support and diverting them into intercollegiate athletic programs, and limits on such subsidization may be justified.

Universities should be encouraged to get out of the service delivery business in a variety of areas not mentioned above—building maintenance is a good example. Although it is an academic activity, some schools are achieving savings by contracting out remedial education courses to for profit providers of educational services.

10) Reevaluate teaching loads.

Although good statistics do not exist, over time teaching loads have declined in American higher education. The justification for the decline is usually to allow faculty more time to conduct research. There is no doubt that, in principle, doing research is good. Society advances through new discoveries, new ideas, and even new forms of creative endeavor. Yet research has its costs as well as benefits, and a close scrutiny of much institutionally funded research would show that costs often exceed benefits.

For faculty members, they can demonstrate to the broader national and international community competence through research—tangible publications that demonstrate a desire and an ability to extend our frontiers of knowledge. By contrast, knowledge about teaching competence is localized—there is not much inter-institutional discussion of teaching effectiveness. Hence careers are advanced, and, above all, tenure is gained, by “doing” research.

Institutions have lowered teaching loads at great cost. The social goals of affordable instruction are being thwarted by the personal goals of university staff to promote career advancement via lower teaching loads.

The typical professor in the social sciences, humanities, and applied vocational disciplines (education, business, communications, etc.) publishes perhaps one paper a year in a fashion where there are, perhaps, 100 readers. Or, she gives a paper in a session of a professional association attended by, perhaps, 15 or 20 persons. The vast majority of papers have a very limited audience, and deal with esoteric intellectual points of little relevance to the real world. This may be less true in the hard sciences, but even here there are diminishing returns to research investments.

We are dubious of legislative mandates of, say, a nine hour teaching load for all faculty. Nobel Prize winning researchers should not have to teach a lot and perhaps even nothing at all. Similarly, others have a talent for administration that should lead them to teach relatively little. A one-size-fits-all statutory teaching mandate is not advisable. At the same time, there is nothing inappropriate about providing incentives to schools to teach more. It might even be acceptable to say to the non-research oriented schools that make up the bulk of the state's higher education system: the average teaching load of full-time faculty with tenure shall be eight (or nine or 10) hours a week or more, and that hefty fines (reduced subsidies) will be imposed on those failing to

meet the teaching constraint. Institutions, then, can devise their own methods of meeting the mandate.

11) Reduce administrative staff.

The evidence is conclusive that there has been a growth in non-instructional professional type employees in universities—many of whom could be called, roughly, “administrators.” The number of vice-presidents, vice provosts, diversity coordinators, public relation specialists, etc., has soared growing far faster than enrollments. These persons often perform usual functions, but they are tangential to the institutional mission of instruction and research. Corporate America in the 1970s and early 1980s fought growing international competition by downsizing administrative staffs, becoming leaner. Often excessive bureaucracies slow decision-making and make it less innovative and successful.

Again, a one-size-fits-all state-directive mandate is probably not wise. But perhaps state incentive payments could induce greater effort to pare administrative costs—even including bonuses to top university officials who demonstrate they can cut administrative costs without impairing the effectiveness of operations.

12) Reevaluate use of very long-term employment contracts.

We often read of long-term contracts of coaches or even university presidents that have to be abrogated at great cost because of personnel changes. The same thing occurs at a vastly larger level with tenured professors. The issuance of lifetime employment contracts is costly fi-

nancially. The present value of a life-time of salary payments and benefits to a newly tenured professor often is in the millions of dollars. Beyond that, tenured faculty often successfully resist needed changes. Often changing enrollment needs mean a school has too many professors of classics or European intellectual history, but not enough professors with an interest in nanotechnology.

Schools are already hiring a larger proportion of non-tenured faculty, using adjunct instructors and graduate students as well. Whether that is a healthy trend is debatable, but it is propelled by the relatively high cost of tenure track faculty. Tenure does serve an important function—protecting faculty from retribution for their beliefs or their writings. But there are alternative means of offering that protection. Since tenure imposes costs, perhaps faculty demanding tenure should have to pay for it out of a fringe benefit budget of fixed size provided to each teaching employee.

Again, a law abolishing tenure statewide would be highly ill advised. Some faculty members probably already sacrifice some income for the job security that tenure provides—and that is fine. Other faculty are able to provide a diversity of viewpoints about the human condition because of the protection tenure affords. Nonetheless, perhaps institutions should be incentivized to reduce the proportion of instructional resources going to tenure track faculty.

13) Do more centralization of library facilities.

Many research institutions spend

5% or so of their budget on library resources. In the age of the Internet, going to the library to look in books and magazines has become dramatically less necessary. It is increasingly uneconomic for 15 libraries in a state to buy a given \$50 or \$75 book, or even subscribe to a journal for \$150 a year. The Google digitalization project and cooperative ventures like JSTOR have already had revolutionary potential impact for lowering costs for publications. Libraries are already becoming giant Barnes & Nobles/Starbucks type places, with lots of comfortable chairs and computer stations to work, but not a place one goes to derive information uniquely available at that site. Regional libraries serving multiple state universities are probably a good compromise between a radical abandonment of traditional library services and the maintenance of the status quo.

14) Do more central contracting of purchases.

Often schools can derive meaningful savings by jointly purchasing standardized products needed in large quantity such as computers, toilet paper, and chalk, to cite three examples. Schools should be encouraged to work with others to facilitate joint purchases. However, a costly and vast centralized purchasing bureaucracy would probably raise, not lower, costs, and should be avoided. There are limits to the economies of large scale purchasing.

15) Eliminate costly duplication of programs.

There are often three history Ph.D. programs located within 100 miles of one another and where market

forces demand no more than one or certainly two. Institutional pride leads to a proliferation of courses and programs that sometimes is hard to justify on any rational cost-benefit grounds. It is probably not wise, in general, for a central administrative authority to forbid college A from offering major B, but it is not inappropriate for the state to declare that it is only to provide subsidies for students studying a given subject at no more than three schools, and for competition to ensue to determine which schools can offer the program.

Care must be exercised here. One of the strengths of both the Texas and American system of higher education is a diversity of offering and competition for students. Too much “coordination” of programs can stifle that. Yet when third parties (the state) are paying a lot of the bills, it can demand limits of the offerings of some expensive services. It is legitimate and proper for central coordinating bodies to limit state support in areas where widespread duplication of curricular offerings adds to costs.

16) Use technology to lower, not raise, costs.

In American business, technology is viewed as a way of reducing costs. In American higher education, it is commonplace for schools to tack on “technology fees,” arguing technology raises costs. That is usually because new technology (e.g., distance learning, computerized instruction) is superimposed on approaches to teaching similar to those used by Socrates 2,400 years ago.

For all their emphasis on research, schools do very little research into which teaching methods are most effective; for example, can hybrid live lecture-discussion/electronic technology teaching approaches in some cases lead to both higher levels of learning and lower costs? The substitution of capital (e.g., computers) for labor (e.g., faculty) has its limitations, and some human interaction between students and faculty is typically necessary and desirable. Nonetheless, colleges should be nudged into developing more cost-effective technologies. Incentives may be needed to prod reluctant faculty and administrators to act. Noteworthy, for-profit schools operate at a far lower cost per student, typically, than do not-for-profit four year schools.

17) Reduce barriers to entry and increased competition.

For-profit schools often are innovative, efficient, and offer students choices not otherwise available. It is commonplace, however, for them to argue that they have many barriers to entry into the higher education business. Many of these barriers relate to accreditation, and accrediting agencies are typically outside the direct purview of state government. However, state governments sometimes impose barriers themselves, and removing such barriers is desirable in fostering competition and allowing more market-based resource outcomes.

18) Provide more consumer information on college costs and performance.

In order to make good college choices, consumers need full infor-

mation. To allocate public funds appropriately, lawmakers need it also. Yet the public is in the dark about lots of things going on at Texas universities. Detailed financial information should be provided for all. For example, Oregon State puts all check payments online (except for salary checks), a good step in the direction of transparency. Detailed information on what students learn is needed—schools should be able to show in an understandable fashion that allows comparison to peer institutions what students learn while at college—what is the “value added” of the college experience. This should be readily available on college web sites, but also on a centrally maintained web site for all Texas public institutions like that of the Higher Education Coordinating Board.

Colleges should be required to report information on the vocational success of graduates, on the allocation of resources between alternative uses (e.g., undergraduate instruction, research, graduate instruction, student services, administration, physical plant maintenance, etc.) How much are intercollegiate athletics subsidized by university funds? How much was spent on out-of-country travel last year? There are a variety of questions that the broader public has the right to know, and transparency in university affairs should be enhanced.

It is extremely difficult to assess the performance of Texas higher education for a simple reason—there is little information on student outcomes. Do students graduating from Texas universities know materially more than when they en-

tered as freshman? Are they better critical thinkers? Have their values improved—a greater sensitivity to the differences between right and wrong, just and unjust? Are they more engaged with society or even their family and friends than before? How are graduates of, say, Texas A&M University, doing five or 10 years after graduation? In short, what is the “value added” by the college experience? By and large we do not know the answer to that question.

It would seem highly desirable for higher education institutions in Texas (and the nation) to examine students in a fashion that provides some answers to these questions. There are standardized tests of generalized knowledge and/or critical thinking that can be administered: the Collegiate Learning Assessment (CLA), even the ACT and SAT administered again at the end of the college career. Even the National Assessment of Educational Progress exams given at age 17 could be administered to see if learning occurred. Similarly, the National Survey of Student Engagement can be used (and is used by many schools) to give us information on what students do while in college—how engaged they are. A large number of Texas institutions administer the CLA and it is possible to use it to measure the “value added” by each public institution, and report the results to the general public. That needs to be done.

In addition, schools can be far more transparent in conveying all sorts of information about their operations generally not reported in an easy to understand fashion. Detailed

income statements and balance sheets should be issued annually, audited by outside accounting firms. If the press or a think tank wants to know how many shares of XYZ stock the University of Texas owns, or how much Professor X makes, or what the average teaching load of full professors is, that information should be conveyed promptly and accurately. Information on attrition rates, crime rates, postgraduate vocational success and the like should be obtained and reported.

Students need this information to make more informed decisions as to where to go to school. The public has the right to know how taxpayer funds are being used. Donors have the right to know whether their funds are being used in accord with their intent. Universities are given special privileges, such as taxpayer subsidies, freedom from taxes, independence from political interference, etc. Whether those privileges are being abused or not is difficult to say without a full accounting of how resources are being used. Legislative action to encourage outcomes based assessment and transparency is worth considering, showing sensitivity to the desire of each institution to determine its own mission and goals.

It should be stated that progress has already been made in dealing with some of the suggestions cited above. Yet more can be done. Much of the high costs of higher education are heavily financed by taxpayers. Reforms are necessary, and the points above are examples of areas where cost reduction can be made.

Conclusions

Texas cares about its young people, and their future. This manifests itself in a large degree of public support for its system of higher education. But merely spending money is not enough—the question arises: is Texas getting good value for its public expenditures? This study presents evidence that is in some ways rather disturbing. Texas spends more per student on higher education than the national average or than neighbors do, but gets relatively small portions of adult college graduates. Attrition rates from college are scandalously high. Moreover, the evidence suggests costs are rising rather significantly over time. Staffs are increasing faster than student enrollments. For all the concerns about inadequate state support heard from university leaders, the evidence shows Texas treats higher education fairly generously, while it may get less in results, as evidenced by the state's low "appropriations effectiveness ratio."

One of the more common explanations given for tuition hikes lately is that there is not enough government support for higher education, so schools are forced to raise tuition to make up for the revenue shortfall caused by stingy state legislatures. Yet the evidence does not show Texas higher education is bereft of resources. Moreover, published tuition charges have risen sharply at Texas institutions, even as the share of university budgets going for instruction has declined. Even once we account for all of the federal, state, local, and institutional grants

provided to students, the average financial burden (the net student tuition) has increased. Relatively high levels of per student state appropriations in Texas have not served primarily to reduce student costs, but seem to have rather primarily increased spending levels at institutions in the state.

More attention needs to be placed on make higher education less a burden on both taxpayers and consumers. This paper suggests a number of areas where cost reductions often are possible. Higher education currently lacks the incentives or motivation to make the vigorous changes needed to make higher education a positive force for change and progress in the Lone Star State. ★

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