Degree Production and Cost Trends

A National Analysis

August 2010

A report from the State Higher Education Executive Officers utilizing the State Policy Resource Connection (SPRC) with support from Lumina Foundation for Education. The views expressed in this publication are those of the authors and do not necessarily represent those of Lumina Foundation for Education, their officers, or employees.

Tables of Contents

Overview and Purpose

The international imperative for postsecondary education is growing, and the push for state and national action is acute. To remain globally competitive, the United States must expedite efforts to further develop a well educated citizenry. Recognizing this urgency, the President, several foundations, policy organizations, and states recently set bold college completion goals:

- President Obama called for the U.S. to be first in the world again in college attainment by 2020.
- Lumina Foundation for Education set a national goal for 60 percent of Americans to have a high-quality degree or credential by 2025.
- The Bill & Melinda Gates Foundation aims to double the number of low-income adults who earn a postsecondary degree or credential with genuine value in the marketplace by age 26.
- Complete College America, along with their Alliance of 24 states, set a national goal that six out of 10 young adults in the U.S. will have a college degree or credential of value by 2020.

Each state faces its own set of demographic and economic challenges. States and institutions operate in unique contexts of student populations, fiscal realities, and higher education governance structures, and undoubtedly will take different approaches to achieve their completion goals. Many states are experiencing dramatic demographic shifts requiring significant improvement in educational attainment among traditionally underrepresented populations. Others were especially hard hit by the recession and, in many cases, full recovery will require a more educated human capital in order to advance a more diverse economy.

Despite these differences, however, the national focus must be the same - dramatically increasing the educational attainment of each state's citizens. Given the current and foreseeable fiscal constraints, the states and their public colleges and universities will need to work creatively and efficiently in order to meet this demand.

In an effort to provide a context for state policymakers and institutional leaders, this report presents an overview and analysis of trends in degree and completion production, costs per degree and completion, and enrollment in public higher education. This report is the first in a series aimed at providing information to states that will help identify pertinent issues, challenges, and opportunities related to degree productivity.

The database constructed by the Delta Cost Project is the principal source of data for this study, employing many of its metrics and calculations to build on previous reports.

While our debt to the Delta Cost Project is great, close readers will note some modest technical differences. In order to maximize utility to SHEEO member agencies, and be consistent with other planned SHEEO studies, the analysis presented here includes some additional institutions' data and employs slightly different institutional classifications.

Methodology

For the purposes of this study, public postsecondary institutions were assembled into six groups based on their Carnegie 2005 classifications. No independent institutions were included in the analysis. These six groups include:

1. Associate's[1]
2. Baccalaureate/Master's[2]
3. Doctoral
4. Research, High Activity
5. Research, Very High Activity

Because this study employs change over time, states that did not have data for a Carnegie group in both 1997 and 2007 were excluded from the analysis. These include Alaska, Connecticut, and Kentucky at the Associate's level and Nevada at the Baccalaureate and Master's level. These states had data in 2007 for the group, but not in 1997.

Table A in Appendix B shows the original Carnegie 2005 classifications and the groupings used for this report. Institutions with no data for a Carnegie 2005 classification were excluded from the analysis. In some instances, the IPEDS reporting procedures have led to data for multiple institutions being grouped under a single institution name.

The analysis used the following variables from the Delta Cost Project: full-time-equivalent enrollment, total degrees awarded total completions, and education and related expenses. Additionally, the Higher Education Cost Adjustment (HECA) used in the State Higher Education Finance Report was applied to state-level data to adjust for inflation. The glossary in Appendix A describes this element in more detail.

1. Full-Time Equivalent Enrollment (FTE): The Delta Cost Project uses the same formula employed by the U.S. Department of Education to produce Full-Time Equivalent enrollment data published annually in the Digest of Education Statistics.
2. Total Degrees Awarded: The sum total of Associate's degrees, Baccalaureate degrees, Master's degrees, Doctoral degrees and First Professional degrees as reported to IPEDS.
3. Completions: The sum total of degrees (see above) plus certificates (Post-Baccalaureate, Post-Master's and Post-Professional) and total awards (awards less than one year, equal to one year but less than two, and equal to two years but less than four) as reported to IPEDS.

[1] Includes institutions classified as baccalaureate institutions that predominantly award Associate's degrees. Associate Institutions with a "special" Carnegie classification were omitted from the analysis as well.

[2] Any institution that had a baccalaureate classification (with the exception of those that were included as Associate's Institutions) and any institution that had a Master's classification.

4. Education and Related Expenses: Total spending on direct education costs. Education and Related expenses include spending on instruction, student services, and the education share of central academic and administrative support and operations and maintenance. This is a Delta Cost Project variable derived from IPEDS reported data.

It should be noted that these measures (annual spending divided by annual degree or completion production) are useful, but still quite crude indicators of the cost per degree or completion. Due to limitations in the data, there is still considerable research to be done in the area of different cost mechanisms related to different degree types and award levels. Please refer to Appendix C for more information on data limitations.

National Trends in FTE Enrollment and Degrees and Completions: 1997-2007

Table 1 examines the total number of FTE enrollments, degrees and completions, nationally and by institution type in 1997, 2002 and 2007, as well as the percent change in each category over time.

- FTE enrollments grew by 22 percent.
- Degrees and completions grew 26 percent and 30 percent respectively.
- Growth in degrees and completions exceeded enrollment growth in all Carnegie classes.
- Completions in the Associate's institutions grew by 41 percent. This is substantial growth compared to the 28 percent increase in FTE enrollment during the same time period.
- Degrees in the Associate's institutions grew by 30 percent.

Table 1 also indicates that the most rapid growth in degrees awarded occurred during 2002 to 2007, the last five years of this ten-year period. Growth in degrees awarded logically lags a few years behind enrollment increases, which outpaced or equaled degree and completion growth in the first five years, so this finding is unsurprising. Enrollment growth accelerated, especially in Associate's institutions, during the recession beginning in 2001, and the surge of growth continued through 2005. The enrollment growth in this period would especially influence completions in 2007 and beyond.

In a subsequent study, SHEEO plans to do further analysis on the growth of certificates and degrees, considering both disciplines and the award level.

Table 1

FTE, Degrees, and Completions by Carnegie Grouping (Public Institutions)

	1997	2002	2007	% Change 1997 to 2002	% Change 2002 to 2007	% Change 1997 to 2007
Associate's						
FTE	2,809,147	3,268,622	3,591,949	16%	10%	28%
All Degrees	389,407	418,665	507,298	8%	21%	30%
All Completions	570,220	642,927	805,577	13%	25%	41%
Baccalaureate/Master's						
FTE	1,852,521	1,995,645	2,221,606	8%	11%	20%
All Degrees	398,951	431,264	504,923	8%	17%	27%
All Completions	403,926	438,115	514,889	8%	18%	27%
Doctoral						
FTE	295,547	315,542	339,050	7%	7%	15%
All Degrees	68,028	70,441	81,449	4%	16%	20%
All Completions	69,428	72,143	83,647	4%	16%	20%
Research, High Activity						
FTE	951,075	1,042,161	1,146,998	10%	10%	21%
All Degrees	221,719	235,405	274,005	6%	16%	24%
All Completions	223,532	238,755	278,748	7%	17%	25%
Research, Very High Activity						
FTE	1,635,050	1,776,078	1,927,958	9%	9%	18%
All Degrees	400,552	427,764	493,359	7%	15%	23%
All Completions	411,832	436,197	501,780	6%	15%	22%
All Sectors						
FTE	7,543,340	8,398,048	9,227,561	11%	10%	22%
All Degrees	1,478,657	1,583,539	1,861,034	7%	18%	26%
All Completions	1,678,938	1,828,137	2,184,641	9%	20%	30%

Table 2 examines the *efficiency* of degree production using a simple measure: degrees and completions per 100 FTE. The ratio of degrees and completions per 100 FTE was higher in 2007 than in 1996. Over that time period, there was a 3 percent increase in degrees per 100 FTE enrollment, and a 6 percent increase in completions per 100 FTE enrollment.

In contrast, every sector but Baccalaureate/Master's institutions, however, shows the ratio of degrees and completions per 100 FTE was lower in 2002 than in 1997. While many factors may influence these statistics, it seems most likely that the sharp increase in enrollment in 2001 and 2002 is responsible for the dip in the ratio for those years and the spike in the ratio for the second five-year period of analysis.

An analysis of the ratios between degrees and completions to enrollments at the state level rarely found substantial change from one year to another, but gradual increases in these ratios appear in many states. The growth in the ratio of degrees and completions to enrollment between 1997 and 2007 indicates increased degree production efficiency; future studies will indicate whether such increases in efficiency will be sustained.

Table 2
Degrees per 100 FTE and Completions per 100 FTE by Carnegie Grouping (Public Institutions)

	1997	2002	2007	% Change 1997 to 2002	% Change 2002 to 2007	% Change 1997 to 2007
Associate's						
Degrees per 100 FTE	13.86	12.81	14.12	-8%	10%	2%
Completions per 100 FTE	20.30	19.67	22.43	-3%	14%	10%
Baccalaureate/Master's						
Degrees per 100 FTE	21.54	21.61	22.73	0%	5%	6%
Completions per 100 FTE	21.80	21.95	23.18	1%	6%	6%
Doctoral						
Degrees per 100 FTE	23.02	22.32	24.02	-3%	8%	4%
Completions per 100 FTE	23.49	22.86	24.67	-3%	8%	5%
Research, High Activity						
Degrees per 100 FTE	23.31	22.59	23.89	-3%	6%	2%
Completions per 100 FTE	23.50	22.91	24.30	-3%	6%	3%
Research, Very High Activity						
Degrees per 100 FTE	24.50	24.08	25.59	-2%	6%	4%
Completions per 100 FTE	25.19	24.56	26.03	-3%	6%	3%
All Sectors						
Degrees per 100 FTE	19.60	18.86	20.17	-4%	7%	3%
Completions per 100 FTE	22.26	21.77	23.68	-2%	9%	6%

Table 3 shows national trends in cost per degree and completion with costs adjusted for inflation using HECA. Between 1997 and 2002, costs per degree and completion grew in every sector. The surge of enrollment beginning in 2001 tended to drive up spending before degree production caught up. While state funding stopped growing during the recession beginning in 2001, tuition revenues increased due to enrollment growth and price increases.

Over the past decade, costs per degree and completion have been reasonably stable in every Carnegie grouping, with a modest amount of variation among the groupings. The cost per degree grew by 6 percent nationally in the first five years, and it declined by 6 percent in the last five years. This finding parallels trends in revenues per FTE student documented in SHEEO's annual State Higher Education Finance (SHEF) report[3]. Fiscal year 2001 was the peak year of constant dollar per student funding for public higher education, before a dramatic decline ending in 2004-2005. Funding levels recovered somewhat by 2007, but not to the level of 2002. Adjusted for inflation, funding per FTE student was similar in both 2007 and 1997.

[3] The SHEF report can be found online at http://www.sheeo.org/finance/shef-home.htm.

Table 3
Cost per Degree and Cost per Completion by Carnegie Grouping (Public Institutions)

	1997	2002	2007	% Change 1997 to 2002	% Change 2002 to 2007	% Change 1997 to 2007
Associate's						
Cost per Degree	$ 61,571	$ 70,485	$ 64,287	14%	-9%	4%
Cost per Completion	$ 42,047	$ 45,899	$ 40,483	9%	-12%	-4%
Baccalaureate/Masters						
Cost per Degree	$ 50,774	$ 51,370	$ 48,875	1%	-5%	-4%
Cost per Completion	$ 50,149	$ 50,566	$ 47,929	1%	-5%	-4%
Doctoral						
Cost per Degree	$ 54,705	$ 55,749	$ 52,945	2%	-5%	-3%
Cost per Completion	$ 53,602	$ 54,433	$ 51,554	2%	-5%	-4%
Research, High Activity						
Cost per Degree	$ 53,058	$ 54,769	$ 53,057	3%	-3%	0%
Cost per Completion	$ 52,628	$ 54,000	$ 52,154	3%	-3%	-1%
Research, Very High Activity						
Cost per Degree	$ 68,601	$ 71,490	$ 68,407	4%	-4%	0%
Cost per Completion	$ 66,722	$ 70,108	$ 67,259	5%	-4%	1%
All Sectors						
Cost per Degree	$ 58,970	$ 62,799	$ 59,048	6%	-6%	0%
Cost per Completion	$ 51,935	$ 54,396	$ 50,301	5%	-8%	-3%

State Level Growth Rates in Enrollment and Degree Production: 1997 to 2007

Figure 1 displays the ten-year change (1997-2007) in FTE enrollment and completions awarded at the Associate's institutions by state, ranked in descending order of growth in completions. The columns to the left of the graphic indicate the percentage of completions that were degrees in 1997 and 2007 respectively for each state.

The right side of Figure 1 (bar chart) shows national completion growth exceeded (41 percent) FTE enrollment growth (28 percent) in Associate's institutions. Completions also grew faster than FTE in 29 states.

Referencing the columns to the left of the bar chart (enumerated percent changes), national degree production as a percentage of completions in the Associate's sector decreased from 68 percent of completions in 1997 to 63 percent of completions in 2007, a significant shift, as discussed earlier. Interestingly, this trend was not consistent among states. In roughly half the states, degrees accounted for a larger percentage of total awards in 2007 when compared to 1997, and in many states the percentage of degrees to total completions did not change significantly over the ten-year period. Given the number of factors involved in these trends, closer examination of institutional and state data will be needed to understand the policies, practices, and demographic factors influencing these data.

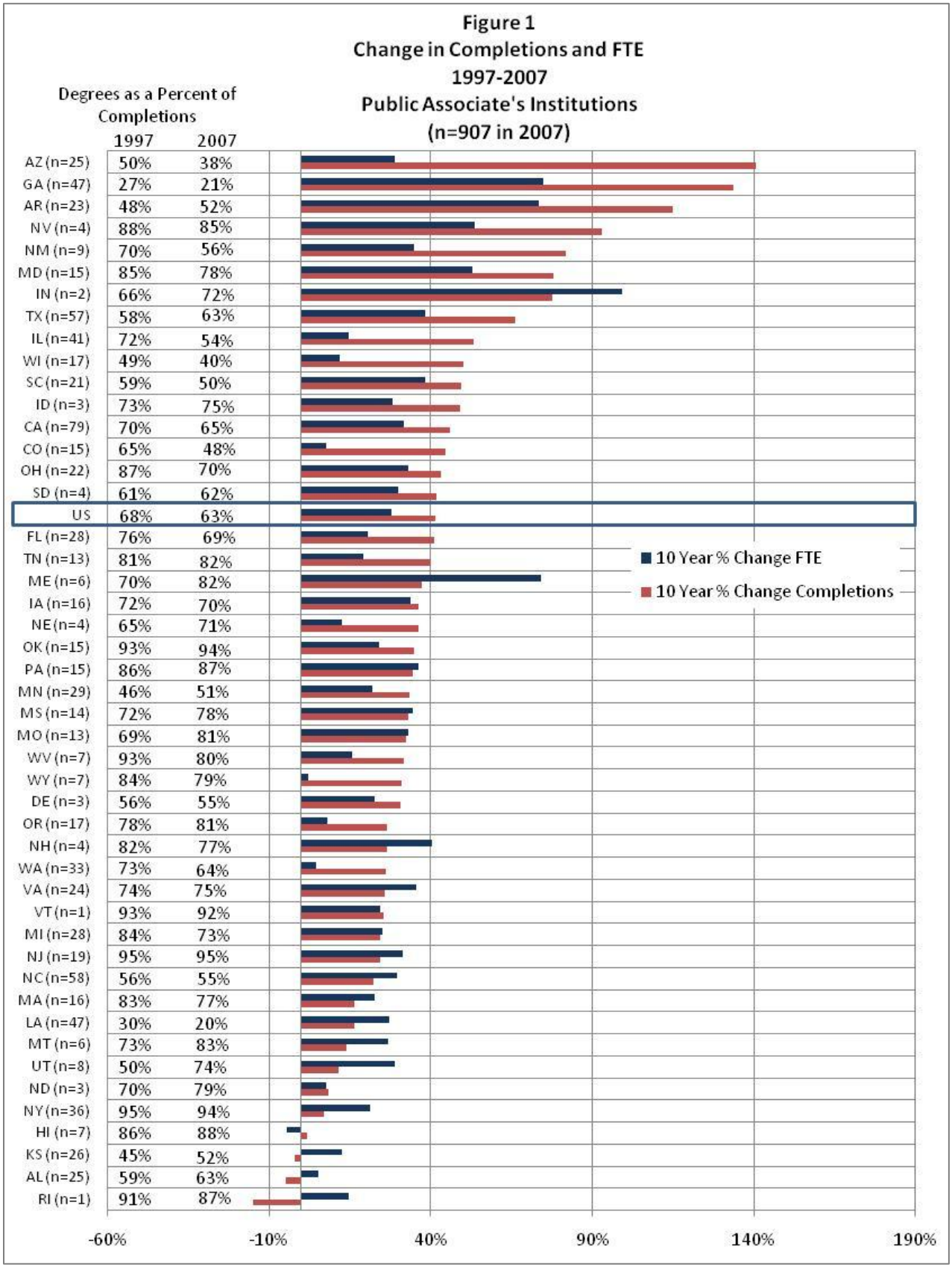
Figure 1
Change in Completions and FTE
1997-2007
Public Associate's Institutions
(n=907 in 2007)
Degrees as a Percent of Completions
1997 2007
AZ (n=25) 50% 38%
GA (n=47) 27% 21%
AR (n=23) 48% 52%
NV (n=4) 88% 85%
NM (n=9) 70% 56%
MD (n=15) 85% 78%
IN (n=2) 66% 72%
TX (n=57) 58% 63%
IL (n=41) 72% 54%
WI (n=17) 49% 40%
SC (n=21) 59% 50%
ID (n=3) 73% 75%
CA (n=79) 70% 65%
CO (n=15) 65% 48%
OH (n=22) 87% 70%
SD (n=4) 61% 62%
US 68% 63%
FL (n=28) 76% 69%
TN (n=13) 81% 82%
ME (n=6) 70% 82%
IA (n=16) 72% 70%
NE (n=4) 65% 71%
OK (n=15) 93% 94%
PA (n=15) 86% 87%
MN (n=29) 46% 51%
MS (n=14) 72% 78%
MO (n=13) 69% 81%
WV (n=7) 93% 80%
WY (n=7) 84% 79%
DE (n=3) 56% 55%
OR (n=17) 78% 81%
NH (n=4) 82% 77%
WA (n=33) 73% 64%
VA (n=24) 74% 75%
VT (n=1) 93% 92%
MI (n=28) 84% 73%
NJ (n=19) 95% 95%
NC (n=58) 56% 55%
MA (n=16) 83% 77%
LA (n=47) 30% 20%
MT (n=6) 73% 83%
UT (n=8) 50% 74%
ND (n=3) 70% 79%
NY (n=36) 95% 94%
HI (n=7) 86% 88%
KS (n=26) 45% 52%
AL (n=25) 59% 63%
RI (n=1) 91% 87%
10 Year % Change FTE
10 Year % Change Completions
-60%
-10%
40%
90%
140%
190%

Figures 2 to 5 display the ten-year growth in enrollments and degrees granted for four-year degree granting institutions. Because approximately 98 percent of all completions in four-year institutions are degrees, completions are not highlighted for these groups.

- Nationally, enrollment in the 333 Baccalaureate and Master's institutions (Figure 2) grew by 20 percent compared to a 27 percent increase in degrees. Degree growth exceeded enrollment growth in 29 of 44 states and equaled it in one. The very rapid growth rate of enrollment and degrees in Florida and Arizona is due partly to the establishment of new institutions in this sector in these states.

- Nationally, enrollment in the 26 Doctoral institutions, those with relatively modest doctoral programs (Figure 3), grew by 15 percent and degrees grew by 20 percent. The rate of growth for degrees exceeded that for enrollment in 11 of the 19 states with such institutions. Since there are 19 states and 26 institutions in this classification, the data represent a single institution in many states.

- Nationally, enrollment in the 66 Research, High Activity institutions (Figure 4) grew by 21 percent and degrees by 24 percent. In 25 of 40 states, the growth rate for degrees exceeded that of enrollment.

- Nationally, the 60 public universities classified as Research, Very High Activity (Figure 5) experienced enrollment growth of 18 percent during this time period while degrees grew by 23 percent. In 26 of the 34 states with these institutions, degree production grew faster than enrollments.

Since this analysis is based on just two data points for each state, these figures raise interesting questions and leave much to be explored.

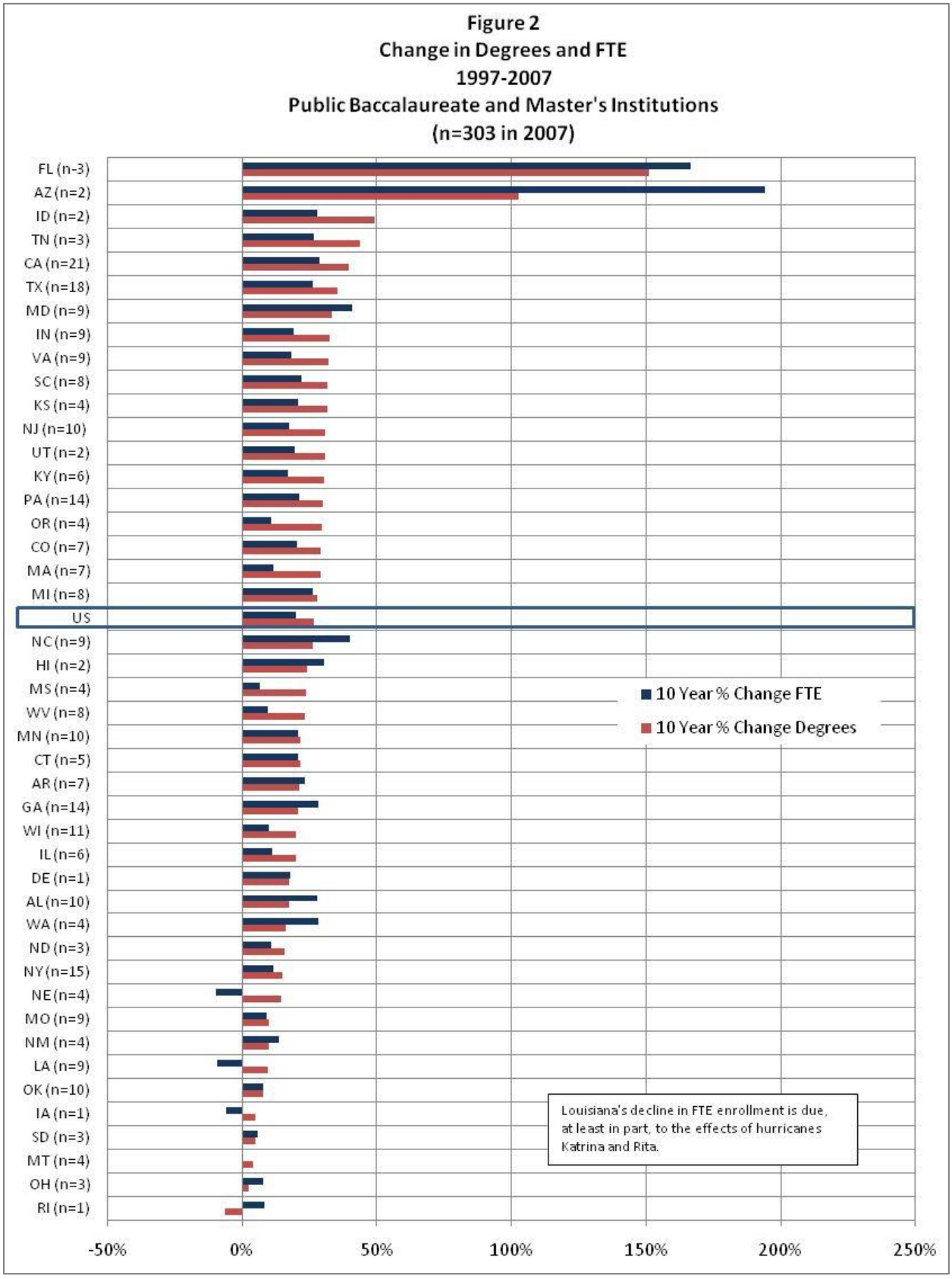
Figure 2
Change in Degrees and FTE
1997-2007
Public Baccalaureate and Master's Institutions
(n=303 in 2007)
FL (n-3)
AZ (n=2)
ID (n=2)
TN (n=3)
CA (n=21)
TX (n=18)
MD (n=9)
IN (n=9)
VA (n=9)
SC (n=8)
KS (n=4)
NJ (n=10)
UT (n=2)
KY (n=6)
PA (n=14)
OR (n=4)
CO (n=7)
MA (n=7)
MI (n=8)
US
NC (n=9)
HI (n=2)
MS (n=4)
WV (n=8)
MN (n=10)
CT (n=5)
AR (n=7)
GA (n=14)
WI (n=11)
IL (n=6)
DE (n=1)
AL (n=10)
WA (n=4)
ND (n=3)
NY (n=15)
NE (n=4)
MO (n=9)
NM (n=4)
LA (n=9)
OK (n=10)
IA (n=1)
SD (n=3)
MT (n=4)
OH (n=3)
RI (n=1)
10 Year % Change FTE
10 Year % Change Degrees
Louisiana's decline in FTE enrollment is due, at least in part, to the effects of hurricanes Katrina and Rita.
-50%
0%
50%
100%
150%
200%
250%

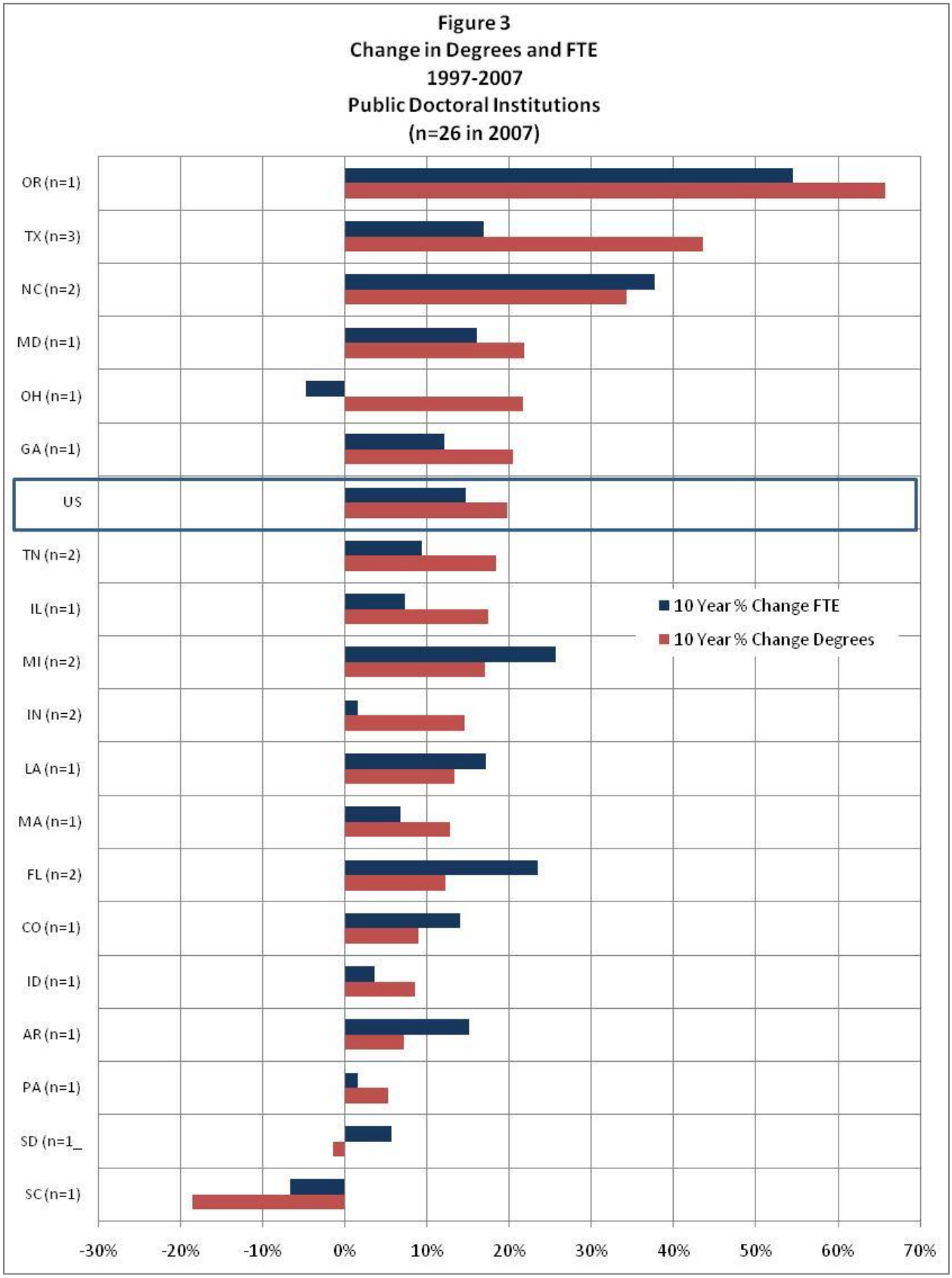
Figure 3
Change in Degrees and FTE
1997-2007
Public Doctoral Institutions
(n=26 in 2007)
OR (n=1)
TX (n=3)
NC (n=2)
MD (n=1)
OH (n=1)
GA (n=1)
US
TN (n=2)
IL (n=1)
MI (n=2)
IN (n=2)
LA (n=1)
MA (n=1)
FL (n=2)
CO (n=1)
ID (n=1)
AR (n=1)
PA (n=1)
SD (n=1_
SC (n=1)
10 Year % Change FTE
10 Year % Change Degrees
-30%
-20%
-10%
0%
10%
20%
30%
40%
50%
60%
70%

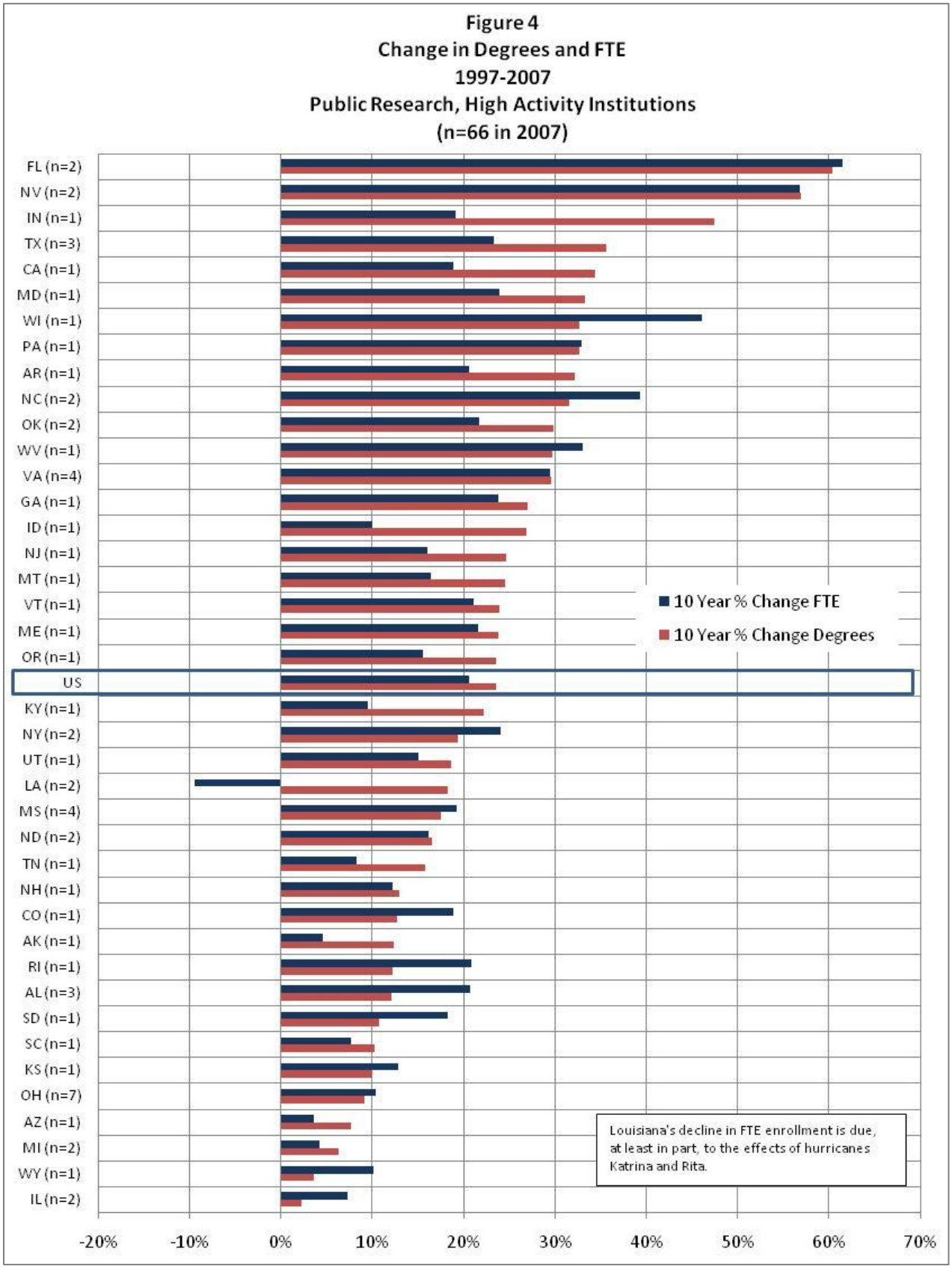
Figure 4
Change in Degrees and FTE
1997-2007
Public Research, High Activity Institutions
(n=66 in 2007)
FL (n=2)
NV (n=2)
IN (n=1)
TX (n=3)
CA (n=1)
MD (n=1)
WI (n=1)
PA (n=1)
AR (n=1)
NC (n=2)
OK (n=2)
WV (n=1)
VA (n=4)
GA (n=1)
ID (n=1)
NJ (n=1)
MT (n=1)
VT (n=1)
ME (n=1)
OR (n=1)
US
KY (n=1)
NY (n=2)
UT (n=1)
LA (n=2)
MS (n=4)
ND (n=2)
TN (n=1)
NH (n=1)
CO (n=1)
AK (n=1)
RI (n=1)
AL (n=3)
SD (n=1)
SC (n=1)
KS (n=1)
OH (n=7)
AZ (n=1)
MI (n=2)
WY (n=1)
IL (n=2)
10 Year % Change FTE
10 Year % Change Degrees
Louisiana's decline in FTE enrollment is due, at least in part, to the effects of hurricanes Katrina and Rita.
-20%
-10%
0%
10%
20%
30%
40%
50%
60%
70%

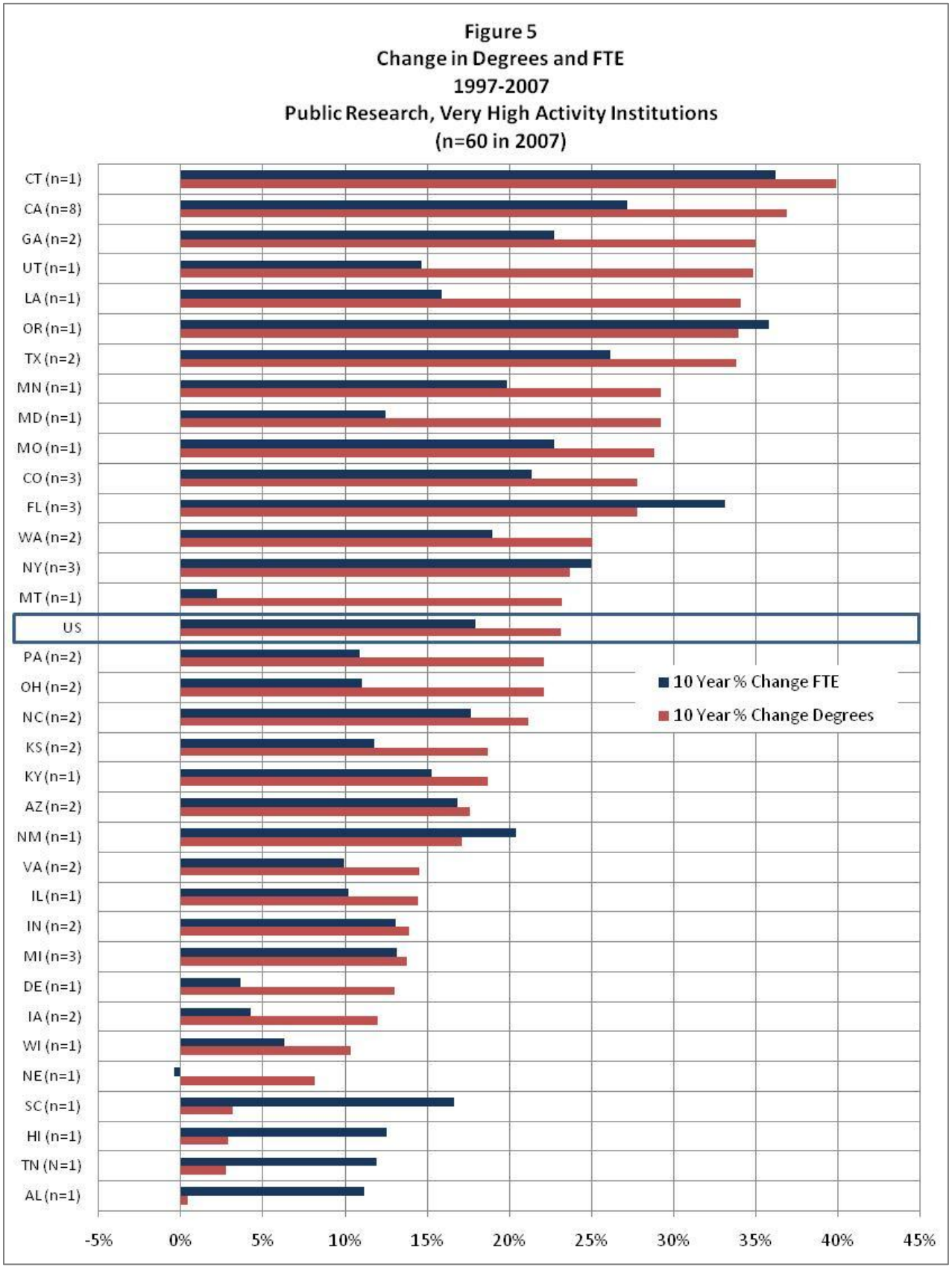
Figure 5
Change in Degrees and FTE
1997-2007
Public Research, Very High Activity Institutions
(n=60 in 2007)
CT (n=1)
CA (n=8)
GA (n=2)
UT (n=1)
LA (n=1)
OR (n=1)
TX (n=2)
MN (n=1)
MD (n=1)
MO (n=1)
CO (n=3)
FL (n=3)
WA (n=2)
NY (n=3)
MT (n=1)
US
PA (n=2)
OH (n=2)
NC (n=2)
KS (n=2)
KY (n=1)
AZ (n=2)
NM (n=1)
VA (n=2)
IL (n=1)
IN (n=2)
MI (n=3)
DE (n=1)
IA (n=2)
WI (n=1)
NE (n=1)
SC (n=1)
HI (n=1)
TN (N=1)
AL (n=1)
10 Year % Change FTE
10 Year % Change Degrees
-5%
0%
5%
10%
15%
20%
25%
30%
35%
40%
45%

Degree Production Ratios (Degrees per 100 FTE Enrollments) Among the States in 2007

Tables 5, 6, and 7 show the 2007 FTE enrollment, and degrees and completions[4] per FTE, for each Carnegie group as well as those statistics indexed to the United States average for that Carnegie group. As might be expected from Figures 1-5, there is great variation among the states on these variables.

Table 5 displays data on enrollments, degrees, and all completions for Associate's institutions. In 2007, these institutions enrolled 3.6 million students and awarded 500,000 degrees plus an additional 300,000 awards and certificates. They awarded an average of 14 degrees and 22 awards for every 100 FTE.

Among the states, enrollment growth from 1997 to 2007 for Associate's institutions ranges from a decrease of 4 percent to an increase of 99 percent. Some states are well below the national average in degrees per 100 FTE but, due to a large number of non-degree certificates, are above average in total completions. In other states, the opposite is true. These findings are an invitation to dig more deeply into other data in order to understand the factors driving differences among the states.

Table 6 provides a similar analysis for four-year institutions with modest or no doctoral programs. These institutions (including both Baccalaureate and Master's as well as Doctoral institutions) enrolled 2.6 million students in 2007 and awarded 586,000 degrees. Across the country, Baccalaureate and Master's institutions awarded about 23 degrees for every 100 FTE, and the Doctoral institutions awarded about 24 degrees per 100 FTE. While there are differences among the states as well as within them, the variation in degree productivity ratios is somewhat lower than for Associate's institutions.

Table 7 presents FTE enrollment and degree productivity ratios for High Activity and Very High Activity Research institutions. These universities in 2007 collectively enrolled 3.1 million FTE and awarded 767,000 degrees, an average of 25 degrees per 100 FTE. While many states fall between 90 percent and 110 percent of the national average on these indicators, some are quite a bit higher or lower than the national average. The number of transfer students may be a significant factor in explaining the differences among states in four-year degree production, but other factors should also be fully explored.

Table 4
Degrees and Awards per 100 FTE, 2007

Sector	Degrees/100 FTE	Awards/100 FTE
Associates[4]	14	22
Baccalaureate/Masters'	23	
Doctoral	24	
Research, High Activity	24	
Research, Very High Activity	25	

[4] Completion data was only tracked for Associate's Institutions

Table 5
FTE, Degrees, and Completions, 2007
Public Associate's Institutions

	FTE		Degrees per 100 FTE		Completions per 100 FTE	
	2007	10 Year % Change	2007	Indexed to US	2007	Indexed to US
AL	50,060	5%	13.11	0.93	20.90	0.93
AR	35,724	73%	14.14	1.00	27.24	1.21
AZ	100,717	29%	11.67	0.83	30.69	1.37
CA	763,057	32%	10.68	0.76	16.41	0.73
CO	43,075	8%	12.68	0.90	26.34	1.17
DE	8,547	23%	12.66	0.90	23.14	1.03
FL	209,228	21%	21.84	1.55	31.63	1.41
GA	84,074	75%	9.87	0.70	46.75	2.08
HI	15,161	-4%	15.80	1.12	17.89	0.80
IA	55,192	34%	19.12	1.35	27.19	1.21
ID	7,709	28%	15.27	1.08	20.40	0.91
IL	168,932	14%	13.95	0.99	25.67	1.14
IN	44,152	99%	14.18	1.00	19.58	0.87
KS	44,795	13%	14.93	1.06	28.72	1.28
LA	34,845	27%	8.75	0.62	43.40	1.94
MA	52,395	23%	15.83	1.12	20.52	0.92
MD	66,477	53%	14.06	1.00	18.04	0.80
ME	6,871	74%	20.04	1.42	24.42	1.09
MI	127,624	25%	14.91	1.06	20.32	0.91
MN	74,141	22%	15.92	1.13	31.12	1.39
MO	54,385	33%	15.27	1.08	18.83	0.84
MS	47,280	35%	15.03	1.06	19.15	0.85
MT	4,518	27%	18.37	1.30	22.24	0.99
NC	119,394	30%	14.69	1.04	26.70	1.19
ND	5,423	8%	26.57	1.88	33.61	1.50
NE	21,659	13%	16.46	1.17	23.31	1.04
NH	7,321	40%	20.19	1.43	26.36	1.18
NJ	103,141	31%	13.84	0.98	14.58	0.65
NM	25,768	35%	11.36	0.80	20.28	0.90
NV	26,971	54%	9.88	0.70	11.68	0.52
NY	168,942	21%	19.43	1.38	20.58	0.92
OH	96,262	33%	14.17	1.00	20.24	0.90
OK	45,210	24%	18.43	1.30	19.56	0.87
OR	46,204	8%	14.70	1.04	18.21	0.81
PA	71,825	36%	16.07	1.14	18.57	0.83
RI	9,567	15%	11.97	0.85	13.80	0.62
SC	52,064	38%	13.24	0.94	26.39	1.18
SD	4,624	30%	25.52	1.81	41.14	1.83
TN	50,882	19%	13.57	0.96	16.64	0.74
TX	293,546	38%	11.26	0.80	17.78	0.79
UT	41,093	29%	19.50	1.38	26.51	1.18
VA	87,672	35%	13.45	0.95	18.02	0.80
VT	8,665	24%	20.10	1.42	21.80	0.97
WA	120,022	4%	16.72	1.18	26.17	1.17
WI	64,445	12%	16.31	1.16	40.57	1.81
WV	10,342	16%	16.53	1.17	20.55	0.92
WY	11,948	2%	17.47	1.24	22.13	0.99
US	**3,591,949**	**28%**	**14.12**	**1.00**	**22.43**	**1.00**

Table 6
FTE and Degrees, 2007

Public Baccalaureate and Master's Institutions					Public Doctoral Institutions				
	FTE		Degrees per 100 FTE			FTE		Degrees per 100 FTE	
	2007	10 Year % Change	2007	Indexed to US		2007	10 Year % Change	2007	Indexed to US
AL	63,275	28%	24.34	1.07	AR	8,842	15%	20.21	0.84
AR	37,633	23%	18.70	0.82	CO	11,670	14%	22.34	0.93
AZ	10,128	194%	26.63	1.17	FL	18,693	23%	21.89	0.91
CA	319,221	29%	25.26	1.11	GA	14,642	12%	19.19	0.80
CO	42,673	20%	17.28	0.76	ID	10,043	4%	19.04	0.79
CT	29,309	21%	23.10	1.02	IL	18,851	7%	26.66	1.11
DE	3,334	18%	16.32	0.72	IN	27,147	2%	26.02	1.08
FL	20,228	166%	25.40	1.12	LA	9,275	17%	20.60	0.86
GA	77,386	28%	19.43	0.85	MA	48,407	7%	23.62	0.98
HI	3,599	30%	21.36	0.94	MD	6,110	16%	15.53	0.65
IA	11,009	-6%	24.96	1.10	MI	36,119	26%	24.95	1.04
ID	17,046	28%	18.27	0.80	NC	38,582	38%	23.36	0.97
IL	50,573	11%	26.69	1.17	OH	10,891	-5%	32.13	1.34
IN	43,982	19%	19.11	0.84	OR	17,763	54%	27.13	1.13
KS	23,218	21%	25.79	1.13	PA	12,786	2%	23.53	0.98
KY	58,498	17%	21.82	0.96	SC	3,998	-7%	15.96	0.66
LA	58,885	-9%	18.11	0.80	SD	6,807	6%	24.30	1.01
MA	34,184	12%	23.04	1.01	TN	18,228	9%	20.68	0.86
MD	59,091	41%	26.38	1.16	TX	20,196	17%	31.90	1.33
MI	77,110	26%	23.37	1.03	**US**	**339,050**	**15%**	**24.02**	**1.00**
MN	65,953	21%	20.88	0.92					
MO	58,254	9%	20.10	0.88					
MS	11,458	7%	20.91	0.92					
MT	7,344	0%	21.39	0.94					
NC	60,137	40%	20.26	0.89					
ND	3,578	11%	20.04	0.88					
NE	12,081	-10%	22.21	0.98					
NJ	111,627	17%	26.72	1.18					
NM	9,660	14%	20.96	0.92					
NY	248,338	11%	22.45	0.99					
OH	16,373	8%	17.09	0.75					
OK	42,390	8%	21.44	0.94					
OR	13,129	11%	24.21	1.07					
PA	87,493	21%	22.72	1.00					
RI	6,875	8%	21.00	0.92					
SC	37,864	22%	20.75	0.91					
SD	6,740	6%	17.36	0.76					
TN	35,976	27%	20.64	0.91					
TX	128,220	26%	23.62	1.04					
UT	18,277	20%	27.25	1.20					
VA	50,880	18%	22.86	1.01					
WA	36,852	29%	25.83	1.14					
WI	77,908	10%	20.85	0.92					
WV	33,817	9%	19.83	0.87					
US	**2,221,606**	**20%**	**22.73**	**1.00**					

Table 7
FTE and Degrees, 2007

Public Research, High Activity Institutions					Public Research, Very High Activity Institutions				
	FTE		Degrees per 100 FTE			FTE		Degrees per 100 FTE	
	2007	10 Year % Change	2007	Indexed to US		2007	10 Year % Change	2007	Indexed to US
AK	18,322	5%	16.64	0.70	AL	13,369	11%	24.05	0.94
AL	48,695	21%	22.22	0.93	AZ	75,738	17%	23.45	0.92
AR	15,263	21%	23.42	0.98	CA	199,002	27%	27.51	1.07
AZ	16,386	4%	28.82	1.21	CO	65,390	21%	25.25	0.99
CA	29,448	19%	28.72	1.20	CT	24,761	36%	25.96	1.01
CO	3,863	19%	20.81	0.87	DE	18,652	4%	24.53	0.96
FL	85,290	62%	28.06	1.17	FL	117,143	33%	28.61	1.12
GA	21,023	24%	27.74	1.16	GA	47,927	23%	26.89	1.05
ID	10,276	10%	24.94	1.04	HI	16,788	13%	25.32	0.99
IL	39,970	7%	27.86	1.17	IA	48,729	4%	24.33	0.95
IN	22,467	19%	25.60	1.07	IL	65,613	10%	26.73	1.04
KS	10,572	13%	24.64	1.03	IN	73,188	13%	23.85	0.93
KY	17,196	10%	23.88	1.00	KS	43,520	12%	24.43	0.95
LA	23,592	-9%	19.23	0.80	KY	23,500	15%	23.99	0.94
MD	9,939	24%	24.21	1.01	LA	28,015	16%	21.95	0.86
ME	27,569	22%	20.96	0.88	MD	31,823	12%	27.51	1.07
MI	27,069	4%	26.39	1.10	MI	103,847	13%	25.79	1.01
MS	48,290	19%	22.97	0.96	MN	41,474	20%	27.26	1.07
MT	12,360	16%	20.79	0.87	MO	51,632	23%	26.11	1.02
NC	24,123	39%	20.01	0.84	MT	10,562	2%	22.33	0.87
ND	26,365	16%	21.87	0.92	NC	51,454	18%	26.13	1.02
NH	24,421	12%	24.06	1.01	NE	31,347	0%	21.88	0.85
NJ	6,663	16%	27.90	1.17	NM	45,742	20%	19.61	0.77
NV	35,093	57%	20.98	0.88	NY	60,143	25%	27.03	1.06
NY	15,128	24%	26.86	1.12	OH	83,508	11%	24.04	0.94
OH	143,723	10%	21.94	0.92	OR	17,677	36%	23.88	0.93
OK	42,165	22%	24.85	1.04	PA	100,726	11%	24.38	0.95
OR	18,851	16%	26.52	1.11	SC	23,817	17%	25.15	0.98
PA	29,106	33%	25.28	1.06	TN	40,263	12%	22.09	0.86
RI	13,033	21%	20.98	0.88	TX	202,349	26%	25.21	0.99
SC	15,977	8%	24.33	1.02	UT	24,185	15%	28.50	1.11
SD	9,428	18%	20.45	0.86	VA	48,213	10%	26.13	1.02
TN	16,458	8%	21.37	0.89	WA	59,693	19%	30.47	1.19
TX	81,050	23%	24.24	1.01	WI	38,170	6%	25.05	0.98
UT	17,985	15%	21.90	0.92	**US**	**1,927,958**	**18%**	**25.59**	**1.00**
VA	69,464	29%	26.25	1.10					
VT	10,685	21%	23.08	0.97					
WI	24,046	46%	19.78	0.83					
WV	25,036	33%	22.46	0.94					
WY	10,607	10%	21.42	0.90					
US	**1,146,998**	**21%**	**23.89**	**1.00**					

Conclusion

Issues of degree and cost productivity will continue to be at the forefront of state and national public agendas in higher education. While policymakers and educational leaders should be sensitive to the limitations of existing data as elaborated in Appendix C, the thoughtful analysis of available data can provide useful insights.

This report provides a snapshot on national progress in the area of enrollment, degree, and completion growth over the past decade. Changes in FTE enrollment and awards (degrees and completions) are positive in the majority of states. In all Carnegie groupings, degree and completion productivity exceed FTE enrollment growth.

While these trends are encouraging, this report is only the beginning of an extensive examination of degree and cost productivity. The variations among institutions warrant further and more-focused analysis of, the following:

- How do enrollment, degree, and completion growth vary by program discipline and length of program across the institutional sectors?
- What program disciplines tend to be more cost effective, yielding higher production rates?
- What policies, practices, and demographic features influence the variations across institutions, institutional sectors, and states?

Additionally, future analysis needs to consider differences between institutional missions and program offerings as well as the use of a “moving average” of “lag” model cost calculation to improve alignment between enrollment, degree and completion production and the cost per degree and completion.

These questions, while not exhaustive, provide a solid foundation upon which subsequent analysis will be based. It is of utmost importance the policymakers at the state and institutional levels continue to be aware of trends in and current levels of degree productivity. This is especially true in this era of changing demographics, increased focus on public higher education productivity, accountability, and limited resources. With continued studies such as these, policymakers will be well-equipped to address the degree productivity needs in their states.

Appendix A – Definitions

Cost Adjustments

Employment Cost Index (ECI). A measure of the change in labor costs, outside the influence of employment shifts, among occupations and industries. The ECI for private industry white-collar occupations (excluding sales) accounts for 75 percent of the State Higher Education Executive Officers (SHEEO) Higher Education Cost Adjustment (HECA). HECA uses the compensation series that includes changes in wages and salaries plus employer costs for employee benefits. Sources: Bureau of Labor Statistics, U.S. Department of Labor.

Gross Domestic Product Implicit Price Deflator (GDP IPD). Current dollar GDP divided by constant dollar GDP. This ratio is used to account for inflationary effects by reflecting both the change in the price of the bundle of goods comprising the GDP and the change to the bundle itself. The GDP IDP accounts for 25 percent of SHEEO HECA. Sources: Bureau of Economic Analysis, Office of Economic Policy, U.S. Department of Commerce.

Higher Education Cost Adjustment (HECA). Measures price inflation experienced by colleges and universities. The HECA uses two external indices maintained by the federal government – the ECI (accounts for 75 percent of the index) and the GDP IDP (accounts for the remainder). Source: SHEEO, SSDB.

Delta Cost Project Variable Definitions (Source: Delta Cost Project Data Dictionary)

Full-Time Equivalent Enrollment (FTE). Derived from the enrollment by race/ethnicity section of the fall enrollment survey. The FTE of an institution's part-time enrollment is estimated by multiplying part-time enrollment by factors that vary by control and level of institution and level of student; the estimated FTE of part-time enrollment is then added to the FTE of the institution. This formula is used by the U.S Department of Education to produce the full-time equivalent enrollment data published annually in the Digest of Education Statistics.

Total Degrees Awarded. The total number of degrees conferred by a college, university, or other postsecondary education institution as official recognition for the successful completion of a program of studies. This is the sum of total Associate's Degrees, Baccalaureate Degrees, Master's Degrees, Doctoral Degrees, and First Professional Degrees.

Total Completions. This annual component of IPEDS collects number of degrees and other formal awards (certificates) conferred. These data are reported by level, as well as by length of program for some. Institutions report all degrees and other awards conferred during an entire academic year, from July 1 of one calendar year through June 30 of the following year. This is the sum of total degrees (see above), total certificates (post-baccalaureate certificates, post-master's certificates, and first professional certificates) and total awards (total awards granted including less than one year, one to two year, and two to four year awards).

Education and Related Expenses. Total spending on direct educational costs. Education and related expenses includes spending on instruction, student services, and the education share of spending on central academic and administrative support, and operations and maintenance. The sum of education and related expenses, research and related expenses, public service and related expenses, and scholarships and fellowships totals to education and general expenses. This is a Delta Cost Project derived variable from collected IPEDS data.

Appendix B – Carnegie Classification Groupings

Table A

Carnegie 2005 Classification and Groupings	
Carnegie 2005 Classification	Grouped Carnegie Classification
Associate's--Public Rural-serving Small	Associate's
Associate's--Public Rural-serving Medium	Associate's
Associate's--Public Rural-serving Large	Associate's
Associate's--Public Suburban-serving Single Campus	Associate's
Associate's--Public Suburban-serving Multi-campus	Associate's
Associate's--Public Urban-serving Single Campus	Associate's
Associate's--Public Urban-serving Multi-campus	Associate's
Associate's--Public Special Use*	Special
Associate's--Private Not-for-profit*	Associate's
Associate's--Private For-profit*	Associate's
Associate's--Public 2-year colleges under 4-year universities	Associate's
Associate's--Public 4-year Primarily Associate's	Associate's
Associate's--Private Not-for-profit 4-year Primarily Associate's*	Associate's
Associate's--Private For-profit 4-year Primarily Associate's*	Associate's
Research Universities (very high research activity)	Research, Very High Activity
Research Universities (high research activity)	Research, High Activity
Doctoral/Research Universities: Doctorate-granting Universities	Doctoral
Master's Colleges and Universities (larger programs)	Baccalaureate/Master's
Master's Colleges and Universities (medium programs)	Baccalaureate/Master's
Master's Colleges and Universities (smaller programs)	Baccalaureate/Master's
Baccalaureate Colleges--Arts & Sciences	Baccalaureate/Master's
Baccalaureate Colleges--Diverse Fields	Baccalaureate/Master's
Baccalaureate/Associate's Colleges	Associate's
Special Focus Institutions--Theological seminaries, Bible colleges, and other faith-related institutions*	Special
Special Focus Institutions--Medical schools and medical centers*	Special
Special Focus Institutions--Other health professions schools*	Special
Special Focus Institutions--Schools of engineering*	Special
Special Focus Institutions--Other technology-related schools*	Special
Special Focus Institutions--Schools of business and management*	Special
Special Focus Institutions--Schools of art, music, and design*	Special
Special Focus Institutions--Schools of law*	Special
Special Focus Institutions--Other special-focus institutions*	Special
Tribal Colleges*	Special
Not classified*	N/A
Not applicable, not in Carnegie universe (not accredited or non-degree-granting)*	N/A

Note: Classifications marked with an asterisk are not included in the report.
Institutions classified with a "special" Carnegie Class in 2000 and reclassified in 2005 class were also excluded (i.e. Military institutions)

Appendix C – Limitations to Data

It should be noted that these measures (annual spending divided by annual degree or completion production) are useful, but still quite crude indicators of the cost per degree or completion. The numbers in the denominator of these ratios (degrees and completions) vary substantially in the length of time required and the cost of instruction. Some completions are certificates requiring less than one year, and others are degrees involving two-year, four-year, or longer programs. Some completions are for relatively low cost programs (such as an associate of arts degree) and other awards are in higher cost programs such as technology, engineering, health professions, or graduate degrees.

In addition, degrees awarded by a single institution often involve actual credit awarded by two or more institutions. Associate's institutions frequently provide instruction without awarding a degree to students who ultimately complete a degree at another institution. This factor tends to increase the cost per degree or completion in Associate's institutions, while the shorter length of associate and certificate programs should tend to decrease the cost. Also, four-year institutions accepting many transfer students will have a lower cost per degree than four-year institutions that have few transfer students.

For these reasons, the differences in cost per degree or completion among different sectors of higher education would be strengthened with additional data on the length and program type of the degrees and certificates. Such data would make for richer analysis when examining sectors over time, or making comparisons among comparable institutions within a sector.