Trends in the Higher Education Labor Force:

Identifying Changes in Worker Composition and Productivity

Daniel Bennett

Center for College Affordability and Productivity

A Report from the

Center for College Affordability and Productivity

April 2009

About the Author

Daniel Bennett is the Administrative Director of the Center for College Affordability and Productivity. He holds a Master of Arts in Applied Economics, with a focus on labor and international issues, as well as a Bachelor of Business Administration, from Ohio University.

About the Center for College Affordability and Productivity

The Center for College Affordability and Productivity is a nonprofit research center based in Washington, DC, that is dedicated to research on the issues of rising costs and stagnant efficiency in higher education.

1150 17th ST. NW #910 202-375-7831 (Phone)
Washington, DC 20036 202-375-7821 (Fax)

www.centerforcollegeaffordability.org
www.collegeaffordability.blogspot.com

TABLE OF CONTENTS

LIST OF TABLES & FIGURES

I. INTRODUCTION

Higher education is a labor-intensive industry whose primary service, instruction, is delivered by a lecturer, accompanied by administrative support and various other services. Growing student enrollment necessitates some additional staffing; however, one would think that the recent and ongoing technological boom would have lessened the labor burden at colleges, but a close examination of the data suggests otherwise. In fact, the data reveals that colleges have generally increased their staff relative to enrollment and the number of degrees awarded, especially in the back office.

One problem, critics claim, is that an onerous regulatory environment has been established that requires a myriad of regulations and reporting requirements, which are often unnecessary and redundant in nature. In order to comply with the government's requirements, colleges need to employ a staff that is responsible for providing the multiple state and federal agencies with compliance reports and data. This may be one piece of the puzzle, but it certainly does not tell the complete story of the burgeoning administrative staffs in higher education.

This report will analyze employment trends and labor productivity at institutions of higher education over the past twenty years. What I find is that colleges have altered the composition of their work force by steadily increasing the number of managerial positions and support/service staff, while at the same time disproportionately increasing the number of part-time staff that provides instruction. Meanwhile, employee productivity relative to enrollment and degrees awarded has been relatively flat in the midst of rising compensation.

II. DATA

Higher education employment, enrollment and degree completion data were collected from the Integrated Post-Secondary Education Database (IPEDS), using the 2007 universe of schools, for all degree-granting institutions for odd years beginning in 1987. Employment data was obtained from the biennial *IPEDS Fall Staff Surveys.* Enrollment data was obtained from the annual *IPEDS Fall Enrollment Surveys*[1]. The degree completion data was obtained from the annual *Fall Completions Surveys*. The 5,062 degree-granting institutions were screened to ensure that each school reported employment, enrollment and degree completion data for each period being measured. This resulted in a sample size of 2,782 schools, which accounts for 55 percent of all degree-granting institutions and 85.5 percent of the full-time equivalent (FTE)[2] student enrollment.[3] Table 1 presents the number of students and schools included in the sample by sector, and the respective percentage of the entire sector that each comprises. Note that the figures for the private for-profit sectors, as well as the 2-year private not-for-profit sector, are generally much lower, due to the fact that many of these schools opened post-1987. While most schools in these three sectors were excluded to avoid biasing the comparisons, it should be noted that as a result, the figures for these sectors are less representative of current institutions.

[1] The Fall 2007 enrollment figures are early estimates by the reporting institutions
[2] FTE is equal to the sum of part-time divided by 3 and full-time {FTE = (PT/3) + FT}
[3] Integrated Postsecondary Education Data System (IPEDS)

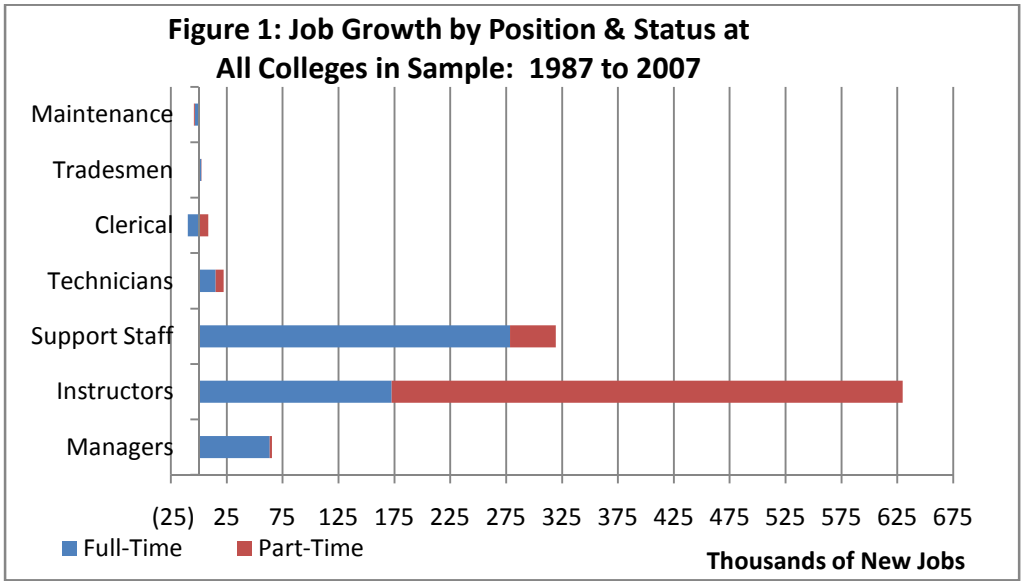
Table 1: Student and School Representation, By Sector[4]

Sector of Higher Education	2007 FTE Students	% of Total Students	No. of Schools	% of Total Schools
Private for-profit, 2-year	36,190	11.8%	51	5.7%
Private for-profit, 4-year or above	178,443	24.1%	87	17.2%
Private not-for-profit, 2-year	13,877	35.4%	31	15.7%
Private not-for-profit, 4-year or above	2,779,297	90.9%	1221	74.5%
Public, 2-year	3,167,336	81.1%	777	67.4%
Public, 4-year or above	5,763,317	97.4%	615	90.7%
Total Sample	11,938,460	85.5%	2782	55.0%

Source: IPEDS

III. EXPANSION OF THE HIGHER EDUCATION WORK FORCE

The total workforce[5] of the colleges included in the sample increased by 1.03 million, or 48 percent, between 1987 and 2007, with full-time employment growing by 33 percent and part-time employment by 85 percent. Figure 1 displays the absolute growth in employment by category and job status during this period. The greatest numbers of jobs (nearly 630,000) were added in the instructor category with the majority (72.6%) being part-time positions. The largest number of full-time positions (278,500+) was created in the support staff category. The number of management jobs also increased substantially (65,000+), with nearly all of them being full-time positions (97%). Both the maintenance and clerical categories experienced a decline in the number of total jobs, although part-time clerical positions grew by 11 percent. Please see appendix B for an explanation of the job categories.



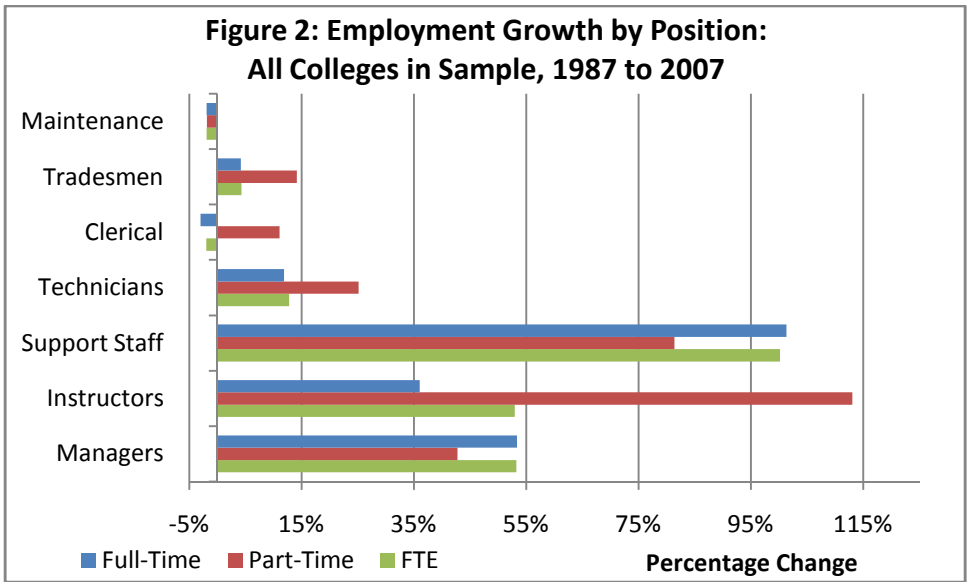
Source: IPEDS

Figure 1 described the change in the higher education labor force between 1987 and 2007 in absolute terms, measuring the change in the number of jobs. Another way of examining jog growth is in terms of

[4] Ibid

[5] Total workforce is the sum of full-time and part-time employees {TE = FT + PT}

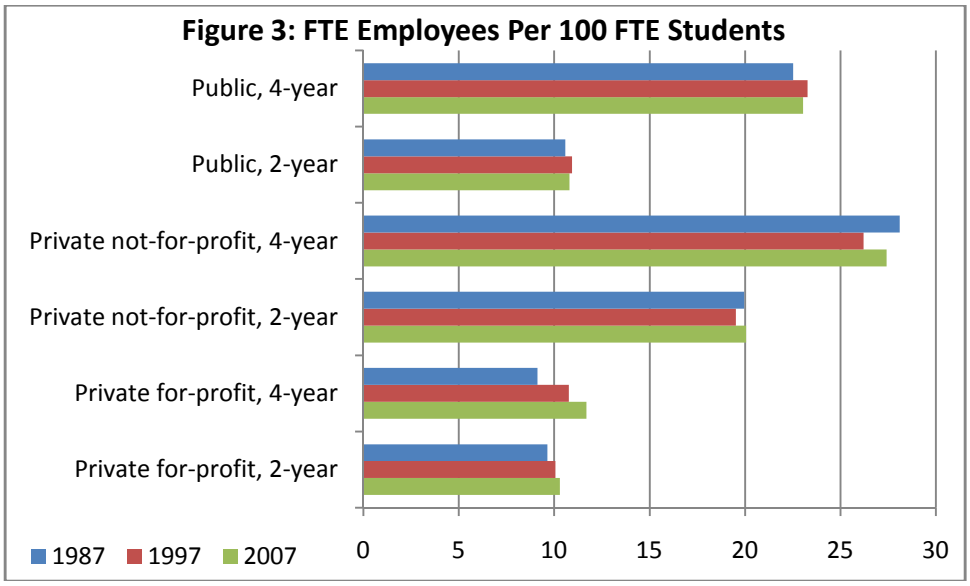
percentage change. Figure 2 shows the percentage growth of employment by position between 1987 and 2007. As can be seen, in terms of FTE employees, support staff jobs were the fastest growing (100%), followed by instruction (53%) and management (53%). The growth in support staff and managerial positions was mostly fueled by full-time jobs, whereas part-time jobs accounted for most of the growth among instructors. Clerical and maintenance jobs both declined by 2 percent.



Source: IPEDS

IV. AN INCREASE IN STAFF RELATIVE TO ENROLLMENT

The previous section discussed the expansion of the higher education workforce between 1987 and 2007, but did not account for the growth in student enrollment during the period. Figure 3 shows the total number of FTE employees per 100 FTE students in the six sectors of higher education in 1987, 1997 and 2007. This ratio provides a measure of employment growth relative to enrollment. Aside from the 4-year private not-for profit sector, which has the highest ratio, all of the sectors experienced an increase in staff relative to enrollment between 1987 and 2007. The for-profit sectors experienced the largest percentage increase, with the 4- and 2-year sectors increasing by 28.2 and 6.8 percent, respectively. The remaining sectors all experienced an increase of less than 2.5 percent during this period.

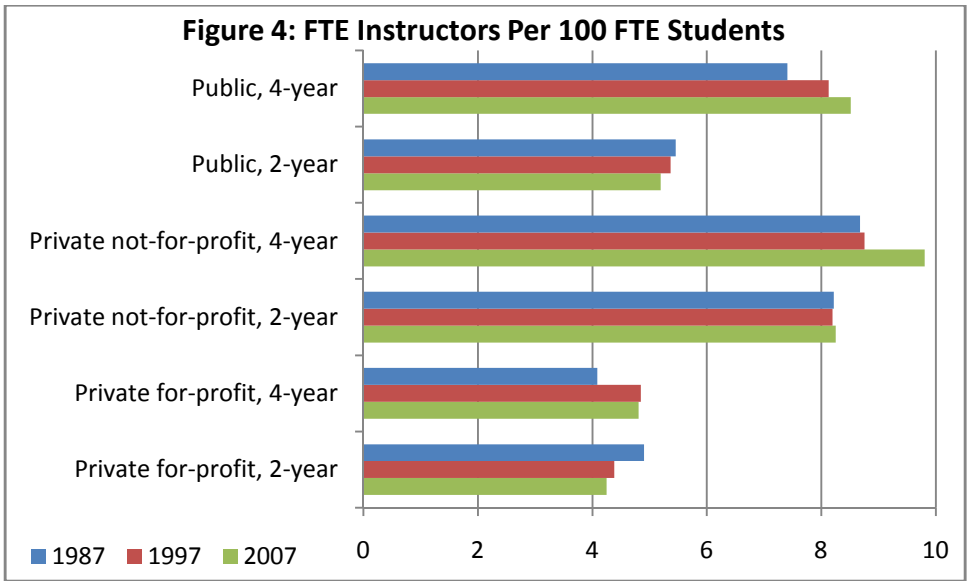


Source: IPEDS

Figure 3 indicated that colleges have experienced an increase in staff relative to enrollment since 1987, with the 4-year private not-for-profit sector being the exception. While the ratio provides a general relative measure of job growth, it does not differentiate between what I deem *front line* (instructors) and *back office* (managers and support staff) employees – both of which are vital to provide educational services, although each has a different role.

Front Line Employees

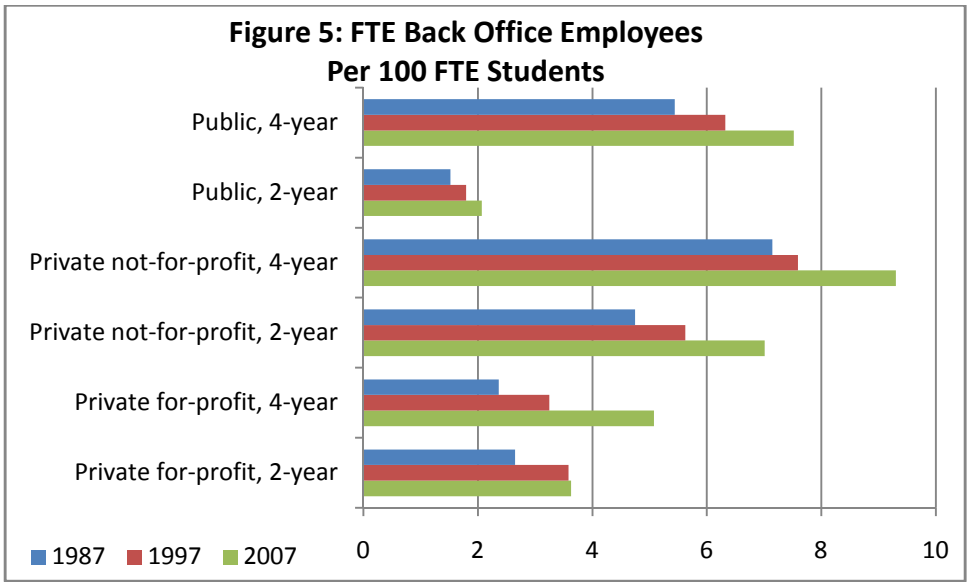
Instructors deliver the most fundamental service in higher education and thus, they can be viewed as the front line employees. Figure 4 presents a snapshot of the number of FTE instructors per 100 FTE students in the six sectors in 1987, 1997 and 2007. The number of FTE instructors per 100 FTE students increased between 1987 and 2007 in all but the public 2-year and private for-profit 2-year sectors, which experienced a decline of 4.8 and 13.3 percent, respectively. All of the 4-year sectors exhibited between a 13 and 17.6 percent increase over the period, while the ratio at the 2-year private not-for-profit sector was essentially unchanged, increasing by 0.4 percent.



Source: IPEDS

Back Office Employees

While instruction is the primary function of colleges, they do require some support staff to administer the various processes associated with running an institution, such as admissions, compliance, management and recruiting. The back office group includes employees that are categorized as either managers or support staff. This group makes up the core bureaucracy. Figure 5 displays the number of FTE back office employees per 100 FTE students in the six sectors in 1987, 1997 and 2007.



Source: IPEDS

The back office relative to enrollment has grown substantially in all six higher education sectors. The ratio in the 4-year private for-profit sector increased by 115 percent between 1987 and 2007, followed by the 2-year private not-for-profit sector, which increased by 47.8 percent during this time period. The remaining sectors experienced increases in this ratio between 30.2 and 38.2 percent for the same

period. This suggests that colleges have significantly expanded the size of their bureaucracies over the past twenty years.

V. LABOR FORCE PRODUCTIVITY

Productivity is typically defined as outputs divided by inputs. To measure labor productivity of colleges, we will use staffing levels as the input, whereas the output is somewhat subjective, so I will introduce two separate measures – FTE student enrollment and the number of degrees awarded. Each productivity ratio will be discussed separately. The former ratio will be described as *enrollment productivity,* while the latter will be described as *degree productivity.*

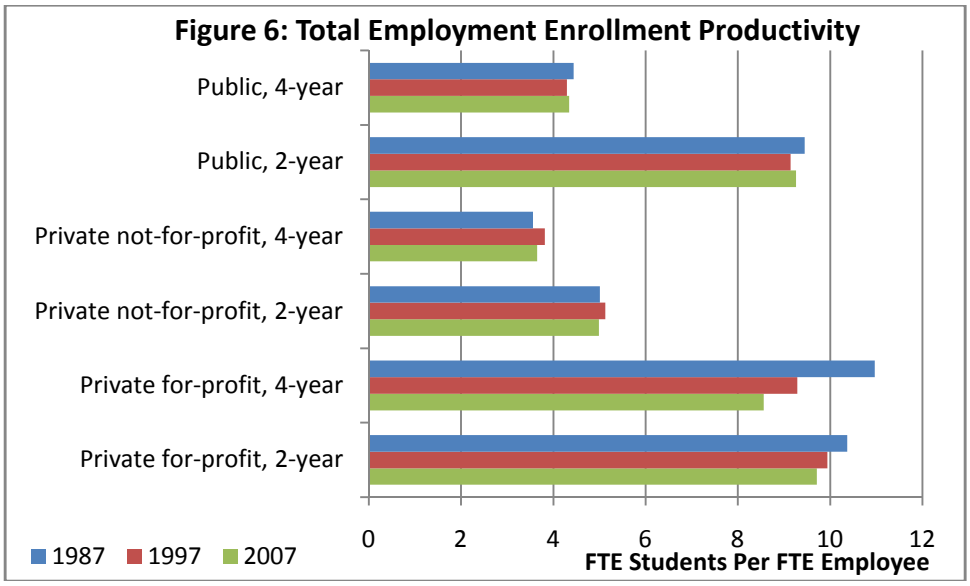
Enrollment Productivity

Enrollment productivity is measured by the number of FTE students enrolled per FTE employee. This ratio provides a relative measure of the number of employees that colleges utilize to manage their student body, allowing a side-by-side comparison of how colleges and sectors operate. There are a few drawbacks to this measurement though. First, it only considers the number of students enrolled and fails to account for how many students receive a degree. This issue will be examined in the degree productivity section. Enrollment productivity also does not take into account the supposed desirability of small class size. Some, including the popular U.S. News college rankings[6], argue that a low faculty-to-student ratio is advantageous for educational purposes. Wishing to avoid controversy, I will leave this determination up to the reader, but will address this issue by differentiating enrollment productivity by total, front line and back office employment.

Total Employment Enrollment Productivity

The total employment enrollment productivity ratio is calculated by dividing the FTE student enrollment by the total FTE employment. Figure 6 displays the total employment enrollment productivity by sector in 1987, 1997 and 2007. The private not-for-profit sectors both experienced gains in total employment enrollment productivity between 1987 and 1997, but pared those gains by 2007. All of the other sectors experienced a decline during this period. The public sectors both realized a small gain in total employment enrollment productivity between 1997 and 2007, but experienced an overall decline between 1987 and 2007. The 2- and 4-year private for-profit sectors declined by 6.4 and 22 percent over the twenty year period. Only the 4-year private not-for-profit sector increased its total employment enrollment productivity over the two decades, realizing a 2.5 percent gain.

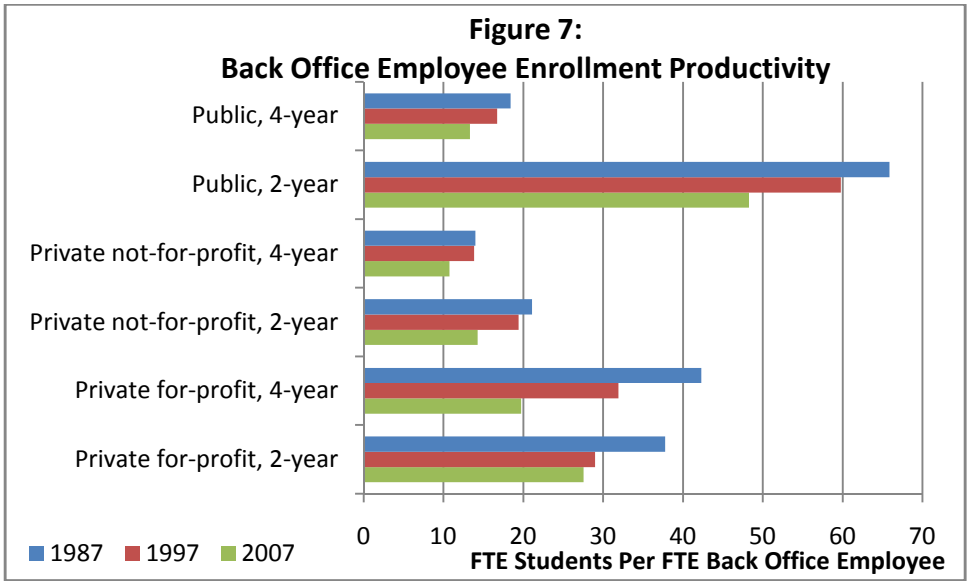
[6] Morse, Robert and Flanigan, Sam. "How we calculate the rankings." *U.S. News & World Report.* 21 August 2008. Available at http://www.usnews.com/articles/education/best-colleges/2008/08/21/how-we-calculate-the-rankings.html?PageNr=2



Source: IPEDS

Back Office Enrollment Productivity

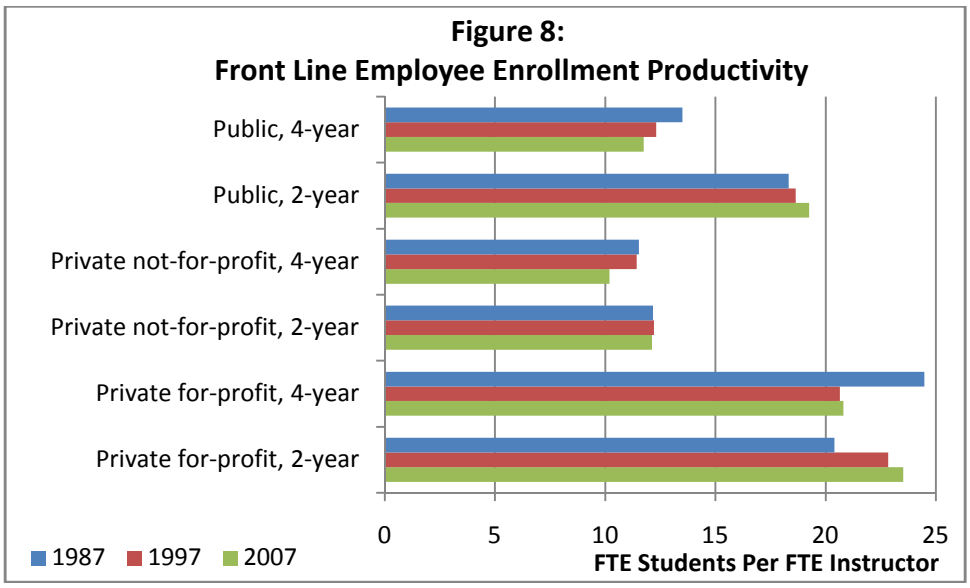
The back office enrollment productivity ratio is calculated by dividing the FTE student enrollment by the combined number of managers and support staff. Figure 7 displays the back office enrollment productivity by sector in 1987, 1997 and 2007. As indicated, back office enrollment productivity has declined substantially in the past twenty years in all six sectors of higher education. The 4-year private for-profit sector experienced the sharpest decline between 1987 and 2007, becoming 53.4 percent less productive, followed by the 2-year private not-for-profit sector, which realized a decline of 32.3 percent. Back office enrollment productivity declined the least in the 4-year private not-for-private sector, dropping by 23.2 percent, although it remains the least productive of the six. The remaining sectors experienced declines between 26.7 and 27.6 percent.



Source: IPEDS

Front Line Enrollment Productivity

The front line enrollment productivity ratio is calculated by dividing the FTE student enrollment by the number of FTE instructors. Figure 8 displays the front line enrollment productivity by sector in 1987, 1997 and 2007. All of the 4-year sectors experienced a double digit percentage decline in front line enrollment productivity between 1987 and 2007. The 2-year private for-profit sector realized a 15.3 percent gain in front line enrollment productivity during this period. The 2-year public sector experienced an increase of 5.1 percent, while the 2-year private not-for-profit sector has remained nearly constant.



Source: IPEDS

It was previously indicated that some proponents argue that small class sizes are desirable, although no mention was made of an ideal class size. According the U.S. News college ranking methodology, colleges are rewarded for having a large proportion of classes with 20 or fewer students enrolled and a small proportion of classes with 50 or more students[7]. This suggests that the average ideal class size is 20 or fewer students, but that classes with up to 50 students are acceptable. Although the front line enrollment productivity ratios calculated for figure 8 are not a direct measurement of class size, they do provide a rough estimate of average class size. We find that, aside from the private for-profit sectors whose ratios are marginally above twenty, the average class size in higher education is well below the arbitrarily defined ideal size of twenty. This finding implies that there is room for improvement in front line enrollment productivity without detrimentally affecting the quality of education.

<u>Degree Productivity</u>

Degree productivity is calculated by dividing the number of degrees awarded by the number of FTE employees. This ratio provides a relative measure of the number of graduates produced with a given staff level, allowing a side-by-side comparison of colleges and sectors ability to produce one of the few

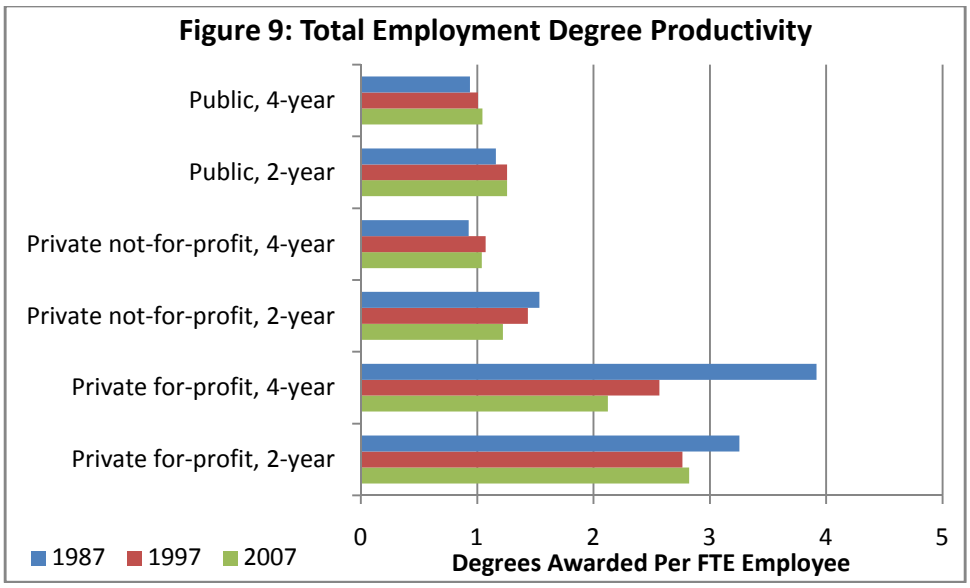
[7] Morse, Robert and Flanigan, Sam. "How we calculate the rankings." *U.S. News & World Report.* 21 August 2008. Available at http://www.usnews.com/articles/education/best-colleges/2008/08/21/how-we-calculate-the-rankings.html?PageNr=2

measurable outputs of higher education – degrees. Colleges that can turn out more degrees with fewer employees are more productive. As with enrollment productivity, I will examine total, back office and front line employee degree productivity.

There are some limitations to this measurement. First, the type of students that a particular type of school attracts varies, so a college with a large percentage of its students graduating from it may not necessarily be indicative of its true productivity. For instance, true productivity may be overestimated by degree productivity at selective colleges with high graduation rates - attributable to their screening out unpromising students. Next, it does not account for the mobility of students between colleges. A student may spend his first several years at one institution before transferring and eventually graduating from another. In this case, only one college gets credit for the degree and thus, the measure probably underestimates true productivity. This limitation is somewhat alleviated by the fact that most colleges experience some inter-institutional student mobility, so at least part of this problem is inherently included in the measurement. In addition, the measure may overestimate true productivity given that it is more common for students to receive multiple degrees simultaneously. By only including first major degrees, this effect should be stymied. A final potential limitation is that there are several different types of degrees, including associates, bachelors, masters, etc. I do not differentiate between the types of degrees, other than not including certificates, due to the fact that there are also various institutional types included in the sample, so this effect should be mitigated.

Total Employment Degree Productivity

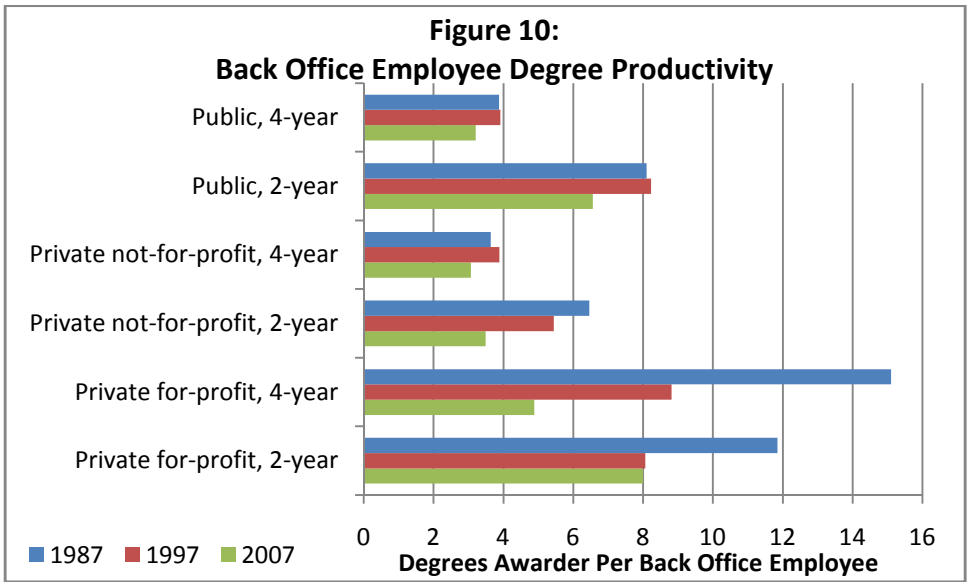
Total employment degree productivity is calculated by dividing the number of degrees awarded by the number of total FTE employees. Figure 9 provides a snapshot of the total employment degree productivity of the six sectors in 1987, 1997 and 2007. The 2- and 4-year public and 4-year private not-for-profit sectors experienced a gain in total degree productivity of 8.2, 11.6 and 12.3 percent, respectively, between 1987 and 2007. The 2- and 4-year for-profit and 2-year private not-for-profit sectors realized losses in degree productivity of 13.3, 45.8 and 20.5 percent, respectively. Despite the changes in productivity described, the for-profit sectors remain nearly twice as productive as their not-for-profit (including public) counterparts, in terms of degrees awarded.



Source: IPEDS

Back Office Degree Productivity

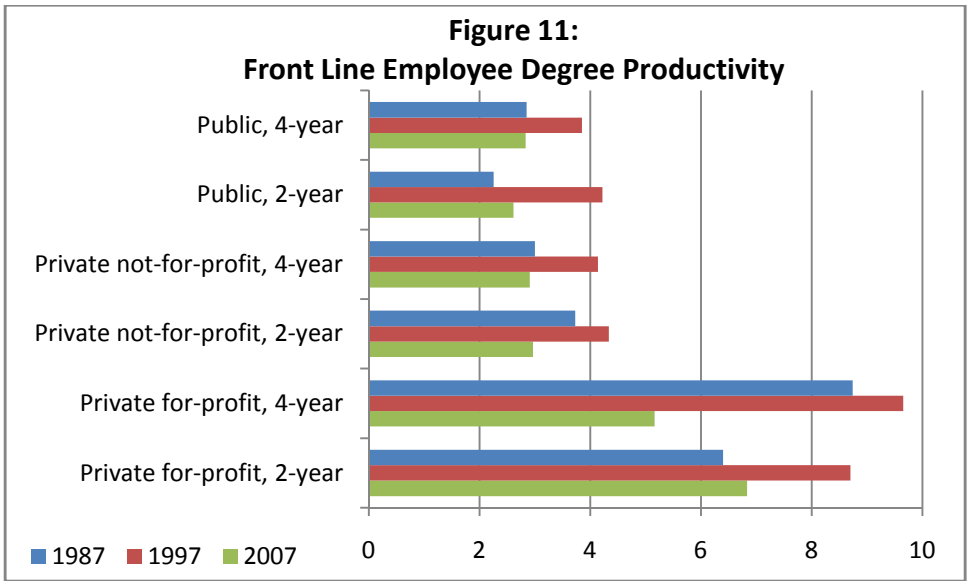
Back office degree productivity is calculated by dividing the number of degrees awarded by the combined number of FTE managers and support staff. Figure 10 displays the back office degree productivity at the six sectors in 1987, 1997 and 2007. Back office degree productivity declined significantly in all six sectors between 1987 and 2007, although both of the public and the 4-year private not-for-profit sectors realized an increase between 1987 and 1997. The 4- and 2-year private for-profit, as well as the 2-year private not-for-profit sectors experienced the largest decline in back office degree productivity during the twenty year period, sinking by 67.6, 32.4 and 45.9 percent, respectively. The remaining three sectors had declines between 15.8 and 19.1 percent during the period.



Source: IPEDS

Front Line Degree Productivity

Front line employee degree productivity is calculated by dividing the number of degrees awarded by the number of FTE instructors. Figure 11 shows the front line degree productivity of the six sectors in 1987, 1997 and 2007. All of the sectors experienced an increase in front line degree productivity between 1987 and 1997, but the gains were pared back between 1997 and 2007. In fact, all but the 2-year public and 2-year for-profit sectors, which increased by 16 and 6.8 percent, respectively, experienced an overall drop during the twenty-year period. The 4-year for-profit and 2-year private not-for-profit sectors declined the most, with reductions in degree productivity of 40.9 and 20.4 percent, respectively.



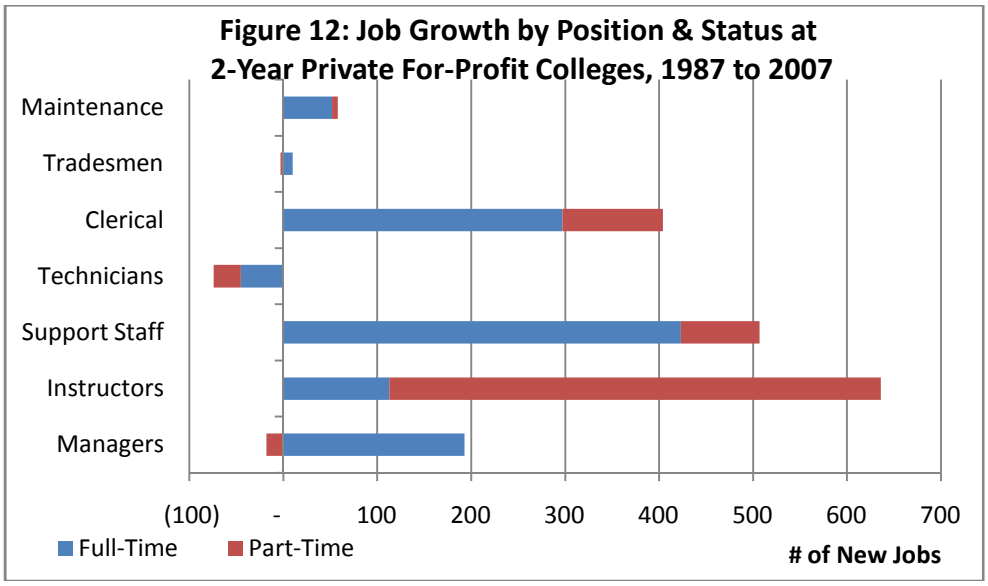
Source: IPEDS

VI. EMPLOYMENT GROWTH BY SECTOR

The previous sections have shown that the labor force in higher education has grown over the past twenty years both in real terms and relative to student enrollment. In addition, it was shown that productivity has declined (for the most part) during this period. This section will take a closer look at the change in the workforce in the six sectors between 1987 and 2007. Each sector will be discussed separately, as the change in workforce will be described in terms of absolute number of jobs by position, as well as the percentage change. Please keep in mind that the sample size for both of the private for-profit sectors, as well as the 2-year private not-for profit one, represent a relatively small proportion of the existing schools in the sector, so the absolute change in employment will be significantly less in these sectors than in the others.

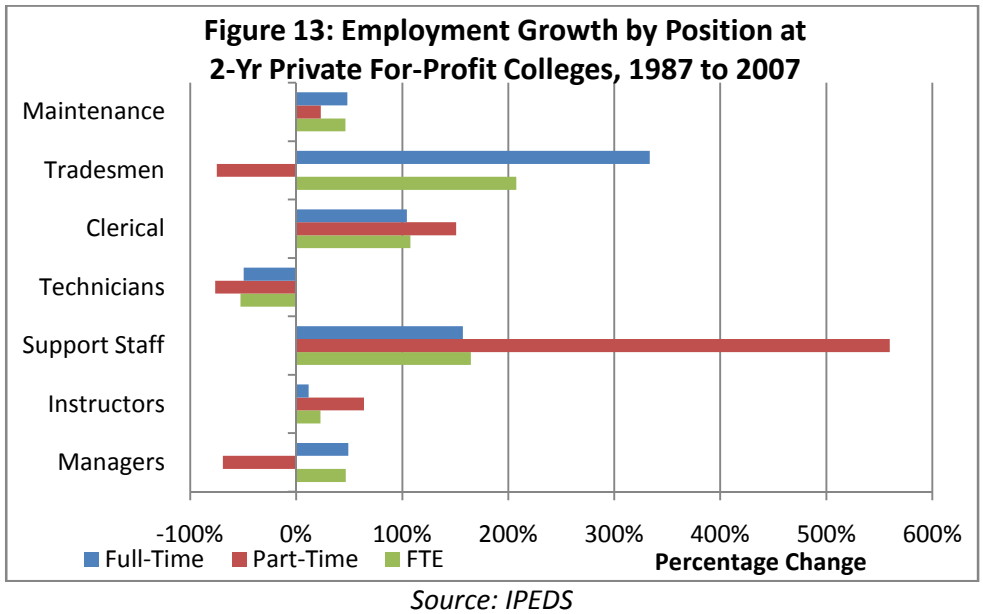
2-Year Private For-Profit

FTE employment in the 2-year private for-profit sector increased by 51.5 percent, or 2.6 percent per annum, between 1987 and 2007. Figure 12 displays employment growth by position in terms of the number of new jobs at schools in the private two-year for-profit sector between 1987 and 2007. The greatest numbers of full-time jobs were added in the support staff (423), clerical (297) and managerial (193) categories. Part-time instructors were the largest addition in terms of total new jobs (636), with the majority (82.2%) being part-time positions. The total number of technicians declined by 74, with the majority (60.8%) being full-time job cuts.



Source: IPEDS

Figure 13 displays employment growth by position in terms of percentage change at schools in the private two-year for-profit sector between 1987 and 2007. In terms of FTE, tradesmen jobs increased the most; however, it should be noted that there were only 13⅓ such jobs in 2007. Support staff and clerical jobs increased by 165 and 108 percent, respectively, while the number of management and maintenance jobs increased by slightly more than 46 percent each. Instruction positions increased by 23 percent, while the number of technicians declined by 52.7 percent.

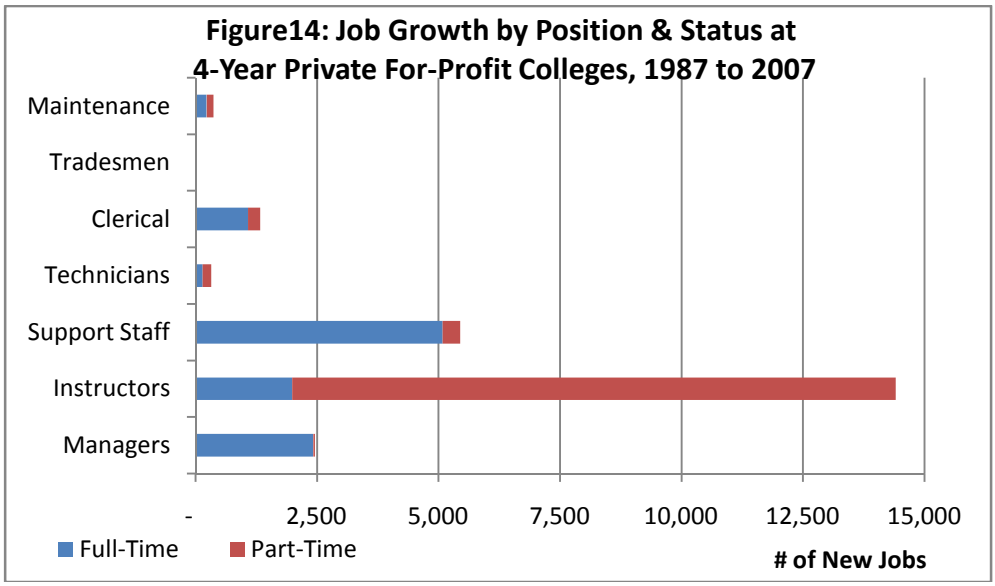


Source: IPEDS

4-Year Private For-Profit

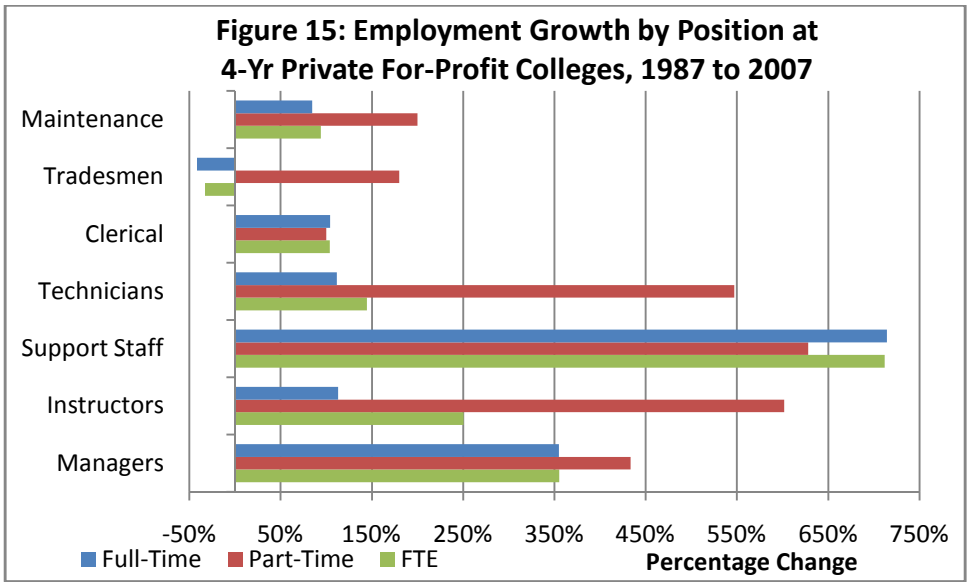
FTE employment in the 4-year private for-profit sector increased by 282 percent, or 14.1 percent per annum, between 1987 and 2007. Figure 14 displays employment growth by position in terms of the

number of new jobs at schools in the sector between 1987 and 2007. The greatest numbers of full-time jobs were added in the support staff (5,085) and managerial (2,420) categories. Instructors accounted for the most new total jobs (14,406), with the majority (86.2%) being part-time. The number of clerical, maintenance and technician workers increased by 1,332, 368 and 320, respectively. The number of tradesmen was nearly constant, declining by eight during the period.



Source: IPEDS

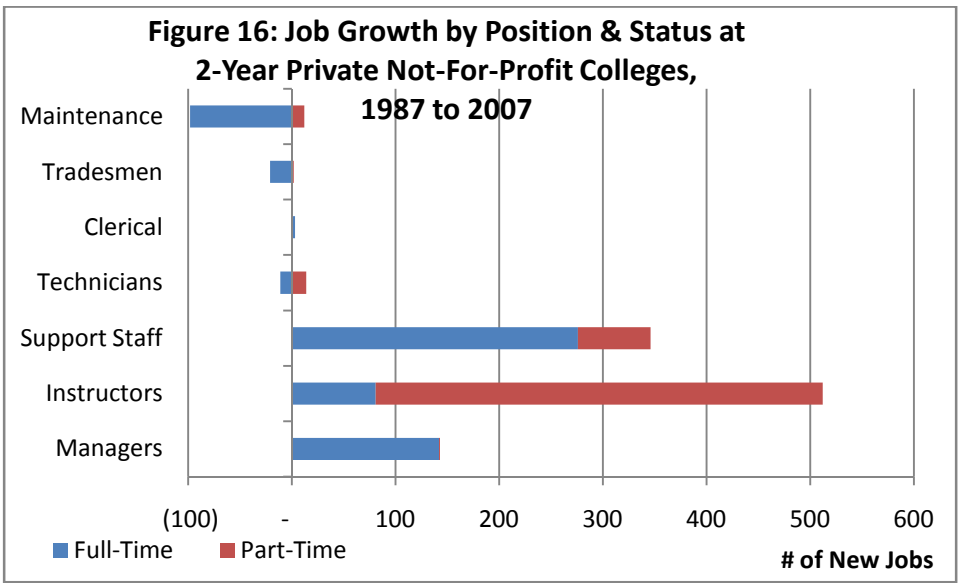
Figure 15 displays employment growth by position in terms of percentage change at schools in the private 4-year private for-profit sector between 1987 and 2007. In terms of FTE, support staff jobs increased the most (712%), followed by management positions, which grew by 355 percent. Instructors, technicians and clerical workers increased by 251, 145 and 104 percent, respectively. Maintenance positions grew by 94 percent, while the number of tradesmen declined by 32.8 percent.



Source: IPEDS

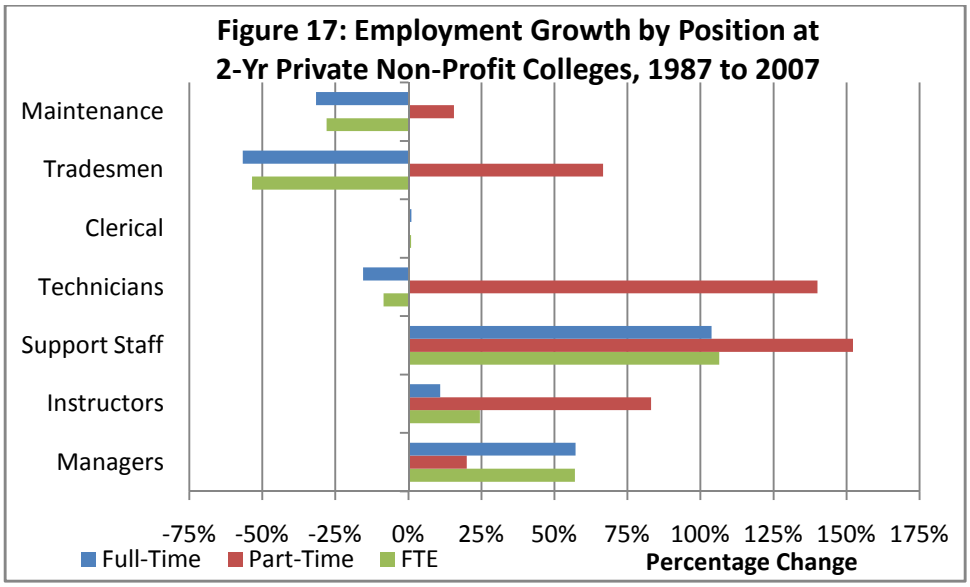
2-Year Private Not-For-Profit

FTE employment in the 2-year private not-for-profit sector increased by 24.6 percent, or 1.2 percent per annum, between 1987 and 2007. Figure 16 displays employment growth by position in terms of the number of new jobs at schools in the private two-year not-for-profit sector between 1987 and 2007. The greatest numbers of full-time jobs were added in the support staff (276) and management (142) categories. Instructors accounted for the most total new jobs (512), with the majority (85%) being part-time jobs. Maintenance workers and tradesmen declined by 86 and 19, respectively. The number of clerical and technicians remained relatively unchanged during the period.



Source: IPEDS

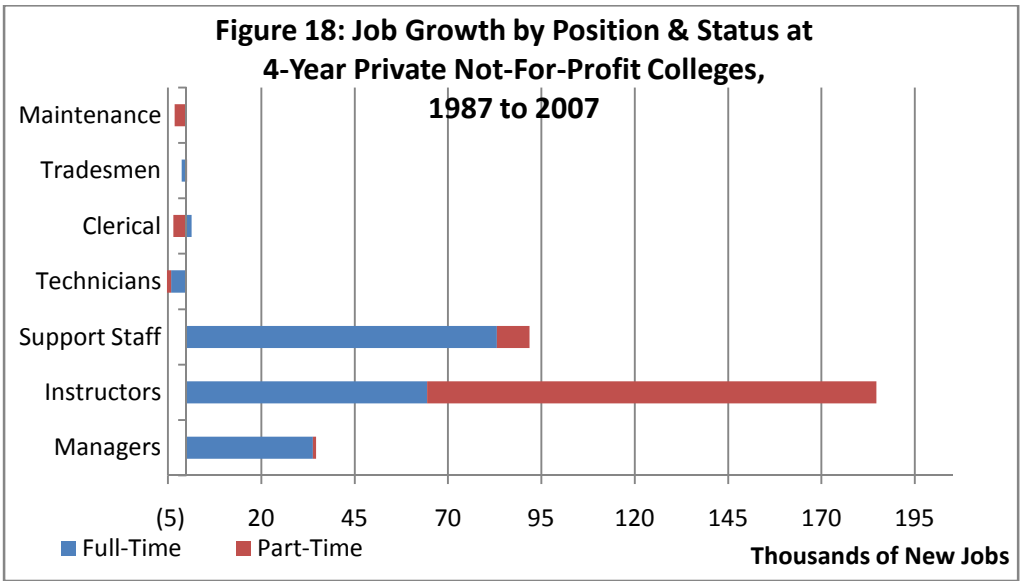
Figure 17 displays employment growth by position in terms of percentage change at schools in the 2-year private not-for-profit sector between 1987 and 2007. In terms of FTE, support staff positions increased the most (106%), followed by management and instructor positions, which grew by 57 and 24.4 percent, respectively. Clerical positions increased by a trivial 0.9 percent, while the remaining job categories decreased.



Source: IPEDS

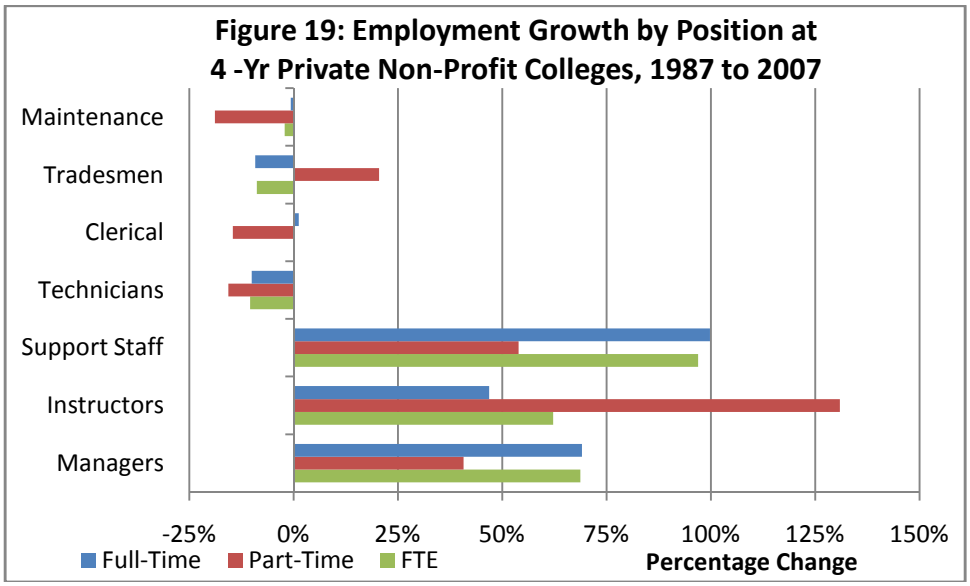
4-Year Private Not-For-Profit

FTE enrollment in the 4-year private not-for-profit sector increased by 40 percent, or 2 percent per annum, between 1987 and 2007. Figure 18 displays employment growth by position in terms of the number of new jobs at schools in the 4-year private not-for-profit sector between 1987 and 2007. Instructors accounted for the most total new jobs (184,652), with the majority (65.1%) being part-time jobs, followed by support staff (91,853), of which 90.4 percent were full-time jobs. Management jobs grew by 34,670, with 97.5 percent being full-time positions. The remaining job categories experienced a decline, with technicians and maintenance workers reporting the biggest drops of 5,351 and 3,189 jobs, respectively.



Source: IPEDS

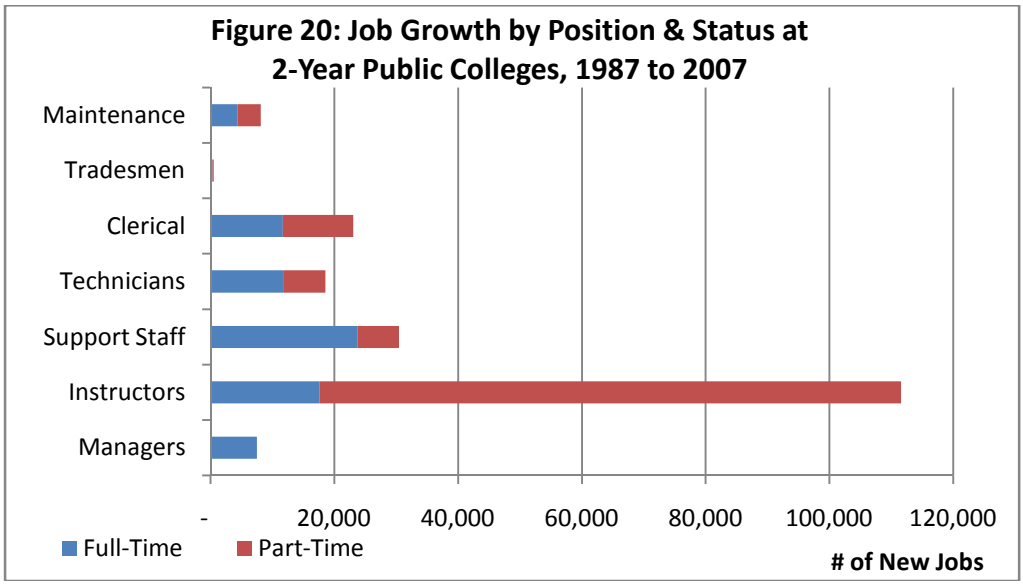
Figure 19 displays employment growth by position in terms of percentage change at schools in the private 4-year not-for-profit sector between 1987 and 2007. In terms of FTE, support staff positions increased the most (97%), followed by managers and instructors, which grew by 68.7 and 62.2 percent, respectively. Clerical positions increased by a trivial 0.1 percent, while the remaining job categories decreased.



Source: IPEDS

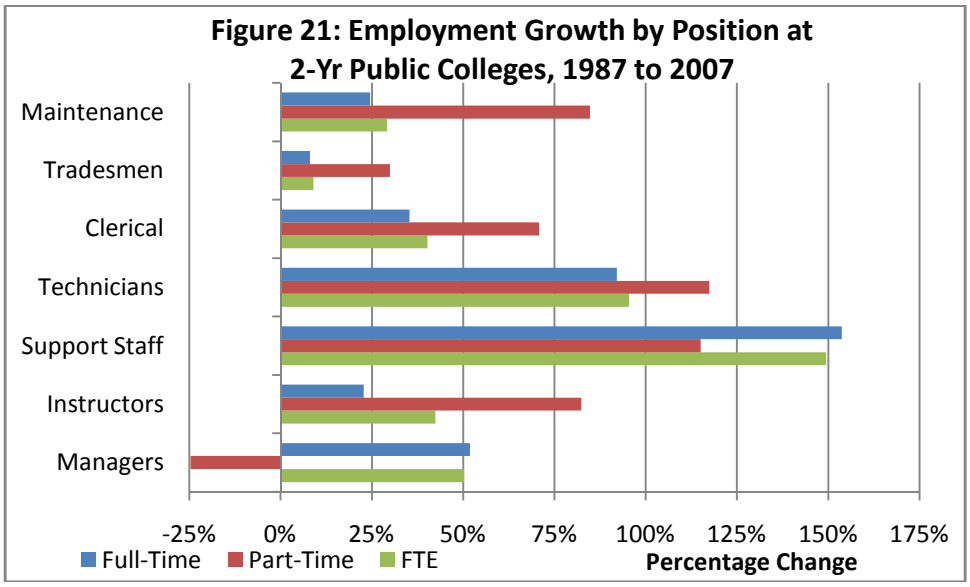
2-Year Public

FTE employment in the 2-year public sector increased by 52.5 percent, or 2.6 percent per annum, between 1987 and 2007. Figure 20 displays employment growth by position in terms of the number of new jobs at schools in the sector between 1987 and 2007. Instructors accounted for the most total new jobs (111,573), with the majority (84.2%) being part-time jobs. Support staff grew by 30,456, of which 78.1 percent were full-time jobs. Clerical and technical positions increased by 23,078 (63.1% FT) and 18,562 (50.6% FT), respectively. Full-time management jobs grew by 7,492. The number of maintenance employees and tradesmen increased by 8,108 (53.3% FT) and 487 (66.5% FT), respectively.



Source: IPEDS

Figure 21 displays employment growth by position in terms of percentage change at schools in the 2-year public sector between 1987 and 2007. In terms of FTE, support staff increased the most (149%), followed by technicians (95.4%). Managers, instructors and clerical workers grew by 50.3, 42.4 and 40.2 percent, respectively. Maintenance employees and tradesmen increased by 29.2 and 9 percent, respectively.

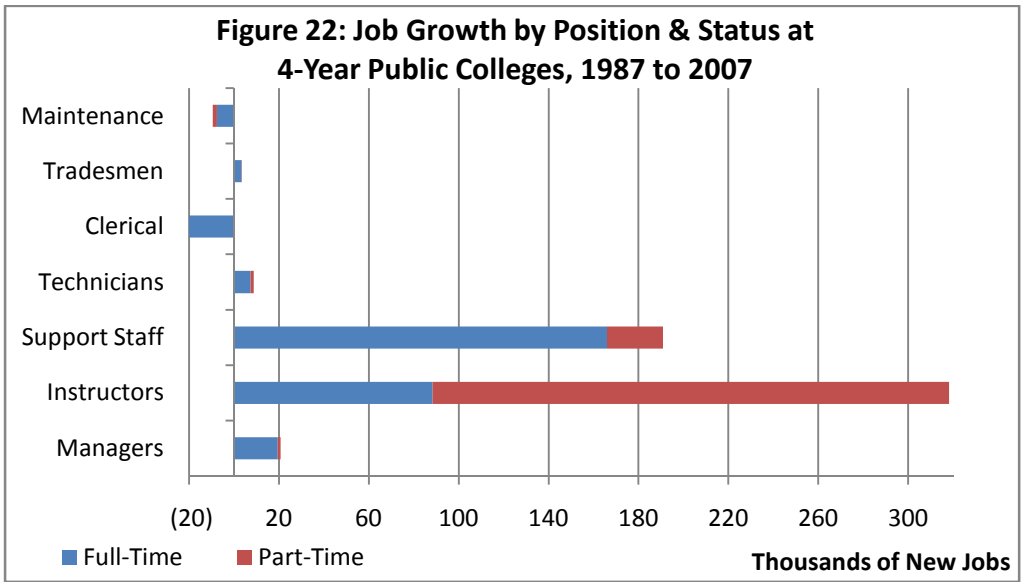


Source: IPEDS

4-Year Public

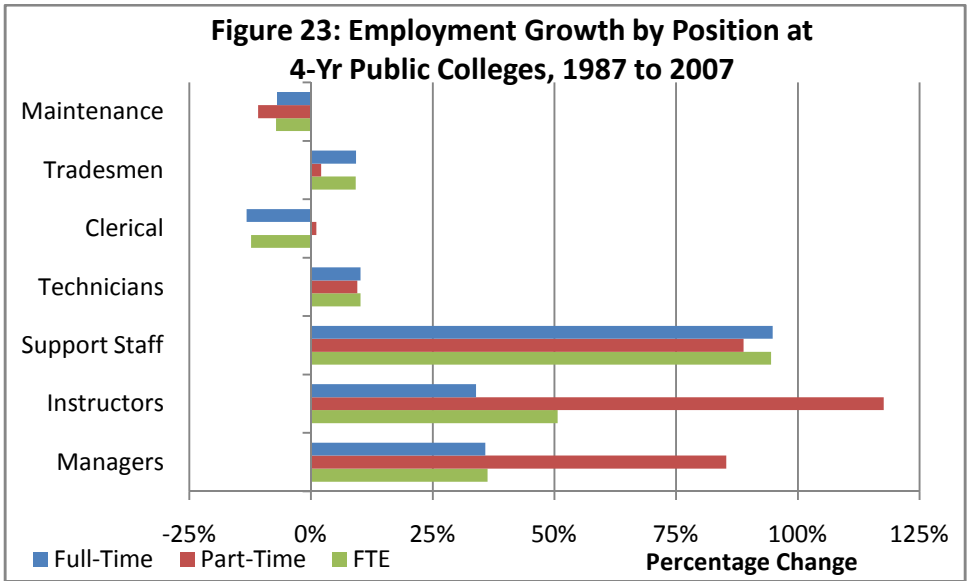
FTE employment in the 4-year public sector increased by 34.1 percent, or 1.7 percent per annum, between 1987 and 2007. Figure 22 displays employment growth by position in terms of the number of

new jobs at schools in the sector between 1987 and 2007. Instructors accounted for the most total new jobs (318,089), with the majority (72.2%) being part-time jobs. The support staff grew by 190,889, of which 89.6 percent were full-time positions. Management jobs grew by 20,690, with 93.9 percent being full-time. The number of technicians and tradesmen positions increased by 8,801 and 3,367, of which 89.9 and 90.9 percent were part-time, respectively. The number of clerical and maintenance jobs decreased by 23,850 and 9,504, respectively, the majority of which were full-time job losses.



Source: IPEDS

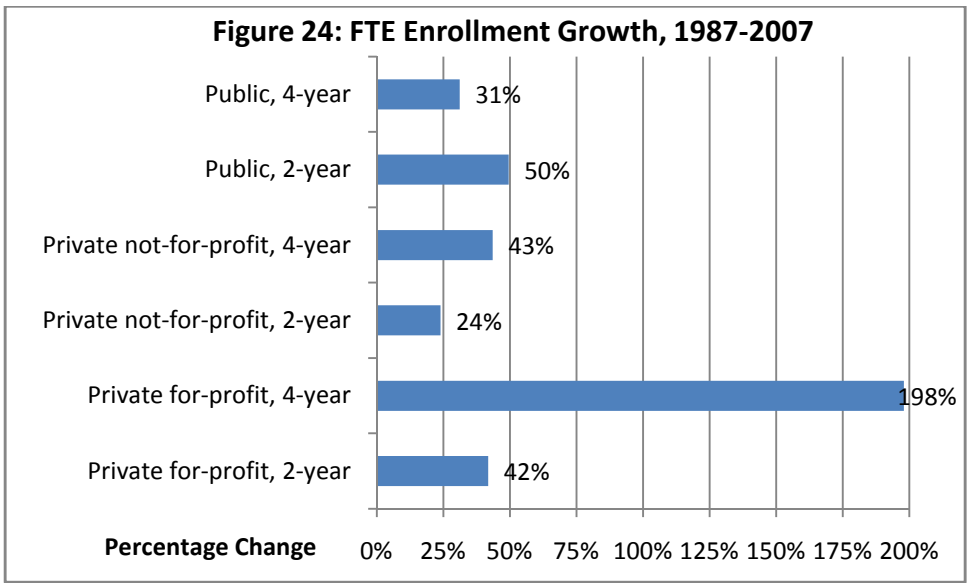
Figure 23 displays employment growth by position in terms of percentage change at schools in the public four-year sector between 1987 and 2007. In terms of FTE, the support staff increased the most (94.5%), followed by instructors (50.7%) and management (36.2%) positions. The number of technicians and tradesmen jobs increased by 10.1 and 9.2 percent, respectively. Maintenance and clerical jobs both experienced a decline.



Source: IPEDS

VII. CHANGE IN EMPLOYMENT RELATIVE TO AN INCREASE IN ENROLLMENT

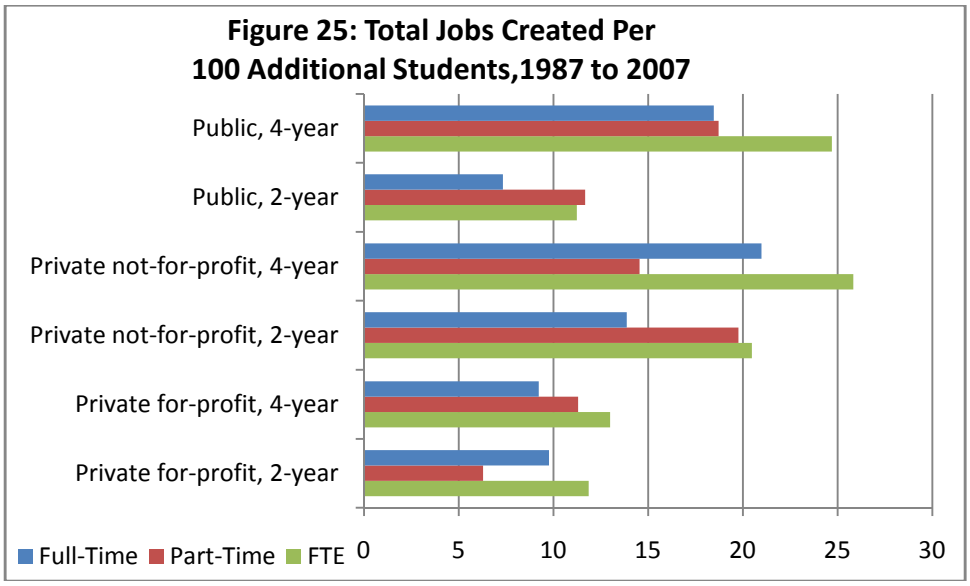
The FTE student enrollment increased by nearly 3.4 million, or 39.7 percent, between 1987 and 2007. The change in enrollment varied by sector, as figure 24 depicts. The private 4-year for-profit sector experienced the most growth, increasing by 198 percent. FTE enrollment at the 2-year public, 4-year private not-for-profit and 2-year private for-profit schools grew by 49.6, 43.5 and 41.8 percent, respectively. FTE enrollment at the 4-year public and 2-year private not-for-profit schools grew by 31.1 and 23.9 percent, respectively.



Source: IPEDS

The previous section examined the change in the higher education workforce by job category in the six sectors between 1987 and 2007. This section will look at the change in employment relative to the change in enrollment in the six sectors between 1987 and 2007. The following figures will show the number of new jobs created per 100 additional students enrolled. This will provide a measure of how colleges have responded to an increase in student enrollment with respect to changes in their work force.

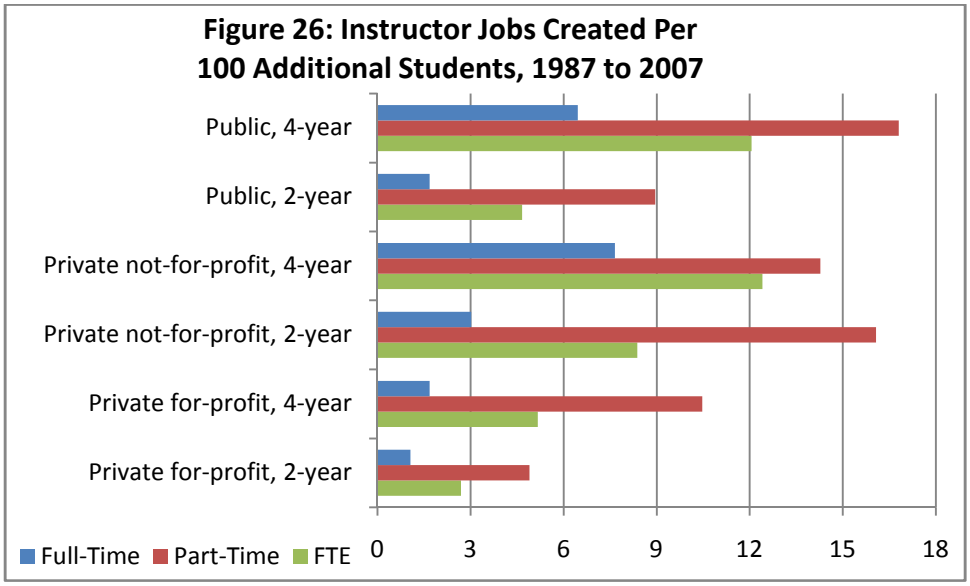
Figure 25 reveals the number of total jobs created for every 100 new students between 1987 and 2007 at the six segments. The 4- and 2- year public schools created 24.7 and 11.2 FTE jobs for every 100 new students, respectively. The 4- and 2-year private not-for-profit sectors added 25.8 and 20.5 FTE jobs for every 100 extra students, respectively. The 4- and 2-year private sectors added 13 and 11.9 FTE jobs for every 100 additional students, respectively. The next several figures detail the types of jobs created per 100 additional FTE students.



Source: IPEDS

Change in Instructor Jobs Relative to Increased Enrollment

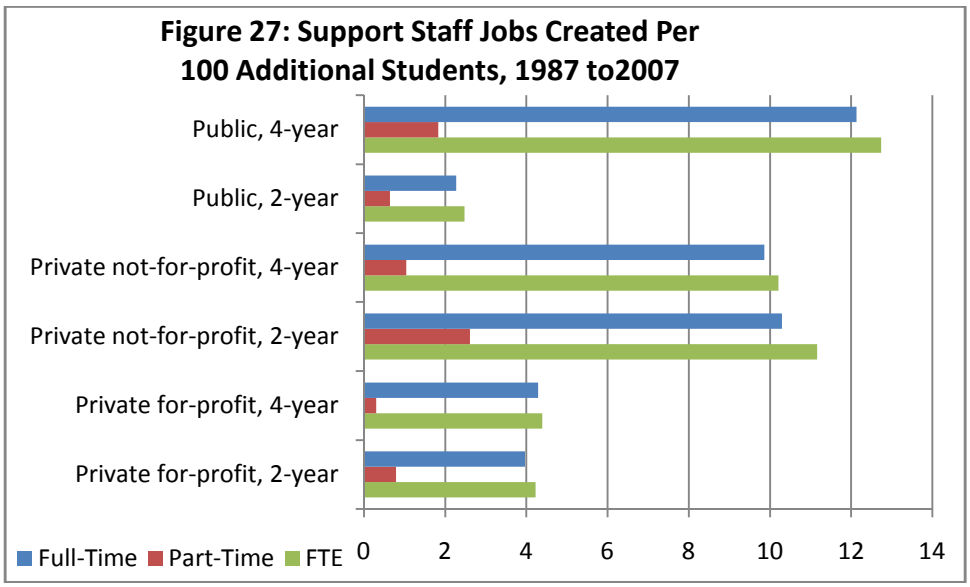
Figure 26 shows the number of new instructor jobs created per 100 students at the six sectors. As is evident, colleges increased their instruction staff primarily with part-time employees, especially in the 2-year and for-profit sectors. The 4-year private not-for-profit sector added the greatest number of instructors per 100 additional students (12.41 FTE), followed by the 4-year public sectors (12.06 FTE). The 2-year private not-for-profit and 2-year public schools added 8.38 and 4.66 instructors per 100 additional students, while the 4- and 2-year for-profit schools added 5.17 and 2.69 instructors for per additional 100 FTE students.



Source: IPEDS

Change in Support Staff Relative to Increased Enrollment

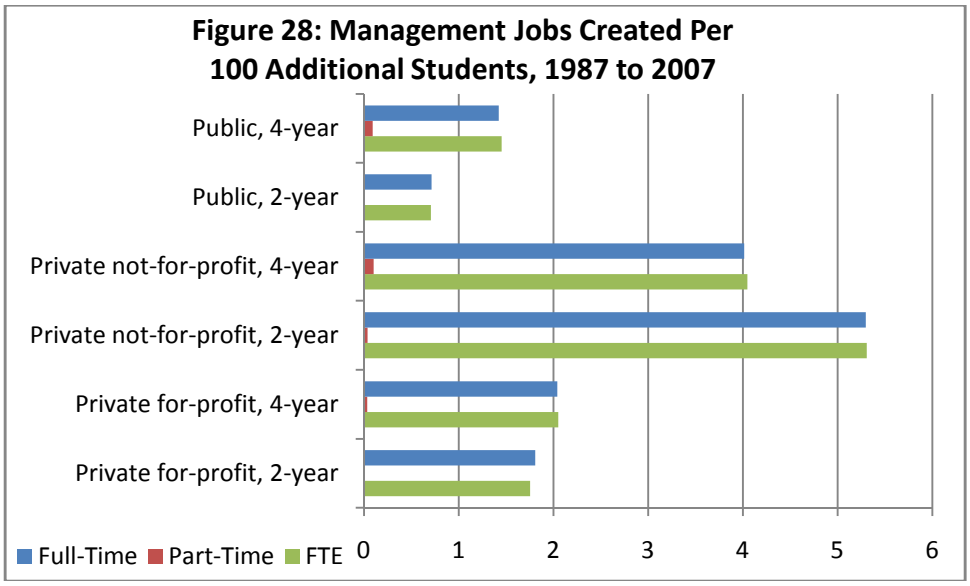
Figure 27 displays the number of new support staff jobs created for every 100 new students at the six sectors between 1987 and 2007. Public 4- and 2-year schools added 12.7 and 2.48 FTE support staff employees for every 100 FTE students, respectively. The 4- and 2-year private not-for-profit schools created 10.21 and 11.16 FTE support staff jobs for every 100 new FTE students, respectively. The 4- and 2-year private for-profit schools increased FTE support staff employment by 4.39 and 4.23 per additional 100 FTE students, respectively.



Source: IPEDS

Change in Management Relative to Increased Enrollment

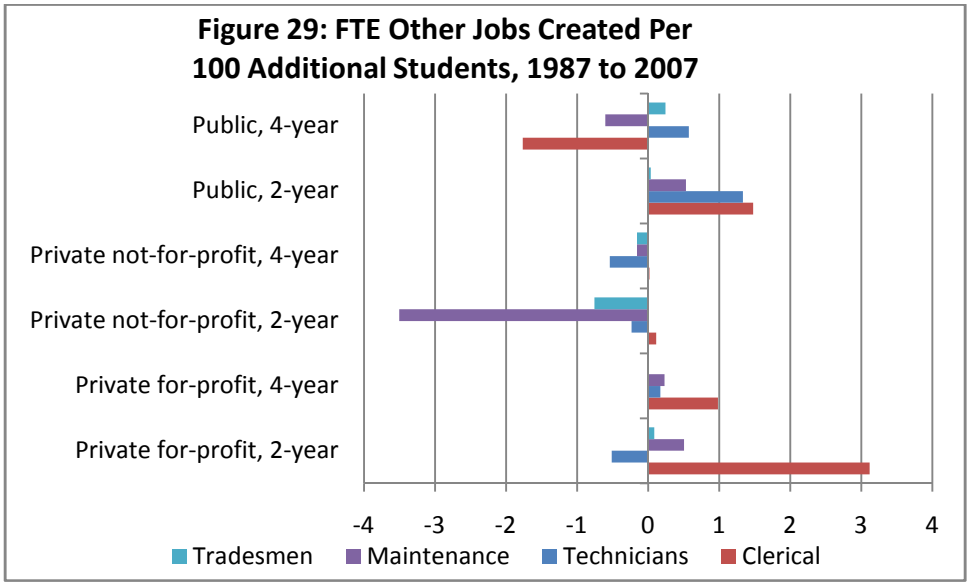
Figure 28 displays the number of new management positions created for every 100 new students at the six sectors between 1987 and 2007. The 4- and 2-year public sectors added 1.45 and 0.71 FTE managers for every 100 FTE students, respectively. The 4- and 2-year private not-for-profit sectors created 4.05 and 5.31 FTE management jobs for every 100 FTE new students, respectively, while the 4- and 2-year private for-profit sectors increased FTE managers by 2.05 and 1.75 per additional 100 FTE students, respectively.



Source: IPEDS

Change in Other Jobs Relative to Increased Enrollment

Figure 29 shows the number of new FTE tradesmen, maintenance, technicians and clerical workers per additional 100 FTE student enrolled at the six sectors between 1987 and 2007. The 2- and 4- year private for-profit sectors added 3.2 and 1.4 of these four FTE positions for every 100 additional FTE students, while the 2-year public sector added 3.4 of these four FTE positions per 100 additional FTE students. The 4-year public sector eliminated 1.6 of these FTE positions per additional 100 FTE students. The 2- and 4-year private not-for-profit sectors eliminated 4.4 and 0.8 of these four positions per additional 100 FTE students.



Source: IPEDS

VIII. SUMMARY

The demand for college education has increased during the past twenty years, as evidenced by rising enrollments. In partial response, colleges have expanded their work force. The above analysis demonstrates that colleges have done this by hiring a large number of part-time instructional staff, which provides the fundamental educational services, while at the same time adding a disproportionate number of full-time management and support staff. This is empirically supported by examining the number of employees relative to enrollment, which has increased substantially during the past two decades, especially with respect to the management and support staff.

This expansion of the labor force relative to enrollment has increasingly resulted in unproductive use of labor resources in higher education. Two separate measures of labor productivity were provided (enrollment and degree) and disaggregated by employee function, including back office (management and support staff) and front line (instructors).

What we find is that *enrollment productivity* declined at all but the 4-year private not-for profit sector between 1987 and 2007, with all sectors experiencing a decline in back office enrollment productivity and all but the 2-year public sector a decline in front line enrollment productivity. *Degree productivity* declined in both the 2- and 4-year for-profit sectors, as well as in the 2-year private not-for-profit one. The 4-year private not-for profit and both the 2- and 4-year public sectors experienced an increase in degree productivity during the period. All six segments realized a drop in back office degree productivity, and only the 2-year for-profit and 2-year public sectors had an overall gain in front line degree productivity during the period. The above analysis indicates that the for-profit sectors are more productive than the not-for-profit sectors and that the 2-year sectors are more productive than their 4-year counterparts.

APPENDIX A: GLOSSARY

Back Office Employees – the combined number of managers and support staff.

Degree Productivity - the number of degrees award per FTE employee. This ratio provides a relative measure of the number of graduates produced with a given staff level.

Enrollment Productivity – the number of FTE students enrolled per FTE employee. This ratio provides a relative measure of the number of employees that colleges utilize to manage their student body.

Full-Time Equivalent (FTE) – the sum of the number of part-time students (employees) divided by three and the number of full-time students (employees). {FTE = (PT/3) + FT}

Front Line Employees – the number of faculty and instructors.

Total Employment – the sum of full-time and part-time employees. {TE = FT + PT}

APPENDIX B: DEFINITION OF JOB CATEGORIES

Seven job categories were referred to throughout this report. The data collected from IPEDS was organized into these categories according to the primary occupational activity. These categories are described below, with how each will be referred to in this report in parenthesis.

- *Faculty (Instructors)* -Persons identified by the institution as such and typically those whose initial assignments are made for the purpose of conducting instruction, research or public service as a principal activity (or activities). They may hold academic rank titles of professor, associate professor, assistant professor, instructor, lecturer or the equivalent of any of those academic ranks. Faculty may also include the chancellor/president, provost, vice provosts, deans, directors or the equivalent, as well as associate deans, assistant deans and executive officers of academic departments (chairpersons, heads or the equivalent) if their principal activity is instruction combined with research and/or public service. The designation as "faculty" is separate from the activities to which they may be currently assigned. For example, a newly appointed president of an institution may also be appointed as a faculty member. Graduate, instruction, and research assistants are not included in this category.[8]

- *Executive, Administrative, and Managerial (Managers)* - Persons whose assignments require management of the institution, or a customarily recognized department or subdivision thereof. Assignments require the performance of work directly related to management policies or general business operations of the institution, department or subdivision. Assignments in this category customarily and regularly require the incumbent to exercise discretion and independent judgment. Included in this category are employees holding titles such as: top executives; chief executives; general and operations managers; advertising, marketing, promotions, public relations, and sales managers; operations specialties managers; administrative services managers; computer and information systems managers; financial managers; human resources managers; purchasing managers; postsecondary education administrators such as: presidents, vice presidents (including assistants and associates), deans (including assistants and associates) if their principal activity is administrative and not primarily instruction, research or public service, directors (including assistants and associates), department heads (including assistants and associates) if their principal activity is administrative and not primarily instruction, research or public service, assistant and associate managers (including first-line managers of service, production and sales workers who spend more than 80 percent of their time performing supervisory activities); engineering managers; food service managers; lodging managers; and medical and health services managers.[9]

- *Other Professional Staff (Support Staff)* - Persons employed for the primary purpose of performing academic support, student service, and institutional support, whose assignments would require either a baccalaureate degree or higher or experience of such kind and amount as to provide a comparable background. Included in this category are all employees holding titles such as business operations specialists; buyers and purchasing

[8] Integrated Postsecondary Education Data System (IPEDS) data description
[9] Ibid

agents; human resources, training, and labor relations specialists; management analysts; meeting and convention planners; miscellaneous business operations specialists; financial specialists; accountants and auditors; budget analysts; financial analysts and advisors; financial examiners; loan counselors and officers; computer specialists; computer and information scientists, research; computer programmers; computer software engineers; computer support specialists; computer systems analysts; database administrators; network and computer systems administrators; network systems and data communication analysts; counselors, social workers, and other community and social service specialists; counselors; social workers; health educators; clergy; directors, religious activities and education; lawyers; librarians, curators, and archivists; museum technicians and conservators; librarians; artists and related workers; designers; athletes, coaches, umpires; dancers and choreographers; music directors and composers; chiropractors; dentists; dietitians and nutritionists; optometrists; pharmacists; physicians and surgeons; podiatrists; registered nurses; therapists.[10]

- *Technical and Paraprofessional (Technicians)* - Persons whose assignments require specialized knowledge or skills which may be acquired through experience, apprenticeship, on-the-job-training, or academic work in occupationally specific programs that result in a 2-year degree or other certificate or diploma. Includes persons who perform some of the duties of a professional in a supportive role, which usually requires less formal training and/or experience than normally required for professional status. Included in this category are mathematical technicians; life, physical, and social science technicians; agricultural and food science technicians; chemical technicians; geological and petroleum technicians; nuclear technicians; paralegals and legal assistants; miscellaneous legal support workers; health technologists and technicians; dietetic technicians; pharmacy technicians; licensed practical and licensed vocational nurses; medical records and health information technicians; opticians, dispensing; healthcare support occupations; nursing aides, orderlies, and attendants; physical therapist assistants and aides; massage therapists; dental assistants; medical assistants; and pharmacy aides.[11]

- *Clerical and Secretarial (Clerical)* – Persons whose assignments typically are associated with clerical activities or are specifically of a secretarial nature. Includes personnel who are responsible for internal and external communications, recording and retrieval of data (other than computer programmer) and/or information and other paperwork required in an office. Also includes such occupational titles such as switchboard operators, including answering service; telephone operators; bill and account collectors; billing and posting clerks and machine operators; bookkeeping, accounting, and auditing clerks; payroll and timekeeping clerks; procurement clerks; file clerks; etc.[12]

- *Service / Maintenance (Maintenance)* – Not defined by IPEDS. Dictionary.com defines maintenance as "the act of maintaining, care or upkeep".[13] Wikipedia refers to maintenance as "fixing any sort of mechanical or electrical device should it become out of order or broken as

[10] Ibid
[11] Ibid
[12] Ibid
[13] http://dictionary.reference.com/browse/maintenance

well as performing actions which keep the device in working order".[14] Such positions might include mechanics, machinists, etc.

- *Skilled Crafts (Tradesmen)* – Not defined by IPEDS. Dictionary.com defines a craft as "an art, trade, or occupation requiring special skill, especially manual labor."[15] Such positions might include carpenters, painters electricians, etc., who are often referred to as tradesmen, which is defined as "a skilled manual worker in a particular trade or craft".[16]

[14] http://en.wikipedia.org/wiki/Maintenance,_repair_and_operations
[15] http://dictionary.reference.com/browse/craft
[16] http://en.wikipedia.org/wiki/Tradesman