Fall 10-2007

A Longitudinal Study on the Number of Graduates from U.S. Colleges and University IT Programs

Rick Weible
Marshall University, weible@marshall.edu

Recommended Citation
Weible, R. J. (2007, October). A longitudinal study on the number of graduates from U.S. colleges and university IT programs. Paper presented at the Southeastern Informs 2007 Annual Meeting, Myrtle Beach, NC.

A Longitudinal Study on the Number of Graduates from U.S. Colleges and University IT Programs.

by

Rick Weible, Division of Management and Marketing,
Marshall University, Huntington, WV 25755,
email - weible@marshall.edu, (304) 696-2673

ABSTRACT

This paper examines the graduation rates for all types of degrees earned by students majoring in information technologies at U.S. colleges and universities. The numbers used in this report are based on graduation numbers reported to the U.S. Department of Education. These numbers show a growth in the total number of graduates between 1995 and 2005 from 103,039 to 187,237 with a peak in 2003 of 240,862. There is a sharp decline between 2003 and 2005. This decline can be linked to major events: the burst of the IT bubble and the terrorist attacks of September 11, 2001. And there is a lag between graduations (completions) and initial enrollments based on the length of time required to complete a program. For a bachelor's degree the lag is between 4 to 6 years.

INTRODUCTION

The demand for IT professionals has had its up and down in the past ten years. At the turn of the century demand was at an all time high. New graduates had several positions to choose from with record high starting salaries and great sign-on incentives such as new cars and cash. With the hope of a great job with a high salary and even the chance to become a quick millionaire on the Internet, students were flocking to IT programs. The findings of this study show this large increase. But the old adage, "what goes up, must come down" applies to the enrollment and graduation rate of IT students.

What a difference a few years can make. For the past three years the number of IT graduates has fallen by more than 22% from the 2003 high of 240,862 to 2005's 187,237. This is still a significant increase over 103,039 graduates in 1995. Between 1995 and 2003, the number of IT graduates grew by more than 133%. Information technology is taking an ever more important role in the economy of today and tomorrow. The demand for IT professionals is again on the rise [12, 13, 14]. With this rise in demand for IT professionals, it is important to make every effort to boost the enrollment in IT programs today to meet the growing needs of tomorrow. If this issue is not addressed, the U.S. will lose its place as the world technology leader.

DATA COLLECTION

The data used in this study was obtained from the US Department of Education. The Department of Education collects various types of data about educational programs in the US. The data for this study comes from IPEDS, Integrated Postsecondary Education Data System.
"The US Department of Education was created in 1980 by combining offices from several federal agencies. Its original directive remains its mission today — to ensure equal access to education and to promote educational excellence throughout the nation. The US Department of Education is dedicated to:

- Establishing policies on federal financial aid for education, and distributing as well as monitoring those funds.

- Collecting data on America's schools and disseminating research.
- Focusing national attention on key educational issues.
  Prohibiting discrimination and ensuring equal access to education."[7]

Under this mission the Department of Education collects statistics on most educational programs in the U.S. The department charged with statistical collection and analysis is the National Center for Education Statistics (NCES).

TECHNOLOGY STUDENT GRADUATION NUMBERS

"One of the National Center for Education Statistics programs is the Integrated Postsecondary Education Data System (IPEDS). IPEDS, established as the core postsecondary education data collection program for NCES, is a system of surveys designed to collect data from all primary providers of postsecondary education. IPEDS is a single, comprehensive system designed to encompass all institutions and educational organizations whose primary purpose is to provide postsecondary education. The IPEDS system is built around a series of interrelated surveys to collect institution-level data in such areas as enrollments, program completions, faculty, staff, and finances."[2]

IPEDS data is available for download at http://nces.ed.gov/ipedspas/index.asp.[9] This research will examine 11 years of program completions data for the academic years between 1994-95 and 2005-06. 2005-06 is the latest data available. Program completion records are reports from postsecondary schools listing the number of students completing each program the school offers. The programs are coded using CIP (Classification of Instructional Programs) codes. CIP codes were created in 1980 with updates in 1985, 1990 and 2000. When updates occur, a 3 year conversion period is permitted before reporting using the new codes is mandatory [8]. Goto http://nces.ed.gov/pubs2002/cip2000/index.asp to see 2000 CIP codes.

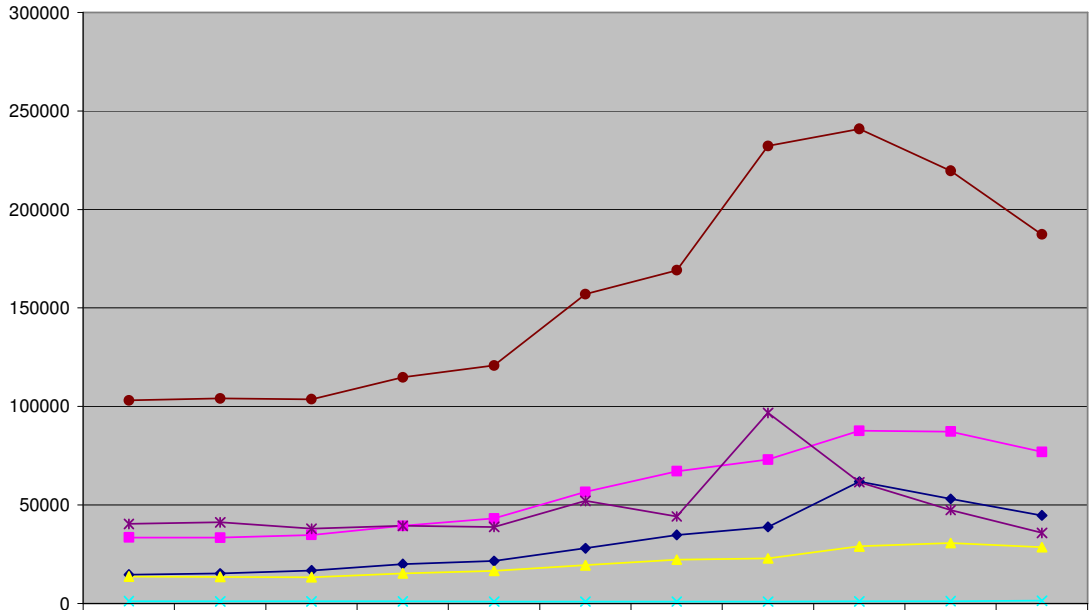
RESEARCH QUESTIONS

What has been happening to the graduation rates in IT programs? What has been happening to the graduation rates in IT programs by degree level? By major? By region of the country? In public versus private schools? In different types of schools based on the Carnegie classification system? By gender? By location? Each questions is investigated.

ANALYSIS

What has been happening to the graduation rates in IT programs? Table 1 shows what has been happening in graduation totals in all types of it programs in all types of schools.

Table 1 – Total IT Program Completions



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total Associates	14630	15110	16706	19887	21505	28006	34765	38789	61881	53052	44627
Total Bachelors	33471	33293	34783	39271	43146	56619	67091	72981	87540	87275	76919
Total Masters	13540	13483	13309	15304	16448	19405	22129	22817	28988	30676	28556
Total Doctors	1068	1005	1003	1026	889	926	902	893	992	1149	1378
All Other Degrees	40330	41137	37832	39274	38772	52027	44165	96698	61461	47380	35757
Grand Total	103039	104028	103633	114762	120760	156983	169052	232178	240862	219532	187237

What does Table 1 show? These numbers and the associated graph show a strong upward trend until 2003, when the trend starts down in all degree areas, except doctorates, which maintains its slow upward movement. Between 2003 and 2005 the total number of degrees issued declined by 53,625 from 240,862 in 2003 to 187,237 in 2005, a 22.26% decline. Associate degree programs have declined the most, by almost 29%, followed by bachelor degree programs declining by 12%, with master degree programs losing 7%. The decline has implications for capacity as programs reduce staff to meet lower enrollments needs.

TYPES OF DEGREES BY IT PROGRAMS

The IPEDS data contains 11 different possible degree levels. Only five are reported in this research, associate's, bachelor's, master's, doctorate's, and all others combined. All others include these classifications: less than 1 year; more than 1 year, but less than 2 years; between 2 and 4 years; post-bachelor's certificate; post-master's certificate; first-professional degree. These five degree levels are presented in the following tables.

IT PROGRAMS

IPEDS data is reported using cipcodes – Classification of Instructional Programs Codes. These codes are divided into a two digit general area code. Computer science is 11, followed by up to 4 decimal places to subdivide programs. At the 6 digit level 39 IT (computer related) majors were identified. These are listed in Table 2.

Table 2 – IT CIPCodes and Descriptions

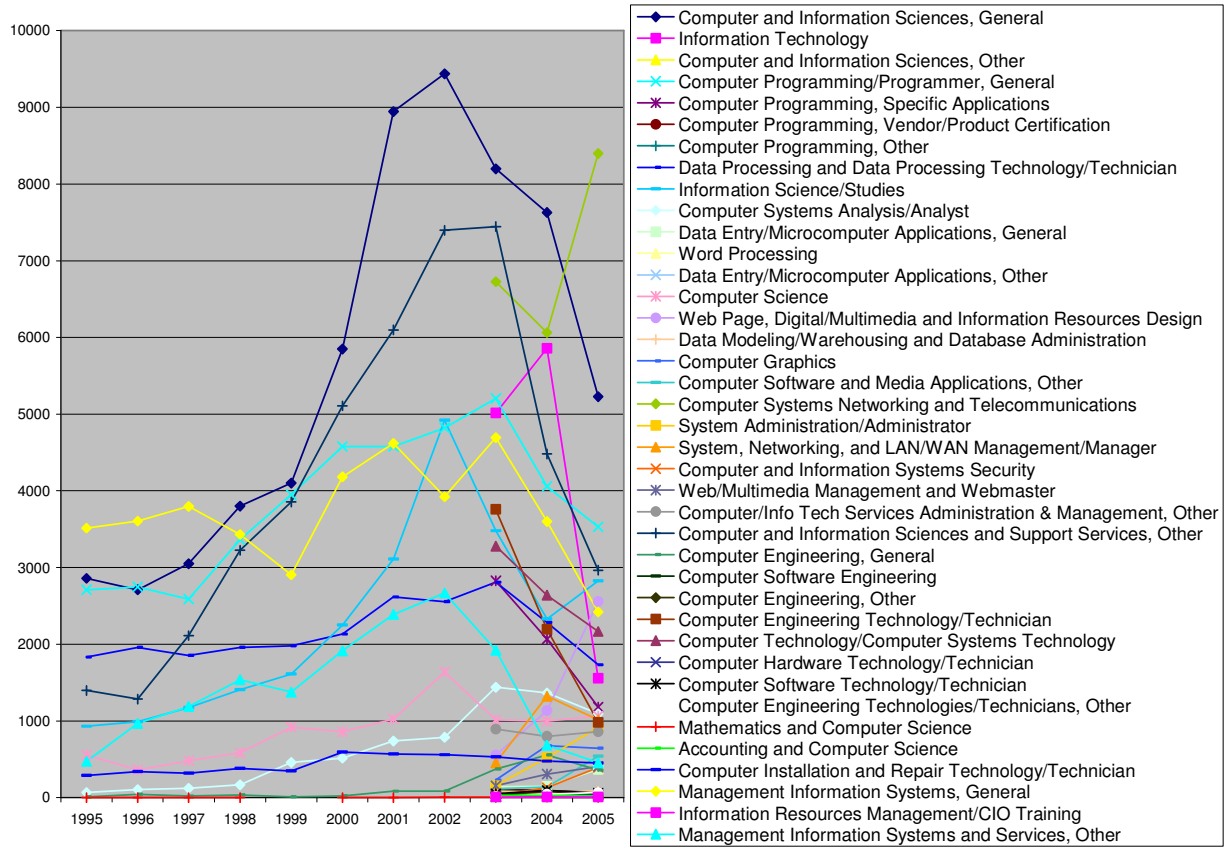
11.0101	Computer and Information Sciences, General
11.0103	Information Technology
11.0199	Computer and Information Sciences, Other
11.0201	Computer Programming/Programmer, General
11.0202	Computer Programming, Specific Applications
11.0203	Computer Programming, Vendor/Product Certification
11.0299	Computer Programming, Other
11.0301	Data Processing and Data Processing Technology/Technician
11.0401	Information Science/Studies
11.0501	Computer Systems Analysis/Analyst
11.0601	Data Entry/Microcomputer Applications, General
11.0602	Word Processing
11.0699	Data Entry/Microcomputer Applications, Other
11.0701	Computer Science
11.0801	Web Page, Digital/Multimedia and Information Resources Design
11.0802	Data Modeling/Warehousing and Database Administration
11.0803	Computer Graphics
11.0899	Computer Software and Media Applications, Other
11.0901	Computer Systems Networking and Telecommunications
11.1001	System Administration/Administrator
11.1002	System, Networking, and LAN/WAN Management/Manager
11.1003	Computer and Information Systems Security
11.1004	Web/Multimedia Management and Webmaster
11.1099	Computer/Info Tech Services Administration & Management, Other
11.9999	Computer and Information Sciences and Support Services, Other
14.0901	Computer Engineering, General
14.0903	Computer Software Engineering
14.0999	Computer Engineering, Other
15.1201	Computer Engineering Technology/Technician
15.1202	Computer Technology/Computer Systems Technology
15.1203	Computer Hardware Technology/Technician
15.1204	Computer Software Technology/Technician
15.1299	Computer Engineering Technologies/Technicians, Other
30.0801	Mathematics and Computer Science
30.1601	Accounting and Computer Science
47.0104	Computer Installation and Repair Technology/Technician
52.1201	Management Information Systems, General
52.1206	Information Resources Management/CIO Training
52.1299	Management Information Systems and Services, Other

In Table 2, six 2 digit cipcode academic areas are included, 11 – computer science, 14 & 15 – computer engineering, 30 – mathematics and computer science, and 52 – management information systems. This list was created based on the author's judgment of what cipcodes to include. Excluded IT cipcodes included clerk-type programs. Not all IT programs have graduates in each type of degrees. Each degree type and the IT program will now be presented.

ASSOCIATE'S DEGREES BY IT PROGRAMS

Associate's degrees are conferred in all 39 IT program areas shown in Table 3. In Table 1, the granting of associate's degrees shows an upward trend until 2003. In Table 3, the trend seems to end earlier in 2002. Several new programs appear in 2003 and keep the trend upward, although most programs peaked in 2002. It would be expected that associate's degree programs would lead the change in all programs because they are the shortest.

Table 3 – Associate's Degrees Programs by IT Program

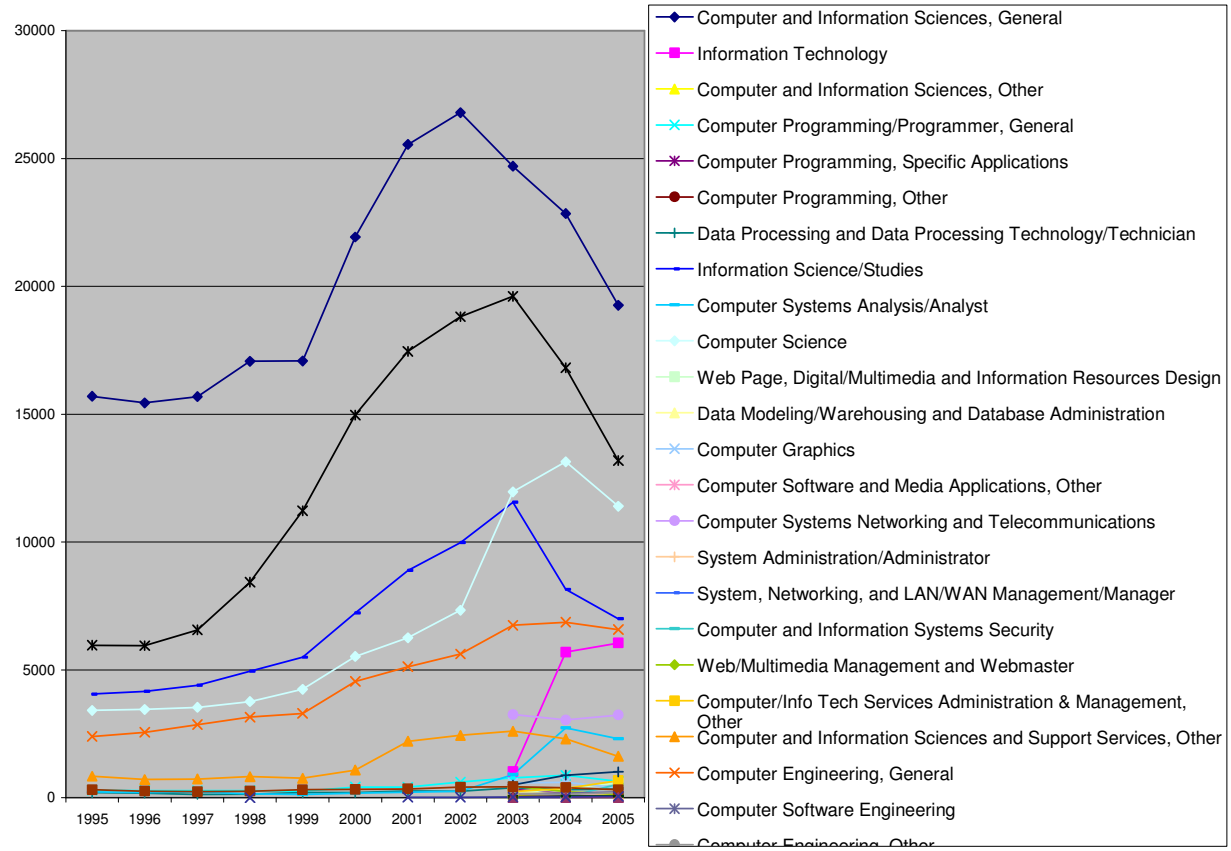


BACHELOR'S DEGREES BY IT PROGRAMS

Bachelor's degrees are conferred in all 35 IT program areas as shown in Table 4. In Table 1, bachelor's degrees peak in 2004, showing a very slight increase from 2002. In Table 4, the peak seems to begin in

2002, the same as with associates degrees. But again, the total trend is boosted by the addition or reclassification of cipcodes in new programs.

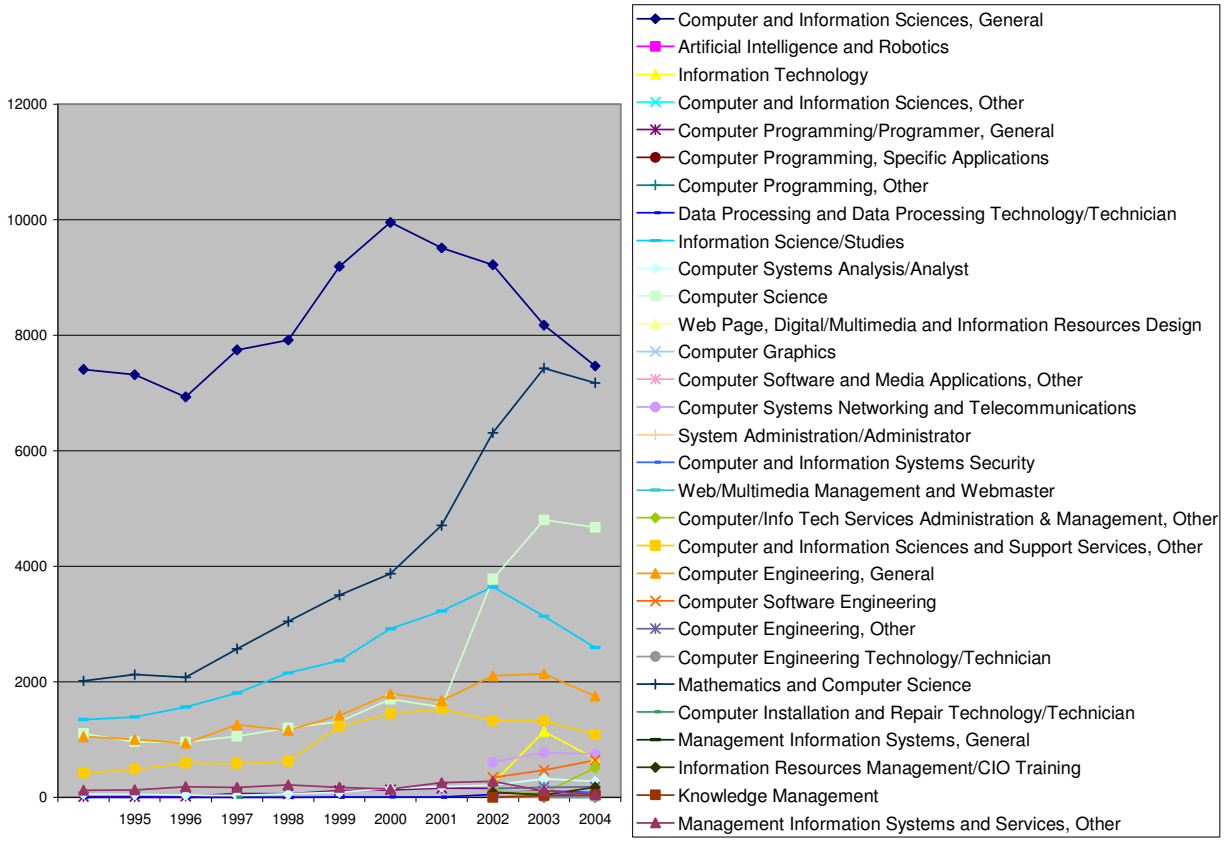
Table 4 – Bachelor's Degrees Programs by IT Program



MASTER'S DEGREES BY IT PROGRAMS

Master's degrees are conferred in all 30 IT program areas as shown in Table 5. Table 5 shows a peak occurring in 2002 followed by a decline. This trend is moderated by the addition or reclassification of cipcodes in new programs.

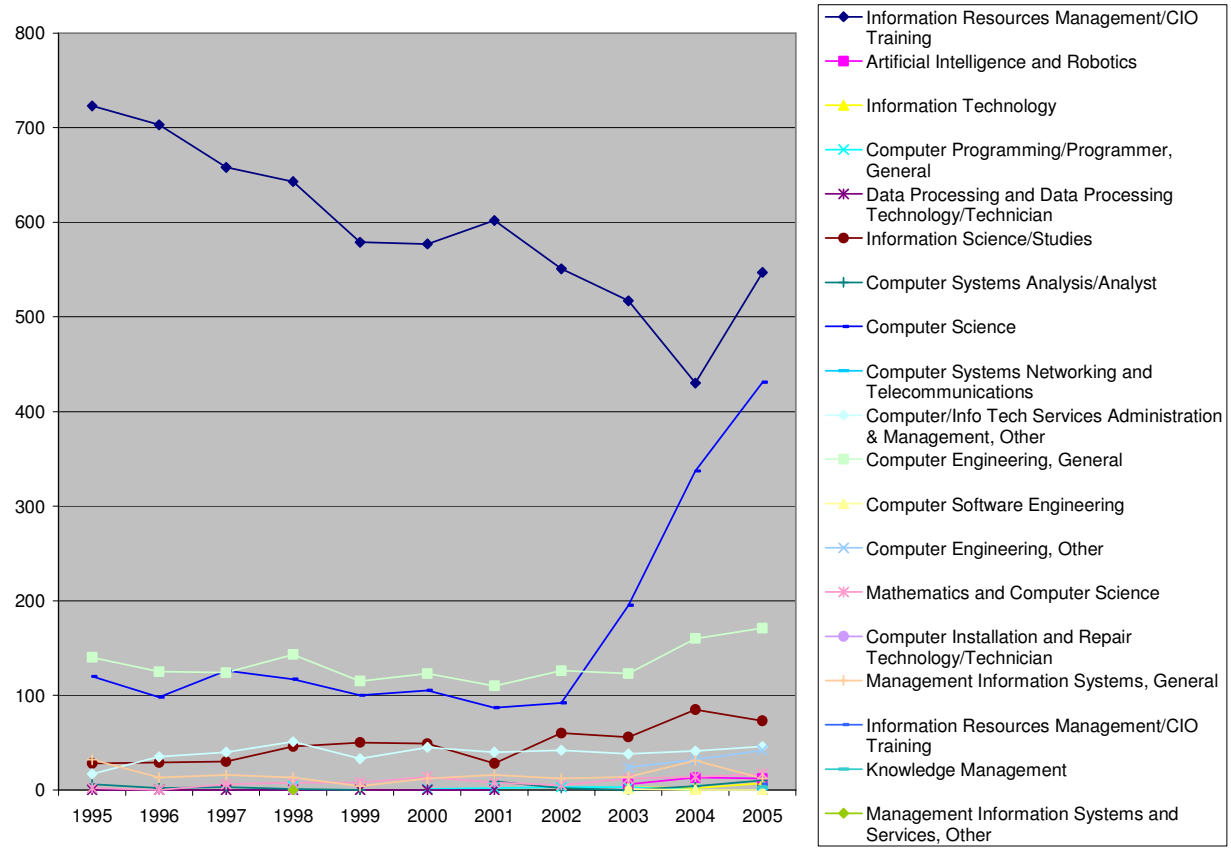
Table 5 – Master's Degrees Programs by IT Program



DOCTORATE DEGREES BY IT PROGRAM

Doctorate degrees are conferred in all 19 IT program areas as shown in Table 6. In Table 1 it is difficult to determine what is happening in doctorate degrees. The raw numbers show a general decline in the number of IT doctorates between 1995 – 1068 degrees, and 2002 – 893 degrees. The numbers then begin to rise quickly through 2005, 2003 – 992, 2004 – 1149, 2005 – 1378.

Table 6 – Doctorate Degrees Programs by IT Program



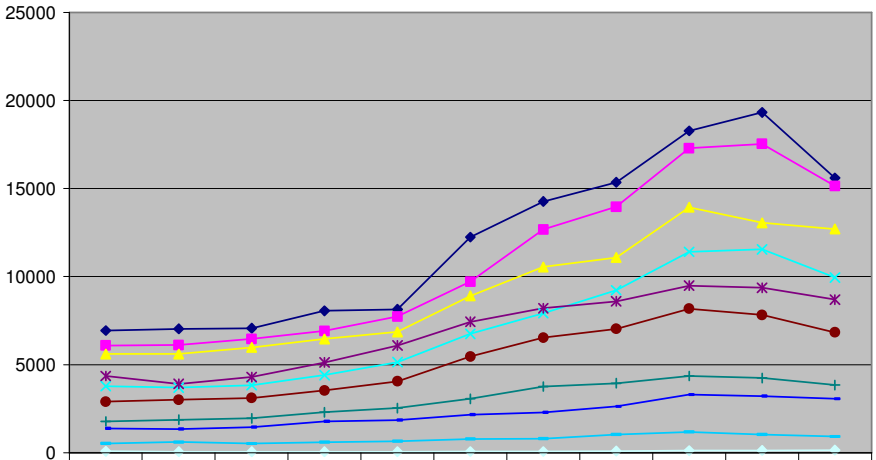
Now that an analysis of the degree programs by majors has been completed, a look at other factors will be performed.

BY REGION OF THE COUNTRY

The IPEDS data divides the country into 10 regions as follows and shown in Table 7.

- U.S. Service schools
- New England which includes: CT ME MA NH RI VT
- Mid East which includes: DE DC MD NJ NY PA
- Great Lakes which includes: IL IN MI OH WI
- Plain which includes: IA KS MN MO NE ND SD
- Southeast which includes: AL AR FL GA KY LA MS NC SC TN VA WV
- Southwest which includes: AZ NM OK TX
- Rocky Mountains which includes: CO ID MT UT WY
- Far West which includes: AK CA HI NV OR WA
- Outlying areas which includes: AS FM GU MH MP PR PW VI
- Not available

Table 7 – Bachelor Degree Completions by Region



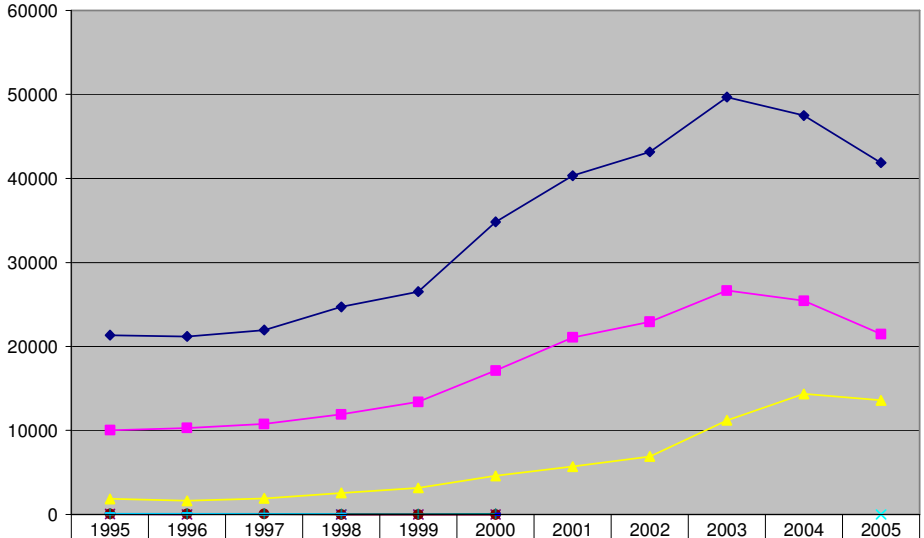
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Southeast AL AR FL GA KY LA MS NC SC TN VA WV	6939	7041	7079	8059	8147	12247	14266	15354	18268	19320	15594
Mid East DE DC MD NJ NY PA	6092	6116	6471	6908	7731	9721	12677	13968	17286	17533	15141
Great Lakes IL IN MI OH WI	5604	5602	5982	6464	6863	8901	10555	11083	13940	13059	12711
Far West AK CA HI NV OR WA	3783	3701	3835	4410	5145	6752	7923	9235	11409	11541	9952
Southwest AZ NM OK TX	4355	3910	4295	5132	6087	7435	8203	8598	9489	9370	8696
Plains IA KS MN MO NE ND SD	2902	3016	3116	3540	4059	5473	6540	7037	8183	7825	6840
New England CT ME MA NH RI VT	1785	1883	1957	2309	2536	3069	3760	3952	4361	4246	3847
Rocky Mountains CO ID MT UT WY	1382	1343	1460	1780	1850	2162	2294	2627	3301	3212	3064
Outlying areas AS FM GU MH MP PR PW VI	540	616	528	602	664	786	794	1032	1179	1030	927
US Service schools	89	65	60	67	64	73	79	95	124	139	147

The Southeast has the highest number of IT graduates followed by the Mid-East and the Great Lakes.

PUBLIC VERSUS PRIVATE SCHOOLS

IPEDS divides colleges and universities into 3 categories: public, private, not-for-profit and private for-profit. Table 8 shows the same decline as is seen the other data for public and private, not-for-profit school completions, but shows private for-profit schools, although a small portion of the total completions has not suffered with this decline.

Table 8- Public versus Private School Completions



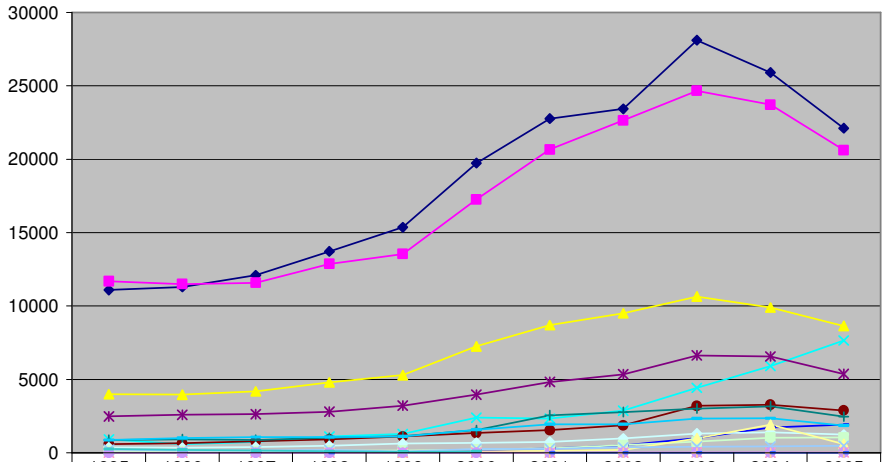
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Public, 4-year or above	21342	21184	21952	24702	26511	34819	40325	43140	49674	47496	41859
Private not-for-profit, 4-year or above	10029	10303	10756	11901	13400	17123	21082	22940	26656	25437	21469
Private for-profit, 4-year or above	1845	1618	1918	2567	3158	4586	5684	6901	11210	14342	13591
Private for-profit, 2-year				0							0
Private for-profit, less-than 2-year	51	4		5	3	1					
Private not-for-profit, 2-year	47	48	61	6	9	6					
Private not-for-profit, less-than 2-year	67	70	68	57	65	78					
Public, 2-year				4		6					
Public, less-than 2-year	90	66	28	29							

The rise in completions for private, for-profit schools may show a shift in how college degrees will be earned in the future.

CARNEGIE CLASSIFICATION SYSTEM

IPEDS used the standard 2000 Carnegie Classifications. This "includes all colleges and universities in the United States that are degree-granting and accredited by an agency recognized by the U.S. Secretary of Education. The 2000 edition classifies institutions based on their degree-granting activities from 1995-96 through 1997-98.

Table 9 – Completions by Carnegie Classifications



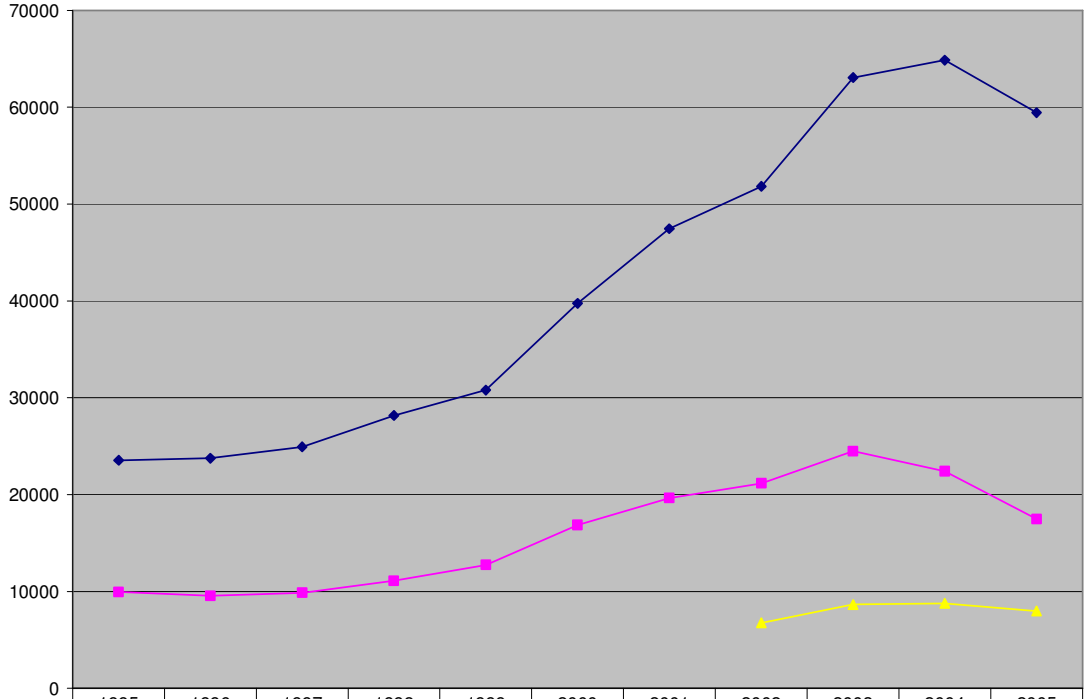
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Doctoral/Research Universities--Extensive	11094	11305	12086	13729	15360	19736	22762	23422	28096	25897	22112
Masters Colleges and Universities I	11688	11490	11588	12871	13537	17266	20658	22640	24660	23714	20619
Doctoral/Research Universities--Intensive	3993	3960	4185	4804	5285	7256	8704	9502	10640	9893	8645
{Item not available}	915	577	735	1100	1283	2398	2336	2870	4429	5921	7659
Baccalaureate Colleges--General	2474	2582	2627	2792	3215	3965	4834	5354	6642	6567	5359
Schools of engineering and technology	603	660	770	916	1102	1349	1534	1873	3197	3274	2885
Masters Colleges and Universities II	875	927	887	1016	1136	1540	2553	2783	3018	3166	2464
Associates Colleges		8	20	42	125	161	313	488	997	1714	1909
Baccalaureate Colleges--Liberal Arts	863	995	1066	1076	1125	1565	1946	1945	2332	2345	1851
Schools of business and management	380	345	393	481	628	686	747	966	1312	1386	1234
Baccalaureate/Associates Colleges	125	98	108	148	155	230	294	527	766	1028	1044

There are not major surprises in this data.

GENDER AND RACE

What has been happening to completions based on gender? Table 10 shows that the completions of women exceeded men for the first time in 2002.

Table 10 – Gender and African Americans Completion Counts



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Men	23534	23742	24916	28171	30802	39758	47450	51816	63076	64862	59444
Women	9937	9551	9867	11100	12740	16861	19641	21165	24464	22413	17475
African American								6743	8652	8772	7968

The surprise in this data is the slow growth in the number of women in IT programs. While male enrollment grew dramatically between 1995 and 2003, the number of women enrolled showed more modest gains.

There is only limited data on African-American completions beginning in 2002. But is shows positive growth.

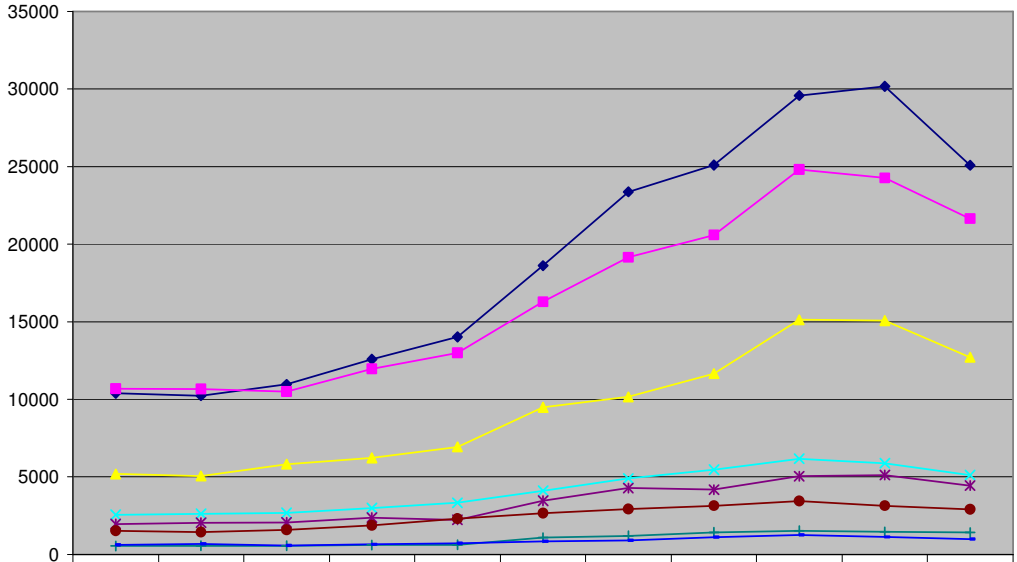
SCHOOL LOCATION

IPEDS classifies the location of school on local population into 7 categories of degrees of urbanization.

- Large City - A central city of a CMSA or MSA with the city having a population greater than or equal to 250,000.
- Mid-size City - A central city of a CMSA or MSA, with the city having a population less than 250,000.
- Urban Fringe of Large City - Any incorporated place, CDP, or non-place territory within a CMSA or MSA of a large city and defined as urban by the Census Bureau.
- Urban Fringe of Mid-size City - Any incorporated place, CDP, or non-place territory within a CMSA or MSA of a Large City of a Mid-size City and defined as urban by the Census Bureau
- Large Town - An incorporated place or CDP with a population greater than or equal to 25,000 and located outside a CMSA or MSA.
- Small Town - An incorporated place or CDP with a population less than 25,000 and greater than or equal to 2,500 and located outside a CMSA or MSA.

- Rural - Any incorporated place, CDP, or non-place territory designated as rural by the Census Bureau.

Table 11 – Degree of Urbanization in School location.



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Large city	10387	10231	10971	12576	14016	18617	23372	25098	29576	30180	25080
Mid-size city	10672	10663	10508	11955	13004	16286	19144	20587	24806	24262	21647
Urban fringe of large city	5184	5053	5820	6227	6929	9488	10158	11661	15123	15074	12704
Small town	2554	2624	2682	2998	3323	4107	4894	5458	6164	5877	5112
Urban fringe of mid-size city	1965	2041	2067	2376	2231	3454	4279	4184	5044	5116	4433
Large town	1533	1439	1591	1878	2308	2666	2921	3135	3439	3146	2910
Rural	553	569	567	609	619	1080	1195	1425	1528	1452	1409
Not assigned	623	673	577	652	716	852	905	1110	1249	1130	996

The data shows the same general trend in all settings.

CONCLUSIONS

The surprising revelation in this review is the steep slope of decline in completion rates. Analysis othe the data does not show major deviations no matter how the data are analyzed. Completion rates by major, region, location, type of school, etc. all remain in the same general relationship to one another.

This decline is a significant issue. Employment demands are on the rise again. With the lag between starting a program and completion, and a decline in capacity, it will be years before the market demand for IT professionals can be met. This could have implications for the whole economy. Technology has driven the productivity gains for the last two decades. The U.S. is the world leader in technology, but we could quickly lose that position. Other countries, particularly China and India, are graduating IT professionals in record numbers. With the large populations of these countries, even a small percentage increase is greater than the total number of U.S. completions.

As a nation we must increase the emphasis on technology in all of educational systems. Starting in elementary school, more women should be steered towards IT professionals. The future of the U.S. economy and our place as world leader may be at stake. Now is the time for action.

SELECTED REFERENCES

[1] *Occupations with the largest job growth, 2002-2012,* in "Occupational employment projections to 2012," published in the *February 2004 Monthly Labor Review*

[2] IPEDS Analysis System. http://nces.ed.gov/ipedspas/index.asp

[3] "The Us Supply of Information Technology Workers: a Survey," *Proceeding of the Southern Association for Information Systems*, March 1-2, 2002, Savannah, Georgia, pp 315+.

[4] "The Employment Out Look for Information Technology Workers: A Demand Forecast" *Proceeding of the 16th Annual Conference of the International Academy for Information Management*, New Orleans, Louisiana, December 14-16, 2001, pp 366+.

[5] "The Employment Out Look for Information Technology Workers: A Supply Forecast" with Terry Wiant and Michael Hicks, *Proceedings of the Southeastern Chapter of InfORMS*, 37th Annual Meeting, Myrtle Beach, South Carolina, October 4-5, 2001.

[6] "The Employment Out Look for Information Technology Workers in West Virginia: A Survey of Supply and Demand" with Terry Wiant, *Proceedings of the Southeastern Chapter of InfORMS*, 37th Annual Meeting, Myrtle Beach, South Carolina, October 4-5, 2001.

[7] Web Sites for the US Dept of Education. http://www.ed.gov

[8] CIP code lists - http://nces.ed.gov/pubs2002/cip2000/

[9] Data download - http://nces.ed.gov/ipedspas/index.asp

[10] Enrollment Projections - http://nces.ed.gov/programs/projections/

[11] National Center for Education Statistics' website purpose - http://nces.ed.gov/help/about.asp
[1] IPEDS - http://nces.ed.gov/ipeds/

[12] "Help Wanted: IT Specialists with Business Know-How." Marianne Kolbasuk McGee, *InformationWeek*, December 18, 2006, Issue 1119, pp 32.

[13] "Study: U.S. tech industry adds 140,000 jobs in first half of 2006." Linda Rosencrance, *Computerworld*, September 27, 2006, online.

[14] "IT Managers Face Crunch in Filling Open Positions." Patrick Thibodeau, *Computerworld*, May 7, 2007, online.

Appendix A - Standard 2000 Carnegie Classifications (leading number are the code)

"15 Doctoral/Research Universities--Extensive: These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the doctorate. They award 50 or more doctoral degrees per year across at least 15 disciplines (see note 2).

16 Doctoral/Research Universities--Intensive: These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the doctorate. They award at least ten doctoral degrees (see note 1) per year across three or more disciplines, (see note 2) or at least 20 doctoral degrees per year overall.

21 Master's Colleges and Universities I: These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the master's degree. They award 40 or more master's degrees per year across three or more disciplines (see note 2).

22 Master's (Comprehensive) Colleges and Universities II: These institutions typically offer a wide range of baccalaureate programs, and they are committed to graduate education through the master's degree. They award 20 or more master's degrees per year.

31 Baccalaureate Colleges--Liberal Arts: These institutions are primarily undergraduate colleges with major emphasis on baccalaureate programs. They award at least half of their baccalaureate degrees in liberal arts fields (see note 3).

32 Baccalaureate Colleges--General: These institutions are primarily undergraduate colleges with major emphasis on baccalaureate programs. They award less than half of their baccalaureate degrees in liberal arts fields (see note 3).

33 Baccalaureate/Associate's Colleges: These institutions are undergraduate colleges where the majority of conferrals are at the subbaccalaureate level (associate's degrees and certificates), but bachelor's degrees account for at least ten percent of undergraduate awards.

40 Associate's Colleges: These institutions offer associate's degree and certificate programs but, with few exceptions, award no baccalaureate degrees (see note 4). Specialized Institutions - These institutions offer degrees ranging from the bachelor's to the doctorate, and typically award a majority of degrees in a single field. The list includes only institutions that are listed as separate campuses in the Higher Education Directory. Specialized institutions include:

51 Theological seminaries and other specialized faith-related institutions: These institutions primarily offer religious instruction or train members of the clergy.

52 Medical schools and medical centers: These institutions award most of their professional degrees in medicine. In some instances, they include other health professions programs, such as dentistry, pharmacy, or nursing.

53 Other separate health profession schools: These institutions award most of their degrees in such fields as chiropractic, nursing, pharmacy, or podiatry.

54 Schools of engineering and technology: These institutions award most of their bachelor's or graduate degrees in technical fields of study.

55 Schools of business and management: These institutions award most of their bachelor’s or graduate degrees in business or business-related programs.

56 Schools of art, music, and design: These institutions award most of their bachelor's or graduate degrees in art, music, design, architecture, or some combination of such fields.

57 Schools of law: These institutions award most of their degrees in law.

58 Teachers colleges: These institutions award most of their bachelor’s or graduate degrees in education or education-related fields.

59 Other specialized institutions: Institutions in this category include graduate centers, maritime academies, military institutes, and institutions that do not fit any other classification category.

60 Tribal Colleges and Universities: These colleges are, with few exceptions, tribally controlled and located on reservations. They are all members of the American Indian Higher Education Consortium.

NOTES ON DEFINITIONS 1. Doctoral degrees are as defined in the Integrated Postsecondary Education Data System (IPEDS) of the U.S. Department of Education's National Center for Education Statistics (NCES). This includes the Ph.D. in any field as well as other doctoral-level degrees such as the Doctor of Education, Doctor of Juridical Science, and Doctor of Public Health. It excludes doctoral-level degrees defined as first-professional degrees in IPEDS. For more information, see http://nces.ed.gov/ipeds. 2. Distinct disciplines are determined by the 4-digit series of the Classification of Instructional Programs published by NCES. For more information, see http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=91396. 3. Liberal arts fields include the following fields (as listed in the Classification of Instructional Programs): English language and literature/letters; foreign languages and literatures; biological sciences/life sciences; mathematics; philosophy and religion; physical sciences; psychology ; social sciences and history; visual and performing arts; area, ethnic, and cultural studies; liberal arts and sciences, general studies, and humanities; and multi/interdisciplinary studies. 4. This group includes community, junior, and technical colleges. “

Source: Carnegie Foundation [2, see institution data definitions].