

**Labor Market Trends and Career Academies in Hamilton County Schools:
A Report to the Chattanooga Area Chamber of Commerce**

June 2007

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Executive Summary

As part of its 2006-2009 Business Plan, the Chattanooga Area Chamber of Commerce (CACC) established an initiative to create an industry standards-based academy system in the Hamilton County Department of Education. Supported by funding from the Ford Motor Company Fund, CACC has engaged the Community Research Council (CRC) to examine historical trends and current conditions in the local labor market with the goal of identifying where workforce needs might be met by the development of such high school level career academies. To accomplish this, CRC undertook the following tasks:

- A reorganization of industrial employment, industrial firm, and occupational categories into the USDOE Career Cluster framework
- An analysis of the *industrial employment growth* of career clusters and sub-sectors that comprise each cluster, including an assessment of the 10 highest- and lowest-growth sectors overall and in sub-sectors containing at least 1,000 employees
- An analysis of the *firm growth* of career clusters and sub-sectors that comprise each cluster, including an assessment of the 10 highest- and lowest-growth sectors overall and in sub-sectors containing at least 100 firms
- An analysis of the *occupational employment growth* of career clusters and sub-sectors that comprise each cluster, including an assessment of the 10 highest- and lowest-growth sectors overall and in sub-sectors containing at least 1,000 employees

It is important to note that industrial employment and firm data uses the firm as the unit of analysis and therefore counts employees/firms based on companies classified by industry. In contrast, occupational employment data uses specific occupations as the level of analysis, meaning that employees in a specific occupation are counted *across* industries – that is, across industries that depend on specific occupations for operations. So, in some cases, certain occupational categories may be growing while seemingly related industries are contracting.

This analysis is occurring at a time of dynamic change in the local, national and global labor market. If a similar analysis had been undertaken just a generation ago, historical trends would have suggested the need for workforce investment in manufacturing – an industry that has since lost almost 7,300 jobs in the region between 2000 and 2004¹ – and could not have possibly foreseen growth in employment in tourism or the rise of information technology occupations.

¹ United States Department of Commerce, Bureau of the Census, County Business Patterns, Hamilton County 2000 and 2004.

An assessment of this type, therefore, needs to be based on three different sets of factors – historical (where we have been), prospective (where we are going), and aspirational (where we want to go). So, historical trends may suggest continuing workforce needs in those clusters that have seen the greatest growth in the last half-decade based on data collected by the Commerce and Labor Departments. Prospective needs can be identified through interviews with current, major local employers. Our aspirational goals, however, also have an effect on new workforce development needs – whether they involve bringing an automotive plant to Enterprise South or making Chattanooga a hub for design and technology employment, as suggested by some of the work by Angelou Economics as part of their assessment of the Central Business District.

All of this must be tempered by the larger global context. Even if history pointed to manufacturing, call centers and accounting as areas of past growth locally, we know that larger global forces are at work. For example, any effort to examine future local employment prospects needs to acknowledge the risk of outsourcing. Alan S. Blinder, Princeton economics professor and former Chair of the President’s Council of Economic Advisors, argues that “[T]hanks to electronic communications and globalization, the future is likely to see much more offshoring of jobs in impersonal services; that is, services that can be delivered electronically over long distance with little or no degradation of quality”. These jobs include both relatively low-skill jobs and jobs requiring high levels of education. However, jobs that require face-to-face contact with a customer or client are less susceptible to automation or offshoring. These personal services include occupations such as lawyers and surgeons as well as mechanics and janitors.²

National demographic shifts also have the potential to affect the local economy in the near term as the “baby boomer” generation reaches retirement age. In 2005 over one-third (33.5%) of Hamilton County’s population was over the age of 50, and almost one-fifth (19.2%) was over the age of 60. Nearly half (48.7%) of the county was 40 years of age or more³. While professional occupations have a disproportionate share of older workers (especially those requiring postgraduate degrees), the factors affecting individual retirement decisions are varied and inconsistent across occupations⁴. While such workers may stay in their jobs longer due to higher than average job satisfaction and salaries/benefits, earlier retirement may be seen in certain occupations with more lucrative pension and health benefits that offset other factors associated with maintaining employment. National labor force participation data from 2006, however, suggests a significant exodus from the workforce after the age of 65. While 64% of those between the

² See Blinder, Alan, *Fear of Offshoring*, CEPS Working Paper No. 119 (December 2005) and Levy, Frank and Richard Murnane, “Got A Routine Job? Not for Long”, *The Washington Post*, 7/4/2004, p. B03.

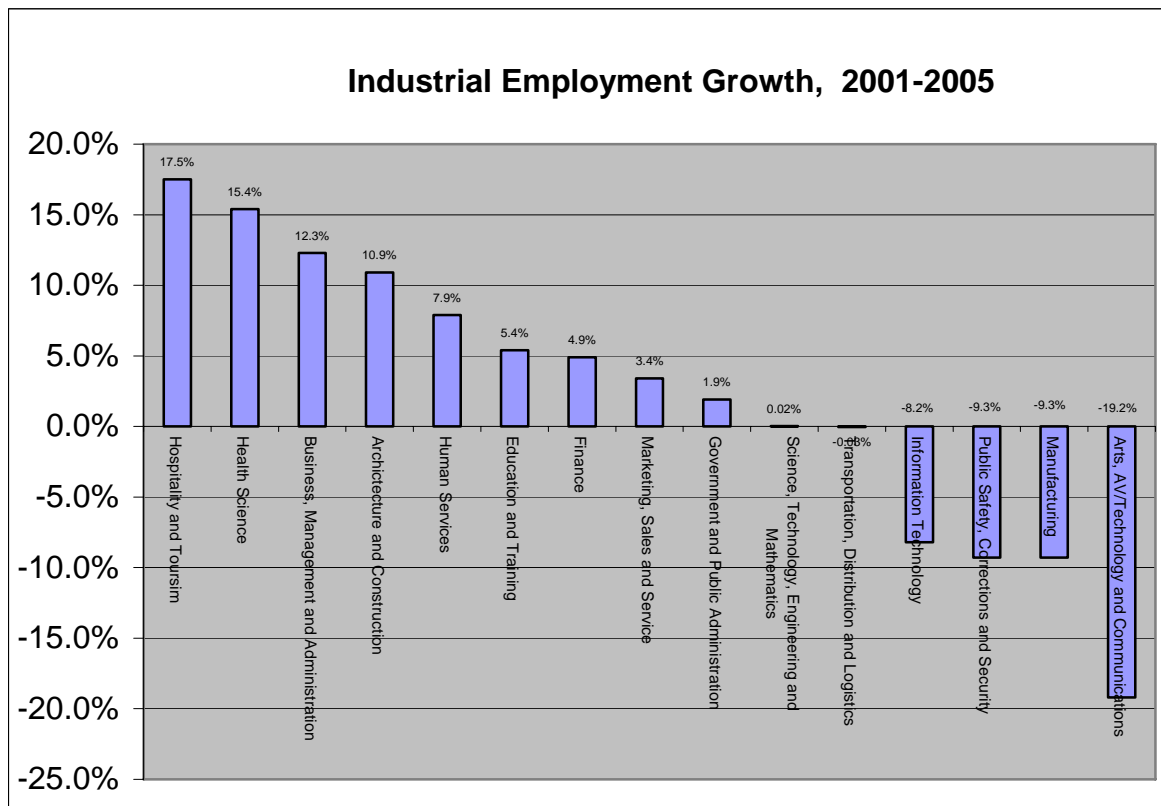
³ United States Department of Commerce, Bureau of the Census, County Estimates by Demographic Characteristics, Hamilton County, 2005.

⁴ See “Gauging the Labor Force Effects of Retiring Baby Boomers”, United States Department of Labor, Bureau of Labor Statistics, *Monthly Labor Review* (July 2000).

ages of 55 and 64 were engaged in employment, labor force participation in the 65 to 69 age group was 31%. For those age 65 years or more, the labor force participation rate was 16%⁵. As the first wave of the “baby boomer” generation will be eligible for early retirement (at age 62) in 2008, it is likely that a significant number of workers will begin to exit the local labor market. The magnitude of the resulting labor shortage will depend upon the labor participation rates of the older demographic groups, the participation rates of the younger demographic groups just entering the labor market, and the capacity of the local education and training infrastructure to develop the skills required for demand occupations.

Summary of Findings and Recommendations

Between 2001 and 2005, industrial employment increased in nine career clusters. Four clusters experienced growth rates in excess of 10%: Hospitality and Tourism (17.5%), Health Science (15.4%), Business Management and Administration (12.3%) and Architecture and Construction (10.9%).

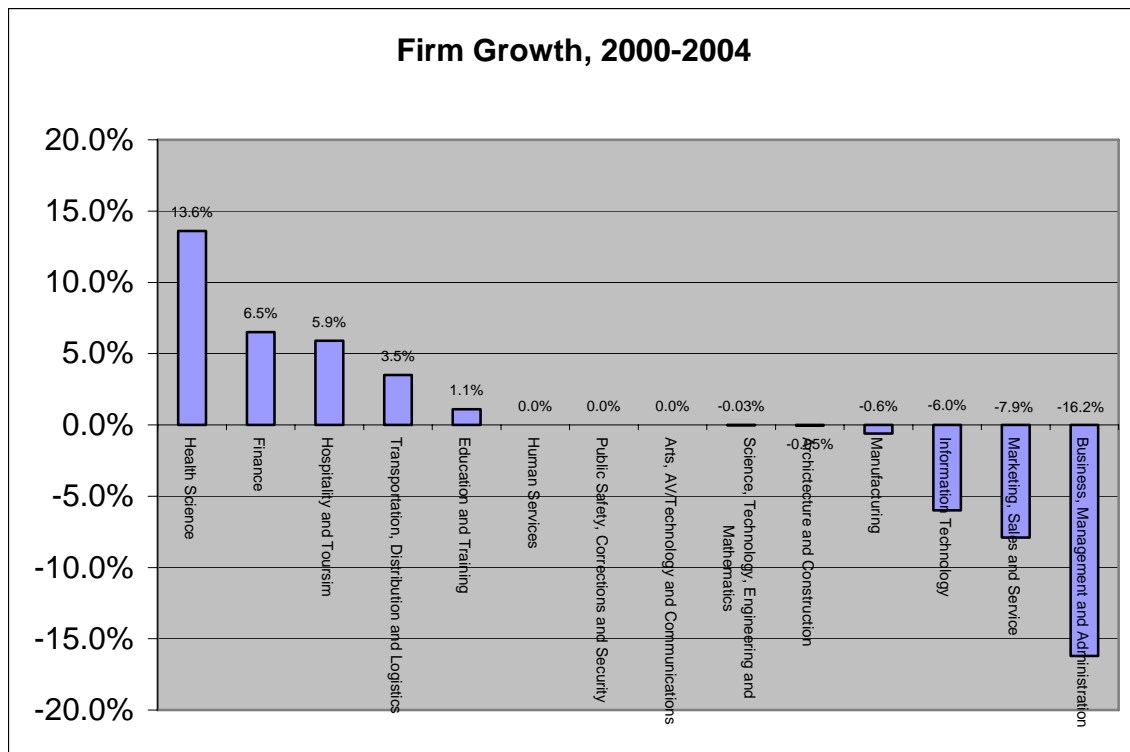


⁵ United States Department of Labor, Bureau of Labor Statistics, *Labor Force Statistics from the Current Population Survey*, Civilian Labor Force Participation Rate, (4th Quarter, 2006).

Employment declined in four clusters: Arts, A/V Technology and Communications (-19.2%), Manufacturing (-9.3%), Public Safety, Corrections and Security (-9.3%) and Information Technology (-8.2%).

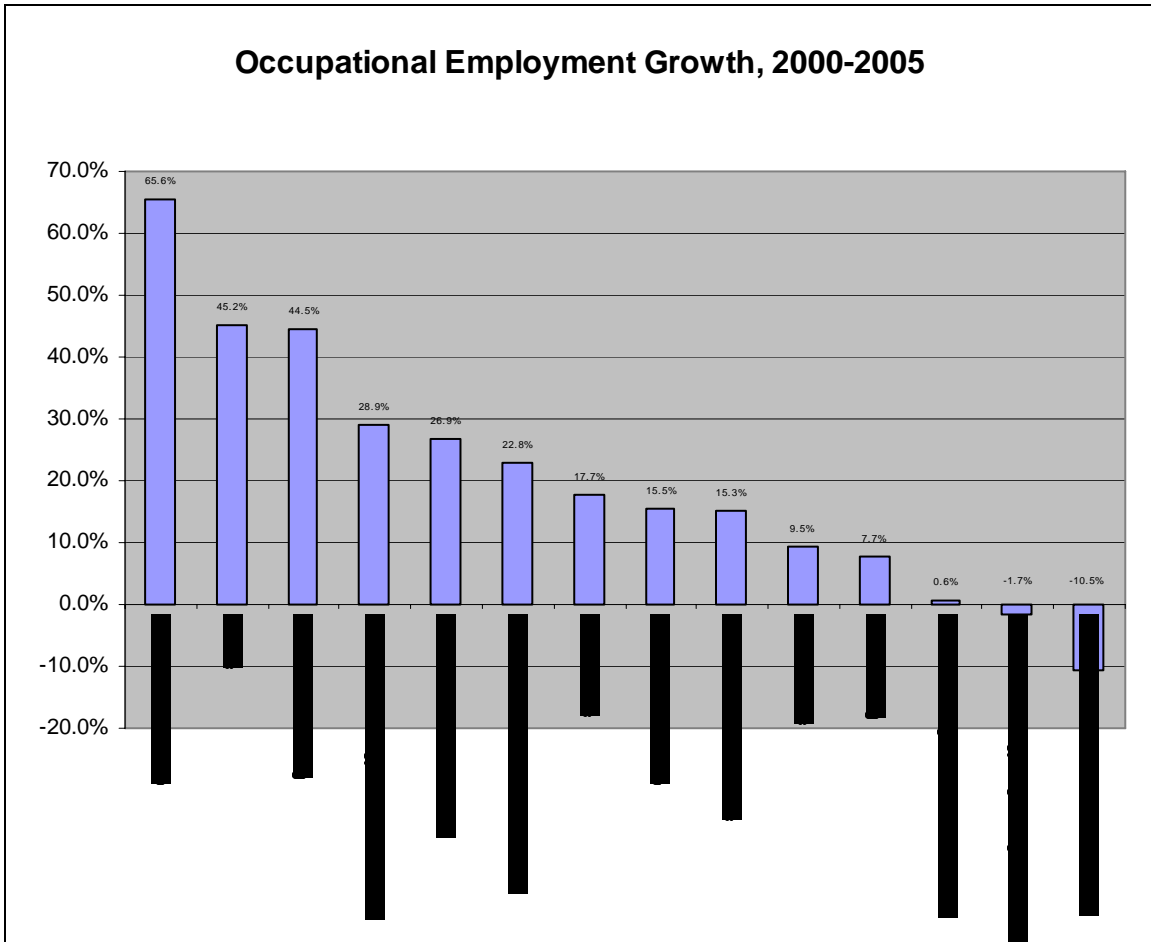
Five career clusters experienced an overall growth in number of firms between 2000 and 2004. While the number of firms within the Health Science career cluster grew at the highest rate (13.6%), Finance (6.5%) and Hospitality and Tourism (5.9%) both had firm growth rates in excess of 5%.

Overall firm growth was static or near static in six career clusters: Human Services; Public Safety, Corrections and Security; Arts, A/V Technology and Communications; Science, Technology, Engineering and Mathematics; Architecture and Construction; and Manufacturing. Three additional career clusters experienced an overall reduction of firms over this time period: Business, Management and Administration (-16.2%), Marketing, Sales and Service (-7.9%) and Information Technology (-6.0%).



Between 2000 and 2005, occupational employment in all but two career clusters increased. The highest rate of occupational employment growth occurred within the Information Technology career cluster (65.6%). Two career clusters experienced occupational employment growth rates in excess of 44%: Finance

(45.2%) and Education and Training (44.5%). Three additional career clusters grew at rates in excess of 22%: Arts, A/V Technology and Communications (28.9%), Architecture and Construction (26.9%), and Public Safety, Corrections and Security (22.8%).



Still three other career clusters experienced occupational employment growth within the 15-18% range: Health Science (17.7%), Hospitality and Tourism (15.5%), and Marketing, Sales and Service (15.3%). Human Services and Manufacturing occupations grew at 9.5% and 7.7%, respectively. Transportation, Distribution and Logistics (-10.5%) and Science, Technology, Engineering and Mathematics (-1.7%) declined.

Table 1 – Industrial Employment, Industrial Firm and Occupational Employment Growth by Career Cluster

| Career Cluster | Industrial Employment Growth, 2001-2005 | Industrial Firm Growth, 2000-2004 | Occupational Employment Growth, 2000-2005 |
|--|--|--|--|
| Hospitality and Tourism | 17.5% | 5.9% | 15.5% |
| Health Science | 15.4% | 13.6% | 17.7% |
| Business, Management and Administration | 12.3% | -16.2% | 0.6% |
| Architecture and Construction | 10.9% | -0.05% | 26.9% |
| Human Services | 7.9% | 0.0% | 9.6% |
| Education and Training | 5.4% | 1.1% | 44.5% |
| Finance | 4.9% | 6.5% | 45.2% |
| Marketing, Sales and Service | 3.4% | -7.9% | 15.3% |
| Government and Public Administration | 1.9% | N/A | N/A |
| Science, Technology, Engineering and Mathematics | 0.02% | -0.03% | -1.7% |
| Transportation, Distribution and Logistics | -0.08% | 3.5% | -10.5% |
| Information Technology | -6.2% | -6.0% | 65.6% |
| Public Safety, Corrections and Security | -9.3% | 0.0% | 22.8% |
| Manufacturing | -9.3% | -0.6% | 7.7% |
| Arts, AV/Technology and Communications | -19.2% | 0.0% | 28.9% |

Four career clusters -- Hospitality and Tourism, Health Science, Education and Training and Finance -- had positive rates of increase across all three measures of growth. These clusters also reflect career areas where industrial employment growth is expected to be strong nationally through 2014.³ Moreover, there are high concentrations of “personal service” jobs in each of these sectors.

Table 2 – Projected National Employment Growth through 2014

| Sector | Growth Rate |
|-------------------------|--------------------|
| Health Care | 32.5% |
| Education | 30.6% |
| Leisure and Hospitality | 17.7% |
| Finance | 8.3% |

In the case of Health Care, employer interviews confirm growing demand and point to the need for greater supply. Critical labor shortages were cited with regard to a variety of positions such as *Long-Term Care Workers, Nurses, Speech Pathologists, Psychologists and Physical Therapists, Pharmacists/Pharmacy Technologists, Vascular Technologists, Laboratory Technologists, Surgical First Assistants and Imaging/Ultrasound Technologists.*

³ U.S. Department of Labor, Bureau of Labor Statistics, *Occupational Outlook Handbook*, 2003.

The practical short-term effect of a limited labor pool in these career areas is that such positions commonly remain open for six months to one year, and are subject to high turnover rates due to a high degree of competition from organizations offering higher salaries and benefits for comparable positions. The long-term effects of these deficits are more significant in that the overall capacity of the health care system is compromised, eroding the quality of life for the entire region.

Other career clusters show signs of slowed growth regionally, but national growth trends suggest that investment in the development of such skill sets will be required to maintain regional competitiveness. The Information Technology Cluster, for example, has undergone regional reductions in industrial employment and in the number of firms – although cross-industry occupations in this cluster have grown by over 65%. Nationally, large employment increases by 2014 are expected within the Software Publishing (67.6%), Internet Publishing (43.5%) and Internet Service Provision (27.8%) industries.

Science, Technology, Engineering and Mathematics is another career cluster that has experienced recent stagnant growth locally, although it represents a career path requiring skills that will continue to be in high demand within the larger economy. For instance, employment in Professional, Scientific and Technical services is expected to grow by 28.4% through 2014 (an increase of 1.9 million jobs). High growth industries within this sector include Computer Systems Design and Related Services (38.5%) and Management, Scientific and Technical Consulting Services (60.5%).

Skills within these career paths are in high demand according to employers, which cited labor shortages in the Information Technology and Science, Technology, Engineering and Mathematics clusters. Specifically, employers cited deficits in computer operators and network administrators as well as a general shortage in basic computer skills. Additionally, multiple employers referenced unmet demand for specialized skills sets such as engineering, automotive/engine repair, and precision equipment repair.

Based on this assessment of regional and national factors as they relate to the future prospects for the Chattanooga Region's labor market, it is recommended that career academies within the Hamilton County Department of Education focus on the following clusters:

- **Information Technology**

While occupations in this cluster had the highest growth rate (65%) between 2000 and 2005, Chattanooga's major employers across industries suggested that such skills represented major gaps in their workforces. This cluster will remain important as long as large segments

of the economy are dependent upon the creation, organization, transmission and storage of highly complex information.

- **Finance**

While occupational employment grew by approximately 45% in the region between 2000 and 2005, employers across several industries cited skills gaps with respect to financial specialties.

- **Health Care**

Employment and firm growth in the Health Sciences career cluster grew at a rate of 15.4% and 13.6%, respectively. Such growth in this career cluster is occurring at a time in which major health care providers are expressing critical shortages in several health care specialties. Age-related demographic shifts and the primacy of Chattanooga as the health care hub for the region are additional contributing factors that make this cluster critical to the vitality of the region.

- **Science/Technology/Engineering/Mathematics**

The Science/Technology/Engineering/Mathematics career cluster experienced near-zero growth across all measures used in this study. However, employers in the region indicated a skills gap for this cluster and demand for such skills is expected to grow in the region.

- **Architecture and Construction**

Occupational growth in this cluster was approximately 27% between 2000 and 2005. Continued physical development in the region is dependent upon the presence of a trained workforce in this area.

- **Hospitality and Tourism**

Reflecting Chattanooga's role as a tourism center, relatively high growth rates for this cluster were found across all measures used in this study. Given the strength of the tourism sector in the region, the career academy model has the potential to prepare students for both entry-level positions and college programs that lead to long-term careers in the industry.

- **Education and Training**

Occupational employment within the Education and Training career cluster grew by 44.5% overall, although the number of secondary school teachers declined by 23.5%. Local employers cited a shortage of secondary teachers in specializations such as math, science and

information technology. Local employers also cited shortages in postsecondary specialties such as nursing, information technology and engineering.

Methodology

Labor Market Trend Analysis

The UDOE Career Cluster framework contains sixteen career categories that are organized based on requisite skill and education levels, and are established as follows:

- Agriculture, Food and Natural Resources
- Architecture and Construction
- Arts, A/V Technology and Communications
- Business, Management and Administration
- Education and Training
- Finance
- Government and Public Administration
- Health Science
- Hospitality and Tourism
- Human Services
- Information Technology
- Law, Public Safety and Security
- Manufacturing
- Marketing, Sales and Service
- Science, Technology, Engineering and Mathematics
- Transportation, Distribution and Logistics

Using this framework, CRC disaggregated employment and occupational data from United States Department of Commerce (USDOC) datasets and reorganized this data according the USDOE Career Cluster framework. Datasets that were utilized in this study included:

- United States Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2001-2005
- United States Department of Commerce, Bureau of the Census, County Business Patterns Firm Data, 2000-2004
- United States Department of Labor, Bureau of Labor Statistics, Metropolitan Area Occupational Employment and Wage Estimates, Occupational Employment Statistics Survey, 2000-2005.

While the amount of information within each dataset was robust, several limitations in availability should be noted:

- For each dataset, the optimal time frame for analysis was determined to be from the year 2000 to the most recent year available.
- 2005 was the most recent year available for each dataset with the exception of the County Business Patterns Firm data (2004 was the most recent year of availability for this dataset).
- 2000 was the base year for each dataset with the exception of the Quarterly Census of Employment and Wages (QCEW). QCEW transitioned from the Standard Industrial Classification (SIC) framework to the North American Industry Classification System (NAICS) structure in 2001. To maintain consistency, 2001 was established as the base year for the analysis of industrial employment.
- The industrial employment and firm growth analyses were conducted by applying NAICS data to the USDOE Career Cluster framework. NAICS data at the three-digit level of aggregation was applied to this framework when it allowed for sufficient detail in the classification of industry/employment types. When sufficient detail was not available at the three-digit level, the four-digit level of aggregation was applied.
- In some cases, data was unavailable at either the three- or four-digit level of aggregation or in either the base or terminal years of analysis (or both). Sub-sectors with missing data in this regard were excluded.
- In some cases, data was unavailable for the base year of analysis, but was available for one or more following years (2002, 2003, etc.). Where data was available, data for following years was applied and footnoted in the text.
- A large amount of industrial employment (BLS) and firm (Census Bureau) data was unavailable at the three- and four-digit levels of aggregation for Catoosa, Dade, Marion, Sequatchie and Walker Counties. For these analyses, Hamilton County was utilized as the geographic unit of analysis (Hamilton County accounts for approximately 80% of all jobs in the Chattanooga Metropolitan Statistical Area [MSA]). The occupational employment analysis was conducted at the MSA level.

Growth rates were calculated using the established base and terminal years, unless otherwise noted.

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Employer Interviews

Human resources directors from the Chattanooga region's 25 largest employers (based on 2006 employment) were contacted for in-depth interviews covering a range of topics with respect to organizational workforce development issues. Organizations that agreed to an interview are as follows:

- Alstom Power
- Chattanooga State Technical Community College
- City of Chattanooga
- Erlanger Health Systems
- Hamilton County Department of Education
- McKee Foods Corporation
- Memorial Health Care System
- Olan Mills, Inc
- Orange Grove Center, Inc.
- Parkridge Medical Center
- Pilgrim's Pride Corporation
- Propex Fabrics
- Roper Corporation
- Tennessee Valley Authority
- United States Postal Service
- University of Tennessee at Chattanooga
- Unum
- US Xpress Enterprises, Inc.

Collectively, these employers represent approximately 34,000 employees in various locations across the region, although the vast majority of their regional workforce is located within Hamilton County.⁶

⁶ CRC also made repeated – though unsuccessful – efforts to schedule interviews with the following firms: Blue Cross/Blue Shield of Tennessee, Covenant Transport, CIGNA Healthcare, Hutcheson Medical Center, Hamilton County Government, Astec, Inc., and Tecumseh Products Company,

Analysis of Industrial Employment Trends⁷

Between 2001 and 2005, employment within the *Architecture and Construction* career cluster grew at a rate of 10.9%. Several sub-sectors had higher growth rates, including Construction of Buildings (16.8%), Heavy and Civil Engineering and Construction (21.4%), and Services to Buildings and Dwellings (17.7%). Specialized Design Services was the only sub-sector in which jobs declined between 2001 and 2005.

Table 3 – 2001-05 Industrial Employment Growth, Architecture and Construction

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth Rate |
|---|------------|-----------------|-----------------|--------------|
| Construction of Buildings | 236 | 1,966 | 2,297 | 16.8% |
| Heavy and Civil Engineering Construction | 237 | 760 | 923 | 21.4% |
| Specialty Trade Contractors | 238 | 5,383 | 5,690 | 5.7% |
| Architectural, Engineering and Related Services | 5413 | 1,337 | 1,401 | 4.8% |
| Specialized Design Services | 5414 | 133 | 127 | -4.5% |
| Services to Buildings and Dwellings | 5617 | 2,723 | 3,205 | 17.7% |
| Total | | 12,302 | 13,643 | 10.9% |

Overall, *Arts, A/V Technology and Communications* jobs declined by more than 19% between 2001 and 2005. Only one sub-sector (Broadcasting) experienced job growth over this time period. Two sub-sectors, Performing Arts Companies and Telecommunications, lost 57% and 46.3% of jobs, respectively.

Table 4 – 2001-05 Industrial Employment Growth, Arts, A/V Technology and Communications

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth Rate |
|--|------------|-----------------|-----------------|---------------|
| Publishing Industries | 511 | 694 | 613 | -11.7% |
| Motion Picture and Sound Recording Industries | 512 | 241 | 206 | -14.5% |
| Broadcasting | 515 | 835 | 894 | 7.1% |
| Telecommunications | 517 | 605 | 325 | -46.3% |
| Performing Arts, Spectator Sports and Related Industries | 711 | 408 | 325 | -20.3% |
| Performing Arts Companies | 7111 | 300 | 129 | -57.0% |
| | | 3,083 | 2,492 | -19.2% |

⁷ United States Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2001-2005. Sector/Subsector Definitions can be found at <http://www.census.gov/epcd/naics02/naicod02.htm>.

Employment within the *Business, Management and Administration* career cluster grew at an overall rate of 12.3% between 2001 and 2005. Jobs in the Facilities and Support Services sub-sector grew by more than 118%. Three additional sub-sectors had employment growth rates over 20% (Management of Companies and Enterprises, Office Administrative Services and Other Support Services). Employment Services grew the least of all sub-sectors in this career cluster (3.6%).

Table 5 – 2001-05 Industrial Employment Growth, Business, Management and Administration

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth Rate |
|---|------------|-----------------|-----------------|--------------|
| Management of Companies and Enterprises | 5511 | 3,147 | 3,836 | 21.9% |
| Office Administrative Services | 5611 | 145 | 180 | 24.1% |
| Facilities Support Services | 5612 | 113 | 247 | 118.6% |
| Employment Services | 5613 | 5,140 | 5,326 | 3.6% |
| Business Support Services | 5614 | 993 | 1,106 | 11.4% |
| Other Support Services | 5619 | 176 | 213 | 21.0% |
| | | 9,714 | 10,908 | 12.3% |

Between 2000 and 2005, employment within the *Education and Training* career cluster grew by 5.4%. Only one sub-sector, Technical and Trade Schools, experienced a reduction in jobs over this time period (-13.6%). Of the remaining sub-sectors, employment in Other Schools and Instruction increased at the highest rate (29.2%), while jobs in Business Schools and Computer and Management Training and Elementary and Secondary Schools increased at 3.3% and 4.8%, respectively.

Table 6 – 2001-05 Industrial Employment Growth, Education and Training

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth Rate |
|---|------------|-----------------|-----------------|-------------|
| Elementary and Secondary Schools | 6111 | 1,772 | 1,857 | 4.8% |
| Business Schools and Computer and Management Training | 6114 | 60 | 62 | 3.3% |
| Technical and Trade Schools | 6115 | 125 | 108 | -13.6% |
| Other Schools and Instruction | 6116 | 154 | 199 | 29.2% |
| | | 2,111 | 2,226 | 5.4% |

Overall, employment within the *Finance* career cluster grew 4.9% between 2001 and 2005. The highest growth rates over this time period occurred in the Funds, Trusts and Other Financial Vehicles (20.2%) and Real Estate sub-sectors. Two sub-sectors experienced job reductions: Accounting, Tax Preparation,

Bookkeeping and Payroll Services employment decreased by 16.7%, while jobs in the Rental and Leasing services sub-sector decreased by 3.4%.

Table 7 – 2001-05 Industrial Employment Growth, Finance

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth Rate |
|---|------------|-----------------|-----------------|-------------|
| Credit Intermediation and Related Activities | 522 | 2,295 | 2,562 | 11.6% |
| Securities, Commodity Contracts and Other Financial Investments | 523 | 514 | 564 | 9.7% |
| Insurance Carriers and Related Activities | 524 | 9,443 | 9,835 | 4.2% |
| Funds, Trusts and Other Financial Vehicles | 525 | 84 | 101 | 20.2% |
| Real Estate | 531 | 1,588 | 1,884 | 18.6% |
| Rental and Leasing Services | 532 | 771 | 745 | -3.4% |
| Accounting, Tax Preparation, Bookkeeping and Payroll Services | 5412 | 1,272 | 1,060 | -16.7% |
| | | 15,967 | 16,751 | 4.9% |

The *Government and Public Administration* career cluster grew at an overall rate of 1.9% between 2001 and 2005. Three sub-sectors within this cluster experienced job losses – Administration of Human Resource Programs (-8.8%), National Security and International Affairs (-17.4%), and Administration of Environmental Quality Programs (-15.4%).

Table 8 – 2001-05 Industrial Employment Growth, Government and Public Administration

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth Rate |
|---|------------|-----------------|-----------------|-------------|
| Executive, Legislative and other General Government Support | 921 | 3,657 | 3,668 | 0.3% |
| Justice, Public Order and Safety Activities | 922 | 186 | 202 | 8.6% |
| Administration of Human Resource Programs | 923 | 114 | 104 | -8.8% |
| Administration of Environmental Quality Programs | 924 | 13 | 11 | -15.4% |
| Administration of Housing Programs, Urban Planning, Community Development | 925 | 142 | 144 | 1.4% |
| Administration of Economic Programs | 926 | 62 | 138 | 122.6% |
| National Security and International Affairs | 928 | 69 | 57 | -17.4% |
| | | 4,243 | 4,324 | 1.9% |

Employment within the *Health Science* career cluster grew at an overall rate of 15.4% between 2001 and 2005. While the highest rate of job growth occurred within the Outpatient Care Centers sub-sector (75.3%), four additional sub-sectors experienced employment growth rates in excess of 19%: Community Care Facilities for the Elderly (19.3%), Offices of Physicians (24.2%), Other Ambulatory Health Care Services (30.1%), and Offices of Other Health Practitioners (31.3%). Job reductions over this time period occurred within the

Home Health Care Services (-0.9%) and General Medical and Surgical Hospitals (-12.6%) sub-sectors.

Table 9 - 2001-05 Industrial Employment Growth, Health Science

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth Rate |
|---|------------|-----------------|-----------------|--------------|
| Offices of Physicians | 6211 | 3,646 | 4,527 | 24.2% |
| Offices of Dentists | 6212 | 1,017 | 1,064 | 4.6% |
| Offices of Other Health Practitioners | 6213 | 1,008 | 1,323 | 31.3% |
| Outpatient Care Centers | 6214 | 368 | 645 | 75.3% |
| Medical and Diagnostic Laboratories | 6215 | 170 | 189 | 11.2% |
| Home Health Care Services | 6216 | 1,301 | 1,289 | -0.9% |
| Other Ambulatory Health Care Services | 6219 | 379 | 493 | 30.1% |
| General Medical and Surgical Hospitals | 6221 | 1,337 | 1,169 | -12.6% |
| Nursing Care Facilities | 6231 | 1,812 | 2,019 | 11.4% |
| Community Care Facilities for the Elderly | 6233 | 513 | 612 | 19.3% |
| | | 11,551 | 13,330 | 15.4% |

Overall, employment within the *Hospitality and Tourism* career cluster grew by 17.5% between 2001 and 2005. The Food Services and Drinking Places sub-sector experienced the highest rate of employment growth over this time period (20.3%), while the Museums, Historical Sites and Similar Institutions and the Amusement, Gambling and Recreation Industries sub-sectors grew by 12.2% and 10.3%, respectively. Only one sub-sector, Travel and Arrangement and Reservation Services, experienced a reduction in employment (-49.0%).

Table 10 – 2001-05 Industrial Employment Growth, Hospitality and Tourism

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth Rate |
|--|------------|-----------------|-----------------|--------------|
| Museums, Historical Sites and Similar Institutions | 712 | 589 | 661 | 12.2% |
| Amusement, Gambling and Recreation Industries | 713 | 981 | 1,082 | 10.3% |
| Accommodation | 721 | 1,524 | 1,645 | 7.9% |
| Food Services and Drinking Places | 722 | 12,267 | 14,762 | 20.3% |
| Travel Arrangement and Reservation Services | 5615 | 151 | 77 | -49.0% |
| | | 15,512 | 18,227 | 17.5% |

Jobs in the *Human Services* career cluster grew by 7.9% between 2001 and 2005. The highest rates of growth occurred in the Other Personal Services (71.5%) and Death Care Services (59.8%) sub-sectors. Employment in Personal Care Services also grew in excess of 32% (32.7%). Job reductions were

experienced in the Dry-cleaning and Laundry Services (-16.1%), Civil and Social Organizations (-5.6%) and Business, Professional, Labor, Political and Similar Organizations sub-sectors.

Table 11 – 2001-05 Industrial Employment Growth, Human Services

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth Rate |
|--|------------|-----------------|-----------------|-------------|
| Social Assistance | 624 | 1,992 | 2,116 | 6.2% |
| Personal Care Services | 8121 | 508 | 674 | 32.7% |
| Death Care Services | 8122 | 112 | 179 | 59.8% |
| Dry-cleaning and Laundry Services | 8123 | 685 | 575 | -16.1% |
| Other Personal Services (Pet Care, Photofinishing, Parking) | 8129 | 207 | 355 | 71.5% |
| Religious Organizations | 8131 | 80 | 84 | 5.0% |
| Grantmaking and Giving Services | 8132 | 135 | 154 | 14.1% |
| Social Advocacy Organizations | 8133 | 152 | 177 | 16.4% |
| Civic and Social Organizations | 8134 | 696 | 657 | -5.6% |
| Business, Professional, Labor, Political and Similar Organizations | 8139 | 386 | 375 | -2.8% |
| | | 4,953 | 5,346 | 7.9% |

Overall, employment within the *Information Technology* career cluster declined at a rate of 8.2% between 2001 and 2005. Only one of the three sub-sectors within this cluster gained employment over this time period (Computer Systems Design and Related Services grew at a rate of 12.7%). Internet Service Providers and Web Search Portals and Data Processing, Hosting and Related Services declined at rates of 71.3% and 9.2%, respectively.

Table 12 – 2001-05 Industrial Employment Growth, Information Technology⁸

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth Rate |
|---|------------|-----------------|-----------------|--------------|
| Internet Service Providers and Web Search Portals | 5181 | 167 | 48 | -71.3% |
| Data Processing, Hosting and Related Services | 5182 | 337 | 306 | -9.2% |
| Computer Systems Design and Related Services | 5415 | 520 | 586 | 12.7% |
| | | 1,024 | 940 | -8.2% |

⁸ Data was unavailable for two sub-sectors within the Information Technology career cluster: Software Publishers (NAICS 5112) and Internet Publishing and Broadcasting (NAICS 5161). 2001-2003 data was unavailable for Data Processing and Related Services (NAICS 5182). 2004-2005 data for employment and growth rate are presented for this sub-sector.

Overall, the *Public Safety, Corrections and Security* career cluster experienced a 9.3% reduction in jobs between 2001 and 2005. All job reductions occurred within the Investigation and Security Services sub-sector.

Table 13 – 2001-05 Industrial Employment Growth, Public Safety, Corrections and Security

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth Rate |
|-------------------------------------|------------|-----------------|-----------------|--------------|
| Legal Services | 5411 | 1,345 | 1,415 | 5.2% |
| Investigation and Security Services | 5616 | 1,772 | 1,412 | -20.3% |
| | | 3,117 | 2,827 | -9.3% |

Employment within the *Manufacturing* career cluster experienced an overall decline of 16.8% between 2001 and 2005. Some sub-sectors experienced job increases during this time period. Jobs in the Nonmetallic Mineral Product Manufacturing sub-sector grew by 70.5%, while Plastics and Rubber Products Manufacturing increased by 25.8%. Additionally, the Fabricated Metal Product Manufacturing and Printing and Related Support Activities sub-sectors grew by 14.8% and 9.5%, respectively.

Table 14 – 2001-05 Industrial Employment Growth, Manufacturing

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth Rate |
|--|------------|-----------------|-----------------|---------------|
| Food Manufacturing | 311 | 7,024 | 6,309 | -10.2% |
| Beverage and Tobacco Product Manufacturing | 312 | 534 | 430 | -19.5% |
| Textile Mills | 313 | 1,870 | 819 | -56.2% |
| Textile Product Mills | 314 | 282 | 255 | -9.6% |
| Apparel Manufacturing | 315 | 307 | 210 | -31.6% |
| Leather and Allied Product Manufacturing | 316 | 185 | 166 | -10.3% |
| Wood Product Manufacturing | 321 | 312 | 184 | -41.0% |
| Paper Manufacturing | 322 | 1,234 | 971 | -21.3% |
| Printing and Related Support Activities | 323 | 1,383 | 1,514 | 9.5% |
| Chemical Manufacturing | 325 | 2,838 | 2,293 | -19.2% |
| Plastics and Rubber Products Manufacturing | 326 | 590 | 742 | 25.8% |
| Nonmetallic Mineral Product Manufacturing | 327 | 692 | 1,180 | 70.5% |
| Primary Metal Manufacturing | 331 | 2,952 | 867 | -70.6% |
| Fabricated Metal Product Manufacturing | 332 | 3,047 | 3,498 | 14.8% |
| Machinery Manufacturing | 333 | 3,308 | 2,987 | -9.7% |
| Computer and Electronic Product Manufacturing | 334 | 694 | 573 | -17.4% |
| Electrical Equipment, Appliance, and Component Manufacturing | 335 | 556 | 381 | -31.5% |
| Transportation Equipment Manufacturing | 336 | 792 | 716 | -9.6% |
| Furniture and Related Product Manufacturing | 337 | 717 | 362 | -49.5% |
| Miscellaneous Manufacturing | 339 | 654 | 463 | -29.2% |
| | | 29,971 | 24,920 | -16.8% |

Large job losses were experienced within the Primary Metal Manufacturing (-70.6%), Textile Mills (-56.2%), Furniture and Related Products Manufacturing (-49.5%), Wood Product Manufacturing (-41.0%), Apparel Manufacturing (-31.6%) and Electrical Equipment, Appliance and Component Manufacturing (-31.5%) sub-sectors.

Overall, employment within the *Marketing, Sales and Service* career cluster increased by 3.4% over the 2001-2005 time period. High rates of employment growth occurred within the Health and Personal Care Stores (58.8%), Wholesale Electronic Markets Agents and Brokers (27.4%), Miscellaneous Store Retailers (21.6%) and Electronics and Appliance Stores (21.6%) sub-sectors. All remaining sub-sectors experienced growth rates below 20%.

Table 15 - 2001-05 Industrial Employment Growth, Marketing, Sales and Service

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth Rate |
|---|------------|-----------------|-----------------|-------------|
| Merchant Wholesalers, Durable Goods | 423 | 4,287 | 4,146 | -3.3% |
| Merchant Wholesalers, Nondurable Goods | 424 | 1,954 | 2,234 | 14.3% |
| Wholesale Electronic Markets Agents and Brokers | 425 | 715 | 911 | 27.4% |
| Motor Vehicle Parts and Dealers | 441 | 2,862 | 2,654 | -7.3% |
| Furniture and Home Furnishings Stores | 442 | 806 | 751 | -6.8% |
| Electronics and Appliance Stores | 443 | 573 | 697 | 21.6% |
| Building Material and Garden Equipment and Supplies Dealers | 444 | 1,626 | 1,754 | 7.9% |
| Food and Beverage Stores | 445 | 1,925 | 1,525 | -20.8% |
| Health and Personal Care Stores | 446 | 905 | 1,437 | 58.8% |
| Gasoline Stations | 447 | 2,405 | 1,864 | -22.5% |
| Clothing and Clothing Accessories Stores | 448 | 4,674 | 5,248 | 12.3% |
| Sporting Goods, Hobby, Book, and Music Stores | 451 | 748 | 689 | -7.9% |
| General Merchandise Stores | 452 | 3,992 | 4,427 | 10.9% |
| Miscellaneous Store Retailers | 453 | 1,192 | 1,449 | 21.6% |
| Nonstore Retailers | 454 | 929 | 750 | -19.3% |
| Advertising and Related Services | 5418 | 544 | 615 | 13.1% |
| | | 30,137 | 31,151 | 3.4% |

The number of jobs in the *Science, Technology, Engineering and Mathematics* career cluster remained almost static over the 2001-2005 time period. Several sub-sectors, such as Management, Scientific and Consulting Services (77%), Scientific Research and Development Services (17.2%) and Remediation and

Other Waste Management Services (12.5%) experienced relatively high rates of growth.

High rates of job loss occurred within the Personal and Household Goods Repair and Maintenance (-58.0%), Waste Collection (-53.3%) and Waste Treatment and Disposal (-39.2%) sub-sectors.

Table 16 – 2001-05 Industrial Employment Growth, Science Technology, Engineering and Mathematics

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth Rate |
|--|------------|-----------------|-----------------|-------------|
| Utilities | 221 | 311 | 267 | -14.1% |
| Management, Scientific and Technical Consulting Services | 5416 | 265 | 469 | 77.0% |
| Scientific Research and Development Services | 5417 | 186 | 218 | 17.2% |
| Other Professional, Scientific and Technical Services | 5419 | 1,656 | 1,741 | 5.1% |
| Waste Collection | 5621 | 30 | 14 | -53.3% |
| Waste Treatment and Disposal | 5622 | 240 | 146 | -39.2% |
| Remediation and Other Waste Management Services | 5629 | 80 | 90 | 12.5% |
| Automotive Repair and Maintenance | 8111 | 1,129 | 1,096 | -2.9% |
| Electronic and Precision Equipment Repair and Maintenance | 8112 | 90 | 88 | -2.2% |
| Commercial and Industrial Machinery and Equipment Repair and Maintenance | 8113 | 413 | 445 | 7.7% |
| Personal and Household Goods Repair and Maintenance | 8114 | 274 | 115 | -58.0% |
| | | 4,674 | 4,689 | .02% |

Employment within the *Transportation, Distribution and Logistics* sub-sector also remained essentially static between 2001 and 2005. High-growth sub-sectors over this time period were Transit and Ground Passenger Transportation (44.0%), Support Activities for Transportation (42.6%) and Warehousing and Storage (23.7%). These gains were offset by job losses in the Truck Transportation sub-sector.

Table 17 – 2001-05 Industrial Employment Growth, Transportation, Distribution and Logistics

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth Rate |
|---|------------|-----------------|-----------------|--------------|
| Truck Transportation ⁹ | 484 | 14,357 | 13,834 | -3.6% |
| Transit and Ground Passenger Transportation | 485 | 257 | 370 | 44.0% |
| Support Activities for Transportation | 488 | 256 | 365 | 42.6% |
| Couriers and Messengers | 492 | 2,138 | 2,235 | 4.5% |
| Warehousing and Storage | 493 | 671 | 830 | 23.7% |
| | | 17,679 | 17,634 | -.03% |

Sub-Sector Assessment – Industrial Employment

Between 2001 and 2005, Administration of Economic Programs had the highest growth rate of all sub-sectors examined in this study (122.6%). One additional sub-sector, Facilities and Support Services, grew at a rate in excess of 118% over this time period. The ten highest-growth sub-sectors grew at rates of 42.6% or more.

Table 18 – Industrial Employment Change, 2001-05: Top Ten Growth NAICS Sub-Sectors

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth % |
|---|------------|-----------------|-----------------|----------|
| Administration of Economic Programs | 926 | 62 | 138 | 122.6% |
| Facilities Support Services | 5612 | 113 | 247 | 118.6% |
| Management, Scientific and Technical Consulting Services | 5416 | 265 | 469 | 77.0% |
| Outpatient Care Centers | 6214 | 368 | 645 | 75.3% |
| Other Personal Services (Pet Care, Photofinishing, Parking) | 8129 | 207 | 355 | 71.5% |
| Nonmetallic Mineral Product Manufacturing | 327 | 692 | 1,180 | 70.5% |
| Death Care Services | 8122 | 112 | 179 | 59.8% |
| Health and Personal Care Stores | 446 | 905 | 1,437 | 58.8% |
| Transit and Ground Passenger Transportation | 485 | 257 | 370 | 44.0% |
| Support Activities for Transportation | 488 | 256 | 365 | 42.6% |

⁹ While the NAICS framework generally classifies employment based on the location where the employment activity is physically performed, an exception exists with regard to Truck Transportation. Employment within this classification is counted in the location in which payroll for such positions are processed, even though such employment activity may take place in a different location.

Internet Service Providers and Web Search Portals experienced the highest rate of employment loss (-71.3%) between 2001 and 2005. All of the 10 with the greatest job declines over this time period experienced employment reductions of 41% or more.

**Table 19 – Industrial Employment Change, 2001-05:
Top Ten Declining NAICS Sub-Sectors**

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth % |
|---|------------|-----------------|-----------------|----------|
| Internet Service Providers and Web Search Portals | 5181 | 167 | 48 | -71.3% |
| Primary Metal Manufacturing | 331 | 2,952 | 867 | -70.6% |
| Personal and Household Goods Repair and Maintenance | 8114 | 274 | 115 | -58.0% |
| Performing Arts Companies | 7111 | 300 | 129 | -57.0% |
| Textile Mills | 313 | 1,870 | 819 | -56.2% |
| Waste Collection | 5621 | 30 | 14 | -53.3% |
| Furniture and Related Product Manufacturing | 337 | 717 | 362 | -49.5% |
| Travel Arrangement and Reservation Services | 5615 | 151 | 77 | -49.0% |
| Telecommunications | 517 | 605 | 325 | -46.3% |
| Wood Product Manufacturing | 321 | 312 | 184 | -41.0% |

Of the sub-sectors with at least 1,000 employees during the base year of analysis, Offices of Other Health Practitioners experienced the highest rate of employment growth between 2001 and 2005. Among the top ten high-growth, high-employment sub-sectors, four additional sub-sectors grew at rates of 20.3% or more. All of the top ten sub-sectors had employment growth of 14.3% or more over this time period.

**Table 20 – Industrial Employment Change, 2001-05:
Top Ten Highest NAICS Sub-Sectors
(Base Year Employment of 1,000 or More)**

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth Rate |
|---|------------|-----------------|-----------------|-------------|
| Offices of Other Health Practitioners | 6213 | 1,008 | 1,323 | 31.3% |
| Offices of Physicians | 6211 | 3,646 | 4,527 | 24.2% |
| Management of Companies and Enterprises | 5511 | 3,147 | 3,836 | 21.9% |
| Miscellaneous Store Retailers | 453 | 1,192 | 1,449 | 21.6% |
| Food Services and Drinking Places | 722 | 12,267 | 14,762 | 20.3% |
| Real Estate | 531 | 1,588 | 1,884 | 18.6% |
| Services to Buildings and Dwellings | 5617 | 2,723 | 3,205 | 17.7% |
| Construction of Buildings | 236 | 1,966 | 2,297 | 16.8% |
| Fabricated Metal Product Manufacturing | 332 | 3,047 | 3,498 | 14.8% |
| Merchant Wholesalers, Non-durable Goods | 424 | 1,954 | 2,234 | 14.3% |

The highest rate of job loss among the ten sub-sectors with at least 1,000 employees occurred within Primary Metal Manufacturing (-70.6%). Textile Mills also experienced job losses at a rate of 56.2%. All of the sub-sectors in the bottom ten of job growth experienced job losses of 10.2% or more.

**Table 21 – Industrial Employment Change, 2001-05:
Top Ten Declining NAICS Sub-Sectors
(Base Year Employment of 1,000 or More)**

| Sub-Sector | NAICS Code | 2001 Employment | 2005 Employment | Growth Rate |
|---|------------|-----------------|-----------------|-------------|
| Primary Metal Manufacturing | 331 | 2,952 | 867 | -70.6% |
| Textile Mills | 313 | 1,870 | 819 | -56.2% |
| Gasoline Stations | 447 | 2,405 | 1,864 | -22.5% |
| Paper Manufacturing | 322 | 1,234 | 971 | -21.3% |
| Food and Beverage Stores | 445 | 1,925 | 1,525 | -20.8% |
| Investigation and Security Services | 5616 | 1,772 | 1,412 | -20.3% |
| Chemical Manufacturing | 325 | 2,838 | 2,293 | -19.2% |
| Accounting, Tax Preparation, Bookkeeping and Payroll Services | 5412 | 1,272 | 1,060 | -16.7% |
| General Medical and Surgical Hospitals | 6221 | 1,337 | 1,169 | -12.6% |
| Food Manufacturing | 311 | 7,024 | 6,309 | -10.2% |

Analysis of Industrial Firm Trends¹⁰

Between 2000 and 2004, the number of firms within the *Architecture and Construction* career cluster declined by less than 1%. Heavy and Civil Engineering Construction grew at the highest rate(50%), while the Construction of Buildings and Specialty Trade Contractors sub-sectors saw reductions in the number of firms by 10.5% and 13.9%, respectively.

**Table 22 – 2000-2004 Firm Growth,
Architecture and Construction**

| Sub-sector | NAICS Code | 2000 Firms | 2004 Firms | Growth Rate |
|--|------------|--------------|--------------|-------------|
| Construction of Buildings | 236 | 228 | 204 | -10.5% |
| Heavy and Civil Engineering Construction | 237 | 36 | 54 | 50.0% |
| Specialty Trade Contractors | 238 | 483 | 416 | -13.9% |
| Architectural, Engineering, and Related Services | 5413 | 123 | 133 | 8.1% |
| Specialized Design Services | 5414 | 24 | 26 | 8.3% |
| Services to Buildings and Dwellings | 5617 | 169 | 176 | 4.1% |
| | | 1,063 | 1,009 | -.05 |

¹⁰ United States Department of Commerce, Bureau of the Census, County Business Patterns Firm Data, 2000-2004

The number of firms in the *Arts, A/V Technology and Communications* career cluster was static. While Broadcasting was the only sub-sector that experienced growth over this time period, offsetting reductions in the number of firms occurred in the Motion Picture and Sound Recording Industries (-10.0%), Telecommunications (-4.3%), and Performing Arts, Spectator Sports and Related Industries (-5.0%) sub-sectors.

Table 23 – 2000-2004 Firm Growth, Arts, A/V Technology and Communications

| Sub-sector | NAICS Code | 2000 Firms | 2004 Firms | Growth Rate |
|---|------------|------------|------------|-------------|
| Publishing Industries (except Internet) | 511 | 19 | 19 | 0.0% |
| Motion Picture and Sound Recording Industries | 512 | 20 | 18 | -10.0% |
| Broadcasting (except Internet) | 515 | 20 | 26 | 30.0% |
| Telecommunications | 517 | 69 | 66 | -4.3% |
| Performing Arts, Spectator Sports, and Related Industries | 711 | 20 | 19 | -5.0% |
| | | 148 | 148 | 0% |

Between 2000 and 2004, the number of firms within the *Business Management and Administration* career cluster decreased by 16.2%. Accordingly, most sub-sectors in this cluster experienced reductions in the number of firms over this time period. Reductions occurred in the Office Administrative Services (-58.2%), Facilities Support Services (-42.9%), Business Support Services (-14.3%), and Management of Companies and Enterprises (-8.8%) sub-sector. The number of firms grew in the Other Support Services (14.8%) and Employment Services (1.5%) sub-sectors.

Table 24 – 2000-2004 Firm Growth, Business Management and Administration

| Sub-sector | NAICS Code | 2000 Firms | 2004 Firms | Growth Rate |
|---|------------|------------|------------|---------------|
| Management of Companies and Enterprises | 5511 | 57 | 52 | -8.8% |
| Office Administrative Services | 5611 | 55 | 23 | -58.2% |
| Facilities Support Services | 5612 | 7 | 4 | -42.9% |
| Employment Services | 5613 | 65 | 66 | 1.5% |
| Business Support Services | 5614 | 49 | 42 | -14.3% |
| Other Support Services | 5619 | 27 | 31 | 14.8% |
| | | 260 | 218 | -16.2% |

The number of firms in the *Education and Training* career cluster grew at a rate of 1.1% between 2000 and 2004. While the number of firms remained largely stable, Educational Support Services more than doubled its number of firms (growing from 6 to 13 firms), while Other Schools and Instruction lost a total of 9 firms over this time period.

**Table 25 – 2000-2004 Firm Growth,
Education and Training**

| Sub-sector | NAICS Code | 2000 Firms | 2004 Firms | Growth Rate |
|---|------------|------------|------------|-------------|
| Colleges, Universities, and Professional Schools | 6113 | 4 | 5 | 25.0% |
| Business Schools and Computer and Management Training | 6114 | 10 | 11 | 10.0% |
| Technical and Trade Schools | 6115 | 12 | 12 | 0.0% |
| Other Schools and Instruction | 6116 | 31 | 22 | -29.0% |
| Educational Support Services | 6117 | 6 | 13 | 116.7% |
| | | 89 | 90 | 1.1% |

The *Finance* career cluster experienced an overall firm growth rate of 6.5% between 2000 and 2004. The highest rates of growth occurred in the Securities, Commodity Contract and Other Financial Investments (18.9%), Accounting, Tax Preparation, Bookkeeping and Payroll Services (16.2%), and Real Estate (12.8%) sub-sectors. The number of firms declined in Insurance Carriers and Related Activities (-7.5%) and Rental and Leasing Services (-3.8%) sub-sectors.

Table 26 – 2000-2004 Firm Growth, Finance

| Sub-sector | NAICS Code | 2000 Firms | 2004 Firms | Growth Rate |
|--|------------|-------------|-------------|-------------|
| Credit Intermediation and Related Activities | 522 | 302 | 327 | 8.3% |
| Securities, Commodity Contracts, and Other Financial Investments | 523 | 74 | 88 | 18.9% |
| Insurance Carriers and Related Activities | 524 | 226 | 209 | -7.5% |
| Funds, Trusts, and Other Financial Vehicles | 525 | 0 | 3 | |
| Real Estate | 531 | 227 | 256 | 12.8% |
| Rental and Leasing Services | 532 | 104 | 100 | -3.8% |
| Lessors of Nonfinancial Intangible Assets (except Copyrighted Works) | 533 | 3 | 3 | 0.0% |
| Accounting, Tax Preparation, Bookkeeping, and Payroll Services | 5412 | 111 | 129 | 16.2% |
| | | 1047 | 1115 | 6.5% |

The number of firms within the *Health Science* career cluster grew by 13.6% between 2000 and 2004. High rates of growth occurred in a number of sub-sectors. Other Ambulatory Health Care services grew from 4 to 15 firms over this time period (a 275% rate of growth). Home Health Care Services (53.8%), Specialty Hospitals (50.0%), Outpatient Care Centers (25.7%), and Other Residential Facilities experienced rates of firm growth in excess of 25%. In two sub-sectors in this cluster, General Medical and Surgical Hospitals (-12.5%) and Community Care Facilities for the Elderly (-4.5%), the number of firms declined.

**Table 27 – 2000-2004 Firm Growth,
Health Science**

| Sub-sector | NAICS Code | 2000 Firms | 2004 Firms | Growth Rate |
|--|------------|------------|------------|--------------|
| Offices of Physicians | 6211 | 301 | 336 | 11.6% |
| Offices of Dentists | 6212 | 159 | 159 | 0.0% |
| Offices of Other Health Practitioners | 6213 | 115 | 138 | 20.0% |
| Outpatient Care Centers | 6214 | 35 | 44 | 25.7% |
| Medical and Diagnostic Laboratories | 6215 | 11 | 13 | 18.2% |
| Home Health Care Services | 6216 | 13 | 20 | 53.8% |
| Other Ambulatory Health Care Services | 6219 | 4 | 15 | 275.0% |
| General Medical and Surgical Hospitals | 6221 | 8 | 7 | -12.5% |
| Psychiatric and Substance Abuse Hospitals | 6222 | 3 | 4 | 33.3% |
| Specialty (except Psychiatric and Substance Abuse) Hospitals | 6223 | 2 | 3 | 50.0% |
| Nursing Care Facilities | 6231 | 13 | 16 | 23.1% |
| Residential Mental Retardation, Mental Health and Substance Abuse Facilities | 6232 | 55 | 65 | 18.2% |
| Community Care Facilities for the Elderly | 6233 | 22 | 21 | -4.5% |
| Other Residential Care Facilities | 6239 | 4 | 5 | 25.0% |
| | | 745 | 846 | 13.6% |

Overall, the number of firms in the *Hospitality and Tourism* career cluster grew at a rate of 5.9% between 2000 and 2004. The highest rates of firm growth occurred within the Accommodation (30.8%) and Amusement, Gambling and Recreation Industries (10.1%) sub-sectors. These gains were offset by reductions in the number of firms in Travel Arrangement and Reservation Services (-34.6%) and Performing Arts, Spectator Sports and Related Industries (-5.0%), although the latter sub-sector only declined by one firm over this time period.

**Table 28 – 2000-2004 Firm Growth,
Hospitality and Tourism**

| Sub-sector | NAICS Code | 2000 Firms | 2004 Firms | Growth Rate |
|---|------------|------------|------------|-------------|
| Performing Arts, Spectator Sports, and Related Industries | 711 | 20 | 19 | -5.0% |
| Museums, Historical Sites, and Similar Institutions | 712 | 12 | 12 | 0.0% |
| Amusement, Gambling, and Recreation Industries | 713 | 79 | 87 | 10.1% |
| Accommodation | 721 | 65 | 85 | 30.8% |
| Food Services and Drinking Places | 722 | 606 | 636 | 5.0% |
| Travel Arrangement and Reservation Services | 5615 | 26 | 17 | -34.6% |
| | | 808 | 856 | 5.9% |

Overall, the number of firms in the *Human Services* career cluster grew by less than 1% between 2000 and 2004. Some sub-sectors in this cluster, however, experienced relatively high rates of growth over this time period. The highest rates of firm growth occurred in Vocational Rehabilitation Services (100.0%), Social Advocacy Organizations (33.3%), Individual and Family Services (13.5%), and Grantmaking and Giving Services (13.0%). Three sub-sectors experienced reductions in the number of firms over this time period: Business, Professional, Labor, Political and Similar Organizations (-16.3%), Community Food and Housing and Emergency and Other Relief Services (-9.1%), and Child Day Care Services (-2.3%).

Table 29 – 2000-2004 Firm Growth, Human Services

| Sub-sector | NAICS Code | 2000 Firms | 2004 Firms | Growth Rate |
|---|------------|------------|------------|-------------|
| Social Assistance | 624 | 157 | 151 | -3.9% |
| Religious Organizations | 8131 | 337 | 338 | 0.3% |
| Grantmaking and Giving Services | 8132 | 23 | 26 | 13.0% |
| Social Advocacy Organizations | 8133 | 18 | 24 | 33.3% |
| Civic and Social Organizations | 8134 | 40 | 44 | 10.0% |
| Business, Professional, Labor, Political, and Similar Organizations | 8139 | 86 | 72 | -16.3% |
| Individual and Family Services | 6241 | 52 | 59 | 13.5% |
| Community Food and Housing, and Emergency and Other Relief Services | 6242 | 11 | 10 | -9.1% |
| Vocational Rehabilitation Services | 6243 | 2 | 4 | 100.0% |
| Child Day Care Services | 6244 | 86 | 84 | -2.3% |
| | | 812 | 812 | 0.0% |

Between 2000 and 2004, the number of firms within the *Information Technology* career cluster declined by 6.0%. This decline was driven in large part by a reduction in the number of firms within Software Publishers (a loss of two firms at a rate of -40%) and Computer Systems Design and Related Services (a loss of 9 firms at a rate of -11.4%). Data Processing, Hosting and Related Services and Internet Service Providers and Web Search Portals experienced a one-year increase in the number of firms at rates of 40.0% and 20.0%, respectively.

**Table 30 – 2000-2004 Firm Growth,
Information Technology¹¹**

| Sub-sector | NAICS Code | 2000 Firms | 2004 Firms | Growth Rate |
|---|------------|------------|------------|--------------|
| Software Publishers | 5112 | 5 | 3 | -40.0% |
| Internet Publishing and Broadcasting | 5161 | 1 | 1 | 0.0% |
| Internet Service Providers and Web Search Portals | 5181 | 5 | 6 | 20.0% |
| Data Processing, Hosting and Related Services | 5182 | 10 | 14 | 40.0% |
| Computer Systems Design and Related Services | 5415 | 79 | 70 | -11.4% |
| | | 100 | 94 | -6.0% |

The number of firms in the *Public Safety, Corrections and Security* career cluster overall was static. However, the number of firms within the Legal Services sub-sector increased by 8 (4.6%). This gain was offset by a corresponding decrease of 8 firms in the Investigation and Security Services sub-sector.

**Table 31 – 2000-2004 Firm Growth,
Public Safety, Corrections and Security**

| Sub-sector | NAICS Code | 2000 Firms | 2004 Firms | Growth Rate |
|-------------------------------------|------------|------------|------------|-------------|
| Legal Services | 5411 | 175 | 183 | 4.6% |
| Investigation and Security Services | 5616 | 41 | 33 | -19.5% |
| | | 216 | 216 | 0% |

The number of firms within the *Manufacturing* career cluster declined by .6% between 2000 and 2004. Petroleum and Coal Products Manufacturing (33.3%), Miscellaneous Manufacturing (33.3%), Furniture and Related Product Manufacturing (20.8%), and Textile Mills (14.3%) experienced high rates of firm growth over this time period. All remaining sub-sectors grew at rates of 13.6% or lower.

¹¹ 2000-2002 data was unavailable for Internet Publishing and Broadcasting (NAICS 5161), Internet Service Providers and Web Search Portals (NAICS 5181), and Data Processing, Hosting and Related Services (NAICS 5182). 2003-2004 data for firm count and growth rate are presented for these sub-sectors.

**Table 32 – 2000-2004 Firm Growth,
Manufacturing**

| Sub-sector | NAICS Code | 2000 Firms | 2004 Firms | Growth Rate |
|--|------------|------------|------------|--------------|
| Food Manufacturing | 311 | 33 | 33 | 0.0% |
| Beverage and Tobacco Product Manufacturing | 312 | 3 | 3 | 0.0% |
| Textile Mills | 313 | 7 | 8 | 14.3% |
| Textile Product Mills | 314 | 14 | 12 | -14.3% |
| Apparel Manufacturing | 315 | 11 | 10 | -9.1% |
| Leather and Allied Product Manufacturing | 316 | 7 | 6 | -14.3% |
| Wood Product Manufacturing | 321 | 9 | 7 | -22.2% |
| Paper Manufacturing | 322 | 15 | 10 | -33.3% |
| Printing and Related Support Activities | 323 | 67 | 61 | -9.0% |
| Petroleum and Coal Products Manufacturing | 324 | 3 | 4 | 33.3% |
| Chemical Manufacturing | 325 | 34 | 38 | 11.8% |
| Plastics and Rubber Products Manufacturing | 326 | 28 | 24 | -14.3% |
| Nonmetallic Mineral Product Manufacturing | 327 | 22 | 25 | 13.6% |
| Primary Metal Manufacturing | 331 | 15 | 12 | -20.0% |
| Fabricated Metal Product Manufacturing | 332 | 91 | 98 | 7.7% |
| Machinery Manufacturing | 333 | 38 | 34 | -10.5% |
| Computer and Electronic Product Manufacturing | 334 | 14 | 10 | -28.6% |
| Electrical Equipment, Appliance, and Component Manufacturing | 335 | 11 | 9 | -18.2% |
| Transportation Equipment Manufacturing | 336 | 13 | 11 | -15.4% |
| Furniture and Related Product Manufacturing | 337 | 24 | 29 | 20.8% |
| Miscellaneous Manufacturing | 339 | 36 | 48 | 33.3% |
| | | 495 | 492 | -0.6% |

There were fewer firms in Paper Manufacturing (-33.3%), Computer and Electronic Product Manufacturing (-28.6%), Wood Product Manufacturing (-22.2%), Primary Metal Manufacturing (-20.0%) and Electrical Equipment, Appliance and Component Manufacturing (-18.2%).

Between 2000 and 2004, firms within the *Marketing, Sales and Service* career cluster decreased by 7.9%. This reduction was driven by decreases in the number of firms in the Wholesalers/Non-durable Goods (-27.8%), Furniture and Home Furnishings Stores (-18.8%), Wholesalers/Durable Goods (-15.2%) and Food and Beverage Stores (-12.8%) sub-sectors.

**Table 33 – 2000-2004 Firm Growth,
Marketing, Sales and Service**

| Sub-sector | NAICS Code | 2000 Firms | 2004 Firms | Growth Rate |
|---|------------|--------------|--------------|--------------|
| Merchant Wholesalers, Durable Goods | 423 | 462 | 392 | -15.2% |
| Merchant Wholesalers, Non-Durable Goods | 424 | 194 | 140 | -27.8% |
| Motor Vehicle and Parts Dealers | 441 | 169 | 156 | -7.7% |
| Furniture and Home Furnishings Stores | 442 | 85 | 69 | -18.8% |
| Electronics and Appliance Stores | 443 | 61 | 64 | 4.9% |
| Building Material and Garden Equipment and Supplies Dealers | 444 | 128 | 113 | -11.7% |
| Food and Beverage Stores | 445 | 156 | 136 | -12.8% |
| Health and Personal Care Stores | 446 | 127 | 114 | -10.2% |
| Gasoline Stations | 447 | 167 | 165 | -1.2% |
| Clothing and Clothing Accessories Stores | 448 | 216 | 217 | 0.5% |
| Sporting Goods, Hobby, Book, and Music Stores | 451 | 98 | 87 | -11.2% |
| General Merchandise Stores | 452 | 67 | 72 | 7.5% |
| Miscellaneous Store Retailers | 453 | 170 | 183 | 7.6% |
| Non-Store Retailers | 454 | 52 | 63 | 21.2% |
| Advertising and Related Services | 5418 | 53 | 58 | 9.4% |
| | | 2,205 | 2,029 | -7.9% |

High-growth sub-sectors in this cluster were Non-Store Retailers (21.2%), Advertising and Related Services (9.4%), Miscellaneous Store Retailers (7.6%) and General Merchandise Stores (7.5%). The remaining sub-sectors experienced firm growth rates of 4.9% or less.

**Table 34 – 2000-2004 Firm Growth,
Science, Technology, Engineering and Mathematics**

| Sub-sector | NAICS Code | 2000 Firms | 2004 Firms | Growth Rate |
|--|------------|------------|------------|--------------|
| Utilities | 221 | 6 | 6 | 0.0% |
| Management, Scientific and Technical Consulting Services | 5416 | 85 | 91 | 7.1% |
| Scientific Research and Development Services | 5417 | 8 | 10 | 25.0% |
| Other Professional, Scientific and Technical Services | 5419 | 67 | 77 | 14.9% |
| Waste Collection | 5621 | 8 | 13 | 62.5% |
| Waste Treatment and Disposal | 5622 | 3 | 3 | 0.0% |
| Remediation and Other Waste Management Services | 5629 | 10 | 9 | -10.0% |
| Automotive Repair and Maintenance | 8111 | 195 | 188 | -3.6% |
| Electronic and Precision Equipment Repair and Maintenance | 8112 | 29 | 19 | -34.5% |
| Commercial and Industrial Machinery and Equipment Repair and Maintenance | 8113 | 38 | 34 | -10.5% |
| Personal and Household Goods Repair and Maintenance | 8114 | 38 | 29 | -23.7% |
| | | 487 | 479 | -1.6% |

Overall, the firm growth rate in the *Science, Technology, Engineering and Mathematics* career cluster between 2000 and 2004 was -1.6%. Substantial reductions in the number of firms took place in the Electronic and Precision Equipment Repair and Maintenance (-34.5%), Personal and Household Goods Repair and Maintenance (-23.7%) and Commercial and Industrial Machinery and Equipment Repair and Maintenance (-10.5%) sub-sectors. Several sub-sectors, however, did experience firm growth including, Waste Collection (62.5%), Scientific Research and Development Services (25.0%) and Other Professional, Scientific and Technical Services (14.9%).

Between 2000 and 2004, firm growth in the *Transportation, Distribution and Logistics* career cluster was 3.5%. Only one sub-sector in this cluster experienced high firm growth over this time period (Warehousing and Storage – 155.6%). With the exception of Truck Transportation (8.3%), all remaining sub-sectors had either zero growth or reductions in the number of firms. There were fewer firms in the Scenic and Sightseeing Transportation (-40.0%), Transit and Ground Passenger Transportation (-38.5%), Couriers and Messengers (-19.0%), and Support Activities for Transportation (-17.6%) sub-sectors.

Table 35 – 2000-2004 Firm Growth, Transportation, Distribution and Logistics

| Sub-sector | NAICS Code | 2000 Firms | 2004 Firms | Growth Rate |
|---|------------|------------|------------|-------------|
| Air Transportation | 481 | 7 | 7 | 0.0% |
| Truck Transportation | 484 | 109 | 118 | 8.3% |
| Transit and Ground Passenger Transportation | 485 | 13 | 8 | -38.5% |
| Pipeline Transportation | 486 | 3 | 3 | 0.0% |
| Scenic and Sightseeing Transportation | 487 | 5 | 3 | -40.0% |
| Support Activities for Transportation | 488 | 34 | 28 | -17.6% |
| Couriers and Messengers | 492 | 21 | 17 | -19.0% |
| Warehousing and Storage | 493 | 9 | 23 | 155.6% |
| | | 201 | 208 | 3.5% |

Sub-Sector Assessment – Firm Growth

Between 2000 and 2004, the ten sub-sectors with the largest increases in firms had growth rates of 33.3% or more. The highest rate of firm growth occurred in Warehousing and Storage, which increased by 155.6%. Two additional sub-

sectors, Educational Support Services and Vocational Rehabilitation Services, grew at rates of 116.7% and 100%, respectively. Four other sub-sectors added firms at rates of 50% or more over this time period.

**Table 36 – Firm Growth Rate, 2000-04:
Top Ten Growth Sub-Sectors**

| Sub-sector | NAICS Code | 2000 Firms | 2004 Firms | Growth Rate |
|--|------------|------------|------------|-------------|
| Warehousing and Storage | 493 | 9 | 23 | 155.6% |
| Educational Support Services | 6117 | 6 | 13 | 116.7% |
| Vocational Rehabilitation Services | 6243 | 2 | 4 | 100.0% |
| Waste Collection | 5621 | 8 | 13 | 62.5% |
| Home Health Care Services | 6216 | 13 | 20 | 53.8% |
| Heavy and Civil Engineering Construction | 237 | 36 | 54 | 50.0% |
| Specialty (except Psychiatric and Substance Abuse) Hospitals | 6223 | 2 | 3 | 50.0% |
| Wireless Telecommunications Carriers (except Satellite) | 5172 | 17 | 25 | 47.1% |
| Data Processing, Hosting, and Related Services | 5182 | 10 | 14 | 40.0% |
| Miscellaneous Manufacturing | 339 | 36 | 48 | 33.3% |

The ten sub-sectors with the highest rates of firm losses experienced reductions of 22.2% or more. Facilities and Support Services lost the highest percentage of firms (-42.9%), while the number of firms within the Software Publishers sub-sector decreased by 40%. Four additional sub-sectors experienced reductions in number of firms at rates of 33.3% or more.

**Table 37 – Firm Growth Rate, 2000-04:
Top Ten Lowest-Growth Sub-Sectors**

| Sub-sector | NAICS Code | 2000 Firms | 2004 Firms | Growth Rate |
|---|------------|------------|------------|-------------|
| Facilities Support Services | 5612 | 7 | 4 | -42.9% |
| Software Publishers | 5112 | 5 | 3 | -40.0% |
| Transit and Ground Passenger Transportation | 485 | 13 | 8 | -38.5% |
| Travel Arrangement and Reservation Services | 5615 | 26 | 17 | -34.6% |
| Electronic and Precision Equipment Repair and Maintenance | 8112 | 29 | 19 | -34.5% |
| Paper Manufacturing | 322 | 15 | 10 | -33.3% |
| Computer and Electronic Product Manufacturing | 334 | 14 | 10 | -28.6% |
| Merchant Wholesalers, Non-durable Goods | 424 | 194 | 140 | -27.8% |
| Personal and Household Goods Repair and Maintenance | 8114 | 38 | 29 | -23.7% |
| Wood Product Manufacturing | 321 | 9 | 7 | -22.2% |

Among sub-sectors containing at least 100 firms, Offices of Other Health Practitioners had the greatest percentage increase in firms (20%). Three

additional sub-sectors grew at rates of 11.6% or more: Accounting, Tax Preparation, Bookkeeping and Payroll Services (16.2%), Real Estate (12.8%), and Offices of Physicians (11.6%). Of the remaining sub-sectors, firm growth rates ranged from 5% (Food Services and Drinking Places) to 8.3% (Credit Intermediation and Related Activities).

**Table 38 – Firm Growth Rate, 2000-04:
Top Ten Growth Sub-Sectors
(Sub-sectors with More than 100 Firms)**

| Sub-sector | NAICS Code | 2000 Firms | 2004 Firms | Growth Rate |
|--|------------|------------|------------|-------------|
| Offices of Other Health Practitioners | 6213 | 115 | 138 | 20.0% |
| Accounting, Tax Preparation, Bookkeeping, and Payroll Services | 5412 | 111 | 129 | 16.2% |
| Real Estate | 531 | 227 | 256 | 12.8% |
| Offices of Physicians | 6211 | 301 | 336 | 11.6% |
| Credit Intermediation and Related Activities | 522 | 302 | 327 | 8.3% |
| Truck Transportation | 484 | 109 | 118 | 8.3% |
| Architectural, Engineering, and Related Services | 5413 | 123 | 133 | 8.1% |
| Miscellaneous Store Retailers | 453 | 170 | 183 | 7.6% |
| Professional, Scientific, and Technical Services | 541 | 725 | 777 | 7.2% |
| Food Services and Drinking Places | 722 | 606 | 636 | 5.0% |

The highest rate of firm loss among sub-sectors containing at least 100 firms occurred in Merchant Wholesalers of Non-durable goods (-27.8%). Three additional sub-sectors experienced reductions of 12.8% or more: Merchant Wholesalers of Durable Goods (-15.2%), Specialty Trade Contractors (-13.9%), and Food and Beverage Stores (-12.8%). Of the remaining sub-sectors, firm reduction rates ranged from -7.5% (Insurance Carriers and Related Activities) to -10.5% (Construction of Buildings).

**Table 39 – Firm Growth Rate, 2000-04:
Top Ten Lowest-Growth Sub-Sectors
(Sub-sectors with More than 100 Firms)**

| Sub-sector | NAICS Code | 2000 Firms | 2004 Firms | Growth Rate |
|---|------------|------------|------------|-------------|
| Merchant Wholesalers, Non-durable Goods | 424 | 194 | 140 | -27.8% |
| Merchant Wholesalers, Durable Goods | 423 | 462 | 392 | -15.2% |
| Specialty Trade Contractors | 238 | 483 | 416 | -13.9% |
| Food and Beverage Stores | 445 | 156 | 136 | -12.8% |
| Building Material and Garden Equipment and Supplies Dealers | 444 | 128 | 113 | -11.7% |
| Construction of Buildings | 236 | 228 | 204 | -10.5% |
| Health and Personal Care Stores | 446 | 127 | 114 | -10.2% |
| Building Material and Supplies Dealers | 4441 | 108 | 97 | -10.2% |
| Motor Vehicle and Parts Dealers | 441 | 169 | 156 | -7.7% |
| Insurance Carriers and Related Activities | 524 | 226 | 209 | -7.5% |

Analysis of Occupational Employment Trends¹²

Overall, the *Architecture and Construction* career cluster experienced a job growth rate of 26.9% between 2000 and 2005. The number of jobs in the Cement Masons and Concrete Finishers occupational category tripled over this time period: other high-growth occupations were Landscaping and Groundskeeping Workers (110.7%), Building and Grounds Cleaning and Maintenance Occupations (61.9%), Highway Maintenance Workers (50.0%), Brickmasons and Blockmasons (47.4%), and Helpers – Electricians (40.0%).

Table 40 – 2000-05 Occupational Employment Growth, Architecture and Construction

| Occupational Title | 2000 Employment | 2005 Employment | Growth Rate |
|--|-----------------|-----------------|--------------|
| Architects, except Landscape and Naval | 90 | 60 | -33.3% |
| Surveyors | 50 | 80 | 60.0% |
| Architectural and Civil Drafters | 110 | 210 | 90.9% |
| First-line Supervisors/Managers of Construction Trades and Extraction workers | 840 | 820 | -2.4% |
| Brickmasons and Blockmasons | 190 | 280 | 47.4% |
| Carpenters | 940 | 850 | -9.6% |
| Cement Masons and Concrete Finishers | 60 | 260 | 333.3% |
| Construction Laborers | 1350 | 1090 | -19.3% |
| Operating Engineers and Other Construction Equipment Operators | 420 | 470 | 11.9% |
| Electricians | 1530 | 1340 | -12.4% |
| Painters, Construction and Maintenance | 360 | 340 | -5.6% |
| Pipelayers | 180 | 70 | -61.1% |
| Plumbers, Pipefitters, and Steamfitters | 660 | 520 | -21.2% |
| Roofers | 190 | 70 | -63.2% |
| Sheet Metal Workers | 400 | 550 | 37.5% |
| Helpers—Electricians | 150 | 210 | 40.0% |
| Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters | 160 | 130 | -18.8% |
| Highway Maintenance Workers | 260 | 390 | 50.0% |
| Building and Grounds Cleaning and Maintenance Occupations | 4,490 | 7,270 | 61.9% |
| First-line Supervisors/Managers of Housekeeping and Janitorial Workers | 200 | 250 | 25.0% |
| First-line Supervisors/Managers of Landscaping, Lawn Service, and Groundskeeping | 80 | 190 | 137.5% |
| Janitors and Cleaners, except Maids and Housekeeping Cleaners | 2,270 | 3,090 | 36.1% |
| Landscaping and Groundskeeping Workers | 560 | 1,180 | 110.7% |
| | 15,540 | 19,720 | 26.9% |

Roofers (-63.2%), Pipelayers (-61.1%), Plumbers, Pipefitters, and Steamfitters (-21.2%), Construction Laborers (-19.3%) and Helpers – Pipelayers, Plumbers, Pipefitters and Steamfitters (-18.8%) all experienced significant declines in employment.

¹² United States Department of Labor, Bureau of Labor Statistics, Metropolitan Area Occupational Employment and Wage Estimates, Occupational Employment Statistics Survey, 2000-2005.

The *Arts, A/V Technology and Communications* career cluster experienced an overall growth rate of 28.9% between 2000 and 2005. The high-growth categories within this cluster were Editors (125%), Graphic Designers (106.7%), Producers and Directors (60%) and Public Relations Specialists (25.0%). Only two occupational categories had a reduction in employment over this time period: Camera Operators (-50.0%) and Floral Designers (-9.1%).

Table 41 – 2000-05 Occupational Employment Growth, Arts, A/V Technology and Communications

| Occupational Title | 2000 Employment | 2005 Employment | Growth Rate |
|---|--------------------|--------------------|--------------|
| Commercial and Industrial Designers | 50 | 50 | 0.0% |
| Floral Designers | 110 | 100 | -9.1% |
| Graphic Designers | 150 | 310 | 106.7% |
| Producers and Directors | 50 | 80 | 60.0% |
| Public Relations Specialists | 120 | 150 | 25.0% |
| Editors | 40 | 90 | 125.0% |
| Camera Operators, Television, Video, and Motion Picture | 100 | 50 | -50.0% |
| | 2,140 | 2,760 | 28.9% |

Overall, the *Business, Management and Administration* career cluster grew .6% between 2000 and 2005. Although this indicates that employment in this cluster was essentially static, some occupational categories did experience high rates of growth. These categories include Education Administrators – Preschool

**Table 42 – 2000-05 Occupational Employment Growth,
Business, Management and Administration**

| Occupational Title | 2000 Employment | 2005 Employment | Growth Rate |
|--|--------------------|--------------------|-------------|
| Chief Executives | 840 | 960 | 14.3% |
| General and Operations Managers | 4,490 | 4,810 | 7.1% |
| Advertising and Promotions Managers | 150 | 140 | -6.7% |
| Marketing Managers | 260 | 260 | 0.0% |
| Sales Managers | 550 | 1020 | 85.5% |
| Public Relations Managers | 90 | 50 | -44.4% |
| Administrative Services Managers | 680 | 410 | -39.7% |
| Computer and Information Systems Managers | 260 | 500 | 92.3% |
| Financial Managers | 940 | 1180 | 25.5% |
| Human Resources Managers, All Other | 250 | 30 | -88.0% |
| Industrial Production Managers | 450 | 330 | -26.7% |
| Purchasing Managers | 250 | 140 | -44.0% |
| Transportation, Storage, and Distribution Managers | 290 | 160 | -44.8% |
| Construction Managers | 450 | 270 | -40.0% |
| Education Administrators, Preschool and Child Care Centers | 40 | 190 | 375.0% |
| Education Administrators, Elementary and Secondary School | 190 | 240 | 26.3% |
| Engineering Managers | 200 | 210 | 5.0% |
| Food Service Managers | 770 | 490 | -36.4% |
| Funeral Directors | 50 | 60 | 20.0% |
| Medical and Health Services Managers | 360 | 290 | -19.4% |
| Postmasters and Mail Superintendents | 30 | 30 | 0.0% |
| Property, Real Estate, and Community Association Managers | 130 | 180 | 38.5% |
| Social and Community Service Managers | 230 | 80 | -65.2% |
| | 11,950 | 12,030 | .6% |

and Child Care Centers (375%), Computer and Information Systems Managers (92.3%), Sales Managers (85.5%), and Property, Real Estate and Community Association Managers (38.5%).

The number of individuals employed as Human Resource Managers (-88.0%), Social and Community Service Managers (-65.2%), Transportation, Storage and Distribution Managers (-44.8%), Public Relations Managers (-44.4%), Purchasing Managers (-44.0%), Construction Managers (-40.0%), Administrative Services Managers (-39.7%), and Food Service Managers (-36.4%) declined significantly.

The number of *Education and Training* jobs grew by 44.5% from 2000 to 2005. High-growth occupations within this cluster were Instructional Coordinators (433.3%), Special Education Teachers, Secondary School (200.0%), Special Education Teachers, Middle School (150.0%), Kindergarten Teachers, except

Special Education (115.0%), Middle School Teachers, except Special and Vocational Education (85.7%), and Teacher Assistants (82.4%). Only two occupational categories, Secondary School Teachers, except Special and Vocational Education (-23.5%) and Computer Science Teachers, Postsecondary (-20.0%), experienced job losses over this time period.

Table 43 – 2000-05 Occupational Employment Growth, Education and Training

| Occupational Title | 2000 Employment | 2005 Employment | Growth Rate |
|--|-----------------|-----------------|--------------|
| Business Teachers, Postsecondary | 100 | 120 | 20.0% |
| Computer Science Teachers, Postsecondary | 50 | 40 | -20.0% |
| Mathematical Science Teachers, Postsecondary | 80 | 90 | 12.5% |
| Health Specialties Teachers, Postsecondary | 30 | 50 | 66.7% |
| Nursing Instructors and Teachers, Postsecondary | 60 | 80 | 33.3% |
| English Language and Literature Teachers, Postsecondary | 110 | 120 | 9.1% |
| Vocational Education Teachers, Postsecondary | 90 | 120 | 33.3% |
| Preschool Teachers, Except Special Education | 340 | 590 | 73.5% |
| Kindergarten Teachers, Except Special Education | 200 | 430 | 115.0% |
| Elementary School Teachers, Except Special Education | 1290 | 1640 | 27.1% |
| Middle School Teachers, Except Special and Vocational Education | 630 | 1170 | 85.7% |
| Secondary School Teachers, Except Special and Vocational Education | 1490 | 1140 | -23.5% |
| Vocational Education Teachers, Secondary School | 130 | 230 | 76.9% |
| Special Education Teachers, Preschool, Kindergarten, and Elementary school | 190 | 340 | 78.9% |
| Special Education Teachers, Middle School | 80 | 200 | 150.0% |
| Special Education Teachers, Secondary School | 80 | 240 | 200.0% |
| Librarians | 150 | 250 | 66.7% |
| Library Technicians | 160 | 170 | 6.3% |
| Instructional Coordinators | 60 | 320 | 433.3% |
| Teacher Assistants | 910 | 1660 | 82.4% |
| | 6230 | 9000 | 44.5% |

Overall, the *Finance* career cluster grew at a rate of 45.2% between 2000 and 2004. Only two occupational categories, Compensation, Benefits and Job Analysis Specialists (-42.9%) and Accountants and Auditors (-10.9%), experienced job losses during this time period. Of the remaining categories, Management Analysts (511.1%), Financial Analysts (325%), Loan Officers (180.8%), and Employment, Recruitment and Placement Specialists had job growth in excess of 115%. Two additional categories, Purchasing Agents and Credit Analysts, had growth rates in the mid-60% range.

**Table 44 – 2000-05 Occupational Employment Growth,
Finance**

| Occupational Title | 2000 Employment | 2005 Employment | Growth Rate |
|--|----------------------------|----------------------------|--------------------|
| Wholesale and Retail Buyers, Except Farm Products | 80 | 140 | 75.0% |
| Purchasing Agents | 260 | 440 | 69.2% |
| Compliance Officers | 170 | 220 | 29.4% |
| Cost Estimators | 280 | 300 | 7.1% |
| Employment, Recruitment, and Placement Specialists | 190 | 410 | 115.8% |
| Compensation, Benefits, and Job Analysis Specialists | 280 | 160 | -42.9% |
| Training and Development Specialists | 250 | 330 | 32.0% |
| Management Analysts | 90 | 550 | 511.1% |
| Meeting and Convention Planners | 40 | 40 | 0.0% |
| Accountants and Auditors | 1,380 | 1,230 | -10.9% |
| Credit Analysts | 30 | 50 | 66.7% |
| Financial Analysts | 80 | 340 | 325.0% |
| Loan Officers | 260 | 730 | 180.8% |
| Tax Examiners, Collectors, and Revenue Agents | 60 | 70 | 16.7% |
| | 3,450 | 5,010 | 45.2% |

Jobs in the *Health Science* career cluster grew by 17.7% between 2000 and 2005. Several occupational categories experienced high rates of job growth over this time period. High-growth occupations were Home Health Aides (509.5%), Pharmacy Aides (150%), Veterinary Assistants and Laboratory Animal Caretakers (142.9%), Veterinarians (125.0%), and Emergency Technicians and Paramedics (95.2%). Only a few categories had reductions in employment over this time period: Internists, General (-40.9%), Dental Hygienists (-21.2%), Medical Records and Health Information Technicians (-20.0%), and Medical and Clinical Laboratory Technicians (-10.3%).

**Table 45 – 2000-05 Occupational Employment Growth,
Health Science**

| Occupational Title | 2000 Employment | 2005 Employment | Growth Rate |
|--|--------------------|--------------------|--------------|
| Dietitians and Nutritionists | 50 | 80 | 60.0% |
| Pharmacists | 270 | 360 | 33.3% |
| Internists, General | 220 | 130 | -40.9% |
| Registered Nurses | 4400 | 4450 | 1.1% |
| Physical Therapists | 230 | 300 | 30.4% |
| Recreational Therapists | 40 | 50 | 25.0% |
| Speech-Language Pathologists | 80 | 110 | 37.5% |
| Veterinarians | 40 | 90 | 125.0% |
| Medical and Clinical Laboratory Technologists | 140 | 240 | 71.4% |
| Medical and Clinical Laboratory Technicians | 390 | 350 | -10.3% |
| Dental Hygienists | 330 | 260 | -21.2% |
| Radiologic Technologists and Technicians | 300 | 320 | 6.7% |
| Emergency Medical Technicians and Paramedics | 210 | 410 | 95.2% |
| Pharmacy Technicians | 320 | 470 | 46.9% |
| Licensed Practical and Licensed Vocational Nurses | 1300 | 1440 | 10.8% |
| Medical Records and Health Information Technicians | 250 | 200 | -20.0% |
| Opticians, Dispensing | 100 | 120 | 20.0% |
| Occupational Health and Safety Specialists | 40 | 40 | 0.0% |
| Home Health Aides | 210 | 1280 | 509.5% |
| Nursing Aides, Orderlies, and Attendants | 2150 | 2210 | 2.8% |
| Physical Therapist Assistants | 180 | 200 | 11.1% |
| Physical Therapist Aides | 110 | 140 | 27.3% |
| Dental Assistants | 500 | 510 | 2.0% |
| Medical Transcriptionists | 130 | 180 | 38.5% |
| Pharmacy Aides | 60 | 150 | 150.0% |
| Veterinary Assistants and Laboratory Animal Caretakers | 70 | 170 | 142.9% |
| | 12,120 | 14,260 | 17.7% |

Overall, the *Hospitality and Tourism* career cluster had a 15.5% increase in employment between 2000 and 2005. The highest rates of growth occurred in the Counter Attendants (110.6%), Food Preparation Workers (70.4%), Hotel, Motel and Resort Desk Clerks (48.0%), and Bartenders (46.2%) occupations. Of the remaining occupations, growth rates did not exceed 25.7%. Of the six occupations that experienced reductions over this time period, Food Preparation

and Serving Related Workers (-22%), Amusement and Recreation Attendants (-30.0%), and Ushers, Lobby Attendants and Ticket Takers (-10.0%) lost jobs at a rate of 10% or more.

Table 46 – 2000-05 Occupational Employment Growth, Hospitality and Tourism

| Occupational Title | 2000 Employment | 2005 Employment | Growth Rate |
|--|-----------------|-----------------|--------------|
| Food Preparation Workers | 980 | 1,670 | 70.4% |
| Bartenders | 260 | 380 | 46.2% |
| Combined Food Preparation and Serving Workers, Including Fast Food Counter Attendants, Cafeteria, Food Concession, and Coffee Shop | 4,860 | 4,990 | 2.7% |
| Waiters and Waitresses | 3100 | 3500 | 12.9% |
| Food Servers, Nonrestaurant | 310 | 300 | -3.2% |
| Dining Room and Cafeteria Attendants and Bartender Helpers | 400 | 380 | -5.0% |
| Dishwashers | 700 | 880 | 25.7% |
| Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop | 460 | 570 | 23.9% |
| Food Preparation and Serving Related Workers, All Other | 450 | 350 | -22.0% |
| Ushers, Lobby Attendants, and Ticket Takers | 100 | 90 | -10.0% |
| Amusement and Recreation Attendants | 300 | 210 | -30.0% |
| Recreation Workers | 320 | 290 | -9.4% |
| Hotel, Motel, and Resort Desk Clerks | 250 | 370 | 48.0% |
| | 12,960 | 14,970 | 15.5% |

Employment within the *Human Services* Career Cluster grew at a rate of 9.5% between 2000 and 2005. Several occupations in this cluster grew at rates in excess of 40%: First-line Supervisors/Managers of Personal Service Workers (175.0%), Mental Health and Substance Abuse Social Workers (54.5%), Hairdressers, Hairstylists and Cosmetologists (43.9%), Health Educators (42.9%), and Child Care Workers (41.1%). Of the five occupations that experienced employment reductions over this time period, three declined by 41.7% or more: Non-Farm Animal Caretakers (-61.5%), Medical and Public Health Social Workers (-60.9%), and Social and Human Services Assistants (-41.7%).

**Table 47 – 2000-05 Occupational Employment Growth,
Human Services**

| Occupational Title | 2000 Employment | 2005 Employment | Growth Rate |
|---|--------------------|--------------------|-------------|
| Substance Abuse and Behavioral Disorder Counselors | 70 | 80 | 14.3% |
| Educational, Vocational, and School Counselors | 330 | 360 | 9.1% |
| Child, Family, and School Social Workers | 320 | 350 | 9.4% |
| Medical and Public Health Social Workers | 230 | 90 | -60.9% |
| Mental Health and Substance Abuse Social Workers | 220 | 340 | 54.5% |
| Health Educators | 70 | 100 | 42.9% |
| Social and Human Service Assistants | 360 | 210 | -41.7% |
| Clergy | 40 | 30 | -25.0% |
| First-line Supervisors/Managers of Personal Service Workers | 40 | 110 | 175.0% |
| Non-farm Animal Caretakers | 130 | 50 | -61.5% |
| Funeral Attendants | 120 | 110 | -8.3% |
| Hairdressers, Hairstylists, and Cosmetologists | 410 | 590 | 43.9% |
| Child Care Workers | 560 | 790 | 41.1% |
| Fitness Trainers and Aerobics Instructors | 260 | 250 | -3.8% |
| | 3,160 | 3,460 | 9.5% |

Overall, occupations within the *Information Technology* career cluster grew at a rate of 65.6% between 2000 and 2005. This high rate of aggregate growth was driven by employment growth within the occupations of Computer Software Engineers, Applications (350.0%), Network Systems and Data Communications Analysts (220.0%), Computer Programmers (67.3%), Computer Support Specialists (76.9%), and Network and Computer Systems Administrators (50.0%). Only one occupation, Database Administrators, experienced a reduction in employment (-20.0%) over this time period.

**Table 48 - 2000-05 Occupational Employment Growth,
Information Technology**

| Occupational Title | 2000 Employment | 2005 Employment | Growth Rate |
|--|--------------------|-----------------|--------------|
| Computer Programmers | 550 | 920 | 67.3% |
| Computer Software Engineers, Applications | 60 | 270 | 350.0% |
| Computer Support Specialists | 390 | 690 | 76.9% |
| Computer Systems Analysts | 520 | 670 | 28.8% |
| Database Administrators | 100 | 80 | -20.0% |
| Network and Computer Systems Administrators | 160 | 240 | 50.0% |
| Network Systems and Data Communications Analysts | 50 | 160 | 220.0% |
| | 1,830 | 3,030 | 65.6% |

Occupational Employment within the *Public Safety, Corrections and Security* career cluster grew at a rate of 22.8% between 2000 and 2005. Growth in this cluster was driven by employment increases in the Paralegals and Legal

Assistants (187.5%) occupational category. Two occupations, Correctional Officers and Jailers and Animal Control Workers, experienced employment reductions of 51.0% and 25.0%, respectively.

Table 49 – 2000-05 Occupational Employment Growth, Public Safety, Corrections and Security

| Occupational Title | 2000 Employment | 2005 Employment | Growth Rate |
|---------------------------------------|-----------------|-----------------|--------------|
| Correctional Officers and Jailers | 490 | 240 | -51.0% |
| Animal Control Workers | 40 | 30 | -25.0% |
| Protective Service Workers, all Other | 80 | 90 | 12.5% |
| Lawyers | 600 | 730 | 21.7% |
| Paralegals and Legal Assistants | 240 | 690 | 187.5% |
| | 1450 | 1780 | 22.8% |

Between 2000 and 2005, the occupations included in the *Manufacturing* career cluster increased by 7.7%. Several occupational categories experienced high rates of growth over this time period, including Extruding, Forming, Pressing, and Compacting Machine Setters, Operators and Tenders (433.3%), Bakers (245.5%), Tool and Die Makers (240%), Rolling Machine Setters, Operators, and Tenders, Metal and Plastic (125%), Multiple Machine Tool Setters, Operators and Tenders, Metal and Plastic (108.3%), and Helpers – Production Workers (106.5%).

Relatively high rates of job reduction occurred within several occupational categories, including Drilling and Boring Machine Tool Setters, Operators, and Tender, Metal and Plastic (-70%), Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators and Tenders, Metal and Plastic (-67.2%), Pressers, Textile, Garment, and Related Materials (-57.1%), Crushing, Grinding, and Polishing Machine Setters, Operators and Tenders (-54.5%), and Machinists (-50.3%).

**Table 50 – 2000-05 Occupational Employment Growth,
Manufacturing**

| Occupational Title | 2000 Employment | 2005 Employment | Growth Rate |
|---|----------------------------|----------------------------|------------------------|
| First-line Supervisors/managers of Production and Operating Workers | 1,590 | 1,590 | 0.0% |
| Electrical and Electronic Equipment Assemblers | 220 | 180 | -18.2% |
| Fiberglass Laminators and Fabricators | 30 | 30 | 0.0% |
| Team Assemblers | 1,960 | 3,570 | 82.1% |
| Bakers | 110 | 380 | 245.5% |
| Computer-Controlled Machine Tool Operators, Metal and Plastic | 110 | 120 | 9.1% |
| Rolling Machine Setters, Operators, and Tenders, Metal and Plastic | 40 | 90 | 125.0% |
| Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic | 790 | 590 | -25.3% |
| Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic | 100 | 30 | -70.0% |
| Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic | 580 | 190 | -67.2% |
| Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic | 100 | 130 | 30.0% |
| Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic | 70 | 80 | 14.3% |
| Machinists | 1,530 | 760 | -50.3% |
| Metal-Refining Furnace Operators and Tenders | 60 | 40 | -33.3% |
| Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic | 420 | 340 | -19.0% |
| Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic | 240 | 500 | 108.3% |
| Tool and Die Makers | 50 | 170 | 240.0% |
| Welders, Cutters, Solderers, and Brazers | 1,030 | 930 | -9.7% |
| Bindery Workers | 170 | 140 | -17.6% |
| Prepress Technicians and Workers | 160 | 90 | -43.8% |
| Printing Machine Operators | 330 | 440 | 33.3% |
| Laundry and Dry-Cleaning Workers | 350 | 320 | -8.6% |
| Pressers, Textile, Garment, and Related Materials | 210 | 90 | -57.1% |
| Sewing Machine Operators | 650 | 460 | -29.2% |
| Cabinetmakers and Bench Carpenters | 120 | 190 | 58.3% |
| Chemical Plant and System Operators | 220 | 120 | -45.5% |
| Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders | 110 | 50 | -54.5% |
| Mixing and Blending Machine Setters, Operators, and Tenders | 300 | 480 | 60.0% |
| Cutting and Slicing Machine Setters, Operators, and Tenders | 160 | 170 | 6.3% |
| Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders | 60 | 320 | 433.3% |
| Inspectors, Testers, Sorters, Samplers, and Weighers | 1,340 | 1,130 | -15.7% |
| Jewelers and Precious Stone and Metal Workers | 60 | 40 | -33.3% |
| Dental Laboratory Technicians | 90 | 90 | 0.0% |
| Packaging and Filling Machine Operators and Tenders | 1,160 | 1,000 | -13.8% |
| Coating, Painting, and Spraying Machine Setters, Operators, and Tenders | 270 | 210 | -22.2% |
| Painters, Transportation Equipment | 30 | 40 | 33.3% |
| Painting, Coating, and Decorating Workers | 50 | 50 | 0.0% |
| Paper Goods Machine Setters, Operators, and Tenders | 340 | 320 | -5.9% |
| Helpers—Production Workers | 930 | 1,920 | 106.5% |
| | 16,140 | 17,390 | 7.7% |

Between 2000 and 2005, occupations within the *Marketing, Sales and Service* career cluster grew at a rate of 15.3% between 2000 and 2005. High growth rates in several categories contributed to this overall increase, including Real Estate Sales Agents (225.0%), Door-to-Door Sales Workers, News and Street Vendors, and Related Workers (200.0%), and Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products (90.5%).

Table 51 – 2000-05 Occupational Employment Growth, Marketing, Sales and Service

| Occupational Title | 2000 Employment | 2005 Employment | Growth Rate |
|--|-----------------|-----------------|--------------|
| First-Line Supervisors/Managers of Retail Sales Workers | 1,890 | 2,140 | 13.2% |
| First-Line Supervisors/Managers of Non-Retail Sales Workers | 630 | 520 | -17.5% |
| Cashiers | 6,110 | 6,730 | 10.1% |
| Counter and Rental Clerks | 650 | 530 | -18.5% |
| Parts Salespersons | 460 | 600 | 30.4% |
| Retail Salespersons | 6,010 | 7,590 | 26.3% |
| Advertising Sales Agents | 210 | 190 | -9.5% |
| Securities, Commodities, and Financial Services Sales Agents | 160 | 140 | -12.5% |
| Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products | 420 | 800 | 90.5% |
| Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products | 1,940 | 2,040 | 5.2% |
| Demonstrators and Product Promoters | 50 | 30 | -40.0% |
| Real Estate Sales Agents | 40 | 130 | 225.0% |
| Sales Engineers | 100 | 40 | -60.0% |
| Door-to-Door Sales Workers, News and Street Vendors, and Related Workers | 30 | 90 | 200.0% |
| | 18,700 | 21,570 | 15.3% |

Several occupations experienced employment decreases over this time period: Sales Engineers (-60.0%), Demonstrators and Product Promoters (-40.0%), Counter and Rental Clerks (-18.5%), and First-Line Supervisors/Managers of Non-Retail Sales Workers (-17.5%).

Overall, employment within the *Science, Technology, Engineering and Mathematics* career cluster declined by 1.7% between 2000 and 2005. Declining categories over this time period include Civil Engineering Technicians (-77.3%), Drafters, All Other (-55.6%), Environmental Engineers (-28.6%), Electrical Engineers (-23.9%) and Industrial Engineers (-20.0%). These losses were offset by increases in employment within the Industrial Engineering Technicians (275.0%), Mechanical Engineering Technicians (100.0%), Mechanical Drafters (88.9%), and Electrical and Electronics Drafters (66.7%) occupational categories.

Table 52 – 2000-05 Occupational Employment Growth, Science, Technology, Engineering and Mathematics

| Occupational Title | 2000 Employment | 2005 Employment | Growth Rate |
|-------------------------------------|-----------------|-----------------|--------------|
| Civil Engineers | 190 | 190 | 0.0% |
| Electrical Engineers | 460 | 350 | -23.9% |
| Environmental Engineers | 70 | 50 | -28.6% |
| Industrial Engineers | 250 | 200 | -20.0% |
| Mechanical Engineers | 310 | 430 | 38.7% |
| Electrical and Electronics Drafters | 30 | 50 | 66.7% |
| Mechanical Drafters | 90 | 170 | 88.9% |
| Drafters, All Other | 90 | 40 | -55.6% |
| Civil Engineering Technicians | 220 | 50 | -77.3% |
| Industrial Engineering Technicians | 40 | 150 | 275.0% |
| Mechanical Engineering Technicians | 40 | 80 | 100.0% |
| | 1790 | 1760 | -1.7% |

The *Transportation, Distribution and Logistics* career cluster decreased by 10.5% in occupational employment between 2000 and 2005. This aggregate decrease is due to employment declines in the Stock Clerks and Order Filers (-21.7%), Postal Service Mail Sorters Processors and Processing Machine Operators (-19.0%), and Shipping, Receiving and Traffic Clerks (-15.8%) occupational categories. Several categories did, however, experience job increases during this time period. These occupations include: Production, Planning and Expediting Clerks (89.3%), Weighers, Measurers, Checkers and Samplers (33.3%), Couriers and Messengers (17.6%) and Postal Service Clerks (7.7%).

Table 53 – 2000-05 Occupational Employment Growth, Transportation, Distribution and Logistics

| Occupational Title | 2000 Employment | 2005 Employment | Growth Rate |
|---|-----------------|-----------------|---------------|
| Couriers and Messengers | 170 | 200 | 17.6% |
| Postal Service Clerks | 130 | 140 | 7.7% |
| Postal Service Mail Carriers | 520 | 520 | 0.0% |
| Postal Service Mail Sorters, Processors, and Processing Machine Operators | 420 | 340 | -19.0% |
| Production, Planning, and Expediting Clerks | 280 | 530 | 89.3% |
| Shipping, Receiving, and Traffic Clerks | 1390 | 1170 | -15.8% |
| Stock Clerks and Order Fillers | 2990 | 2340 | -21.7% |
| Weighers, Measurers, Checkers, and Samplers, | 90 | 120 | 33.3% |
| | 5990 | 5360 | -10.5% |

Sub-Sector Assessment – Occupational Employment

Between 2000 and 2005, the ten highest-growth sub-sectors experienced occupational growth rates of 300% or more. The highest-growth sub-sector was Management Analysts, which increased by 511.1% over this time period. Four additional sub-sectors experienced growth rates of 433.3% or more: Home Health Aides (509.5%), Bus and Truck Mechanics and Diesel Engine Specialists (485%), Instructional Coordinators (433.3%), and Extruding, Forming, Pressing and Compacting Machine Setters (433.3%).

**Table 54 – Occupational Employment 2000-05:
Top Ten Growth Sub-Sectors**

| Occupational Title | 2000 Employment | 2005 Employment | Growth Rate |
|---|--------------------|--------------------|-------------|
| Management Analysts | 90 | 550 | 511.1% |
| Home Health Aides | 210 | 1,280 | 509.5% |
| Bus and Truck Mechanics and Diesel Engine Specialists | 200 | 1,170 | 485.0% |
| Instructional Coordinators | 60 | 320 | 433.3% |
| Extruding, Forming, Pressing, and Compacting Machine Setters | 60 | 320 | 433.3% |
| Education Administrators, Preschool and Child Care Center/Program | 40 | 190 | 375.0% |
| Computer Software Engineers, Applications | 60 | 270 | 350.0% |
| Cement Masons and Concrete Finishers | 60 | 260 | 333.3% |
| Financial Analysts | 80 | 340 | 325.0% |
| Library Assistants, Clerical | 30 | 120 | 300.0% |

The ten sub-sectors with the highest rates of employment decline all had reduction rates of -60.9% or more. The largest decrease in employment occurred within Life, Physical, and Social Science Technicians, All Other (-94.8%). Three additional sub-sectors declined at rates of 70% or more: Human Resources Managers, All Other (-88%), Civil Engineering Technicians (-77.3%), and Drilling and Boring Machine Tool Setters, Operators and Tenders, Metal and Plastic (-70%). Occupational employment reduction rates for the remaining sub-sectors ranged from -60.9% (Medical and Public Health Social Workers) to -67.2% (Grinding, Lapping, Polishing, and Buffing Machine Tool Setters).

**Table 55 – Occupational Employment, 2000-05:
Top Ten Lowest-Growth Sub-Sectors**

| Occupational Title | 2000 Employment | 2005 Employment | Growth Rate |
|---|--------------------|--------------------|-------------|
| Life, Physical, and Social Science Technicians, All Other | 580 | 30 | -94.8% |
| Human Resources Managers, All Other | 250 | 30 | -88.0% |
| Civil Engineering Technicians | 220 | 50 | -77.3% |
| Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic | 100 | 30 | -70.0% |
| Grinding, Lapping, Polishing, and Buffing Machine Tool Setters | 580 | 190 | -67.2% |
| Social and Community Service Managers | 230 | 80 | -65.2% |
| Roofers | 190 | 70 | -63.2% |
| Nonfarm Animal Caretakers | 130 | 50 | -61.5% |
| Pipelayers | 180 | 70 | -61.1% |
| Medical and Public Health Social Workers | 230 | 90 | -60.9% |

Within the ten highest-growth occupational sub-sectors with at least 1,000 employees, Team Assemblers experienced the highest growth rate between 2000 and 2005 (82.1%). The remaining occupations in this group experienced growth rates between 13.2% (First-line Supervisors/Managers of Retail Sales Workers) and 38.3% (Data Entry Keyers).

**Table 56 – Occupational Employment, 2000-05:
Top Ten Growth Sub-Sectors
(Occupations with 1,000 or More Employees)**

| Occupational Title | 2000 Employment | 2005 Employment | Growth Rate |
|---|--------------------|--------------------|-------------|
| Team Assemblers | 1,960 | 3,570 | 82.1% |
| Data Entry Keyers | 1,070 | 1,480 | 38.3% |
| Janitors and Cleaners, except Maids and Housekeeping Cleaners | 2,270 | 3,090 | 36.1% |
| Bookkeeping, Accounting, and Auditing Clerks | 2,010 | 2,590 | 28.9% |
| Elementary School Teachers, except Special Education | 1,290 | 1,640 | 27.1% |
| Laborers and Freight, Stock, and Material Movers, Hand | 3,400 | 4,310 | 26.8% |
| Retail Salespersons | 6,010 | 7,590 | 26.3% |
| Office Clerks, General | 3,830 | 4,750 | 24.0% |
| Maintenance and Repair Workers, General | 2,280 | 2,660 | 16.7% |
| First-line Supervisors/Managers of Retail Sales Workers | 1,890 | 2,140 | 13.2% |

Between 2000 and 2005, occupational employment within the top ten declining sub-sectors ranged from -50.3% (Machinists) to -12.4% (Electricians). Three additional sub-sectors experienced employment reductions of 21.7% or more over this time period: Packers and Packagers, Hand (-42.6%), Secondary School Teachers (-23.5%), and Stock Clerks and Order Filers (-21.7%).

**Table 57 – Occupational Employment, 2000-05:
Top Ten Lowest-Growth Sub-Sectors
(Occupations with 1,000 or More Employees)**

| Occupational Title | 2000 Employment | 2005 Employment | Growth Rate |
|--|--------------------|--------------------|-------------|
| Machinists | 1,530 | 760 | -50.3% |
| Packers and Packagers, Hand | 4,010 | 2,300 | -42.6% |
| Secondary School Teachers, except Special and Vocational Education | 1,490 | 1,140 | -23.5% |
| Stock Clerks and Order Fillers | 2,990 | 2,340 | -21.7% |
| Construction Laborers | 1,350 | 1,090 | -19.3% |
| Shipping, Receiving, and Traffic Clerks | 1,390 | 1,170 | -15.8% |
| Inspectors, Testers, Sorters, Samplers, and Weighers | 1,340 | 1,130 | -15.7% |
| Receptionists and Information Clerks | 1,900 | 1,630 | -14.2% |
| Packaging and Filling Machine Operators and Tenders | 1,160 | 1,000 | -13.8% |
| Electricians | 1,530 | 1,340 | -12.4% |

Major Employer Workforce Needs

Through in-depth interviews with major employers in the Chattanooga region, CRC was able to identify prospective workforce needs. The employers interviewed largely embraced the career academy concept, and felt that it had the potential to form a part of the solution that would lead to the elimination of major gaps in the regional workforce. However, virtually all firms viewed the best role for career academies as that of a college preparatory program in which students are provided information about certain career fields, develop career-specific skills and learn basic concepts essential for success. Employers did not view career academies as a replacement for two-year technical degrees or blocks of curriculum taught in four-year institutions. As such, career academies were viewed as the beginning of a long-term career path rather than a short-term employment program for graduating students.

Administrative/Professional Workforce Issues

- Specialized administrative positions appear to be subject to competitive pressures originating from firms from both within and outside of the Chattanooga region. As a result, organizations with greater resource constraints are facing increasing difficulty in retaining the talent needed to successfully run the organization.

- A number of Chattanooga's largest employers cited shortages in such positions. As skills inherent in this type of position are normally applicable across industries, career academies that focus on such skills may be of general benefit to the region.
- Regional labor shortages within certain specialties in the health care industry are extremely pronounced and reach across virtually every major health care facility in the community. Significant shortages exist for *Pharmacists/Pharmacy Technologists, Vascular Technologists, Laboratory Technologists, Speech Therapists, Physical Therapists, Surgical First Assistants and Imaging/Ultrasound Technologists.*
- While employers indicate a recruiting capacity that is adequate, labor shortages are a result of a general skill shortage on a regional (and national) level. This shortage results in positions that remain vacant for extended periods of time. When such positions are filled, the risk of leaving the position to work for competitors offering higher salaries is ever-present.
- The limited capacity of regional education/training institutions coupled with impending demographic shifts will create a crisis in the health care delivery system unless a comprehensive local training and recruitment strategy is created and implemented.
- A marked deficit in engineers trained at the Bachelor's and Master's levels was evident in organizations that rely on such talent for their operations. The vitality of the Chattanooga region is dependent upon the capacity to train and attract engineers and other knowledge-based labor to the area. The employer interviews indicate that current capacity in this regard is not adequate.
- For certain employers, labor shortages in *engineering* specialties such as *metallurgy* have recently emerged due to retirement-related attrition. These positions remain unfilled for extended periods of time due to a limited applicant pool and low applicant skill level relative to the requirements of the position.
- Other highly specialized technical/professional positions such as *Food Scientist, Electrical Engineer, Drafter, Nuclear Scientist and Fossil Fuel Scientist* are in short supply nationally, making it difficult to recruit high-level applicants to the region.

Trades/Skilled Professions Workforce Issues

- A number of the employers interviewed indicated a shortage of available workers to fill the skilled trades professions. Such positions often require at least a two-year degree and on-the-job training after hiring. The community education/training system does not appear to have the capacity to meet the regional demand for labor in this occupational category.
- For some employers, trades positions such as *Machinists* and *Welders* are the most difficult to fill in the entire organization. For others, shortages in *Mechanics* and *Tractor/Trailer Repair Specialists* have direct, immediate implications for conducting day-to-day operations – and can thus significantly affect company “bottom lines”. Like professional/administrative positions, high mobility and competition from other firms contribute to high turnover rates. Less mobile positions such as *Power Plant Operators* have significantly lower turnover rates, although such positions can remain unfilled for substantial periods of time if the position is vacated.
- While unions normally play a major role in the training and retention of trades positions, they do not emphasize recruiting and therefore have not been entirely successful in helping to meet the workforce needs of Chattanooga’s largest employers.
- Skilled trades positions are often highly specialized and require extensive, industry-specific training on an ongoing basis before and after initial hire. It is this narrow specialization that contributes to regional labor shortage in these fields and the resulting difficulty in recruitment.

Entry-Level Workforce Issues

- *Basic Reading and Math:* Most employers interviewed cited a lack of basic math skills on the part of the entry-level labor pool. In the cases where a basic math test was given as a condition of hiring, high failure rates were cited.
- *“Soft” Skills:* Most employers interviewed indicated major “soft” skills gaps among entry-level employees. Skills such as timeliness, attendance and socialization were cited as absent in the entry-level labor pool, attributed largely to immaturity, generational attitudes and norms, and insufficient experience in meeting the requirements of stable employment.

Community Research Council

- A number of organizations interviewed indicated little difficulty in finding an adequate supply of applicants for open entry-level positions. For most organizations, entry-level positions required at least a high school diploma or its equivalent, and were not otherwise screened in relation to social/work/life skills.
- While the pool of applicants for entry-level positions was found to be adequate according to the organizations interviewed, retention of entry-level employees was found to be extremely difficult. This was most commonly attributed to “soft skills” deficits.
- Based on employer interviews, the entry-level labor market appears to be subject to churning, where entry-level applicants are hired, serve one organization for a limited period of time and then quit (or are fired for violating company policy). The same employees are then hired by another organization, serve for a short time, and then move on to the next organization. This cycling behavior has the effect of increasing the supply of entry-level labor while steadily decreasing its quality. Over time, this phenomenon has the potential to erode the overall quality of the regional workforce.

Recommendations

The results of the quantitative analysis and the employer interviews suggest several areas of concentration for career academies. A number of single-site academies currently exist within HCDE including academies addressing career paths such as technology and business systems, culinary arts and hospitality, engineering and construction technology, multimedia, information and technology, health careers and transportation/engineering/automotive. These recommendations suggest the potential for building on to some of the existing programs and creating new ones:

- **Information Technology**

Occupations in this cluster had the highest growth rate (65%) between 2000 and 2005. Additionally, Chattanooga’s major employers across industries suggested that such skills represented major gaps in their workforce. This indicates that, although technology firms have not increased employment in the region, such occupations are highly relevant across industries and will remain so as long as large segments of the economy are dependent upon the creation, organization, transmission and storage of highly complex information.

- **Finance**

While growth in both employment and the number of firms in the Finance career cluster was in the 5-6% range, occupational employment grew by approximately 45% in the region between 2000 and 2005. Like the Information Technology cluster, employers across several industries cited skills gaps with respect to financial specialties. Taken as a whole, this data indicates that occupations requiring this skill set are growing at high rates across industries in the region.

- **Health Care**

Employment and firm growth in the Health Sciences career cluster grew at a rate of 15.4% and 13.6%, respectively, and occupational employment in this cluster grew at a rate of 17.7% between 2000 and 2005. Growth in this career cluster is occurring at a time in which major health care providers are expressing critical shortages in several health care occupations including *Pharmacists/Pharmacy Technologists, Vascular Technologists, Laboratory Technologists, Speech Therapists, Physical Therapists, Surgical First Assistants* and *Imaging/Ultrasound Technologists*. Given age-related demographic shifts and the primacy of the Chattanooga region as the health care hub for a large portion of southeastern Tennessee and northern Georgia, this career cluster will continue to be important to the vitality of the region.

- **Science/Technology/Engineering/Mathematics**

In the Chattanooga region, the Science/Technology/Engineering/Mathematics career cluster experienced near-zero employment, firm and occupational growth over the time period(s) of analysis. But, employers in the region indicated a skills gap in specialized occupations within this cluster. Demand for such skills is expected to grow in the region, given continued expansion of energy, transportation and information infrastructure as well as the potential expansion of the SimCenter at the University of Tennessee at Chattanooga (UTC).

- **Architecture and Construction**

Occupational growth in this cluster was approximately 27% between 2000 and 2005. Continued physical development in the region is dependent upon the presence of a trained workforce in the area.

- **Hospitality and Tourism**

Reflecting Chattanooga's role as a tourism center, industrial employment in the Hospitality and Tourism career cluster grew at a higher rate (17.5%)

than any other cluster in the region between 2001 and 2005. Firms grew at a rate of approximately 6% between 2000 and 2004, while occupational employment growth between 2000 and 2005 was 15.5%. Given the strength of the tourism sector in the region, the career academy model has the potential to prepare students for both entry level positions and college programs that lead to long-term careers in the industry. Cornell's School of Hotel Administration¹³ may provide a viable model in this respect in terms of curriculum formulation and career path development.

- **Education and Training**

Occupational employment within the Education and Training career cluster grew by 44.5% overall, although the number of secondary school teachers declined by 23.5%. Local employers cited a shortage of secondary teachers in specializations such as math, science information technology. Local employers also cited shortages in postsecondary specialties such as nursing, information technology and engineering, and expressed a frustration with the limited capacity of local educational institutions to produce an adequate number of graduates. This was particularly true within the Health Science and Science, Technology, Engineering and Mathematics Sectors. Area employers also highlighted teacher shortages in secondary education.

¹³ See <http://www.hotelschool.cornell.edu>.