

Jobs for New York's Future

Report of
The City University of New York
Jobs Task Force 2012

CU
NY



Office of the General Counsel and
Senior Vice Chancellor for Legal Affairs

535 East 80th Street
New York, NY 10075
www.cuny.edu

May 2012

Chancellor Matthew Goldstein
The City University of New York
535 E. 80th Street
New York, NY 10075

Dear Chancellor Goldstein:

On behalf of the CUNY Jobs Task Force, I am pleased to present the final report of findings and recommendations that resulted from your creation of the task force in fall 2011.

Focusing on five key industries in New York City—finance, insurance, and accounting; health care; higher education; information technology; and media and advertising—the task force examined key drivers and emerging trends in the industries, the workforce skills in demand, and employers’ recommendations to colleges and universities to enhance students’ preparation for a competitive workplace.

The task force’s research included interviews with industry experts, including the members of the task force themselves; analysis of labor market information; and examination of industry reports and trade organization websites. The research was designed to provide a snapshot of the selected industries and offer directional guidance to CUNY and other universities in educating a workforce capable of driving innovation and contributing meaningfully to New York City’s global marketplace.

To that end, the report recommends strengthening links to industry in order to better support areas such as academic programming, career guidance, and job search training. The report also notes the importance of understanding post-graduate outcomes, as well as the articulation and assessment of specific learning outcomes. (Please note that the report is available online at www.cuny.edu.)

The report’s recommendations position CUNY as a resource for the city’s major industries and suggest a number of opportunities for follow-up action by the University:

- We know that a number of CUNY partnerships and programs with industry already address the linkages suggested by interviewees. A comprehensive effort to identify and examine CUNY’s best practices, as well as those of institutions across the country, will be a critical first step toward the goal of refining and expanding such activities and ensuring their effectiveness in preparing students for the rapidly changing 21st century workplace.
- Following conversations you have initiated across CUNY, the University should further its consultations with trustees, presidents, faculty, disciplinary councils, students, alumni, governance and advisory groups, the Business Leadership Council, and other constituencies to identify ways this study can be used to inform program improvements.
- The University should develop a framework for communicating with industry sectors, which could include creating a single, central point of contact for businesses seeking to interact with CUNY, and cross-campus discipline councils that more deeply connect with businesses in their respective fields.
- CUNY may also wish to consider conducting industry scans like those undertaken for this report at regular intervals and with other industries of strategic importance to the city and to the University. Ongoing monitoring of the labor market to determine if labor supply is matching industry demand should remain a priority at CUNY.
- The University plays a key role in the New York City labor market—it serves the majority of undergraduates in New York City, and 80 percent of its bachelor’s recipients remain in the city after graduation. Enhanced data collection about post-graduate outcomes would not only advance our understanding of the industries in which graduates participate but would also greatly assist the colleges in planning for academic programs, student services, and career advisement.
- CUNY’s emphasis on rigorous and clearly articulated learning outcomes, highlighted most recently in the University’s “Pathways to Degree Completion” initiative, is reflected in much of the feedback offered by employers interviewed for the report. A continued focus on building key skills—including communication skills, data analysis, and creativity—along with ongoing assessment is essential to maintaining the long-term advancement of our students.

The CUNY Jobs Task Force was pleased to consider these important issues on behalf of the University. I deeply appreciate the diligent efforts of the task force and its staff, and I look forward to working closely with you and other University officials to address questions and follow-up activities.

Sincerely,

Frederick Schaffer
Chair, CUNY Jobs Task Force

TABLE OF CONTENTS

Task Force Members.....	4
Executive Summary.....	5
1. Introduction.....	9
Research Design.....	10
Organization of Cross-Industry Findings.....	11
2. Cross-Industry Findings.....	12
Snapshot of Industry Clusters.....	12
Key Industry Drivers and Emerging Trends.....	15
Workforce Skills in Demand.....	16
Recommendations to Colleges and Universities.....	18
3. Industry Profiles.....	19
Finance, Insurance, and Accounting.....	19
Health Care.....	27
Higher Education.....	35
Information Technology.....	42
Media and Advertising.....	51
Conclusion/Recommendations.....	60
Appendix A: Interview Protocol.....	62
Appendix B: Industry Experts Interviewed.....	64

TASK FORCE MEMBERS

Frederick Schaffer (Chair)

General Counsel and Senior Vice Chancellor for Legal Affairs
The City University of New York

Steve Anderman

Chief Operating Officer and Chief Information Officer
Bronx Lebanon Hospital Center

Orlando Ashford

Chief HR Officer & Communications Officer
Marsh & McLennan Companies

Frank Bisignano

Chief Administrative Officer and Head of Home Lending
JP Morgan Chase & Company

Ted Brown, Ph.D.

Professor and Executive Officer, Computer Science Department
Executive Director, CUNY Institute for
Software Design and Development
CUNY Graduate Center

Roger Ferguson

President and Chief Executive Officer
TIAA-CREF

Maria Gotsch

President and Chief Executive Officer
New York City Investment Fund

Carol Schuster

Former Worldwide Managing Director,
Global Brand Management, Ogilvy & Mather

Mark Wagar

President and Chief Executive Officer
Empire BlueCross BlueShield

Robert Walsh

Commissioner
New York City Department of Small Business Services

STAFF

Shayne Spaulding

University Director of Workforce Development
The City University of New York

Lesley Hirsch

Director, New York City Labor Market Information Service
Center for Urban Research
CUNY Graduate Center

Ronnie Kauder

Senior Associate, New York City Labor Market Information Service
Center for Urban Research
CUNY Graduate Center

Theresa Desmond

Special Assistant to the Chancellor and Director of Special Projects
The City University of New York

Suri Duitch, Ph.D.

University Associate Dean of Continuing Education and
Deputy to the Senior University Dean for Academic Affairs
The City University of New York

EXECUTIVE SUMMARY

In recent years, there have been a number of calls to strengthen the country's skilled workforce for a 21st-century economy in which new fields continue to emerge and competition is global. Higher education institutions play a key role in preparing a workforce capable of driving innovation, developing new technologies, and meeting the needs of industry. Just as colleges and universities must ensure that students advance a broad range of cognitive abilities, they must also be responsive to change, shaping programs that align with industry evolution and demand.

As New York City's public university, The City University of New York (CUNY) has a special responsibility to educate a workforce that will build the city's economy in the decades ahead. To ensure that CUNY is preparing graduates who can sustain New York City's global leadership, the University must continually assess key sector needs and review its own academic programs and its approach to helping students secure work.

To that end, CUNY Chancellor Matthew Goldstein formed a Jobs Task Force in the fall of 2011 to examine industry and labor force trends in several industry sectors that are of strategic importance to the University and New York City's economy. These include:

- Finance, insurance, and accounting
- Health care
- Higher education
- Information technology (IT)
- Media and advertising

Specifically, Chancellor Goldstein asked the task force to answer the following key questions with respect to the five clusters above:

- 1) What current jobs requiring a college degree are difficult to fill?
- 2) What are the jobs and skills of the future that require a college degree?
- 3) How can CUNY and other institutions of higher education better prepare students for the labor market today and in the future?

The research conducted for the Jobs Task Force included both primary and secondary data collection, including interviews with industry experts, analysis of labor market information, and examination of industry reports and trade organization websites. The study team synthesized the findings from the above sources into five industry profiles and a summary report that highlights crosscutting themes.

It should be emphasized that, as noted above, the scope of this report was limited to five industries and three overarching questions, researched through data analysis and interviews with key industry representatives. Respondents' observations, as synthesized throughout this report, are intended to provide aspirational guidance to universities and may not reflect existing practices at individual education institutions. Follow-up research regarding existing best practices at CUNY and other universities is highly recommended.

Key cross-industry findings from this research fall into three main areas: key industry drivers and emerging trends that have an impact on the workforce; workforce skills in demand, including anticipated shortages and gaps in the workforce; and recommendations to colleges and universities.

Key Industry Drivers and Emerging Trends

To understand what elements drive employment expansion and contraction within an industry, colleges and universities must understand the basic factors that influence its profitability. Colleges and universities should further understand—from the businesses' perspective—what emerging trends will influence future workforce needs. The industry experts interviewed in this study cited the following cross-cutting drivers and emerging trends:

- Economic conditions. With the exceptions of higher education and health care, the selected industries are sensitive to business cycles, expanding their workforce when the economy is stronger and retrenching when the economy is weaker. Although the recent recession is over, there is still a high degree of uncertainty about the state of the economy. Uncertainty slows business and makes these industries less likely to expand.
- The magnitude and pace of regulatory change, particularly in finance and health care, which has increased the demand for associated experience and skills. In finance, these include auditing, risk assessment, and compliance. In health care, these skills also include compliance as well as an understanding of how regulation changes reimbursement policies and the scope and models of practice.
- The frequency of technological change, which was cited by all industry experts as having the greatest influence on the way business is conducted and what is currently and will in the future be required of the workforce (including a need for more software programmers and developers).
- The growing volume of information, which must be managed, analyzed, and utilized, increasing the demand for graduates skilled in data analysis.
- Increasing globalization and consolidation and the resulting increase in international competition among businesses for customers and workforce talent.
- The multigenerational workplace, leading to challenges in managing three generations in the workforce and an anticipated shortage of people with critical skills and experience as the baby-boom generation retires.

Workforce Skills in Demand

Although the chancellor originally charged the task force with identifying both occupations and skills in demand, it became clear that the industries perceived labor supply shortages primarily in terms of skills, not occupations. The following were the skills cited:

- An appropriate balance between deep, specific skills and general knowledge, referred to as “T-shaped skills”—i.e., immersion in one field and broad knowledge across other fields
- Creativity and curiosity and a broad understanding of the world that is often obtained from a well-rounded liberal education
- Written and oral communication skills; that is, the ability to effectively articulate and present ideas
- Analytical skills, namely the ability to arrange, understand, assess, and interpret increasing amounts of data

- Business process skills, including project management, process management, and client management
- Learning agility and flexibility, such as the ability to change course and learn on the job
- Cultural competence, namely the ability to serve a diverse customer base in the United States and abroad
- Previous exposure to work

Recommendations to Colleges and Universities

Based on their experiences with recent two- and four-year college graduates, industry experts made the following recommendations to CUNY and other institutions of higher education:

- Build deeper and more meaningful relationships with industry, including finding ways to invite and use industry input, from student internships to faculty/staff site swapping, and making it easier for industry to access CUNY.
- Provide career guidance by assisting students in exploring interests, aptitude, and career pathways, as well as job search skills training, such as résumé preparation, interview skills, and how to research industries and companies of interest
- Facilitate work experience before graduation by arranging internships and summer employment opportunities
- Simulate workplace conditions that will help students acquire business skills, such as project planning and management, estimating timelines, and developing and maintaining budgets

In addition to a summary of the cross-cutting themes, this report includes detailed profiles of the five industry sectors. These profiles consist of an overview of the components of each industry cluster, as well as the number of firms, employees, and average pay in each. The profiles also summarize key employment trends, including how employment in the industry has changed over the last decade, the top occupations in the industry, emerging workforce issues and skills needed, and how colleges and universities can better prepare candidates for employment in the industry.

Industry-specific findings include:

- *Finance, insurance, and accounting.* Consolidation/globalization, as a result of mergers and acquisitions and the financial downturn of 2008, is a key industry driver. Employment opportunities have decreased (even as wages have increased), but demand for workers in risk management and those with bilingual skills is expected to grow.
- *Health care.* The main drivers shaping the industry are an aging population, the size of the Medicaid and Medicare population, technology changes, and regulatory and policy changes that promote disease prevention and the management of chronic conditions, as well as cost reductions. Workforce shortages are anticipated for several occupations and will be affected by the shift from hospitals to ambulatory care settings.
- *Higher education.* Employment has grown in the sector, in part because economic conditions have led more people to enroll in colleges and universities for retraining and credentialing. Workforce needs will be driven by constrained resources, government demands for accountability, and an increasingly diverse student body.

- *Information technology (IT)*. The speed of technological advancements and the proliferation of information generated across industries have greatly increased the need for workers with IT and related analytical skills, all across the economy. There is a shortage of programmers and developers, particularly those without special visa needs, and a need for more computer science graduates.
- *Media and advertising*. The huge impact of digital technology and social networking, as well as considerable consolidation within several segments of this cluster, has led to widespread operational shifts. Employment has declined in some parts of the industry, notably publishing, and new workers must increasingly possess technological fluency, a facility with analytics, and strong communication skills.

The report concludes with additional recommendations by the task force for next steps to be taken by CUNY and other institutions of higher education in New York City:

- CUNY should monitor global and local trends in key city industries and expand meaningful links to industry. To do so effectively, it is recommended that the University conduct an inventory of current practices in New York City's institutions of higher learning and identify local and national best practices.
- The process of improving alignment of academic programs with industry should continue and include regular monitoring of labor market data, conducting scans in strategic sectors on a regular basis, and convening faculty and administration to discuss potential program improvements.
- CUNY should develop a framework for communicating with strategic industry sectors, which could include creating a single, central point of contact for businesses seeking to interact with CUNY, and cross-campus discipline councils that interact more deeply with businesses in their respective fields.
- CUNY and other New York City colleges and universities should also identify best practices regarding career guidance and job search skills training, which should be then used to improve CUNY's programs.
- Given the importance of rapid technological change as an industry driver, CUNY should work closely with the IT industry to understand emerging workforce issues and more aggressively market computer science as a course of study for students in an effort to increase the number of computer science graduates.
- To fully understand the effectiveness of career-preparation and job-search training, and to understand how well academic programs prepare graduates for the world of work, institutions of higher education would benefit from robust collection of post-graduation employment outcomes.
- The task force further recommends that the findings from this report be used to inform CUNY's Pathways to Degree Completion initiative, which seeks to enhance general education.

1. INTRODUCTION

Over the last several years, there have been a number of calls to strengthen the country's skilled workforce for a 21st century economy in which new fields continue to emerge and competition is global. Most recently, President Obama announced plans to create a community college program to train workers for skilled positions in high-growth industries.

Perhaps more than ever, a focus on aligning higher education and key sectors of the economy is urgently needed. For example, as a 2010 National Academies report pointed out, in an age of rapidly advancing technology across the globe, the United States ranks 27th among developed nations in the proportion of college students receiving undergraduate degrees in science or engineering.¹

Higher education institutions must examine their responsibility and enhance their ability to educate a workforce capable of driving innovation, developing new technologies, and meeting the needs of current and emerging industries. Just as colleges and universities must ensure that students advance a broad range of cognitive abilities—from interpreting data to formulating original ideas—they must also be responsive to change, shaping programs that acknowledge industry evolution and demand.

Institutions of higher learning must understand global and local marketplaces and monitor post-graduate outcomes in order to fulfill their role in accelerating economic growth and improving the well-being of degree holders. Labor market research has shown that increasing levels of education are correlated with better rates of employment and higher earnings.

As New York City's public university, The City University of New York (CUNY) has a special responsibility to educate a workforce capable of driving the city's economy throughout the 21st century. With 24 colleges and professional schools across the city's five boroughs, CUNY currently enrolls more than 270,000 degree-seeking students and over 200,000 continuing education students. In fact, the University serves the majority of undergraduates who enroll in college in New York City. More than 1 million CUNY graduates already contribute to New York's growth and vibrancy.

To maintain its status as a global center of commerce and culture, New York City will increasingly rely on a well-educated workforce. A 2010 report from the Center for an Urban Future and the Community Service Society, "Closing the Skills Gap," makes this clear: "New York will need to produce significantly more middle- and high-skilled workers to meet the demands of a labor market focused ever more sharply on 'knowledge workers.'"²

To ensure that CUNY is preparing graduates who can participate meaningfully in the city's economy and contribute the innovative ideas that will sustain New York City's global leadership, the University must continually assess industry needs and review the degree of alignment of its own academic programs with those needs, as well as its approach to helping students secure work.

¹ *Rising Above the Gathering Storm, Revisited: Rapidly Approaching Category 5*, National Academy of Sciences, 2010 (citing Education at a Glance 2009: OECD Indicators, Table A-3.5.)

² Fischer, David Jason, and Jeremy Reiss, "Closing the Skills Gap: A Blueprint for Preparing New York City's Workforce to Meet the Evolving Needs of Employers," Community Service Society of New York/Center for an Urban Future, January 2010, p. 8.

In recognition of this essential responsibility, CUNY Chancellor Matthew Goldstein formed a Jobs Task Force in the fall of 2011 to examine industry and labor force trends in several industry sectors that are of strategic importance to the University and New York City's economy. The task force comprised leaders from selected industry sectors, which included:

- Finance, insurance, and accounting
- Health care
- Higher education
- Information technology (IT)
- Media and advertising

Specifically, Chancellor Goldstein asked the task force to answer the following key questions with respect to the five clusters above:

- What current jobs requiring a college degree are difficult to fill?
- What are the jobs and skills of the future that require a college degree?
- How can CUNY and other institutions of higher education better prepare students for the labor market today and in the future?

With input and direction from Jobs Task Force members, researchers worked to answer these questions in the fall and winter of 2011-12. This report summarizes the research and presents findings and recommendations.

Research Design

With direction from the chancellor and the Jobs Task Force, the research was conducted by CUNY staff members from the Office of Academic Affairs and the New York City Labor Market Information Service (NYCLMIS), part of the Center for Urban Research at the CUNY Graduate Center. The research included both primary and secondary data collection methods, as outlined below:

Interviews with industry experts. Because the task force was asked to focus on five specific industries, it was clear that interviews with leaders in these industries who employ graduates of two- and four-year degree programs would be an important source of data for this study.

The researchers developed an interview guide to address the three questions posed by Chancellor Goldstein in greater detail (see Appendix A). Interviews began with a discussion of how the industry has changed over the last several years, current industry drivers and trends, and how these developments relate to the size and nature of the workforce and the skills required of new college-educated workforce entrants. Interview questions then focused on occupations or skills that businesses are having difficulty filling through their recruitment methods and current candidate pools. Discussion then turned to business leaders' observations about how well they believe colleges and universities prepare candidates for jobs in their respective industries and concluded with their recommendations to colleges and universities.

CUNY staff interviewed the task force members and asked them to recommend other leaders in their respective industries who could speak knowledgeably about these issues. Additional experts were identified by Jobs Task Force staff. The respondents (listed in Appendix B) generally were individuals with high-level general management or human resources responsibility at their firms.³

³ All interviews were recorded, transcribed, and analyzed according to theme.

The staff interviewed 39 individuals: three general informants, eight in finance, insurance, and accounting, four in higher education, six in health care, six in information technology, and 12 in media and advertising.

Analysis of labor market information. On behalf of the Jobs Task Force, the NYCLMIS at the CUNY Graduate Center analyzed labor market trends over the last 10 years in the selected clusters. Except for health care and higher education, the other industries are not strictly aligned with standard industry categories but were instead developed according to meaningful groups as perceived by institutions of higher education and their graduates. NYCLMIS aggregated several industries, as noted above, that together comprise the finance, insurance and accounting, information technology, and media and advertising clusters. Once aggregated, analyses of these clusters included total firms and employment, average pay, and workforce demographics in each industry compared to the total employed New York City workforce. It also examined the location quotient (i.e., concentration of employment) of each industry cluster relative to employment across the country.

Data were obtained from the New York State Department of Labor (Quarterly Census of Employment and Wages), the 2000 decennial census, and 2008 through 2010 public-use microdata samples from the American Community Survey.

Examination of industry reports and trade organization websites. To place the information collected into context, researchers reviewed selected reports, information from industry organization websites, and materials provided by individuals interviewed.

Synthesis. The study team synthesized the findings from the above sources into five industry profiles, which together comprise section 3 of this report. The team further analyzed the profiles for overarching themes to be highlighted as general findings. These cross-industry themes are presented in section 2 of this report.

With regard to the research design, it must be emphasized that the scope of this report was intentionally limited to five industries and three overarching questions. This enabled researchers to speak at length to a relatively small sample of industry experts. Respondents' observations were broadly drawn from their professional experience, supported by daily practice and subject to their own perceptions. Their observations are intended to offer aspirational guidance to colleges and universities. However, they may not reflect existing practices at individual institutions. Follow-up research regarding best practices at CUNY and other universities is highly recommended.

Organization of Cross-Industry Findings

Snapshot of Industry Clusters. This section presents a basic overview of the industries, including the number of firms, the number of people employed, average wages, and the relative importance of these industries to New York City.

Key Industry Drivers and Emerging Trends. This section presents important cross-cutting trends and drivers that affect the current and future workforce and external factors that affect businesses.

Workforce Skills in Demand. This section identifies current and anticipated shortages and gaps in the workforce as identified by interviewees. Many of these shortages are echoed in studies of the evolving labor market.

Recommendations to Colleges and Universities. This section includes specific suggestions made by interviewees.

2. CROSS-INDUSTRY FINDINGS

Snapshot of Industry Clusters

Definitions

Finance, insurance, and accounting. There are about 15,000 finance and accounting firms in New York City. New York City has long been considered a global center of the finance industry, although other cities in the United States and across the globe have been gaining competitive strength. This is a broad cluster that includes commercial and investment banking, insurance agencies, brokerages, and carriers, as well as accounting and tax advisement firms.

Health care. This was the largest sector examined, with more than 16,000 employers and more than 450,000 employees working in hospitals, ambulatory health care facilities, and nursing and residential care facilities. This sector has grown steadily over the last 10 years despite the recession; virtually all of that employment growth was in ambulatory health care facilities.

Higher education. New York City is home to 413 public and private higher education institutions, which provide academic and trade education in degree- and non-degree-granting programs and, in most cases, confer postsecondary awards such as degrees and certificates.

Information technology (IT). There are more than 5,000 IT firms in New York City. The largest local segment of the cluster is computer systems and design. The types of businesses included in the Jobs Task Force definition of the cluster include computer systems design and installation firms, data hosting and processing firms, software developers and publishers, and “other information services,” which includes Internet Service Providers (ISPs) and archival services.

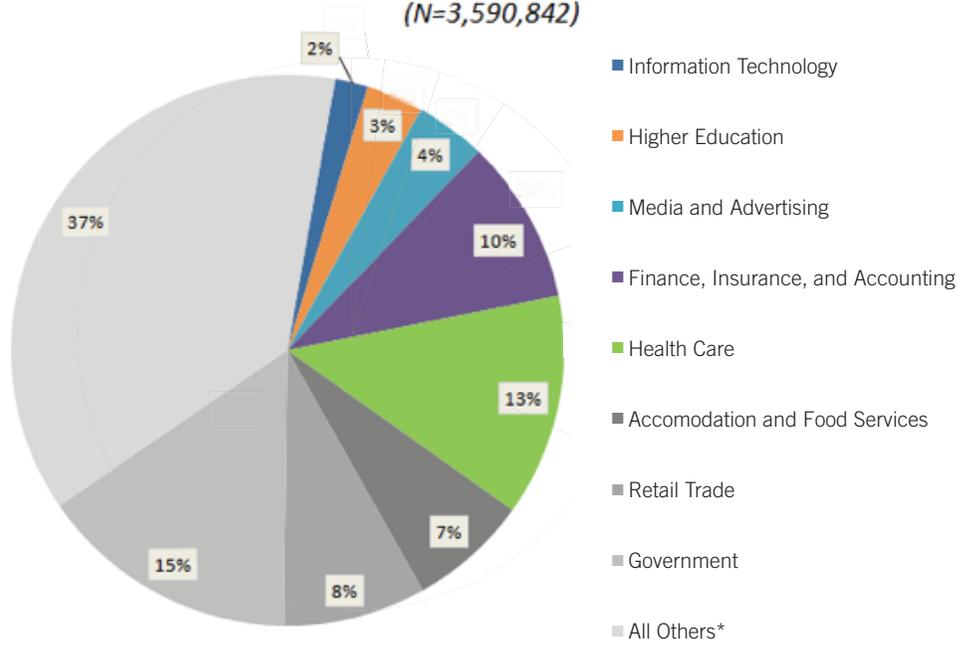
Media and advertising. This sector includes more than 6,000 companies employing almost 150,000 people in New York City. The industries researched include advertising, public relations, and related services; publishing, including newspapers, magazines, books, and other publications; motion pictures and video; TV and radio broadcasting; and sound recording. While overall employment has declined in the last 10 years, the industry in New York City is now stronger relative to the rest of the country than it was in 2000.

Employment

As the following chart shows, one in three people working in New York City in 2010 worked in one of the targeted industry clusters, which were selected, in part, because they were considered of particular strategic importance to the city and the University, given their long-established and collaborative efforts to fill a range of jobs with college graduates. The largest share worked in health care, which made up 13 percent of the local workforce, followed by finance, insurance, and accounting, which made up 10 percent. The remaining clusters account for less than five percent of total employment respectively, with about 70,000 in information technology, 120,000 in higher education, and 150,000 in media and advertising.

Employment in the Selected Industry Clusters as a Share of Total NYC Employment, 2010

(N=3,590,842)

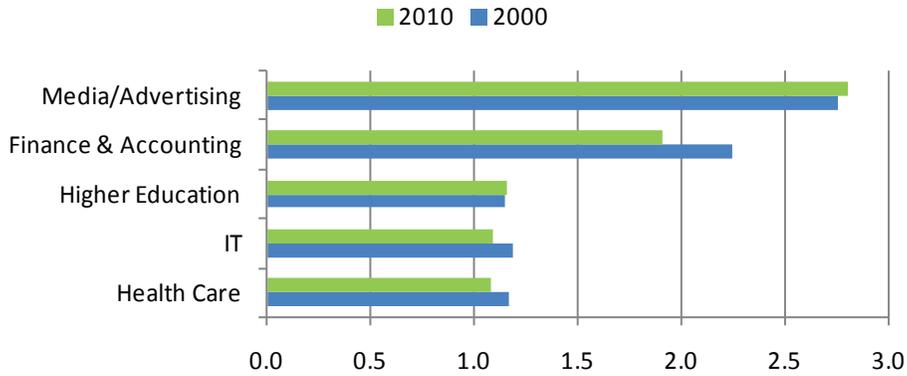


SOURCE | QCEW, 2010.

*Includes – in descending order of employment – administrative services and waste management and remediation, professional and technical services (not otherwise included in finance, insurance, and accounting, information technology, or media and advertising), other services, wholesale trade, real estate and rental and leasing, construction, social assistance, transportation and warehousing, manufacturing, arts, entertainment, and recreation, management of companies, information (not otherwise included in information technology or media and advertising), educational services (not otherwise included in higher education), utilities, agriculture, and mining.

Employment concentration. The chart on the next page examines the concentration of employment as a way of illustrating the relative importance of each cluster as a source of employment in New York City compared to elsewhere in the nation. Employment in all five of the selected clusters is more concentrated in New York City than in the United States as a whole. Employment in advertising and media in particular is almost three times more concentrated in New York City than elsewhere in the country. Between 2000 and 2010, the degree of employment concentration decreased slightly in finance, insurance, and accounting, IT, and health care, while it increased in media and advertising, and remained about the same in higher education. The decrease in relative employment concentration in finance and accounting is likely a result of decreasing overall employment levels in New York City as well as the proliferation of retail banking outlets nationally. Local IT and health care employment grew over the decade, so the decreasing employment concentration is likely the result of greater growth in employment elsewhere in the nation. The local concentration of employment in media and advertising increased, while employment numbers in the cluster decreased over the decade, suggesting that firms in this cluster have shed jobs faster elsewhere.

Concentration of Cluster Employment in New York City
(1.0= national average)

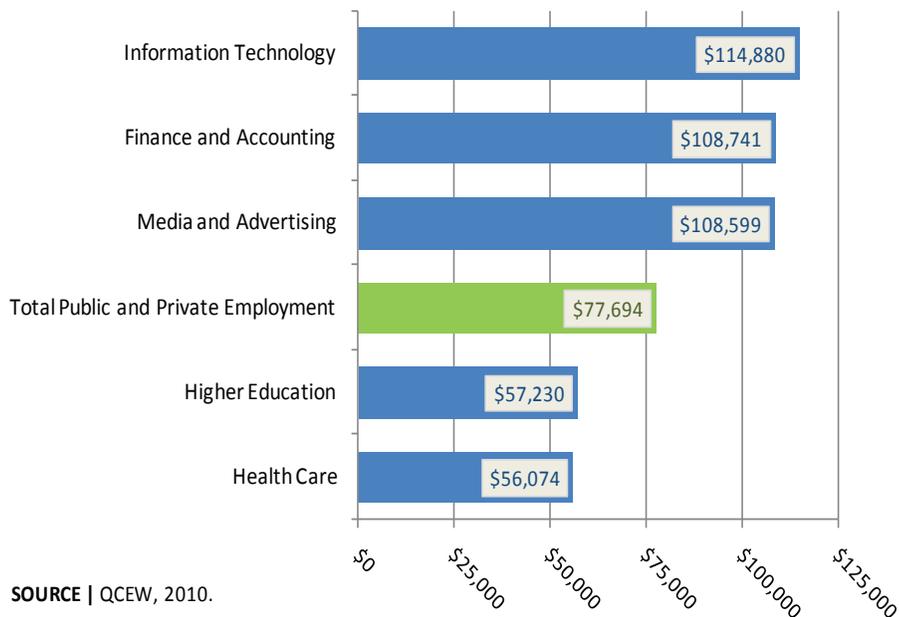


SOURCE | Quarterly Census of Employment & Wages, 2000 and 2010

Average Pay

The following chart shows the average annual earnings in each industry and the overall employment average for New York City. Average pay in IT, finance, and media and advertising exceeds the citywide average of \$77,694 by more than \$20,000 each, while average pay in health care and higher education is at least \$20,000 per year less than the average.

Average Pay in the Selected Industry Clusters, 2010



SOURCE | QCEW, 2010.

Key Industry Drivers and Emerging Trends

Several key issues emerged from interviews with industry leaders and were common across all five industry clusters.

- *Economic conditions.* Foremost on the minds of respondents was the current level of uncertainty in the post-recession economy. For example, New York City's finance sector was hit hard at the outset of the recession, with firm closings, job losses, and reduced profit margins. Despite some rebound and government assistance, there continues to be significant uncertainty around debt holdings in the finance sector, both domestically and overseas. While hiring may be picking up in most industries in New York City, finance and media and advertising have not recovered their pre-recession employment levels. However, the health care and higher education industries have grown regardless of the business cycle. In fact, the economic downturn may have resulted in an increase in employment in higher education, as demand for retraining and educational credentials increased.
- *Regulatory change.* Another important driver, particularly in finance and health care (and, as a result, in information technology), is the magnitude and pace of regulatory change. In finance, Dodd-Frank legislation and increasing scrutiny in general have affected the demand for specific skills. As a result, there is a need for more workers who are well versed in auditing, compliance, and risk management. In health care, reform legislation that promotes preventive care, reductions in hospital readmissions, and management of chronic diseases are driving the need for workers with different skills. A major implication of regulatory change across sectors is the need for workers who can restructure and manage new information systems.
- *Rapid technological change.* It is hard to overstate the impact of technology on the way business is conducted and what will be required of the workforce. Far and away, respondents identified the frequency of technological changes as the most significant trend shaping the workforce today and well into the future.

The transition from analog to digital in every industry has changed the skills required of the workforce and is driving a need for constant retraining and for individuals who possess the ability to learn on the job. The technological skills that students learn during their college years may be obsolete when they graduate. In addition, representatives from every industry spoke of the need for more software programmers and developers—in short, more computer science majors.

- *Information and analytics.* Technological advancements have also accelerated the ability to capture more information about the world. Whereas data used to be generated in megabytes or even gigabytes, it is common in some industries to have terabytes and even petabytes of information generated daily, which must be managed, analyzed, and used. Although firms in every sector are faced with increasing amounts of data, a few segments are affected most dramatically, including finance, media and advertising, and health care. In health care and finance, new regulatory requirements are a significant driver of information growth. Firms that use their information well have a competitive advantage in terms of marketing and sales. This has increased the demand for graduates who can manage and analyze information in the context of the industries in which they work.
- *Globalization and consolidation.* Although firms may be highly specialized, the researchers noted a major trend toward consolidation in the finance, health care, and media and advertising industries. For example, before the recession there were six American investment banks located in New York City; today there is just one, after the closing and absorption of three and the conversion of two others into bank holding companies. Just a few conglomerates own and control the vast majority of the public relations and advertising world, and both publishing and television broadcasting have also become increasingly consolidated. As a result, overseas companies are expanding into the United States, and vice versa. With globalization comes international

competition for both businesses and workforce talent as well as a need for companies to effectively serve a diverse customer base.

- *The multigenerational workplace.* People are staying in the workforce longer. At present, three generations are working side by side in the workplace, each with different attitudes toward work and different communication styles and technological skills. Several respondents spoke about the challenges of managing an intergenerational workforce. In particular, they noted the need for college students to become acculturated to workplace norms before they graduate, by learning how to appropriately communicate with supervisors and set reasonable expectations about workplace flexibility and timelines for promotion.

The sheer size of the baby-boom generation relative to the generations that succeeded it means that there could be fewer people with critical skills and experience as this generation retires. Several interviewees believe that Generation Y and millennial workers will command more authority in demanding wages and improved work conditions as a result of the anticipated shortage of people with qualifications and skills needed in the workplace. The retirement of the baby-boom generation will affect some of the industries researched more than others. For example, the average age of health care workers is older than the average age of the city's employed workforce as a whole, and the higher education sector has a greater number of workers that are age 55 or older, compared to the city's total employed workforce.

Workforce Skills in Demand

The Jobs Task Force initially envisioned learning about both the occupations for which employers were having difficulty recruiting qualified candidates, as well as the desired skills. After just a few conversations, it became clear that employers were primarily concerned about *skills* shortages that make it difficult for businesses to recruit the desired workforce. Interviewees identified key skills and experience that are in demand:

- *Specific skills and general knowledge, or "T-shaped skills."* Employers in all sectors were looking for candidates with a deep and solid grounding in a specific field as well as the ability to collaborate across disciplines and apply knowledge in fields other than their own. In contemporary human resources terms, this is what is referred to as the "T-Shaped Professional."⁴ Similarly, several respondents wanted their workforce to be well versed in their own specialized field of knowledge but also have a broader understanding of the world and an ability to maturely communicate with a variety of individuals. Some interviewees even expressed a preference for breadth over depth after observing too many technically qualified candidates fail once on the job. In health care, strong clinical skills were foremost, but respondents also described a need for a broad understanding of the health care delivery system and the ability to communicate effectively with patients and other health care workers at all levels.
- *Creativity and curiosity.* Nearly all interviewees spoke of the value of employees who were creative, engaged, and curious about a wide range of topics. They seek workers with the ability to consider disparate points of view and pieces of information and, from that, develop sound conclusions and innovative ideas. Many referred to the need for broad-based skills that are drawn from a well-rounded liberal education: the ability to listen, gather evidence, analyze information, identify immediate and long-term issues, solve problems, and invite

⁴ David Guest, "The hunt is on for the Renaissance Man of computing," *The Independent* (London), September 17, 1991.

and assess different perspectives. Whether in advertising, information technology, or finance, interviewees hoped to find graduates who are independent, insightful thinkers with broad interests.

- **Written and oral communication skills.** The employers interviewed were troubled by the lack of written and oral communication skills within the current pool of college graduates. Several noted that colleges could not invest too much effort and resources to help their graduates better articulate ideas and conclusions, especially in writing. Many spoke to the inability of the majority of college graduates with whom they interact to make concise and clear presentations to their colleagues. And several respondents spoke with alarm about job candidates' poor self-presentation skills in the application and interviewing process, citing résumés and cover letters with typographical errors as well as inappropriate attire and questions at interviews.
- **Analytical skills.** As noted above, today more information is generated at a faster speed than ever before. Regulatory requirements and industry competition have forced firms to make optimal use of their information. Yet several respondents remarked that college graduates were surprisingly ill prepared to work in an information-rich environment. Aside from “big data” skills, there is an increasing need for workers to have a basic understanding of how to arrange pieces of information (numbers, words, and images) to assess performance, reveal trends, and create a message that is relevant and useful to business operations.
- **Business process skills.** Several interviewees talked about skills and responsibilities that are not typically addressed in postsecondary education but that college-educated candidates must be prepared to perform. These include:
 - Project management, or the ability to guide a project from beginning to end and navigate time and budget constraints
 - Process management/problem solving, or the ability to work through disagreements or mismatches in order to steer a process or project to fruition. Inherent in this skill set is the ability to work effectively in interdisciplinary teams
 - Client management or the ability to empathize with the client and inspire and maintain the client's confidence. One respondent related this ability to having a high “EQ,” or emotional intelligence quotient
- **Learning agility and flexibility.** Because of the fast-paced nature of technological change, as well as other transformations in the workplace, businesses are seeking workers who demonstrate an ability to change course and learn new things, in addition to their general capacity to perform the required set of tasks.
- **Cultural competence.** As a result of globalization, companies are serving an increasingly diverse customer base. Institutions of higher education are also seeing a more diverse student body, and health care providers are focused on outreach to underserved communities. These trends require employers to hire a workforce that understands and can effectively serve this diverse customer base.
- **Previous exposure to work.** Almost all respondents said that there is no substitute for previous, relevant work experience. In addition to providing evidence that a candidate can do a similar job at a new firm, previous work experience—even that not specifically related to the required job—enables workers to adjust to a new working environment.

Recommendations to Colleges and Universities

At the end of the interviews conducted for this study, industry experts were asked what institutions of higher education could do to help graduates succeed in their industry. Each of the following themes arose in a majority of the selected industries:

- *Build deeper and more meaningful relationships to industry.* Respondents cited a range of ways this could be accomplished, including student internships, opportunities for faculty to work in the industry, faculty/staff site swapping, and encouraging meaningful industry input in the academic program planning process.

Common and related themes emerged in these discussions:

- Finding the right balance between academic and career-focused approaches. The respondents who raised this theme—especially in information technology and to some extent in media and advertising—believe that higher education institutions have not done enough to align their programs with current practices in their industries.
 - Finding the best method for industry input. Business leaders acknowledged (without prompting) that institutions of higher education should remain solely responsible for curriculum development. However, they also believe that some faculty could benefit from greater exposure to evolving industry practices, and that such exposure would benefit students and the curriculum.
 - Developing a framework for communicating with and understanding strategic industry sectors, which could include creating a single, central point of contact for businesses seeking to interact with CUNY, and cross-campus discipline councils that more deeply interact with businesses in their respective fields. With respect to program planning, some interviewees remarked that industry advisory boards have not been adequate forums for such input.
- *Provide career guidance and job search skills training.* Industry experts were unanimous in recommending that students be given career guidance and job-search training before they enter the labor market as college graduates.
 - Many students are unaware of the potential career pathways that are associated with various fields of study. Students should learn to assess their own aptitudes and interests and incorporate this information early in their career exploration process. Students should then become familiar with the skills and qualifications that are required in industries and careers in which they show interest. The interview respondents also emphasized that students should learn how to become informed about the industries and companies in which they are interested so that they can speak knowledgeably when they begin their job searches.
 - With respect to job search skills, the interviewed experts suggested that students receive assistance with résumé/cover-letter preparation, networking, interview skills, business attire, and professional behavior.
- *Facilitate work experience before graduation.* Most interviewees thought that colleges could do much more to help students acquire work experience before they graduate. In some industries, respondents noted that college courses could in some respects emulate the work environment; for example, class projects could engage students in working in teams and developing a product from beginning to end. Respondents also highly recommended that colleges work with industry employers to arrange internships and summer employment. In some specialized occupations—such as registrars or financial aid professionals in higher education—jobs are often filled by those who gained experience in these fields by working while they were also students.

3. INDUSTRY PROFILES

Industry Profile: Finance, Insurance, and Accounting

What is the finance, insurance, and accounting industry cluster in New York City?

New York City is home to almost 15,000 finance and accounting firms that employ a total of 350,000 people, with average pay of more than \$100,000 per year. New York City has long been considered a global center of the finance industry. The banking industry attracts entry-level college graduates from across the country.

The industry profiled can be broken down into two subsectors:

- *Finance and insurance.* This subsector comprises commercial and investment banking (securities) and insurance agencies, brokerages, and carriers of various types (life insurance, health insurance, property and casualty insurance, accident and health insurance). Large local employers in finance include JPMorgan Chase, Citigroup, Bank of America, Capital One, and Morgan Stanley. Insurance firms include American International Group, MetLife, United Healthgroup, Aetna, and Liberty Mutual.
- *Accounting, tax preparation, bookkeeping, and payroll services.* This report focuses on accounting and advise-ment services. Some of New York City's largest employers in this industry include Ernst & Young LLP, KPMG LLP, Deloitte & Touche Tomatsu LLP, Thompson Reuters Tax and Accounting, and Pricewaterhouse Coopers LLP.

FIRMS, EMPLOYMENT AND AVERAGE PAY, 2010

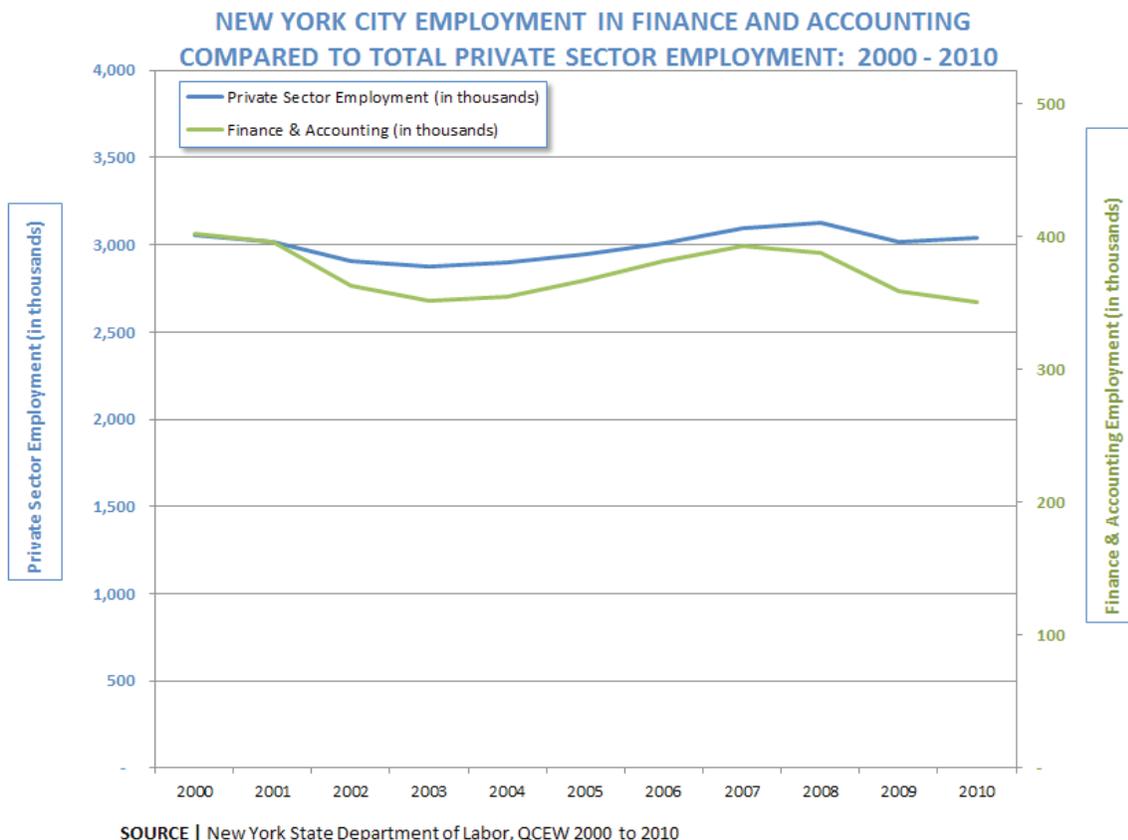
	Firms	Employees	Average Pay
Finance and Insurance	11,856	308,430	\$110,828
Accounting, Tax Preparation, Bookkeeping, and Payroll Services	2,816	42,391	\$93,851
Total Finance and Accounting	14,672	350, 821	\$108,741

Source: QCEW, 2010

How has employment changed in finance and accounting in New York City in the last 10 years? What are the main drivers influencing business activity today? What impact has this had on employment?

Over the last 10 years, employment in this industry cluster in New York City has generally followed the business cycle, but has declined relative to the overall private-sector economy, losing a total of 51,058 jobs (a 13 percent decrease) from 2000 to 2010. All of this loss has been in the finance and insurance portion of the industry, which lost 54,133 jobs; the accounting portion gained 3,075 jobs over the 10-year period.

The graph below displays total employment in finance and accounting over the 10-year period from 2000 to 2010 compared to total private sector employment.



The main drivers that have shaped the industry in recent years include:

- **Consolidation**

- Beginning with deregulation in the 1980s, the banking sector has seen consolidation as a result of mergers and acquisitions. This trend continued after the financial downturn of 2008, as financial institutions that had not remained solvent were taken over by larger institutions. What were 38 separate banking firms in 1995 have been consolidated into just four by 2010.
- The 1980s saw the beginning of consolidation in the accounting subsector. Today four firms, known as “the big four,” dominate the industry: Pricewaterhouse Coopers (based in the United Kingdom), Ernst & Young (based in the United Kingdom), KPMG (based in the Netherlands), and Deloitte Touche Tohmatsu (based in the United States). These companies have large workforces in New York City and do large-scale hiring of entry-level college graduates each year.

• Globalization

- As consolidation has occurred, banks and accounting firms are increasingly operating internationally. To a large extent, small local banks have been replaced by large conglomerates operating in the United States and overseas.
- Globalization and changing demographics mean that finance and insurance companies are serving an increasingly diverse customer base, whether in the United States or abroad.
- Certain functions of finance, accounting, and insurance firms have been moved overseas. One expert said that he expected “back office” and “support activities” to continue to be located outside of New York City. For example, the customer-service functions of many companies have been moved overseas, where call centers handle telephonic and internet-based customer-service activities.

• Economic downturn

- The economic downturn beginning in 2008 has had a major impact on all aspects of the finance and accounting sectors.
- As described above, the downturn has led to further consolidation, particularly in the banking sector. This in turn affects businesses that serve that sector, including public accounting firms.
- The finance and insurance sectors have seen increased regulation as a result of the mortgage crisis that precipitated the 2008 downturn.
- While low interest rates in the banking sector are aimed at increasing business activity, in the insurance sector low interest rates contribute to industry shrinkage as firms see their investment incomes and revenues decline.
- Over the past decade, wages have been increasing in the finance sector while employment opportunities have decreased. One respondent cited a recent New York Times article highlighting how this trend has deepened since the onset of the most recent recession.⁵

• Changes in technology

- In commercial banking, technological change means that many transactions that once required the assistance of an individual inside a branch office can now be accomplished without employee assistance and offsite, at automatic teller machines located in retail establishments, at home through the Internet, and through mobile technology.
- In all aspects of the finance and insurance sectors, a greater volume of data has led to a greater need for increasingly sophisticated data analysis and higher levels of transparency and accessibility of data to the public. These changes have affected audit, risk management, investment, and customer-service activities.

⁵ Kevin Roose, “A Blow to Pinstripe Aspirations,” New York Times, November 21, 2011, <http://dealbook.nytimes.com/2011/11/21/wall-st-layoffs-take-heavy-toll-on-younger-workers/>

- **Demographic shifts**

The growing percentage of foreign nationals and resident aliens, particularly those who speak other languages, will influence hiring in the commercial banking sector. These firms will need more bilingual call centers, tellers, and managers in their retail business as the customer base becomes more linguistically diverse.

What are the top occupations in the industry? What skills do industry employers value? What are the emerging workforce issues? How do people get entry-level jobs in this industry cluster?

Top occupations. The 15 most common occupations in the industry that require at least an associate degree are listed in the table below.

Finance and Accounting: Top 15 Occupations Requiring an Associate Degree or More Education

Occupation	Employment		Change		Typical Entry Level Education Requirement ¹	Composition of the Workforce ²
	2008	2018	Level	Percent		
Securities, Commodities, and Financial Services Sales Agents	35,240	32,738	-2,502	-7.1%	Bachelor's degree	SC/C
Accountants and Auditors	24,213	26,223	2,010	8.3%	Bachelor's degree	C
Personal Financial Advisors	20,004	22,365	2,360	11.8%	Bachelor's degree	C
Financial Analysts	19,647	20,511	864	4.4%	Bachelor's degree	C
Financial Managers	19,592	18,612	-980	-5.0%	Bachelor's or higher degree, plus work experience	SC/C
General and Operations Managers	8,310	7,545	-764	-9.2%	Bachelor's or higher degree, plus work experience	SC/C
Management Analysts	5,295	5,772	477	9.0%	Bachelor's or higher degree, plus work experience	C
Financial Specialists, All Other	4,295	4,295	0			
Computer Systems Analysts	3,653	3,935	281	7.7%	Bachelor's degree	SC/C
Insurance Underwriters	3,334	2,673	-660	-19.8%	Bachelor's degree	SC/C
Software Developers, Applications	3,122	3,122	0			
Computer and Information Systems Managers	2,180	2,285	105	4.8%	Bachelor's or higher degree, plus work experience	SC/C
Lawyers	2,160	2,162	2	0.1%	First professional degree	C
Business Operations Specialists, All Other*	1,503	1,516	14	0.9%	Bachelor's degree	SC/C
Credit Analysts	1,391	1,317	-74	-5.3%	Bachelor's degree	SC/C

SOURCE | New York State Department of Labor Occupational Projections, New York City and Staffing Patterns Matrix.

¹ The assignments for typical education and training requirements allow occupations to be grouped to create *estimates* of the education and training needs for the labor force as a

² The educational cluster data for each occupation are presented to show the *actual* level of education achieved by workers who are employed in the occupations. Where there is a combination, more than one education level is included (HS: high school; SC: some college/AA; and C: College/BA and more).

A number of jobs in the industry require specific credentials beyond a college undergraduate or graduate degree, including certified public accountants, actuaries, and many investment professionals, such as certified financial advisors, and Series 79 “limited representative” licensing. On the other hand, several respondents noted that sales positions, the most common occupation in the industry, do not require a college degree. (This is more common in insurance than in the banking subsector.) One expert noted that sales is one of the few jobs that cannot be replaced by technology.

Finance industry experts reported that the largest volume of openings are in sales and private banking, citing the need for investment managers, financial advisors, investment bankers, and corporate bankers. One finance firm looks for intelligence and social skills, or “emotional intelligence,” in its sales force, explaining that sales people must have very strong communication and presentation skills, be reasonably confident, and have the analytical skills and discipline to do a demanding job.

In the accounting subsector, public accountancy firms divide their work into three categories: 1) auditing, 2) tax, and 3) advisory. One interviewee said new entrants to the sector typically start as interns or associates. Entry at higher levels typically requires a graduate degree.

Additional skills valued by employers. Industry employers interviewed for this research said that they value:

- Strong academic record from a reputable institution
- Analytic and problem-solving skills
- Project management skills
- Oral and written communication skills
- Interpersonal skills
- Learning agility
- International skills (e.g., speaking multiple languages, experience living/working with different cultures, experience abroad)

Emerging workforce issues. Across subsectors, industry experts expected an increasing demand for individuals in the area of risk management, as a result of the economic downturn and increases in regulations as a result of the Dodd Frank legislation. As explained above, experts expect a greater demand for bilingual employees, especially in the retail banking industry.

Workforce demographics. The following chart displays the demographic characteristics of the workforce in the finance and accounting industry cluster in 2000 and 2008-2010, and compares these with the total employed workforce in New York City.

Almost two-thirds of those employed in New York City in this industry (65 percent) live in New York City. Of those, more than the average (of the employed population of the city as a whole) live in Manhattan, are U.S.-born, and have at least a baccalaureate degree. Also, the population working in the industry is less diverse and younger than the average employed population of the city.

Demographic Characteristics of the New York City Finance Industry Cluster Workforce and Total Employed Workforce, 2000 and 2008-10

	2000		2008-2010	
	Finance	Total Employed	Finance	Total Employed
New York City Residents	268,173	2,902,068	267,206	3,353,116
Non-New York City Residents*	146,099	827,407	161,662	927,618
Bronx	7%	13%	7%	14%
Kings	26%	29%	22%	30%
Manhattan	33%	24%	42%	23%
Queens	25%	28%	23%	27%
Staten Island	8%	6%	6%	6%
Male	50%	51%	52%	51%
Female	50%	49%	48%	49%
U.S.-Born	67%	57%	64%	54%
Foreign-Born	33%	43%	36%	46%
White	55%	42%	53%	37%
Black	18%	22%	13%	21%
Hispanic	12%	22%	14%	26%
Asian	12%	11%	18%	13%
Other	3%	4%	2%	2%
Age 18-34	48%	39%	47%	38%
35-44	26%	27%	24%	23%
45-54	16%	21%	17%	22%
55+	10%	10%	12%	17%
Less than high school or GED	3%	17%	2%	14%
High school or GED	15%	22%	9%	22%
Some college/Associate's degree	25%	25%	19%	24%
BA or More	57%	37%	70%	40%

SOURCE | 2000 Census and 2008-10 American Community Surveys public use microdata (PUMS).

*The remaining percentages that appear in the table are of people who both live *and* work in New York City.

Note: data is restricted to those 18+ in the non-institutionalized population who are employed in the civilian labor force.

Getting an entry-level job in the industry. Internship programs play an important role in recruiting entry-level college graduates in the finance, insurance, and accounting sectors. Large firms have robust recruitment programs aimed at identifying and competing for qualified talent. Many employers have relationships with specific universities, which they see as the go-to source for hiring. Social networks also play a role in hiring. To recruit a more diverse candidate pool, one interviewee said that they try to tap into local “affinity networks.”

How do industry businesses view the college-educated younger workforce? How well are colleges and universities preparing candidates for jobs in finance and accounting?

Several industry experts distinguished between “front office” and “back office” jobs within the banking industry. For front office positions, the banking industry tends to draw its workforce from highly selective colleges and universities from across the country. In the accounting industry, recruitment is also from top-tier accounting schools, although in accounting, the top schools are generally not Ivy League institutions. In both finance and accounting, experts noted that students graduating from programs directly linked to the industry (MBA programs, accounting programs, etc.) are better prepared than those coming from departments not as closely linked to the sector. For example, banks and accounting firms both recruit graduates with economics, mathematics, and information-systems degrees. However, such programs and their faculty are not typically oriented to jobs in the banking or accounting sector.

What would industry employers like to change about the way individuals are prepared for jobs at the post-secondary level?

Industry employers would like to see graduates with stronger written communication skills.

Employers are also interested in seeing candidates with more work experience. One industry expert said that this is where CUNY students have an advantage; they are more likely to have held a job while in college. The work experience does not have to be in the sector and can include customer-service experience of various kinds as well as leadership roles in voluntary organizations.

Employers prefer to hire graduates who have been exposed to project and project management. According to one, if colleges and universities prepared their graduates with the skills to “manage, problem-solve, and decision-make,” the graduates “will be more valuable to the workforce and to themselves than anyone can imagine.”

Industry experts also expressed the desire for a workforce that has a better understanding of the big picture—i.e., understanding the profit and loss context that drives industry decisions.

Given the pace of change, new entrants to the workforce need to be prepared to navigate career transitions. Colleges and universities can do a better job of preparing graduates for this changing environment. This means not only being able to accept change but to be able to learn new things and make successful career transitions.

What kinds of relationships do industry employers have with CUNY campuses? With other institutions of higher education? What types of relationships would they like to have?

Several employers noted relationships with Baruch College’s Zicklin School of Business, especially its accounting program. Other sources of recruitment included Ivy League schools, as described above, as well as top-rated accounting schools.

Employers would like to build stronger relationships with academic departments not directly linked to the industry. The increase in jobs requiring data analysis requires an entry-level workforce with strong quantitative skills, such as

those graduating from mathematics and economics programs. In accounting, much of the advisement work requires individuals who have backgrounds in computer systems. Without strong links to industry, graduates may not receive the preparation they need. Furthermore, they may not even consider finance jobs a possibility because the path to such jobs is not clear.

One expert described his firm's efforts at deepening relationships with campus faculty and administration. In his view, close ties enable the firm to communicate its needs to the faculty who are developing the curricula. For example, this firm encouraged one college's computer science program to place greater emphasis on mobile and web-related software development.

What are the implications of these findings for colleges and universities?

In many ways, the finance sector provides the best example of strong industry-university relationships, as internship programs are a significant source of recruitment of entry-level graduates. However, colleges and universities should do more to build strong connections with industry.

- Industry experts indicated that the vast majority of their new employees—at the undergraduate and graduate levels—had summer work exposure at their firms. One voiced the opinion that summer work programs are much more common at elite private colleges than they are at CUNY.
- While summer jobs and internships serve an important function, industry can also play a role in shaping what is taught in the classroom and various career advisement activities that can help lead graduates to a job in the sector.
- Colleges should leverage closer ties to the industry to better identify which jobs exist and help students to prepare for them.
- Another suggestion from the experts was to bring industry leaders into classrooms and college faculty to the industry's offices.
- Colleges and universities should also place a stronger emphasis on written communication skills.

Industry Profile: Health Care

What is the health care cluster in New York City?

New York City is home to more than 16,000 public and private health care establishments, employing a total of more than 466,000 people, with average pay of \$56,074 per year.

According to the Bureau of Labor Statistics, the industry can be broken down into three subsectors:

- Ambulatory health care facilities, which includes offices of physicians, dentists, and other health care practitioners, as well as outpatient care centers, medical and diagnostic laboratories, and home health care services
- Hospitals, which includes general medical and surgical hospitals, psychiatric and substance abuse hospitals, and other specialty hospitals
- Nursing and residential care facilities, which includes nursing care facilities, residential mental retardation, mental health and substance abuse facilities, and community care facilities for the elderly

Increasingly the lines between these subsectors, as defined by the Bureau of Labor Statistics, are being blurred. For example, hospitals' role in the delivery of ambulatory care services is growing.

FIRMS, EMPLOYMENT AND AVERAGE PAY, 2010

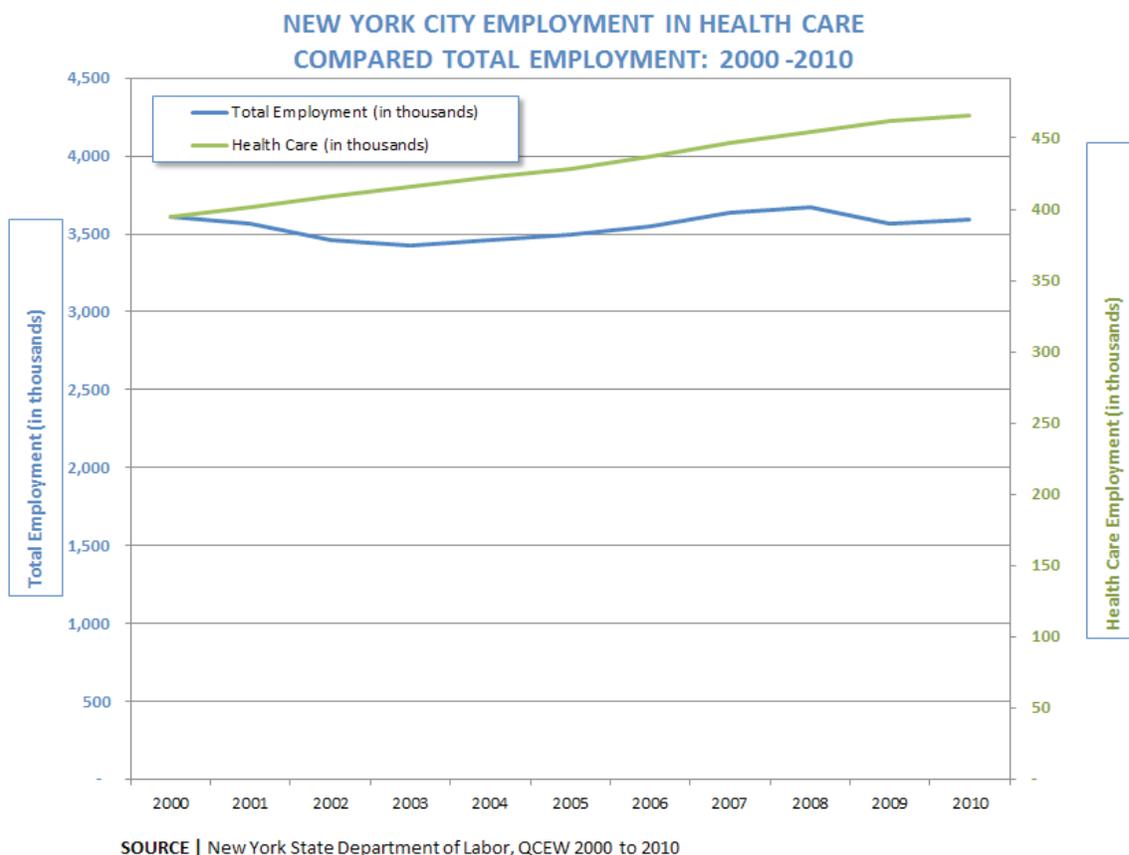
	Firms	Employees	Average Pay
Ambulatory Health Care Services	15,139	180,152	\$47,497
Hospitals	103	200,675	\$70,451
Nursing and Residential Care Facilities	1,246	85,445	\$40,698
Total Health Care	16,488	466,272	\$56,074

Source: QCEW, 2010

How has employment changed in health care in New York City in the last 10 years? What are the main drivers influencing business activity today? What impact has this had on employment?

Over the last 10 years, employment in this industry cluster in New York City has grown steadily, adding a total of 64,866 jobs, a 16 percent increase from 2000 to 2010. All of this growth has been in ambulatory health care services, which has added 64,289 jobs over the 10-year period. The number of people employed in hospitals and nursing and residential care facilities was almost exactly the same in 2010 as it had been in 2000.

The graph that follows displays total employment in health care over the 10-year period from 2000 to 2010 compared to total employment (combined public and private).



The main drivers that have shaped the industry in recent years in New York City are the size of the Medicaid and Medicare population, technology changes, the aging population, increasing costs and policy changes aimed at controlling costs while improving the quality of health care.

- **Size of the Medicaid and Medicare population.** New York City has a large population of Medicaid and Medicare beneficiaries. Services to these groups, which comprise low-income, elderly and disabled populations, have implications for the cost of delivering health care, the nature of the care delivered, and where that care is delivered. Low-income and elderly populations have higher rates of chronic diseases and morbidity, and are more likely to access health care in hospitals, as opposed to community-based settings
- **Advances in technology.** Advances in technology have resulted in more data available for analysis, particularly to identify the factors that contribute or detract from quality care. Due to increased transparency, this information is not only available to health care providers and government agencies but also to patients, who expect quality care and good customer service.

- **Aging population.** Many recent health care trends are driven by the demands of the aging population. Furthermore, the baby boom generation—defined as individuals born approximately between 1946 and 1964, an estimated 76 million Americans—will have increased health care needs as it ages, adding pressure to the health care system, particularly in ambulatory care and long term/residential care settings. The anticipated retirement of baby-boom generation members who are health care workers will also affect the availability of skilled professionals to deliver quality care.
- **Increasing costs in an environment of constrained public and private resources.** The costs of health care have risen over the past several decades, due to advances in technology and prescription drugs, rising rates of chronic disease and increasing administrative costs to manage the system. These costs are felt by employers, patients, and governments, which each pay a portion.⁶
- **Changes in policy aimed at improving health care and reducing costs.** Policy reform has occurred at every level over the last several years. While the Patient Protection and Affordable Care Act enacted in 2010⁷ is the most well-known, other policy drivers include efforts to control Medicaid and Medicare costs (both at the state and federal levels) and to implement meaningful use of electronic health records, as well as efforts by some state governments to change “the scope of practice”—what licensed professional are allowed to do—for particular occupations. Policy changes have been aimed at:
 - Reducing hospital admissions, adverse hospital events (e.g., falls, infection), and avoidable readmissions
 - An increased focus on prevention, chronic disease management, and care coordination
 - Expanding health insurance coverage

As a result of these trends, health care is increasingly being delivered in ambulatory care settings, which are better equipped to help patients manage chronic disease and are believed to do so at a lower cost than acute care settings. It is anticipated that federally qualified health centers (FQHCs)⁸, aimed at providing primary care in underserved communities, will play an expanded role in this evolving system. Hospitals have already begun to play a less prominent role, as reflected in data on “empty beds” and the closure of numerous hospitals in New York City over the past several years.

⁶ A Henry J. Kaiser Family Foundation, KaiserEDU.org. “U.S. Health Care Costs,” Background Brief, available at <http://www.kaiseredu.org/issue-modules/us-health-care-costs/background-brief.aspx>

⁷ At the time of this report, the Patient Protection and Affordable Care Act was being challenged in the United States Supreme Court; it is unclear how the results of this case will impact the implementation of the law.

⁸ According to the Centers for Medicaid and Medicare Service, FQHCs “are ‘safety net providers such as community health centers, public housing centers, outpatient health programs funded by the Indian Health Service, and programs serving migrants and the homeless.’” They are designated as FQHCs if they receive grant funding (or are a subrecipient) under Section 330 of the Public Health Service Act or have been determined that they meet the requirements of receiving such funding.

What are the top occupations in the industry? What skills do industry employers value? What are the emerging workforce issues? How do people get entry-level jobs in this industry cluster?

Top occupations. The 15 most common occupations in the industry that require at least an associate degree are listed in the table below.

Health Care: Top 15 Occupations Requiring an Associate Degree or More Education

Occupation	Employment		Change		Typical Entry Level Education Requirement ¹	Composition of the Workforce ²
	2008	2018	Level	Percent		
Registered Nurses	66,466	74,508	8,042	12.1%	Associate degree	SC/C
Physicians and Surgeons, All Other	16,277	17,156	879	5.4%		
Medical and Health Services Managers	9,361	9,782	421	4.5%	Bachelor's or higher degree, plus work experience	SC/C
Radiologic Technologists and Technicians	5,111	5,545	434	8.5%	Associate degree	SC/C
Medical and Clinical Laboratory Technologists	4,603	4,888	285	6.2%	Bachelor's degree	SC/C
Physician Assistants	3,251	3,908	657	20.2%	Master's degree	SC/C
Dental Hygienists	3,149	3,836	687	21.8%	Associate degree	SC/C
Medical Records and Health Information Technicians	2,944	3,144	200	6.8%	Associate degree	HS/SC
Physical Therapists	2,236	2,663	427	19.1%	Master's degree	C
Mental Health and Substance Abuse Social Workers	2,205	2,450	245	11.1%	Master's degree	C
Respiratory Therapists	2,060	2,349	288	14.0%	Associate degree	SC/C
Dentists, General	1,896	1,999	102	5.4%	First professional degree	C
Mental Health Counselors	1,756	2,133	378	21.5%	Master's degree	C
Healthcare Social Workers	1,608	1,914	306	19.0%	Bachelor's degree	C
Rehabilitation Counselors	1,468	1,598	131	8.9%	Master's degree	C

SOURCE | New York State Department of Labor Occupational Projections, New York City and Staffing Patterns Matrix.

¹ The assignments for typical education and training requirements allow occupations to be grouped to create *estimates* of the education and training needs for the labor force as a

² The educational cluster data for each occupation are presented to show the *actual* level of education achieved by workers who are employed in the occupations. Where there is a combination, more than one education level is included (HS: high school; SC: some college/AA; and C: College/BA and more).

Given the efforts to improve care while decreasing costs, there has been a focus on getting people to work “at the top of their license” and expanding the scope of practice for certain occupations to enable lower-level employees to do more. At the same time, industry experts have observed that certain positions now require more education than in the past. For example, physical therapists are increasingly required to possess a doctorate for positions that once required a master’s degree. The requirement for nurses is moving toward a bachelor’s degree at the entry level, a reflection of the fact that nurses are being asked to do more.

In addition, industry experts anticipate shortages for particular occupations, including laboratory technologists; respiratory, occupational, and physical therapists; pharmacists and pharmacy technicians; radiological technologists and radiological technicians; and health educators. Given the aging population and the expansion of the insured population as a result of health care reform, it is anticipated that there will be shortages of primary-care providers, including medical doctors, physician assistants, and nurse practitioners, particular those with specialty training in areas such as gerontology, pediatrics, and gynecology.

Industry experts had divergent opinions about the impact of health information technology on the workforce. Several respondents noted that technology was contributing to fewer available jobs, as the ability to manage an electronic health record increasingly become integrated into the daily responsibilities of all health professionals, rather than being assigned to distinct positions. Others noted the demand for people with new skills to design, implement and maintain data systems; train the workforce to use these systems; and manage patient portal integration, prescription program integration and patient registries.

While the focus of this study was the demand for jobs requiring a college degree, it was clear from interviews that changes in the health care sector were also resulting in growth in demand for occupations requiring less than a college degree. For example, an increased emphasis on disease prevention and care management is leading some

providers to experiment with the use of community health workers, who may help patients access care for specific diseases and to manage chronic conditions. There is also interest in expanding the scope of practice for medical assistants so that they can take on expanded responsibilities, particularly in ambulatory care settings.

Skills valued by employers. Industry employers, representatives from industry/professional associations, and other experts interviewed for this study said that they value the following:

- **Strong clinical and critical thinking skills.** Industry experts talked about the limits of classroom-based education in providing people with the necessary clinical skills. They indicated that these skills and “real-world decision making” can only be learned through experience on the job. While simulation training was mentioned as enhancing the development of clinical skills, it was emphasized that simulation training could not replace on-the-job experience.
- **Strong communication/customer service skills.** While a good “bedside manner” has always been valued in the health care sector, communication skills are increasingly important in an environment where building relationships with clients can enhance disease prevention and patient self-management. Furthermore, increased transparency and a focus on quality and patient satisfaction mean that patients and their families demand good customer service. As one industry expert said, “Hospitals are in also in the hospitality business.” An added component of customer service skills is the ability to deliver culturally and linguistically competent care to a diverse patient base.
- **Understanding of chronic disease.** With advances in health care, patients are increasingly living with chronic disease, including cancer, asthma, diabetes, hypertension, and mental health issues. In an environment focused on preventing hospital admissions, chronic disease management becomes more important. Every interviewee said that knowledge of chronic disease was important in all health care occupations.
- **Ability to work as part of a care coordination team.** With care of individuals with chronic disease occurring across health care settings and involving many different kinds of workers, the ability to work effectively as part of a care coordination team is highly valued by employers.
- **Ability to use and read an electronic health record.** The management of chronic disease and patient care across settings and among different providers requires the availability of portable data on patients. Comfort with technology and an understanding of how electronic health records work is highly valued by employers. The skills of creating and reading electronic health records are increasingly integrated into existing jobs.

Emerging workforce issues. The healthcare industry is currently in a phase of experimentation. While there has been funding for pilot programs—for example, Patient-Centered Medical Homes and Medicaid Health Homes—much of what is occurring now is experimentation at the provider’s expense. For example, many health care providers are testing use of community health workers to meet some of the goals of the Affordable Care Act. Whether these new models and approaches survive will depend both on the ability to demonstrate positive outcomes, including reduced costs, and on the direction of federal and state policies.

Getting an entry-level job in the industry. The next chart displays the demographic characteristics of the workforce in the health care industry in 2000 and 2008-2010, and compares these with the total employed workforce in New York City. More than four in five health care workers (83 percent) live in New York City, as compared to 78 percent of the overall employed workforce. This workforce is well dispersed throughout the five boroughs of the city. The health care workforce is heavily female and has a larger proportion of both black workers and foreign-born workers than the average for the employed workforce in New York City. It is also slightly older than the average, with 48 percent of the health care workforce age 45 or older.

**Demographic Characteristics of the New York City Health Care Industry Workforce
and Total Employed Workforce, 2000 and 2008-10**

	2000		2008-2010	
	Health Care	Total Employed	Health Care	Total Employed
New York City Residents	350,309	2,902,068	435,428	3,353,116
Non-New York City Residents*	70,558	827,407	88,473	927,618
Bronx	18%	13%	19%	14%
Kings	32%	29%	33%	30%
Manhattan	18%	24%	17%	23%
Queens	25%	28%	25%	27%
Staten Island	7%	6%	6%	6%
Male	27%	51%	24%	51%
Female	73%	49%	76%	49%
U.S.-Born	51%	57%	46%	54%
Foreign-Born	49%	43%	54%	46%
White	32%	42%	27%	37%
Black	36%	22%	35%	21%
Hispanic	18%	22%	23%	26%
Asian	10%	11%	13%	13%
Other	4%	4%	2%	2%
Age 18-34	29%	39%	29%	38%
35-44	29%	27%	23%	23%
45-54	25%	21%	25%	22%
55+	17%	10%	23%	17%
Less than high school or GED	14%	17%	11%	14%
High school or GED	22%	22%	22%	22%
Some college/Associate's degree	28%	25%	28%	24%
BA or More	37%	37%	38%	40%

SOURCE | 2000 Census and 2008-10 American Community Surveys public use microdata (PUMS).

*The remaining percentages that appear in the table are of people who both live *and* work in New York City.

Note: Data is restricted to those 18+ in the non-institutionalized population who are employed in the civilian labor force.

The health care sector in New York City is heavily unionized. 1199SEIU United Healthcare Workers East represents a large portion of the workforce in private hospitals. Other important unions include DC-37 AFSCME, representing the public hospital workforce, and the New York State Nurses Association, representing many nurses.

Recruitment also occurs through health care staffing firms and job search engines, like monster.com. Clinical rotations and internships can lead to jobs with employers that host such training opportunities.

How do industry businesses view the college-educated younger workforce? How well are colleges and universities preparing candidates for the health care industry?

In general, industry representatives spoke highly of the preparation of the college-educated workforce and, in particular, noted CUNY's success in preparing the nursing workforce. While the existing health care workforce faces challenges regarding the use of technology to manage care (i.e., through electronic medical records), new entrants are well positioned in this respect; they have a higher comfort level with computers and can more easily learn new systems.

What would industry employers like to change about the way individuals are prepared for jobs at the post-secondary level?

Respondents indicated that entry-level workers need to gain more clinical experience as part of their education. It was clear that clinical rotations, as they are currently structured, are not meeting employer needs. One way to meet the need for health care professionals with clinical experience, while also building the pipeline of qualified workers to address anticipated workforce shortages, is through "stackable credentials." Currently, due to the nature of the regulatory environment governing the delivery and practice of health care in New York State and the requirements of some academic departments, students frequently must repeat coursework as they seek to advance their careers. It was suggested that higher education could do more to help students progress along distinct career pathways by focusing on better articulation between occupations so that basic requirements are echoed across disciplines. For example, one person interviewed wondered why an advancing health care worker needs to repeat EKG or phlebotomy coursework if he or she has both prior classroom training and practice in the field. Another industry expert noted that articulation between associate and baccalaureate degrees could be streamlined, so that individuals are not accumulating unnecessary credits.

Some interviewees also noted that colleges could do more to help people build stronger communication and interpersonal skills. However, there were differing opinions about whether it is the role of higher education to provide students with these skills.

Employers are also looking for new graduates who can respond to the changes brought about by health care reform. This requires, among other things, knowledge of the U.S. health care system and policy environment, a broad understanding of chronic diseases, and training in how to work in teams to coordinate care. As employment in ambulatory settings is anticipated to expand, one expert noted the benefits of preparing graduates for work in such environments. Currently, clinical preparation is oriented to acute care settings.

What kinds of relationships do industry employers have with CUNY campuses? With other institutions of higher education? What types of relationships would they like to have?

The link between universities and the health care industry is strong; they must work together because of the clinical requirements of education programs. However, employers also expressed a desire for input into the curriculum development process, which is perceived as being opaque. While individual faculty or departments may have strong connections with industry, respondents suggested that such relationships could be built in a more systematic way.

One industry representative highlighted the work of Lehman College in designing programs that are responsive to industry needs.

What are the implications of these findings for colleges and universities?

Stronger connections with the health care industry will help higher education be more responsive to the rapidly changing health care environment. One way to build this link is through the development of “transition to practice” programs, which give candidates the opportunity to further build their clinical skills while making direct connections with employers.

Employers need to be given other opportunities to connect with the design and delivery of programs. At a minimum, universities should help industry partners understand the process of program development and identify opportunities to connect with the process. Engagement with discipline councils was mentioned as one possibility for building connections between health care employers and CUNY to inform curriculum development.

Given that massive changes are under way and the future is largely unknown, efforts to understand the health care industry needs must be ongoing. What respondents highlighted as trends and skill shortages through this research will likely change as further implementation of health care reform occurs.

Industry Profile: Higher Education

What is the higher education cluster in New York City?

New York City is home to 413 public and private higher education establishments that employ a total of almost 120,000, with average pay of \$56,074. For the purpose of this research, jobs in three subsectors were examined:

Junior, or two-year colleges. The term “junior colleges,” while used by the Bureau of Labor Statistics, is an antiquated term. These higher education institutions are typically referred to as community colleges or two-year colleges.

Colleges, universities, and professional schools. Most employees in the higher education sector work in colleges, universities, or professional schools. While there are fewer such establishments, these often represent large systems with thousands of employees.

Business schools and computer and management training. This industry includes business and secretarial schools, computer training, and professional and management development training.

FIRMS, EMPLOYMENT AND AVERAGE PAY, 2010

	Establishments	Employees	Average Pay
Two-year Colleges	26	16,843	\$44,230
Colleges, Universities, and Professional Schools	164	98,978	\$59,695
Business Schools and Computer and Management Training	223	3,264	\$49,590
Total Higher Education	16,488	119,085	\$56,074

Source | QCEW, 2010

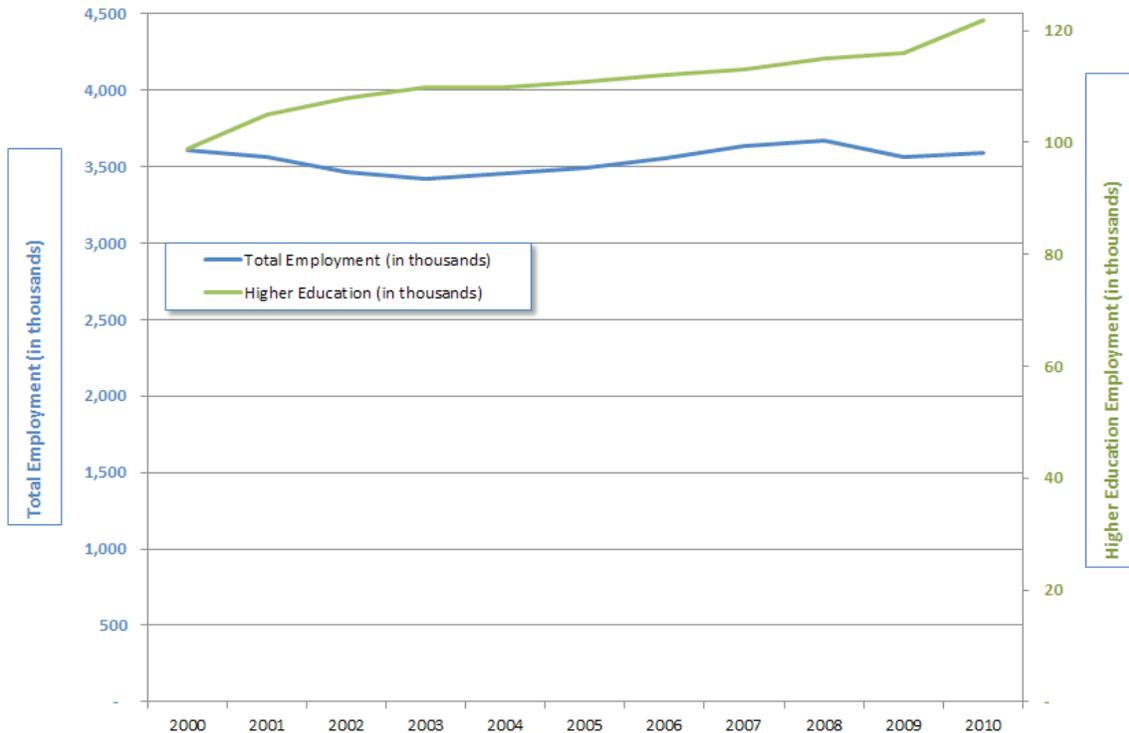
Because of its emphasis on entry-level occupations, the CUNY Jobs Task Force focused on staff jobs in higher education. The majority of employees in higher education are in faculty jobs and teaching positions.

How has employment changed in higher education in New York City in the last 10 years? What are the main drivers influencing business activity today? What impact has this had on employment?

Over the last 10 years, employment in this industry cluster in New York City has grown every year, adding a total of 23,297 jobs, or a 24 percent increase from 2000 to 2010. All of this growth has been in colleges, universities, and professional schools, which have added 22,465 jobs in the 10-year period.

The graph on the next page displays total employment in higher education over the 10-year period from 2000 to 2010 compared to total employment (combined public and private). Higher education is traditionally resilient during recessions, when people who are not otherwise in the workforce may instead opt to enroll in college or other types of training. To illustrate the point, the graph shows that higher education employment continued to grow between 2008 and 2010, during the most recent recession.

NEW YORK CITY EMPLOYMENT IN HIGHER EDUCATION COMPARED TO TOTAL EMPLOYMENT: 2000 - 2010



SOURCE | New York State Department of Labor, QCEW 2000 to 2010

The main drivers that have shaped the industry in recent years are:

- The **economic downturn**, which generally had a negative impact on employment in other industry sectors, may have actually resulted in an increase in employment in the higher education sector.
- Each interviewee noted **changing demographics** as a trend in higher education; however, each spoke about them in a different way. One person noted that with increasing numbers of people going to school, institutions of higher education are serving more adult learners and nontraditional students. Another industry representative observed that the majority of high school graduates in the future will live in foreign countries and that colleges and universities must learn how to serve these students. The higher-education workforce, like the nation, has become increasingly diverse. Several individuals talked about the challenges of managing a multi-generational workforce, as people delay retirement and new graduates enter the workforce. Younger workers were described as lacking some of the “soft skills” expected in the workplace.
- Both public and private institutions are facing a **constrained fiscal environment**. These financial pressures come from decreasing government funding (for institutions and for individuals wanting to go to school) and lost revenue from investments as a result of the economic downturn, alongside increasing enrollments and increasing costs of health benefits and pensions. In an effort to contain costs, there has been an expansion of outsourcing in higher education, in areas such as building services, food services, bookstores, and other business services. This means fewer jobs in higher education and, specifically, fewer non-professional jobs. Another consequence

of more limited resources is an increased focus on generating revenue through fund raising, particularly in public institutions.

- The impact of **technology** is widespread. Not only are there more IT jobs in higher education but technological capability is required in most jobs. In addition, advances in technology have led to new ways of educating people. One individual interviewed noted that online learning was only just emerging in higher education and that such technology was essential to responding to both young students and the nontraditional students described above.
- There are **increasing demands for accountability** both from students and from government. Several respondents described higher education as being “highly collaborative and slow to act.” Higher education is being challenged to become more efficient and focused on results to respond to questions about low graduation rates and the value, both economic and otherwise, of a college degree to an individual.

What are the top occupations in the industry? What skills do industry employers value? What are the emerging workforce issues? How do people get entry-level jobs in this industry cluster?

Top occupations. In the higher education sector, the 15 most common occupations are predominantly faculty and teaching (e.g., graduate assistant) positions. Given that the CUNY Jobs Task Force focused on entry-level jobs, the research for this report was limited to staff positions in higher education. The following non-teaching positions were represented in data on the top 15 occupations in the higher education sector.⁹

Higher Education: Top 15 Occupations Requiring an Associate Degree or More Education

Occupation	Employment		Change		Typical Entry Level Education Requirement ¹	Composition of the Workforce ²
	2008	2018	Level	Percent		
Education Administrators, Postsecondary	2,739	2,654	-85	-3.1%	Bachelor's or higher degree, plus work experience	C
Educational, Guidance, School, and Vocational Counselors	1,968	2,104	136	6.9%	Master's degree	C
Computer Support Specialists	267	273	6	2.3%	Associate degree	SC/C

SOURCE | New York State Department of Labor Occupational Projections, New York City and Staffing Patterns Matrix.

¹ The assignments for typical education and training requirements allow occupations to be grouped to create *estimates* of the education and training needs for the labor force
² The educational cluster data for each occupation are presented to show the actual level of education achieved by workers who are employed in the occupations. Where there is a combination, more than one education level is included (HS: high school; SC: some college/AA; and C: College/BA and more).

Conversations with higher education experts focused on the following staff positions/areas:

- **Development.** In an environment of compressed resources, workers who can fill development positions have increasingly been in demand. Several people noted the challenge of competing for talent with large not-for-profit organizations, such as hospitals, museums, and foundations, which are headquartered in New York City. People in development need to have strong communication skills, the ability to connect with the alumni base, and the ability to build a strong relationship with the leadership in an institution. These jobs generally require a bachelor's degree or higher.

⁹ Neither the Bureau of Labor Statistics nor the New York State Department of Labor collect occupational data if the occupational employment is less than one percent of overall industry employment. There are undoubtedly other staff positions; however, they make up less than one percent of higher education employment.

- **Registrar.** A few people described the challenge of finding people to work in registrar's offices. This work involves using Excel, managing student records, scheduling, room assignments, and other issues. While the registrar typically requires a bachelor's degree, there are people supporting the registrar who may possess an associate degree. This work has been dramatically changed by technology.
- **Bursar.** One industry representative described the difficulty of finding people to fill positions in bursar's offices. Often these positions require workers to be bonded or to hold a CPA license. Like registrars, the work of bursars has been heavily influenced by technological change.
- **Information technology.** IT positions were described by all interviewees as being extremely hard to fill. The requirements for IT positions range from associate degrees to graduate degrees. One challenge in attracting strong IT professionals is the fact that large institutions tend to lag behind in their usage of the latest technology and thus may not be attractive to the IT workforce. Another challenge is finding people who are both technologically savvy and possess the strong interpersonal skills needed to work with non-technical staff.
- **Human resources.** As employment in higher education grows, so do opportunities in human resource offices. Human resource departments benefit from hiring workers with human resource degrees (such as that offered at Baruch College). Lawyers are also valued, given the regulatory environment. Several people interviewed noted that human resource professionals in higher education need to focus less on compliance and more on strategies for engaging the workforce.
- **Other general professional positions.** At CUNY, there are approximately 5,000 higher education officer (HEOs) series positions across the University. These are professional staff members whose positions are defined under a union contract and who typically play administrative roles. Requirements for HEO series positions vary widely, reflecting the broad range of work performed by professional staff.

Skills valued by employers. In addition to the specific qualifications and skills described above, industry employers interviewed for this research said that they value:

- **Strong communication skills, both oral and written.** One person noted that fewer and fewer administrative staff members were competent writers. As a result, professional staff members have increasingly had to take on clerical work. Strong oral communication skills are required in almost all positions, include technical IT positions.
- **Technology skills.** Most universities have large data-management systems, so staff at all levels are required to have computer skills.
- **Project management skills.** Several interviewees noted the value of project management skills, particularly among IT staff.
- **People management skills.** Given the collaborative work environment in higher education, the ability to work in teams and manage people is essential. One respondent noted that because there is a focus on advancement and career ladders, individuals may be promoted without receiving training in how to manage people.

- *Adaptability/ability to learn.* As the workplace is constantly changing, it is essential for new entrants to have the ability to learn new skills and be willing to change.
- *Understanding of higher education/shared governance.* Employers value people who have an understanding of shared governance and the culture of higher education. Those who are hired from outside the sector, especially those coming from the private sector, can have difficulty adjusting to this environment.

Emerging workforce issues. Given the fiscal environment and increasing demands for accountability from government and from the public, higher education is changing. It was unclear from interviews how demands for accountability would affect the workforce in the future. Continued outsourcing will mean a shrinking workforce, particularly for ancillary positions and support staff.

What was clear was that higher education must adapt to meet the demands of a changing student body, which is increasingly diverse and includes many nontraditional students, including those who are older and those who are working. This means offering classes online, during the evening and on weekends, and outside of a regular semester schedule.

To attract its future workforce, higher education will need to consider practices that are being adopted by those companies identified as the best places to work. This includes allowing people to work remotely and outside of a 9-to-5 schedule.

How do people get entry-level jobs in this industry cluster?

Recruitment for higher education occurs in traditional venues, including advertising in industry publications and websites. Several people interviewed discussed the need for higher education to find new ways to recruit qualified candidates, including using social media. Again, the issue of higher education being slow to change was noted as a barrier to competing for talent.

What are the characteristics of the higher education workforce and how, if at all, do they differ from the general workforce in New York City?

The chart on the next page displays the demographic characteristics of the workforce in the higher education industry in 2000 and 2008-2010, and compares these with the total employed workforce in New York City. These figures include faculty and teaching positions as well as non-teaching staff positions. The higher education workforce is more concentrated in Manhattan, less diverse, older, and more educated than the general employed workforce in New York City. These characteristics either remained unchanged or, in the case of age and educational attainment, became more pronounced during the 10-year period.

Demographic Characteristics of the New York City Higher Education Industry Cluster Workforce and Total Employed Workforce, 2000 and 2008-10				
	2000		2008-2010	
	Higher Education	Total Employed	Higher Education	Total Employed
New York City Residents	71,008	2,902,068	89,688	3,353,116
Non-New York City Residents*	17,234	827,407	23,480	927,618
Bronx	12%	13%	14%	14%
Kings	22%	29%	24%	30%
Manhattan	41%	24%	38%	23%
Queens	20%	28%	20%	27%
Staten Island	4%	6%	5%	6%
Male	44%	51%	44%	51%
Female	56%	49%	56%	49%
U.S.-Born	69%	57%	67%	54%
Foreign-Born	31%	43%	33%	46%
White	55%	42%	54%	37%
Black	17%	22%	15%	21%
Hispanic	15%	22%	16%	26%
Asian	11%	11%	11%	13%
Other	3%	4%	3%	2%
Age 18-34	43%	39%	42%	38%
35-44	21%	27%	18%	23%
45-54	20%	21%	17%	22%
55+	17%	10%	23%	17%
Less than high school or GED	4%	17%	2%	14%
High school or GED	9%	22%	9%	22%
Some college/Associate's degree	22%	25%	20%	24%
BA or More	64%	37%	69%	40%

SOURCE | 2000 Census and 2008-10 American Community Surveys public use microdata (PUMS).
*The remaining percentages that appear in the table are of people who both live *and* work in New York City.
Note: data is restricted to those 18+ in the non-institutionalized population who are employed in the civilian labor force.
Note: due to restrictions in the ACS data, this analysis does not include NAICS code 6114 (Business schools and computer and management raining) as it can not be separated from 6115 (Technical and trade schools)

How do higher education institutions view the college-educated workforce? How well are colleges and universities preparing candidates for jobs in higher education other than faculty positions?

Several respondents said that recent graduates have different expectations with respect to their jobs. They want flexibility and quick promotion and do not feel the need to put in the work required to advance. In addition, many new graduates lack “soft skills,” including how to dress appropriately for work and communicate with co-workers.

The multi-generational workforce in higher education can lead to a clash of cultures between new hires who are recent graduates and those who have been in the workforce for a long time. Industry representatives were reflective about the need for higher education to change to accommodate new entrants to the workforce. They also noted the value that new entrants add because they are “not poisoned” by the institutional bureaucracy.

What would higher education employers like to change about the way individuals are prepared for jobs at the post-secondary level?

Employers said that colleges and universities could do more to provide people with job-readiness lessons, including the importance of being on time, dressing appropriately, and being responsible about taking work time for personal issues and activities.

Colleges and universities could do a better job of ensuring that students enter the workplace with the oral and written communication skills needed to succeed. These skills are required in virtually all positions that require a college degree. Also important are strong project and people management skills.

Finally, learning agility was noted as an important skill. Even in a highly unionized environment, industry experts noted the importance of preparing students to be flexible in response to changes in technology, policies, and other transformations.

One industry representative said that more internships are necessary at the bachelor’s level to help prepare people for the workforce: “People need help figuring out what higher education is all about.”

What kinds of relationships do higher education employers have with CUNY campuses? With other institutions of higher education? What types of relationships would they like to have?

Industry experts did not note any particular sources of recruitment, except for Baruch’s human resource program for human resource positions.

What are the implications of these findings for colleges and universities?

Colleges and universities need to do more to provide people with the basic skills needed to succeed at work. This includes making sure graduates possess general work readiness, communication, project management, and interpersonal skills. Colleges and universities also need to do more to respond to changes in technology and the workplace in order to compete for qualified talent.

Industry Profile: Information Technology

What is the information technology cluster in New York City?

Because of the pervasiveness of technology in the workplace, information technology (IT) can be described as a class of businesses, occupations, or skill sets rather than as a single industry. For example, individuals in IT occupations perform critical functions in numerous local industries such as banking, media and advertising, and health care. Individuals with IT skills perform critical functions throughout the labor market. For the purpose of this report, the focus is on the IT industry itself, although the findings may be equally relevant to IT occupations and skills in other industries. The types of businesses included in the Jobs Task Force definition of the cluster include:

- *Computer Systems Design and Related Services.* Firms that design systems that integrate hardware, software, and communication technologies. These firms also may install systems and train and support system users. Some of New York City's largest employers in this industry include Donovan Data Systems, Sun Microsystems, Tri Zetto Group, EMC Corporation, and Unisys Corporation.
- *Data Processing, Hosting, and Related Services.* Firms that provide the infrastructure for hosting or data processing services. Hosting services may provide web hosting, streaming services, or application hosting. Data processing firms provide specialized reports or automated processing or data entry services. Some of New York City's largest firms in this industry include ADP, Epsilon, IBM, Affiliated Computer Services, and Internap Network Services.
- *Other Information Services.* Firms that supply, store, search, retrieve, and provide access to information. This segment includes Internet service providers, publishing, and broadcasting. Some large New York City firms in this industry are Reuters, The Associated Press, Google, and Bloomberg LP.
- *Software Publishers.* Firms that publish software applications; these firms may also design, develop, publish, and distribute software. Some large New York City firms in this industry include Microsoft, Rockstar Games, Symantec, Double Click, and Oracle.

New York City is home to more than more than 5,000 IT firms, employing almost 70,000 people. The largest segment of the cluster in New York City is computer systems design and related services, comprising 78 percent of the firms and 64 percent of the industry's total employment. The smallest segment is software publishers, which currently make up less than 3 percent of the firms and employment in the industry. Average pay in the IT cluster is about \$115,000, well above the citywide average of \$81,000.

FIRMS, EMPLOYMENT AND AVERAGE PAY, 2010

	Firms	Employees	Average Pay
Software Publishers	131	1,658	\$146,395
Data Processing, Hosting, and Related Services	375	4,884	\$121,142
Other Information Services	691	18,379	\$103,733
Computer Systems Design and Related Services	4,127	43,725	\$117,670
Total IT Cluster	5,324	68,646	\$114,880

SOURCE | QCEW, 2010

What are the main drivers influencing IT business activity today? What impact can we expect these drivers to have on IT employment?

Sensitivity to primary client base. The IT industry provides customized IT services to other industries as well as “enterprise” solutions that are purchased and used by multiple industries. The IT industry’s largest client base for custom services in New York City is finance. “As finance goes, so goes IT in this town,” one industry expert explained. For enterprise services, the largest business driver is the business cycle; during downturns, businesses become more conservative in their purchasing and this affects their investment in computer systems, applications, and related services.

Big Data †

In 2009, nearly all sectors of the US economy had at least an average of 200 terabytes of stored data *per firm*, twice the size of Wal-Mart’s data warehouse just 10 years earlier.‡ According to a research firm called IDC, the amount of data generated is doubling every two years. The explosion is not just of quantity but also of type: data come in the form of images, video, words, and numbers.

Big data is not just an IT issue: at the highest levels, firms in every sector must address its implications for all phases of their operations. Firms that effectively analyze their large data sets generate more innovation and productivity growth than their competitors.

While the use of big data matters across the economy, opportunities vary from sector to sector. The computer and electronic products, information, finance and insurance, government, retail, advertising and media, and health care sectors are poised to gain substantially from the use of big data. By 2018, the United States alone could face a shortage of 140,000 to 190,000 people with deep analytical skills and 1.5 million managers who can use the data to make effective decisions.

† This discussion is adapted from Manyka, J., M. Chui, B. Brown, et al., 2011. *Big data: The next frontier for competition, innovation, and productivity*, McKinsey Global Institute, and includes insights shared at a big data conference hosted by the New York City Investment Fund on September 23, 2011.

‡ The statistic refers to firms with 1,000 or more employees.

Rapid technological advances. Over the past 10 years the pace of technological change has accelerated exponentially across the IT cluster. Digital technology is now common in such diverse goods as automobiles and televisions. Technology has also increased mobility: file storage has become increasingly portable, the Internet has exploded with activity, computing speed increased dramatically, and new devices have proliferated, giving consumers and businesses access to office technology nearly anywhere they travel.

Information proliferation. As a result of technological advances in Internet infrastructure, data storage, and processing speed, the volume of information that is readily accessible has increased by several orders of magnitude. Firms that may have had megabytes or gigabytes of data now generate thousands or millions times that amount of data on a weekly or daily basis. Managing this information is itself a challenging task, and firms that use this data to understand and communicate to their markets and effectively comply with regulatory requirements are at a tremendous advantage over their competitors. IT firms that can provide analytical services stand poised to profit from this need; firms that specialize in “big data” are at a particular advantage.

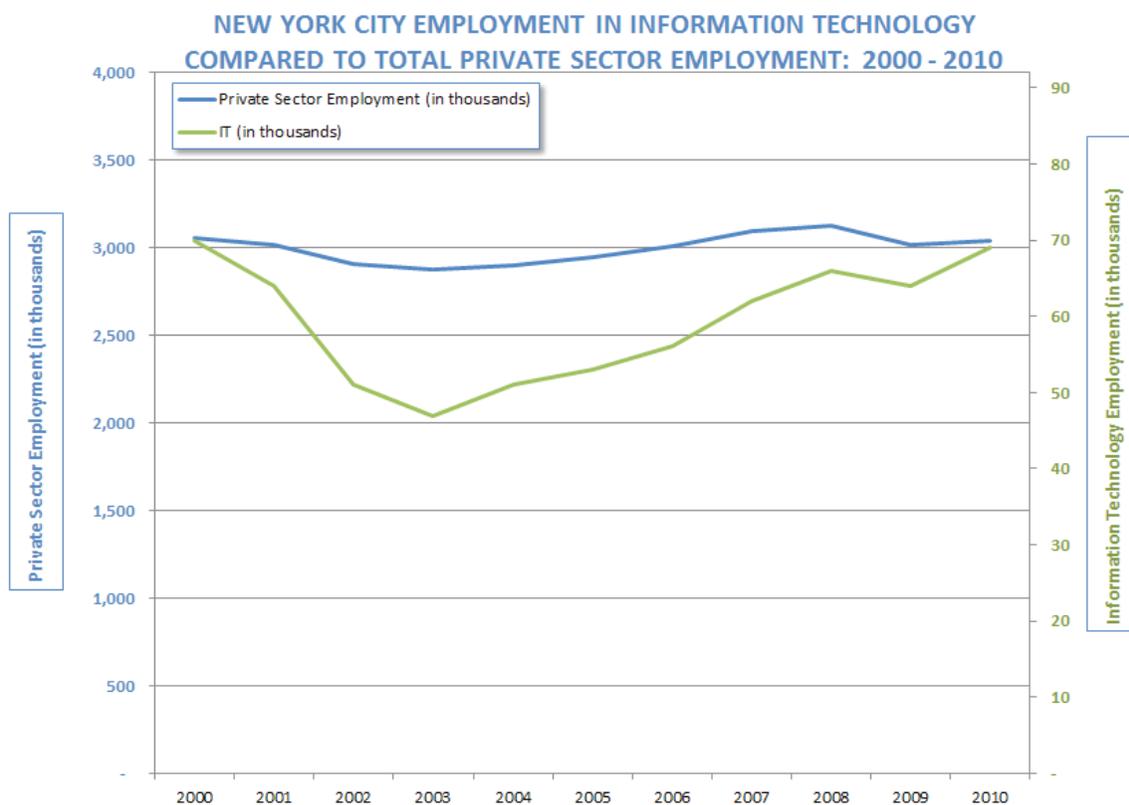
Increasing use of the “cloud” for data storage and processing. The number of office and consumer on-site servers is expected to decrease dramatically as businesses and consumers move their files and data storage to remote web-based servers. Employment in server installation and maintenance would increase if cloud-computing firms locate in New York City. If they do not locate in the city, however, New York would likely experience a drop in employment in such IT infrastructure jobs.

Growing use of mobile computing. More and more, businesses and consumers communicate and compute on mobile devices like smartphones and tablets. This shift requires application and website developers who can adapt their work (or update others’ work) to operate on multiple platforms.

How has employment changed in the IT industry cluster in New York City in the last 10 years?

The next graph displays total employment in the IT cluster over the 10-year period from 2000 to 2010 compared to total private sector employment. Over the past 10 years, employment in this industry cluster in New York City fell dramatically during the IT “bust” that began in 2001 and bottomed out in 2003. Since 2003, employment in the sector has risen, and in 2010 had surpassed 2000 levels by five percent. Given the pace of technological change, employment in the IT cluster did not grow as much as might have been expected in the past decade.

Further analysis¹⁰ indicates that all of the IT cluster employment growth in the past decade was in the other information services industry (including Internet service providers, publishing, and broadcasting), which grew by 83 percent. The number of firms in this industry also quadrupled during the past 10 years. Employment in the largest component of the cluster—computer systems design and related services—decreased by 5 percent during the same period, although the number of firms remained about the same. Taken together, it appears that New York City is adding firms and employment in segments of the cluster that stand to benefit from recent technological innovations. Based on interviews with industry experts, New York City will be well positioned in the IT cluster in the decades to come.



SOURCE | New York State Department of Labor, QCEW 2000 to 2010

¹⁰ Analysis of employment trends among the component industries is not shown but is available upon request.

What are the top occupations in the IT industry?

Occupations that make up at least one percent of IT cluster employment are listed in the table below. The majority of titles and jobs are technical in nature and require significant knowledge of programming, computer systems, or both. The only titles that suggest otherwise are marketing managers, general and operating managers, and accountants and auditors. All titles require a four-year college degree; a majority of the current workforce has attained this level of education.

Information Technology: Top Occupations Requiring an Associate Degree or More Education

Occupation	Employment		Change		Typical Entry Level Education Requirement ¹	Composition of the Workforce ²
	2008	2018	Level	Percent		
Computer Programmers	9,802	8,430	-1,372	-14%	BA/BS	SC/C
Software Developers, Applications	5,886	6,757	871	15%	BA/BS	C
Computer Systems Analysts	5,813	6,261	448	8%	BA/BS	SC/C
Software Developers, Systems Software	4,012	4,786	774	19%	BA/BS	C
Information Security Analysts	3,866	na	na	na	na	na
Computer and Information Systems Managers	2,107	2,208	101	5%	BA/BS + experience	SC/C
General and Operations Managers	1,843	1,673	-170	-9%	BA/BS + experience	SC/C
Management Analysts	1,157	1,261	104	9%	BA/BS + experience	C
Network and Computer Systems Administrators	1,036	1,147	111	11%	BA/BS	SC/C
Accountants and Auditors	667	722	55	8%	BA/BS	C
Marketing Managers	257	265	8	3%	BA/BS + experience	SC/C
Sales Engineers	239	243	4	2%	BA/BS	SC/C
Market Research Analysts and Marketing Specialists	23	26	3	14%	BA/BS	C

SOURCE | New York State Department of Labor Occupational Projections, New York City and Staffing Patterns Matrix.

¹ The assignments for typical education and training requirements allow occupations to be grouped to create *estimates* of the education and training needs for the labor force as a whole .

² The educational cluster data for each occupation are presented to show the *actual* level of education achieved by workers who are employed in the occupations. Where there is a combination, more than one education level is included (HS: high school; SC: some college/AA; and C: College/BA and more).

Indeed, the industry experts noted that a vast majority, if not all, jobs in the industry require a high degree of technical knowledge and a solid grounding in computing and programming. Some experts mentioned that their sales forces also have computer science or engineering degrees, as they are called upon to advise clients and must have a deep understanding of their firms' product and services lines. Several industry experts reported that advanced degrees might not immediately lead to advancement, although candidates with master's degrees and doctorates may be compensated more generously in the same positions.

All industry experts agreed that it is difficult to assign occupational titles to a vast majority of IT positions and a few described the standard occupational categories themselves as "antiquated." For example, most developers are programmers (and vice versa), many programmers and developers are analysts or engineers, and a large number of people employed in technical occupations are generally called upon to manage projects and clients and sell their products and services. One expert explained that new employees in his company rotate positions on software development projects: a new recruit might be assigned to the development team on one project and then assigned to manage the next project altogether.

What skills do industry employers value?

Learning agility and flexibility. Because the field is changing so rapidly, the most sought-after employees are developers or programmers with a solid grounding in the theories and principles of computing and the flexibility to learn new languages and work with new platforms and applications. Several experts noted that what students learn in the first two years of college might be irrelevant in the market by the time they graduate. A common theme among the industry experts was that they wanted candidates who are “committed to continuous learning.”

Well-rounded intelligence. In addition to the solid computing backgrounds, several experts also remarked that they value a well-rounded intelligence that is not typically associated with computer science graduates. Noting the growing consumer focus on computing, and the need for sales and project management skills, respondents observed that the IT industry is increasingly becoming more interdisciplinary. Additional skills mentioned were analytics, data management, and project and client management.

Applications and programming languages. Programmers and developers currently in short supply include those with facility with the following languages and applications: Net/C#, Java, Objective C, Hadoop, Ruby on Rails, PHP, Python, Javascript, Sharepoint, SAP and Peoplesoft. Although several experts acknowledged that data analytics has become somewhat of a “flavor of the month,” they all mentioned that top-notch data handling and analytical skills are in great demand now and that this demand will only grow.

What are the emerging workforce issues?

Shortage of programmers. Several experts described a shortage of programmers and developers who are U.S. citizens or resident aliens, mentioning the high number of H1B visas their firms had applied for in order to hire foreign nationals into these positions. IT firms would like to see many more domestic computer science graduates who do not require assistance with special immigration status, as the application process entails a great deal of time and expense for the firms.

Education is not striking the proper balance between academic and vocational goals. Most of the experts with whom we spoke were sensitive to the need for colleges to maintain their academic integrity, but expressed—in one form or another—the belief that colleges do not do enough to prepare students for the world of work. Common themes were:

- Students are not sufficiently grounded in the theory and principles of computing to enable them to easily learn new programs.
- Many graduates—even from highly selective schools—are not sufficiently proficient in any of the major programming languages currently used by industry.
- Students are not exposed to a variety of analytical skills.
- Coursework does not expose students to the full cycle of product development.
- Computer science programs do not emphasize the longevity of programs or the importance of working with existing programs. In some subfields within IT, the majority of work entails adding or editing subroutines within programs and otherwise refining existing programs.

How do people get entry-level jobs in this industry cluster?

At the larger and more prestigious firms, college graduates get entry-level positions through college recruitment or summer internship programs. Others apply for the jobs through specialized websites. All of the experts talked about the tremendous value of previous work experience among recent college graduates and expressed preference for those candidates who had already worked in an internship or summer job at their own firm. Internships and summer jobs are seen as low-risk trial periods for the businesses during which time they can assess if the individual will be successful within the firm's culture.

What is the composition of the workforce today and how has it changed in the past 10 years?

The following chart displays the demographic characteristics of the workforce in the information technology industry in 2000 and 2008-2010, and compares these with the total employed workforce in New York City. In 2010, more than one-third of workers in the IT cluster lived outside of New York City, compared to about one-fifth of the employed adult workforce.

Those who live in New York City were far more likely to reside in Manhattan than the workforce as a whole, although the Manhattan concentration declined somewhat over the decade with an increase in IT workers residing in Brooklyn. Males and whites are over-represented in the IT cluster. Although males are half the working adult population, they are two-thirds of the IT workforce. Although Black and Hispanic New Yorkers are underrepresented in the cluster, Asian New Yorkers were well represented. The IT workforce was also far more educated than the general adult workforce with almost two-thirds having graduated from college in 2000 and 70 percent in 2010. It is also a younger workforce, with 50 percent between the ages of 18 and 34, compared to 38 percent of the total employed workforce who are in that age group.

**Demographic Characteristics of the New York City Information Technology Industry Cluster
Workforce and Total Employed Workforce, 2000 and 2008-10**

	2000		2008-2010	
	Information Technology	Total Employed	Information Technology	Total Employed
New York City Residents	51,346	2,902,068	43,152	3,353,116
Non-New York City Residents*	26,910	827,407	26,219	927,618
Bronx	7%	13%	6%	14%
Brooklyn	21%	29%	31%	30%
Manhattan	44%	24%	36%	23%
Queens	22%	28%	23%	27%
Staten Island	6%	6%	4%	6%
Male	65%	51%	72%	51%
Female	35%	49%	28%	49%
U.S.-Born	70%	57%	64%	54%
Foreign-Born	30%	43%	36%	46%
White	60%	42%	58%	37%
Black	13%	22%	11%	21%
Hispanic	11%	22%	12%	26%
Asian	13%	11%	16%	13%
Other	3%	4%	3%	2%
Age 18-34	62%	39%	50%	38%
35-44	22%	27%	26%	23%
45-54	12%	21%	16%	22%
55+	4%	10%	8%	17%
Less than high school or GED	2%	17%	2%	14%
High school or GED	10%	22%	8%	22%
Some college/Associate's degree	24%	25%	21%	24%
BA or More	64%	37%	70%	40%

SOURCE | 2000 Census and 2008-10 American Community Surveys public use microdata (PUMS).
 *The remaining percentages that appear in the table are of people who both live *and* work in New York City.
 Note : Data is restricted to those 18+ in the non-insitutionalized population who are employed in the civilian labor force.
 Note : Due to restrictions in the ACS data, this analysis includes Other Telecommunications in 2008-10 as it cannot be separated from Data Processing, Hosting, and Related Servcies in 2000.

What would IT industry employers like to change about the way individuals are prepared for jobs at the post-secondary level?

- *Better analytical skills.* Two experts noted that today's workforce needs to be better prepared to analyze any type of information placed in front of them. For example, one expert suggested that all students graduating with degrees in the soft or hard sciences be required to demonstrate proficiency with Microsoft Excel©, while another spoke about the need to work with less structured data such as images and words.
- *Better self-presentation skills.* Some respondents noted the relatively poor self-presentation skills witnessed during the interview process and suggested that colleges provide students with access to instruction on résumé and cover letter writing, networking, and interviewing skills.

- *More respect for others.* Several also remarked that recent graduates have a perceived entitlement and inflated sense of their abilities and judgment. It is difficult to tell whether this is a common phenomenon for young people assimilating to workplace norms, or if this entitlement is especially pronounced within the recent crop of graduates. As one expert stated, “If colleges could turn out computer science graduates who are well-rounded individuals *and* take them down a peg while they were at it, that would be great.”

What kinds of relationships do IT industry employers have with CUNY campuses and other institutions of higher education?

Large firms typically have dedicated campus recruiting departments or divisions and actively recruit from universities known for their strong computer science and engineering programs, such as MIT, Carnegie Mellon, Columbia, NYU, and Rensselaer Polytechnic Institute. Recruiters commonly work closely with their technical counterparts to obtain a deeper sense of the skills and personality types that are needed. Many recruiters attend interviews and travel with recent recruits that graduated from the same school. As one expert explained, new employees know the faculty who in turn know the most promising students, which creates a pipeline that keeps bringing in the most talented students. Another firm noted that they do not recruit from highly selective schools for lower level, “mechanically inclined,” infrastructure jobs.

The interviews in this study were not conducted with a representative sample of IT companies; rather, they included highly placed individuals in some of the largest and most well-known firms in New York City. Most industry experts had employed CUNY graduates—either as staff members or interns—and had positive experiences with them; however, none of their firms directly recruited CUNY graduates. None of the respondents were aware of any special relationship with the CUNY campuses except serving *pro forma* on departmental advisory councils.

An expert from a well-known firm talked about the firm’s difficulty attracting the best and the brightest to work in New York City and attributed this to the desire among recent graduates to attain a work-life balance and access to the outdoors. That firm provides day passes to museums, theaters, and other special events. Once recruited, new staff attend one of two orientation programs: a 10-week program for computer science majors and a 16-week program for math, economics, and engineering majors.

What are the implications of these findings for colleges and universities, including CUNY?

- *Engage industry to improve the alignment of academic programs to industry needs.* Computer science departments need to find more meaningful ways to work with industry so they can provide instruction that better prepares students for the world of work. Existing advisory councils are not perceived as a useful means to achieve any meaningful alignment between instruction and industry needs. Potential ideas offered included:
 - *Provide faculty incentives.* Provide incentives to faculty to remain up to date with the latest developments in the field. One way to accomplish this is through faculty “fellowships” at industry sites. Another way to accomplish a similar goal is to recruit adjunct or part-time faculty from the industry.
 - *Simulate typical industry activities in the classroom.* Computer science departments should be encouraged to require senior projects that simulate the application development process and other industry-relevant scenarios.

- *Continue to engage industry in high-level dialogue.* Because of the fast pace of technological advancement, industry experts believed that universities should continuously engage in the type of work with which this task force was charged. Respondents believed that this was a useful endeavor and that it is essential that faculty absorb the findings from this study so it may inform curriculum development.
- *Strategically allocate faculty and subfield foci.* Within CUNY, promote cross-campus communication about a) curricula, in order to promote a more coherent, less ad hoc approach to teaching computer science throughout CUNY; and b) faculty specialties, in order to reduce redundancy and spark collaboration across specialties. One potential forum for this dialogue is the computer science discipline council.
- *Encourage student interest in computer science.* Universities need to play a much stronger role in encouraging broader student interest and demand in IT and related careers. Institutions of higher education need to explain why IT is important, what the IT industry is looking for, and what they are doing to help students prepare for work in the industry.
- *Graduate more computer science majors.* Competition among firms for highly skilled computer science graduates is fierce.

Industry Profile: Media and Advertising

What is the media and advertising industry cluster in New York City?

New York City is a worldwide mecca for the media and advertising industry, which is an instrumental part of the city's image and economy. (Think *Mad Men* and *30 Rock*.) Many people relocate to New York especially to work in this industry. The major subsectors of media and advertising include:

- Advertising, public relations, and related services
- Publishing, including newspapers, magazines, books, and other publications
- Motion pictures and video
- TV and radio broadcasting
- Sound recording

New York City is home to more than 6,000 media and advertising companies, employing almost 150,000 people, with average pay of nearly \$108,000.

As shown below, the advertising, public relations, and related services subsector employs the largest number of people, followed by publishing.

FIRMS, EMPLOYMENT AND AVERAGE PAY, 2010

	Firms	Employees	Average Pay
Advertising, public relations and related services	2,561	53,210	\$112,722
Newspaper, periodical, book and directory publishers	1,048	44,362	\$106,129
Motion pictures and video	1,963	30,899	\$96,335
TV and radio broadcasting	162	17,381	\$119,996
Sound recording	429	2,714	\$136,193
Total Media and Advertising	6,163	148,566	\$107,926

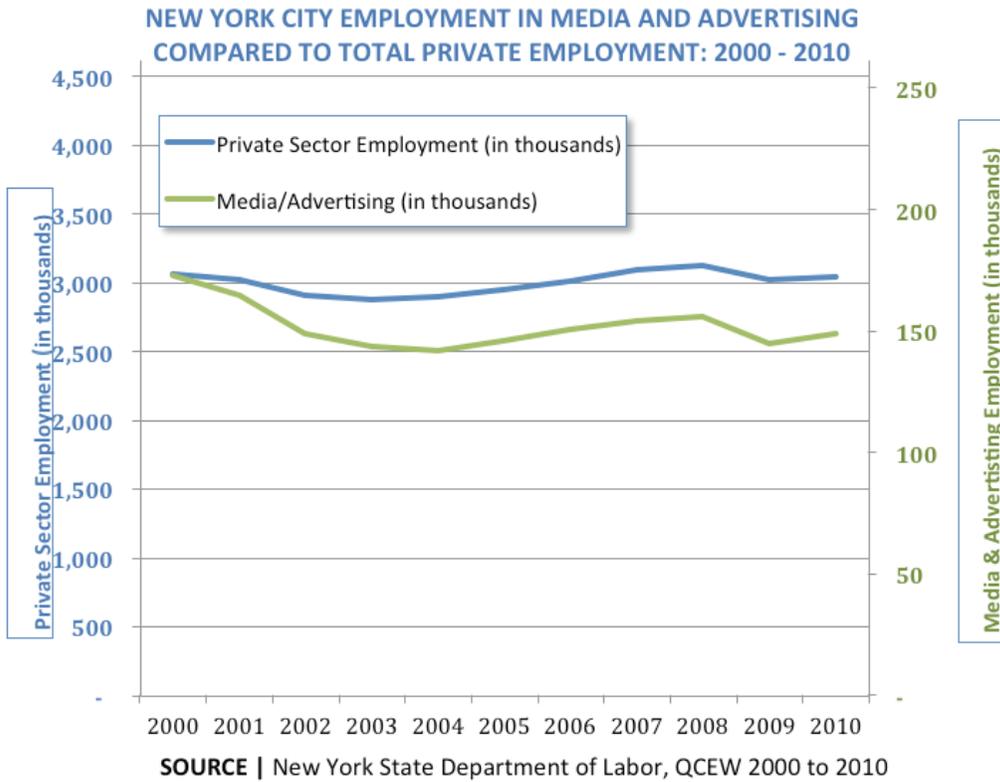
Source: QCEW, 2010

How has employment changed in the media and advertising industry cluster in New York City in the last 10 years?

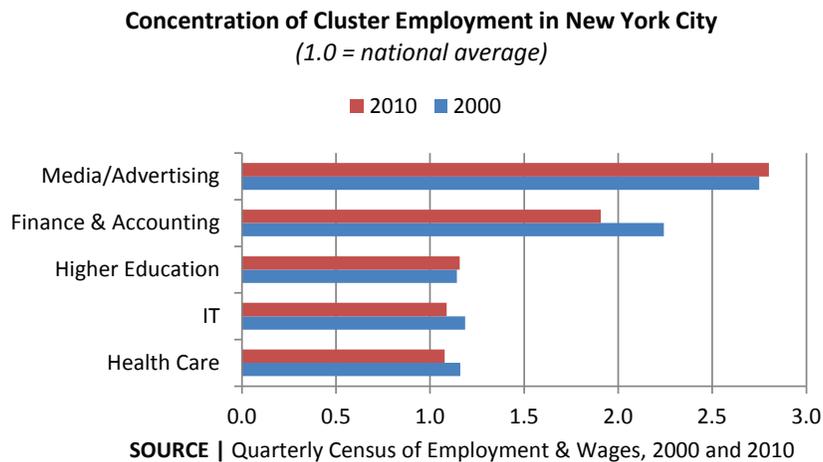
What are the main drivers influencing business activity today? What impact has this had on employment?

Over the last 10 years, employment in this industry cluster in New York City has generally followed trends in the business cycle, but has not fared as well as the overall private sector economy. The number of people employed in media and advertising declined by almost 25,000 between 2000 and 2010. An examination of subsector employment figures shows that half of this can be accounted for by publishing, which experienced steady, year-after-year job losses, declining from 57,175 in 2000 to 44,362 in 2010. Although it involves a smaller number of jobs, sound recording employment also declined steadily, from 4,697 in 2000 to 2,714 in 2010, or 42 percent. The other three subsectors lost employment earlier in the decade but have seen increases in the last couple of years.

The graph below displays total employment in media and advertising over the 10-year period from 2000 to 2010 compared to total private sector employment.



Even with the declines in employment shown above, New York City had a larger share of U.S. media and advertising jobs in 2010 than it did 10 years earlier. This is illustrated in the following bar chart:



The main drivers that have shaped the industry over the last 20 years are consolidation, specialization, and technology.

- **Consolidation/globalization.** There has been considerable consolidation within several segments of this industry cluster.
 - In **advertising and related services**, many formerly separate agencies have been absorbed into a small number of major holding companies. Four major international groups—Omnicom, WPP, Interpublic, and Publicis Groupe—control a large number of agency brands spread all over the world.¹¹ For example, the British-owned WPP Group (interviewed in connection with this research) consists of more than 150 companies worldwide in advertising, public relations, branding and identity, and related disciplines. These include New York-based brand-name companies Ogilvy & Mather, the Grey Group, J. Walter Thompson, Young & Rubicon, and Kantar, as well as agencies in other global markets. There remain a smaller number of prominent, independently owned companies, such as the public relations firms Edelman and Rubenstein Associates, Inc.
 - In **publishing**, there are now six conglomerates (sometimes called the “six sisters”) that control much of the book publishing industry around the world. They are Hachette Book Group (France), HarperCollins (Australia/News Corp), Macmillan (Germany/Holtzbrinch), Penguin Group (United Kingdom/Pearson), Bertelsmann AG (Germany, owns Random House and others), and Simon & Schuster (United States).¹² There has also been consolidation in magazine publishing. For example, Condé Nast (interviewed in connection with this research), headquartered in New York City, produces 18 consumer magazines, four business-to-business publications, and many more websites and tablet and mobile phone applications.
 - **Media and entertainment** companies have also been impacted by mergers and consolidation. Three of the top four entertainment companies in the United States are headquartered in New York City. These are News Corporation, Time Warner, and Viacom. Viacom includes such New York-based entertainment companies as MTV, Nickelodeon, and Comedy Central, as well as BET, based in Washington, D.C., Paramount, based in California, and 160 networks around the world.
- **Specialization.** Many advertising and media companies have either spun off separate companies or have divisions within them that specialize in direct marketing, media investment, and market research (also called consumer insight), and segmented businesses that focus on everything from health care to youth markets. Many companies in advertising and public relations have divisions or groups that concentrate on different sectors, such as health, real estate, financial services, and many others.
- **Technology.** It would be hard to overstate the impact of technology on media and advertising. One industry expert noted that 15 to 20 years ago, there was no Internet; five to six years ago, there were no smart phones; and three to four years ago, there were no tablets. Another who described herself as a “dyed-in-the-wool print person” said that the No. 1 issue is how to navigate the digital age.
- **Customers are consuming through multiple media**, often simultaneously. Companies in the industry feel they must have “all things everywhere” and “access the target audience using all media.”

¹¹ www.adbrands.net/advertising_industry_structure.htm

¹² www.larsenpomada.com/lp/pages.cfm?ID=42

- With the **increasing use of the Internet, smart phones, and, more recently, tablets**, fewer people buy hard copies of newspapers, magazines, and books. Consumption of these materials is becoming digital. This is having an impact on the entire “food chain”—the demise of Borders is just one example.
- Everyone in the industry mentioned the important role played by **social media**. One person interviewed said that digital and social media has created a dialogue with people. Media and marketing is no longer aimed in one-direction; it is about **networks**.
- Technology has had an impact on the industry in general, with more two-way or every-way communication, from **self-publishing to YouTube**.
- One person interviewed said that the digital business is evolving rapidly, with a **new invention every three to six months**.
- The direction of the film and television industry is also clearly driven by advances in digital technology, especially in the need for more skilled people in **post-production visual effects**.

It is not completely clear whether these drivers have directly caused the decline in employment. The book publishing industry, for one, has become more streamlined, with fewer editors, sales reps, editorial assistants, publicists, etc. It is clear that the types of jobs have shifted and changed somewhat, with a tilt towards people with more technological knowledge. As one industry expert noted, some roles disappear while others grow. There is some re-purposing of the current workforce, and new and future hires must be able to adapt to these changes.

What are the top occupations in the industry? What skills do industry employers value? What are the emerging workforce issues? How do people get entry-level jobs in this industry cluster?

Top occupations. The 15 most common occupations in the industry that require at least an associate degree are listed in the next table.

Media and Advertising: Top 15 Occupations Requiring an Associate Degree or More Education

Occupation	Employment		Change		Typical Entry Level Education Requirement ¹	Composition of the Workforce ²
	2008	2018	Level	Percent		
Editors	9,254	8,754	-500	-5.4%	Bachelor's degree	C
Producers and Directors	7,809	7,590	-219	-2.8%	Bachelor's or higher degree, plus work experience	SC/C
Public Relations Specialists	7,261	8,255	995	13.7%	Bachelor's degree	C
Graphic Designers	5,385	5,573	188	3.5%	Bachelor's degree	SC/C
Market Research Analysts and Marketing Specialists	4,304	4,915	611	14.2%	Bachelor's degree	C
General and Operations Managers	3,053	2,772	-281	-9.2%	Bachelor's or higher degree, plus work experience	SC/C
Writers and Authors	2,684	2,894	209	7.8%	Bachelor's degree	C
Accountants and Auditors	2,635	2,854	219	8.3%	Bachelor's degree	C
Reporters and Correspondents	2,568	2,237	-331	-12.9%	Bachelor's degree	C
Advertising and Promotions Managers	2,554	2,350	-204	-8.0%	Bachelor's or higher degree, plus work experience	C
Art Directors	2,067	2,127	60	2.9%	Bachelor's or higher degree, plus work experience	SC/C
Broadcast Technicians	1,887	1,813	-74	-3.9%	Associate degree	HS/SC/C
Film and Video Editors	1,810	1,712	-98	-5.4%	Bachelor's degree	SC/C
Camera Operators, Television, Video, and Motion Picture	1,016	974	-42	-4.1%	Bachelor's degree	SC/C
Multimedia Artists and Animators	989	1,042	53	5.4%	Bachelor's degree	SC/C

SOURCE | New York State Department of Labor Occupational Projections, New York City and Staffing Patterns Matrix.

¹ The assignments for typical education and training requirements allow occupations to be grouped to create *estimates* of the education and training needs for the labor

² The educational cluster data for each occupation are presented to show the *actual* level of education achieved by workers who are employed in the occupations. Where there is a combination, more than one education level is included (HS: high school; SC: some college/AA; and C: College/BA and more.

As would be expected from the industry employment numbers cited earlier, occupations closely associated with publishing—editors, reporters, and correspondents—are not expected to grow, although hiring is still taking place to replace people who leave or retire. The two main growth occupations are public relations specialists and market research analysts/marketing specialists.

Industry experts interviewed for this research specifically mentioned hiring writers, editors, data analysts and specialists, planners, publicists, account executives, and “digital people.” Several said that there are “more analytics” in every part of the industry. All mentioned the impact of technology on jobs across the board.

Skills valued by employers. Industry employers interviewed for this research said that they value the following:

- Candidates and employees with a passion for the type of work and/or the brand, whether it’s MTV, The Economist, or a fashion magazine. They want employees to have a connection with the product and the work; to be engaged and to themselves be consumers of media.
- People who can express themselves well, verbally and in writing, who can articulate an idea, connect with a client in a mature way, and engage the client. One industry expert said that in an age of digital media, the counter-intuitive need is for employees who can effectively communicate in person.
- Experience is valued more than academic credentials or qualifications. One company interviewed has removed the bachelor’s degree requirement from all of its positions. However, other companies interviewed require a bachelor’s degree as a baseline requirement. In some parts of the industry (public relations, publishing), most employees have humanities backgrounds.
- Less tangible skills such as a sense of integrity or teamwork.
- People with an affinity for numbers who are also creative and insightful. One industry expert called this “numeracy skills and intelligence.” As one another industry expert said, “the job is to figure out what the audience wants.” Some look for a background in statistics.
- Analytic and critical thinking skills. One industry expert called this the ability to problem-solve by asking the right questions. Another called this being able to create a cohesive story out of disparate pieces of information.
- Given the importance of the digital side, every industry expert interviewed stressed the importance of **both traditional talents and hard skills in technology**. Employees must be able to navigate the electronic environment. This included such things as:
 - Ability to work on or build a website or blog, or conduct e-commerce
 - Ability to convert from print to different digital platforms
 - Being able to manage Facebook, Twitter, and other social media

Emerging workforce issues. The most commonly mentioned workforce issues include lack of technical skills or digital savvy among experienced workers, managing a multi-generational workforce, and a “sense of entitlement” among younger employees

Getting an entry-level job in the industry. When asked how they find new employees, virtually every industry employer interviewed for this research mentioned:

- **Internships.** One industry expert called this a “big feeder pool.” Another said that an internship is the entrée to the business, as it reduces employer risk. The vast majority of these internships appear to be paid. Some companies work with specific universities to find interns.
- **On-campus recruitment.** All mentioned recruitment with colleges. Some have college relations departments. Some companies specifically target colleges that will offer a more diverse workforce, which all of the employers interviewed wanted.
- **Facebook, LinkedIn, and corporate websites** are also used in recruiting candidates.

Some segments of the industry recruited through “friends and family” in the past. However, this method is felt to have many limitations, especially in terms of diversity, by which is meant differences of many kinds, including perspective, opinion, and background, as well as the more traditional categories of race and gender.

The chart below displays the demographic characteristics of the workforce in the media and advertising industry cluster in 2000 and 2008-2010, and compares these with the total employed workforce in New York City.

In general the media and advertising workforce is younger, more educated, and less diverse than the city's total employed workforce. A higher proportion is U.S.-born and lives in Manhattan. The demographic composition of the media and advertising workforce did not change markedly between 2000 and 2010, although a larger percentage had a bachelor's degree or more. Freelance work is common in this field; it is estimated that up to one quarter of the industry workforce is engaged in this manner.

Demographic Characteristics of the New York City Media/Advertising Industry Cluster Workforce and Total Employed Workforce, 2000 and 2008-10

	2000		2008-2010	
	Media & Advertising	Total Employed	Media & Advertising	Total Employed
New York City Residents	137,530	2,902,068	139,579	3,353,116
Non-New York City Residents*	54,464	827,407	55,575	927,618
Bronx	7%	13%	5%	14%
Kings	22%	29%	29%	30%
Manhattan	51%	24%	47%	23%
Queens	18%	28%	17%	27%
Staten Island	3%	6%	2%	6%
Male	47%	51%	48%	51%
Female	53%	49%	52%	49%
U.S.-Born	79%	57%	80%	54%
Foreign-Born	21%	43%	20%	46%
White	66%	42%	65%	37%
Black	13%	22%	12%	21%
Hispanic	11%	22%	12%	26%
Asian	7%	11%	9%	13%
Other	3%	4%	2%	2%
Age 18-34	53%	39%	51%	38%
35-44	24%	27%	25%	23%
45-54	15%	21%	13%	22%
55+	9%	10%	10%	17%
Less than high school or GED	4%	17%	2%	14%
High school or GED	10%	22%	7%	22%
Some college/Associate's degree	20%	25%	15%	24%
BA or More	66%	37%	76%	40%

SOURCE | 2000 Census and 2008-10 American Community Surveys public use microdata (PUMS).

*The remaining percentages that appear in the table are of people who both live *and* work in New York City.

Note: data is restricted to those 18+ in the non-institutionalized population who are employed in the civilian labor force.

Note: due to restrictions in the ACS data, this analysis includes NAICS 51913 (Internet publishing and broadcasting and web search portals) in 2008-10 data, which is included in NAICS 5151 (Radio and television broadcasting) in 2000.

How do media and advertising businesses view the college-educated younger workforce? How well are colleges and universities preparing candidates for the media and advertising industry?

The younger workforce. It may be that every generation is critical of the generations that succeed it. That said, industry employers reported that, on the positive side, many younger college graduates are well read, energetic, knowledgeable about many subjects, and curious. One industry expert said they are fun to work with.

On the critical side, the main complaints concerned:

- **Attitude**, or what many called the **entitlement mentality**. Several interviewees observed that “millennials” have a more entitled mindset when they enter the industry; however, one added that this mindset may be warranted given that their technical skills are in increasing demand.
- **A lack of professionalism**, which meant everything from using Facebook at work to being overly casual in demeanor and speech. One industry expert said that they are “not put together as an adult.”
- **Poor writing quality** or lack of basic grammar and punctuation knowledge. This was felt to be a major deficit by every industry expert interviewed.
- **Weak job search skills**. One industry said that there is “an appalling lack of preparation” of students with basic job search skills, such as résumés, interviewing skills, etc. Several mentioned that they discard many résumés for basic errors.

Preparation by colleges and universities. One industry expert commented that people at universities do not have expertise in media and advertising, that the industry is evolving quickly, and that professors have not kept up. There also appears to be a need for more people skilled in film production, especially digital and special effects, which is a growing market.

What would industry employers like to change about the way individuals are prepared for jobs at the post-secondary level?

Industry experts had a variety of suggestions. These included:

- Basic computer skills, including proficiency with Microsoft Office© applications and how to set up a blog
- A comfort level with math and business (mentioned by multiple industry experts)
- Public speaking experience
- Curiosity, a love of knowledge, and an ability to read critically
- Greater critical thinking skills
- Improving writing quality (mentioned by multiple industry experts). One person said that “no school can do enough” in the area of writing

One expert recommended that universities think about the individual in a holistic, not trade-oriented, way and that students need broader knowledge of the world.

Almost every expert said that **colleges and universities should be more involved in helping students with career planning, setting long-term goals, and job searches**. One thought that students should not be allowed to select a major without defining long-term goals or choosing a career.

One industry expert thought that universities should offer formal credited courses on career exploration/job search.

What kinds of relationships do media and advertising employers have with CUNY campuses? With other institutions of higher education? What types of relationships would they like to have?

A limited number of industry experts were interviewed for this research and most of the advertising and media experts were not involved in relationships with CUNY campuses, although many had employees who were CUNY graduates or interns who were CUNY students. The major exception to this is the close involvement of Steiner Studios with the new Brooklyn College Graduate School of Cinema, planned to open in the fall of 2013. The graduate school will be located at Steiner Studios and afford students the opportunity to work part-time while they are in school. Steiner Studios is also working with Carnegie Mellon University to bring its entertainment technology programs onsite at Steiner Studios.

The researchers are also aware that the new CUNY Graduate School of Journalism requires an internship and has connections within the publishing industry. One industry representative said that the company was approached by and is partnering with the Newhouse School at Syracuse University. The relationship involves the creation of fellowships that enable professors to spend the summer (three months) working in the industry to understand current developments so that they can better prepare their students. Several individuals said that business advisory councils are not a good vehicle for working with industry, that they do not accomplish much for students and are not informing the curriculum.

Another industry employer is interested in working with CUNY but said the University must “make it easy for me.” A third is willing to work with CUNY specifically on job search skills: résumé development, writing a cover letter, interviewing skills.

What are the implications of these findings for colleges and universities?

- Colleges and universities in general need to build deeper and more meaningful relationships with employers in this industry. This must go beyond industry advisory councils and could include anything from arranging internships for students to finding ways for faculty to become more current with the way the industry operates.
- Colleges and universities should consider how to offer more career advisement, job search skills education, and information about basic business etiquette. It appears that many candidates are rejected based on sub-standard résumés, lack of knowledge of the employer with which they are interviewing, and poor communication skills during the interview. It is often the case that the people with the best job-seeking skills are the ones who secure employment.
- Internships and pre-graduation work experience are highly desired by companies. CUNY and/or its campuses need to recognize the importance of work experiences for students, especially those that provide pathways to jobs in the industry.

CONCLUSION/RECOMMENDATIONS

While the focus of the Jobs Task Force was limited to five industry sectors and a few key questions, its findings have important implications for colleges and universities in New York City, including The City University of New York. In preparing students for a 21st-century workplace, institutions of higher education should be mindful of the global forces that affect businesses across industries—from economic crises to new technologies to consolidation and regulatory changes. The reality is that wide-scale trends have an impact on individual hiring decisions. Therefore, campus administrators, faculty, staff, and students should monitor and, as necessary, respond to these marketplace changes.

Additionally, the industry leaders interviewed for this report voiced a keen interest in working with higher education institutions in meaningful ways, in order to keep colleges and universities apprised of industry changes and needs and to offer specific feedback about skills in demand. All agreed that college curricula are the province of academic institutions. However, given the growing competition graduates face in gaining employment, industry input can be critical to universities' ability to prepare highly skilled, creative, and engaged workers ready to lead key industries in the coming decades.

Based on the findings of this report, the task force offers additional recommendations for consideration by The City University of New York:

- The industry experts interviewed for this report recommended strengthening links between industry and higher education. It is important to note that the study team did not conduct an inventory of current practices at CUNY or other institutions of higher education. It is likely that some individuals, departments, or colleges already implement the practices recommended in this report and that these practices could be replicated or built upon to increase CUNY's responsiveness to industry. In order to create an effective plan of action, CUNY leadership should undertake an inventory of current activities and identify national best practices.
- Although clearly many businesses do work closely with CUNY departments on the various campuses, several business leaders with whom we spoke conveyed a lack of knowledge about whom they would contact if they were interested in forging a deeper collaboration. The task force recommends that CUNY develop a framework for communicating with and understanding strategic industry sectors, such as a) creating a single, central point of contact for businesses seeking to interact with CUNY, and b) cross-campus discipline councils that more deeply interact with businesses in their respective fields.
- In addition, the task force recommends that the process of improving the alignment of academic programs to industry continue in three ways. First, the task force recommends monitoring of labor market data to inform program development and content. Second, the task force recommends conducting scans similar to those found in this report in other strategic sectors and scheduling revisions to the scan on a regular basis. Third, the task force recommends convening cross-campus faculty and administrative leadership to discuss the larger implications of this effort and identify ways in which this study can be used to inform program improvements.
- CUNY and other institutions of higher education in New York City should also conduct a scan of demonstrably effective college-based career guidance and job search skills training, particularly at large public universities. These findings also should be culled to craft specific recommendations for improving CUNY's programs in this regard. The University might consider utilizing groups like the Business Leadership Council and college alumni boards to increase networking possibilities across job and age cohorts, internship and summer employment opportunities, and job application tips.

- The frequency of technological change was cited by respondents as the most significant trend shaping the workforce now and into the future. Representatives from every industry spoke of the need for more software programmers and developers. The task force recommends that CUNY work closely with the IT industry to understand emerging workforce issues, encourage student interest in computer science, and graduate more computer science majors.
- Understanding the experience of recent graduates is essential in developing or refining efforts to prepare students for employment—particularly in an age of accountability and rising college costs. Information on post-graduate outcomes should be gathered and used to inform program planning, advising, curricular development, and job search assistance. Where did recent graduates find work? When? How did their career paths evolve? Campuses may find surveys or focus groups of recent graduates to be useful.
- CUNY is currently engaged in a “Pathways to Degree Completion” initiative to reform its general education requirements and streamline the transfer process across the University. The new common core structure is based on a set of clearly articulated learning outcomes. Many of these outcomes reflect feedback received by the task force regarding skills currently in demand of college graduates. Employers want to be assured that graduates have achieved a level of competency in data analysis, written communication, evaluation and synthesis of evidence, and other key skills. The findings of this task force could contribute to current University-wide dialogues about outcomes—i.e., what graduates should know—and reinforce the importance of determining proficiency not simply as a means of accumulating credit but as an essential requirement for professional success.

APPENDIX A: INTERVIEW PROTOCOL

CUNY JOBS TASK FORCE EMPLOYER EXPERT INTERVIEW GUIDE

Introduction

Thank you for agreeing to take the time to share your insight and expertise about key trends in your field and their implications for recruiting qualified staff with a college degree. CUNY Chancellor Matthew Goldstein convened the Jobs Task Force to answer the following key questions:

- 1) What current jobs requiring a college degree are difficult to fill?
- 2) What are the jobs and skills of the future that require a college degree?
- 3) How can CUNY and other institutions of higher education better prepare students for the labor market today and in the future?

The study will focus on the following sectors/fields: financial services and accounting, healthcare, higher education, information technology and media. The study will include interviews with Jobs Task Force members and other experts, analysis of labor market data and review of key industry publications. These activities will culminate with a report outlining findings and recommendations due for completion in early 2012.

Do you have any questions about the study or our role before we begin?

Industry Information

1. We have provided information on the key segments of your industry, the largest companies and key industry associations/unions. Is there anything missing from this picture?
2. What are the main drivers influencing business activity in your industry/field today?
3. What are the workforce implications of these industry drivers?
Prompts:
 - a. Implications for the size of the workforce
 - b. Implications for types of occupations
 - c. Implications for the ways people do their jobs
4. What are the emerging issues in your industry/field?
5. How do these impact workforce issues?
6. We have provided a list of the top occupations in your sector/field that require a college degree. Are there any occupations that you would add?
7. What are the qualifications for these occupations?
 - a. Degree
 - b. Major

Recruitment/Hiring

8. Is your industry having any difficulty finding qualified employees for any particular occupations?
9. Thinking forward to a time of economic recovery or expansion, what might be the recruitment/hiring/retention challenges?
10. When you are looking to hire new employees, do you work directly with any CUNY colleges or other universities?
How do you work with them?

Training/Education Issues

11. What is your view of the effectiveness of education and training programs to prepare new employees in the occupations we have been discussing?
 - a. In what ways are these employees well prepared?
 - b. What broad deficits, if any, exist in the educational and training background of these employees?
12. If you could change three things about the way colleges prepare the workforce, what would they be?

Conclusion

13. Do you have any additional thoughts about the workforce challenges of the future?
14. Is there anyone essential for us to speak with to better understand the workforce issues in your sector/field?

Thank you. We hope to be in touch with you as we continue our research activities. We will keep you apprised of our findings.

APPENDIX B: INDUSTRY EXPERTS INTERVIEWED¹³

Steve Anderman

Chief Operating Officer
Bronx Lebanon Hospital Center
September 27, 2011

Orlando Ashford

Chief Human Resources Officer and
Communications Officer on Diversity and Inclusion
Marsh & McLennan Companies
November 17, 2011

Frank Bisignano

Chief Administrative Officer and Head of Home Lending
JPMorgan Chase & Company
October 25, 2011

Susan Bolotin

Editor-in-Chief
Workman Publishing
December 28, 2011

Ted Brown, Ph.D.

Professor and Executive Officer,
PhD Program in Computer Science, CUNY Graduate Center
Executive Director, CUNY Institute for Software
Design and Development
November 29, 2011

Andy Brantley

President and CEO
College and University Professional Association
for Human Resources (CUPA-HR)
January 6, 2012

Andrew Brust

Founder and CEO
Blue Badge Insights
December 1, 2011

Catherine Casey

Senior Vice President for Human Resources
New York University
February 24, 2012

John Donnelly

Director of Human Resources
JPMorgan Chase & Company
January 6, 2012

John N. Eddy

Vice President
Steiner Studios
February 13, 2012

John Elliott

Vice President and Dean
Baruch College, Zicklin School of Business
December 8, 2011

Roger Ferguson

President and Chief Executive Officer
TIAA-CREF
October 17, 2011

Julie B. Goldberg

Chief Operating Officer
Rubenstein Associates, Inc.
January 31, 2012

Maria Gotsch

President and CEO
New York City Investment Fund
October 5, 2011

Matthew Harrington

President and CEO
Edelman U.S.
December 8, 2011

Tim Johnson

Senior Vice President
Greater New York Hospital Association
November 21, 2011

Yosette Jones-Johnson

Assistant Vice President for Faculty and Staff Relations
CUNY Graduate Center
February 1, 2012

Deanna Laird

North America University Recruitment Leader
IBM
January 10, 2012

Ian Laird

Director, Strategy, Programs and Sales
Empire Blue Cross/Blue Shield
October 20, 2011

¹³ Additional individuals were interviewed but declined permission to list their names in the report.

Kevin Laitman

Vice President
Grant-Peters Associates
December 5, 2011

Christine Larsen

Executive Vice President
JPMorgan Chase & Company
January 16, 2012

Elizabeth S. Lasdon

Executive Director of Human Resources
Rubenstein Associates, Inc.
January 31, 2012

Brendan Molloy

Director of University Relations and Recruiting
KPMG
December 20, 2011

Doug Rohde

Software Engineer
Google
December 19, 2011

Paul Rossi

Managing Director and Executive Vice President
The Economist Group
December 21, 2011

Howard Rubenstein

Founder and President
Rubenstein Associates, Inc.
January 31, 2012

Carol Schuster

Former Worldwide Managing Director, Global
Brand Management
Ogilvy & Mather
October 14, 2011

Trish Shortell

Senior Vice President, Executive Recruitment
& Talent Management
WPP
December 7, 2011

Regan Solmo

Managing Editor
W Magazine
December 16, 2011

Bill Stackhouse, Ph.D

Director of Workforce Development
Community Health Care Association of New York State
November 29, 2011

Douglas C. Steiner

Chairman
Steiner Studios
February 13, 2012

Seymour Sternberg

Retired Chairman and CEO
New York Life Insurance Company
December 1, 2011

Shawna Trager

Director of Health Workforce and Grants
Greater New York Hospital Association
November 21, 2011

Jenny Tsang-Quinn

Executive Director
New York Alliance for Careers in Health Care
December 12, 2011

Sandi Vito

Director
1199SEIU Training & Upgrading Fund
December 7, 2011

Mark Wagar

President and CEO
Empire Blue Cross/Blue Shield
October 20, 2011

Robert Walsh

Commissioner
New York City Department of Small Business Services
November 11, 2011

Gloriana Waters

Vice Chancellor for Human Resources Management
City University of New York
December 9, 2011

