



New York City's Growing High-Tech Industry

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Highlights

- Nearly 7,000 high-tech companies in New York City provided more than 100,000 jobs during the third quarter of 2013, approaching the industry's record level of employment before the dot-com crash of 2000-2001.
- Job growth in the high-tech industry (33 percent) has been four times faster than the rate in the rest of the City's economy (8 percent) during the current economic recovery.
- The New York State Common Retirement Fund invested \$122.8 million in tech-related companies in New York City between 2007 and 2013, earning solid returns for the Fund while helping to create more than 1,300 new jobs.
- The high-tech industry in New York City is building synergies with other industries in the City's economy, helping to stimulate job growth. For example, job growth in advertising and public relations has grown by 25 percent in recent years.
- The average annual salary for workers in the high-tech industry was \$118,600 in 2012, compared to an average of \$79,500 for all other jobs in New York City (\$65,400 excluding the securities industry).
- By some estimates, there are as many as 150,000 technology jobs in nontechnology industries, such as finance, health care and retail.
- Clusters of high-tech companies have spread beyond Midtown South to Lower Manhattan, Downtown Brooklyn, and Long Island City.
- New York City is developing initiatives to promote the growth of the high-tech industry, including the Applied Sciences NYC initiative, which aims to expand the high-tech workforce.
- In 2013, venture capital firms invested \$1.3 billion in the high-tech industry in the New York City metropolitan area.

Technology is playing a growing role in personal and business activities. While there is a broad range of firms that are engaged in technology-related activities, at the heart of this trend are high-tech companies. These companies, which range in size from small start-ups to large multinational firms, are creating new products and new technologies, which in turn are being integrated into other industries, such as media, retail and finance.

In New York City, these high-tech companies have been flourishing, creating a source of well-paying jobs at a time when employment in many other traditionally well-paying industries has not been growing as quickly.

Like other industries, the high-tech industry employs workers in a wide range of job titles, including non-tech-related positions such as accountants, administrative assistants, managers and sales representatives. The growth of the high-tech industry offers employment opportunities to workers with a broad range of skills, not just those with technical backgrounds.

The high-tech industry's young, creative workforce is attracted to New York City because of its culture, diversity, public transportation system and the opportunities it offers to live and work in the same community. World-class academic institutions and creative industries also draw people to New York City, providing new ideas and talent for the industry.

Another benefit of locating in New York City is access to many sources of capital. The New York State Common Retirement Fund is taking an active role, making profitable investments in New York City's technology industry that have helped companies expand and create new jobs.

The high-tech industry is creating well-paying jobs and diversifying the local economy, which is helping to reduce New York City's economic dependence on Wall Street. With the City's many competitive advantages, combined with continued support from the public and private sectors, the high-tech industry is well-positioned for future growth.

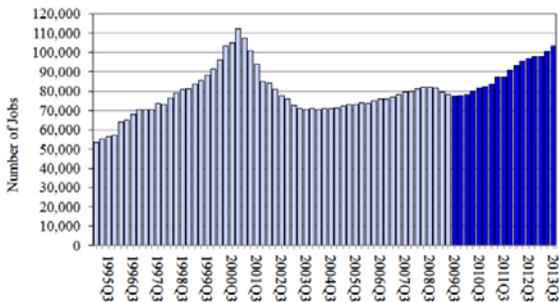
The High-Tech Industry

There is no universally accepted definition of the high-technology industry. For this report, the Office of the State Comptroller (OSC) has focused on a core of businesses that design, manufacture, develop or maintain new technologies related to computer systems and data processing centers, software publishing, computer and communications equipment, and the Internet.¹

The number of high-tech companies in New York City grew rapidly during the 1990s, but then fell sharply after the dot-com bubble burst in 2001 and through the recession that followed. The number of high-tech companies grew slowly over subsequent years as the industry consolidated and matured, and recently there has been a noticeable uptick in growth.

By the third quarter of 2013, New York City was home to 6,970 high-tech firms, which is near the record level before the dot-com crash. Employment in the high-tech industry totaled 103,100 jobs during that quarter, or 25,600 more jobs than four years earlier when the economic recovery was beginning (see Figure 1). The high-tech industry was one of the fastest growing industries during this period, with a rate of growth (33 percent) that was four times faster than the rate of job growth in the rest of the City's economy (8 percent).

Figure 1
Jobs in New York City's High-Tech Industry



Note: Shaded regions from 2009Q3 shows growth over the economic recovery.
Sources: U.S. Bureau of Labor Statistics; OSC analysis

More than half of all the jobs in the City's high-tech industry (56,000 jobs) were located in businesses primarily engaged in designing, managing and operating computer systems. This segment of the industry has grown by 35 percent (adding 14,400 jobs) during the economic recovery.

¹ OSC's definition of the high-tech industry includes the following North American Industry Classification System (NAICS) codes: 334, 517, 518, 5112, 5415 and 51913.

Employment at telecommunications firms, which accounted for one-fifth of the industry's jobs, has been slowly declining as technology has changed the way these companies deliver services. Firms primarily engaged in digital media (such as Internet publishing and broadcasting), Internet searches and other web-related services, accounted for 15 percent of the industry's jobs. This segment of the industry has more than tripled during the recovery (adding 10,200 jobs). While software publishing accounted for only 2 percent of the industry's jobs, it had the fastest rate of growth (58 percent) during the recovery.

The growth of the high-tech industry offers employment opportunities for workers with different levels of education, not just those with technical backgrounds, because not every job at a high-tech firm is a high-tech occupation. As is the case in other industries, high-tech firms employ workers with other skills, such as accountants and sales representatives. A report by HR&A Advisors (commissioned by the Association for a Better New York, Citi, Google and NY Tech Meetup) found that 60 percent of the jobs at tech firms do not require a bachelor's degree.

Likewise, since computers and new technologies are everywhere, workers in high-tech occupations can be found in virtually every industry. For example, the finance industry employs programmers and other high-tech workers to create systems to trade stocks and provide online services. HR&A Advisors and the Partnership for New York City have estimated that there are up to 150,000 technology jobs in non-tech firms in New York City.

A report prepared for the 2013 Bloomberg Technology Summit found that advertising, publishing, media, design and entertainment companies have benefited from new digital and mobile technologies. OSC found, for example, that employment growth at companies within the advertising and public relations industry has paralleled the growth in high-tech, increasing by 25 percent during the recovery. The high-tech industry has benefited in turn from the creative talent and changing business models at these firms.

While this report focuses on the high-tech industry, others have focused on broader technology-related industries in the City, including online retail, traditional media, broadcasting and health care. According to these estimates, the number of jobs in the broader technology sector ranges from 141,000 to 262,000.

Wages and Salaries

Total wages paid by firms in the City's high-tech industry rose by 38 percent since 2009 to reach \$11.4 billion in 2012, the highest level on record. This represented 3.8 percent of all wages paid in New York City.

The average annual salary for workers in the high-tech industry was \$118,600 in 2012, compared to \$79,500 for all other jobs in the City's economy (\$65,400 excluding the securities industry). Average annual salaries at high-tech companies have also grown faster (13 percent) than the salaries in the rest of the City's economy (9 percent) between 2009 and 2012. Digital media firms (i.e., Internet publishing and web search portals) had the highest average salaries (\$154,400 in 2012). These firms also had the highest salary growth, increasing by 49 percent between 2009 and 2012.

As mentioned earlier, high-tech jobs can be found not just in the high-tech industry but in other industries as well, such as finance. Figure 2 shows the average salaries of a sample of high-tech occupations located in the New York City metropolitan area.

Figure 2
Average Annual Wages for High-Tech Occupations
in the New York Metropolitan Statistical Area

Occupation	Average Annual Wage
Computer User Support Specialists	\$59,640
Computer Network Support Specialists	77,950
Web Developers	80,750
Computer Programmers	91,010
Network and Computer Systems Administrators	91,470
Database Administrators	93,400
Computer and Mathematical Occupations	95,080
Computer Systems Analysts	98,900
Computer and Information Research Scientists	99,800
Computer Hardware Engineers	100,030
Software Developers (Applications)	108,760
Software Developers (Systems Software)	110,360
Computer Network Architects	117,890
Information Security Analysts	120,460
Computer and Information Systems Managers	164,470

Note: Occupational Employment Statistics Survey for May 2013.

Sources: U.S. Bureau of Labor Statistics; OSC analysis

Nurturing the Industry's Growth

Establishing a talented pool of science, technology, engineering and math (STEM) workers is often regarded as the number one challenge to the future of New York City's high-tech industry. By some accounts, the City has more STEM job openings than qualified candidates to fill them. In recent years the City, the State and the private sector have undertaken initiatives to support the emerging high-tech industry by nurturing a skilled workforce for these jobs.

The Applied Sciences NYC initiative is building and expanding applied sciences and engineering campuses. The centerpiece of the initiative is Cornell NYC Tech, an engineering graduate school (affiliated with Cornell University and Technion-Israel Institute of Technology) that will be located on Roosevelt Island.

Three other prestigious institutions have opened or will open programs under the initiative. The Center for Urban Science and Progress (CUSP), led by New York University and the NYU Polytechnic School of Engineering, has opened in Downtown Brooklyn; Columbia University has created the Institute for Data Sciences and Engineering in Morningside Heights; and Carnegie Mellon University will construct an Integrative Media Program at the Brooklyn Navy Yard.

Existing STEM programs at academic institutions throughout the City also help support the high-tech industry. These include engineering and/or computer science programs at the State University of New York, the City University of New York (CUNY), and 16 private institutions. The Mayor intends to build on these initiatives by expanding STEM programs in the City's public schools and at CUNY; expanding access to high-speed Internet; and providing incentives for high growth industries.

The continued influx of skilled immigrants also helps expand the talent base sought by high-tech firms. In OSC's November 2013 report, *The Role of Immigrants in the New York City Economy*, immigrants were found to be well-represented in many higher-paying occupations. For example, immigrants hold more than one-third of the jobs in computer systems design, software publishing, and data processing and hosting and related services.

Technology Clusters

In Manhattan, Internet and digital media firms have clustered in Midtown South, notably Chelsea, the Flatiron District, SoHo and Union Square (collectively known as Silicon Alley). The area was initially popular with technology companies (both high-tech companies and those involved in broader technology-related activities) in part because of the abundance of large loft spaces, which were easily converted into modern work environments.

Over the past decade, large high-tech companies such as Google and Facebook have secured significant amounts of office space in Midtown South. As average asking rents have risen in this area, firms have begun to locate in other parts of the City where space is more affordable.

Throughout New York City, clusters of high-tech and creative firms have been forming in Lower Manhattan, Downtown Brooklyn and Long Island City (see Figure 3). These areas are rich in services and amenities important to high-tech businesses and workers (e.g., technology incubators, co-working spaces, public transportation, higher education institutions, more affordable rent and broadband connectivity).

Figure 3
Tech Hotspots in New York City



Lower Manhattan, traditionally home to financial firms and government offices, has become attractive to high-tech and creative firms. With lower rents than other neighborhoods in the borough, Lower Manhattan is easily accessible and increasingly residential. According to Launch^{LM} (an organization devoted to advancing the downtown technology community), Lower Manhattan is home to more than 600 tech-related companies.

Over the last decade, a growing number of technology-related firms have located in Downtown Brooklyn, Dumbo and the Brooklyn Navy Yard, an area marketed as the Brooklyn Tech Triangle. The area, which is home to more than 500 tech and creative firms, has attracted young, creative professionals and has become increasingly popular as a center of a new urban culture.

Historically an industrial area on the western Queens waterfront, Long Island City (LIC) has large spaces and lower rents than Manhattan, making it attractive for start-ups and technology manufacturing companies. LIC is easily accessible to both midtown Manhattan and Roosevelt Island, which by 2017 will be home to the Cornell NYC Tech campus.

Venture Capital Investments

Raising sufficient capital has always been a challenge for new companies. New technologies (such as cloud services, open-source software, and inexpensive mobile applications and platforms) have made starting a new business less expensive, but access to funding for the early stages of development remains critical. In New York City, with its proximity to Wall Street and a growing venture capital community, technology firms have access to diverse funding opportunities.

In 2013, venture capital firms invested \$1.3 billion in 222 high-tech companies in the New York City metropolitan region, according to the MoneyTree Report (about one-third of venture capital funding in the region).² This ranked third among the nation's regions, following Silicon Valley and New England. Since the end of the last recession, high-tech venture capital investment in the New York City metropolitan region has doubled, growing at the same rate as in Silicon Valley and more than twice the rate of growth in New England.

The In-State Private Equity Program of the New York State Common Retirement Fund (CRF) is also making investments through venture capital firms, providing much-needed early-stage funding to New York State companies.³ The program is designed to generate a market rate of return consistent with the risks associated with private equity, and has contributed to economic growth in the State. Between 2007 and 2012, the program had a 20 percent internal rate of return on fully exited investments.

A large portion of the In-State Program's investments in New York City have been in tech-related companies. The CRF invests through venture capital partners such as Contour Venture Partners, DFJ Gotham, High Peaks Venture Partners, Milestone Venture Partners and Softbank Capital Technology NY. Between 2007 and 2013, the CRF invested in 139 companies in the City, of which 133 were tech-related. These investments, which totaled \$122.8 million, have helped the companies expand. Since the initial investment, employment at these companies had more than doubled (to 2,167 jobs) as of the first quarter of 2013.

² Produced by PricewaterhouseCoopers and the National Venture Capital Association, with Thomson Reuters' data.

³ The State Comptroller is the sole trustee and manager of the CRF, which as of December 31, 2013, held assets in trust of \$173.2 billion for more than 1 million members.