

**The Rise of Silicon Alley –  
Reasons for Success and Challenges**

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## **I. Overview**

“Silicon Alley” refers to the high tech industries within the New York City metropolitan region, including new media, telecommunications, software development, game design, fintech (financial technology) and other fields. The name “Silicon Alley” is derived from “Silicon Valley”, its predecessor originating in the San Francisco Bay area.

The “Silicon Alley” area is only 28% the size of Silicon Valley, but it is experiencing rapid growth in many different industries. In 2016, venture capital investment in New York City’s startups reached \$7.3 billion, almost \$4.7 billion more than the previous year. Furthermore, from 2007 to 2014, employment in tech grew 57 percent, compared to that of Silicon Valley, which grew only 36 percent. Even though New York City is a relatively small technology hub compared to Silicon Valley, Austin or Seattle, its rapid job growth demonstrates that it will be a leading tech center in the future.

## **II. Factors contributing to Silicon Alley’s success**

There are several factors that contribute to **New York City’s unique success** as a global city and emerging technology hub:

### **1. Prestigious research universities**

New York City is home to many top class universities such as Columbia University, New York University and Cornell University that provide collaboration between faculty and existing industries, talented students and groundbreaking tech research. Other prestigious universities such as Princeton University and Yale University also lie within the New York City region. Many universities are now focused on developing their research in technology. For example, Cornell University is building a new tech-focused graduate school that has strong ties to Google and allows student entrepreneurs to collaborate with faculty easily.

### **2. High population and quality of human capital**

New York City is one of the leading cities in the world. Because of its prominent financial and media industries and cultural reputation, it attracts talent and human capital from all over the world. Currently, its population is around 8.5 million people, with the New York Metropolitan Area at around 16 million people. New York City is also one of the most diverse cities in the world, attracting many immigrants who provide the dynamism and entrepreneurial spirit necessary for economic development.

In terms of talent, approximately 34.5 percent of adults in New York City over the age of 25 have a bachelor’s degree or higher, which places it at 10th in the nation. According to the Global Cities Index report published by A.T. Kearney in 2014, New York City is the

world's most globally engaged city according to criteria based on business activity, human capital and information exchange. Another report, 'The Hotspots 2025' published by The Economist, ranked New York City as the world's most competitive city at least until 2025. The competitiveness and global influence of New York City is a reflection of the concentration of talent in the city.

### **3. Diversity and prominence of existing industries**

New York City is famous for its strength in finance, new media and fashion, but it is also developed in a wide variety of industries in a way that Silicon Valley is not since it is one of the biggest cities in the world. There are more Fortune 500 companies headquartered in New York State than in any other state in the country, most of which are located in the city. Such companies include Pfizer, Verizon Communications, PepsiCo and IBM. Thus, the interdisciplinary backgrounds and skills of people who can potentially work in technology give New York City a competitive advantage in terms of how people approach problems.

Furthermore, the strength of existing industries inspires entrepreneurs to innovate within such industries, unlike Silicon Valley. For example, Gawker, BuzzFeed and Upworthy are successful media startups that developed and flourished because they built upon the city's existing media industry in the form of major companies like NBC Universal and the New York Times. This symbiosis allows startups in New York City's legacy industries to grow at a faster pace than other hubs because they have the backing of larger and more prominent companies.

Because the new era of technological innovation will see technology integrate with traditional industries such as finance, retail and media, New York City's strength in both areas gives it an advantage over other cities in the world, even Silicon Valley.

### **4. Strong financial sector**

New York City is one of the world's leading financial centers, with a deep concentration of talent and wealth. The financial services industry is responsible for creating almost one million jobs for the city and contributes approximately 20 percent of New York City's gross domestic product. Many of the world's top banks, such as JP Morgan Chase, Citigroup, Goldman Sachs Group and Morgan Stanley, are headquartered in New York City. Two of the world's largest stock exchanges, the New York Stock Exchange and NASDAQ, are also in New York City.

The strong financial sector in New York City is beneficial for technology firms for many reasons. Because of their size and wealth, banks serve as important funding sources for tech companies, providing the investment often carried out by venture capital firms. Banks also may have financial expertise that tech companies need to grow and scale their business ideas.

## **5. Extensive public infrastructure**

New York City has a complex and extensive public transportation system that covers the entire city. It has the largest subway system in the world in terms of track mileage and the fourth-largest in terms of annual ridership. Its commuter rail system that serves New York State, New Jersey and Connecticut is the largest in the country, serving almost 150 million people every year. New York City's public bus network is also extensive, serving approximately 2.5 million people every day. The city is also served by several major airports, such as John F. Kennedy International Airport, Newark Liberty International Airport and LaGuardia Airport.

A complex and developed infrastructure boosts economic growth because it connects people with the resources they need such as housing, education, health services and employment opportunities. It also attracts talent from overseas because they see the strong infrastructure as an indicator of a prosperous city.

## **III. Unique technology industries in New York City**

New York City's technology landscape is unique in terms of its strengths in financial technology, new media, ad technology and commerce. Although Hong Kong's technology sector is not fully developed, it can learn from New York City because it shares many similarities with it in terms of its financial strength, density and dynamism.

### **1. Financial technology industry**

Broadly speaking, financial technology or fintech is technology that disrupts traditional financial services such as mobile payments, money transfers, loans and investment. At the moment, New York City is the fastest growing fintech region in the United States, as it serves as home to almost 200 fintech startups. Furthermore, from 2010 to 2015, almost \$4.4 billion was invested into fintech companies. In the first quarter of 2016, New York City overtook Silicon Valley in terms of fintech financing with \$690 million compared to \$511 million.<sup>1</sup>

Some of New York City's prominent fintech companies include:

- Kickstarter (A crowdfunding platform)
- LearnVest (A customized personal finance platform)
- Betterment (An automated investment advising platform)
- OnDeck (A platform for small business financing)

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<sup>1</sup> Hayden Pirkle, "The State of Fintech in Silicon Alley," *Quovo*, published on 27<sup>th</sup> April 2017. <https://www.quovo.com/fintech-blog/the-ecosystem/the-state-of-fintech-in-silicon-alley/>

New York City's fintech ecosystem is well developed due to its existing financial market and workforce, with startup accelerators like Accenture's Fintech Innovation Lab and Barclays Accelerator that help companies to develop and grow, and venture capital firms like Bain Capital Ventures and IA Ventures that provide funding.

There is also much collaboration between traditional financial institutions and fintech startups. In 2015, 83% of total investment in fintech startups went to firms that collaborated, rather than competed with existing institutions. This trend demonstrates that the fintech industry in New York City will grow more quickly, and thus leading to greater investment and market reach.

## **2. Artificial intelligence technology industry**

Artificial intelligence (AI) is a new, revolutionary technology that has tremendous potential to change the way humans live and work. New York City is developing quickly as a hub for AI technology and Hong Kong has an opportunity to develop similarly, given that it can collaborate with Shenzhen, a booming center for AI technology in Asia.

New York's AI community is successful because it has a multitude of global, Fortune 500 companies that can benefit from the disruption brought about by AI. Industries that thrive in New York City such as new media, finance and retail will progress quickly by adopting AI. Thus, such companies are willing to invest in AI development and pay for AI services.

It is also successful because the city has many prestigious universities who will perform cutting-edge AI research and provide opportunities for collaboration between schools and startups. AI companies will also benefit from the talent available at these schools. For example, the AI NexusLab is a AI startup accelerator formed through the collaboration between New York University and ff Venture Capital.

Some of New York City's prominent AI companies include:

- X.ai (An AI personal assistant)
- Qloo (AI platform for travel/cultural recommendations)
- Clarifai (Uses AI to teach computers to see differences in complex objects)
- Behold.ai (AI medical platform that helps healthcare providers process billings, claims and images)<sup>2</sup>

## **3. Urban technology industry**

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<sup>2</sup> Sam DeBrule, "A Glimpse of New York's Artificial Intelligence Ecosystem," *Machine Learnings*, published on 2<sup>nd</sup> April 2017.

<https://machinelearnings.co/a-glimpse-of-new-yorks-artificial-intelligence-ecosystem-ee950f11eb61>

Due to the rise of urbanization and new technologies such as autonomous cars, Internet of Things and smart sensors, cities around the world are looking for ways to weave them into their fabric in order to increase efficiency, sustainability and quality of life. New York City is developing as a hub for urban technology and Hong Kong, as one of the world's biggest and most densely populated cities, has an opportunity to develop similarly.

New York City was named the "Best Smart City" during the 2016 Smart City Expo Worldwide. The local government and city agencies have worked extensively to make New York City one of the world's leading "smart" cities. Some of their initiatives include:

- LinkNYC (The world's largest municipal Wi-Fi network)
- Urban Tech NYC (An accelerator program for startups targeting urban challenges)
- Marketplace.nyc (A tool for the city government to identify and purchase solutions for urban challenges)
- Investment in smart technologies such as gunshot detection sensors and smart vehicles

Aside from government initiatives, many companies in New York City are involved in advancing urban technology. Some of the prominent firms include:

- SideWalk Labs (Google-linked company that develops digital technology in urban areas)
- Dreamit Urban Tech (Accelerator to scale startups targeting the built environment)
- Gehl Institute (Creates public spaces to boost economic opportunity)
- Intersection (Creates public services like free Wi-Fi and calling)

#### **IV. Role of private sector and public-private partnerships**

The private sector plays an equally important role as the public sector in terms of driving economic and urban development. The private sector generally serves several different functions including:

- Job creation and employment
- Creation of technology, ideas, products and innovation
- Financing and investment for infrastructural and public projects
- Influencing policy decisions
- Driving economic growth

The private sector, although successful on its own, can more effectively improve the wellbeing of people living in the city by cooperating with the public sector. Thus, governments can utilize public-private partnerships to fuel urban growth and development.

Public-private partnerships are a long-term contract between government and private-sector companies to fund, create and operate large infrastructural projects. These partnerships allow government agencies to improve public goods by utilizing the innovation that is created by the private sector partner. Usually, the private sector partner provides funds, assists or facilitates the implementation process, or serves as an intermediary between the government and a third party.

According to a report by Freedman Consulting, LLC with support from Bloomberg Philanthropies, New York City uses public-private partnerships successfully in five different ways<sup>3</sup>:

## **1. Providing services**

One way that public-private partnerships work is providing a new service that satisfies a public need, often when government resources are limited.

MillionTreesNYC was a 2007 initiative to plant one million trees in New York City by 2017. It was started by the New York City Department of Parks & Recreation and a non-profit organization called the New York Restoration Project.

The private partners, which included corporations like Toyota, BNP Paribas and ConEdison, were significant in providing funds, identifying planting spaces that were not available to city agencies, and helping the government collaborate with environmental groups.

## **2. Addressing systemic issues**

The second way that public-private partnerships work is addressing a systemic challenge through the wider scope made available by collaboration of different sectors.

Applied Sciences NYC was an initiative that aimed to develop the city's scientific, technological and engineering capital in order to make New York City a global tech hub. The initiative, spearheaded by the New York City Economic Development Corporation, called for technical and educational institutions to submit a STEM-based proposal that would help the city's technological development. The winner was a joint proposal from Cornell University and Technion-Israel Institute of Technology to build a tech-based campus on Roosevelt Island.

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<sup>3</sup> "The Collaborative City" *Freedman Consulting, LLC* (with support from Bloomberg Philanthropies), published in July 2015.

[https://data.bloomberglp.com/dotorg/sites/2/2015/07/The\\_Collaborative\\_City.pdf](https://data.bloomberglp.com/dotorg/sites/2/2015/07/The_Collaborative_City.pdf)

The private partners were instrumental in developing the educational solution for the government-led competition. The advisory committee for the competition was also made up of leaders from the business sector. Furthermore, private funding was an important part of the process with investment coming from IBM, Xerox and Microsoft among others.

### **3. Building platforms**

The third way that public-private partnerships work is providing a platform for citizens to engage with solving problems in the city.

Change by Us NYC was an initiative launched by the media firm Local Projects and the non-profit CEOs for Cities that aimed to provide citizens with the opportunity to share their ideas on how to improve the city and receive financial or logistical help from city agencies or interest groups.

The private partners were primarily important in providing funding, as much of the private support came from the Rockefeller Foundation, the Knight Foundation and the Case Foundation.

### **4. Innovating by experimenting**

The fourth way that public-private partnerships work is testing an innovative solution to a problem.

The Center for Economic Opportunity was a government office dedicated to identifying and implementing innovative programs to reduce poverty. Over 50 programs were developed, implemented and tested through the office. One of the most famous ones was Opportunity NYC, a conditional cash transfer program that provided cash incentives for achieving certain goals in education, health and employment.

The private partners, including companies, institutes and universities, were instrumental in providing private funding and support, as well as implementation and analysis of the projects being tested.

### **5. Responding with agility**

The fifth way that public-private partnerships work is responding to certain challenges using a flexible and agile approach.

The National Salt Reduction Initiative was created in 2008 to address the problem of sodium overconsumption, which contributed to many health threats for the American



public. The program, spearheaded by the Department of Health and Mental Hygiene, sought to reduce national sodium consumption by 20 percent by 2014.

The private partners played an important role in advocating for lower sodium or collaborating with industry stakeholders to create and follow reduction targets. Private organizations included the American Heart Association and the National Kidney Foundation, as well as industry leaders like Starbucks Coffee Company, Heinz and Kraft, which adhered to these targets.

## **V. Challenges faced by New York City**

As with all cities, New York City faces many challenges ranging from poverty and gentrification to public education and environmental sustainability. Hong Kong also faces similar issues and it can learn from some of the policies initiated in New York if applicable.

The plan for New York City's development is OneNYC, a plan spearheaded by New York Mayor Bill de Blasio. All of the social issues are taken from the 2017 OneNYC report<sup>4</sup>:

### **1. Balanced economic development and jobs**

New York City has one of the world's largest and strongest economies. At the moment, it has the opportunity to continue expanding and diversifying its economy, specifically into innovation industries like advanced manufacturing, e-commerce, biotech and design. As New York is a global capital for innovation and high-growth industries, Hong Kong can learn from New York City in terms of expanding its economy into said industries as well.

At the same time, the city's growth is not equally distributed and many people do not have the skills nor opportunities to benefit from the city's development. Furthermore, stagnant wages that resulted from the 2008 economic recession have not kept up with rising living costs in the city. Thus, income inequality and poverty is increasing. This situation is similar to that of Hong Kong, as people struggle with poverty and immense income inequality as well.

With regard to workforce development, New York City has several objectives, according to the OneNYC initiative:

- Train citizens in high-growth industries (health care, technology, industrial/manufacturing, construction, retail, food service) to create an inclusive workforce
  - Create training programs for people not ready for college, training or career-track jobs

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<sup>4</sup> "One New York The Plan for a Strong and Just City," *The City of New York*  
<http://www.nyc.gov/html/onenyc/downloads/pdf/publications/OneNYC.pdf>

- Make employment easier for people with a criminal history
- Create a set of common metrics for workforce programs
- Leverage OneNYC investments to train and employ New York citizens of all skill levels
  - Encourage targeted hiring programs, that allow employers who hire local qualified workers, to receive tax credits
  - Create and provide training for jobs in green infrastructure
  - Expand training and employment opportunities for underrepresented New York citizens in construction
- Ensure all students have access to education that builds 21<sup>st</sup> century skills
  - Expand access to computer science and technology education in New York City public schools
  - Strengthen and expand Career and Technical Education programs, that prepare students for post-secondary degree programs, apprenticeships or entry-level work
  - Create bilingual learning environments for New York City students

## **2. Culture**

New York City is known as one of the cultural capitals of the world, attracting over 56 million tourists from all over the world every year to see its museums, Broadway shows, art galleries, theaters etc. However, many communities in New York City lack public cultural and civic events that enhance the quality of life in neighborhoods.

In the same way, many of Hong Kong's areas also lack cultural development despite it being one of Asia's leading cities. The value of artistic expression is limited to more affluent areas, while the society, as a whole, does not place a priority on the arts.

New York City has several objectives to address cultural expression in all areas of the city:

- Ensure well-used, high-quality cultural facilities and programming in all neighborhoods
- Provide funding and capacity-building support to local cultural organizations to create public art and programming in underserved areas
- Facilitate cultural partnerships for public agencies
- Increase use of parks and public spaces for cultural, educational and civic engagement programs for the public
- Streamline the permit process to increase access to public spaces for community events

## **3. Housing affordability**

New York City is widely known as one of the most expensive places to live in the world. According to the Worldwide Cost of Living survey released by the Economist Intelligence Unit in 2017, New York City ranked #9 in the world.

In terms of housing, New York City ranked #3 in a 2017 list of most expensive cities to rent a 2-bedroom apartment with a price of \$2,909. A Streeteasy data analysis of housing found that a typical New York household would need to spend at least 65 percent of its total annual income on rent, approximately 35 percent higher than the recommended 30 percent. According to a New York City Housing and Vacancy Survey in 2014, 56 percent of renters are rent burdened, meaning they pay more than a third of their income for housing.

Why is housing in New York City is so expensive?

- The demand for housing is much higher than the supply of housing, thus raising the price of housing
- The benefits of living in New York City (world-class bars, restaurants, entertainment, shops) is included in the price of housing
- Tight zoning restrictions prevent developers from creating a higher supply of housing
- Rent control rules may prevent developers from constructing new homes because their profits are limited, thus raising the prices that the rules intended to control
- Property taxes on rental apartments are very high
- Construction costs are very high due to high wages for workers, stringent rules for inspections, lack of storage space etc.<sup>5</sup>

What are the consequences?

- People can become homeless because they cannot afford to pay rent. There are approximately 60,000 homeless people in New York City, many of whom are forced to sleep in homeless shelters or on the streets.
- Poverty increases because people lack affordable housing
- A lack of housing can lead people to become emotionally distressed, which affects their their physical health and productivity at work, which subsequently affects company performance and economic growth
- Without housing, people become more frustrated with their circumstances and the government's inaction, which may lead to social unrest if not properly addressed

What are some of the government's objectives, according to OneNYC?

- Create and preserve 200,000 units of affordable housing over the next ten years and support construction of 160,000 private units of affordable housing
  - Maximize use of city-owned land for new housing

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<sup>5</sup> Josh Barro, "DEAR NEW YORKERS: Here's Why Your Rent Is So Ridiculously High," *Business Insider*, published on 9<sup>th</sup> July 2013 6:59PM.

<http://www.businessinsider.com/the-8-reasons-why-new-york-rents-are-so-ridiculously-high-2013-7>

- Conduct collaborative neighborhood planning to support new mixed-income housing creation
- Create Mandatory Inclusionary Housing Program (permanently affordable housing for households at a range of income levels)
- Expand opportunities for minority- and women-owned businesses
- Find and develop potential major sites for housing development
- Expand housing and related services for city's most vulnerable populations
  - Strengthen community-based homelessness prevention systems
  - Create a more streamlined process for intake, assessment and rehousing to end veteran homelessness
  - Expand rental assistance and aftercare to support individuals transitioning from shelters to permanent housing

#### **4. Environmental problems /pollution**

Climate change is a threat to many major cities around the world, especially ones that are primarily built on islands such as New York City and Hong Kong. Some of the major issues include air quality and waste management.

In terms of air quality, air pollution remains to be a major problem in New York City. Every year, there are more than 2,000 deaths and 6,000 hospital visits due to air pollution in the city. Furthermore, impoverished communities are more at risk for pollution-related health problems. By 2030, the city aims to reduce its pollution by 20 percent for particulate matter levels and 50 percent for sulfur dioxide levels.

What is the government's objectives, according to OneNYC?

- Enforce the updated DEP Air Pollution Control Code (controls emissions from unregulated sources like boilers, food trucks)
- Cut emissions from mobile sources
  - City fleet (replace or retrofit diesel vehicles, increase more electric vehicles)
  - Private truck fleets (offer rebates to trucks for upgrades to cleaner vehicles or fuels)
  - Idle vehicles (enforce existing laws against vehicle idling)
  - Toll crossings (Expand use of gateless tolling)

In terms of waste management, the amount of waste that New York City citizens is becoming a major problem. The average citizen has a waste footprint of almost 25 pounds of waste in total per week, which totals to more than six million tons of waste per year in the city. The city is aiming to not send any waste to landfills by 2030.

What is the government's objectives, according to OneNYC?

- Expand New York City organics program to all New York residents by 2018 (increase curbside collection and drop-off sites for organic waste)
  - Develop additional sorting and processing capacity for organics

- Process 250 tons of food waste per day at WWTP (Wastewater Treatment Plant) to produce energy and cut greenhouse emissions
  - Expand community composting to all five boroughs of New York City
- Enhance New York City's curbside recycling program so that it offers single-stream recycling by 2020
  - Create circular economy and market for recycled materials
- Reduce use of plastic bags and other non-compostable waste
- Give every New Yorker the opportunity to recycle and reduce waste, especially in NYCHA (New York City Housing Authority) housing developments
- Eliminate all waste from New York schools
- Expand opportunities to reuse and recycle textiles and electronic waste through the non-profit reuse sector (i.e. Goodwill/Salvation Army)
- Develop plan for Save-As-You-Throw program to reduce waste (rewards program for households that recycle more and waste less)
- Reduce commercial waste disposal by 90 percent by 2030
  - Conduct a comprehensive study of commercial waste collection zones
  - Encourage periodic waste audits for large commercial buildings
  - Create a Zero Waste Challenge program for large commercial waste generators
  - Revise commercial recycling rules to make recycling easier for businesses
  - Require all food service establishments to separate food waste from other waste