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Executive Summary

In January 2023, New York City Mayor Eric Adams announced the goal of connecting 30,000 New Yorkers to apprenticeships by 2030. In this ambitious goal, the administration seeks to address two ongoing workforce and economic challenges: first, a high number of job seekers unable to get a foothold into the job market and access pathways into goodpaying, in-demand jobs, and second, employers struggling to access the talent they need with the right skillsets both to fill current vacant positions and growing jobs in emerging occupations.¹

Apprenticeship, which combines structured training with paid, on-the-job learning, is a successful approach that provides opportunities for workers, particularly those without a four-year college degree, to access jobs with a pathway to a living wage and a life-sustaining career, and employs a well-trained talent pipeline. At scale, it is a more effective way to match talent to opportunity and to power the local economy. Through an "Apprenticeship Accelerator," the City will seek to bring together public and private partnerships to support the expansion of apprenticeships, including supporting employers in creating new programs and recruiting talent from across the city.

To reach its ambitious goal, the City hired Accenture to map the current landscape of apprenticeship in New York City (i.e., what types of programs exist, how many registered apprenticeships are currently tracked, what are growing occupations in the New York City economy), as well as examine how other geographies have gone about increasing and scaling apprenticeship programs. This report includes ive sections:

- 1. Current New York City Landscape: Apprenticeships and Occupations
- 2. Current Landscape Outside of New York City
- 3. Counting, Codifying, and Determining the Impact of Apprenticeships
- 4. Voices from the Field: Key Learnings
- 5. Recommendations

The data, research, and interview findings detailed in these sections provide an initial analysis of some existing opportunities. New York City can build upon and some successful strategies that other apprenticeship stakeholders have adopted. Based off these key learnings, the report provides a series of recommendations to inform the City's next steps and activities to scale apprenticeship and to meet the 30,000 goal.

"For years, the apprenticeship model was limited largely to traditional trades work, but in recent years it has been adopted by industries including finance, health care and tech – with incredible results. But in New York City, there currently aren't enough apprenticeships to go around. Through embracing apprenticeships, New York City can create multiple pathways to success for both job seekers and employers for all entry-level occupations that lead to promising, well-paying jobs.

The transition to an apprenticeship will require mindset shifts, institutional redesign, resource reallocation and changes to how we recruit, hire train and advance talent. We have already made headway under the Adams administration, bringing in new employers – of all sizes and industries - to partner with NYC Public Schools and local colleges We do not shy away from a challenge. Together, we can rethink how we train New Yorkers and prepare them for the jobs of the future."

- Abby Jo Sigal, Executive Director, New York City Mayor's Office of Talent and Workforce Development



To track the number of apprenticeships in New York City, measure growth, and target areas for investment, the City must first define what constitutes an apprenticeship, as well as build a shared understanding of this definition with key stakeholders. To be considered an apprenticeship, a program must contain the following key components that constitute the threshold definition:

✓ Career path

Program is co-designed with industry, includes a designated track into full-time employment, and imparts recognized, transferable skills

Opportunity

Program is accessible to underrepresented groups, specifically women and BIPOC apprentices

Salary

Program is an "earn-and-learn" model; paid wages that increase as skills and productivity increase and includes pathway to a living wage

Training

Program combines formal structured learning with on-the-job training

✓ Apprentice support

Program includes a supervisor and dedicated mentorship

Duration

Program is either time-based with approximately 12 months or 2,000 hours minimum, competency-based, or hybrid

In addition to the required components above, there are several best practices that apprenticeships should strive for to be of the highest quality. This includes providing apprentices with at least a living wage upon starting the program, setting measurable equity goals and engaging in intentional recruitment efforts, and providing a transferable credential like an associate degree. This report refers to several different types of apprenticeships including those that are registered with the United States Department of Labor (US DOL) and/or New York State Department of Labor (NYSDOL), unregistered programs, pre-apprenticeship programs that prepare individuals for apprenticeships, as well as youth and adult apprenticeships that target particular age groups. This threshold definition will serve as a method of counting apprenticeships and determining a baseline quality standard across different types of apprenticeships.

Current New York City Landscape



In order for the City to take full advantage of the current opportunities that exist in New York City's apprenticeship space, it is important to understand who the current program sponsors and apprentice employers are, the industries, occupations and demographics of apprentices, as well as the occupations powering the New York City economy.

State registered apprenticeships are concentrated in the trades

As of Spring 2023, there are 8,603 individuals participating in apprenticeship programs in New York City that are registered with NYSDOL. The majority of registered programs in New York City are in the construction and building trades. Companies and organizations outside of the trades may be deterred by a process that they perceive as written for the trades, as well as by the registration requirements.

Nationally registered New York City apprenticeships are concentrated outside of the trades

There are 543 apprentices participating in a nationally registered program. Interestingly, 85% of the total apprentices registered nationally in New York City are concentrated in healthcare and professional services, indicating that either firms register at the national level to avoid doing so in all states that they operate in or may perceive the NYSDOL process as time or administratively challenging. As New York City increasingly targets industries like technology, professional services, and healthcare for apprenticeship growth, keeping in mind the current perceived and real barriers to registration will be important.

Apprenticeships pending NYSDOL registration are concentrated outside of the trades

While the majority of registered programs are in the construction and building trades, the number of programs pending NYSDOL registration in the technology, professional services, business operations, and healthcare industries have increased. Of the 27 programs pending registration in New York City, the majority are in technology or business operations, a trend that indicates apprenticeship growth in other sectors.

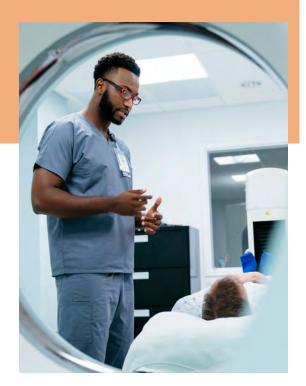
Many employers in New York City have unregistered apprenticeships or similar programs

To capture unregistered apprenticeship in New York City, this report includes outcomes from a brief survey distributed in April and May of 2023 that surveyed companies and institutions to determine whether they have apprenticeship programs. 17 of the 40 respondents indicated that they employ apprentices. In addition, desk research was performed to analyze 100 organizations with a significant footprint in New York City, including the top 20 companies in terms of number of employees and revenue. This research found that approximately half of the companies offer apprenticeships in the United States, and many others run programs that appear to uphold many, if not all, of the elements of the threshold definition of an apprenticeship described above.

Entry-level occupations that power New York City are a starting point for directing investment in apprenticeships

In addition to looking at registered and unregistered apprenticeship in New York City, this report proposes a set of entry-level occupations that power, and will continue to power, New York City's economy to help the City strategically direct investment in apprenticeships. Target entry-level occupations were determined based on whether they have a low/medium risk of automation, require at most a bachelor's degree, provide a New York City living wage, have growth opportunity, and if there is a sufficient volume of roles. Given these criteria, the list produced identifies 150 occupations that span across industries such as healthcare, food service, business operations, technology, and the trades. As the City targets its resources, it may want to refine this list of entry-level occupations, taking into consideration key City priorities like transitioning to a green economy, and technology and infrastructure investments, in order to develop a targeted set of priority areas for apprenticeship investment.

Current Landscape Outside of New York City



We also benchmarked New York City compared to the current landscape in other geographies and explored how various stakeholders have structured their approach to building and scaling apprenticeships in their cities.

Growing momentum in apprenticeships in nontraditional sectors

Compared to other cities across the United States, New York City has a relatively low number of apprentices given its total population. Of the peer cities (large cities and those with similar economic distributions) analyzed, eight cities have a higher percentage of the adult population participating in registered apprenticeships, such as Philadelphia (0.57%), than in New York City (0.21%). In addition, while the primary occupations for apprenticeship are in the construction and building trades across cities, there is evidence of growing momentum in peer cities around other industries, such as healthcare, public sector, hospitality, and emerging sector occupations. US DOL data supports this trend, documenting significant apprenticeship growth since 2014 across finance and insurance (319%), healthcare and social assistance (691%), and professional, scientific and technical services (1,476%). Apprenticeship growth in these industries is a reason for optimism around apprenticeship growth in New York City, given that the city's economy is heavily made up of professional service industries.

Intermediaries play several key roles in supporting apprenticeships

Engaged and active intermediary organizations are key to building and maintaining a successful apprenticeship ecosystem. Intermediaries are entities that serve a variety of functions including convening industry, addressing skills gaps, organizing labor, raising resources, advocacy and policy change, and supporting systems-level change. As conveners and providers of services, intermediaries are pivotal to helping companies build quality apprenticeship programs, as well as scale, maintain and track them. Intermediaries play key functions, including facilitating connections across key stakeholders involved in the apprenticeship ecosystem, promoting the value of apprenticeships and best practices to employers and other relevant stakeholders, and helping ensure the quality of programs by helping employers with the administrative support required for registered apprenticeship programs, recruiting and sourcing talent, and serving as a training provider.

States and localities stand up and maintain apprenticeships at scale by leveraging multiple funding streams

It is important to leverage a combination of funding from various sources, including federal formula and competitive grants, local and state grants and tax credits, employer funding, and philanthropy, to set up, scale, and maintain apprenticeships. These funding streams are used in concert to support activities like program administration and set up, recruitment and outreach, instructional training, on-the-job training and mentorship, providing wrap around services, and to fund intermediaries. Stakeholder interviews confirmed that blending, braiding and aligning various funding sources was key to their process of successfully setting up and growing apprenticeship programs.

Counting, Codifying, and Determining the Impact of Apprenticeships



Tracking apprenticeships will require intentionality and multiple strategies

Tracking the number of and outcomes of apprenticeships will be a key task for the City to coordinate in order to measure progress towards the 30,000 goal, ensure that programs meet threshold criteria, and understand where growth is happening and where to invest. The City should work with US DOL and NYSDOL to download data on registered apprenticeships regularly. For unregistered apprenticeships, there is a limited set of best practices. Other geographies track apprenticeships through private platforms or via a state data warehouse. The City will need to consider creative ways to tally unregistered apprentices, such as through distributing surveys, working with intermediaries, councils, and workforce development boards to survey their members, and conducting direct outreach to large employers in New York City. Tracking apprentice outcomes will also help the City understand the impact of apprenticeship programs on participants and employers over time.

Building an apprenticeship ecosystem

Requires understanding and promoting the positive impact of apprentices for various stakeholders including employers, job seekers, educational institutions, and the public sector.

These players face entrenched challenges: job seekers struggling to access a living wage and career growth opportunities, employers unable to find talent with the right skills, and vacancies in the public sector. Apprenticeships have the potential to address these challenges and benefit these individuals and organizations. Demonstrating the positive impact that apprenticeships can have on cross-industry stakeholders will be key to activating them to support and invest in apprenticeships.

- Employers cite several benefits of apprenticeships to their companies, including
 accessing talent with the right skillsets to fill in-demand roles, diversifying their
 workforce, increased retention rates, and a monetary return on investment.
 Interviews with employers re-iterated the positive experiences and perceived
 benefits that apprenticeships have on their firms.
- **Job seekers** For workers struggling to gain a foothold into growing industries like technology and professional services, apprenticeships offer a way in, through a paid position, while offering training in new skills and a pathway to a job with a living wage.
- Educational institutions also stand to benefit from apprenticeships, particularly
 community colleges that strive to connect their students with employment
 opportunities. Apprenticeship programs offer a structured way (i.e., via codesigning curriculum) for colleges to form connections with industry and create
 paid work experience opportunities for their students, leading to positive outcomes
 for their current students and attracting new ones.
- Public Sector apprenticeships offer a way to recruit for entry-level positions
 and increase retention in a sector with significant turnover. The City will also
 be in a better position, having invested in its own apprenticeship programs, to
 advocate for other employers to do the same. Overall, increasing the number of
 apprenticeships will have a positive impact on the New York City economy, by
 efficiently directing investment into more skills-based (rather than degrees-based)
 hiring and getting people typically left out of the workforce into good-paying jobs.

Key Learnings and Recommendations

To exponentially scale apprenticeships, New York City must capitalize on existing resources, invest in new opportunities, and continue to build momentum across numerous stakeholders. Based on the key learnings from this landscape analysis, pulled from more than 50 stakeholder interviews, desk research and data analysis within New York City and across other geographies, this report proposes five recommendations for the City to consider when building an "Apprenticeship Accelerator."

1. Leverage untapped resources to exponentially scale

To scale apprenticeships and meet the citywide goal of 30,000, the accelerator must engage all existing resources and efforts, including leveraging public funding, creating a new private/public partnerships fund dedicated to apprenticeships, applying for federal competitive grants, capitalizing on employers already engaged in earn-and-learn training programs, and working with NYSDOL and the New York State Education Department (NYSED) to fast-track the registration process for a cohort of qualified training providers.

2. Rebrand
apprenticeships
and trumpet
their value
proposition

To change hearts and minds and build the shared understanding that apprenticeships benefit all parties involved and are applicable to professional services industries, not just the traditional trades, focused rebranding and awareness efforts are needed for different key audiences. This includes targeted messages for employers, education providers, City government, parents, students and the public.

3. Center justice, equity, diversity and inclusion in apprenticeship advancement To ensure that the City's investment in apprenticeships is a tool for justice, equity, diversity and inclusion, the City should invest in pre-apprenticeship and bridge programs, engage in focused outreach, train employers and supervisors to support apprentices of all backgrounds, and leverage its purchasing power to advance diversity in apprenticeships, such as through Project Labor Agreements.

4. Align and improve infrastructure

There are a number of organizations, employers and educational institutions that are already deeply engaged with apprenticeship work in New York City. To expand apprenticeships, the City will need to align these efforts and fund and scale the most effective among them. This will be possible through activities such as providing technical assistance for employers, supporting intermediaries, streamlining the NYSDOL process, creating a subcommittee of the NYC Workforce Development Board focused on apprenticeship, and dedicating personnel at NYC Talent to lead the strategy for apprenticeships.

5. Track, report and amplify outcomes

Tracking and amplifying outcomes is critical to understanding what works and continuing to build momentum. In the near term, the City should determine a set of quality indicators and standards around outcomes to track to determine programmatic success and where to invest. The City should also develop a comprehensive tracking system to track apprentices, including through improving access to NYSDOL's system, requiring data from publicly funded apprenticeships, and investing in dual-purpose employer-facing platforms that provide resources to employers and track key metrics. In the medium and long term, the City should work to define a research agenda and engage in joint public reporting.

To meet the goal of connecting 30,000 New Yorkers to apprenticeships by 2030, the City will need to take full advantage of the existing funding, program, and partnership opportunities as well as the growing momentum around building apprenticeships in nontraditional sectors like technology, healthcare, and professional services. The City need not reinvent the wheel, and instead adopt many of the best practices and effective strategies that other jurisdictions and entities have deployed to build, scale and maintain their apprenticeship ecosystem. In doing so, the City can expeditiously transition to a talent development system that embraces apprenticeship and better serves a growing number of New Yorkers, employers, occupations and industries.



In the last three years, New York City has experienced major economic disruptions, most notably the COVID-19 pandemic. While the economic recovery has been more rapid than initially anticipated for many, the recovery has not been equal. The number of New Yorkers unable to get a foothold into the job market, those stuck in careers without a living wage and limited economic mobility, and unemployment inequity has remained an ongoing challenge.

A report released by the New York State Comptroller's office in December 2022 found that the unemployment rate for 16- to 24-year-olds is nearly 18%. The report also highlighted the disparity among young people of color, with the unemployment rate for young Black workers at 18.5%, young Hispanic workers at 23.3% and young Asian workers at 23.3% (in comparison to 16.2% of young White workers). The post-pandemic economic recovery for young job seekers (particularly young people of color and young men) in New York City has been much slower when compared to New York State and other geographies across the country.² In addition, according to a report from the Center for New York City Affairs released in April 2023, while New York City unemployment has decreased from 6.4% to 5.3% from January to March 2023, the gap between the unemployment rate of Black New Yorkers (12.2%) and White New Yorkers (1.3%) widened. Additionally, the report found that the New York City unemployment rate for workers without a four-year college degree is 7.6% compared to 3.7% for those with a bachelor's degree.³ New York City must invest in strategies that help to connect job seekers without a four-year degree and underserved New Yorkers to well-paying occupations.

New Federal funding opportunities, including the Inflation Reduction Act (IRA), the Bipartisan Infrastructure Law (BIL) grant programs, and the CHIPS and Science Act offer an opportunity for job growth, such as in manufacturing, transportation, and construction jobs. New York City will need the right talent to fill these roles. To align workforce skills growing industries and roles that will power the New York City economy for years to come, the City must invest in strategies that prepare the city's untapped resources for these jobs. Part of this work will need to be in partnership with educational institutions like the City University of New York (CUNY) to invest in models that braid industry-informed learning and training with job experience. Apprenticeship is one method that has been successful in aligning workforce with jobs of the future.

Threshold Definition & Best Practice

To track, build upon, and measure the quality of apprenticeship programs over the next seven years and beyond, a threshold definition of what constitutes an apprenticeship is key. The threshold definition described below includes minimum program requirements that must be met to qualify as an apprenticeship, while there are also best practices that apprenticeship programs should strive to achieve. This threshold definition includes many of the requirements that NYSDOL and US DOL require for registered apprenticeships (further discussed in the Current New York City Landscape: Apprenticeships and Occupations section of this report).

There must be a job in the company [hosting an apprentice], a job that would otherwise be filled by a permanent employee. That's the difference maker between any work-based learning opportunity and an apprenticeship."

- Juan Salgado, Chancellor, City Colleges of Chicago

Threshold Definition



In terms of career path, an apprenticeship must be designed in partnership with industry, with a focus on jobs that power the economy. There should be a clearly defined designated track into a full-time employment role and continued career path upon program completion. The program should also provide transferable skills recognized by other employers other than the apprenticeship sponsor or employer.



Apprenticeships must commit to accessibility. Program design is inclusive of people from diverse backgrounds and recruits broadly in ways that address historic disparities.



An apprenticeship must fit an "earn-and-learn model," or paid wages throughout the duration of the apprenticeship. The apprentice's wages will increase as skills and productivity increase and there must be a defined pathway to a living wage.



Training during an apprenticeship must combine formal structured learning (i.e., industry-aligned curriculum in the form of instructor-led classroom courses, web-based academic trainings, webinars) either via in-person or virtual, with on-the-job training.



The program must include apprentice support, via an established supervisor relationship and dedicated mentorship.



The apprenticeship can be time-based with approximately 12 months or 2,000 hours minimum, competency-based using a formal competency framework, or hybrid.

Threshold Definition & Best Practice

Best Practice

In addition to a threshold definition of what constitutes an apprenticeship, there are a series of best practices characteristic of high quality apprenticeships.



For a career path, it is best practice to include a clearly defined skillset that will be achieved through the program that are transferable across employers. Apprenticeships should focus on in-demand, cross-industry occupations with economic mobility and that allow access to multiple career pathways. Clear steps for high school students, out of school, out of work (OSOW) youth, college students and adults should be included.



Ensure that the program includes practices such as a measurable commitment to inclusivity and goals internally and externally, incorporation of participant voice in program design, and intentional recruitment efforts across a wide range of education, community and workforce partners.



Apprentices' salary during and after an apprenticeship should be at or above living wage, based on the cost of living in the apprenticeship location, and include benefits such as health insurance.



An apprentice should achieve a portable credential (industry or academic) at the end of the apprenticeship, such as a certificate or an associate degree. USDOL recommends at least 144 hours of formal structured learning, but the amount should be employer-driven.



Additional supports to meet the apprentices and supervisors where they are is a best practice. This includes essential skills development (i.e., verbal and written communication skills, teamwork, time management, critical thinking), cohort programming, stipends for transportation/childcare, mental health services, covering program costs such as uniforms/exam fees, and support to access benefits such as the Supplemental Nutrition Assistance Program (SNAP). In addition, supervisor training on justice, equity, diversity and inclusion to support working with a diverse workforce benefit both apprentices and supervisors.



When measured by competency, it is best practice to include competency-based assessments that are aligned with national frameworks such those proposed by the USDOL, CareerWise or the Urban Institute.

Threshold Definition & Best Practice

For a comparison across threshold definition components and best practices, reference the table below.

	Threshold	Best Practice
Career Path	 Designed in partnership with industry, with a focus on jobs that power the economy Designated track into a full-time employment role – and a continued career path – upon program completion Transferable skills recognized by employers other than apprenticeship sponsor/employer 	 Clearly defined skillset achieved that are formally transferable across employers Focus on in-demand, cross-industry occupations with economic mobility and access to multiple career pathways Clear career path steps for apprentices
Opportunity	 ✓ Commitment to accessibility and a programmatic design that supports people from a diversity of backgrounds ✓ Program design should recruit broadly and in ways that address historic disparities 	 Ensure apprenticeship includes key practices, including but not limited to: Measurable commitment and goals internally & externally Incorporation of participant voice in program design Intentional recruitment efforts across wide range of education, community and workforce partners
Salary	 Earn-and-learn (i.e., paid wages) throughout apprenticeship Increased wages as skills and productivity increase; pathway to a living wage 	✓ Living wage (or above) based on the cost of living in apprenticeship location and benefits such as health insurance
Training	Formal structured learning (i.e., industry- aligned curriculum in the form of instructor- led classroom courses, web-based academic trainings, webinars) either via in-person or virtual, combined with on-the-job training	 Portable credential (industry or academic) achieved at the end of the apprenticeship, such as a certificate or associate degree 144 hours of training time (structured learning only)
Apprentice Support	 Established supervisor relationship and dedicated mentorship 	✓ Soft skills development, cohort programming, stipends for transportation/childcare, mental health services, covering program costs such as uniforms/ exam fees, support to access benefits such as SNAP
Duration	 ✓ Can be time-based, competency based or hybrid ✓ If time-based, approximately 12 months or 2,000 hours minimum ✓ If competency-based (and does not meet 2,000 hours requirement) must use formal competency framework 	✓ Competency-based assessments aligned with national frameworks/processes, such as US DOL, CareerWise or the Urban Institute

Table 1: Apprenticeship Threshold Definition and Best Practice

Types of Apprenticeships

Apprenticeship in the 21st century takes a variety of forms. It spans industries, professions, and age groups. Programmatically, apprenticeships may vary (i.e., differences in educational components, length and accreditation offered), but must meet the threshold definition described above. This report will refer to several different types of apprenticeships, including registered and unregistered programs, bridge programs like pre-apprenticeships, and apprenticeships that cater to particular age groups (i.e., youth apprenticeship and adult apprenticeship).

Registered Apprenticeships

Registered apprenticeships are programs that are formally registered with US DOL and/or NYSDOL. This requires the apprenticeship program to meet the department's minimum qualifications and to fill out the required paperwork to officially register the program with the Department.

Unregistered Apprenticeships

Unregistered apprenticeships are not formally registered with US DOL or NYSDOL but still meet the programmatic requirements as described in the threshold definition above.

Adult Apprenticeship

Adult apprenticeships focus on participants older than 24 years old but may include anyone over the age of 21 years old.

Youth Apprenticeship

Jobs for the Future defines youth apprenticeships as programs that are built for youth between the ages of 16 and 24. The programs allow participants to experience a work environment while gaining skills, and also gives the employer an opportunity to develop talent. While youth apprenticeships span from ages 16 until 24, they focus on ages 16 – 21 years old. In addition, the primary differences between youth and adult apprenticeships are how youth are recruited to programs, their schedules, and the tasks that they may be permitted to perform on the job.⁴

Pre-Apprenticeship

According to Jobs for the Future, pre-apprenticeships prepare individuals for registered or other apprenticeship programs and their careers. The best programs connect directly to existing apprenticeships and prepare participants through instruction and other supports to be successful in apprenticeships and their careers. Community-based organizations, high schools, labor organizations, workforce agencies, and community colleges are among the entities that run these programs.⁵

New York City's Commitment: Connecting 30,000 New Yorkers to Apprenticeships by 2030

Announced during the State of the City address in January 2023, Mayor Eric Adams committed to connecting 30,000 New Yorkers to apprenticeships by 2030. Apprenticeships are seen as a key component of addressing two issues central to boosting economic growth and reducing inequality: New Yorkers struggling to get a foothold in the job market and employers unable to secure the talent needed to fill vital roles. Prior to this announcement, in August 2022, by way of **Executive Order 22** Mayor Eric Adams convened the Future of Workers Task Force, made up of leaders from across New York City's private, nonprofit, and philanthropic organizations. The Task Force was charged with helping the City "reboot" their approach to talent and workforce development. Published in June of 2023, the City released "Pathways to an Inclusive Economy: The Future of Workers Task Force Blueprint" that set forth five key strategies to improve talent development, job training, and employment services across the city. To meet Mayor Adam's goal of connecting 30,000 New Yorkers to apprenticeships by 2030, the Task Force recommended that the City invest in an "Apprenticeship Accelerator."

Through an "Apprenticeship Accelerator," the City will seek to dramatically increase the number of apprenticeships by:

- Working closely with key actors in the apprenticeship space, coordinating and aligning activities
- Braiding and blending local, state, federal and private funding streams
- Coordinating and streamlining employer engagement
- · Centralizing tracking and ensuring consistency of data
- Scaling learnings and best practices

In tandem, the City will seek to engage with potential apprenticeship program participants and encourage their participation by "highlighting how these programs are providing a pathway to economic opportunity and financial security while transforming the career trajectory for New Yorkers in industries like information technology, marketing, health care, and finance." In sum, apprenticeships are a vital component of the City's plan to connect employers to the right talent with the right skillsets and simultaneously get more New Yorkers into the good-paying, life-sustaining jobs of the future.⁷



Understanding the current landscape of apprenticeships in New York City is the first step to meeting the citywide goal of connecting 30,000 New Yorkers to apprenticeships by 2030. According to data supplied by the New York State Department of Labor (NYSDOL) as of April 2023 there are currently 8,603 individuals participating in registered apprenticeships in the city. This comprises approximately 0.2% of NYC jobs. In addition to the apprenticeships registered through NYSDOL, there are nationally registered apprenticeships through the United States Department of Labor (US DOL). As of March 2023, there are 543 apprentices participating in nationally registered programs in New York City.

It is important to understand key actors in apprenticeship: the jobseekers, the sponsors who administer these programs, the training providers, and the employers that hire and host apprentices. It is also necessary to capture the industries, occupations and demographics of apprentices.

To do this, we have reviewed existing data on apprenticeships. For registered apprenticeships and those pending registration, NYSDOL shares data on their website and also supplied data not publicly available for this report. We used this data to conduct a deeper analysis, including researching and adding supplementary information to enable the Mayor's Office to better perceive emerging trends. We also looked at data from USDOL on nationally registered apprenticeships.

In addition to the existing data on apprenticeships that have been registered and are pending registration, we conducted a survey regarding registered apprenticeships. We deployed a brief survey through 100+ intermediary partners. The partners represented a selection of New York City business groups as well as industry-specific institutions. Further details on the response and findings can be found below. Additional information on how the New York City landscape compares to other geographies can be found in the following chapter on the Current Landscape Outside of New York City.

Data Considerations

The below represents a comprehensive assessment of the information NYSDOL supplied regarding registered apprenticeships in New York City However, there are a few caveats that should be highlighted related to the data:

Apprentice Residency

This information represents the number of apprentices in apprenticeships registered in New York City. It does not indicate whether every individual is a New York City resident. It also does not account for any residents that may be engaging in remote work outside of the city.

Nationally Registered Apprenticeships

Apprenticeships can be registered at a state or the national level. The total number and breakdown of apprenticeships below is divided into apprenticeships that are registered with NYSDOL and apprenticeships that are nationally registered with US DOL and located in one of NYC's five counties. It appears that the data does not overlap, but programs can be registered both nationally and locally – and given the caveats that NYSDOL attaches to the US DOL data (further discussed below) – the analysis is disaggregated.

Registered Apprenticeships

There are two types of state apprenticeship offices: an Office of Apprenticeship (OA) or a State Apprenticeship Agency (SAA). Further information on each type can be found on the following pages. New York's program is administered through an SAA, which is run by NYSDOL.⁸ NYSDOL is deeply committed to growing apprenticeships in New York and has teams throughout the state to assist sponsors with setting up apprenticeship programs. Generally, organizations that have worked closely with NYSDOL have found them to be willing partners.

However, several interviewees stated that the apprenticeship registration process in New York State can be complex. The process steps outlined below represent a high-level overview of the process. Overall, the high-touch process can be discouraging for employers who do not fully understand what is required to register the apprenticeship. Some cited concerns include:

Lack of information online

At multiple points in the registration process, the interested business must call NYSDOL to complete required steps. While some employers may be open to this, many will be apprehensive to reach out directly to a government agency, especially a labor-focused agency, for basic information on the application process.

Transparency of the application process

The full set of application materials is not readily available on the NYSDOL website. As of May 2023, NYSDOL does not have a blank application available on its website. While one can review a pending application, there is no way to identify the full set of information that will be needed for the process without calling and speaking with someone. There are also several parts of the application process that are not clearly outlined or connected unless one independently connects the dots. For example, Direct Entry programs and staffing ratios are not mentioned in NYSDOL's application process. Finally, it is unclear how long the process will take. Timelines for approval (2-4 months) are listed for certain parts of the process, but there are programs listed on the NYSDOL site that have been pending approval for more than 12 months.

Oversight by multiple entities and preference to the building and construction trades

In addition to NYSDOL, which provides technical assistance and process oversight, multiple other entities are involved with the application. The New York State Department of Education must approve all instruction providers – an approved list of which is not easily accessible on the NYSDOL site – and if an employer wants to register a new trade it needs to be approved by the State Apprenticeship and Training Council as well as the Labor Commissioner. The State Apprenticeship and Training Council's information available on the NYSDOL website seems to lend preference the trades. The Council uses terms like "journey workers" in its principals and three of four of the listed members represent carpenters, sheet metal contractors and electricians.

NYSDOL Apprenticeship 8-Step Registration Process

NYSDO	NYSDOL Apprenticeship 8-Step Registration Process		
	Contact NYSDOL	Step 1: The applicant must to contact an apprentice regional supervisor. The regional supervisor will explain the apprenticeship program, how to complete the application process, and the relevant regulations.	
	Select Trade	Step 2: NYSDOL staff will help determine which trades best suit the applicant's needs. Many of the training outlines are immediately available. For new trades. NYSDOL staff will conduct a job study at no cost, which is reviewed by the State Apprenticeship and Training Council and approved by the Labor Commissioner.	
ķ- ••	Visit	Step 3: Local apprenticeship staff will visit the applicant's business. Staff will also assist with completing the application and provide any needed technical assistance. While the application can be filled in digitally, ultimately the application will need to be printed and signed. NYSDOL would like to implement electronic signatures in order to make the process more user-friendly.	
	Select Instruction Providers	Step 4: The New York State Education Department (NYSED) must approve all instruction providers. NYSDOL staff can assist with identifying instruction providers.	
	Affirmative Action Plan	Step 5: Employers must complete an Affirmative Action Pledge (for sponsors with fewer than five apprentices) or the Affirmative Action Plan.	
	Public Comment Period	Step 6: Information about a new apprenticeship program is posted online for transparency. During this public comment period, NYSDOL staff review the application to ensure labor law compliance. Note: The 30-day (minimum) public comment period can take time and be a frustration for employers.	
2	Approval	Step 7: An apprenticeship program approval process takes between two and four months. The length of the approval process will vary based on individual circumstances. Note: Approved programs undergo a two-year probation period upon the start of the first apprentice, during which the sponsor is not allowed to submit any new program applications or change its approach.	
2	Monitoring Visits	Step 8: Local apprenticeship staff monitor apprenticeship programs in order to provide technical assistance and ensure that businesses are compliant. Note: Employers express concern over having NYSDOL visit their place of work each year. NYSDOL staff communicate that this process helps to drive more apprentices to them, instilling confidence that quality standards are being followed.	

Source: NYSDOL

Table 2: NYSDOL Apprenticeship Process

Current New York City Landscape: Apprenticeships and Occupations

Landscape of Current Apprenticeships in New York City

State Apprenticeship Agencies

The registered apprenticeship system consists of two types of entities: OAs and SAAs. Both the OA and SAAs provide technical assistance and support to program sponsors, guide partners on each phase of developing a program, connect businesses to training providers, and advise partners on available funding sources. The key differences between the two are:

- SAA staff members are State employees
- SAAs are not required to use the standard Federal paperwork and documentation
- SAAs are not required to use the national Registered Apprenticeship Partners Information Database System (RAPIDS)

New York is an SAA state that is run by NYSDOL. As a result, it has the flexibility to adjust documentation and it does not use the RAPIDS system. By not using the RAPIDS system, it is more difficult to access up-to-date information. NYSDOL does report to US DOL, but according to NYSDOL, the data is a point in time picture of NYSDOL apprenticeships. Depending on when the data is collected and reported, it may not be equivalent to the data reported on NYSDOL's website.

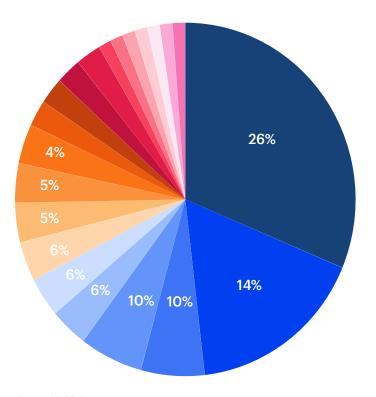
Also, NYSDOL does not currently collect data on individuals with disabilities or apprentice education level, and the categories reported for the veteran status, industry, occupation, and union data elements may not be an accurate representation of New York State's data. Continuing to work with NYSDOL to streamline the registration process and have access to regular, comprehensive data – perhaps through a data-sharing agreement – will be important to scaling apprenticeships in New York City.9

Trades & Occupations

As of April 2023, there are 213 trades that have at one time registered as an apprenticeship with NYSDOL. Currently, 198 of those are "active" apprenticeships. These apprenticeship frameworks can be used by any sponsor interested in sponsoring apprentices in that occupation. The largest concentration of apprenticeships is in the Construction and Extraction category (SOC 47) with sixty role types that make up 30% of the overall registered apprenticeships. This includes occupations such as carpenters, stone masons, and electricians.

The second largest is Production (SOC 51), which comprises 19% apprenticeship with 39 roles such as machinists and welders. There are fewer available registered apprenticeships in areas such as technology (10 roles, 5% overall), management/business operations (12 roles, 6% overall) and healthcare (12 roles, 6% overall). See Figure 1 for a breakdown of the occupations by 2-digit SOC codes.

The relatively few approved apprenticeship frameworks available in growing industries such as technology and healthcare is significant because it creates an extra barrier to creating registered apprenticeships. Currently, if a sponsor wishes to create an apprenticeship in an occupation that is not currently approved, they face additional required steps in addition to the current approval process (see Table 2). To establish a new trade, sponsors must work with NYSDOL to complete a job study, which must then be reviewed by the State Apprenticeship and Training Council and the Labor Commissioner.¹⁰



Source: NYSDOL Figure 1: NYSDOL Approved Apprenticeship Frameworks by Trade

- Construction and Extraction Occupations
- Installation, Maintenance, and Repair Occupations
- Computer and Mathematical Occupations
- Personal Care and Service Occupations
- Healthcare Support Occupations
- Office and Administrative Support Occupations
- Educational Instruction and Library Occupations
- Management Occupations
- Art, Design, Entertainment, Sports and Media Occupations
- Sales and Related Occupations
- · Farming, Fishing, and Forestry Occupations
- Production Occupations
- Architecture and Engineering Occupations
- Community and Social Service Occupations
- Food Preparation and Serving Related Occupations
- Life, Physical and Social Science Occupations
- Building and Grounds Cleaning and Maintenance Occupations
- Healthcare Practitioners and Technical Occupations
- Protective Service Occupations
- Business and Financial Operations Occupations
- Education Instruction and Library Occupations

Current New York City Landscape: Apprenticeships and Occupations

Landscape of Current Apprenticeships in New York City

Within these broader occupational categories, apprentices in Stateregistered programs are highly concentrated in a subset of occupations. Ten trades (listed in Table 3) account for 73% of apprentices currently enrolled in programs based in New York City. These apprenticeships are almost entirely in the construction and production trades, with a significant concentration in the electrician and carpenter occupations.

Notably, there are no tech, healthcare or business operations occupations in the top ten largest (in number of participants) NYSDOL-registered apprenticeships. The largest current occupations among those fields are Community Health Workers (28 apprentices) and Software Developer (21 apprentices.) The third-largest group of active apprentices is School Safety Agents, which is sponsored by the New York City Policy Department (NYPD).

Trade/Occupation	Total Apprentices
Electrician	1,345
Carpenter	1,308
School Safety Agent	633
Elevator/Escalator Constructor & Modernizer	591
Plumber	553
Iron Worker (Outside)	532
Skilled Construction Craft Laborer	448
Sheet Metal Worker	407
Steamfitter	243
Elevator Servicer and Repairer	234

Source: NYSDOL

Table 3: Number of NYSDOL Registered Active Apprentices by Trade, April 2023

New York City Police Department: School Safety Agent Apprenticeship

The New York City Policy Department (NYPD) hosts one of the largest current cohorts of registered apprentices in New York State through its School Safety Agents program. The NYPD requires that School Safety Agents complete 17 weeks of the Police Academy, for which School Safety Agents car receive up to 26 college credits at select public colleges, as well as through private institutions such as Pace University.¹¹

This is an example of a competency-based framework, as it does not align with the 2,000 hours required for a time-based apprenticeship. It is notable example of a scaled, public sector apprenticeship. In addition, it is one of the most diverse current apprenticeships according to NYSDOL. According to NYSDOL's data, 65% of School Safety Agent identify as female, 30% as Hispanic, and 59% as Black.

NYPD is exploring programs that would create pipelines for positions in the department that they have had challenges recruiting for in recent years, including School Safety Agents. These programs would primarily target high school students, providing them with career exploration opportunities and exposing them to job opportunities in public safety, such as through informational interviews with NYPD leadership. One of these programs is an "Assistant School Safety Agent" program that would target recruiting high school juniors. Upon graduation (and if at least 18 years of age) they would be hired into the position. Also, NYPD is looking to allow Assistant School Safety Agents to receive credit for their time in the program that can be allocated towards the 60 college credits required to serve in the department. NYPD is waiting for final approval and then plans to hire 400 individuals for the pilot program, hopefully in the Fall 2023.

Current New York City Landscape: Apprenticeships and Occupations

Landscape of Current Apprenticeships in New York City

Overall, there are currently 8,603 apprentices across all NYSDOL-registered apprenticeships. The full distribution of active apprentices can be seen in Appendix A against the total occupations in New York City. These were matched as closely as possible based on the titles, since the data from NYSDOL does not include the SOC codes for titles with active apprentices. The distribution of active apprentices provides another perspective on the City's landscape. While technically there may be a broader range of occupations outside of the trades available for use, in practice there are few apprentices active in those programs across New York City. There is an opportunity for expansion just using the apprenticeship frameworks currently registered with NYSDOL.

The picture looks different for nationally registered apprenticeships. According to US DOL's website, as of March 2023 there are 543 apprentices located in New York City that are part of national programs. The top twelve occupations comprise of 85% of total apprentices registered nationally in New York City, and they are all in non-construction and building trades (see Table 4). These apprenticeships are concentrated in the healthcare and professional services industries. Based on interviews with several large companies and other intermediaries, there are two potential explanations for this difference. First, there are large professional service firms and multi-state organizations with apprenticeship programs that register at a national level to avoid having to do so separately in all the states that they operate in. Second, some individuals interviewed reported that the process to register with NYSDOL is more burdensome – and less predictable – than the US DOL process and therefore only register at the national level.

Occupation	Number	Percent
Home Health Aide (Health Support Specialist)	175	32%
Application Developer	63	12%
Nurse Assistant Certified (Nurse Assistant)	45	8%
Digital Marketer	42	8%
General Insurance Associate	26	5%
Data Analyst	23	4%
User Experience Designer	20	4%
Business Analyst	17	3%
Sterile Supply Technician	16	3%
Computer Programmer	13	2%
Electromechanical Technician	12	2%
Project Manager	12	2%

Source: US DOL RAPIDS

Table 4: Number of Nationally Registered Active Apprentices by Occupation, March 2023

Timeframe

The existing frameworks for registered apprenticeships in New York include competency-based, time-based and hybrid approaches. In a competency-based apprenticeship, apprentices must complete a minimum of 1,000 on-the-job training hours and successfully demonstrate their acquired skill and knowledge, as verified by the program sponsor. Time-based approaches, the traditional apprenticeship framework, require apprentices to partake in at least 2,000 hours of on-the-job learning. Finally, the hybrid approach requires a certain minimum number of hours and demonstrated acquisition of skills.¹²

The majority (81%) of apprenticeship programs registered with NYSDOL in New York are time-based. The time required varies based on the occupation, ranging from 12 to 60 months; 48- and 36-month apprenticeships are the most popular. This is similar to the Swiss apprenticeship system, where apprenticeships are typically three to four years in duration. Only 15% of programs are competency-based, with even fewer (3%) hybrid options. The type of framework is heavily correlated with the apprenticeship occupation. Almost all the "traditional" apprenticeship occupations – construction, production, installation/repair, and architecture/engineering – are time-based apprenticeships. Competency-based frameworks are correlated with technology, healthcare, business/operations and sales occupations. Hybrid approaches vary, but given the small number of them, it is difficult to determine trends. Information on the timeframes and frameworks for nationally registered apprenticeship programs in New York City is not available from US DOL.

While competency frameworks are used in fast-growing industries, they do require an infrastructure to develop and administer the NYSDOL-required hands-on and written tests. Recognizing that this is a burden for some employers, the State invested in the State University of New York (SUNY) to fund community colleges to develop training outlines and testing centers, conduct outreach, develop pre-apprenticeship programs, and aid in related instruction, in order to expand apprenticeships in target industries such as advanced manufacturing, healthcare, and technology/cybersecurity/artificial intelligence. In 2023, CUNY also received an investment from New York State to expand apprenticeships at ten colleges with associate degrees. In partnership with the New York Jobs CEO Council, they are expanding apprenticeships and internships for CUNY students at companies such as Ernst & Young and Mastercard. Continuing to develop ways to support employers with creating and testing these frameworks will be crucial for apprenticeship growth in key industries. Leveraging SUNY and CUNY will be key to scale. In partnership will be crucial for apprenticeship growth in key industries.



Sponsors & Employers

To register an apprenticeship in New York, a sponsor must apply via NYSDOL's process for approval. Sponsors are the entities that administer an apprenticeship program. There are four types of apprenticeship that can be filed with NYSDOL. Individual and group non-joint programs, and individual and group joint programs. The registration dictates which entity will apply for and administer the apprenticeship, the ability for the apprentice to work amongst different employers during their apprenticeship, and union oversight. The table below summarizes the characteristics of each apprenticeship.

Formal NYSDO	OL Designation	Individual non-joint	Group non-joint	Individual joint	Group joint
	Individual employer	x			
Sponsor	Group of employers / industry association		X		
(registers & administers apprenticeship)	Individual employer partnered with a union			x	
	Group of employers / industry association partnered with a union				x
Apprentice	Can work for a single employer	х		х	
employment mobility	Can work for multiple employers		x		х
Union approval		If employees are union	members	x	x
Illustrative examples		Auctioneers (Art Operations Specialist)CVS (Pharmacy Technician)	 New York (multiple occupations) Pursuit (Software Developer) 	General Mills & BCTGM Local 36G (Packer Mechanic, Plant Maintenance Electrician)	 Association of Master Painters and Decorators of NY Inc. & Finishing Trades Institute of New York (Paperhangers)

Source: NYSDOL

Table 5: New York apprenticeship registration types

Current New York City Landscape: Apprenticeships and Occupations

Landscape of Current Apprenticeships in New York City

There are many kinds of sponsors that can submit applications to NYSDOL, but given unions' ability to conduct a secondary review, if there is a possibility of unionization it is easier to work directly with the union as a sponsor. The information on individual sponsors for registered programs is not publicly available on NYSDOL's website.

To view sponsors for existing programs, we researched individual programs in New York City to identify sample sponsors. The sponsors for the top ten trades (which comprise 73% of active apprentices) are included below in Table 6. This list highlights the important roles that unions play as sponsors in the traditional apprenticeship trades. Except for School Safety Agents, unions account for most of the active apprentice programs. This is likely due to the historic presence of unions in the apprenticeship space and the types of occupations that are most popular in New York City.

<u>Trade</u>	Sponsors
Electrician	 Joint Apprenticeship Committee IBEW Electrical Local Union #3. Top Shelf Electric Corporation. TC Electric LLC.
Carpenter	Carpenter's Joint Apprenticeship & Training Center of NYC & Vicinity.
School Safety Agent	NYC Police Department (School Safety Division) .
Elevator/Escalator Constructor & Modernizer	Elevator Constructors Local #1 Joint Apprenticeship Committee.
Plumber	Plumbers Local Union #1 Joint Apprenticeship & Training Center.
Iron Worker (Outside)	Ironworkers Local Union 40 and 361.
Skilled Construction Craft Laborer	 Construction General Building Laborers Local Union #79. LIUNA Local Union #731 Training Fund. DC 16s Training and Ed Fund.
Sheet Metal Worker	Sheet Metal Workers Local #28.
Steamfitter	Joint Steamfitting Apprenticeship Local Union #638.
Elevator Servicer and Repairer	Joint Apprenticeship & Training Center of the Elevator Industry.

Source: NYSDOL

Table 6: NYSDOL Registered Trade by Sponsors

Specific sponsor details are not available from US DOL. Therefore, it is not possible to see the sponsors of nationally registered apprenticeships that have New York City participants. However, only 45% of the nationally-registered New York City based apprentices are identified as participants in union programs.

Apprentice Qualifications



Sponsors submit minimum qualifications for apprentices as part of the application to NYSDOL. Since these qualifications are not publicly available, we again looked at the qualifications for the top ten active programs registered with NYSDOL based on information from the sponsors' websites.

The list of requirements can be found in Table 7. Many of the apprenticeships share a common set of qualifications: apprentices must be 18 years of age, have a high school equivalency education level, have the physical ability to perform required tasks, pass a drug screening and share a certificate of release/discharge where applicable. Most of the other qualifications are similar amongst the trades, including aptitude tests, access to transportation, background checks and ability to acquire the materials for testing.

Although the occupations below are concentrated in traditional trades, based on the pending applications in non-traditional fields such as technology and business operations, the qualifications are similar to other industries.

Trade	Shared Requirements	Common Requirements	Apprenticeship-Specific Requirement
Electrician			Two (2) year residence in the Greater New York Metropolitan Area
Carpenter	 All applicants must be 18 years of age when applying HS diploma, GED, TASC Physically able to perform the 		 Proof of any trade-related experience, certification, or education U.S. citizen/legal right to work in the US
School Safety Agent			 21 years of age Pass a character and background investigation Reside in one of the five boroughs of New York City Pay a \$75 fee for fingerprinting Must be eligible to obtain NYC Special Patrolman status Be a United States Citizen at time of hire
Elevator / Escalator Constructor & Modernizer	of age when applying HS diploma, GED, TASC	 Reliable means of transportation (4/10 require this) Aptitude test related to the role (6/10 require this) 	Must participate in an interview, if eligible
Plumber			 A filing fee and testing fee must be paid at time of filing Must appear for an interview with the Joint Apprenticeship and Training Committee on a scheduled date Must be a permanent legal resident of the United States at the time of selection to start the program
Iron Worker (Outside)			Must be able to follow written directions
Skilled Construction Craft Laborer			
Sheet Metal Worker			
Steamfitter			 Must purchase text materials for use in trade-related classroom training (~\$400) Must interview as administered jointly by employer and employee representatives
Elevator Servicer and Repairer			

Table 7: Top Ten NYSDOL Apprenticeship Trades - Qualifications

Current New York City Landscape: Apprenticeships and Occupations

Landscape of Current Apprenticeships in New York City

Pre-Apprenticeship Programs in New York City: Increasing Access and Diversity in Apprenticeships

Pre-apprenticeships play a critical role in advancing equitable access to apprenticeships and developing talent pipelines. This section is a brief overview covering the importance of pre-apprenticeships, their role in developing a pipeline to registered apprenticeships through Direct Entry in New York City, and local examples. As the City identifies its short-, medium- and long-term priority occupations, an ancillary review should be done to understand the ecosystem of pre-apprenticeship programs.

What is a Pre-Apprenticeship?

Pre-apprenticeships are sets of services/strategies that position individuals to enter and succeed in an apprenticeship program. They can be delivered by a range of entities, including community-based organizations, educational institutions, or labor organizations. Pre-apprenticeships are not formally registered by US DOL – although US DOL publishes program guidelines – but some states such as Pennsylvania and Wisconsin are starting to formally recognize/register pre-apprenticeship programs. This is especially true for programs that are linked to existing apprenticeship programs.¹⁶

Pre-apprenticeships can be effective means to connect people from underrepresented communities to registered apprenticeships and increase diversity and inclusion in these programs. They act as a bridge to ensure individuals can meet the requirements to enter a full apprenticeship. High quality pre-apprenticeships typically consist of an approved curriculum, hands-on learning, supportive services, a focus on equity and diversity, and direct entry into a registered apprenticeship. Their programming and training dovetails with full apprenticeships and provides associated wraparound services to access apprenticeship opportunities.¹⁷

Direct Entry

Pre-apprenticeship programs can also facilitate direct entry into registered apprenticeships. For a direct entry pre-apprenticeship, upon completion of the program the students will receive a guaranteed apprenticeship position with the participating employer/sponsor. In New York, Direct Entry providers are required to have agreements with registered apprenticeship programs. NYSDOL reviews and approves all Direct Entry programs, assessing whether they have a quality curriculum and a focus on underrepresented groups. There are 16 approved Direct Entry programs in New York City. The providers include schools such as the Bronx International High School and Columbia University and community-based organizations. All the Direct Entry programs in New York City are connected to the building trades through unions.¹⁸

New York City Programs

There are a range of pre-apprenticeship programs in New York City, including Direct Entry programs. Many formal pre-apprenticeship programs are in the building trades given the overall distribution of apprenticeships in the city. Some of the most well-known include Helmets to Hardhats, Constructions Skills (the Edward J. Malloy Initiative) and Nontraditional Employment for Women.¹⁹ These groups have an established track record of positioning individuals successfully into registered apprenticeships and are supported to varying degrees by the city. Outside of the trades, there are examples of strong pre-apprenticeship programs in tech with high-quality bootcamps such as General Assembly.²⁰ Information on pre-apprenticeship programs in other industries in New York City is limited, although there are national examples of strong pre-apprenticeship programs in industries such as advanced manufacturing. As the City increases its investment in apprenticeships, it is critical to foster strong pre-apprenticeship programs for target sectors and occupations, as well as make it accessible to New Yorkers who have been traditionally excluded from these opportunities and embed these programs into the NYC Public Schools high school curriculum.

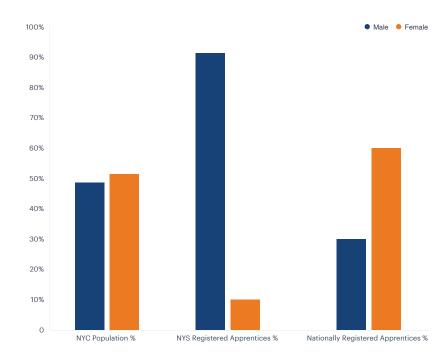
Demographic Distribution

Apprenticeships can connect individuals with diverse backgrounds to high-paying jobs with advancement and training opportunities. When speaking with employers and intermediaries such as Multiverse, one of the most common reasons cited by employers for starting and growing apprenticeships is the ability to recruit and retain diverse talent.

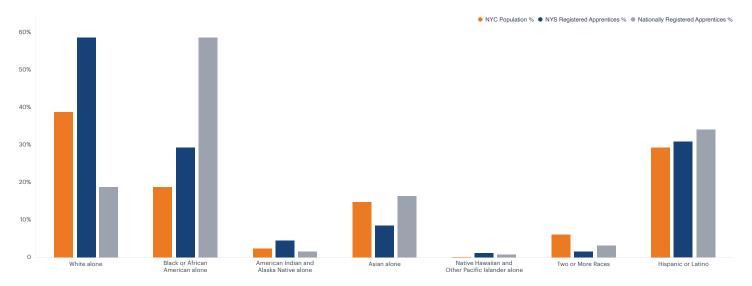
Historically, a far greater portion of apprenticeships have been held by individuals who identify as White and male than the national population. As of 2022 – the most recent full year for which data from US DOL is available – 75% of apprentices identify as White, versus 16% Black and 4% Asian. In addition, 27% of apprentices identify as Hispanic (all races). Women have also historically participated in apprenticeships at lower rates than men and have been concentrated in social service occupations. In 2021, only 14% of active apprentices were women. However, over the last decade, apprentices have become generally more racially diverse, indicating a trend towards greater inclusivity in the space. ²²

The demographics of active NYSDOL apprentices in New York City align with the national trends related to gender, but are different in terms of race and ethnicity. Like the national trends, there is a significant disparity in gender enrollment in apprenticeships. As shown in Figure 2, while there are slightly more women in the New York City population (52% women versus 48% men) there are far more active male apprentices (87%) than female (13%). This distribution is driven predominantly by the percentages in the two largest trades: electricians (13% women) and carpenters (14% women). Similar to national trends, women are overrepresented in occupations outside of the traditional trades. Most notably, women comprise 71% of active Community Health Worker apprentices and 65% of School Safety Agent apprentices. Overall, the gender distribution of active NYSDOL apprenticeships align with the national trends.

Interestingly, the nationally registered apprenticeships have a significantly higher portion of female apprentices. This is driven by the Home Health Aide apprentices – the largest subset of nationally registered apprentices in NYC – 97% of whom identify as female.



The racial and ethnic distribution of New York City apprentices diverges from the national trend, both for NYSDOL and nationally registered apprentices. Of the 8,603 active apprentices, 999 did not report their racial or ethnic identity. As a result, these figures could shift depending on the distribution of individuals in the unidentified group. It is likely to remain consistent given that the breakdown is similar to NYSDOL data from 2012-2017 on apprenticeship demographics. However, of those represented, White individuals are still overrepresented in active apprentices when compared with the City's adult population (as shown in Figure 3). Black and Hispanic individuals are also slightly overrepresented. Asian individuals are the most underrepresented racial group (3% of active apprentices versus 14% of the population) among active registered apprentices. For nationally registered apprentices, 200 of 543 did not self-identify their race and 64 of 543 did not disclose their ethnicity.



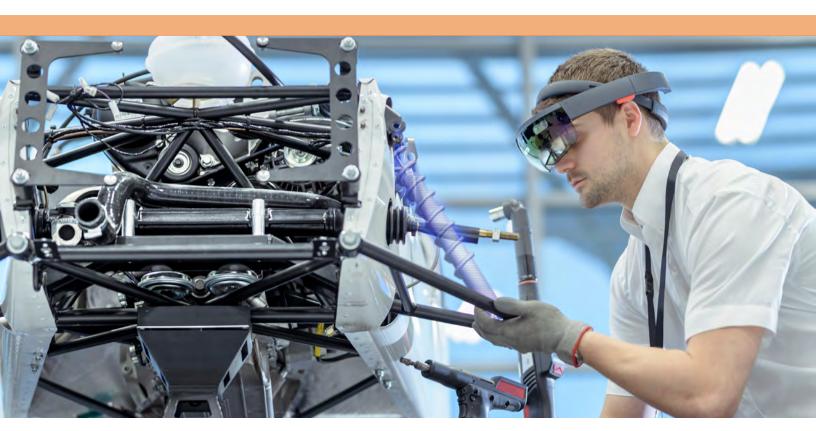
Source: NYSDOL, US DOL RAPIDS

Figure 3: Racial and Ethnic Distribution for NYSDOL and Nationally Registered Apprenticeships Compared to the NYC Population

Similar to the gender distribution discussed above, given the size of the carpenter and electrician occupations as part of the sample, these occupations largely drove representation. However, Black apprentices are highly represented in skilled craft laborers (61% Black), School Safety Agents (59% Black) and sheet metal workers (44% Black). The top occupations for Hispanic apprentices are terrazzo workers (53% Hispanic), steel painters (50% Hispanic) and roofers (48% Hispanic). Given the number of Asian apprentices, it is difficult to discern the occupational distribution outside of carpenters and electricians. However, it is notable that 11 of the 21 software developer apprentices – who are all youth apprentices – in the CareerWise New York program are Asian. For nationally registered apprenticeships, apprentices who identified as Asian were highly concentrated in one occupation – application developers – where they comprise 41% of apprentices.

New York City-based apprentices participating in nationally registered programs are even more diverse in terms of race and ethnicity: 65% identified as Hispanic and 56% as Black. Apprentices who identified as Hispanic were largely home health aides (85% Hispanic). A large portion of application developers (63%) also identified as Hispanic. Apprentices who identify as Black are concentrated in several occupations: home health aides (62%), application developers (45%), digital marketers (69%) and nurse assistants (76%).

Although there are encouraging signs that some occupations have diversified the pipeline of apprentices, there is still immense work to be done to ensure that apprenticeships in New York City are an inclusive path to family-sustaining jobs. New York City has taken steps towards this effort, as explored in the section below, but it must continue to be a focus as investment in apprenticeship grows.



Current New York City Landscape: Apprenticeships and Occupations

Landscape of Current Apprenticeships in New York City

Inclusive Apprenticeship Investments in New York City

According to US DOL, 77.5% of the 686,000 apprentices active between 2010 and 2019 identified as White. While most apprentices in the United States identify as White, programs have become more diverse over time. For example, apprentices who identified as Hispanic has been increasing between 2010 and 2019, with a large jump in 2017 from 14.4% to 22.4%. Women have also accounted for an average of only 8.5% of apprentices (one barrier identified has been limited access to childcare, a barrier that disproportionately impacts women). Equity across race and gender should be a key component of any apprenticeship. Employers can use several approaches to make their apprenticeship more diverse.

This includes, but is not limited to

- · Marketing programs to diverse communities
- Partnering with community organizations to market to and recruit candidates
- Partnering with public schools to start youth apprenticeship programs
- Wrap around supports, such as childcare and transportation and
- Providing cultural competency and diversity and inclusion training to mentors and workplaces to help prepare them for supporting diverse
 candidates in apprenticeship.²³

In addition, inclusive apprenticeships are those "that support and are designed to be inclusive of apprentices with disabilities". US DOL has set a goal of 7% of participating apprentices per sponsor to be individuals with disabilities. The expansion of apprenticeships in industries like technology and the increased acceptance of remote work, offers new opportunities for inclusive occupations. To recruit persons with disabilities into apprenticeships and ensure that these programs are supportive and accommodating, policymakers, employers, and other apprenticeship partners should consider approaches like incentivizing employers through tax policies to include individuals with disabilities in apprenticeship programs and providing accommodations and additional supports, like assistive technology.²⁴

In September 2022, Mayor Adams announced public-private partnership investments in the Career Readiness and Modern Youth Apprenticeship program. The program connects 3,000 NYC public school students with paid apprenticeships at companies across finance, technology and business operations. In addition, the program seeks to reach students in communities that have historically been denied the opportunities that are offered in the modern youth apprenticeship program – access to job training, strong wages, and a path into a good-paying job and career growth.²⁵

New York City has previously invested in apprenticeship programs that center inclusivity and equity, such as the Community Health Worker Apprenticeship Program. This 6-month program, supported by a collaboration between the New York Alliance for Careers in Healthcare, 1199SEIU Training and Employment Funds, LaGuardia Community College, and BronxCare Health System, trained participants to become a community health worker at BronxCare, where their role is to liaise between the hospital and the surrounding community.²⁶ Another program, the Tech Talent Pipeline, supported programs like Spotify's 16-week NYC Technology Fellowship Program that provided participants from diverse backgrounds with an opportunity to fill an entry-level engineer position at Spotify and receive training, professional development, and mentorship.

Apprenticeships Pending Registration

In addition to the active apprenticeship programs in New York State, as of April 2023 there are 27 programs pending registration in New York City. A pending application is an application submitted to NYSDOL that has not completed the full approval process. While portions of these applications are posted online, NYSDOL does not have a database with application information. The data below represents information pulled from the apprenticeship applications and coded into a database for analysis.



Occupations

The trades pending apprenticeships are largely in non-traditional occupations. The full list is in Table 8. While there are some applications for trades such as Carpenters, Electricians and Paperhangers, most are in technology or business operations. Of the applications that listed the anticipated number of apprenticeships, the highest was for Software Developers through the Pursuit Benefit Corporation.

These pending apprenticeships indicate the growing interest in occupations outside the traditional construction trades.

NYC Pending Apprenticeship Occupations
Art Operations Specialist
Carpenter
Chemical Laboratory Technician
Computer Support Technician (3 programs)
Data Analyst
Electrician
Financial Services Representative
Human Resources Associate (4 programs)
Junior Accountant
Marketing Coordinator (2 programs)
Paperhanger
Pharmacy Technician
Quality Assurance Auditor (3 programs)
Sales Associate - Financial Services
Security Analyst
Software Developer
UI/UX Designer

Source: NYSDOL

Table 8: NYSDOL Pending Apprenticeship Occupations

Visual and Graphic Arts Associate (2 programs)

Timeframe

Three quarters of the program that are pending registration are competency-based programs. This is predominantly because 20 of the 27 pending applications are from one sponsor – CareerWise New York – which uses a competency-based framework. The other pending applications employ a time-based approach, ranging from 12 to 60 months. Similar to statewide trends, the construction occupations have longer timelines while the technology and business operations roles are typically 12-month programs.

Sponsors & Employers

As briefly described above, approximately three quarters of pending applications were submitted by CareerWise New York, acting as a sponsor on behalf of local employers. CareerWise New York is an intermediary organization that focuses on modern youth apprenticeships in New York City. According to the pending applications with NYSDOL, CareerWise's employer partners include: Amazon, Accenture, Bloomberg, the Brooklyn Navy Yard, Mastercard, Credit Suisse, Mercer and Infor. Only one of the pending applications – for paperhangers – is in partnership with a union. Others are Individual Non-Joint apprenticeships, sponsored by small firms such as Apollon Group (Carpenter) and large companies including CVS Health Corporation (Pharmacy Technician).

The sponsors are partnered with training providers. CareerWise New York's applications partner with a range of CUNY schools, including Guttman Community College, Borough of Manhattan Community College, and Lehman College. Apollon Group partners with SUNY Maritime College. The other sponsors use a combination of union-created training and internal institutes.

Apprentice Qualifications

The qualifications for pending apprenticeships mirror those for registered apprenticeships – high school equivalency, 18 years or older, background checks, physical ability to perform work, and other competencies such as – in the case of pharmacy technicians – basic math and typing skills. CareerWise's youth apprenticeship programs differ in that they do not require a high school degree or the equivalent. Instead, the apprentices must be enrolled in high school as rising juniors. It is notable that the difference in qualifications between the pending applications and the highest-volume registered programs is not significant, even though the occupations vary (traditional construction vs emerging occupations).

Unregistered Apprenticeships

Unregistered apprenticeships are apprenticeships that do not officially register with either NYSDOL or US DOL. Employers often cite the burden of registration – and the lack of flexibility once registered – as reasons for not registering the apprenticeship. Common concerns that we have heard from our stakeholder interviews and employers about registering apprenticeships are included in Table 9 below. Research suggests that about half of all U.S. apprenticeships are not registered.²⁷

Many of these programs are high quality and meet the core components of a registered apprenticeship. Better understanding these apprenticeships, determining which meet our suggested threshold criteria, and partnering on ways to improve quality and access, is critical for connecting New Yorkers to quality jobs through apprenticeships.

Category	Cited Concern with Registration
	Apprentice selection criteria and interview records must be disclosed with US/NYSDOL
Program Requirements	 Limited flexibility to adjust to new roles or training needs: detailed competency rubric and related instruction must be outlined at the onset of the apprenticeship, apprentice progression must be tracked, and amendments to course schedules made accordingly 6-12 months in advance For NYSDOL, there is a two-year probationary period during which time the sponsor cannot change its approach
	Formal review of apprentice competencies (at least annually, recommended semi-annually)
	 A separate apprenticeship employment agreement is required, that restricts termination to "for cause" reasons after the probation period (up to 1 year); employers must document reasonable cause for any termination
	 Potential for random selection to be included in a federal evaluation, which may involve providing records of participations and access to program/partner personnel
	When the program structure changes
Notification Requirements	When an apprentice is added, when one completes the program, and when any apprentice is transferred, suspended or terminated (with a statement of the reasons)
	At the one-year mark of the program, after the first class completes the program, and every five years after

Source: NYSDOL Table 9: NYSDOL Pending Apprenticeship Occupations

This section offers a high-level overview of data gathered through desk research and a brief survey distributed in April and May of 2023. The desk research consists of surveying large companies and institutions to determine whether they host an apprenticeship program. We reviewed offerings at 100 entities to determine whether they had registered or unregistered apprenticeships. Findings are included below. Additional follow up is needed to determine the number of unregistered programs (that meet the threshold definition of apprenticeship) in New York City specifically.

The survey was distributed to 100+ local professional and business associations with the request to distribute to its members. As a result, we received 40 responses, the results of which are included below. We recommend conducting additional, in-depth outreach via employer intermediaries, training providers, and employers directly to further understand the landscape of unregistered apprentice programs in New York City in greater depth. This should be an on-going activity led by the Mayor's Office but conducted in partnership with organizations like the Partnership for New York City, the New York Jobs CEO Council, local chambers of commerce and industry organizations. This effort will help capture the full range of businesses with unregistered apprenticeship programs.



Employer Details



Desk Research

The desk research entailed looking at 100 companies and institutions with a large presence in New York. Of the firms that we researched, approximately half (46) offer apprenticeships in the United States. Many (28) of the firms that do not have a United States-based apprenticeship either have programs in other countries or run programs that seem to share many of the characteristics of apprenticeships.

The desk research entailed looking at 100 companies and institutions with a large presence in New York. This includes the top 20 companies (by number of employees and revenue) in the City. Since many traditional industries – like the trades – have registered apprenticeships, the desk research focused on professional service firms, with a selection of retail, industrial and healthcare corporations as well. The companies consist of firms such as Adobe, Bank of America, and Verizon. The full list of 100 companies is included in Appendix B.

Of the firms that we researched, approximately half (46) offer apprenticeships in the United States. In the vast majority of cases, it was not possible to discern whether they offer the apprenticeships in New York City nor the number of apprentices they have per year. However, in cases where there are press releases indicating the numbers, it is typically <200 per year, or significantly fewer. Firms take either a centralized or a decentralized approach to their apprenticeships. In some cases, there is not an advertised apprenticeship program – for example, at firms like Hearst – but there are apprenticeship roles posted on their site. In these cases, individual parts of the corporation (or like at Hearst, a publication) leads the apprenticeship work. For other firms such as Google, McDonald's, and Aon, apprenticeships are a centralized effort.

Interestingly, many (28) of the firms that do not have a United States-based apprenticeship either have programs in other countries or run programs that seem to share many of the characteristics of apprenticeships. Commonly, they have apprenticeships in the United Kingdom or other countries in Europe, such as Germany. For these firms, it would be worth speaking to the people who work in apprenticeships internationally to understand how that model might be imported to their New York City office, and what the barriers might be.

Other firms run programs that appear to share many of the characteristics of the threshold definition of apprenticeships described in the introduction. A particularly robust example is the Breakthrough Fellowship Program from Pfizer, which is a program designed to increase diversity and foster an inclusive workplace. The program is currently primarily located in New York City. It starts with a 10-week summer internship for rising undergraduate seniors, then is two years of paid full-time employment. It includes mentorship and other programming. Fellows then receive a scholarship for a two-year graduate program, and then return to Pfizer after graduation. A more seamless integration of the on-the-job program with on-going academic training (rather than a full-time model for school) would align it closely with the apprenticeship threshold. Con Edison and the New York Times also have local fellowship/rotational programs that share characteristics with apprenticeships, and potentially, with a more formal integration of a structured academic components, could fit an apprenticeship model.



Survey Response

Based on the survey response, 17 respondents employed apprentices. The companies are concentrated in Manhattan and Brooklyn, with respondents in all five boroughs. The largest sectors represented include professional services, hospitality, arts and construction. Most employers were hosts to small cohorts of apprentices, with several employers stating that they employed 20+ individuals that met the threshold definition outlined by the City. Based on the ranges provided by employers, we can estimate respondents typically employ 125-305+ apprentices in New York City per year. The bulk of these are unregistered.

Survey respondents were typically interested in apprenticeships, but nearly 25% did not know much about what an apprenticeship entails. For respondents who were familiar with apprentices, about half believed that apprentices are a good way to attract and retain talent, especially new talent. The other half indicated that they were able to hire the talent needed without more than the typical on-the-job training they provided or had other ways of training employees. Only a few believed that overseeing an apprenticeship program was more difficult than it was worth.

Apprenticeship Program Specifications & Employer Perspective

Like with registered apprenticeships, unregistered programs are structured in different ways to suit employer needs. The desk research and survey indicated several program design trends. Based on the information provided via the survey or available from desk research, apprenticeships at these companies typically:

- Are 6-15 months in length, with most being 12+ months
- Offer mentorship and supervision, along with supplementary workshops/development opportunities
- Offer an onboarding/training experience at the start of the apprenticeship
- Require the apprentice to either be currently enrolled in some sort of educational program (2- or 4-year degree program), although some offer "returnship" programs for experienced individuals, or explicitly state that the program is not only for entry-level talent

Based on desk research, the driving force cited in program descriptions/press releases is a desire to address a specific talent or diversity gap in the talent pipeline. This aligns with information from stakeholder interviews, both from employers and business intermediary groups.

The City's investment in apprenticeships should be strategically focused on a set of priority occupations. This section identifies a set of entry-level occupations that power – and will continue to power – New York City's economy through 2029. In addition to identifying a set of occupations, it outlines steps to further refine the list to develop a set of priority investments. Overall, New York City's workforce falls into 798 occupational codes, according to Lightcast's data. Lightcast's data uses Standard Occupational Classification system codes at the 4-digit level (minor codes) and this is the level used for the analysis below.

Entry Level Occupations that Power the New York City Economy

To identify a set of entry level occupations that power the economy, and form the basis for selecting priority occupations, we identified several key factors for consideration. These factors are informed by studies from the Harvard Business School, the Brookings Institute, and Accenture's Inclusive Future of Work methodology. The data used to populate the framework is from Lightcast, NYSDOL, Accenture and the U.S. Census Bureau. The methodology, as well as the funnel of occupations, is included in Figure 4 below. We used the following factors for our analysis:



Automation

We selected occupations with a low/medium likelihood of automation. This was assessed using Accenture and Lightcast's automation indices. Accenture's indices are based on the percent of time that a worker in a particular occupation completes automatable tasks; this is determined based on internal research and Bureau of Labor Statistics data. Where Accenture research was not available, Lightcast's automation index – based on O*Net's description of work activities and research by Carl Frey and Michael Osborne – was used. This was filtered for "Low" and "Medium" occupations on Accenture's index, and <100 using Lightcast's index.



Education

To determine the appropriate level of education to filter on, we looked at New Yorker's educational attainment, the qualifications for existing registered apprenticeships, and the typical education level of occupations. According to the U.S. Census Bureau, as of 2021 only 17% of New Yorkers have a graduate or professional degree. Roles that typically employ individuals with graduate degrees are not likely to be a good fit for an apprenticeship, due to the reliance on significant schooling prior to hire. These roles were filtered from our analysis. We decided to include roles where individuals with a bachelor's degree are typically hired, even though only 24% of New Yorkers have a bachelor's degree. We included this because occupations with successful apprenticeships – such as software developers – often are held predominantly by individuals with a bachelor's degree. However, it is the apprenticeship that opens the possibility for a broader range of educational backgrounds. Therefore, removing occupations where workers typically have a bachelor's degree would eliminate potential apprenticeship occupations.

Wages

We analyzed wages based on two methods, both of which could be used for future City calculations. First, we calculated the target wage based on the Massachusetts's Institute of Technology's (MIT) Living Wage Calculator for the New York City-Newark-Jersey City region. The MIT calculator is based on the number of working individuals and children in the household. To determine what wage level to use, we reviewed the U.S. Census Bureau's 2021 American Community Survey data on household size. According to the Census Bureau, 74% of New York City households do not have people under the age of 18 years and the average family size is 2.58 individuals. As a result, we rounded up the living wage for a 2-person family, with both adults working, with one child (\$24.03/hour from the MIT calculator) to set a wage floor of \$25/hour.²⁸

Second, we used the 2023 "NYC True Cost of Living" report from the Fund for the City of New York and the United Way. This report uses the New York City True Cost of Living (TCL) methodology. The TCL is based on what is needed to meet the basic needs of a New York City household. It includes housing, childcare, food, transportation, healthcare, taxes and other expenses. The TCL estimates that the cost of living in New York City for two adults, one preschooler and one school-age child – it assumes both adults are working – ranges from \$107,26 in the Bronx to \$151,723 in Lower Manhattan.²⁹ To have a range of choices of where to live in New York City – but discounting the two most expensive areas of Southern Manhattan and Northwest Brooklyn – the TCL estimates that a family of that size would need to earn \$123,688.³⁰ That means on average, each adult would need to earn \$61,844 per year (or \$30.92/hour based on a 40-hour week and 50 weeks per year.) Given both measures, we prioritize occupations where an individual can earn \$31/hour. However, we recommend that the City considers occupations that meet all other criteria and enable people to earn at least \$25/hour, especially if those occupations have strong employer capacity, meet City policy priorities, have existing apprenticeship frameworks and are paths for a diversity of individuals. A list of those forty occupations is included below.



soc	Description	Cluster	2029 Jobs
43-5061	Production, Planning, and Expediting Clerks	24,396	\$26.81
29-2061	Licensed Practical and Licensed Vocational Nurses	20,721	\$27.23
53-3032	Heavy and Tractor-Trailer Truck Drivers	18,768	\$26.74
25-3021	Self-Enrichment Teachers	18,199	\$30.14
47-2031	Carpenters	16,721	\$30.19
53-3051	Bus Drivers, School	15,867	\$25.89
21-1018	Substance Abuse, Behavioral Disorder, and Mental Health Counselors	12,409	\$27.00
53-2031	Flight Attendants	8,255	\$29.85
27-2022	Coaches and Scouts	7,658	\$27.83
39-9031	Exercise Trainers and Group Fitness Instructors	7,627	\$28.47
35-1011	Chefs and Head Cooks	6,327	\$29.94
21-1099	Community and Social Service Specialists, All Other	5,445	\$29.28
39-6012	Concierges	5,258	\$25.03
43-5032	Dispatchers, Except Police, Fire, and Ambulance	4,801	\$26.57
37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers	4,759	\$26.46
39-1022	First-Line Supervisors of Personal Service Workers	4,735	\$25.00
27-4011	Audio and Video Technicians	4,662	\$30.73
27-2011	Actors	4,615	\$30.91
13-2082	Tax Preparers	4,481	\$26.95
29-2072	Medical Records Specialists	3,711	\$27.01
43-5031	Public Safety Telecommunicators	2,877	\$30.93
29-2055	Surgical Technologists	2,688	\$29.99
29-2043	Paramedics	2,483	\$29.40
27-4021	Photographers	2,264	\$27.13
25-9099	Educational Instruction and Library Workers, All Other	2,169	\$27.88
19-4061	Social Science Research Assistants	1,984	\$25.43
49-2098	Security and Fire Alarm Systems Installers	1,779	\$26.01
19-4021	Biological Technicians	1,744	\$28.23
21-1091	Health Education Specialists	1,597	\$30.91
29-2081	Opticians, Dispensing	1,425	\$27.98
51-4041	Machinists	1,339	\$25.45
47-2181	Roofers	1,142	\$25.91
27-3099	Media and Communication Workers, All Other	1,062	\$28.81
47-2121	Glaziers	1,027	\$28.92
53-5011	Sailors and Marine Oilers	1,009	\$30.39
53-4031	Railroad Conductors and Yardmasters	1,002	\$30.87

Source: Lightcast $^{\text{TM}}$ 2023, NYSDOL, Accenture

Table 10: Occupations that Meet Priority Criteria but Wages <\$25/Hour

soc	Description	Cluster	2029 Jobs
17-3031	Surveying and Mapping Technicians	873	\$29.42
39-3092	Costume Attendants	743	\$30.11
43-9081	Proofreaders and Copy Markers	613	\$25.63

Source: Lightcast[™] 2023, NYSDOL, Accenture

Table 10: Occupations that Meet Priority Criteria but Wages <\$25/Hour



Both NYSDOL and Lightcast estimates were used to identify average industry growth. NYSDOL typically has a more aggressive estimate per occupation, predicting that the City economy will grow by 12% from 2018 to 2028. Given this growth, we prioritized occupations that will grow by at least half that amount (6%) by 2028. We compared NYSDOL and Lightcast's growth rates and used the higher of the two when available. The only exception to this filtering is for occupations where at least 10% of the workers are more than 65 years old, since retirements will cause a potentially greater increase in available jobs beyond growth of the occupation.

Volume

We selected occupations where Lightcast projects that there will be 1,000 roles as of 2029. This is based on Accenture's Inclusive Future of Work Methodology to determine Opportunity Occupations, which uses that base number to ensure there is an adequate number of roles in a particular occupation to justify prioritization. For occupations where more than 10% of workers are 65+ years old, we set the threshold at 500.

Using the above filters on the original 798 occupations, we identified 150 occupations that meet the criteria. Following an initial filtering for duplicative occupation codes and roles that are unlikely to be good candidates for apprenticeships and City investment, the list includes 150 occupations. The full list of 798 occupations is included as Appendix C. Long-term, the City should aim at creating apprenticeship programs for the 150 occupations – and more – that have entry level roles that meet the criteria described above. While this is a significant refinement from 798 occupations, it still too large a group to reasonably pursue to increase apprenticeships in the short-term. The following section describes the recommended steps to further narrow the list to priority occupations.



Notes

- 1. Automation is from Accenture's Inclusive Future of Work methodology, unless unavailable for a SOC code. in which case Lightcast is used
- 2. Based on 2023 NYC True Cost of Living Report: see section on "Wages" above for further detail
- 3. NYSDOL predicts the average growth rate through 2028 as 12.2%. If an industry is predicted to grow at essentially half the average rate, it is excluded. The growth rate is the larger growth rate from NYSDOL or Lightcast
- 4. Using Lightcast data in 2029

The final number is further refined by: 1) removing duplicates and unlikely occupations. such as clergy and CEOs and 2) including any occupations that have 500+ jobs. <6% growth but 10% of the emolovees are 65+ years old

Methodology for Identifying Priority Occupations

To further refine the list of 150 entry level occupations that power the economy, we recommend conducting the analysis and research outlined in Table 11 below. There are four key areas of further investigation: understanding employer capacity, aligning the occupations with overall City policy priorities, assessing the availability and applicability of existing apprenticeship frameworks, and reviewing demographic information. A further description of the methodology, as well as initial analysis in several areas, can be found below. There are several structural challenges to growing and retaining good-paying entry-level occupations in New York City. With remote work on the rise, entry-level roles are shifting to markets with a lower cost of labor and cost of living. This is especially true for national corporations with operations in multiple markets. In addition to the refinement process outlined below, we suggest having further conversations with large scale corporate employers to better understand this recent phenomenon. Pending those discussions, there may be a greater need to focus on roles that are tied to New York City – such as healthcare – instead of more mobile occupations.

Refinement Lens	Activities
Employer capacity	 For each occupation, determine whether it is concentrated in particular occupational cluster and whether than cluster provides mobility Map the industry concentration of each occupation using 2-digit or 3-sigit NAICS codes If concentrated in an industry, analyze company size by revenue/employees Unless there is a strong intermediary, in the short-term the City should look to partner with medium- and large-size companies with capacity to launch or expand apprenticeship programs Map industry conveners/intermediaries (leverage existing work of Industry Partnerships) Connect with industry leaders to gauge level of interest and demand for occupation – this is a critical activity to build buy-in and check against of-the-moment industry intelligence Through employer conversations, gauge the ability to identify a specific group of skillsets across the occupation; this is likely to be easier for occupations with a more technical skillset (technicians, engineers, programmers)
City policy priorities	 Identify key focus industries Develop user profiles to identify the different clients that the City is planning to serve through apprenticeships (ex. CUNY college graduates/students vs high school graduates vs out-of-school-out-of-work-youths) and determine the priority in the short- medium- and long-term for apprenticeships
Apprenticeship framework availability	 Determine whether there is an existing registered framework that is being used in New York State or New York City (information is included in the following section of this report) Determine whether there is an existing registered framework nationally If existing at the local, state or national level, speak with key entities (sponsors and training providers) to understand capacity to expand
Demographics	 Determine the racial/gender distribution of priority occupations in NYC Review distribution: Less diverse occupations = opportunity for apprenticeships Plan for inclusive program design and incorporate into employer/partner discussions

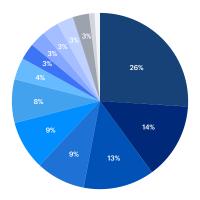
Table 11

Employer Engagement, Occupational Clusters and Career Pathways

Apprenticeships must be employer-driven. The first step to finalizing priority occupations should be engagement directly with employers to understand the occupations with the greatest hiring needs in their industry. The above analysis provides a basis for this conversation. While some occupations are clearly aligned with specific industries – like in the healthcare sector – for other cross-sectoral occupations the industry concentration is not evident. Deep employer conversations, along with further analysis of the occupational distribution across industry codes will help determine where to focus the City's efforts.

Priority occupations should also lead to roles in industries that can offer career with advancement potential or highwage positions with stability. According to research conducted by the Brookings Institute captured in the report "Moving Up," many workers in low-wage occupations get stuck in low-wage work, even workers when controlling for other factors such as education. Brookings defines a set of clusters based on groups of occupations within which workers transition frequently but rarely leave. Based on the analysis completed for that report, we classified the 150 priority occupations by cluster, which can be seen in Figure 5 below. While most of the priority occupations fall into categories with average wage and mobility as noted in Figure 6, it worth nothing that the average wage across these occupations is \$47/hour. This wage would enable a family to live comfortably. Even the sandpit occupations, removing one occupation that has an outlier high wage, had an average wage of \$42/hour.

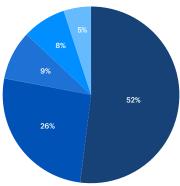
Occupational Clusters



- Technology and Engineering
- Administrative and Professional Services
- Sales and Management
- Education
- Unknown
- Healthcare
- Public safety
- Construction and Installation
- Mechanics and Specialists
- Transportation and Production
- Technicians and Scientists
- Assemblers and Machine Operators
- Food and Customer Service

Source: NYSDOL, Lightcast $^{\text{TM}}$ 2023, Brookings Institute "Moving Up" Cluster Taxonomy Figure 5

Mobility Potential



- Average wage, Average mobility
- High wage, High mobility
- Unknow
- Average wage and mobility, but high growth
- Sandpit

Source: NYSDOL, Lightcast[™]2023, Brookings Institute "Moving Up" Cluster Taxonomy Figure 6

Brookings Institute & Jobs for the Future: Mobility Taxonomies

Both the Brookings Institute and Jobs for the Future categorize occupations by their mobility and ability to offer competitive wages. Their frameworks are frequently used to classify occupations A brief description of their frameworks are included below. For the purposes of this study, we aligned with the Brookings Institute's analysis to categorize priority occupations.

Brookings Institute

As part of its effort to understand economic mobility in the United States, researchers from the Brookings Institute conducted a study analyzing how workers transition across occupations. The researchers analyzed 228,000 real occupation-to-occupation transitions into and out of 428 occupations in 130 industries. Through this work, the Brookings Institute identified 15 distinct occupational clusters. Workers move within these clusters more frequently than they cross them. The Institute then categorized occupations within the clusters based on their wage and mobility potential.

Importantly, while a worker's age, demographics, education, work experience all influence mobility, the Brookings Institute found that some occupations offer more mobility than others even for similar workers. Characteristics about the occupation itself – such as the value and transferability of the skills required – account for approximately two-thirds of the variation in upward mobility. Low wage work is especially "sticky" and it becomes stickier the longer one remains in it. Low-wage, low-mobility work is termed a "sandpit" cluster since individuals can get stuck in these areas long-term.

The cluster analysis helps pinpoint the most promising trajectories from low- to high-wage work. There are "upward pathways" within clusters where workers can move up by transitioning between closely related occupations and there are "skyway" occupations that offer workers a change to make a leap into a new higher-wage high-mobility cluster.³¹

Jobs for the Future

In 2018, Jobs for the Future (JFF) partnered with Burning Glass to examine the ability of middle-skill jobs – positions that typically require some education beyond high school but not a four-year degree – to promote career advancement and income growth. JFF and Burning Glass examined nearly four million resumes and found they did not equally result in advancement and growth. They categorized the roles into three buckets:

- Lifetime jobs are careers in themselves, workers rarely advance in their position but they are well paid and offer long-term stability.
 Healthcare has many lifetime occupations
- Springboard jobs lead to careers where workers advance to different role with more responsibility and greater pay. The business and tech fields have a high concentration of springboard jobs
- Static jobs typically do not feed into careers, often offer lower-pay compared to other middle-skill roles, and provide little advancement into other sectors

Coupled with the other factors discussed above, both the Brookings Institute and JFF offer practical analysis of occupations that should inform the City's selection of occupations. Using the work of the Brookings Institute or JFF, the City should invest in roles that offer a stable, good income or roles with high mobility and advancement into positions with greater income growth.³² For the static/sandpit jobs, the City should work with employers and policymakers to move these to springboard or pathway jobs if they are critical to the health of the city. The City should also explore policies to improve job quality for individuals employed in those occupations.

We recommend two tools for understanding a specific career path: Lightcast Career Pathways and the Brookings Institute's Mobility Pathways.³³ Each tool can be used to show advancement to and from a particular occupation. Lightcast Career Pathways also shows the aligned skill between different occupations, which is important if considering a change between occupations in different industries. Depending on the target user profiles identified by the City, we recommend also reviewing feeder occupations into the priority occupations to open pathways to individuals with a diversity of professional and educational backgrounds. Using these tools, the City can identify which positions have transferrable skills and which occupations are feeder paths into the priority occupations.

Aligning with City Policy Priorities

Apprenticeship investments should align with the City's key economic development priorities. While economic development priorities can shift over time, the investments often span longer horizons and cross administrations. Some examples include:

- The green economy, with investments such as the East Side coastal resiliency project, offshore wind, the climate campus on Governor's Island and clean energy initiatives funded through the Inflation Reduction Act
- Technology, including investments such as Cyber NYC
- Life sciences, including Science Park and Research Campus Kips Bay
- Infrastructure, given the significant investment from the Federal government investments via the Infrastructure Investment and Jobs Act (IIJA)
- Healthcare, considering the investments coming to New York City through the latest investment in Medicaid reform within New York State

Work has already begun to identify which occupations will be needed in several of these areas – notably in the green economy and technology. Further work on this topic can ensure that priority occupations for apprenticeship will complement existing investments.

Aligning with City Priorities & Investments: Sustainability

Cities and states are grappling with the effects of climate change and making efforts to curb its impact. As a result, jobs that address these challenges are growing and are anticipated to increase over the coming years. The occupations vary widely – everything from green finance to recycling to freight and electric vehicles.

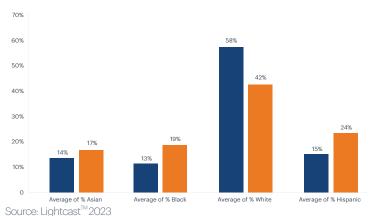
New York City has dedicated significant resources to increasing sustainability over the last two decades, including setting ambitious climate targets and policies and investing tens of billions of dollars in climate resiliency. In April 2023, Mayor Adams released New York City which outlines investments in sustainable infrastructure, building decarbonization and the circular economy. The plan also emphasizes the need to connect the New York City workforce to emerging green trades, allowing them to move from low-wage jobs to careers in an in-demand market. The City is in the process of developing a green economy industry action plan which will launch a climate education and training program in NYC Public Schools, grow New York City's workforce by positioning New Yorkers for green economy jobs, and support entrepreneurship and industry innovation in this space.³⁴

This plan will likely focus on a range of roles since there are opportunities in everything from climate finance to the circular economy. However, since buildings drive almost 70% of all GHG emissions in New York City, many roles will be focused on building decarbonization. This includes roles in the construction, engineering and electrical trades that include specific skills in areas like solar instillation offshore wind (note: NYCEDC's investments in offshore wind are expected to create between 8,000 and 13,000 jobs across industries).³⁵

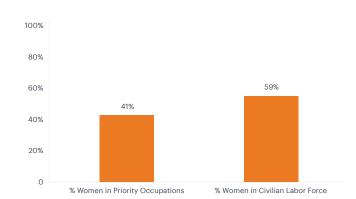
The City should align apprenticeship investments with the public and private investments in sustainability, especially since there is already a large, establish presence of apprenticeships in the trades that can be expanded upon with these new jobs. One potential example is the recent announcement of the New York Climate Exchange on Governor's Island. Clare Newman, President & CEO at the Trust for Governors Island, anticipates that the investment will serve hundreds of students and create hundreds of roles for techs and facilities managers, on top of the construction jobs. Separate and apart from these roles, it will be a source of green construction training opportunities and potential workforce programming. Investments like the New York Climate Exchange are expected to spur growth in non-trade roles as well, such as in waste, finance and consulting, and consumer products.

Priority Occupation Demographics

The priority occupations tend to be more male and Whiter than the average across all occupations in New York City. This indicates the potential for diversifying the talent pipeline in these occupations through apprenticeships.







Source: Lightcast[™]2023 Figure 8: Priority Occupations by Gender

Comparison of Priority Occupations to Current New York Apprenticeships ____

To compare the priority occupations to current apprenticeships, we pulled the SOC codes from the linked outlines on the Trade List from NYSDOL.³⁶ The list contains the 199 active frameworks that are available to New York sponsors. After creating the database, we compared the SOC codes from the Trade List to those from the list of priority occupations. The majority of identified priority occupations do not have apprenticeship frameworks that are approved by NYSDOL New York. The 28 occupations listed in Table 12 below have existing frameworks. Since this was based on matching SOC codes, it possible that additional occupations could align with existing apprenticeship frameworks but not be a SOC match. The existing frameworks cover a mix of construction trades, tech, industrial and public sector occupations. Further expansion of public sector roles – such as teachers – is a potential pathway to fill talent gaps in the City. Further discussion of public sector apprenticeships is included below.

Comparison of Priority Occupations to Current New York Apprenticeships

soc	Description	Apprenticeship Framework in NYC
11-1021	General and Operations Managers	Computer Support Technician
11-9021	Construction Managers	Construction Manager
13-1111	Management Analysts	Continuous Improvement Associate
13-1161	Market Research Analysts and Marketing Specialists	Marketing Coordinator
15-1253	Software Quality Assurance Analysts and Testers	Quality Assurance Auditor
15-1255	Web and Digital Interface Designers	UI/UX Designer
15-1299	Computer Occupations, All Other	Cloud Engineer
17-2199	Engineers, All Other	Manufacturing Engineering Technician
17-3011	Architectural and Civil Drafters	Drafter (Architectural)
17-3023	Electrical and Electronic Engineering Technologists and Technicians	Calibration Technician (Electrical/Electronic)
19-4099	Life, Physical, and Social Science Technicians, All Other	Quality Assurance Auditor
25-2021	Elementary School Teachers, Except Special Education	Teacher
25-3099	Teachers and Instructors, All Other	Environmental Literacy Instructor
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	Scenic Artist
33-2011	Firefighters	Fire Fighter
41-3031	Securities, Commodities, and Financial Services Sales Agents	Sales Associate (Financial Services)
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	Technical Sales Representative
47-2111	Electricians	Electrician (Housewire or Residential)
47-2152	Plumbers, Pipefitters, and Steamfitters	Plant Maintenance - Pipefitter
47-2211	Sheet Metal Workers	Sheet Metal Worker (Iron Plate)
47-2221	Structural Iron and Steel Workers	Iron Worker (Stone Derrickman & Rigger)
47-4011	Construction and Building Inspectors	Energy Efficiency Technician
47-4021	Elevator and Escalator Installers and Repairers	Elevator Servicer and Repairer
49-3011	Aircraft Mechanics and Service Technicians	Aircraft Refinishing Paint Technician
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	Diesel Engine Mechanic
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	Heating, Ventilation & Air Conditioning Mechanic
49-9041	Industrial Machinery Mechanics	Vacuum Furnace Technician (Manufacturing Only)
49-9051	Electrical Power-Line Installers and Repairers	Electrical (Outside) Line Worker

Source: NYSDOL

Table 12: Priority Occupations with NYSDOL Approved Apprenticeship Framework

Current New York City Landscape: Apprenticeships and Occupations

Comparison of Priority Occupations to Current New York Apprenticeships

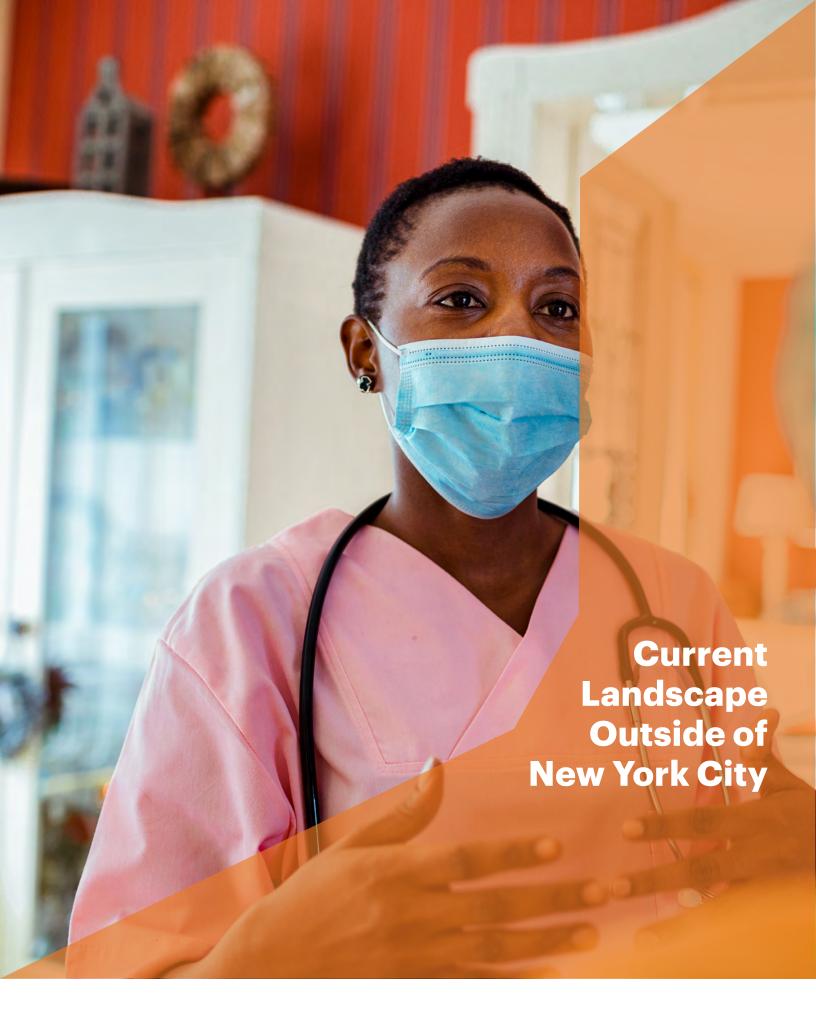
Public Sector Apprenticeships in New York City

The City of New York has historically had several apprenticeships across a variety of occupations. With high vacancy rates – nearly 8% in March 2023 according to the New York Times – in the City, apprenticeships represent a pathway to recruiting and retaining talent. Combined with Mayor Adams' commitment to apprenticeship, this is the time to invest in public sector apprenticeship programs.³⁷

Currently, public sector apprenticeships in New York City are created in a decentralized model. Agencies have largely independent programs that they started due to a staffing need. A preliminary analysis based on conversations with former employees from the NYC Department of Citywide Administrative Services (DCAS), CUNY and NYC Public Schools and a review of NYSDOL's list of registered apprenticeships uncovered several examples of apprenticeships:

- NYC Police Department: School Safety Officers
- NYC Department of Transportation: Highway repair
- New York City Housing Authority: Painters
- NYC Public Schools: CTE teachers through the Success Via Apprenticeship program
- NYC Department of Parks: Arborist Apprentice Program

If a comprehensive review was conducted, it is likely that there are currently (or historically) other examples of apprenticeships in New York City government. In addition, City agencies have engaged in multi-year fellowships with CUNY in areas such as technology, which can be shaped into pathways to public sector apprenticeships. One recent and promising example is the Civil Service Pathways Fellowship program. The Civil Service Pathways Fellowship is a two-year program for graduates of CUNY's four-year colleges focused on roles in finance, data analysis and technology. The goal of the program is to be a path for students to take roles in City government after the fellowship. After their first year of placement, Fellows take a civil service exam which enables agencies to hire them for full-time roles. Further expansion of this model, including adopting it for current two- and four-year degree students, is a promising way to increase public sector apprenticeships. Some key activities to build on existing momentum include: identifying and expanding successful programs citywide, working to identify the critical vacancies, right-sizing the job requirements (education, years of experienced) with the job responsibilities and working with Civil Service Commission, unions and other key stakeholders to adopt necessary title changes.



Over the past decade, apprenticeships have been growing in prevalence across the United States. As of 2023, there are more than 580,000 active apprentices nationwide. This represents a 103% increase from 2013, and a 25% percent since 2018. This section reviews the state of apprenticeships in the largest cities nationwide and compares them to New York City, where comparative data is available. The data below is from RAPIDS, except for New York City data which is a combination of NYSDOL data plus the additional of nationally-registered programs. Since RAPIDS data is available at the county level, we have used the county that the major city is in as a proxy for the city itself. This data includes information on apprentices registered on a state and national level.

Total Apprenticeships

In other countries, especially European counties such as the United Kingdom, Germany and Switzerland, apprenticeships comprise a large portion of their workforce – in Switzerland, for example, 44% of the working population 25-63 had an apprenticeship as their highest qualification.³⁸ This is significantly different than the United States. The 580,000 apprenticeships nationally account for approximately 0.2% of the total workforce population of 266 million. The data in the largest cities reflect national trends. As of 2022/2023, active apprentices account for a small portion of the total workforce in each county.



Total Apprenticeships

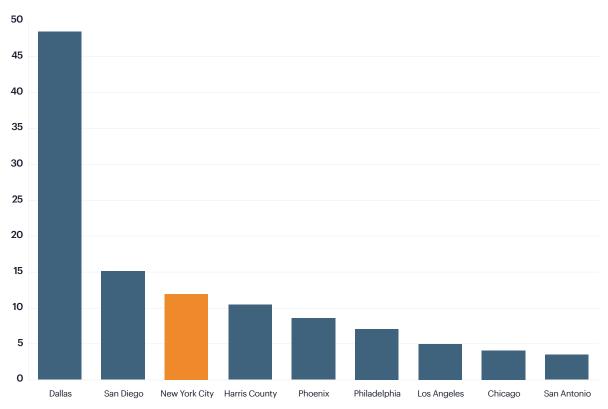
	Active Apprentices	Adult Workforce Population	% of Adult Workforce
Philadelphia (Philadelphia County)	4,576	798,540	0.57%
Dallas (Dallas County)	5,867	1,362,947	0.43%
San Diego (San Diego County)	5,905	1,680,193	0.35%
Los Angeles (Los Angeles County)	16,239	5,142,826	0.32%
Chicago (Cook County)	7,680	2,745,204	0.28%
Houston (Harris County)	6,401	2,432,353	0.26%
San Antonio (Bexar County)	2,619	1,007,364	0.26%
San Francisco (San Francisco County)	1,147	489,407	0.23%
New York City (New York City County)	9,146	4,307,749	0.21%
Phoenix (Maricopa County)	4,718	2,306,881	0.20%

Source: USDOL, U.S. Census Adult Workforce Population, ACS 1-Year Estimates Data Profiles, Civilian Labor Force Table 13: Number of registered apprenticeships compared to adult population

Demographics

Across the largest cities in the country, New York City is typical in terms of the demographic breakdown of its apprentices. In terms of gender, there are significantly fewer female apprentices (hovering under 15% overall) than male apprentices (Figure 9). New York has one of the larger percentages of female apprentices compared with peer cities. Dallas is a notable exception. This is spurred by the mix of occupations among Dallas' registered apprenticeships, where Registered Nurse Residents account for nearly 40% of all apprentices in the county. This occupation employs a high percentage of female apprentices.

% Female Apprentices



Source: US DOL RAPIDS, NYSDOL

Figure 9

Current Landscape Outside of New York City

Comparative City Analysis: Apprenticeships in Major American Cities

In terms of race and ethnicity, New York City is similar to the average across peer cities except in a few areas highlighted in the chart below. New York City has fewer apprentices that identify as Hispanic or American Indian or Alaska Native, and a higher percentage of apprentices that identify as Black or African American. City demographics seem to drive these differences rather than specific policy priorities. For example, Phoenix has the highest portion of individuals that identify as American Indian or Alaska Native, while San Antonio, Los Angeles and San Diego have high percentages of apprentices that identify as Hispanic.

	American Indian or Alaska Native	Asian	Black or African American	Multiracial	Native Hawaiian or Pacific Islander	White	Hispanic
Chicago	2%	1%	11%	1%	0%	75%	34%
Dallas	2%	7%	28%	1%	1%	46%	31%
Houston	3%	1%	23%	1%	1%	56%	52%
Los Angeles	13%	4%	12%	1%	2%	23%	77%
Philadelphia	0%	1%	15%	1%	0%	79%	7%
Phoenix	16%	2%	8%	1%	1%	46%	46%
San Antonio	2%	1%	6%	1%	0%	78%	66%
San Diego	2%	8%	14%	2%	5%	26%	60%
San Francisco	2%	12%	10%	0%	3%	72 %	33%
New York City (NYS & US DOL)	1%	3%	28%	1%	1%	51%	31%
Average	4%	4%	16%	1%	1%	55%	44%

Sources: US DOL RAPIDS (2022); NYSDOL active apprenticeships data (April 2023) Table 14: Breakdown of Apprentices by Race

Occupations

Similar to New York City, the construction trades are the most prevalent registered apprenticeships in peer cities. However, there are concentrated pockets of non-construction occupations and industries; these areas are highlighted below along with recommendations for additional research.

The top apprenticeship occupations in major cities in the United States primarily fall within the construction trades. The occupations in Table 15 account for 80% of apprenticeships in peer cities. There are two healthcare occupations - Registered Nurse Residents and Nurse Assistants - that fall into the top occupational categories, as well as a role called "Operations Management" which covers individuals who oversee multiple departments in the public or private sector. The categories below align with the top currently active apprenticeships in New York City through NYSDOL. The only occupation in New York City that does not fall within the top occupations below is the New York City Police Department's School Safety agents.

The list diverges from the apprenticeships that are nationally registered in New York City, but the volume of those occupations exclude them from this list.

Source: US DOL RAPIDS (2022)
Table 15: Common Apprentice Occupations

Occupation	Number of Roles in Peer Cities	Percent of Total Roles in Peer Cities
Electrician	9,787	19%
Plumber	3,890	8%
Construction Craft Laborer	3,565	7%
Carpenter	3,382	7%
Registered Nurse Resident	2,193	4%
Sheet Metal Worker & Tinsmith	2,153	4%
Pipe Fitter	2,058	4%
Elevator Constructor	1,710	3%
Roofer	1,317	3%
Cement Mason Concrete Finisher	1,274	3%
Ironworker or Structural Ironworker	1,134	2%
Painter	974	2%
Operations Management	801	2%
Millwright	800	2%
Truck Driver, Heavy	787	2%
Fitter I	784	2%
Boilermaker I	752	1%
Operating Engineer/Heavy Construction Equipment Mechanic	705	1%
Heating & Air Conditioning Mechanic & Installer	598	1%
Broadband Technician	552	1%
Glazier	501	1%
Wood Flooring Specialist	476	1%
Refrigeration and Air Conditioning Maintenance	413	1%
Nurse Assistant	378	1%

The overall view of occupations across these cities hides several variations amongst them and some data inconsistencies. While electricians, carpenters, plumbers, and sheet metal workers are present in high numbers across the cities, most of the counties have a few outliers from the table above. There also appears to be a data reporting issue in California, since both Los Angeles and San Diego have high numbers of apprenticeships without an assigned occupation. Based on this analysis, there are a few notable variations among cities and occupations:

Healthcare

Texas has a high concentration of apprentices in healthcare occupations. Dallas has an unusually high number of registered apprenticeships in the healthcare industry. All the registered nurse residents above are from Dallas, and it is the top registered occupation in the county, surpassing even electricians. In addition to registered nurse residents, Dallas has a high number of nurse assistants, pharmacy technicians, ambulance attendants (EMTs) and sterile supply technicians. Houston also has a relatively large number of apprenticeships in healthcare, including community health workers, health information data analysts, and phlebotomists. In addition to the work being done in Texas, there is smaller concentration of dental assistants in Los Angeles. We recommend following up with key stakeholders in these cities – especially in Dallas and Houston – to understand best practices and policies as New York City seeks to grow apprenticeships in healthcare occupations.



Public Sector

There are several public sector occupations with larger numbers (50+) in each city. Apprenticeships in public schools (teacher aides in San Diego and Dallas, early childhood teachers and child development specialists in Philadelphia) are popular. Philadelphia also has many correction officer apprenticeships. Given what we know about public sector apprenticeships in New York City, it is likely that some of the other occupations in the trades – like painters, steel workers, and craft laborers – also work for the public sector.

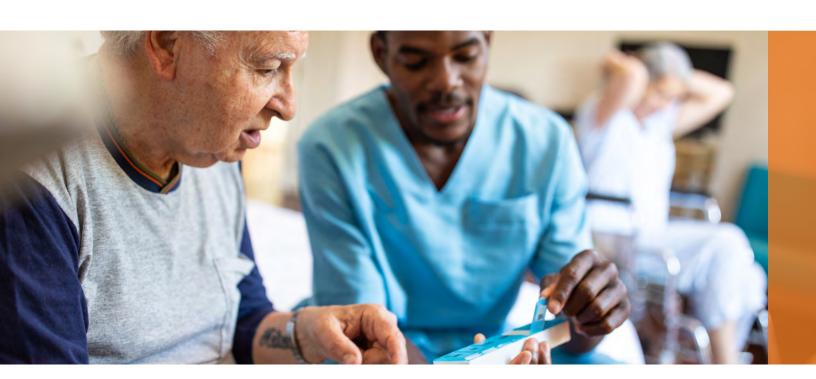
Emerging Sectors

Growing non-traditional apprenticeships in sectors such as tech, business operations and the creative economy is a key policy priority in New York City and across the country since these roles are growing and pay family-sustaining wages. San Diego has an especially high concentration of active apprentices in these fields. The second-largest occupation – after electricians – is operations management (795 roles). Operations managers coordinate the operations of public or private sector organizations, overseeing multiple departments or locations. San Diego also has many sound technicians (147) – typically involved with the music industry – and an active cohort of software/application developers (30). Understanding the roles/training for the operations management apprenticeships would be especially useful given New York City's interest in focusing on transferrable skillets, and the large number (99,000) and high median salary (\$66/hour) of these roles locally.

Outside of San Diego, there are several smaller programs in cyber security (Phoenix) and computer support specialists (Chicago). There are also multiple telecommunications/broadband technicians apprentices in peer cities. Given the federal investment and growth in this space it is a notable that there are multiple active frameworks used across major cities.

Hospitality

Almost every city – Chicago, Houston, Los Angeles, Phoenix, Philadelphia, San Diego, has active apprenticeships in the hospitality industry for cooks. While there isn't a high volume of these apprentices in each city, it is notable that it is a broadly used active apprenticeship framework. The median salary for cooks in New York City does not reach the \$31/hour target, but head cooks are close (\$29/hour), there are projected to be more than 6,000 head cooks and 25,000+ cooks in 2029, and there is a low risk of automation or movement to a city with a lower cost of living/labor cost. It is worth further investigation when identifying priority occupations, especially given New York City's investment in this sector to date.



Apprenticeships in Nontraditional Sectors: Growing Momentum

Although apprenticeships are historically associated with the building and construction trades, there is growing momentum to expand apprenticeships beyond traditional industries. Outside of the United States, in countries such as Switzerland and Germany, the most popular apprenticeships are in the commercial sectors including banking, retail, and technology.

In the United States, there is growing interest in apprenticeships in areas such as technology, healthcare, and advanced manufacturing. Federal and state investments have been dedicated to growing apprenticeships in these nontraditional, modern sectors. Large professional corporations have invested in apprenticeship programs as a way to address talent gaps in occupations like cyber intelligence. Employers across multiple states have come together through entities like the Apprenticeship Network – led by Aon, Accenture and Zurich – to address their talent needs.

This interest is also clear from the growth of registered apprenticeships in these fields - which likely only tells part of the story, as many professional programs are not yet registered.

Overall, apprenticeships have grown by 103% since 2014 However, that grown has not been even - sectors such as healthcare and professional services have been growing rapidly. While construction and building trades still significantly outnumber these other industries, and deserve continued investment, the future of growth for apprenticeships is in these new and emerging sectors.³⁹

Finance and insurance:

319%

Experienced growth

Construction:

76%

Experienced growth

Healthcare & social assistance:

691%

Experienced growth

Professional, scientific and technical services:

1476%

Experienced growth

Apprenticeship Intermediaries: Role and Approach _____

Intermediary Roles in the Apprenticeship Ecosystem

Engaged and active intermediary organizations will be key to building and maintaining a successful apprenticeship ecosystem in New York City. Intermediaries are entities that serve a variety of functions in the apprenticeship ecosystem including convening industry, addressing skills gaps, organizing labor, raising resources, advocating for policy change, and supporting systems-level change. In the apprenticeship space, unions and union training organizations play many key intermediary functions, especially in the trades and healthcare industries. Industry associations, community colleges, and non-profits also perform this set of functions in a variety of industries.

Convening industry

Industry associations, councils and partnerships, convene and support either a specific industry (i.e., building trades) or cross-industry leaders (i.e., CEOs in NYC). As conveners, they bring together the relevant industry parties involved in setting up, developing, and maintaining apprenticeships. Examples of actors in this space include the Manufacturers Association of Central New York (MACNY), the Manufacturing and Industrial Innovation Council (MaiiC), Tech:NYC, the Partnership for New York City, the Real Estate Board of New York (REBNY), Building Skills NY, and the New York Jobs CEO Council.

Addressing skills gaps

Intermediaries convene workforce and/or training-focused organizations member organizations to support skills-based training and learning development for apprenticeship programs. This includes organizations such as the Consortium for Worker Education (CWE), Brooklyn Workforce Innovations (BWI), the New York Association of Training and Employment Professionals (NYATEP), the New York City Employment and Training Coalition (NYCETC) and Pursuit.

Organizing labor

Labor unions are membership-driven organizations that bring together employees to advocate for employment terms and conditions such as wages, benefits and schedules. Unions play a key role in managing apprenticeship programs through vetting applicants, and providing training and funding.⁴⁰ In New York City, 1199SEIU, the International Brotherhood of Electrical Workers (IBEW) and District Council 37 (DC37) are examples of active unions that play a role in the apprenticeship space.

Raising resources

Intermediaries also play a critical role in contributing to funding apprenticeship. Unions, technical assistance providers like Multiverse, the Partnership for Youth Apprenticeship (PAYA) and New York Workforce Funders play key roles in securing and aligning funding from various sources to support apprenticeship. More information on how intermediaries support with funding apprenticeship can be found in the next section, Funding Availability and Use Cases – Role of Intermediaries.

Apprenticeship Intermediaries: Role and Approach



Advocacy and policy change

As advocates for apprenticeships, intermediaries play a key role in communicating the value – as a talent strategy – to prospective employers. Many employers are unfamiliar with apprenticeship programs in the technology, finance, marketing, and other industries outside of established apprenticeship programs in the building and manufacturing trades. Employers may be wary of starting an apprenticeship program, unsure of the value to them, or concerned about the registration process with US DOL. As a convener who operates across an industry or multiple, intermediaries are well-equipped with the knowledge of their members hesitations and how to address them, having a catalogue of use cases and success stories to share with prospective employers. At a policy level, intermediaries are advocates for funding changes and working with labor departments to make the regulatory environment more conducive for apprenticeship. For example, Apprenti works directly with federal regulators on policy issues. CareerWise, a nonprofit apprenticeship intermediary, is working with key stakeholders in New York State to adjust labor laws to be more supportive of students participating in earn and learn experiences.

Overall, the variety of key roles that intermediaries play are vital to creating and supporting a robust apprenticeship ecosystem that contributes to high-level systems change. According to Jobs for the Future, intermediaries are "in a position to replicate and spread effective practices that improve outcomes" for employers and the apprentices. ⁴¹ Apprenti, a tech talent focused organization, works across multiple geographies, developing best practices for tech apprenticeships and sharing with their member organizations. Apprenticeship USA and organizations like Jobs for the Future provide research, thought leadership, and best practices that seek to drive systems change to make the workforce and education systems more inclusive and equitable.

Intermediary Roles in Apprenticeship Program-Level Support

Intermediaries fulfill a variety of roles that help to execute and support apprenticeships at the program level and by doing so, help ensure program quality. For employers seeking to build or maintain an apprenticeship program, intermediaries may provide administrative support required for registered apprenticeship programs, recruit and source talent, serve as a training provider or connector to training for apprenticeship stakeholders (i.e., apprentices, supervisors), elicit feedback from employers/apprentices and share best practices across relevant stakeholders. Intermediaries may also serve as a government partner – as the go-to source for tracking the number of apprenticeships, for providing quality control across programs, and as an advocate for apprenticeships creation that is in line with the City's goals.

Apprenticeship Intermediaries: Role and Approach

Administrative support

Intermediaries can guide employers through the US DOL registration process. Apprenticeship Carolina, a division of the South Carolina Technical College System, directly supports businesses create and maintain their registered apprenticeship programs (adult and youth) as well as unregistered pre-apprenticeship programs. The organization's consultants support companies at no cost to help them through the entire process, providing technical assistance that includes with registration. Apprenti, can "file and register custom apprenticeship standard" on behalf of an employer. MACNY, as an approved sponsor, can file group joint applications for business with NYSDOL.

Recruitment

Apprenticeship-focused intermediaries, including Apprenti, CareerWise, and Multiverse provide talent directly to employers by managing the recruitment process, from recruiting and interviewing candidates to either facilitating placements or funneling them to employers' hiring process.

Instructional training

Intermediaries can be sources of training, as well as serve as connectors and sources of finding instruction providers. Multiverse, for example, designs its 12-15 month training programs in tech skills that it provides to apprentices. Others, like Apprenti that supports employers with sourcing technical training and CareerWise New York that facilitates alignment between the public school curriculum and industry, serve as connectors or intermediaries between the employer and the training source.

Mentorship training

Intermediaries may provide training for mentors, a key requirement of an apprenticeship. Multiverse facilitates one-on-one couching between one of their in-house industry experts and apprentice line managers.



Funding to support apprenticeships comes from many different sources depending on the purpose. This section outlines the components of an apprenticeship and the necessary associated funding. It then provides an overview of the types of funding typically used for apprenticeships by source, including case studies.



Figure 10: Apprenticeship structure

Apprenticeship Costs

The types of programs costs for apprenticeships are similar across employers. A diagram of these costs can be found in Figure 10. For each program, there are fixed costs required to set up the program, design the curriculum, locate classroom space, manage the execution, and recruit individuals. There are also variable costs associated with the wages and benefits of apprentices, the mentor/supervisor time, and supplies for the apprentices – like uniforms or other non-equipment needs, and instruction/tuition investments. Overall, employee wages are the primary cost driver for an apprenticeship. Further detail on the scale of costs and associated benefits is provided in the following chapter on the impact of apprenticeships.

Often, apprenticeships are the result of either braided, blended or aligned funding coming from different partners and sources. Funding streams can cover different components of the program, with some overlapping ability to deploy the resources. Table 16 below highlights the components of these cost buckets and potential funding sources. While the ability to use multiple funding sources is beneficial, the landscape is complex. Without significant background in the rules and eligibility for funding streams, it can be difficult for program designers to effectively align funding. New York City should consider how to make the process as easy as possible for potential sponsors, employers and apprentices.⁴² This is especially important for supporting apprentice wages, which are the largest cost of an apprenticeship program.

Program Area	Common Cost Driver	Potential Funding Sources
Program Design and Administration	 Wages and benefits for organizational staff and/or contractors (evaluation, quality control, internal systems development) Start-up expenses Fundraising Intermediary payments 	 Employer, sponsor or lead organization's funds Grants from state or federal agencies to support the growth and administration of apprenticeships Philanthropic grants Dues/fees (from union or organizational members)
Recruitment & Outreach	 Wages and benefits of outreach teams (internal or contracted) Promotional materials and paid advertising costs Informational materials and training for partners 	 Partner organization's operating funds Grants from the state or federal government Employers' general funds Philanthropic grants
Classroom Training	 Wages and benefits for training team Curriculum development and/or licensing Equipment and supplies Classroom space 	 WIOA Title I Individual Training Accounts Federal Pell Grants SNAP Employment and Training funds Perkins V funds (through community colleges) State-funded grants, scholarships and appropriations to educational institutions Employers
On-the-Job Training & Mentorship	 Wages and benefits for mentors/supervisors and the apprentices One-time costs for new employees (ex. system onboarding, background checks) Equipment and supplies (ex. tools, computer, materials 	 Employers (typical source of wages) State tax credits WIOA Title I Workforce Development Activities and Title IV Vocational Rehabilitation funds SNAP Employment and Training funds State and federal grants
Wraparound Services	 Wages and benefits for team(s) Transportation costs Childcare costs Job search/pre-employment transition services Individualized equipment to meet specific needs/accommodations 	 WIOA Title I, Title III Employment Services and Title IV funds IDEA funds Employers Apprentices

Table 16: Cost Drivers and Potential Funding Sources

Apprenticeship Stakeholders

As outlined above, different funding streams and actors are associated with the various costs of developing and running apprenticeships. These actors all have a place in the apprenticeship ecosystem, briefly outlined in Figure 11 below. While some of the roles are synonymous with the players (i.e. apprentices have a stable function) many of the other players can take on multiple roles. For example, community-based organizations can provide classroom training or help with registration, local or state government can act as an intermediary or an employer. However, the below are the critical roles that constitute the range of actors in the system. These stakeholders' funding role are further described below.

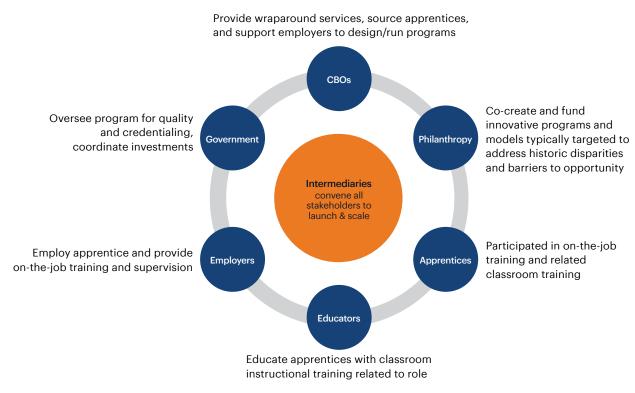


Figure 11: Funding Stakeholders

Role of Intermediaries

As demonstrated in the previous section, intermediary organizations play a critical role in coordinating all the various stakeholders and resources to launch and manage an apprenticeship. Intermediary roles can be filled by multiple types of actors. Two important ones that contribute to the funding needed to scale apprenticeships include unions and apprenticeship technical assistance providers, such as Multiverse, Apprenti or CareerWise.



Unions

Unions have historically provided most of the funding, coordinating and support functions for apprenticeships. Apprenticeship programs sponsored via a joint labor-management structure (typically unions and multiple employers) are the largest and oldest in the United States. In New York City, unions are the sponsors for all the top occupations except for School Safety Officers. Among the other large peer cities described above, US DOL data indicates that 72% of the apprentices are participating in union-led programs. The building trades are not the only sector in which unions play a large role. Healthcare unions – specifically 1199J-AFSCME – also significantly support apprenticeships.

Unions play a central role in managing apprenticeship programs. In addition to recruiting and vetting applicants, unions play critical training and funding roles. Unions offer rigorous related technical instruction, typically by technical experts and union members. As of November 2022, the building trades and their contractors operate approximately 1,700 nationally recognized privately operated training centers – known as Join Apprenticeship Training Centers (JATC) – in the United States.

Unions' role in funding apprenticeships is also critical. Most joint programs are financed via a trust fund (sometimes known as a Training or Training and Employment Fund) that is funded by contributions from union members, employers or contractors. The amount is negotiated between the union and employers/contractors. For union members, it typically amounts to "cents" for every hour of their salary over the course of a year. The amount can vary year to year.

Case Study: 1199SEIU Employment and Training Funds

Historically, 1199SEIU has been the primary driver of employment training in the healthcare field through their Training and Employment Funds (TEF). TEF provides significant support for their members, ranging from traditional training and education to employment services to resolving management conflicts. TEF has been a significant supporter of apprenticeships in New York City, with the active healthcare apprenticeships all funded by the union.

According to Daniel Bustillo, Deputy Executive Director, 1199SEIU Training and Employment Funds, employers in healthcare are increasingly looking to nontraditional forms of talent acquisition and training like apprenticeships due to the significant shortages in the healthcare labor force. These services are primarily funded through member dues, especially for incumbent worker training. Apprenticeship work has been funded by these dues as well, although TEF has been able to access US DOL grants and contracts especially through its work with the Healthcare Career Advancement Program (H-CAP) a national labor/management organization. Since many healthcare providers are noon-profits – especially the hospital systems hiring at scale – tax credits have not tax credits have not been a productive form of funding for either the employer or TEF's intermediary work. According to Bustillo, although there are some barriers to scaling apprenticeships in healthcare because of the highly regulated nature of the profession, there are opportunities especially in technologist occupations - like respiratory or radiation technologists – and potentially upskilling for nursing staff.

Technical Assistance Providers

To meet rising interest, there are an increasing number of employer-facing providers focused on apprenticeships. As discussed above, these include organizations focused apprenticeship specifically – such as Multiverse and Apprenti – but also industry associations and workforce development organizations that see apprenticeship as an important career pathway for the people they serve. These providers receive and consolidate funding in a variety of ways, braiding sources for the benefit of employers and apprentices. Some examples include:

Employer payments

Intermediaries such as Multiverse and Apprenti operate primarily based on employer fee models. They are full-service companies that can support a firm that wants to launch an apprenticeship. From recruiting to designing programs to providing related education, these firms can fulfill all employer needs. However, that comes at a price to the employer. Employers pay for this out of pocket. The costs limit the kinds of firms that can use these full-service intermediaries. For example, Tim Smith, Director of Communications and Public Affairs at Multiverse, estimates that approximately 90% of Multiverse's customers are enterprise scale companies.

Tax credits can be used to offset the cost for employers. In the UK, Multiverse has leveraged employers' apprenticeship levy payments to pay for its programing. This type of funding, Smith notes, is critical to scaling and supporting programs because it's a stable set of incentives that allows businesses to plan for their hiring needs. It is not a one-off grant to kick start a program to test if it works. Multiverse has also received significant venture capital. Translating this to the United States has not yet been successful. There is interest but Smith and Jennifer Carlson, CEO and Founder of Apprenti, have noted that due to available incentive structures and employer interest it has not been a part of their model.

Competitive grant applications

Intermediaries can serve as convener on consortium of actors in the ecosystem to help secure funding. Careerwise in both New York and nationally has played this role for partners across multiple states, securing \$7 million in competitive grants from US DOL in recent years. Intermediaries also play this role for philanthropic investments. For example, San Francisco partnered with the Bay Area Council – an employer intermediary – to secure philanthropic funding to support the Northern California Apprenticeship Network (further described below).

Federal Funding

The federal government is the largest funder of apprenticeships and workforce development in the country. While registering an apprenticeship provides stability, it does not automatically ensure federal funding for apprenticeship, but there are both federal formula and competitive funds that can be leveraged to support apprenticeships. Below are common sources of federal funding deployed to support both registered and unregistered apprenticeship programs nationwide.

Workforce Innovation and Opportunity Act (WIOA)

States have used WIOA formula funding to support several components of apprenticeships: instructional training, a portion of on-the-job training, and supportive services through individual training account. WIOA is authorized to use for registered apprenticeships and can be used for apprenticeship-like programs that are not registered. Local Workforce Development Boards (WDBs) set policy on allowable apprenticeship costs for eligible individuals. While it varies by state, common uses of WIOA include:



Individual Training Accounts (ITAs) can cover the allowable amount of job-related instruction costs, including costs related to classroom instruction and distance learning. Similarly, Customized Training contracts between local WDBs and employers can pay for apprenticeship instructional costs. Under WIOA, however, training providers must be on the Eligible Training Provider List or they must be part of a registered program. In New York City, the ETPL includes many CUNY schools, and providers of hospitality training (ex. International Culinary Center) and tech training (ex. Flatiron School, NPower and Per Scholas.) WDBs can also use up to 20% of their WIOA allocation to support incumbent worker training costs.

Note: While there are many well-known organizations on the New York ETPL, the directory at the state could use further improvement. There are more than 100 training providers listed and not all of them appear to be of a similar quality – some places have little more than a phone number or e-mail address for an individual. In addition, some high-quality ones are not even included on the list. Curating a searchable, easy-to-navigate list of training providers – and helping to expand the list – could be a helpful tool for apprentices, employers and intermediary organizations.

On-the-job training & mentorship

Depending on state and local policy, On-the-Job-Training contracts funded by WIOA can reimburse employers up to 75% of wages paid to participants for up to six months. Typically, the reimbursement rate is closer to 50% of wages.



Wraparound services & pre-apprenticeships

WIOA can be used for services that lead to a placement in a registered apprenticeship program, including covering pre-apprenticeship and other kinds of employment readiness training. This includes wraparound services such as childcare or transportation costs. When an individual transfers into a registered apprenticeship program following these services, it counts as a positive placement for WIOA reporting.

WIOA is a powerful tool to fund apprenticeships, especially when combined with other state and federal resources. Given the upcoming increase in WIOA funding that New York City will receive, it could be a primary source of funding to cover areas – like a portion of apprentice and supervisor wages – that are not otherwise covered by federal resources. However, the Mayor's Office should seek to address challenges common to other agencies using WIOA for apprenticeships by:

- Ensuring team members (internal, outreach, Workforce1) are well-trained on apprenticeships so they can effectively speak to its benefits and the associated resources available. This includes both employer-facing and jobseeker-facing teams.
- Evaluating the return on investment of an apprenticeship program for the employer and jobseeker, since supporting apprenticeships are often a more costly investment. Apprenticeships compete against other short-term trainings that can deliver quick results but may not have the same long-term impact. It is important to track and evaluate apprenticeship effectiveness over time relative to the other career pathways strategies.
- Streamlining the application and funding tracking process, taking the burden off employers wherever possible.

Funding Availability and Use Cases

Case Study: Maricopa County, Arizona (Phoenix)

The Maricopa County Workforce Development Board has the highest number of WIOA-eligible participants who are also registered apprentices in the country. The country focuses on the building trades, working with six intermediary partners that represent union- and non-union companies. The connection is the result of the work of Career Advisor staff that work for the County. All Career Advisors are trained on apprenticeship and are co-located with the respective training schools. There are two designated individuals who would solely with apprentices. The Career Advisors conduct on-site training and process the paperwork so that apprentices do not have to go to a career center. This is something to consider for the Workforce1 Centers in New York City.

Maricopa County also uses WIOA to fund the instructional training component of a registered apprenticeship, allowing individuals to access up to \$4,000 for their instruction. This is typically used in the first year of the apprenticeship program when wages are lower.

US DOL/Employment and Training Administration (ETA) Competitive Grant Funding for Apprenticeships

US DOL provides competitive grant funding for entities seeking to increase apprenticeships across the country. Since 2019, US DOL has invested nearly \$1 billion in grants and contracts specifically supporting apprenticeships. The grant opportunities have ranged in size from \$3.3 million to expand access for women in apprenticeships and non-traditional occupations to \$184 million to scale apprenticeships through sector-based strategies.

Depending on the eligibility requirements and the applications selected, these grants can cover every component of apprenticeships – from program design and administration to outreach to wraparound services. Descriptions of the larger grant opportunities in recent years are included below. The chart below gives a sense of the focus and size of recent opportunities.



Funding Availability and Use Cases ____

Grant Name	Purpose	Size	Awardees	Award Range
Apprenticeship Building America (2022)	 State apprenticeship building and modernization Expansion of youth apprenticeships Growing equitable registered apprenticeship pathways through pre-apprenticeships Support of registered apprenticeship hubs in new and fast-growing industries & occupations 	\$121 million	 Community colleges Intermediary organizations City & county governments Foundations 	\$1.9 - \$8 million
State Apprenticeship Expansion, Equity and Innovation Grants (2021)	 Expand programming and inclusive recruitment strategies Develop partnerships with new industries and nontraditional occupations Aligned apprenticeships within state education and workforce systems 	\$99 million	State governments, in partnership with local governments and industry	\$3.9 - \$10 million
Scaling Apprenticeship through Sector-Based Strategies (2019)	 Expand apprenticeships to new industry sectors reliant on H-1B visas, such as IT and IT-related industries, advanced manufacturing, and healthcare Increase apprenticeships among employers in these sectors that have not traditionally implemented apprenticeships, particularly small- and medium-sized businesses 	\$184 million	College and universities with private sector partners	\$2 - \$12 million

Source: US DOL - Active Grants and Contracts
Table 17: Recent Apprenticeship Grants from US DOL

Funding Availability and Use Cases



In New York, SUNY, NYS DOL, upstate counties and organizations such as Healthcare Career Advancement Program (H-CAP), Per Scholas and CareerWise have received awards. Of the awards received in New York, the City has only been a partner on one – CareerWise's Apprenticeship Building America proposal.

This suggests that the City has either not been an aggressive applicant, or its/its partners' applications have not been competitive. In addition to grants focused specifically on apprenticeships, US DOL/ETA awards millions of dollars competitive workforce and training grants that have been used to support apprenticeships nationwide. Given the citywide goal, the City should set up the infrastructure to quickly and easily apply for grants and/or seek partners that have the capacity to submit competitive applications in coordination with the City.

Case Study: Apprenticeship Carolina

Apprenticeship Carolina was formed in 2007 as a program of the South Carolina Technical College System to ensure all employers had access to the information and technical assistance needed to create registered apprenticeships. The program has apprenticeship consultants that work closely with employers to set up and design the infrastructure for the apprenticeship, all free of charge for the employer. As part of the system, economic development agencies statewide also keep schools abreast of local workforce needs and refer employers to their system. Apprenticeship Carolina bolsters apprenticeships in nontraditional sectors such as healthcare, tech, tourism and advanced manufacturing. Apprenticeship Carolina has seen a significant growth since its founding, supporting nearly 45,000 apprenticeships since 2008.⁴⁴

Apprenticeship Carolina has braided several funding streams in their successful program. First, the state and local regional commissions have made small investments (several million dollars over time) to fund personnel dedicated to conducting outreach, coordinating stakeholders and assisting employers. The state also created a small tax credit - \$1,000 per year per apprentices for up to four years – which is seamlessly offered to employers working with the initiative.⁴⁵

Apprenticeship Carolina's largest investment to date has come from competitive grants from US DOL. Since 2019 alone, US DOL has awarded Apprenticeship Carolina more than \$20 million to advance apprenticeships in industries ranging from advanced manufacturing to technology and transportation. Apprenticeship Carolina has used that federal funding to support personnel for program administration and employer engagement, small grant programs for employers with an apprenticeship program (\$12,500 for new locations and \$2,500 per apprentice), and to support related instruction.

Funding Availability and Use Cases

Supplemental Nutrition Assistance Program (SNAP) Employment and Training Funds

SNAP Employment and Training (SNAP E&T) funds are an avenue to fund the instructional training, on the job training and support services components of an apprenticeship. States are awarded SNAP E&T funds annually and have the flexibility to design their programs – services, regional focus, and whether its mandatory. SNAP recipients are eligible to use SNAP E&T funds for the cost of apprenticeships, other on-the-job training experiences, educational programs, vocational education. There are two types of funds:

- 100 percent funds: administrative expenses or direct program costs other than participant reimbursement this includes tuition, case management and job development.
- 50-50 funds (which must be matched by a non-federal source): administration and participant expenses above as well as transportation, dependent care and equipment/supplies/books.

Although typically used for instruction and other services, SNAP E&T can be used for subsidized work-based learning as well, including offsetting wages. The state proposes the level of wage subsidization, in their E&T state plan. Although SNAP E&T support is typically limited to six months, there is an exception for participation in a registered apprenticeship. In 2023, New York City received \$65.4 million in SNAP E&T 50-50 funds and slightly more than \$2 million in 100 percent funds.

SNAP E&T has successfully funded impactful workforce development programs, including for apprenticeships. States such as Virginia, Washington, Ohio and California have leveraged SNAP E&T for their programing. Currently, the Los Angeles Department of Economic and Workforce Development is developing a program to use these funds which they feel are an "untapped resource" for their workforce development programming. The City should investigate the current use of SNAP E&T funds in New York to best leverage them for apprenticeships. A discussion with the Seattle Jobs Initiative (SJI) would be beneficial, as they are the leading technical assistance provider in this space.

Current Landscape Outside of New York City

Funding Availability and Use Cases

Case Study: Oregon's Department of Human Services

Oregon's Department of Human Services has focused on growing SNAP E&T services to expand access to skills training and supportive services. The SNAP Training and Employment Program (STEP) Community College Consortia in Oregon ensures access to adult education and skills training at community colleges across the state. Portland Community College serves as the intermediary, leading a consortia that includes all 17 community colleges, state agencies, community-based organizations. The consortia uses a Career Pathway framework that offers individuals short-term, stackable credentials that build towards other credentials (i.e., associate degree, bachelor's degree, etc.). This approach supports individuals' progression along an education and career pathway, while also ensuring that the individual has access to supportive services such as tuition assistance, digital inclusion, housing, and childcare. This approach supports individuals' progression along an education and career pathway, while also ensuring that the individual has access to supportive services such as tuition assistance, digital access, housing, and childcare.

Case Study: Washington State & the Seattle Jobs Initiative

The Basic Food Employment and Training (BFET) program is Washington's SNAP E&T program. BFET provides education, employment and training services. BFET activities include job search training, supervised job search assistance, educational services, vocational education and skills training. The program also offers case management, job retention services and wraparound supports such as transportation and childcare to facilitate successful program completion.⁴⁸

BFET started in Seattle as a pilot in October 2005, with four community-based organizations and one college. The program now reaches statewide with over 50 community-based organizations, 12 Employment Security WorkSource locations and all 34 community and technical colleges offering a variety of employment and training services. The program served nearly 58,000 participants between 2016 and 2020. Two years after exiting BFET, 55% of participants are employed with a median hourly wage of \$18.72, with wages being adjusted for inflation. This is above the state's \$15.74 minimum wage. BFET can be used for apprenticeship and pre-apprenticeship programs.⁴⁹

The Seattle Jobs Initiative was one of the founding community-based organizations that launched BFET with Washington State. It became a prime advocate for SNAP E&T, building support among local, state and federal stakeholders. Now, the organization is the leading technical assistance provider for states and other administering entities.⁵⁰

Funding Availability and Use Cases

United States Department of Education

The United States Department of Education (DOE) is a critical source to fund the classroom instruction component of apprenticeships. For example, DOE invests significant funding into supporting Career and Technical Education through both formula and competitive grants. DOE meaningfully contributes to investing in the apprenticeship ecosystem, including through the following mechanisms:

Pell Grants and Federal Work Study

The Federal Student Aid (FSA) office provides billions of dollars a year in federal grants and work-study funds that can help apprentices access higher education. Students who qualify for Federal Pell Grants can access thousands of dollars per year (up to \$6,845 in 2022-2023) for tuition, room and board and other expenses. Federal Work Study programs can pay a portion of the training wages of eligible individuals participating in an apprenticeship while they are enrolled in certificate and degree programs.⁵¹



Perkins V Funds

Perkins V funds are used by eligible institutions to supplement their career and technical education programs, including supporting professional/support staff and purchasing equipment or materials. It is commonly used across CUNY institutions to support its technical and workforce training programming.

Local/State Government

States play a critical role in the on-the-ground funding of apprentices. Through their Departments of Labor and Workforce Development Boards, they operationalize the funding provided from the federal government. They also make their own investments in apprenticeships, levying taxes and investing portions of their general operating funds into apprentice programs. This section provides and overview and brief case studies of state investments.

Tax Credits

States use tax credits to offset the cost of apprenticeships for employers. Tax credits typically offset the cost of the program per each eligible apprentice if they meet the eligible criteria. Many states use the federal Work Opportunity Tax Credit Program for apprenticeships. Through this program, employers receive a credit of \$2,400 per qualified employee, which can increase to \$9,600 for a qualifying veteran. An overview of state tax credits are included below. Based on the offerings in other states, New York has relatively flexible eligibility requirements and a generous reimbursement amount. However, there has been minimal usage. In 2022, NYSDOL issued 97 tax credits to only 66 businesses across all of New York State, supporting 246 apprentices.

Tax credits are likely to be most beneficial for small- and medium-sized companies. Based on conversations with organizations like 1199SEIU and large professional services employers, the amounts are less significant for large multinational firms and are not available for large non-profit employers such as hospitals. Despite this, ensuring the process is easy for smaller firms – and that technical assistance providers are well-versed on how to apply – would help offset the cost for employers.

State	Description	Amount
Connecticut	 Tax credit for manufacturing programs that are 2-4 years in length 	• Lesser of \$7,500 per apprentice or 50% of wages
Colorado	 Enterprise Zone Tax Credit: credit for hiring apprentices within an EZ 	EZ Tax Credit: 12% of eligible job training costs
Illinois	 Covers educational expenses (cover tuition, fees, book costs etc.) 	 Up to \$3,500 per apprentice per year Additional \$1,500 if business is in an underserved area
Maryland	Tax credit available for employers that hire a registered apprentice	 \$3,000 for first five apprenticeship and \$1,000 after five or for youth apprentices Maximum of \$15,000 per year
Massachusetts	 Registered apprenticeship in healthcare, technology and manufacturing 	 Lesser of \$4,800 per apprentice or 50% of wages; up to \$100,000 per year
New York	 Credit for qualifying apprentice as well as additional credit for a full year of mentorship 	 \$2,000-6,000 per apprentice depending on seniority and nature of supervision. Must be enrolled 35 hours/week for at least six months Additional \$1,000/apprentice if apprentice is identified as a "disadvantaged youth apprenticeship" Additional \$500 for each apprentice counseled by a mentor for a full year
South Carolina	 Meant to offset direct and indirect costs, can be used for design/development, instruction, materials etc. 	• \$1,000 per apprentice per year for up to four years
Virginia	Worker Training Credit applicable to apprenticeship sponsors	 35% of costs of providing eligible training 35% of the direct costs of providing manufacturing training students

Sources: US DOL – State Tax Credits and Tuition Support; NYSDOL. Empire State apprenticeship tax credit. Table 18: Recent Apprenticeship Grants from US DOL

Grant Programs/General Operating Funds

States have developed a variety of grants to support apprenticeships. The size, focus and type of these programs depend on the needs and strategies of the state, although they are typically administered by their Departments of Labor or the equivalent. State support typically falls into one of the following categories:

Classroom training

Many states provide tuition support for the instructional component of apprenticeship programs. This is typically done through funding community colleges or scholarship programs that can be accessed by participants in apprenticeship programs. Some states – such as Colorado – allow their state 529 Savings Plan to be used for apprenticeship instructional training. California, Colorado, Delaware, Florida, North Carolina and South Carolina are a sample of the states that provide tuition assistance for apprentices' instructional training.

Innovation and program design

Many states invest in the creation and design of apprenticeships and apprenticeship ecosystems. These can take the form of coinvestments with federal funds – since there is typically a matching requirement for these funds – or pure state funding streams. Often these investments seek to spur innovation and drive policy priorities like developing non-traditional apprenticeships in new occupations or increasing access for underserved populations. Along with private investment, these funds can also spur the growth of the overall ecosystem, supporting an infrastructure of collaboration between key parties and funding partner activities through contracts.

Program administration

States also invest in the personnel needed to administer and grow apprenticeship programs. While many departments are partially funded by US DOL, states supplement their teams to conduct outreach, build consortia, and move policy priorities forward. For example, the State of Wisconsin uses state general funds for its team of more than a dozen individuals at the Bureau of Apprenticeship Standards. The team works directly with employers to register their programs, conduct outreach, and coordinate with local technical colleges. They also are the governance entity and quality control for statewide programs, conducting site visits and program check-ins during the year.

These allocations can be made directly – by funding personnel or initiatives dedicated to running and growing apprenticeship programs in the State – or through competitive processes. They are sometimes funded solely through general state funding sources, namely taxes, or a combination of state and federal resources. For example, NYSDOL is currently offering a \$3 million Apprenticeship Expansion Grant – a competitive grant funded by WIOA Title I resources – to provide opportunities for approximately 130 apprentices, with a focus on underrepresented populations. NYSDOL's goal is to support the growth of apprenticeships in high-demand occupations and the emerging fields of advanced manufacturing, healthcare, hospitality, and technology. Similar competitive grant programs are available in large states such as California, which currently is offering a \$7.3 million State Apprenticeship Expansion, Equity & Innovation Grant to develop new equitable apprenticeship programs for target populations.

The allocation of state, regional or local resources should be aligned with New York City's policy and programmatic priorities. There are multiple examples of funding designs to achieve different policy goals, whether it be to offset the cost of educational expenses, spur innovation in new sectors, or grow an apprenticeship ecosystem. Several examples of innovative funding designs – largely underwritten by state funding sources – are included as brief case studies below.

Case Study: California Apprenticeship Innovation Funding

In 2023, the California Department of Industrial Relations (DIR) and its Division of Apprenticeship Standards (DAS) launched a new initiative, Apprenticeship Innovation Funding (AIF). California has made a three-year commitment of \$175 million, including \$55 million in the current budget year. AIF supports apprenticeship program sponsors and other intermediaries who have active registered apprenticeship programs. It is not intended to be start-up funding – there are other sources for this investment – it is for firms that have already registered their apprenticeship with DAS.⁵²

Funding details include:

- · AIF can be used to support registered apprenticeships other than firefighters and occupations in the building trades.
- It is reimbursement-based formula funding. It is not a competitive process and it is intended that every applicant that meets the requirements will be awarded.
- The funding covers two categories and is not mutually exclusive, although the AIF program leaders believe that the sponsor is more likely to submit for both funding streams:
 - AIF Support (AIF-S): Cover the cost of running and apprenticeship program, aggregating demand and recruiting, supporting and placing apprentices; funding is available every year the apprentice is active
 - \$3,500 per apprentice, prorated to the number of months
 - \$1,000 bonus for apprentice for completion
 - AIF Training (AIF-T): Allow for new training development and the training costs of apprentices at \$8.82 per training hour⁵³

AIF is a pilot program, based on the stable funding streams in European countries, to create a sustainable apprenticeship model. In its 2022-2023 budget proposal for a \$230 million fund, DAS anticipated that the allocation would lead to 250,000 new apprentices in California by 2029. Applications were due on May 11, 2023. As a result, information on the interest in or ease of the process is unavailable.⁵⁴

It is worth noting that overall, California invested \$231 million in apprenticeship-related activities in its 2022-2023 budget year and more than \$480 million over the next three years. This includes the \$175 million for AIF, \$65 million to create a youth apprenticeship grant program and \$15 million to fund a unit to expand women's presence in the construction industry apprentices and a 30% increase to the reimbursement rate for training in building/construction apprenticeships. AIF is a large portion of the investment, but it is embedded in a larger ecosystem.⁵⁵

Case Study: ApprenticeshipNC

North Carolina's youth apprentice tuition waiver, which became law in 2016, is available to apprentices who begin their program within three months high school graduation. The waiver fills a gap in the state's college and career readiness pipeline: the well-funded Career & College Promise (CCP) dual enrollment program is available only to current high school students, meaning that recent high school graduates would have to pay for apprenticeship tuition.

High school students are able to access either program; students who are awarded the CCP tuition benefit can simply transition to the youth apprentice tuition waiver upon graduation, with no lapse in tuition coverage. Colleges are reimbursed for waived tuition out of the yearly budget of the state's apprenticeship agency, ApprenticeshipNC. They receive the same funding for apprentices as for regular students. Alongside other ambitious state initiatives, including the use of grant funding from US DOL to defray instructional expenses for adult apprentices, the youth apprenticeship waiver has raised apprenticeship's profile in North Carolina, propelling the state past its goal of 10,000 apprentices statewide by 2018.

Case Study: Career Connect Washington

In May 2017, Governor Inslee created the Career Connect Washington (CCW) Task Force, composed of leaders from business, labor, government, non-profits, and education. The plan was transformed into legislation in April 2019, along with funding to begin implementation. CCW developed a statewide coalition of employers, labor, government, education, and community leaders to create a system of regional and statewide partnerships that fills gaps in Washington's existing workforce and educational system.

The coalition focuses on a continuum of educational and workforce experience from Career Explore (early exposure to career options) through Career Launch (work-based programs aligned with classroom experience ending in a degree).

To support CCW's work, the State of Washington has invested more than \$50 million from state operating funds into the coalition's efforts. This is funded primarily by an increase in the state's Business and Occupations Tax, which was supported by Amazon and Microsoft – increased for the purpose of funding CCW's initiatives. State funding has been coupled with more than \$30 million in federal funding, but the state's investment is the primary source of support for the work.

Employers

Employers are key funders of apprenticeship programs. The largest cost of an apprenticeship is typically the wages to apprentices throughout their training. Employers should contribute to the wages – since they are getting some level of productivity from the apprentice, but in the early stages of an apprenticeship there is typically not a positive return on investment (ROI) for the employer. While long-term employers can reap the benefits, at the beginning they are paying the apprentice salary as well as allocating training time for their supervisor.

Figure 12 below is an illustrative demonstration of the typical ROI timeline for employers. The curve can vary significantly based on the program duration, wage levels and profession, and the productivity of the apprentice while they master the skill.⁵⁶

To support employers willing to make investments in apprenticeships, many states and localities have provided support in the form of tax credits and direct grants. While it is critical to have employers contribute to apprenticeships to demonstrate their commitment and ability to maintain apprentices, intermediaries and community colleges we interviewed noted that even a small amount of funding can help tip the scales for employers when deciding to start a program. The timing of the employer contribution can sometimes be leveraged to support deeper engagement around selection and retention.⁵⁷

A stylized model of apprenticeship training **Employer benefits** after apprenticeship Worker MP Productivity Wage and value of apprentice's contribution to production Experienced worker's wage Apprentice wage **Employer** benefits during apprenticeship Employer cost MP = Marginal product of labor

Source: Almeida, N., F. Figueiredo, and L. Ribeiro, "Do Firms Benefit from Apprenticeship Investments?" IZA World of Labor Figure 12: Model of Apprenticeship Training & Business Return

Philanthropy

Philanthropic funding is a key resource for growing apprenticeship programs. While not at the scale of federal or state investments, philanthropic funding is often flexible and easier to use than government funding sources. Critically, it also can be leveraged to support innovative, new programs. Philanthropic organizations can be the lead investors that unlock the use of other funding sources.

There are few philanthropic entities that focus solely (or even primarily) on apprenticeships. However, many regional and national philanthropic organizations invest in innovative workforce development initiatives. Most of the states we interviewed noted that they had received support from philanthropic organizations to varying degrees. However, it was often in the early stages of something new and was critical for proving the model. For example, in Washington State, the core team that runs Career Connect Washington was funded by foundations including the Gates Foundation and Bloomberg Philanthropies. The core team worked closely with those foundations to develop the concept, governing structure and program framework that has allowed Washington State to dramatically increase apprenticeships via a multi-million-dollar state investment.

The case study below is an example of a type of philanthropic investment: a grant between an individual philanthropy and an apprenticeship effort, and a group of philanthropic donors that have aligned around a set of priorities and jointly direct resources to support youth apprenticeships. Either could be a viable model in New York City, depending on the City's needs.

Case Study: Partnership for Youth Apprenticeship (PAYA)

The Partnership to Advance Youth Apprenticeship (PAYA) is an example of a set of aligned philanthropic investments supporting apprenticeships. PAYA is a multi-year, multi-stakeholder initiative to assist innovative organizations around the country in developing youth apprenticeship programs that are scaled and can be replicated. The Partnership is led by New America and is comprised of eight partner organizations including CareerWise, Jobs for the Future, the National Fund for Workforce Solutions, and the National Governors Association. PAYA is supported by grants from the Annie E. Casey Foundation, the Ballmer Group, Bloomberg Philanthropies, the Joyce Foundation, JP Morgan Chase & Co., and the Siemens Foundation.⁵⁸

PAYA produces technical assistance tools to support the creation and development of youth apprenticeship programs, and regularly has programming to share best practices. It is also a granting entity itself, investing in three areas:

- 1. Development Grants to support the early-stage design and implementation of programs
- 2. Accelerator Grants to accelerate the work of promising programs and previous grantees
- 3. National Learning Hub Grants to drive the proliferation of high-quality youth apprenticeship programs

Examples of projects funded through PAYA's grant-making include:

- **WE CAN TX:** Leaders including Educate Texas, an initiative of the Communities Foundation of Texas, and the Texas Business Leadership Council are developing policy recommendations and a plan for a statewide youth apprenticeship system, identifying regional partnerships ready to implement youth apprenticeship programs in high demand, high growth industries.
- **LEAP Youth Apprentices:** The Project for Pride in Living (PPL), a nonprofit that provides affordable housing and career services in Minnesota's Twin Cities, enrolls 200+ students per year in alternate school programs. PPL is working with Walgreens, Ameriprise Financial, the City of Minneapolis and the Minnesota Department of Transportation to create apprenticeships in automotive technology, pharmacies, banking and office operations.⁵⁹

Grantees are members of PAYA's network and are part of its community of practice, which includes nearly 100 members in 30 states. Combined, the members serve more than 16,000 youth apprentices. The aligned investment strategy – and shared community of practice – supports a coordinated approach to investing in innovative youth apprenticeship models. Although it is a relatively new initiative, and further time is needed to understand its full impact, the alignment of philanthropic funding is a model for coordinated investments.⁶⁰



Tracking Apprenticeships

Tracking Apprenticeships

Tracking registered and unregistered apprentices will be a key task for the City to coordinate in order to measure progress towards the 30,000 goal, ensure that programs meet quality standards, determine where growth is happening and where to invest, and to understand the impact of apprenticeship programs on participants and employers. For registered apprenticeships, data is tracked at the national level by US DOL and/or the state level by NYSDOL. For unregistered apprenticeships, there is a limited set of best practices and the City will need to consider a combination of activities in order to tally unregistered apprentices, including regularly distributing surveys and leveraging intermediaries.



Registered Apprenticeships

Registered apprenticeships are tracked by US DOL at the national level and NYSDOL at the State level. NYSDOL data includes information such as the sponsor's name, associated trade, effective date, program length in months (or labeled as competency or hybrid), the total number of apprentices per that sponsor, and the gender, ethnicity and race of those apprentices.

In addition to seeking data from the federal and state government, localities pursue other methods of tracking apprenticeships in order to capture registered (and those pending registration) apprenticeships. The Los Angeles County Department of Economic Opportunity is piloting a platform with BuildWithin, a "sponsor-facing" software that employers use to manage apprenticeships. By using the BuildWithin platform with employers, Los Angeles will be able to leverage the platform to keep track of the number of apprentices documented in the system.

For counting the number of registered apprenticeships in New York City, on an annual basis the City should consider working with US DOL and NYSDOL to gather data and conduct a cross-comparison to avoid any double counting (i.e., cross-check that apprentices included in both US DOL and NYSDOL systems are not counted twice). The City may also consider, rather than conducting a full count each year, working with US DOL and/or NYSDOL to understand what is possible (from a data perspective) to track the growth of net new apprenticeships.

Tracking Apprenticeships

Unregistered Apprenticeships

Methods for tracking unregistered apprenticeships are varied. Career Connect Washington primarily uses Washington State's existing data warehouse. The system includes data on K – 12 schools, community colleges, and from the State's employment office. Most importantly, the system includes a special coding to designate apprenticeship participants, allowing the State to track the number of apprentices associated with State-connected programs. Career Connect Washington does not track private employers' programs that do not have a direct connection to State programming or funding.

Complementing the City's approach to counting the number of registered apprenticeships locally, the City will need to consider, on an annual basis, tallying up the number of unregistered apprenticeships through a combination of activities. The City could considering one or a combination of methods, including:

- Distributing an annual, non-anonymous survey and leveraging intermediary organizations and associations, such as the NY Jobs CEO
 Council, the Partnership for NYC, the Real Estate Board of New York, and the Association for a Better New York, to help administer the survey
 and encourage member participation.
- Conducting direct outreach to employers who 1) the City suspects have an apprenticeship program in New York City and 2) are not a
 member of a target intermediary or association. This will require some research and investigation of medium to large employers in New
 York City, identifying those who publicize having apprenticeship or apprenticeship-like programs either in or outside of New York City. To
 complement the survey, the City may consider conducting outreach calls to these employers, leveraging summer interns to
 support this work.

The Impact of Apprenticeships

Apprenticeships have the potential to benefit multiple stakeholders, including employers, job seekers, the public sector, educational institutions and the broader economy. An analysis of reports, surveys, and voices from the field demonstrate that apprenticeships have the potential to address stakeholder-specific challenges and positively impact their organization.

Some of the challenges that individuals and organizations across sectors face – job seekers looking to get a foothold in the market, employers unable to fill open positions, a skills shortage for the jobs that power the New York City economy – can be addressed by the benefits that come from meaningful, industry-aligned apprenticeship programs. Employers are struggling to obtain the talent that they need. Simultaneously, job seekers are struggling to gain a foothold into a job market that is increasing influenced by technology and automation. Educational institutions are looking for ways to provide their students with meaningful work experience that complements their education and to help their students secure full-time, good paying positions upon graduation as well as maintain and increase enrollment. New York City government is a facing a talent shortage, struggling to fill thousands of open roles and retain its talent.

The Impact of Apprenticeships

The New York City economy is also in the position to benefit from investment in apprenticeship. From a public policy perspective, increased employment for people typically left out of the workforce benefits the City's economy overall. Rather than focusing on hiring for jobs solely based on educational degree, New York City has the opportunity to embrace a new approach that is focused on skills-based hiring. Not only does this serve the goal of getting New Yorkers without four-year degrees into good-paying jobs, but it also is a more efficient model of investing resources directly into building a workforce that aligns directly with jobs of the future. Apprenticeship, by better matching training to opportunity, has the potential to reduce friction that we see in the talent market.

This section explores the benefits of apprenticeships to employers, job seekers, educational institutions, and the public sector, to provide a set of value propositions for why these stakeholders should support and invest in apprenticeship programs.

Employers

While national and local government has increased its focus on and funding for apprenticeship programs, it is employers who make the biggest investments in these programs.⁶² To adequately engage and incentivize employers to begin or continue to run apprenticeship programs, it is important to have an understanding of what the perceived benefits of apprenticeships are for employers.

NYSDOL and intermediaries often engage with employers apprehensive to apprenticeship programs. Employers seek clear indications of return on investment, as well as anecdotally, how apprenticeships can help address some of their challenges like accessing talent with the right skillsets, diversifying their workforce, and talent retention. Employers with successful apprenticeship programs cite both direct benefits, such as a monetary return on investment per apprentice as well as indirect benefits, such as increased retention and company culture improvement. According to National Apprenticeship, for every \$1 invested, employers receive an average of \$1.47 return on investment. Other reports and studies have sought to investigate both the monetary return on investment for employers on apprenticeship, as well as other benefits, by surveying and profiling employers with apprenticeship programs:

- In 2015, as part of US DOL's American Apprenticeship Initiative (AAI), a survey of 68 employers across industries was conducted to document the costs and benefits of their AAI-affiliated registered apprenticeship programs. This included looking at both direct (the dollar value of apprentices' productivity) and indirect (value that employers experienced beyond the apprentices' productivity, such as reduced turnover and increased morale) benefits to employers. The survey found that 68% of employers surveyed received a positive net return on their investments (both direct and indirect benefits) over the five years since the apprenticeship ended.⁶⁴
- A study performed by the U.S. Department of Commerce and Case Western University examined the payoff to business from their investments in apprenticeship programs, focused on 13 businesses and intermediaries across industries. Key findings from their inquiry included that the most significant cost was the apprentices' compensation over the duration of the program. Other key costs were program start-up, tuition, education materials, mentors' time, and overhead. Costs of the programs studied ranged from approximately \$25,000 to \$250,000. Overall, the 13 companies reviewed unanimously supported apprenticeship, finding immense value in the program and identifying benefits that "justified the costs and commitments" associated with their programs. In terms of monetary return on investment, one company studied, Dartmouth-Hitchcock, had an apprenticeship program with a rate of return of at least 40%, and the program nearly paid for itself within the first year. Siemens USA had at least a 50% rate of return when compared to the costs associated with "hiring off the street." Across the employers studied, they unanimously shared that apprenticeships "improve their overall performance and provide a competitive advantage over other firms" through benefits received like production (value of output by apprentices and reduction in errors), workforce (reduced turnover, improved recruitment, access to a pipeline of skilled employees, developing future managers) and soft skills (apprentices offer greater problem-solving ability, reducing the need for supervision).

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Counting, Codifying and Determining the Impact of Apprenticeships

The Impact of Apprenticeships

Job Seekers

60% of workers in the United States do not have a four-year college degree, but employers have made a four-year college degree a requirement for being considered for the majority of jobs that pay a middle-class or above wage. This untapped talent pool struggles to gain a foothold in the job market, while employers are struggling to access the talent they need with the right skills.⁶⁶

For job seekers, apprenticeship offers access to a paid position while obtaining new, in-demand skills, culminating in a pathway to a living wage and further career growth opportunities. An additional benefit of apprenticeship programs for job seekers it that the program culminates in an industry-recognized credential, allowing individuals to move vertically or horizontally – to continue to grow and obtain new skills with their current employer or to move elsewhere where the credential is also recognized.

Nationally, 91% of apprentices find employment after completing their apprenticeship and their starting wage is on average, above \$60,000 (point of comparison: living wage calculated for determining priority occupations in this report for an adult living in NYC is \$61,844 per year).⁶⁷ As a comparison, 85% of 2016 CUNY Baruch College graduates were employed or in graduate school, and the average salary ranged from \$35,625 to \$51,410 (based on the student's course of study).⁶⁸

Educational Institutions

Community colleges and public schools in particular can benefit from apprenticeship programs. Apprenticeships connect students to workplace learning and full-time employment. Anecdotally, CUNY students often have jobs and often struggle to balance the demands of school and work. By embracing apprenticeship, CUNY can support students' immediate financial needs and could help to boost enrollment (total headcount enrollment at CUNY, according to the 2022 Mayor's Management Report, has declined from 274,099 to 243,389 from FY18 to FY22⁶⁹). Apprenticeships also offer the educational institution the opportunity to build connections with local employers, allowing for continued conversation around job growth/opportunities and to inform curriculum to better align with industry needs.

CUNY is directing focus and resources towards career success for their students. CUNY Central Office's current goal is to become a place where employers communicate their talent needs to the College, who then provides those skill-aligned resources (their students). LaGuardia Community College ran a data analytics internship program with Mastercard that had several of the components of an apprenticeship, including paid positions and industry-informed curriculum (co-developed by Mastercard and the college's computer science faculty partner). Following completion of the internship, all twelve students who participated in the program were hired for full-time positions. LaGuardia Community College as well as the CUNY Central Office are seeking to set up additional earn-and-learn opportunities that combine workplace learning with industry-aligned curriculum, and lead to full time positions for CUNY students.

In addition, SUNY works with over 500 employers on pre-apprenticeship and apprenticeship, organizing their work with a specific community college serving as the strategic lead for each targeted industry. The lead campuses collaborate to help develop the industry-informed curriculum as well as distribute and manage the funding available for the tuition of apprentices and host industry roundtables. These roundtables allow community colleges and partners to bring together groups of employers to discuss course design, training opportunities, and placements for apprenticeship.

Another way in which apprenticeship programs benefit educational institutions is that it brings employers and educators together to engage in a targeted and purposeful way. Angie Kamath, Dean of the New York University School of Professional Studies, shared that bringing employers to the table to engage in conversations around talent and skills needs, and to directly inform and co-design curriculum leads to lasting connections. Rather than a transactional relationship, this mutual investment in a co-problem-solving activity benefits both parties involved.

One area that is worth further investigation is whether there are numerical increases in graduation rates for students in apprenticeship programs. The City should explore working with CareerWise New York, New York City Public Schools, CUNY, and SUNY to track these metrics.

Counting, Codifying and Determining the Impact of Apprenticeships

The Impact of Apprenticeships

Public Sector

The City of New York is facing its own talent shortage, with 23,000 vacant positions budgeted across City agencies as of February 2023, and ongoing challenges with retention and turnover. Like for the private sector, apprenticeships offer a way to recruit for entry-level positions and to grow talent in-house, investing early in individuals and inspiring loyalty that can lead to increased retention. Through an apprenticeship program, the City could broaden the pipeline of talent coming to work for the City by not requiring a bachelor's degree and two-years of experience. An apprenticeship would allow people with less experience to onboard into City jobs without threatening existing entry-level wages, making it more amendable to all parties, including unions.

Another positive impact of the public sector investing in apprenticeships is that it can inspire increased confidence in the model by other stakeholders – private employers, educational institutions, labor unions – who then view the government as leading by example. With the goal of connecting 30,000 New Yorkers to apprenticeships by 2030, the City will need to undertake a rigorous campaign to bring stakeholders across industries and sectors onboard with investing their own resources in apprenticeship programs. The City will be in a better position to advocate for apprenticeships and convince private sector employers that may be wary of investing in apprenticeship programs to do so by demonstrating that the City, New York City's largest employer, is making apprenticeships a key component of its talent strategy. For example, the City of San Francisco is hiring apprentices into government roles. TechSF shared that when talking to employers about apprenticeships, employers often ask whether the City of San Francisco has in-house apprentices. For TechSF, having public sector apprenticeships is viewed as key component of backing the City's apprenticeship policies and goals.

From a government and public policy perspective, it is in the City's best interest for as many New Yorkers as possible to be employed. The City is currently working with New York City Public Schools and CareerWise to hire more than 100 youth apprentices for positions in over 20 City agencies. By creating opportunities for public sector apprenticeships such as this, the City will be creating meaningful pathways for New Yorkers typically excluded from the public sector labor market into good-paying jobs, benefiting the City's overall goals around creating a more thriving and inclusive economy.



Voices from the Field

The key learnings and themes below have been gathered from approximately 50 interviews with stakeholders across employers, educational institutions, intermediaries, unions, and the public sector. The learnings are categorized into buckets, including: program design and quality; key resources; communications and branding; infrastructure, governance and partnerships; justice, equity, diversity and inclusion; and tracking. The learnings are supported by brief case studies of selected stakeholders' approach to apprenticeship (i.e., program model, office structure, funding management). Generated from these learnings, there is a set of recommendations in the following section for New York City to consider when building its tactical plan for accelerating apprenticeship growth over the next seven years.

Learnings from Leaders in Apprenticeships

Program Design and Quality

Although apprenticeship programs vary by occupation, length, location, and partnership involvement, there are core qualities that lead to success for apprentices and employers, including the overall apprenticeship program structure, onboarding and responsibilities, instructional training, supervisor relationship, and recruitment and hiring practices.

Overall Program Structure

Cohort

Cohort approaches are successful because they give structure to the apprenticeship program. They provide opportunities for mutual learning and support between apprentices, which can reduce drop out. Having a group of apprentices go through all of the phases of the apprenticeship program – like onboarding and training – creates a community of support for the apprentices who are experiencing a new environment.

Duration

Duration of the apprenticeship program should be connected to skills required for the job. For example, apprenticeship programs should not have a year-long commitment for roles where skills can be demonstrated more quickly or that result in occupations with salaries lower than a living wage. Apprentices will not be incentivized to spend that time in an apprenticeship program, and the cost will not benefit the employer.

Note: an exception could be if there are other benefits associated with the occupation, such as public sector roles that have significant medical/leave/pension benefits and stability.



A central apprenticeship manager

A central apprenticeship manager helps to coordinate the overall apprenticeship program. These managers understand the scope of apprentice's responsibilities, how to connect them to supportive services when needed, and can be the advocate for apprenticeship programs internally as well as connect with partners externally to increase programs. This is especially important in regard to supportive services, where central managers can help connect individuals with publicly available supports that have been shown to reduce drop off rates. Direct apprentice supervisors need to be trained on these elements as well, but it is most helpful if there is another person that centrally manages apprentices.

Case Study: Spotify

Description: Spotify was an early adopter of supporting apprenticeships in the technology field. In 2014/2015, the company realized that it needed to build its early career talent base in its technical and business divisions. The idea for an apprenticeship program was the result of a hack weeks solutioning sessions. When Spotify started its programming, however, it became clear that individuals from community colleges and tech boot camps were having difficulty progressing through the recruitment process, and Spotify was unable to connect with the underrepresented talent they sought.

Spotify partnered with the Tech Talent Pipeline to develop their candidate recruitment and assessment process for the NYC Technology Fellowship. Spotify identified the role of full-stack software developer as their primary target for apprenticeships and required all apprenticeship candidates to demonstrate proficiency in data structure and algorithms as the minimum bar for selection. Through the Fellowship, Spotify hires early career talent to fill growing needs on their tech teams, while engaging senior tech leads to develop programming and onboarding to equip new Fellows with the skills needed to be successful at Spotify.

Fellows and supervisors receive support that promotes their success. Fellows are paired with a mentor, who is carefully selected through a questionnaire that evaluates their commitment and previous experience with mentorship. They are also part of a cohort that provides peer learning and interaction. Apprenticeship supervisors - the technical leads - receive training before the program starts to ensure the supervisor has the right skillset to manage a successful program.

Elements of the Fellowship have also been adopted company wide. For example, now all new engineers conduct a week-long project at the start of their position because it integrates them into their team. This started as a program component within the Fellowship.

The program has had several benefits for Spotify. It has improved retention – apprentices typically stay at Spotify 1-2 years longer than average. It has been a successful recruitment platform for diverse talent. It has also provided an opportunity for Spotify employees to demonstrate their management abilities to progress on their career track.

Onboarding and Responsibilities

Professional skills training

Professional skills training is supportive, especially for students who may have never worked in an office environment. Training on professional skills like email etiquette and time management, as well as introduction to cultural elements of the workplace, like understanding the impact of a late arrival, workers rights, how/when to communicate being out, can better ensure that programs are inclusive and that apprentices are set up for success.

Transition support

Transition support for an apprenticeship is important, since the transition period when everything is new can be the most difficult part. It can be difficult adjusting to a new environment, having to balance many priorities (like work and school), so extra support such as additional supervisor meetings and schedule flexibility is important to helping ensure apprentice transition and success. This should take place both prior to and during the apprenticeship.

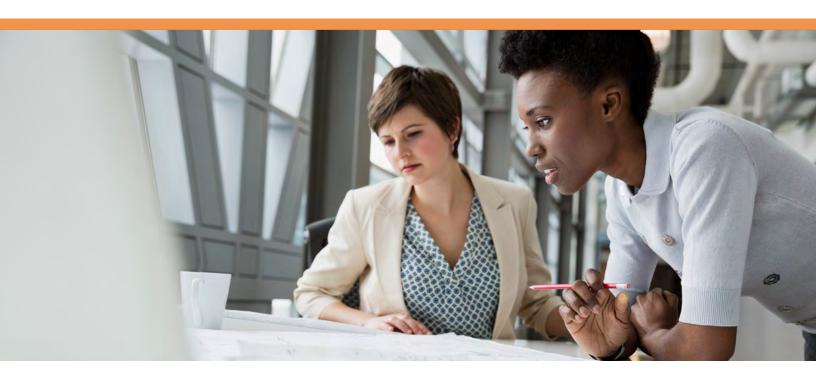
Career readiness and counseling

Career readiness and counseling is important, particularly for youth apprentices. Youth apprenticeships are an opportunity for career exploration, but programs also want to ensure that participants are interested in the roles that they will be doing and understand the potential career paths associated with that role. Additional support such as career counseling services help to ensure that participants and the employer needs are better aligned.

During their apprenticeship program, apprentices should be **doing the job** that they will be responsible for long-term, so they are well-trained when exiting their apprenticeship and prepare to assume their full-time role. This can be either for the company that they are completing their apprenticeship or elsewhere. The responsibilities that they have during their apprenticeship should include the critical, role-specific skills that are transferrable. The apprentice should understand how those skills relate to the role and the field so that they can understand the value that learning those skills has for their overall career progression.

Instructional Training

- Apprenticeship classroom training (combined with on-the-job experience) needs to result in a qualification
 that is recognized and transferable. This is important to ensuring that upon completion of an apprenticeship
 program, apprentices have the ability to transfer to other companies or geographies and that their skills are
 recognized by other entities.
- Training curriculum must be employer-informed to ensure that the instruction and skills being taught directly ties to the role and industry that apprentices are working in. Employers should be empowered to have real control/contribution over the curriculum, or need to be fully bought in that the instructional training being delivered is directly relevant to job skills.
- Applied degrees, associate or otherwise, are a first step to instituting a "permeable" system that exists in
 other countries like the United Kingdom and Switzerland. These typically two-year degree programs, which
 already have a mission around getting participants into jobs, have certain infrastructure and often direct ties
 to industry and employer partners that can be leveraged to build out apprenticeship programs. This is a key
 step to braiding educational and job experience, rather than one or the other, and ensuring that curriculum is
 directly aligned with growing jobs of the future.



Case Study: Accenture's North America Apprenticeship Program

Description

Accenture's Apprenticeship Program started in 2016 in Chicago with a cohort of 5 participants. Since then, the program has grown to 40 cities including Atlanta, Dallas, Detroit, Los Angeles, New York City, Philadelphia, and Washington DC. In 2019, Accenture expanded the program to include high schoolers through a youth apprenticeship program that strives to create new pathways for students by combining learning in the classroom with hands-on, meaningful work experience. To date, more than 2,000 people have participated in Accenture's apprenticeship program. As part of Accenture's commitment to scaling professional apprenticeships, the company continuously strives for apprentices to make up 20% of its entry-level hiring and has successfully reached that milestone in its fiscal year 2022.

Recruitment

Accenture's youth apprenticeship program partners with CareerWise to source and recruit apprentices. The post-secondary apprenticeship program leverages strong partnerships with over 100 educational institutions, nonprofits, and other community partners in addition to apprentice and other employee referrals to access and recruit high potential candidates from untapped talent pools. Of the 2000+ apprentices who have participated in the program since 2016, the majority are racially and ethnically diverse, and nearly half are women.

Program structure

Accenture's youth and post-secondary apprenticeship models are cohort-based with the youth program ranging for up to three years and the post-secondary program 12 months. Youth apprentices typically work ~16 hours per week; post-secondary apprentices work an average of 40 hours per week. The apprentices shadow an assigned co-worker, and their day-to-day is managed by a supervisor who is trained by the program team. They also have regular check-ins with their apprentice lead and receive frequent, written, and specific performance feedback.

Instructional training

Accenture's apprentices receive formal structured learning, on-the-job training, and coaching to help build their skills and advance their careers. Apprentices develop proficiency in targeted business and technology areas, supplemented by professional skills training to augment the individual's performance and ready them for career opportunities. Instructional training is delivered internally via Accenture's learning department and in partnership with external vendors. Upon joining, apprentices attend "new joiner orientation" in an apprentice-only cohort where they learn about the company, the program structure and expectations, and meet other members of their apprenticeship cohort. Apprentices then attend Apprentice School to develop core professional services skills. Further structured training is tailored to the apprentices' role and business group including technical and functional training.

Case Study: LaGuardia Community College and Mastercard

In the 2022-2023 school year, LaGuardia piloted an internship program with Mastercard that had many of the key elements of an apprenticeship, including functioning as an earn-and-learn model, combining relevant, industry-informed classroom instruction with on-the-job training, and securing a pathway into full-time jobs for participants upon completion of the program. LaGuardia became connected with Mastercard through the New York Jobs CEO Council. LaGuardia noted that it is often "hard to break through" with companies and get a direct connection to them; the New York Jobs CEO Council helped to facilitate this direct connection by identifying a shared interest and mutually beneficial relationships (in braiding skills-based training with employment) and connecting LaGuardia staff with the hiring and human resources staff at Mastercard.

Upon establishing a shared goal around bringing CUNY students into paid internships for in-demand roles in data analytics at Mastercard, the college and company worked together to design a relevant classroom curriculum. Members of Mastercard's Human Resources team identified the key competencies required for data analytics roles at the company and collaborated with LaGuardia's Computer Science Program director to design the curriculum. This industry-informed training was delivered at the college for credit. The co-designing of the curriculum between Mastercard and LaGuardia's faculty partners helped to ensure that the training in the classroom was preparing students with the necessary skillsets to be successful in their roles at Mastercard. At the end of the program, all twelve students were hired for full-time roles.

In April 2023, Governor Hochul announced a \$2 million expansion of apprenticeships at 10 CUNY colleges to create more opportunities for students to earn associate degree credit for work experience. In collaboration with the New York Jobs CEO Council, students will be placed at member companies like JPMorgan Chase, EY, Citi, American Express, Deloitte, AIG, Mastercard and Wells Fargo.⁷²

Case Study: New York University School of Professional Services (NYU SPS) – Hospitality Apprenticeship Program

NYU SPS is in the process of creating an apprenticeship program with the School of Hospitality that would combine an NYU associate degree with employment and job training. The program would connect with students via CareerWise New York, creating a pipeline of students in youth apprenticeship programs from New York City Public Schools to the School of Hospitality's newly-created associate degrees.

Associate Dean Nicolas Graf envisions that the program's students will begin in a CareerWise youth apprenticeship during their junior year of high school, working 10 to 15 hours per week with employers that includes Hyatt and Marriott International (NYU has established connections with these companies). During the students' senior year, they would work 12 to 15 hours per week. Upon graduation from high school, they would take a gap semester, working full-time with their employer and acquiring associate degree credit for NYU SPS. Following the gap semester, students would transfer into the NYU associate degree program where the school will take the portfolio of what the students have learned to date and designate credit for their prior learning. In total, the participants will earn about half of their credit to their associate degree from on-the-job training, graduating in 12 – 18 months once they begin their classroom learning at the NYU School of Hospitality.

The program is being designed in tandem with industry. The rubric used with employers is standardized to an extent so that NYU can quickly assess prior learning and award credit. NYU SPS is in the process of building brand new degrees (rather than retrofitting existing degrees) for this program and will need to go through the State accreditation process. In addition, the Administration wants to ensure that the program corresponds to an existing bachelor's degree program, so that participants' on-the-job learning can be transferred as a bachelor's degree course. This creation process – accreditation, industry-informed curriculum, associate degree credit, and matching learning to bachelor's degree programs – provides career options to participants. Students earn a recognized degree with established pathways so that they can continue to work full-time with their apprenticeship employer or transfer to a bachelor's degree program. When the program kicks-off, the Associate Dean expects the first cohort to be approximately 20 students.

Apprentice Supervisors

While executive commitment often spurs the adoption of apprenticeship programs, apprentice supervisors are critical for success of the apprentices and the continuation of programs.

- Supervisors should have **deep experience in the actual role** that the apprentice will do in order to be a better teacher and provide the best and most relevant support, guidance and training. Supervisors should not be limited to those in senior positions, rather they should be those with experience most relevant and supportive to the apprentices on-the-job experience.
- Supervisors must be supported and trained on how to effectively work with apprentices. Supervisors are often
 selected for their technical knowledge or management skills, not because they are experienced trainers they
 need to be taught how to best train apprentices. Because apprentices may be coming with varied experience (i.e.,
 different levels of education or professional experience), supervisors need to be able to modulate their direction
 and understand apprentices' experiences and strengths coming into a role. Training like cultural competency,
 mentorship best practices, and about the apprenticeship program is key to ensuring that the program is inclusive.
- Supervisors need support to help develop their training program and curriculum. Executive commitment does not always translate to the line supervisor, who needs to have their current responsibilities reduce in order to provide the necessary training for apprentices.

Recruitment and Hiring

Quality pre-apprenticeship and bridge programs are common sources for apprenticeships, and often result in increased participation in apprenticeship programs. Beyond these programs, other types of outreach such as through community organizations, educational institutions, Workforce1 centers, and paid marketing are effective methods of recruiting and hiring for apprenticeship programs. In New York City, Workforce1 centers could be an effective channel for apprenticeship recruitment since they interact with tens of thousands of individuals each year.

"It's really important to have the right management [during an apprenticeship]. Some managers/administrators may provide the support to help you do the work... our management was providing time to do the reading and things like that. But there was another cohort that wasn't getting that support and [the work] was overwhelming them... the managers need training or a manual on how to work with apprentices."

Former mid-career apprentice, employed at a healthcare institution

Key Findings: Adult Apprenticeship Round Table

From a round table discussion with current and former apprentices from adult apprenticeship programs in New York City, apprentices shared elements that they consider essential for making an apprenticeship program successful. It is important to incorporate the apprentices' point of view in designing apprenticeship programs and allow for direct and continuous feedback to ensure that the program is serving its participants successfully.

1. Supervisor relationship is key

Apprentices agreed unanimously that one of the most, if not the most important element of an apprenticeship program is the supervisor relationship. Supervisors should have significant experience in the role that apprentices are training for and working in. Whether the supervisor is currently in the role or has prior experience performing those tasks, it is important that the supervisor can adequately guide and train the apprentices in their role. It is also important to have a supervisor who is committed to the success of the apprentice, and has the adequate training and support to be able to commit the necessary time and attention needed.

2. Recognize prior experience

Apprentices, particularly adult apprentices, often enter these programs with significant prior work experience. While it could be in another industry, some apprentices shared that they did not feel like their prior professional experience was respected or recognized by their apprenticeship employer. For example, one apprentice shared that she felt like she is was unfairly stereotypes as coming into the job knowing nothing, whereas she had prior relevant professional experience. Recognizing and acknowledging that apprentices are coming into these programs with a wide variety of prior experience and skillsets is important to ensuring that apprentices feel that their abilities and contributions are respected and therefore, they are able to be rigorous in their performance.

3. Need to be purposeful in reaching people

The apprentices participating in this round table came into their apprenticeship through a variety of ways, such as through an educational institution, as an upskilling opportunity at their place of work, or through word of mouth. They expressed a lot of gratitude for the opportunity, recognizing the career and life-changing benefits of having access to their program. They also shared that these opportunities need to be available to more people, and part of that is making sure that people know about these programs.

Key Findings: Youth Apprenticeship Round Table

From a round table discussion with five current and former apprentices from youth apprenticeship programs in New York City, apprentices shared elements that they consider essential for making an apprenticeship program successful.

1. Help with time management

Youth apprentices shared that it is extremely challenging to balance the demands of a job and school. Youth are legally permitted to work for a maximum four hours per day if they have school the next day. (Note: CareerWise is working with key city and state stakeholders to explore addressing the challenge that these laws place on braided earn-and-learn opportunities for students). Balancing a schedule that includes attending school, homework, a job, and other life commitments (i.e., family obligations, social life) is extremely challenging for youth apprentices. One of the apprentices in the round table shared that he gave up playing all sports the year that he started his apprenticeship and has noticed a significant decrease in the amount of time he has to spend with friends. Another apprentice shared that support for managing the demands of school and the on-the-job components of the apprenticeship could really depend on the support of individual school administrators and teachers. One apprentice shared that "after coming back to school in person after COVID, the school (administration) sort of forgot about us who were doing this program (apprenticeship). We had to speak up and advocate for ourselves..." needing to remind teachers and the administration that school schedules must be conducive to supporting the time requirements of their job.

2. Apprentice "buddies"

In addition to their supervisors, a few of the apprentices shared that their programs set up apprentice "buddy" programs that connected current apprentices with full time employees who were formerly apprentices. Beyond the formal supervisor relationship, they found this additional relationship very supportive because they had someone with a shared experience to go to for advice and guidance outside of the job (i.e., how to navigate the workplace culture, how to balance the demands of the job and school).

3. Rotational programs

Apprentices shared that they had the opportunity throughout their apprenticeship to do a few different roles in different departments such as technology, design, and marketing. While it was not necessarily a formal part of the program and more so about demand and the apprentices advocating for their preference, they shared that in this phase of life as a student, the opportunity to engage in career exploration was very helpful to figuring out what they wanted to do full-time upon completion of the program.

Leveraging Existing Key Resources

Significant investment is needed to build and scale apprenticeship programs. The City should include a focus on what is already existing and available, including existing funding and existing employer-driven earn-and-learn training models that can be tapped and expanded upon. Federal and state funds, as well as philanthropic funding are available to support apprenticeship.

Philanthropic funding

Philanthropy plays an important role at the beginning of setting up an apprenticeship office and for new initiatives. Organizations like Apprenti and Career Connect Washington leveraged philanthropic funding to support start-up costs and build program infrastructure. Typical investments are in the design of a new set of partnerships (supporting the overall ecosystem) rather than a specific program. They support both staff and non-personnel expenses.

Federal workforce funding

Federal workforce funding is a key component of on-going investments in apprenticeships (i.e., WIOA, SNAP E&T, US DOE). Competitive federal grants such as US DOL ETA, are an important source to supplement state general funds and on-going federal funding sources. These federal funds, which can support a range of services involved in apprenticeship like instructional training, outreach, education, registration costs, and programs design and development, are critical to having stable funding streams to support the work of making apprenticeship a reliable source of talent as well as cost-effective for employers.

State funding

States have invested significant state funding, including through tax credits, grant programs, general operating funds, and innovation funding (for example, California's Apprenticeship Innovation Funding) to support intermediaries, schools, and employers with the resources needed to start and grow apprenticeships.

Unions

Unions have played an important role in funding apprenticeships, such as through trust funds (i.e., Training or Training and Employment Fund) with contributions from union members, employers or contractors. There is no broadly equivalent body that plays this role outside of the trades.

Employers are already engaged in earn-and-learn training models

Many employers are already investing in training new hires or interns for in-demand positions without government investment. This includes unregistered apprenticeship programs, paid internship programs, rotational programs, and fellowships, which often include key components of apprenticeship programs such as earn-and-learn, on-the-job and complementary classroom training, and hiring for a full-time role upon program completion

Case Study: TechSF and the James Irvine Foundation

TechSF is a workforce development program funded through the City of San Francisco's Office of Economic and Workforce Development in partnership with the Department of Labor. The goal of the program is to help individuals find good jobs in tech and in industries that hire tech talent. TechSF is a leading intermediary for tech apprenticeships in the San Francisco area.

In November 2022, TechSF received a \$900,000 grant from the James Irvine Foundation to support the work of the Northern California Apprenticeship Network. The Apprenticeship Network, launched in 2021, is run by the Bay Area Council, the largest employer-facing organization in the region. The multi-year investment's goal is to increase apprenticeships hosted by companies in the network by 20% year-over-year. The philanthropic funding is supporting program staff, outreach efforts to employers, shared best practice sessions, and technical assistance for employers. It also funds data tracking to ensure that the scale and impact of the Network is effectively captured in its first years.

Communications and Branding

Across conversations, stakeholders emphasized the importance of defining what a twenty-first century apprenticeship looks like and sharing that definition regularly and consistently. Employers, job seekers, and the broader public may envision apprenticeship to be limited to the trades. Creating and investing in a communications strategy that includes a clear, cross-industry definition of apprenticeship and the demonstrated positive impact is key to bringing needed partners on board.



Confusion around the definition of apprenticeship across stakeholders

Across stakeholder interviews we heard that there is confusion over the definition of an apprenticeship. Once a threshold definition is established, many stakeholders requested that it be shared widely to build a shared understanding – especially if the apprenticeship definition is broader than one that is registered with NYSDOL or US DOL.



Stakeholders recommend branding apprenticeships for cross-industry stakeholders

Many associate the term "apprenticeship" solely with trades occupations. To demonstrate how the term apprenticeship applies across sectors and occupations, intermediaries and cities have invested in re-branding the term to be inclusive of other sectors (i.e., technology, healthcare).

"What we are really talking about is a mindset shift on what job skills are necessary, what job quality is, and what wages and benefits will put New Yorkers on a path to stability and mobility. Job seekers are not thinking to themselves that [an apprenticeship] is the way forward because too few New Yorkers have had access to one, been introduced to the possibility of one, or have found access to the pre-apprenticeship on-ramps."

Case Study: Career Connect Washington

The Career Connect Washington (CCW) Task Force, created by Governor Inslee in 2017, is composed of leaders from business, labor, government, non-profits, and education. CCW developed a statewide coalition of employers, labor, government, education, and community leaders to create a system of regional and statewide partnerships that fills gaps in Washington's existing workforce and educational system.

The coalition focuses on a continuum of educational and workforce experience from Career Explore (early exposure to career options) through Career Launch (work-based programs aligned with classroom experience ending in a degree).

Career Explore, Career Prep and Career Launch

CCW has branded their program as Career Explore, Career Prep and Career Launch in order to integrate career path steps and highlight how apprenticeships fit into the overall picture. While Career Launch promotes registered apprenticeships, other apprenticeship are promoted as well. The terminology used seeks to minimize debate on what apprenticeship is as well as being inclusive of both registered and unregistered programs, with the goal of opening employers up to the idea of apprenticeship.

Marketing

In various interviews with government entities, local workforce provider organizations and employers, stakeholders stated that it is important to be clear about how apprenticeships will benefit them. It helps to build momentum and get people interested in the pathway. Table 19 below organizes messages by their target audience, based off information gathered from stakeholders about what types of messaging certain players are receptive to.

Message	Audience	
Apprenticeships are not just for the trades Includes professional services, healthcare, technology and advanced manufacturing/green economy: Multi-year registered apprenticeships are not the only model Provides a path into in-demand jobs across many sectors	Employers, Job Seekers, Students	
Apprenticeships can address talent shortages in terms of recruitment and retention for in demand occupations Brings nontraditional, diverse talent that strengthens company Ability to train and shape team members, increase loyalty	Employers (including New York City as an employer)	
Apprentices come from all genders, races, ethnicities, and abilities and can be successful	Students, Parents, Job Seekers	
Apprenticeships braid education and work experience Not just one or the other. Apprenticeships are a tool for providing education (not supplementing) and work experience should be recognized as such/credit received It is an opportunity to increase enrollment and strengthen relationships with industry	Educational Institutions	
Apprenticeships exist in NYC Public Sector NYC is doing its part to invest in apprenticeships internally.	Employers, the Public	
Unions have been the leaders in developing, supporting and pipelining talent using apprenticeship Unions should continue to lead by example and continue to expand their apprenticeship programs Table 19	Unions	

Building Infrastructure, Governance and Partnerships

In addition to leveraging existing resources like funding, building supporting infrastructure, central governance, and partnerships is key to creating a strong, apprenticeship ecosystem that can accelerate the growth of new apprenticeships and scale existing programs.

A central coordinating body accelerates scale and builds momentum

It is important to have dedicated teams with full-time employees that range in size based on what functions (i.e., registration support, consultation, marketing, training support) are performed. Some teams are housed in community colleges (Apprenticeship Carolina), others within government (TechSF) and others initiated by government but operate somewhat independently as a public/private partnership (Career Connect Washington). The governing entity typically sets a clear definition of "apprenticeship." Many employers, jobseekers, and other institutions assume that an apprenticeship is registered and some fear the dilution of the program if it is not aligned with federal standards. The governing entity may help build a shared understanding of the definition of apprenticeship to be more inclusive of nontraditional industries and occupations.



Apprenticeship relies on partnerships across sectors and stakeholders

The apprenticeship model demands coordination with clear roles and responsibilities among employers, training institutions, industry groups or associations, and intermediaries.

Employers

To achieve both sustainability and scale, apprenticeship initiatives need to be driven by and respond to the talents needs of employers. The most important element of success is the job itself and that can only be driven by employer demand. Further, apprenticeships should be selected and designed by employers from that apprentice occupation – a hospital administrator, for example, can't design a pharmacy apprenticeship, much less a technology one. Employers are involved in different ways depending on the models, but typically this includes:

- Hiring apprentices.
- Apprenticeship councils that drive the selection of occupations and influence investments.
- · Advisory committees for technical colleges.
- Examples/spokespeople to describe apprenticeship success.

Training Providers

Community colleges and other training providers can be facilitators, provide curriculum support, and support with apprenticeship registration.

The key principles for apprenticeship are that they are employer driven and that they prioritize worker mobility. [At TechSF] we help employers identify what occupations make sense to apprentice, then we help them design the program. A central goal for many of the employers we work with is activating new/diverse talent pools."

- Orrian Willis, City and County of San Francisco, Senior Workforce Development Specialist (TechSF)

Industry Groups or Associations

These organizations can create shared infrastructure to start and sustain apprenticeships. For example, The Manufacturers Association of Central New York, The Manufacturers Association, The Manufacturers Alliance of New York and the Brooklyn Chamber of Commerce announced a partnership to expand Advanced Manufacturing Registered Apprenticeship opportunities in New York City. The partnership will help to support the goal of increasing registered apprenticeships in advanced manufacturing across the city over the next 3 years, providing individuals, particular those from diverse backgrounds, with education, training, and career pathways in the industry.⁷³

Intermediaries, Boards/Councils, Unions

It is important to have partners focused on a particular sector and occupations since apprenticeship frameworks and needs vary by sector. These organizations provide a range of services and support including training and registration.

Case Study: Pursuit

Pursuit is a non-profit and public benefit corporation that works to connect individuals to meaningful career opportunities in the technology sector, specifically as developers. The organization has a four-year model of training and career readiness work for its Fellows. This consists of three primary models of engagement. Pursuit Core, a 12-month training program (essentially a pre-apprenticeship) aimed at readiness for a first role in technology. Pursuit Commit is a 36-month experience working in a job (apprenticeship) created specifically for the Fellows. As of May 2023, Pursuit Commit became a registered apprenticeship with NYSDOL. Prior to the Core, Pursuit offers growth and bridge services.

Since 2013, Pursuit has served 830 individuals through its Fellowship model, connecting them with opportunities at 20 employers including companies like Pinterest, Kickstarter, LinkedIn and BlackRock. 100% of Fellows are from low-income populations, 60% do not have a bachelor's degree, 63% identify as Black or Latinx, and 50% identify as women or non-binary. At the completion of their Fellowship, individuals on average experience a wage increase of \$17K to \$94K.

Pursuit has leveraged multiple funding types to achieve its mission and aim at self-sustainability. The 501c3 has combined philanthropy, government, and an innovative jobs bond which was first issued in 2016. The Pursuit Public Benefits Corporation, the underlying entity for Pursuit Commit, is financed through employer payments and impact financing. Pursuit developed a registered apprenticeship model that has served a diverse population with significant outcomes. It is a strong example of the kind of entity that the City should continue to support in expanding apprenticeships.



While NYSDOL's registration process offers clear guidance and support, employers may decide that the administrative requirements outweigh the perceived benefits of registration

Employers may not have the internal capacity to support the administrative tasks required to register an apprenticeships program and/or do not know where to go for support with the process. In addition, the benefits of extra support, a tax credit, formal recognition and credentialing may not be seen as offsetting the perceived costs of registering a program, such as sharing internal training information and having NYSDOL perform site visits.

NYSDOL's registration process was written when apprenticeships were more limited to the trades and union-driven, and therefore has elements that make it a trades and unions-driven process. Employers may perceive that the registration process does not lend itself to registering and supporting programs for industries outside of the trades, like technology, finance and consulting. NYSDOL is exploring changes to the process to ensure it is more industry and occupation inclusive.



Employers need support to create the internal infrastructure to start and sustain apprenticeships

Employers often require program design support, funding for administrative costs, and trainings for apprentice supervisors/mentors, all of which incentivize and support the creation and maintenance of high-quality programs. Both large and small employers require this to different degrees.

Justice, Equity, Diversity and Inclusion

When setting up and scaling apprenticeship, programs should recruit broadly in ways that address historic disparities and ensure that job seekers, both youth and adult, can access these opportunities. Across the stakeholder interviews conducted, we found that those investing in and running apprenticeships center justice, equity, diversity and inclusion in their programs through a variety of means. This includes through activities and programs like youth apprenticeships, pre-apprenticeships and bridge programs, targeted outreach, training employers and supervisors to support apprentices of all backgrounds, and leveraging City purchasing power.



Youth apprenticeships

Candidates for youth apprenticeships, by nature of being in school, have access to wrap around services. Students may have access to counselors, transportation, health/mental health services, and other supports from the school district that can make it easier for youth to participate in a program (whereas adults have more competing responsibilities and less formal support). Supportive services for youth (and adult) apprentices are key to ensuring that people can be rigorous in their participation.

Reaching out to particular schools – for example, CareerWise CO works with schools that have a high percentage of students on free/reduced lunch, and/or high percentage of minority students – to better ensure that apprenticeships are provided to students who typically do not have access to these opportunities.

Case Study: J.P. Morgan Chase & Co.

Youth Apprenticeships

J.P. Morgan Chase & Co. (JPMC) has long been committed to understanding and growing apprenticeships, including participating in a trip to Switzerland to evaluate their model. The firm is focused on building a pipeline of talent that represents the cultural diversity of New York City, as a core part of providing excellent customer service that gives the firm a competitive edge. JPMC has committed \$20 million dollars to support summer youth employment programs across the United States, including supporting the Career Readiness and Modern Youth Apprenticeship Program with CareerWise New York.

JPMC hosts apprenticeships as a company. Traditionally, the firm has had two tracks: business and technology. As part of the program, apprentices support community banking branches or conduct coding work, such as quality assurance or quality control. The firm is considering expanding the occupations with apprentices to include areas such as project management and administration.

In addition to technical skills, apprentices that participate in JPMC's program receive training in soft skills development, workplace norms, and onboarding to the company's value system. JPMC is also working closely with CUNY and NYU to understand how students can get academic credit for their apprenticeship, collaborating to outline what skills are gained in the course of an apprenticeship and the overlap with their educational curriculum.

Pre-apprenticeships and pre-training

Apprentices need training support before starting apprenticeships full-time. Programs that invest in professional and power skills training (i.e., email etiquette, time management) as well as application process support (i.e., resume, interview skills) help to bridge skills gaps that can cause candidates to be excluded from apprenticeship programs. We heard this strongly from employers and organizations like the New York Jobs CEO Council that works closely with employers to stand up apprenticeship programs. In addition to preparing participants for apprenticeships, these programs connect them to these opportunities. For example, the Apprenticeship Readiness Collective (ARC), is a group of organizations that connect New Yorkers to union apprenticeship programs, supporting recruitment to direct-entry and pre-apprenticeship programs for Building and Construction Trades Council of Greater New York affiliates.⁷⁴

Apprentice mentor training is key to support diverse candidates for apprenticeships

Partner with organizations that train mentors in cultural competencies to better ensure apprentice supervisors are prepared to provide the support and guidance to apprentices across backgrounds (for example, Wisconsin partners with EmpowHer and MENTOR Greater Milwaukee). It is important to work with employers to ensure that they can support their apprentices to be their full, authentic selves (CareerWise CO).

Cities make investments in targeted outreach and marketing

Designating funds for marketing, such as advertisements on Hispanic and African American radio stations, marketing on YouTube and social media, is an effective way to market apprenticeships to underserved communities. Partnering with community organizations for events is effective as well.

Learnings from Leaders in Apprenticeships ____

Case Study: Wisconsin Department of Workforce Development, Bureau of Apprenticeship Standards

The Wisconsin Department of Workforce Development (DWD) Bureau of Apprenticeship Standards supports registered apprenticeship, youth apprenticeship, and certified pre-apprenticeship for the state. In addition to re-doing their affirmative actions in the trades to align with US DOL's standards, the Bureau has made equity as a key driving force in its work to maintain and expand apprenticeships (particularly youth apprenticeship expansion) in the state.

Marketing Strategy

The Bureau of Apprenticeship Standards invests in diverse recruiting practices, working to make people who traditionally have not had access to apprenticeship opportunities aware of these programs and how to connect to them. The Bureau designates funds for marketing, such as advertisements on Hispanic and African American radio stations, and on YouTube, Hulu and Social media. They have found that this is an effective way to reach underserved communities.

Pre-Apprenticeship

The Bureau is working in partnership with community-based organizations to increase certified pre-apprenticeships that work in conjunction with registered apprenticeships, so that there is a clear pipeline of participants in pre-apprenticeship programs into registered apprenticeships.

Department of Corrections Partnership

The DWD works with the Wisconsin Department of Corrections (DOC) that hosts registered pre-apprenticeship programs in prisons. In August 2022, an apprenticeship program joint-supported by DOC and Moraine Park Technical College awarded certificate of completion to six men from a correctional center. DOC worked with DWD's staff to get the programs approved as a certified pre-apprenticeship program to help participants gain new skills and prepare and connect them to registered apprenticeship opportunities. During their 12-week, 12-credit program offered by the college, the participants received on campus lab and classroom instruction in welding processes.⁷⁵

Mentor Training

The Bureau partners with EmpowHer and MENTOR Greater Milwaukee organizations that train mentors in cultural competencies to better ensure apprentice supervisors are prepared to provide the support and guidance to apprentices across backgrounds.



Cities can leverage their purchasing power to center justice, equity, diversity and inclusion

Other ways of investing in apprenticeships, can be effective in incentivizing equity hiring in the trades. "Alternative" means of investing in apprenticeships – notably through Project Labor Agreements – can be effective and incentivize equity goals in the trades which typically have the largest numbers of apprentices. One example of this is San Francisco's local hiring policy, which requires that for public works or improvement projects over \$600,000, that 30% of all project hours in each trade be performed by local residents and that 50% of the project work hours performed by apprentices in each trade be performed by local residents.⁷⁶

Learnings from Leaders in Apprenticeships

Tracking

Many of our interviewees are focused on growing registered apprenticeships, and to understand their progress they need a comprehensive tracking method. With registered apprenticeships, the mechanism to track is built into the start since it is typically required by the local Department of Labor. This information is then available to gauge progress. However, in addition to gathering data from US DOL and NYSDOL, the City may require additional data that is not tracked in its systems, based on the City's metrics, such as apprentice outcomes.

Unregistered apprenticeships are difficult to track

Leveraging partners, intermediaries, and/or contractors to support with counting and tracking is one option for monitoring growth. It is difficult to track programs not connected to any type of system or to a governing body (i.e., programs not connected to government, an external funding source or a partner like an intermediary. One example of this is an employer's apprenticeship program that is entirely internally funded and managed, and that employer is not part of a partnership organization. It is difficult to collect information on those programs without cold outreach.



Leverage existing data systems

Rather than reinventing the wheel, others have leveraged existing data systems when possible, such as government data warehouses, public schools, and community colleges. These systems have incorporated coding to track apprentices associated with these entities.

Case Study: Career Connect Washington

To track apprenticeships, CCW staff primarily uses Washington State's existing data warehouse. The system includes data on K – 12 schools, community colleges, and from the State's employment office. The system has added special coding to designate apprenticeship participants, allowing the State to track the number of apprentices associated with State-connected programs. Career Connect Washington does not track private employers' programs that do not have a direct connection to State programming or funding.

Private platforms



Private platforms are available that can support government or other institutions with tracking apprenticeships while also providing supports to users, such as employers who want access to programmatic best practices and training resources.

Learnings from Leaders in Apprenticeships ____

Case Study: Los Angeles Department of Economic Opportunity

Description

Los Angeles County's Department of Economic Opportunity is an economic and workforce development office that oversees a variety of services including supporting small businesses and residents with career pathways, and supports apprenticeships. The State of California set a goal of 500,000 apprenticeships by 2029, a lot of which the Department expects to come from Los Angeles Country.

BuildWithin Pilot Program

The Department is piloting a platform "BuildWithin" to track apprenticeships. BuildWithin is a "sponsor-facing" software that employers use to manage apprenticeships. It is set up so that Los Angeles Country pays for it then sponsors can use the content available, which is mostly focused on technology to start. Los Angeles will track registered programs and those that have an intention to be registered in the future through this platform as employers and apprentices use it. It is a licensing platform that the Department can use to help get people sponsored and approved, and a place for apprentices to access and complete training.

These key learnings, supported and emphasized by interviews across different types of stakeholders, highlight the successes, challenges, and best practices that people with experience with apprenticeship programs have shared. Given these key learnings, we have provided a set of recommendations for the City to consider as it determines the next steps for activating an Apprenticeship Accelerator and working toward connecting 30,000 New Yorkers to apprenticeships.



To exponentially scale apprentices in New York City, we will need to capitalize on all the progress the city has made to date and continue to build momentum across numerous stakeholders. All parties will need to collaborate to push that momentum forward and also embrace long-term, systemic level changes. To effectively advance systems-level change in the city, it is critical to:

- Deeply understand the landscape and mobilize key players, leveraging untapped resources and making strategic investments
- Develop a shared understanding of values and a vision for equitable change
- Invest in infrastructure that weaves connections among critical actors, builds trust & uncovers opportunities for growth
- Evaluate outcomes and amplify impact

These are the guiding principles around which we have structured a set of five recommendations to advance apprenticeship in New York City.

Based on learnings across the country from places that have exponentially scaled apprenticeships – like California and South Carolina – one of the key ingredients to success is a central body dedicated to growth. In New York City, the Apprenticeship Accelerator will serve that role, aligning goals across the ecosystem and driving progress on the five recommendations outlined in the following pages.

We recommend that the Accelerator:

- Work closely with key actors in the apprenticeship space, coordinating and aligning activities
- Braid and blend local, state, federal and private funding streams
- Coordinate and streamline employer engagement
- Centralize tracking and ensure consistency of data
- Scale learnings and best practices
- Expand the number of employers that have adopted of apprenticeships

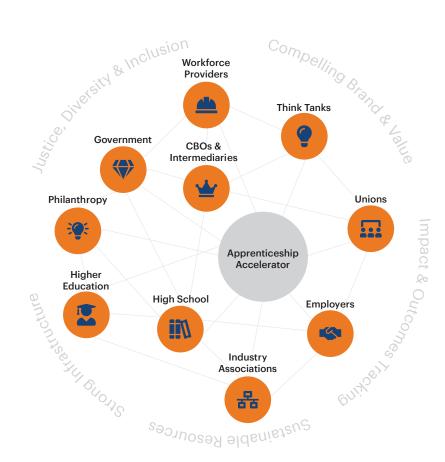


Figure 13: Funding Stakeholders

In other geographies, this role is often played by a statewide entity with strong local partnerships. In New York, given the scale of New York City and the city's momentum, we recommend creating an office that coordinates closely with the State and promotes both registered and non-registered apprenticeships. Like for other successful entities, we recommend that the work is employer-driven and sector focused. The Accelerator would work closely with employers, industry associations, chambers of commerce, and unions to expand the number of apprenticeships particularly in occupations and industries that have not traditionally used formal apprenticeships as a mechanism to build their talent pipelines. Of the offices we spoke with, the personnel typically have a sectoral focus and – in the case of statewide offices – a geographic one. Sometimes there were individuals dedicated to youth apprenticeships as well. We suggest building on the momentum of the Industry Partnerships in New York City and deploying a sectoral approach where relevant to the following recommendations.

"Career Connect Washington has grown opportunities by leveraging what is existing and not trying to replicate or duplicate it. We provide a framework, we fund quality initiatives and organizations, we act as a technical assistance provider and track our impact. We hold everyone accountable for growing a system together."

- Maud Daudon, Executive Leader, Career Connect Washington



Leverage Untapped Resources to Exponentially Scale

Engage philanthropic support focused on areas such as: one-time costs for ecosystem development, developing curriculum for apprentice supervisors, or employer resources.	Near-term
Develop an infrastructure to identify, coordinate and apply for competitive grants with City and State stakeholders to maximize the federal funding allocated to New York City for apprenticeships.	Near-term
Engage NYSDOL in a one-time fast-track process to register many new qualified and engaged training providers as apprenticeship training providers.	Near-term
Leverage existing Federal funding to offset the cost of employer wages, instructional training, or wraparound services.	Near-term
Support employers already engaged in training activities by providing an online library of resources about training plans, supervisory best practices and knowledge measurement.	Mid-term



Rebrand Apprenticeships and Trumpet Their Value Propositions

Work with existing employers to position apprenticeships as talent acquisition and develop ways to measure and ensure a positive ROI.	Near-term
Invest in exposure, experience and awareness for parents, students and the public, emphasizing messages including: apprenticeships are not only in the trades, apprenticeships are not secondary to school, and that a diverse group of apprentices are successful.	Near-term
Lead by example via the City of New York employing apprentices and providing experiences aligned with best practices.	Mid-term
Facilitate experiences (sharing and standardizing work-based learning plans, time for educators to connect with employers on education outcomes) that ingrain for educators that apprenticeships are a tool for education and not a supplement.	Long-term



Center Justice, Equity, Diversity and Inclusion in Apprenticeship Advancement

Develop a set of principles to train employers (apprenticeship hosts) to support apprentices with varied backgrounds and experiences.	Near-term
Expand existing quality pre-apprenticeship and bridge programs (pending outcomes and learnings) and develop more options in non-traditional sectors.	Near-term
Invest in intermediaries with community ties and require robust outreach plans in diverse communities for all contracts.	Mid-term
Set ambitious apprenticeship targets in City contracts as in the PLAs, including gender and race affirmative targets that mirror the diversity of New York City's workforce.	Long-term



Align and Improve Infrastructure

Create apprenticeship committees for the Workforce Development Board and the Talent and Workforce Development Interagency Cabinet.	Near-term
Improve capacity at NYC Talent and the Apprenticeship Accelerator to align with investments by other cities and states.	Near-term
Fund dedicated support – through apprenticeship intermediaries, Industry Partnerships, and industry associations – for program design and administration start-up costs and building the capacity of supervisors and employees responsible for apprentices.	Mid-term
Streamline the NYSDOL process, including: one front door for employers, single process for union vs non-union, aligned reporting, single process with clear timelines, easy access (no personal phone calls) and consolidated documentation.	Mid-term



Track, Report and Amplify Outcomes and Impact

Track apprenticeship growth through a three-part system: leveraging data from NYSDOL, requiring data from apprenticeships receiving any public support, and incentivizing employers to report information to receive quality content.	Near-term
Set industry standards about what outcomes should be tracked to determine programmatic success and investments. Measure quality of programs using the learnings on best practices from employers, apprentices and national experts.	Near-term
Build in evaluation resources for all City apprenticeship investments such as employer ROI, school retention and graduation, and apprentices' long-term career growth.	Mid-term

Recommendation 1: Leverage Untapped Resources to Exponentially Scale

To truly scale apprenticeships and meet the citywide goal of 30,000, the Accelerator must engage all existing resources and efforts. In addition to the below, the City should continue to review existing policies if they act as a barrier to apprenticeship growth. For example, the City should continue to work with the State to evaluate the rules around work participation for high school students to make it easier for those students to engage in apprenticeships. Below are recommendations on where untapped potential can be leveraged to support exponential growth.



New public/private partnership fund dedicated to apprenticeships

(Near-term)

Nationally, philanthropy has played an important role in developing apprenticeship programs and infrastructure. As a first priority of the broader Talent Fund, philanthropic partners should be engaged to support initiative such as:

- One time apprenticeship development costs (such as paying educators to more closely align current work-andearn/internship programs with classroom learning objectives, or funding start up staffing at key institutions to get apprenticeships initiatives launched).
- · Establishing an online Wiki/portal for employers to share and obtain best practices, training plans, etc.
- Developing curriculum for apprentice supervisors in select in-demand and emerging occupations.

These investments should be complimented by a public investment in trainee/apprentice wages (possibly using WIOA funds) and in classroom education (via sources such WIOA, NYC Public Schools or CUNY). Employers should contribute a portion of trainee/apprentice wages, which can be staggered or apportioned in ways that positively affect employer selection of trainees and apprentice retention.



Federal competitive grants (Near-term)

Competitive grants from federal agencies such as the Department of Labor are key components of the funding strategy to expand apprenticeships across the United States. To effectively compete for these grants, the Apprenticeship Accelerator should develop a consistent, sustainable infrastructure to identify, coordinate and apply for competitive grants with City and State stakeholders to maximize the federal funding allocated to NYC for apprenticeships. This is especially urgent given the extensive federal funding being invested into areas such as infrastructure and advanced manufacturing where there are existing apprenticeship models and opportunities for growth.



Currently, many workforce development nonprofits and education institutions are providing the kind of instruction needed for apprenticeships — but without the recognition or framework that being an education partner for a registered apprenticeship confers. To expand the pool of available training providers, and make it easier for employers to identify and source education partners, the City should work with strategic partners such as Partnership for New York City, New York Association of Training and Employment Providers, and the NYC Employment and Training Coalition to engage NYSDOL and NYSED in a one-time fast-track process to register a cohort of qualified and engaged training providers. The roster of qualified providers should be clearly posted on the NYSDOL website as well as City websites. The City should continue to engage with New York State on apprenticeship expansion, and consider working closely the Regional Economic Development Councils to help coordinate between providers, assist with strategic planning, and align funding to support apprenticeship growth.

In addition, it will be key to expand upon the important and growing role that NYC Public Schools and CUNY play in supporting apprenticeship as feeder organizations, training providers, and advisors, as well as in providing other infrastructure support for both youth and adult apprenticeships. The more that the Apprenticeship Accelerator can work to braid apprenticeship into the existing, traditional educational pathways in New York City, the more likely apprenticeship is to scale sustainably.

Public funding (Near-term)

While registering apprenticeships with NYSDOL and USDOL contributes to stability and longevity, it does not ensure funding for apprentice wages. The City should leverage existing Federal funding (WIOA) as well as existing programs funded by those streams such as Customized Training and Individual Training Grants (ITGs) to partially subsidize the cost of apprentice wages, fund instructional training, or support connections to and use of wraparound services like childcare and transportation. Unions are also a critical source of funding for apprenticeships. The City could expand the number and support for apprentices in these Union-funded programs via existing and new bridge programs/pre-apprenticeships.

Public investment in apprenticeships should be driven by industry labor market demand. The City currently invests tens of millions of dollars in adult workforce training programs in alignment with employer input via its Industry Partnerships in areas such as healthcare, technology, construction, hospitality and manufacturing; funds programing for the creative economy with the Mayor's Office of Media and Entertainment; and contributes to building emerging sectors through NYCEDC's work with life sciences and sustainable energy. The City should evaluate where apprenticeships can be layered into its current workforce development investments.

In addition, over the past several years CUNY and SUNY have significantly and meaningfully increased their industry partnerships. SUNY is focused on being the training partner for pre-apprenticeship and registered apprenticeship programs that lead to college credit (but not necessarily a degree), while CUNY's apprenticeship model is focused on creating on-the-job training opportunities for students completing Associate degree programs. We recommend the City review public funds allocated to apprenticeship expansion to ensure programs meet the threshold criteria, and that there is focus on tracking short and medium-term outcomes for SUNY and CUNY apprenticeships to inform future strategies. Moving forward, building on State and City investments in SUNY's and CUNY's infrastructure, including the internships, fellowships, clinical residencies, and other work experiences that the universities spearhead, is a starting point for converting as many existing programs as possible into apprenticeships that meet the threshold and overtime achieve best practice criteria.

Employers engaged in earn-and-learn training (Mid-term)

Expanding the number of employers engaged in apprenticeship is critical to scale. Fortunately, employers are already investing in training new hires or interns for in-demand positions without government funding. The City should support and expand these efforts by providing an online library of resources about training plans, supervisory best practices and knowledge measurement. This effort by the City would benefit both employers (via best-in-class resources to enhance their current efforts) and workers/

unemployed New Yorkers by creating new clear, formal and accessible pathways to employment. The City should leverage organic employer consortiums, such as the New York Jobs CEO Council and the Apprenticeship Network, that are already engaged in earn and learn training as well.

Recommendation 2: Rebrand Apprenticeships and Trumpet Their Value Proposition

The fastest growing apprenticeships nationally are in the professional services industries, such as technology and business operations. However, many still strongly associate apprenticeships with the building and construction trades. To change hearts and minds, rebranding and awareness efforts are needed for different key audiences. To support marketing and rebranding, the City should consider incorporating the following recommendations into a citywide communications and outreach strategy, created in collaboration with industry, and leveraging a seasoned external communications firm. Below are recommendations for areas of focus.



Employers (Near-term)

It is not possible to expand apprenticeships without buy-in from employers. To fully scale, it is critical that employers believe that apprenticeships are a key component of addressing their talent needs – both for shortages or diversifying their team. The Accelerator should work with employers to position apprenticeships as a primary talent acquisition strategy for all their entry level roles. This includes investing in ways to measure and ensure a positive return on investment and sharing existing research on the return-on-investment employers experience from apprenticeships. Hearing directly from other employers – especially those of a similar size or in the same industry – is a powerful way to convince employers that apprenticeships are a solution to talent needs.

"Apprenticeship models create immense value for employers and can put out the 'talent fire' by supplying new skillsets, while at the same time opening doors of opportunity to college and career for young people".

- Noel Ginsburg, Founder & CEO, CareerWise Colorado



Parents, students and the public (Near-term)

For parents, students and the broader public, the Accelerator should coordinate efforts to increase exposure, experience and awareness of apprenticeships. They should emphasize messages including:

- Apprenticeships are not just for people in the building and construction the trades, they can also be pathways to quickly
 growing fields such as technology
- Apprenticeships are school for both secondary and post secondary education institutions. Apprenticeships provide viable education and paid work experience

This work could be done through an educational campaign, but also through increased investment in exposure opportunities for students while they are in middle or high school. Even the use of branding such as a "Fellowship" may improve interest, especially in certain industries. The City should also think about how to leverage investments such as the Summer Youth Employment Program to expose participants to employers with apprenticeship programs. Lastly, the City should engage Parent-Teacher Associations and hold "apprenticeship fairs" for parents — who may be unfamiliar with the benefit apprenticeships can provide and see them as conflicting with college or further education. Many parents may also be good candidates for apprenticeships themselves.



City government (Mid-term)

New York City is a powerful amplifier for apprenticeships. As an employer, the City provides opportunity to scale. Several City agencies, such as the NYPD and the NYC Department of Transportation, have engaged in apprenticeships or apprenticeship-like programs. The City should build on its momentum, deploying the best practices described in this report to center equity, worker advancement, and career pathways for its own apprenticeships. In addition, the City can publicize apprenticeships that meet its standards. This "seal of good housekeeping" could be combined with communications campaigns, providing a boost in audience for the best-in-class apprenticeship programs. As described in the introduction to this report, the minimum thresholds for apprenticeships include: guaranteed employment following an apprenticeship, formal structured classroom training, a program design that supports equity and transferable skills (across a diversity of employers). Best practices include: wraparound services, a starting living wage, dedicated training for supervisors to enhance the apprentice experience, and an integrated pathway for high school through college students.



Education providers (Long-term)

Currently CTE educators and CUNY professors serve many students in industry-aligned earn-and-learn programs, both during academic year and outside of it. To strengthen and expand these efforts, the system should signal that earn and learn models are a priority – not a supplement to the classroom experience – by:

- Sharing and standardizing learning plans for the work-based learning across schools
- Allowing time for educators to connect with employers to debrief/analyze apprenticeship outcomes and objectives during and after the apprenticeship
- Paying educators a one-time development fee to fully integrate work-based learning with classroom learning objectives so that each week students learn in the classroom something they can practice in the workplace

"Structural solutions are key - the more you can do to organize the education system to be aligned to the goals of apprenticeship, the further you get...that partnership between educators and employers can unlock supply".

- Eric Lugo, Senior Advisor, City Colleges of Chicago

Recommendation 3: Center Justice, Equity, Diversity and Inclusion in Apprenticeship Advancement

Advancing equity is the foundational expectation of investing in apprenticeships in New York City. As framed by Mayor Adams' in his 2023 State of the City, the ultimate goal of apprenticeships is to "ensure that all New Yorkers have access to family-sustaining jobs with good pay and benefits." Diversifying the talent pipeline is also a top reason cited by employers to employ apprentices. Below are recommendations to help ensure that the City's investment in apprenticeships is a tool for justice, equity, diversity and inclusion.

"We have to remember we shouldn't be grateful to be here. We deserve to be here and our opinion matters just as much as everyone else".

- Early career female apprentice from the Bronx, employed at a healthcare institution

Employers and supervisors (Near-term)

Across the employers, apprentices and intermediaries interviewed, one of the most widely recognized elements of a successful apprenticeship is buy-in and knowledge of the apprentice supervisors. While many apprenticeships start from the top down, they are not successful unless the supervisors and human resources leaders are well-trained and deeply invested. The Accelerator should develop a set of principles to train and support human resources leaders and supervisors (apprenticeship hosts) to support apprentices with varied backgrounds and experiences. There is no need to reinvent the wheel. The city should draw on existing quality training programs – or key learnings from employers who have hosted apprentices – and create materials. While some of the material may be general, an effort should be made to tailor it to 1) capture any nuances between different industries and types of occupations and 2) signal to an employer that it is applicable to their business. In some industries, leveraging a name-brand company's training materials will be especially effective in building legitimacy. These newly created materials must be accessible and shared with employers and supervisors of small- and medium- sized businesses, as well as include specific strategies that support small- and medium- sized businesses.

Pre-apprenticeship and bridge programs (Near-term)

Employers and apprentices attest that exposure and preparation can be a critical factor for apprentices' success – and this is especially important for apprentices who are still in high school. One effective way to do this to have individuals participate in pre-apprenticeship programs. The Accelerator should work to expand existing quality pre-apprenticeship programs – reviewing outcomes from existing programs – and develop more options in non-traditional sectors.

Where formal pre-apprenticeship programs do not yet exist, the City should invest in programming led by workforce development providers and other community-based organizations with strong track records of effectively equipping a diversity of individuals with the skills employers need – including New Yorkers who have prior justice system involved or physical or cognitive disabilities. To ensure the maximum efficacy of these bridge programs, the educational institution responsible for the apprenticeship should provide the most common reasons interested individuals do not complete the apprenticeship. Employers should do the same. Narrowly focusing bridge programs on "closing these gaps" will ensure the programs can be as brief as possible while still achieving a high graduation/apprentice conversion rate.

Focused outreach (Near-term)

It is not possible to participate in an apprenticeship unless you are aware of it and understand its benefits. A critical way to advance diversity and inclusion is to partner with organizations that are embedded in a variety of communities and can raise awareness about apprenticeship programs. The City should invest in partners and intermediaries with deep community ties to build a pipeline to apprenticeship programs. The City should also leverage existing networks to reach individuals from communities that have historically wrestled with employment and wage disparities.

As part of this effort, the City should require detailed outreach plans that target diverse communities as part of all contracts related to apprenticeship. It should be an explicit and meaningful aspect of the evaluation criteria. The focus on diverse communities should also be echoed in any media investments made to promote apprenticeships. The City should ensure that media outreach is inclusive of those who are visually or hearing impaired.

"We need to make sure that everybody knows about what an apprenticeship is and that this is an opportunity. I came in basically off the street, by chance. I didn't do any program [beforehand.] I would have never known this existed, that you could have this kind of opportunity without a bachelor's degree... My salary increased so much and I never would have known without the work I was personally doing to find out about these things."

– Mid-career female apprentice from the Brooklyn, employed at a large professional services fim

"Much of the talent in [New York City] requires what is referred to as "braided development experiences" where they need to work while going to school. We thought that leaning into this approach is more employee and student centric than waiting for someone to graduate...It also helps us recruit talent that has the cultural and language skills that are needed in a melting pot like New York City...Our ability to hire talent that is aligned culturally across our markets provides our firm a competitive advantage. It dramatically increases our customer satisfaction and employee engagement."

- Jesse Jackson, Head of Consumer & Community Banking and Firmwide Operations New Joiner Experience, JP Morgan Chase & Co.



City investments (Long-term)

The City should continue to leverage its purchasing power to advance diversity in apprenticeships. The City should expand its Project Labor Agreements to guarantee direct entry for pre-apprenticeship programs that serve diverse communities. This includes – and makes more important – passing Community Hiring legislation. In addition, the City should set ambitious apprenticeship targets in City contracts, including gender and race targets that mirror the diversity of New York City's workforce. Lastly, the City should consider reviewing its M/WBE vendors and assign apprenticeship targets to the largest vendors. Finally, the City, as stated in **Executive Order 22** and reinforced in the **Future of Workers Task Force Blueprint**, needs to disaggregate the data collected from its three-part data tracking system (see recommendation 5) in order to center justice, equity, diversity and inclusion in future apprenticeship development strategies and investments.

Recommendation 4: Align and Improve Infrastructure Advancement

Apprenticeships already play a meaningful role in the New York City workforce ecosystem. There are a number of organizations, employers and education institutions that are deeply engaged in this work. The key to expanding apprenticeships in NYC is to align these disparate efforts and to fund and scale the most effective among them.



Apprenticeship committees (Near-term)

The New York City Workforce Development Board (WDB) is already an important place where government engages employers. Building on the Future of Workers Task Force, we recommend creating a dedicated committee that is a permanent and ongoing part of the WDB. The committee should support the Accelerator and guide its work. In addition to the employer-facing work that the committee will conduct, it should also be a place to bring together different stakeholders, brokering relationships between employers, educational institutions and non-profit workforce organizations that will accelerate apprenticeship growth. The WDB should be closely aligned with the Industry Partnerships and their respective boards with respect to promoting and building apprenticeships.

In addition to the WDB, we recommend that the Talent and Workforce Development Interagency Cabinet be leveraged to focus on apprenticeships. This convening of city agencies is an important forum to 1) drive movement on public sector apprenticeships and 2) coordinate apprenticeship outreach and support among employer-facing City entities such as the New York City Department of Small Business Services, the New York City Economic Development Corporation, Mayor's Office of Media and Entertainment and the Brooklyn Navy Yard.

Finally, we recommend that current and former apprentices be invited to serve on the Subcommittee or on an adjacent advisory body that provides input to the New York City Workforce Development Board and the Accelerator. Uplifting the diverse voices of apprentices is key to ensuring that the City's outreach strategies and programs are designed in collaboration with those who have lived the apprenticeship experience.



Capacity at NYC Talent (Near-term)

Cities and states investing in apprenticeships have personnel dedicated to scaling apprenticeships across the broader workforce system. Often, there are multiple individuals (upwards of four FTEs) that focus on apprenticeships. For example, the Bureau of Apprenticeship Standards in Wisconsin has 10+ FTEs, and New York City's population is nearly 50% larger than Wisconsin's. Wisconsin has several full-time staff dedicated to employer outreach for apprenticeships. In addition to investing in nonprofit, intermediary and education institutions doing this work, the City must be adequately staffed to coordinate, innovate, and lead strategy for this work. NYC Talent should have a dedicated team of staff responsible for working with city, state and industry leaders to advance apprenticeships.



Employer technical assistance (Mid-term)

Employers – especially small and medium-size businesses outside of the construction and building trades – often need assistance when starting apprenticeship programs. To scale the number of employers engaged in apprenticeship, the City should invest in dedicated support – though apprenticeship intermediaries, Industry Partnerships, and industry associations. This investment could include support for program design and administration startup costs and building the capacity of supervisors and employees responsible for apprentice training. Employer support should also focus on apprentices who are upskilling. While commonly thought of as an entry-level pathway, employers use apprenticeships to train incumbent workers for more highly skilled positions. Technical assistance providers must have the skills and experience to help develop these programs with employers.

The technical assistance can take many forms – everything from in-depth help to train the trainer models to cohort apprenticeship models to online resources – but it is critical to supply this assistance to businesses. Organizations such as the New York Jobs CEO Council and the Chicago Apprenticeship Network have effectively leveraged a cohort approach to share best practices and lessons learned on how to efficiently execute on apprenticeship programs. The City should ensure that the intermediaries also have the knowledge to deliver the services needed around apprenticeships – this may involve developing trainings on best practices for local technical assistance providers. This effort by the City would benefit both employers (via best-in-class resources to enhance their current efforts) and workers/unemployed New Yorkers by creating new clear, formal and accessible pathways to employment

"We need one place where companies can get all of the different options [to design and expand apprentice programs] and a full range of support to pursue those different options."

- Merrill Pond, Executive Vice President, Partnership for NYC



Streamlined NYSDOL process (Long-term)

The State's existing registered apprenticeship program offers a strong foundation for City-State collaboration, and expansion of apprenticeships. Together, the City and the State should:

- Develop one front door (with employer facing materials and processes) for apprenticeships registered with the State and non-registered or city supported apprenticeships
- Streamline the State's registration process for employers, ensuring that the bulk of the process can be completed online without emailing or engaging individual NYSDOL staff members
- Create an interactive digital map of the steps employers, educational institutions and intermediaries need to take to register apprenticeships from start to finish with links to the online tasks to be completed

- Expand ways education providers can become certified to offer registered apprenticeship services, including leveraging the process required for individual training grant providers
- Eliminate multiple processes for engaging in registered apprenticeships depending on whether employer is union/ nonunion or wants to participate in direct entry.
- Create a pathway whereby City or philanthropic funding can easily be used to support additional benefits (coaching, insurance, transport vouchers, etc.) for registered apprenticeships
- Address the system bias that favors traditional trades occupations over apprenticeships from other occupations and inclustries

Recommendation 5: Track, Report and Amplify Outcomes and Impact

Tracking and amplifying outcomes is critical to understanding success and continuing to build momentum. This recommendation outlines both what the Accelerator and City should track, a methodology for tracking, and suggestions for amplification.



Three-part data tracking system (Near-term)

Developing a regular, comprehensive tracking system will be critical to determining progress towards the citywide goal, understanding the scale of change, and course correcting when needed. While many places track registered apprenticeships, there are fewer examples of central teams that track unregistered efforts. Since employers – especially non-building and construction trade firms – do not have registered apprenticeships, it is important to determine a method to track these as well. We recommend taking a three-pronged approach to tracking:

- Improve access to NYSDOL's existing system. NYSDOL does not make data on apprenticeships in New York City publicly available other than high-level information presented at quarterly meetings. While the data that they do present is informative, in order to understand the landscape on a regular basis there is a need for more frequent and detailed access to NYSDOL registered apprentice information. We recommend establishing an on-going data sharing agreement between the City and the State.
- Require data from publicly funded apprenticeships and key partners. All efforts funded by public or aligned
 private resources should have a shared set of metrics that are required to be tracked. This is especially important for
 understanding unregistered apprenticeships, which will not show up in NYSDOL's system. This can be done through
 employer reporting (ideally into a standardized reporting framework) and provision of information through existing
 systems (like a verification of payroll). However, we recommend using the easiest possible process to minimize the
 burden on business owners.
- Coax data from employers by exchanging high-quality information and resources. Create an employer "Wiki" with valuable content that draws employers. The content should be tailored by sector/occupation and provide practical information for New York City based firms. If possible, leverage existing platforms either in the public or private sector that are easy to use, for example the BuildWithin platform that Los Angeles is exploring.

To supplement the above approach, if needed, the Accelerator can leverage city agency mailing lists, summer interns and a network of community partners to engage in outreach to document unregistered apprenticeships.

Whether via one of the platforms above or through a separate system, the Accelerator should work with key coordinating partners, internal and external to government, to track progress toward the citywide goal and maintain other metrics relevant to apprenticeship in one place.



Quality indicators (Near-term)

The Accelerator should set standards around what outcomes should be tracked to determine apprenticeship success and investments. These standards should be used to gauge an apprenticeships effectiveness and direct public and private investments over the medium term. The metrics should be developed using learnings on best practices from employers, such as those described above, apprentices and national experts. Suggestions include:

- The number/percentage of apprentices hired into a full-time role (either at the employer or at another firm in a similar role)
- Wages during the apprenticeship, immediately afterwards and over time
- Training hours completed
- · Demographic (including factors such as educational attainment) composition

In addition to requiring tracking, the Accelerator should work with partners and peer organizations to determine benchmarks for these metrics.



Long-term research agenda (Near-term)

Beyond tracking outcomes, the Accelerator should build in evaluation resources for City investments and set a research agenda on the long-term impact of apprenticeship. Research questions could include a deep look at employer return on investment, a longitudinal study on apprentices' career trajectory, outcomes for students in terms of school retention and graduation, benefits for educational providers around enrollment growth, and other topics that would lead to system-wide adoption of apprenticeships.



Appendix A: New York City Registered Apprentices

Trade	Total Apprentices (NYSDOL & US DOL)	Total 2021 Occupations	
Carpenter (Including Piledriver / Dockbuilder)	1,509	16,106	
Electrician	1,455	18,229	
School Safety Agent	633	N/A	
Elevator/Escalator Constructor & Modernizer	591	2,936	
Plumber	573	10,637	
Iron Worker (Outside)	532	1,879	
Skilled Construction Craft Laborer	458	N/A	
Sheet Metal Worker	407	2,342	
Steamfitter	243	10,637	
Elevator Servicer and Repairer	234	2,936	
Lather (Wood, Wire and Metal)	223	N/A	
Ornamental Iron Worker	203	N/A	
Painter, Decorator & Paperhanger	191	N/A	
Carpenter (Piledriver / Dockbuilder)	188	N/A	
Linoleum, Resilient Tile and Carpet Layer	158	N/A	
Pointer, Caulker and Cleaner	140	N/A	
Stationary Engineer	139	1,936	
Painter and Decorator (Structural Steel-	132	N/A	
Bridges)	132	N/A	
Millwright	106	N/A	
Roofer	102	1,109	
Insulation and Asbestos Worker	92	N/A	
Bricklayer, Mason	78	N/A	
Plant Maintenance- Electrician	69	N/A	
Glazier	65	1,029	
Dry Wall Taper (Finisher)	52	N/A	
Terrazzo Worker	47	N/A	
Metal Refinisher	44	2,342	
Iron Worker (Stone Derrickman and Rigger)	42	1,879	
Tile Setter (4 Year)	39	N/A	
Community Health Worker	38	4,998	
Marble, Carver,Cutter and Setter	32	N/A	
Stone Mason	28	N/A	
Software Developer	26	47,499	
Plasterer	19	N/A	
Sheet Metal Worker (Sign Hanger-Rigger)	17	N/A	
Business Operations Associate	16	17,981	
Optg. Engineer (Heavy Equipment)	15	N/A	
Cabinetmaker	15	N/A	
Cement Finisher or Cement Mason	12	N/A	

Appendix A: New York City Registered Apprentices

Trade	Total Apprentices (NYSDOL & US DOL)	Total 2021 Occupations
Certified Recovery Peer Advocate	11	9,963
Hazardous Materials Removal Worker	10	N/A
Bench Jeweler (Production)	10	N/A
Piano Builder	5	N/A
Certified Nursing Assistant	5	N/A
Multi-Story Window and Bldg Surface Cleaner	5	N/A
Tile, Marble and Terrazzo Finisher	5	N/A
Optg. Engineer (Universal Equipment)	5	N/A
Project Manager	5	32,018
Computer Support Technician	5	20,313
Plumber and Steamfitter	5	10,637
Sprinkler Fitter	5	10,637
Heating, Ventilation and Air Conditioning Mechanic	5	8,492
Refrigeration and Air Conditioning Mechanic	5	8,492
Diesel Engine Mechanic	5	4,799
Hospital (Medical) Coder	5	3,127
Site Safety Manager	5	1,594

Appendix B: Apprenticeships at Top New York City Employers

Company Name	Apprenticeship Program?	Further Details
ABM Industries	No	
Accenture	Yes	Data analytics, cyber security, software engineering, and others
Adobe	Yes	User experience (UX) design, data science, software engineering and digital marketing
AIG	Yes	Finance
AirBnB	Yes	Software engineering
Alcoa	No	Has an apprenticeship program in Australia
Amazon	Yes	Associate Cloud Consultant, Cloud Support Associate, Solutions Architect, Software Engineer, Technical Sales
American Express	Yes	Digital, Analytics, Engineering, and Business Operations
Aon	Yes	
Arconic	Yes	Advanced Electrical, Machinist, Advanced Mechanical
Asana	Yes	Business, Engineering, Product Teams
B&H Photo Video	No	
Bank of New York Mellon Corp	No	
BlackRock	No	Has an apprenticeship program in the United Kingdom
Bloomberg	No	Has an apprenticeship program in the United Kingdom
Bloomingdales	No	Has a multi-month Leadership Development Program for early career individuals
Bristol-Myers Squibb	No	
Bumble and Bumble	Yes	Color apprentices
Buzzfeed Inc.	No	
CBS	Yes	Newsroom
Chubb	Yes	Technology, claims and underwriting
Cisco	Yes	Technical and non-technical in multiple areas
Citibank	Yes, in Chicago	Banking, Capital Markets and Advisory Investment Banking
Cognizant	Yes	Pre-apprenticeship Java and a "Career Accelerator" for a Full Stack Developer
Colgate-Palmolive	No	
conEdison	No	Has an 18-month rotational program through its Leadership Development Program
Credit Suisse	Yes	Has an apprenticeship program in the United Kingdom and Switzerland
Deloitte	No	
Duane Reade Holdings	Yes	Pharmacy technicians
Ernest and Young	Yes	Hosts apprenticeships through the New York Jobs CEO Council and in the United Kingdom
Estee Lauder Company	No	Several long-term rotational programs, such as the Breakthrough Fellowship Program
Etsy	Yes	Technology and design roles

Appendix B: Apprenticeships at Top New York City Employers

Company Name	Apprenticeship Program?	Further Details
GE Aerospace	No	Has an apprenticeship program in the United Kingdom
Goldman Sachs Group	No	Has an apprenticeship program in the United Kingdom
Google	Yes	Sales and marketing, software engineering, customer engineering, data analytics, among others
Hearst	Yes	Yes in certain publications, such as the Times Union
HESS	Yes	Operations apprenticeship – registered program
Hilton	No	Has an apprenticeship program in the United Kingdom, Germany, Netherland, Switzerland and Australia
Honeywell International Inc.	No	Intensive multi-month rotational program - Future Leaders Program (Sales, Finance, Engineering, Supply Chain)
IBM	Yes	Cybersecurity, software development, data science, design
Icahn Enterprises LP	Unknown	
Infor	Yes	Quality Assurance Auditor
Interpublic Group	Unknown	Previous advertising tech apprenticeships, currently has programs in the United Kingdom
INTL FCStone	No	
J.Crew	No	
Jet Blue	Yes	Maintenance technicians
JLL (Jones Lang LaSalle) Inc.	No	
JPMorgan Chase	Yes	Business and technology, including branch operations
KPMG	No	Has an apprenticeship program in the United Kingdom
L3 Technologies	No	Has an apprenticeship program in the United Kingdom
LensCrafters	Yes	Apprentice optician
Lockheed Martin	Yes	Aircraft maintenance, software engineering, cyber security
Loews	Yes	Loews Culinary Academy
Lowe's	Yes	Pre-apprenticeship program into the trades
Macy's	No	Extensive rotational program; Executive Development Program
Madison Square Garden	No	
Marriott	No	Has an apprenticeship program in the United Kingdom, France and Germany
Mars Inc.	Yes	Machine maintenance apprenticeship
Marsh & McLennan	Yes	Human resources, accounting
McDonald's	Yes	Management and operations
McKinsey & Company	No	
Metlife	No	
MetLife	No	
Modell's Sporting Goods	No	
Morgan Stanley	No	Has an apprenticeship program in the United Kingdom
Mt. Sinai Hospital - Queens	Yes	Geriatrician
National Grid	No	Has an apprenticeship program in the United Kingdom
NBC Universal	No	

Appendix B: Apprenticeships at Top New York City Employers

Company Name	Apprenticeship Program?	Further Details
New York Community Bancorp Inc.	No	
New York Life Insurance	No	
NewYork-Presbyterian	Yes	Perfusionist (likely others as well, currently recruiting for this)
Omnicom Group	No	Has an apprenticeship program in the United Kingdom
PepsiCo	No	Has an apprenticeship program in the United Kingdom
Pfizer	No	Several long-term rotational programs that may meet threshold criteria, such as the Breakthrough Fellowship Program
Philip Morris International	No	Has a robust apprenticeship program in Indonesia
Pinterest	Yes	Engineering, product management, product design, UX researcher
PwC	Yes	Has an apprenticeship program in the United Kingdom
Ralph Lauren Corporation	No	
Rent the Runway	No	
Salesforce	Yes	Software engineers and other tech roles
Sotheby's Holdings	No	
Tapestry (Coach Inc)	Yes	Craftsperson
Target	No	Set of entry rotational programs
The Blackstone Group In	No	
The New York Times Co.	No	Several year-long Newsroom Fellowship and Local Investigations Programs and a Newsroom Editing Residency
Thomson Reuters	No	Potential co-op program available, but few details available
TIAA-CREF	No	Hosts a two-year rotational development program
Tiffany & Co	Yes	Hand engraver apprenticeship
Time Warner	Yes	Broadband technician
Travelers Cos.	No	Hosts a two-year development program
Twenty-First Century Fox	No	
United	Yes	Airline technicians
Verisk	No	Extensive rotational program - Early Career Foundations Program
Verizon Communications	Yes	Various technology positions
Viacom Inc.	Yes	Mostly internships, but also apprenticeship program in production
Warby Parker	Yes	Apprentice optician
Wayfair	Yes	Logistics
Wegmans Food Markets	No	Extensive set of development programs, unclear if they are long-term

Appendix C: Priority Occupations

soc	Description	Cluster	2029 Jobs	Median Hourly Earnings
11-1021	General and Operations Managers	Sales and management	109,268	\$66.85
29-1141	Registered Nurses	Healthcare	97,953	\$48.75
13-2011	Accountants and Auditors	Administrative and professional services	70,984	\$52.03
15-1252	Software Developers	Technology and engineering	62,570	\$69.18
13-1161	Market Research Analysts and Marketing Specialists	Sales and management	58,328	\$41.58
41-3031	Securities, Commodities, and Financial Services Sales Agents	Administrative and professional services	56,319	\$69.49
41-3091	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	Sales and management	42,902	\$36.99
13-2051	Financial and Investment Analysts	Administrative and professional services	39,905	\$60.04
25-2021	Elementary School Teachers, Except Special Education	Education	39,515	\$41.26
13-1111	Management Analysts	Sales and management	37,656	\$53.91
11-3031	Financial Managers	Administrative and professional services	36,593	\$110.79
13-1082	Project Management Specialists	Unknown	34,744	\$52.75
33-3051	Police and Sheriff's Patrol Officers	Public safety	30,214	\$39.60
13-1071	Human Resources Specialists	Administrative and professional services	28,686	\$40.73
27-2012	Producers and Directors	Unknown	27,890	\$51.01
15-1232	Computer User Support Specialists	Technology and engineering	23,048	\$31.96
11-3021	Computer and Information Systems Managers	Technology and engineering	21,759	\$105.27
13-2052	Personal Financial Advisors	Administrative and professional services	20,584	\$66.86
23-2011	Paralegals and Legal Assistants	Administrative and professional services	20,563	\$32.09
13-1199	Business Operations Specialists, All Other	Sales and management	20,483	\$40.83
27-3031	Public Relations Specialists	Sales and management	18,935	\$40.13
11-2021	Marketing Managers	Unknown	18,658	\$88.86
47-2111	Electricians	Construction and installation	18,099	\$40.70
11-2022	Sales Managers	Unknown	16,425	\$100.16
11-9111	Medical and Health Services Managers	Healthcare	15,385	\$68.74
15-1211	Computer Systems Analysts	Technology and engineering	13,835	\$55.29
21-1021	Child, Family, and School Social Workers	Education	13,555	\$33.87
15-1244	Network and Computer Systems Administrators	Technology and engineering	13,057	\$52.14
13-1151	Training and Development Specialists	Administrative and professional services	12,378	\$35.68
41-3021	Insurance Sales Agents	Administrative and professional services	11,022	\$33.92
53-1047	First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	Transportation and production	10,915	\$31.62

Appendix C: Priority Occupations

soc	Description	Cluster	2029 Jobs	Median Hourly Earnings
47-2152	Plumbers, Pipefitters, and Steamfitters	Construction and installation	10,819	\$38.18
13-2061	Financial Examiners	Administrative and professional services	10,467	\$56.15
13-1041	Compliance Officers	Agriculture and maintenance	10,177	\$43.50
13-2072	Loan Officers	Administrative and professional services	10,140	\$53.56
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	Construction and installation	9,364	\$46.34
29-2018	Clinical Laboratory Technologists and Technicians	Healthcare	9,113	\$38.75
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	Mechanics and specialists	8,872	\$32.86
11-9199	Managers, All Other	Sales and management	8,864	\$78.44
11-9151	Social and Community Service Managers	Education	8,419	\$40.73
15-2051	Data Scientists	Technology and engineering	8,120	\$65.13
17-1011	Architects, Except Landscape and Naval	Technology and engineering	7,724	\$51.35
11-3012	Administrative Services Managers	Education	7,428	\$66.54
29-2034	Radiologic Technologists and Technicians	Healthcare	7,354	\$38.93
25-2052	Special Education Teachers, Kindergarten and Elementary School	Education	7,351	\$40.09
15-1253	Software Quality Assurance Analysts and Testers	Technology and engineering	7,110	\$62.20
53-2011	Airline Pilots, Copilots, and Flight Engineers	Transportation and production	7,087	\$105.33
27-1011	Art Directors	Technology and engineering	6,990	\$66.06
15-1255	Web and Digital Interface Designers	Technology and engineering	6,902	\$52.16
15-1241	Computer Network Architects	Technology and engineering	6,850	\$67.13
17-2051	Civil Engineers	Technology and engineering	6,849	\$51.48
11-3121	Human Resources Managers	Administrative and professional services	6,763	\$86.40
11-9051	Food Service Managers	Food and customer service	6,584	\$35.46
15-1231	Computer Network Support Specialists	Technology and engineering	6,578	\$41.12
15-1212	Information Security Analysts	Technology and engineering	6,575	\$70.61
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	Sales and management	6,571	\$53.75
13-1131	Fundraisers	Sales and management	6,518	\$39.32
11-2011	Advertising and Promotions Managers	Unknown	6,427	\$82.19
13-1121	Meeting, Convention, and Event Planners	Sales and management	6,087	\$38.54
33-2011	Firefighters	Public safety	6,055	\$38.68
43-6012	Legal Secretaries and Administrative Assistants	Administrative and professional services	5,912	\$33.85
33-1012	First-Line Supervisors of Police and Detectives	Public safety	5,855	\$61.27
15-1254	Web Developers	Technology and engineering	5,794	\$37.38

Appendix C: Priority Occupations ___

soc	Description	Cluster	2029 Jobs	Median Hourly Earnings
41-9022	Real Estate Sales Agents	Sales and management	5,568	\$36.84
27-3043	Writers and Authors	Technology and engineering	5,424	\$40.87
27-4032	Film and Video Editors	Technology and engineering	5,211	\$48.39
11-9141	Property, Real Estate, and Community Association Managers	Sales and management	5,149	\$51.40
13-1141	Compensation, Benefits, and Job Analysis Specialists	Administrative and professional services	5,067	\$41.82
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	Mechanics and specialists	5,003	\$31.07
15-1299	Computer Occupations, All Other	Technology and engineering	4,724	\$52.76
13-2041	Credit Analysts	Administrative and professional services	4,620	\$65.37
11-2032	Public Relations Managers	Unknown	4,321	\$77.75
17-3011	Architectural and Civil Drafters	Technology and engineering	4,285	\$32.01
11-3013	Facilities Managers	Unknown	3,964	\$60.10
15-2031	Operations Research Analysts	Technology and engineering	3,766	\$51.54
27-1025	Interior Designers	Technology and engineering	3,739	\$32.28
29-1292	Dental Hygienists	Technicians and scientists	3,704	\$40.97
47-4011	Construction and Building Inspectors	Agriculture and maintenance	3,655	\$39.26
49-3011	Aircraft Mechanics and Service Technicians	Assemblers and machine operators	3,550	\$35.24
13-1051	Cost Estimators	Construction and installation	3,535	\$39.79
29-1126	Respiratory Therapists	Healthcare	3,498	\$40.73
11-9021	Construction Managers	Sales and management	3,456	\$65.90
13-2099	Financial Specialists, All Other	Administrative and professional services	3,453	\$47.08
41-9021	Real Estate Brokers	Sales and management	3,294	\$46.10
15-1243	Database Architects	Technology and engineering	3,182	\$68.93
17-2071	Electrical Engineers	Technology and engineering	3,174	\$51.61
15-1242	Database Administrators	Technology and engineering	3,134	\$58.45
29-2032	Diagnostic Medical Sonographers	Healthcare	3,026	\$42.68
53-6051	Transportation Inspectors	Agriculture and maintenance	3,023	\$38.91
47-4021	Elevator and Escalator Installers and Repairers	Sales and management	2,976	\$48.81
27-2042	Musicians and Singers	Education	2,882	\$44.03
19-4099	Life, Physical, and Social Science Technicians, All Other	Technicians and scientists	2,703	\$31.96
13-1011	Agents and Business Managers of Artists, Performers, and Athletes	Sales and management	2,666	\$38.72
25-3099	Teachers and Instructors, All Other	Education	2,653	\$35.84
13-1081	Logisticians	Transportation and production	2,631	\$41.61
29-1031	Dietitians and Nutritionists	Healthcare	2,497	\$33.92

Appendix C: Priority Occupations ___

soc	Description	Cluster	2029 Jobs	Median Hourly Earnings
11-3071	Transportation, Storage, and Distribution Managers	Transportation and production	2,431	\$58.44
47-2211	Sheet Metal Workers	Mechanics and specialists	2,328	\$33.90
11-9031	Education and Childcare Administrators, Preschool and Daycare	Education	2,247	\$36.47
11-9041	Architectural and Engineering Managers	Technology and engineering	2,198	\$84.98
31-2021	Physical Therapist Assistants	Healthcare	2,146	\$32.92
49-9041	Industrial Machinery Mechanics	Mechanics and specialists	2,127	\$31.09
11-9039	Education Administrators, All Other	Education	2,114	\$45.31
51-8021	Stationary Engineers and Boiler Operators	Mechanics and specialists	2,058	\$40.90
11-3131	Training and Development Managers	Unknown	1,882	\$85.11
47-2221	Structural Iron and Steel Workers	Construction and installation	1,870	\$46.56
17-2141	Mechanical Engineers	Technology and engineering	1,866	\$51.19
27-3091	Interpreters and Translators	Technology and engineering	1,817	\$39.95
17-2112	Industrial Engineers	Technology and engineering	1,816	\$50.93
11-3061	Purchasing Managers	Sales and management	1,790	\$80.32
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	Technology and engineering	1,775	\$63.26
25-3011	Adult Basic Education, Adult Secondary Education, and English as a Second Language Instructors	Education	1,762	\$36.67
33-1021	First-Line Supervisors of Firefighting and Prevention Workers	Public safety	1,745	\$67.32
19-5011	Occupational Health and Safety Specialists	Unknown	1,735	\$43.01
19-2041	Environmental Scientists and Specialists, Including Health	Unknown	1,716	\$43.80
11-2033	Fundraising Managers	Unknown	1,637	\$86.91
13-2031	Budget Analysts	Administrative and professional services	1,618	\$47.18
29-2031	Cardiovascular Technologists and Technicians	Healthcare	1,598	\$34.92
15-2011	Actuaries	Administrative and professional services	1,571	\$69.81
13-2028	Property Appraisers and Assessors	Unknown	1,550	\$37.56
27-1027	Set and Exhibit Designers	Technology and engineering	1,486	\$38.40
27-4031	Camera Operators, Television, Video, and Film	Technology and engineering	1,461	\$40.02
25-2032	Career/Technical Education Teachers, Secondary School	Education	1,409	\$47.95
21-1029	Social Workers, All Other	Education	1,404	\$36.36
49-9051	Electrical Power-Line Installers and Repairers	Technicians and scientists	1,400	\$51.47
27-1014	Special Effects Artists and Animators	Technology and engineering	1,348	\$44.79

Appendix C: Priority Occupations

soc	Description	Cluster	2029 Jobs	Median Hourly Earnings
41-9031	Sales Engineers	Sales and management	1,344	\$59.33
33-1099	First-Line Supervisors of Protective Service Workers, All Other	Public safety	1,328	\$35.31
19-3099	Social Scientists and Related Workers, All Other	Technology and engineering	1,321	\$47.41
11-9081	Lodging Managers	Sales and management	1,256	\$44.26
17-2199	Engineers, All Other	Technology and engineering	1,251	\$56.18
27-3011	Broadcast Announcers and Radio Disc Jockeys	Unknown	1,246	\$37.70
11-9121	Natural Sciences Managers	Education	1,211	\$81.34
13-2081	Tax Examiners and Collectors, and Revenue Agents	Administrative and professional services	1,204	\$37.57
27-4014	Sound Engineering Technicians	Technology and engineering	1,193	\$48.72
31-2011	Occupational Therapy Assistants	Healthcare	1,167	\$32.19
29-2035	Magnetic Resonance Imaging Technologists	Healthcare	1,143	\$43.31
13-2071	Credit Counselors	Administrative and professional services	1,141	\$31.01
17-3023	Electrical and Electronic Engineering Technologists and Technicians	Technicians and scientists	1,139	\$36.48
27-3042	Technical Writers	Technology and engineering	1,125	\$42.75
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	Agriculture and maintenance	1,111	\$33.88
17-2081	Environmental Engineers	Technology and engineering	1,043	\$49.74
53-5021	Captains, Mates, and Pilots of Water Vessels	Transportation and production	1,014	\$50.78
25-4013	Museum Technicians and Conservators	Education	804	\$35.08
11-1031	Legislators	Sales and management	779	\$40.14
27-1029	Designers, All Other	Technology and engineering	680	\$43.36
27-3092	Court Reporters and Simultaneous Captioners	Administrative and professional services	675	\$51.81
33-9021	Private Detectives and Investigators	Public safety	631	\$34.63
29-1129	Therapists, All Other	Healthcare	540	\$36.23
17-1012	Landscape Architects	Technology and engineering	507	\$46.81

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