



**Connected Pathways to Tech Employment
September 2020**

This report was made possible by NYCEDC



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Connected Pathways to Tech Employment

September 2020

Pursuit partnered with New York City Economic Development Corporation (NYCEDC) and public and nonprofit sector organizations across the City to develop a roadmap for increasing participation in the technology industry for low-income, blue-collar workers.

The findings, challenges, and recommendations in this report have taken on even greater urgency as a result of COVID-19. The pandemic has unmasked and amplified long-standing inequities in our society, with the most vulnerable communities feeling the greatest economic impact. It is critical that we help these populations secure well-paid careers in technology.

This report was completed with the support of New York Public Library, Queens Public Library, Brooklyn Public Library, CUNY, Urban Upbound, Tech:NYC, NYCHA, and GLG.



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Context and Ten-year Vision



Over the last 10 years, the NYC tech industry has created more wealth, companies, and jobs than ever before

In the past decade, the New York City tech sector has added **63,000 jobs — an 80% increase.**¹ This growth has far outpaced that of other industries, with tech-sector job creation increasing at a rate of two to four times overall private sector job creation from 2009 and 2018.^{2,3}

This increase in job creation has spurred demand for software engineers and other high-skilled workers.⁴

- Job openings in the city's tech sector jumped 38%
- In November 2019, New York had the third-highest number of tech openings by city, behind only San Francisco and Seattle

By 2022, the four tech giants — Amazon, Apple, Facebook, and Google — are projected to have ~20,000 workers in New York City.⁵ This increase is also being fueled by sectors that are increasingly becoming tech enabled. There are currently twice as many technology jobs in non-tech industries in New York as there are in technology companies.⁶

Source:

1. New York State Comptroller, [New York City Employment Trends](#) (2019).

2. Civic Hall, [NYC's Tech Opportunity Gap](#) (2019).

3. James Parrott, Senior Director for Fiscal and Economic Policy at the New School

4. New York Times, [Silicon Valley's Newest Rival: The Banks of the Hudson](#) (2019).

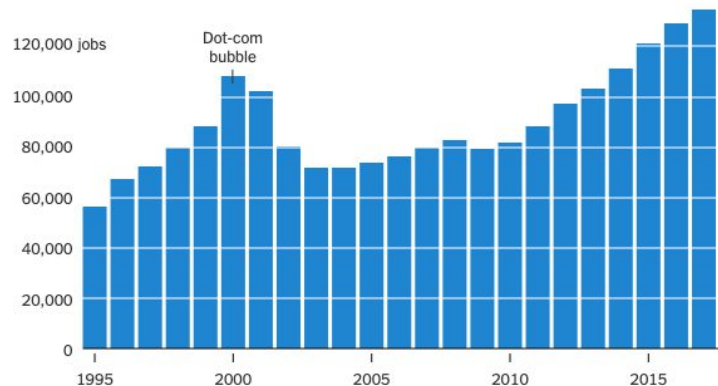
5. New York Times, [Silicon Valley's Newest Rival: The Banks of the Hudson](#) (2019).

6. EMSI data source

The New York Times

New York Is a Genuine Tech Hub (and That Was Before Amazon)

Tech jobs in New York City



Note: Figure for 2017 is a preliminary estimate. Online retail jobs are not included in these figures. (There were 12,700 online retail jobs in New York in 2017.)

By The New York Times | Source: Office of the New York State Comptroller

[Link to Article](#)

The City has been actively engaged with public and private partners to make this happen.



Cornell Tech created to become a national tech hub

**[CUNY
2X TECH]**

Partnership to double the number of tech bachelor's degrees between 2017-2022



Union Square rezoning to create 21-story tech hub

In the next 10 years, the NYC tech industry and its demand for high-skilled tech workers will only continue to grow

Silicon Valley tech giants have already committed to doubling their NYC footprint:

- Facebook signed a lease at Hudson Yards enabling it to increase its work force to nearly 9,000 employees¹
- Google will lease 1.3 million sq ft at a converted former freight terminal in lower Manhattan, creating space for more than 12,000 employees—nearly double its current staffing²—in the city over the next 10 years
- Amazon signed a lease to create space for more than 1,500 employees, bringing its total staffing in the city to more than 8,000³

Start-ups will be driving new the demand for tech workers, too

- In the third quarter of 2019, investors pumped more than \$27 billion into start-ups in the New York City region, the second most for any area outside San Francisco during that time period⁴

At the same time, macroeconomic trends in the future of work will also accelerate the demand for high-skilled tech workers

- In the past two years, digital skills, including in advanced software systems and social media platforms, grew more than 70%⁵
- Automation and outsourcing are threatening traditional blue-collar work, with 1.4 million jobs in New York City (30% of total employment) at risk of being eliminated⁶

Source:

1. Wall Street Journal. [Facebook in Talks for New York Office, in Deal Making Company One of City's Largest](#) (2019)

2. Wall Street Journal. [Google Plans large New York City Expansion](#) (2018).

3. New York Times. [Amazon Grows in New York, Reviving Debate Over Abandoned Queens Project](#). (2019)

4. PWC and CB Insights. [MoneyTree Report Q3 2019](#) (2019).

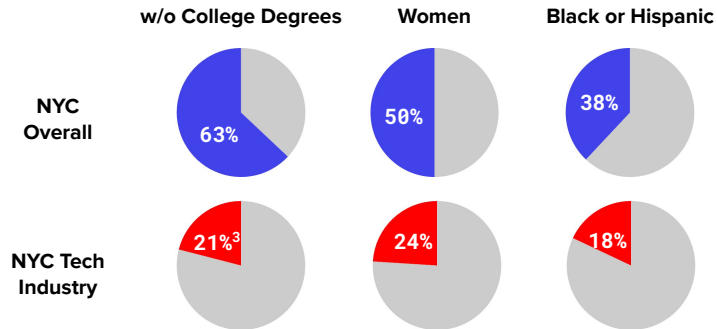
5. Civic Hall. [NYC's Tech Opportunity Gap](#) (2019).

6. Center for an Urban Future, Work to do: [How automation will transform jobs in NYC](#) (2018)

The tech industry has created more wealth, companies, and jobs than ever before. But many New Yorkers aren't sharing in those opportunities.

New Yorkers from diverse and non-traditional backgrounds are not sharing in the prosperity being created by tech.

While a majority of New Yorkers (63%) do not have a bachelor's degree, just 21% of software developers in NYC are non-BA holders.^{1,2} Additionally, female, Black, and Hispanic populations are underrepresented in the tech industry.²



Source: NYC's Tech Opportunity Gap (2019), Civic Hall

1. US Census Bureau

2. NYC's Tech Opportunity Gap (2019), Civic Hall

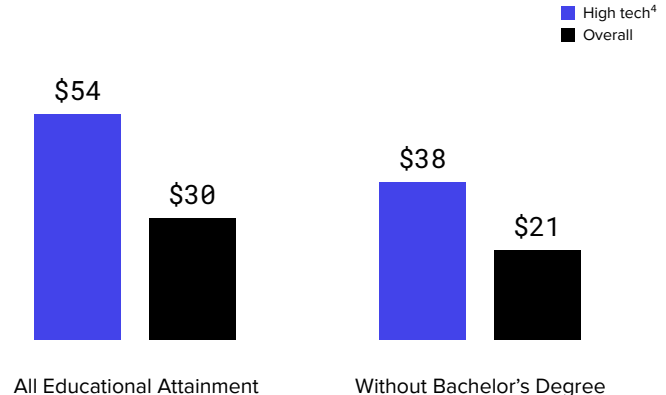
3. Representative of Developers ONLY

4. High-tech jobs are those focused on the creation and management of high-tech tools, products, systems, and support services (e.g., developers, software engineers)

Many New Yorkers are missing out on opportunities for high-paying careers in tech.

The median hourly wage for all high-tech jobs is \$54 compared to the overall median hourly wage of \$30.¹ Additionally, individuals without a BA who work in the tech sector earn an average hourly wage of 1.8x (\$38 vs. \$21) more than their non-BA-holding counterparts working in other sectors.²

MEDIAN HOURLY WAGE BY JOB TYPE²





TEN-YEAR IMPACT:

10,000
life-changing jobs

\$14B
life-time wage gains

TEN-YEAR VISION:

New York City is the leader of shared prosperity in the technology industry, enabling low-income, blue-collar New Yorkers from every neighborhood to gain employment and create \$14 billion in collective lifetime wage gains

Today, 65 million Americans are stuck in low-wage jobs, 70 percent don't have college degrees, and one third live at or below the poverty line. **In New York City, more than 1.6 million New Yorkers can't find work or are stuck in low-wage jobs.**¹

Over the last 10 years, the City has been actively engaged with public and private partners to attract high-quality talent and dynamic companies that seek out diverse and non-traditional talent. **In the next 10 years, it is critical to establish initiatives that will create a technology ecosystem that is inclusive of New Yorkers from all five boroughs, income levels, and professional and educational backgrounds.** In effect, New Yorkers, including and especially those from underrepresented communities, can share in the prosperity and wage gain from the tech boom.

Source:

1. Pursuit analysis of [New York City Comptroller data](#), and [Tech Sector representation data](#)

Key Findings



Project findings and recommendations were led by Pursuit and developed with a group of trusted partners who collectively have the scale, proven experience, and employer relationships necessary to propose effective solutions at scale



Empowers adults across NYC to launch meaningful careers in tech and go from \$18-\$85K on average



New York
Public Library

92 Branches, 17M patrons, and 3M public computer sessions a year



QUEENS
PUBLIC
LIBRARY

Annual attendance of >11M across 62 locations and 1.4M program attendees



<1/2 mile away from nearly all of Brooklyn's 2.6M residents, and 700,000 active patrons



200,000 students served per year across all 5 boroughs



Constituency of 30,000 in Public Housing across Queens, the South Bronx, and East Harlem



More than 700 tech companies that employ 10,000s of individuals in NYC and beyond



GLG is the world's knowledge marketplace connecting clients with insights from their network of more than 700,000 experts

The respondent group used a four-step process to build the knowledge base of current barriers and develop barrier-specific recommendations

1. Define current barriers

- Conduct **primary research** including a survey of Pursuit Fellows; interview employers (i.e., Heads of D&I, recruiting) and workforce development funders; and conduct focus groups with service providers and community partners.
- Leverage **existing secondary research on existing data and reports** to validate and further develop barriers.

2. Review current offerings

- Collect **data on programs and conduct interviews with service providers** to landscape existing interventions.
- Gather current **best practices and case studies** of interventions with proven results.

3. Map strategies to achieving vision

- Conduct **planning workshop** to review and discuss fact base.
- **Map and prioritize strategies to** increase career pathways for underrepresented New Yorkers in tech.

4. Design and develop recommendations

- Form **smaller working groups** to evaluate and develop the intervention design and replicable implementation plan with the following fields: proposed design, rationale, open questions and risks, resourcing requirements and potential implementation timeline.

REPORT FINDINGS

Systemic barriers across four primary areas close the door to local, diverse, and nontraditional talent (those without college degrees, professional experience, or networks).

**1.
Training
&
Access**

**2.
Financing
to Scale**

**3.
Employer
Activation**

**4.
Post-hire
Success**



REPORT FINDINGS

1. Training & Access

Jump to 'Training & Access' Chapter (Page 19) for more information

There are many programs that provide training and services; however, there is no connected path to career-specific employment and there is a significant gap between programs offered by community providers and last-mile training providers.

Furthermore financial obligations continue to be the biggest challenge to participation.

As a result, 34% of participants surveyed from diverse and nontraditional backgrounds still lacked awareness of career pathways available to them and nearly 70% of those who were interested in tech careers lacked confidence that they could achieve tech employability.¹

¹ Survey of 50 Pursuit fellows



REPORT FINDINGS

2. Financing to Scale

Jump to 'Financing to Scale' Chapter (Page 37) for more information

There is only enough annual philanthropic funding for adult workforce training to serve fewer than 1% of New Yorkers who can't find work or are stuck in low-wage jobs.

Public funding of adult related education has declined consistently since 2001.

There is not enough meaningful data demonstrating the ROI of workforce training, particularly for low-income populations, which discourages private investment.

\$60B

Needed to Train the 1.7M
New Yorkers Living in Poverty

<\$28MM

Annual Philanthropic Funding
for Adult Job Training Direct
Services in NYC

Source: NYCT Stronger Together: The Power of
Funder Collaboration

REPORT FINDINGS

3. Employer Activation

Jump to 'Employer Activation' Chapter (Page 48) for more information

"Progress is slow and many companies struggle to materially increase representation levels of diverse talent, gain an understanding of where in their organizations diversity matters most, and create truly inclusive organizational cultures to reap the benefits."

Except from "Delivering through Diversity"
(McKinsey and Company, 2018)



REPORT FINDINGS

4. Post-hire Success

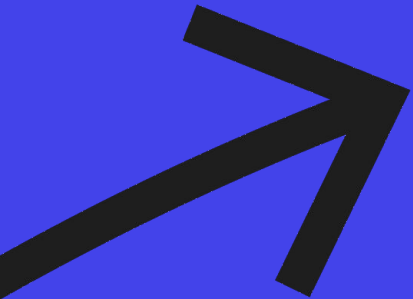
Jump to 'Post-hire Success' Chapter (Page 58) for more information

Because low-income, non-college degree-holding individuals lack professional experience and networks, they often encounter career challenges around workplace integration, job retention, and financial management.

Additionally, the 58% of New Yorkers who have less than three months of savings and more than 20% who have no credit profile whatsoever will require financial literacy guidance to achieve financial well-being.



Key Recommendations



To tackle these issues, our report offers a series of recommendations from Pursuit and New York City service providers. Pursuit and the participant group focused on the first recommendation outlined below (#1), while the following three recommendations (#2-4) are based on Pursuit's experience as a last-mile training program serving adults from low-income backgrounds.



Report Recommendations

1. Training & Access

Create connected paths to career-specific employment for all New Yorkers with diverse and nontraditional backgrounds to break into tech

2. Financing to Scale

Catalyze the market for financing income- share agreements designed for low socio-economic adults

3. Employer Activation

Work with and incentivize employers to pilot, track results of, and scale effective employment models

4. Post-hire Success

Fund and support intermediaries to work with employers to ensure professional integration, career advancement, and financial wellbeing for workers





1. Training & Access









A range of skills-building and cultural / professional experience programs are necessary to prepare New Yorkers with non-traditional backgrounds for employment in technical roles

	Characteristics	Example programs
Basic literacy and numeracy skills	Instruction on basic literacy and numeracy skills including ESOL offerings. Vast majority of programs are delivered in-house and a partner network can be used for referrals if additional support is needed	<ul style="list-style-type: none"> • Adult Basic Education • ESOL
Basic digital skills	Introduces introductory computer skills and topics (e.g., MS office training, writing emails). Offerings can vary from drop-in to more formalized programs	<ul style="list-style-type: none"> • Basic CPU skills
High School equivalency	Libraries offer variety of prep courses for HSE and on-site administration of TASC exam	<ul style="list-style-type: none"> • Pre-HSE / HSE • College prep
Higher education	Higher education institutions like CUNY offers many tech-related and non-tech degrees across NYC	<ul style="list-style-type: none"> • Associate's • Bachelor's
Foundational employ. skills	Can involve a variety of career resources, classes, workshops, and information sessions (group and 1-on-1). Some providers also offer individual appointments for focused career support	<ul style="list-style-type: none"> • Career workshops • Resume and interview support • Job placement support
Technical training	Offerings range from basic computer skills (e.g. email, web search), to intermediate digital skills (e.g. basic graphic design) to advanced coding	<ul style="list-style-type: none"> • Intermediate digital skills • Advanced coding

NOTE: This list is not exhaustive of cultural and interpersonal skills that are also critical to succeed in a professional setting

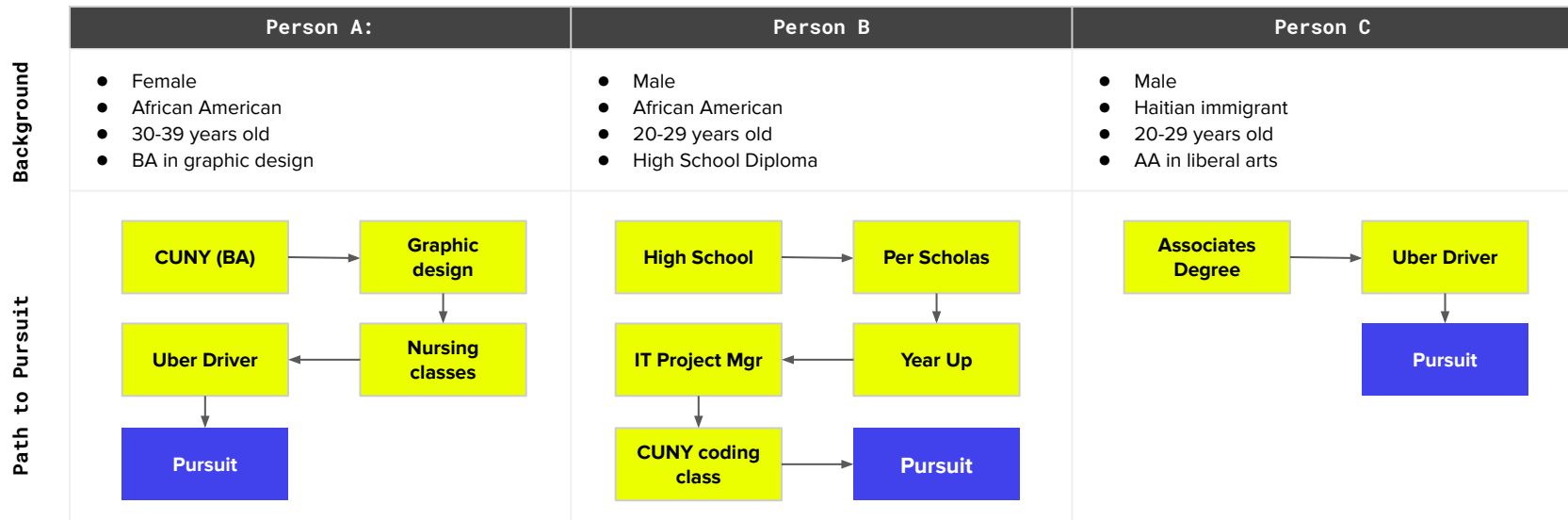
Programs and services are available to many New Yorkers; however, these services are often fragmented across many providers

						
Basic literacy and numeracy skills		✓	✓	✓		✓
Basic digital skills		✓	✓	✓		✓
High School equivalency			✓	✓		✓
Higher education					✓	
Foundational employ. skills		✓	✓	✓		✓
Technical training	Last-mile training	Intermediate technical training				Bridge to Pursuit

NOTE: This list is not exhaustive of cultural and interpersonal skills that are also critical to succeed in a professional setting

As a result, the path for candidates with non-traditional backgrounds is neither clear nor connected.

An individual's journey to Pursuit and other providers is seemingly random with no clear entry point or pathway.



Source: Interviews with Pursuit's fellows

There is also a significant intensity and commitment gap between intermediate series-based technical training and intensive last-mile training programs such as Pursuit

Current offering	Description	Commitment
Basic computer literacy and fundamentals workshops	Subjects range from foundational skills to computer and financial literacy. Topics can include: Microsoft Office proficiency, email for beginners, creating your own website etc.	One-time 1-3 hours No cost
Intermediate series-based technical skills programs	Teaches basic coding over the course of several sessions. Current offerings include: <ul style="list-style-type: none"> • NYPL's Project_<code>: A 10-week coding program culminating in a capstone project to build a website • Urban Upbound Bridge to Pursuit: Six-week, part-time training program teaching participants basic coding skills and exposing them to the tech industry. 	3-10 weeks Part time Little to no cost
Intensive last-mile technical training / boot camp	Intensive, accelerated learning programs that teach beginners digital skills—including full-stack web development, data science, and UX/UI design—that prepare participants to launch careers in tech. Programs are heavily project based and require students to immediately put their learnings into practice.	15-40 weeks Full time ~\$13,584

Last-mile training programs, like Pursuit, are **significantly more intense and require greater financial commitment** than other technical programs offered.

As a result, **many applicants are currently under-prepared to enroll and succeed** (Pursuit has a ~10% acceptance rate). In order to be better prepared, applicants require a bridge program that

- provides greater exposure and understanding of careers in tech
- better assesses aptitude for a career in a technical role
- equips candidates with the financial well-being and literacy to pursue the investment necessary for a boot camp

Source: Interviews with workshop participants; Eggelston, Liz. "2019 Coding Bootcamp Market Size Study"

Furthermore, personal obligations and lack of financial resources hinder New Yorkers from making the commitment to succeed in intensive training

Pursuing intensive training often requires a deep investment of time and/or finances that many New Yorkers are unable to make. The average cost of tuition for a full-time software developer bootcamp in the US is \$13,584 and trade school is more than \$30,000. However, 58% of New Yorkers have less than three months of savings on hand and more than 20% have no credit profile whatsoever. Furthermore, many New Yorkers have personal commitments such as child/elder care and full-time jobs that preclude them from making the necessary time commitment.



I didn't have the resources in order to reach out to tech opportunities



I thought I had to go back to school and take out loans to get a computer science degree to prove I had the genius in me.

Based on your experience, what were the most significant challenges you faced in completing Pursuit Core?

50%

Balancing the program with personal obligations

38%

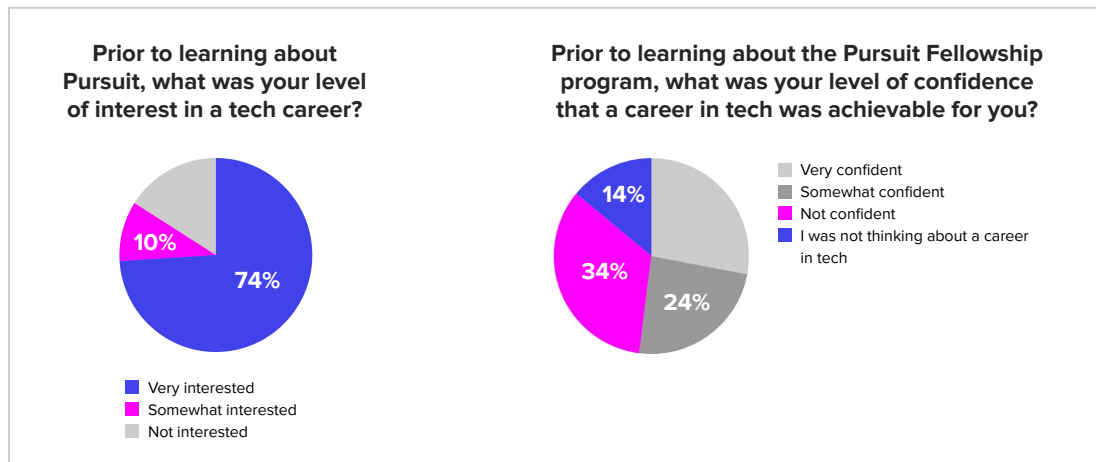
Financial support during the program

Source: Interviews with Pursuit's fellows, survey with target population, Workshop participants; Afridi, Lena. "How is Economic Opportunity Threatened in Your Neighborhood? 2016"; Eggelston, Liz. "2019 Coding Bootcamp Market Size Study"

Consequently, many New Yorkers question their ability to break into and build careers in tech

When surveyed, respondents frequently cited limited confidence in their ability to enter and succeed in the tech industry.

- 74% of those surveyed were very interested in a career in tech
- However, nearly half of all respondents had not considered a career in technology
- Of those respondents who were interested in a tech career, only one third felt very confident that a career in tech was possible



Source: Interviews with Pursuit's fellows, Survey with target population, Workshop participants

Pursuit: Connected Pathways to Tech Employment

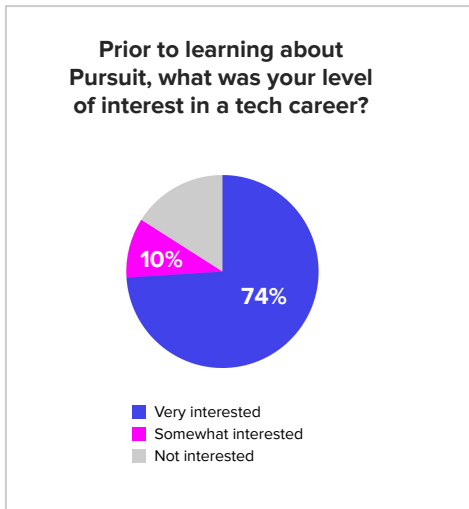
Even though I graduated with a degree in Math and took a few classes in CS, I didn't have too much experience with programming so I was not confident that I could land a job in tech.

I was not confident that a career in tech was achievable for me. I didn't have prior experience and my background wasn't in technology.

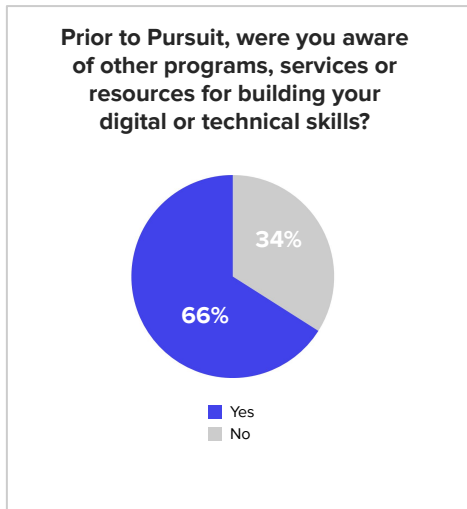
I didn't think a career in tech was possible [prior to Pursuit]. I didn't know enough about the tech industry to be able to make an informed decision. I didn't want to put life on hold and invest the time and money necessary to acquire tech skills when a job in tech wasn't guaranteed.

As a result, even when they are interested in a career in tech and aware of programs available to them, very few take advantage of these services

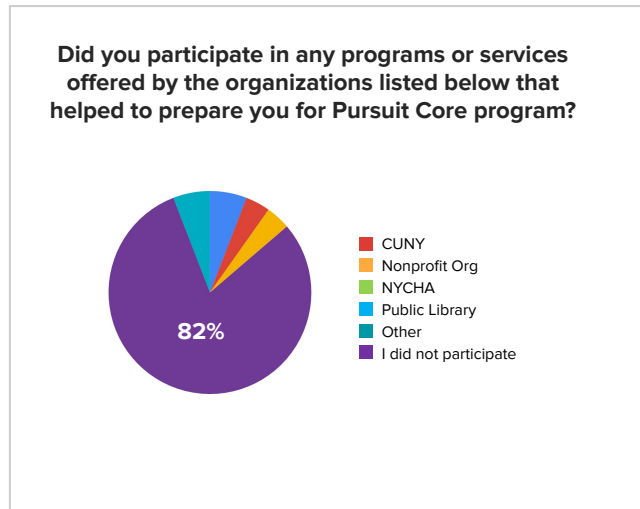
84% of candidates were somewhat to very interested in a career in tech ...



... 66% of these candidates were aware of resources available to them ...



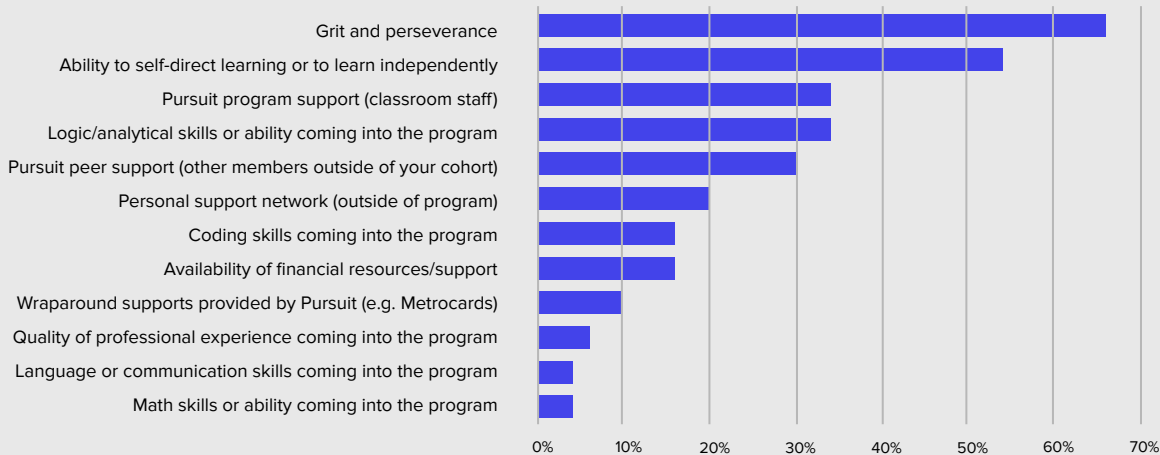
... however, 82% of candidates surveyed still had not participated in any programs or services



Source: Interviews with Pursuit's fellows, Survey with target population, Workshop participants

New Yorkers who do succeed in entering the tech industry have leaned heavily on their own grit and perseverance.

Based on your experience, what were the top three most important factors for successfully completing the Pursuit Core program?



“ My life challenges as an adult taught me to work hard. A lot of people here have hit bottom at some point and learned to be gritty and to fail forward.

“ It is very difficult to break into the tech industry as a career changer or underrepresented minority. To acquire a tech job that pays 2 to 5 times the rate of a dead-end job and get out of poverty requires a lot of will-power, dedication, investment of limited personal resources, and skills.

Source: Interviews with Pursuit's fellows, Survey with target population, Workshop participants

OUR RECOMMENDATION

Create **connected paths to career-specific employment** for all New Yorkers, across the five boroughs, from diverse and nontraditional backgrounds – those without college degrees, professional experience, or networks – to break into tech



There are four core components necessary to implement the recommendation and create access to training and skills for New Yorkers from all five boroughs

1A. Close skills gap by designing a bridge program

New bridge program to address gap between partner program offerings and last mile program readiness

1B. Increase awareness and scale through frontline referral staff

Train and educate frontline partner staff on software engineering career pathway so that they can refer interested candidates to appropriate next step based on candidate profile

1C. Create assessment to enable multiple entry points

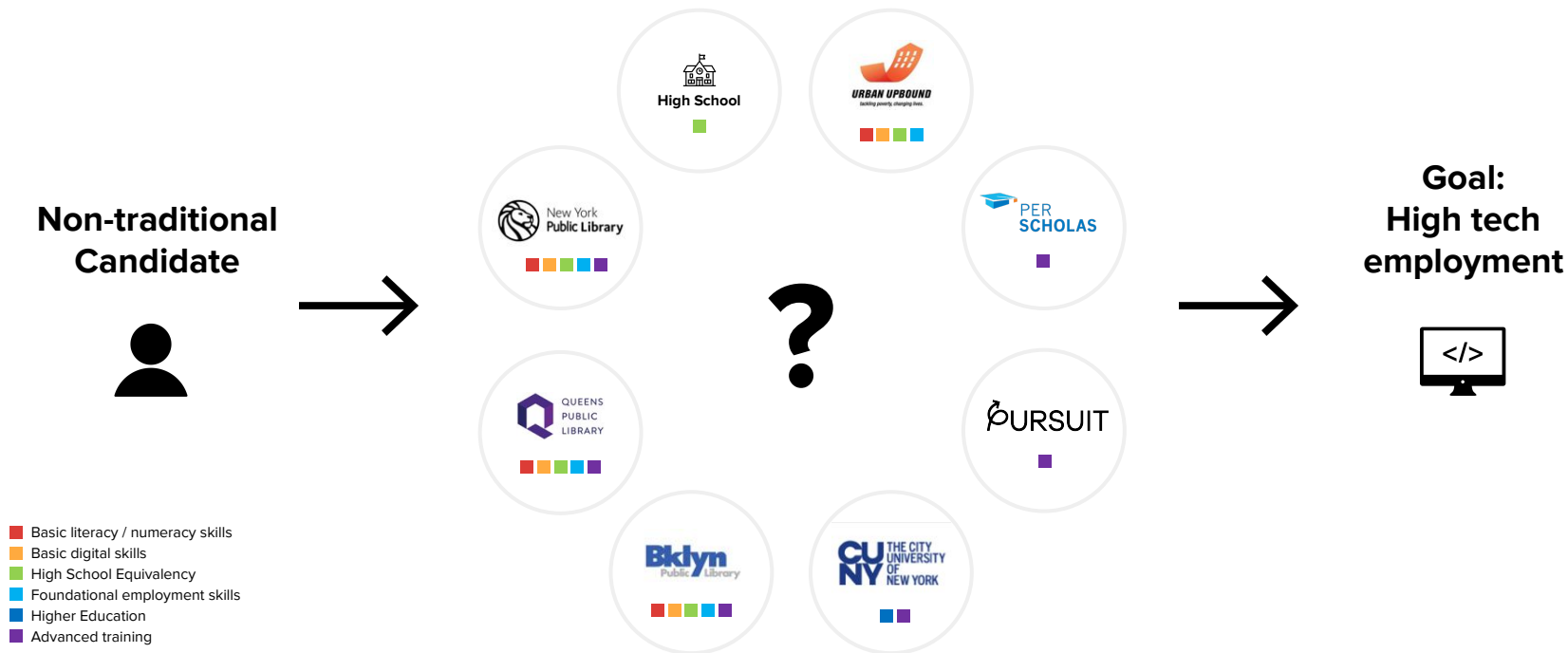
Create easy-to-use checklist or questionnaire that helps interested candidates identify their unique next right step across the diversity of programs and providers

1D. Connect programs to create career-specific path

Build strategic partnerships and a shared online resource center across program providers to better coordinate and align services by identifying linkages among programs

Across all initiatives, wrap-around services and holistic support (e.g., financial literacy) is necessary to encourage perseverance

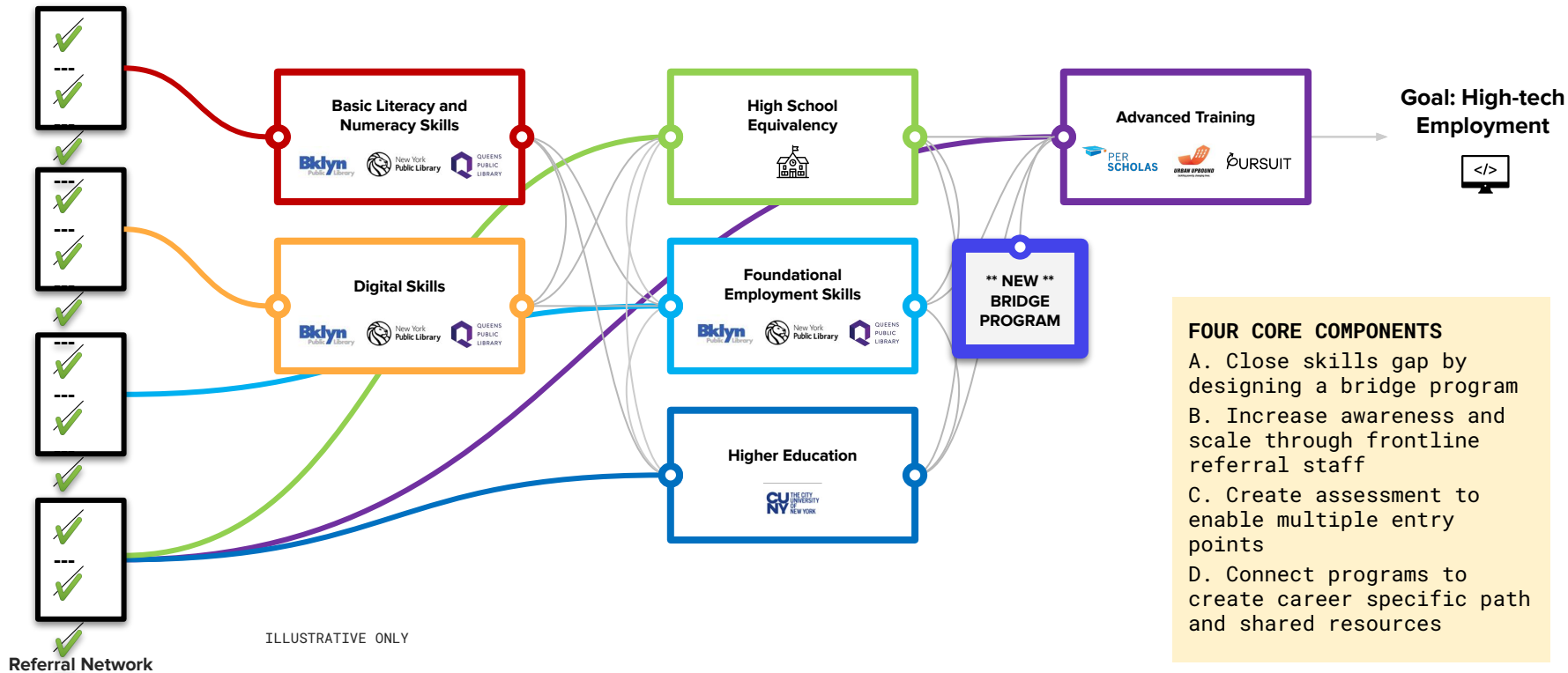
FROM programs and services fragmented across several disconnected providers



ILLUSTRATIVE ONLY

Pursuit: Connected Pathways to Tech Employment

TO programs and services coordinated and connected to form an integrated path to career-specific employment with multiple entry points and access from every borough



A Purpose

In the technical skill-building eco-system **there is a gap between basic / intermediate technical skill-building programs** (e.g., computer classes or basic intro to coding classes at public libraries) **and advanced last-mile programs like Pursuit.**

The result is:

- **Low acceptance rates:** Many candidates, who may be good candidates for a software engineering career with access to other skill-building or bridge programs, are not admitted to programs like Pursuit due to foundational skill gaps
- **Decreased confidence:** Candidates who are unable to complete the transition into a technical role because they are not adequately supported can be demoralized and perpetuate the belief that a career in tech is out of reach

A new bridge program that is focused on more intermediate tech sector literacy and skill building (e.g., computational logic, algorithmic thinking) and integrated into community partner education offerings can act as the bridge that can lead into a more intensive coding boot camp.

Design and outcomes

While the program still needs to be designed and validated, the initial proposal is for a 4-6 week in-person, part-time “Bridge to Tech” program that is ideal for graduates of existing TASC / HSE/ ELL programs who are looking for career-centered training to connect them to last-mile training providers.

By the end of the program, students will:

- **Understand different career pathways** in tech and related skill sets
- **Communicate their interest in tech** and why they are a good applicant for last-mile training provider
- **Understand the basic components of computational thinking** and how it applies to computer programming
- **Understand the financial investment** required to participate in intensive last-mile training programs

Expected outcomes

- **Improved acceptance and enrollment rates** of individuals into last-mile training programs
- **Increased volume of individuals** as candidates are better able to navigate the pathway end-to-end

B Purpose

Currently, pathways to careers in technology for adults without college degrees or professional experience are undefined. They may hear about programs and services that can enable them to enter the tech industry by word of mouth or community groups. However, **increasing awareness of the tech sector and the potential to transition into tech careers continues to be an acute need among the target population.**

In order to reach the target population *en masse*, **personalized outreach from trusted community organizations with established community footprints** is necessary. We will take an opportunistic approach to partnering with or leveraging other related tech campaigns in the city.

Larger-scale events and awareness campaigns can be effective at a later stage; however, because programs and services are fragmented across disparate service providers, it is likely not the the most effective starting point or best use of resources at this time.

Design and outcomes

Leverage community partners who have established broad footprints (e.g., public libraries, NYCHA offices) as a frontline referral network for pathways to careers in technology.

To reach population currently served by project partners:

- **Identify relevant frontline staff** (e.g., librarians, library adult education administrators, NYCHA administrators)
- **Provide training and education to staff** on the career pathway, how to identify target candidates, and how to connect them to an initial first step (more detail in following recommendation)

To reach population not directly served by project partners:

- **Identify community partners** and follow steps above OR
- **Leverage existing events** to increase awareness

Expected outcomes

- **Increased enrollment** in programs across all stages of the pathway, including last-mile training programs
- **Improved understanding of demand** by tracking number of interactions, referrals, and conversions

C Purpose

There is a **system-wide need for better competency-based assessment** of potential software engineering candidates. There are currently nascent assessment efforts. However these are not linked to available programs and resources and often limited in scope, for example:

- **NYPL's "What is your tech profile" quiz** aimed to help candidates identify what type of computer user they are and therefore what classes are relevant for them inventories NYPL programs only
- **General Assembly's Credentials assessment** evaluates a candidate's ability to write functional, efficient and clean code. However, in the event of a skill deficiency, does not provide suggestions to available programs and resources

We do not believe it is the right first step for this participant group to invest in the design of a valid, custom testing instrument. Instead, **we recommend a lightweight initial screening questionnaire that is compatible with our frontline referral approach and can be easily modified over time.**

This recommendation strikes a **balance between taking an inclusive approach up-front to encourage participation** in valuable, career-relevant programming from partner organizations, **while still providing a more targeted filter at the later stages to identify candidates who are ready for intensive last-mile training.**

Design and outcomes

We propose a **lightweight and easy-to-use assessment that can be either self-administered by candidates** (e.g., access through the online resource center) **or administered by frontline referral network** at trusted community providers (e.g., libraries).

This **assessment is aimed at both connecting a potential candidate to the right initial resources and recommending an entry point** through an easy-to-use checklist or set of questions.

In the future, a more rigorous problem solving assessment to test readiness for intensive last-mile training can be designed and administered as part of bridge program (depending on agreed upon bridge design), or other entry points to last-mile training.

Expected outcomes

- **Improved acceptance and enrollment rates** of last-mile training candidates as candidates are able to better identify their entry point into a tech career pathway based on their competencies rather than credentials
- **Increased enrollment** and completion of partner and bridge programs as tool provides clear next steps and program recommendations

D Purpose

In New York City, there is a diversity of service providers—libraries, social service organizations, educational institutions, and last-mile training providers—offering a range of workforce development programming and services.

While they all share the same broad goal of helping underserved populations achieve employability, **providers often diverge on specific goals and programmatic approaches.** Some serve specific populations and offer comprehensive long-term programs (e.g. Urban Upbound) while others target the general population and provide single-session, subject-specific programming (e.g. Queens Public Library). Still others administer entirely different models, e.g., The City University of New York (CUNY) provides a range of courses that give participants the opportunity to receive skill-based training for in-demand tech careers.

While each provider is committed to making a positive impact on the audiences they serve, **the current landscape of uncoordinated providers is difficult for members of the target population to navigate and can undermine their confidence in their ability to enter and succeed in the tech industry.**

Design and outcomes

We propose **establishing and maintaining strategic partnerships across workforce development providers.** In doing so, partners will co-design an interconnected system of service providers that will create access to a comprehensive suite of relevant programs and services and open up career pathways into the tech industry for diverse and nontraditional audiences.

Implementation could take a modular approach:

1. **Codify a pathway by identifying linkages between programs, and sharing in an online resource center:** All providers (public, private, and non-profit) that provide services from adult basic education to last-mile intensive training will be invited to participate
2. **Coordinated diagnostic review of programs:** Providers can share best practices on operational efficiency and program effectiveness and proactively manage performance
3. **Longer-term strategy development:** Partners can consider leveraging each other's capabilities further e.g., marketing efforts, data and forecasting capabilities

Expected outcomes

- **Increased enrollment** and completion of partner and bridge programs as pathway provides clear next steps and program recommendations

2. Financing to Scale

There isn't enough financing to scale programs and services that close skills and employment gaps

There is only enough annual philanthropic funding for adult workforce training to serve fewer than 1% of New Yorkers who can't find work or are stuck in low-wage jobs. Public funding in adult-related education has consistently declined since 2001. Private investment is limited. Collectively, this lack of funding can be attributed to multiple factors:

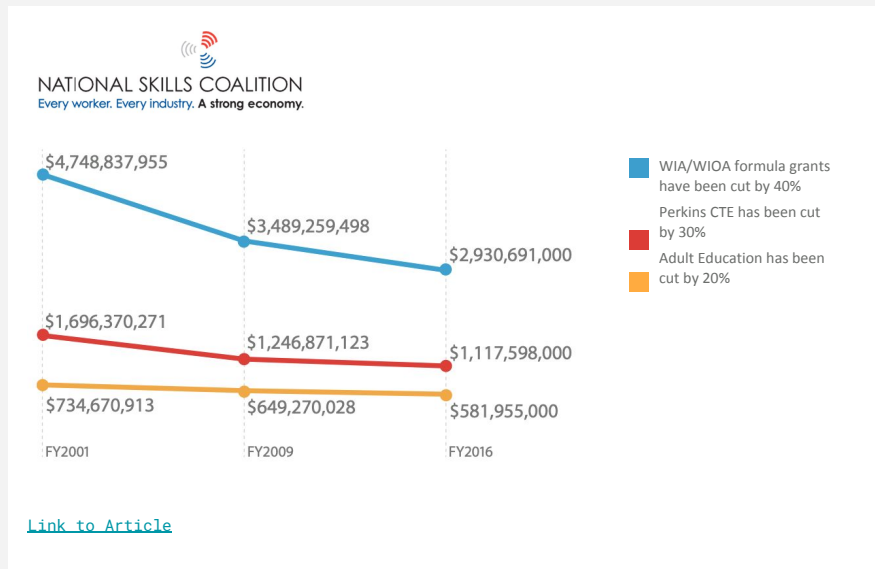
- A. **Workforce training is expensive** (e.g., trade schools on average cost \$34,000 per student) and as a result, available funding does not go far
- B. **The public is sharply divided in views of Americans in poverty**, potentially impacting levels of investment in underrepresented adult populations
- C. **There is a lack of data** demonstrating the ROI of workforce training, particularly for low-income populations

<1% support

Annual Philanthropic Funding of less than \$28 million for adult job training direct services in NYC would train fewer than 1% of the 1.6 million New Yorkers who can't find work or are stuck in low-wage jobs

Declining since 2001

Public investment in adult related education has declined consistently since 2001



A Workforce training is expensive

Many policy makers and business leaders tout worker retraining as a way to upskill American workers, help them achieve economic mobility, and address the prosperity gap. **Some investments have been made, for example:**

- The Labor Department under President Trump is investing \$200 million to retrain 85,000 workers (i.e., \$2,000 per worker)¹
- Amazon is investing \$700 million dollars to retrain a third of its workforce (i.e., \$7,000 per worker)²

However, in reality, retraining adults and workforce development can be over 10x the budget allocated in these initiatives

- Trade schools on average cost \$34,000 per student³
- Full-time bootcamps cost, on average, \$13,584 per student⁴

At the same time, the 2018 Benchmarking report of Trends in Education Philanthropy, notes “**elementary and secondary education [have] long dominated U.S. education funding priorities and [continue] to do so.**” Among respondents to the 2018 benchmarking survey, 82 percent report funding some aspect of K-12 education and K-12 education funding accounts for almost 60% of the total education-related philanthropy.⁵

Furthermore, there is a growing body of literature, that **high-quality pre-K programs can have a huge positive impact** on the lives of children – especially low-income children – as well as on the parents and family, and a **high return on investment, making earlier education interventions even more attractive.**⁶

Sources:

1. Pursuit analysis of [New York City Comptroller data](#), and [Tech Sector representation data](#)

2. [Press Release here](#)

3. The Simple Dollar, [Why You Should Consider Trade School Instead of College](#) (2019)

4. Eggeston, Liz. “2019 Coding Bootcamp Market Size Study”

5. Grantmakers for Education, [Trends in Education Philanthropy, Benchmarking Report 2018-2019](#) (2019)

6. NPR, “Investing in pre-school beats the stock market, hands down” (2016) Nobel Laureate James Heckman, professor of economics at the University of Chicago and the director of the Center for the Economics of Human Development, calculated a rate of return of “13% per annum from quality early education programs.

B The public is sharply divided in views of Americans in poverty, potentially impacting levels of investment in underrepresented adult populations

The **American public has mixed views when it comes to how much of a role government should play in alleviating poverty**: 51% percent say “the government today can’t afford to much more to help the needy,” while 43% say “the government should do more to help needy Americans, even if it means going deeper into debt.”

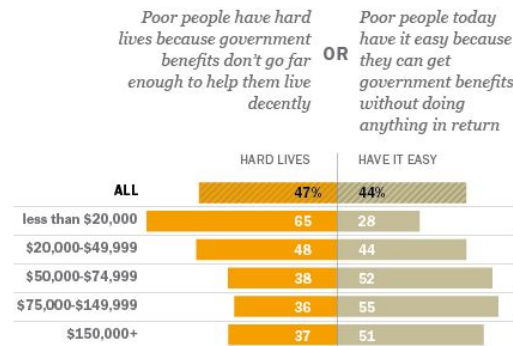
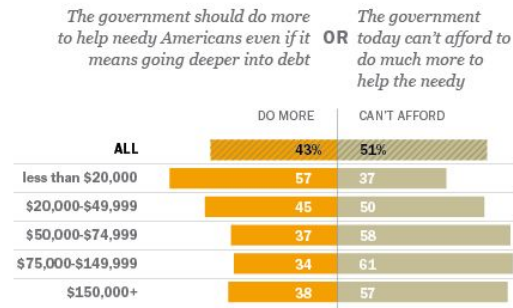
Similarly, the **public is also divided over the impact government aid has on individuals in poverty**: 65% of those with incomes less than \$20,000 say “poor people have hard lives because government benefits don’t go far enough to help them live decently” whereas over half of those making \$50,000+ say “poor people today have it easy because they can get government benefits without doing anything in return.”

In a 2018 survey, public opinion on why people are rich and poor was partisan – 72% of Republicans said “a person is generally more likely to be rich because they worked harder than others” whereas 62% of Democrats say it generally has more to do with advantages others did not have.

Sources: Pew Research Center. [Partisans are divided over the fairness of the U.S. economy – and why people are rich or poor](#) (2018); [Public is sharply divided in views of Americans in poverty](#) (2014)



Mixed Views on Poverty, Government Benefits



Note: Income based on total family income in previous year. Volunteered responses of Neither, Both equally, Don't know and Refused not shown.
Source: Pew Research Center survey, Jan. 23 - Mar. 16, 2014, N=10,013.

C A lack of data demonstrating the ROI of adult workforce training discourages investment

- There is a **lack of data measuring meaningful outcomes**: Most adult workforce training programs, colleges, and trade schools base their success on the number of people who enroll in and/or complete their programs. **These are empty metrics as they fail to capture employment success or long-term wage gains**, as opposed to employment and salary outcomes, which are true measures of success
- **Tracking outcomes is inconsistent and imprecise**: Because adult workforce training programs vary in terms of design and duration of time, it is often difficult to demonstrate specific impact. As a result, many organizations, including workforce training organizations in New York City, use projections which have been criticized as imprecise¹

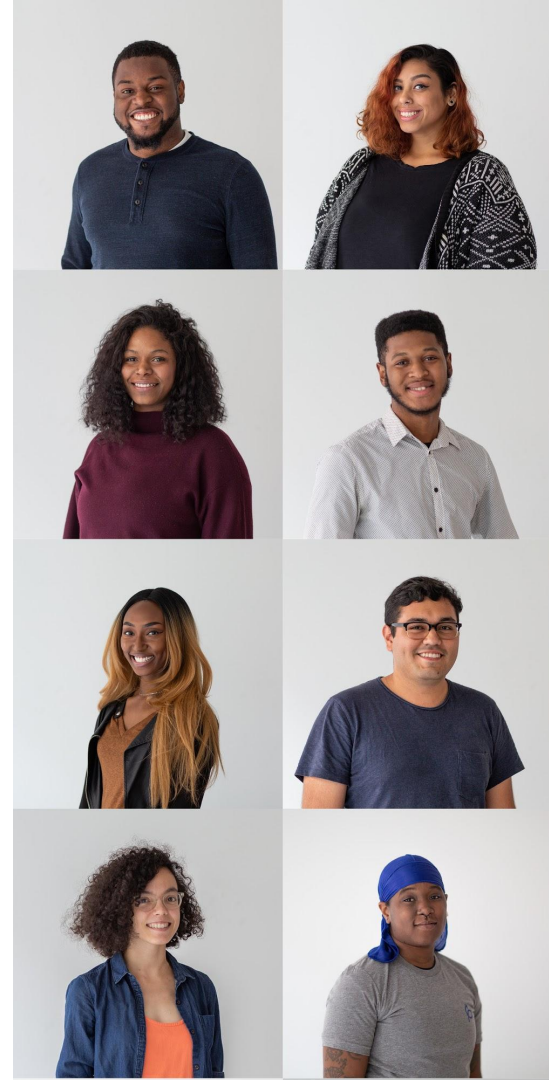
As a result, **many programs have failed to prove ROI** for students or employers, which discourages private sector investment. For example, Job Corps, the largest federal workforce program, spent ~\$15-45K per student but was unable to prove meaningful outcomes.

Furthermore, **some organizations have engaged in fraudulent reporting**. For example, Seedco, a nonprofit organization in NYC, “developed systematic practices to report false placements” to the city’s Department of Small Business Services.²

Sources: Workshop participants; Department of Labor OIG Audit Report “[Job Corps could not demonstrate beneficial job training outcomes](#)” (2018).

1. [Article here](#)

2. [Article here](#)



Financing effective skills-based training and workforce development will require alternative forms of investment

To scale adult workforce training, there needs to be either:

- **Greater philanthropic funding**
- **Alternative financing** to philanthropy that leverages private investment
- **Policy changes** to incentivize philanthropic funding and private investment and create a supportive regulatory environment that protects providers, funders, and recipients of workforce development

Different types of programs current rely on different types of funding:

- **Basic educational programs:** largely dependent on public funding
- **K-12 and higher educational programs:** government and philanthropy to help pilot innovative solutions
- **Last-mile training programs:** largely rely on tuition; however, this precludes many low-income adults from participating. Income-share agreements provide an opportunity to provide and scale last-mile training for low-income adults

Based on the experiences of Pursuit, we have focused this section on income sharing agreements.



Pursuit has successfully piloted an ISA to tackle the funding gap

Pursuit has developed an innovative funding model, Pursuit Bond, to address the lack of funding for adult job training. Through the Bond, social impact investors cover upfront costs for Pursuit's training, which Fellows repay as a percent of their future income once they get high-paying jobs in tech. Fellows pay nothing up front for their training and only pay back once they get jobs.

With the Bond, Pursuit is accountable to our Fellows and our outcomes. We are only successful if they are successful.

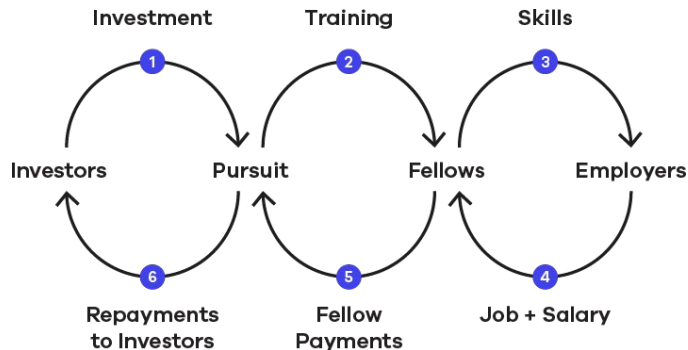
Pursuit piloted Pursuit Bond 1.0 in 2016, raising \$750,000 from Inherent Foundation and Lily Auchincloss Foundation. Four years later, our Fellows have gotten high-paying tech jobs, paid into our income share agreement, and we have fully repaid our investors.



Pursuit Bond addresses the systemic gap in funding for job training.

Pursuit Bond creates a self-sustaining funding model that can scale transformation to the vast need of low-income communities. Pursuit Bond is also a *bond* between Pursuit, our Fellows, employers, and social impact investors – each of us is only as successful as the other.

- **Pursuit:** We receive capital necessary to make deep investments into a high-quality program designed exclusively for our Fellows' needs and to maximize economic opportunity, transformational impact and mobility.
- **Our Fellows:** Receive the holistic and long-term support necessary for truly transformational change in a supportive and invested environment with reduced financial risk and no upfront cost to access.
- **Social impact investors:** We hold ourselves accountable to our outcomes and partner with impact-oriented investors to achieve a renewable source of financing to meet the vast need. At the same time, we carefully choose what types of investors we work with and counterbalance the potential outsized influence of investor returns on our program design with what is most beneficial for a low-income Fellow population, including designing fair and principled ISA terms and servicing procedures.
- **Employers:** We work closely to understand and meet employers' workforce needs through a variety of approaches: (1) We closely match our training curriculum and job-readiness assessments with employers' to meet their skills-based standards for software engineers (2) We co-design with leading companies alternate models of competency-based hiring and supportive onboarding processes.



The Pursuit Bond creates a template that can finance workforce development at scale.

Workforce development requires a funding solution and **Pursuit Bond** can be the vehicle to unlock financing at scale.

Historically, capital markets have responded to systemic financing issues through innovative financial mechanisms:

- **Municipal Bonds** fund the creation of public goods and infrastructure that would otherwise not be possible (roads, waterways, housing, bridges, etc.). Two-thirds of all infrastructure is funded this way, providing modest but stable and tax-advantaged financial returns.
- **Sustainability Bonds** were created to recognize that environmental, social and governance (ESG) factors are important drivers of financial outcomes. Since the term “ESG” was coined in 2004, over \$30T has been invested globally and is expected to continue growing.

Pursuit Bond has the potential to become the financing model for any institution that creates long-term meaningful wage gains, independent of industry and profession.



From Pursuit's experience, the following elements are necessary to implement a successful income share agreement (ISA) at scale for the target population

- **Identify catalytic capital** necessary to create a market for financing income share agreements, designed specifically for adults from low socio-economic backgrounds.
- **Design new financing vehicles and student contracts** for different audiences and needs
- **Set market-forming policies** such as tax advantages for students comparable to educational loans and the clarification of credit impact
- **Improve payment processing and clarify regulation** to ensure that participants, operations, and investors have clear guidelines, protections, and expectations
- **Create financial literacy support** designed specifically for low socio-economic populations to understand this new financial product and support education and life-changing impact (e.g., dedicated payment and financial planning platform)
- **Develop standardized metrics** used to assess programs and ensure programs are able to better serve more low-income, non-college degree-holding New Yorkers

OUR RECOMMENDATION

Catalyze the market for financing income-share agreements designed for adults from low socio-economic backgrounds





3. Employer Activation



While diversity and inclusion have become higher priorities, there is still limited progress

In their 2018 report “Delivering through Diversity,” McKinsey and Co. finds that even though an increasing number of companies have recognized the need for greater diversity and inclusion, **“Progress is slow and many companies struggle to materially increase representation levels of diverse talent, gain an understanding of where in their organizations diversity matters most, and create truly inclusive organizational cultures to reap the benefits.”** Based on interviews with employers, discussion with workshop participants, and Pursuit’s experience, we identified two core challenges contributing to lack of progress on adoption of D&I initiatives:

- A. Limited representation and investment at the executive level** has made progress incremental. In interviews with Chief Diversity Officers and D&I leads, they have noted while CDOs can achieve positive outcomes, they are often a “lone wolves” and can experience high turnover.
- B. Recruiting and hiring processes are not tailored to diversity and inclusion goals:** many employers require candidates to have a college education and professional experience. At the same time, candidates often gain employment through established networks. These requirements disqualify many New Yorkers from consideration, regardless of the talent and skills they possess. By scaling proven recruiting, hiring, and onboarding practices to tech employers, we can break down barriers to employment for diverse and nontraditional talent.

Sources: Employer interviews, Workshop discussion, Pursuit experience



A Despite cultural shifts, limited representation and investment at the executive level has made progress incremental

Diversity and inclusion are **significantly higher priorities** in tech now than even five years ago due to:

- Increased investor pressure and measurement
- Expectation of basic transparency
- Greater recognition of benefits of D&I focus



Workforce demographics are no longer a trade secret.

Signs of positive progress include investing in dedicated D&I leaders/teams, measuring diversity within employee base, and incorporating D&I into onboarding and employee training

However, **while companies “increasingly realise that commitment to I&D starts the top,” limited progress has been made at the executive level.** In their 2018 report “Delivering through Diversity,” McKinsey & Company, found that when comparing levels of diversity on executive teams from 2014 to 2018, “Overall, gender diversity on executive teams increased by 2 percentage points to 14%, while ethnic and cultural diversity increased by 1 percentage point to 13%,” suggesting limited progress.

Who we heard from *Select profiles*



Former Head of Global Inclusion & Diversity, large tech company

Chief Inclusion & Diversity Officer, large healthcare network



Former Diversity and Inclusion Lead, large tech company

Head of Impact & Giving, large tech company



B Recruiting and hiring practices that privilege candidates with college degrees, professional experience, and networks undermine D&I

A lack of college degrees, professional experience, and networks remain a barrier for diverse and nontraditional candidates. A 2018 survey of 750 hiring leaders at U.S. employers by Northeastern University's Center for the Future of Higher Education and Talent Strategy found that:

- The **relative value of educational credentials** in hiring has held steady (29%) or increased (48%) for most employers in the last five years
- **College degree holders are perceived as having a high degree of skills and knowledge.** A majority (54%) of those surveyed agreed with the statement that college degrees are "fairly reliable representations of a candidate's skills and knowledge" and 76% agreed that completing a degree program is a "valuable signal of perseverance and self-direction" in a job candidate
- Nearly half (44%) of **employers report that they have increased the level of education preferred or required for the same job** roles over the last five years – often due to increased skills demands for these jobs, as well as increased supply in the market

However, nearly 70% of respondents expect pre-hire assessments to pose the greatest near-term challenge to the traditional reliance on educational credentials. Specifically, **skills-based or competency-based hiring appears to be gaining momentum** with 23% of HR leaders reporting either having a formal effort to deemphasize degrees and prioritize skills underway and a further 39% are actively exploring and considering this direction.

In the NYC tech ecosystem specifically, **75% of NYC's high-tech jobs have a typical entry-level educational attainment requirement of a bachelor's degree or higher**, according to Civic Hall's 2019 report "NYC's Tech Opportunity Gap." However, when compared with actual NYC workers with bachelor's degrees different high-tech occupations varied from 54 – 79%, suggesting an **overreliance on credentials to judge aptitude**. Furthermore, existing research suggests that almost 50% of new hires come from employee referrals. A well-documented phenomena in the technology sector, it is often referred to as [the tech sector circle of life](#) or the [real social network](#).

These practices collectively work to disqualify many New Yorkers from consideration, regardless of the talent and skills they possess.

Sources: Northeastern University. [Educational Credentials Come of Age](#) (2018).

Pursuit Fellows are hired at leading companies

Our Fellows have been hired at more than 150 leading companies. From fast growing startups to large public corporations, Pursuit Fellows are now developing software and enabling innovation across industries. Additionally, through their unique experiences and perspectives, they are transforming company culture and helping industries design products that cater to an increasingly diverse customer base.

Outcomes overview to date:

\$16,061

Average salary
pre-program

\$86,147

Average ISA-eligible
starting salary
post-program

150+

Companies that have
hired Pursuit Fellows

OSCAR



iHeartRADIO

SHOPKEEP

okcupid

Betterment

IBM

Microsoft

BlackRock

Spotify

Jet

The New York Times

BuzzFeed

KICKSTARTER

CapitalOne

Uber

Pinterest

JUSTWORKS.

Blue Apron

Q MANAGED BY Q

JPMorganChase

LinkedIn



PELOTON

Pursuit has piloted and demonstrated positive outcomes of initiatives to revise recruitment and hiring practices

- I Alternative models of competency-based hiring and supportive onboarding**
- II Pathways to upskill**
- III New pipelines and specific recruiting**



I Alternative models of competency-based hiring and supportive onboarding

Most industry onboarding processes are not tailored to the unique needs of diverse and non-traditional talent.

Pursuit has worked with leading tech companies to design hiring programs and onboarding processes that cater to diverse and nontraditional candidates. **With the guidance and expertise of Pursuit, Citi removed its college degree requirement for entry to the company's summer analyst program.** This enabled Pursuit Fellows to interview and ultimately get hired for the entry-level program. Additionally, Pursuit worked with Citi to design and implement a Prep Year program. Pursuit Fellows are currently spending a year getting on-the-job experience and honing their technical skills while Citi's degree-seeking analysts—entry-level employees who joined the summer analyst program following their junior years of college—complete their senior years and rejoin Citi as full-time analysts. Following completion of the Prep Year program, Pursuit Fellows will continue in their roles as full-time analysts.

CASE STUDY: Citi x Pursuit



SUMMER
ANALYST

"Prep Year"

RETURN AS FULL
TIME ANALYSTS



Deyvi
Technology
Analyst



Lola
Technology
Analyst



Chelsea
Technology
Analyst



Jevon
Technology
Analyst

II Pathways to upskill from blue-collar to white-collar

Opportunities for blue-collar employees to advance within companies

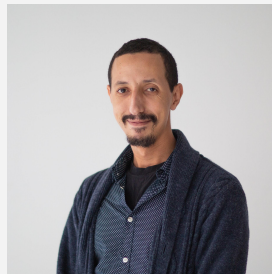
no longer exist: There was a time in the U.S. when it was possible for blue-collar workers to move from mailroom to boardroom, from warehouse to corner office. But those opportunities are in short supply—especially in the tech industry. That’s because many companies are hiring for core competencies while outsourcing low-skilled labor.

But when employees don’t work directly for a company, they have no way of advancing within that company. The result is a **bifurcated workforce: outsourced warehouse workers and janitors on one hand and in-house software developers on the other.** Few options exist for blue-collar workers to get ahead. College degrees are cost prohibitive and worker retraining programs are focused on maintenance, not advancement.

Through LevelUp, Pursuit partners with employers who provide fees to Pursuit to market the LevelUp opportunity to their employees and identify and recruit those employees to enter Pursuit’s four-year Fellowship. After successfully completing the training portion of the Fellowship and passing the partner company’s rigorous interview process, Pursuit LevelUp participants can be offered full-time positions as software engineers at the company.

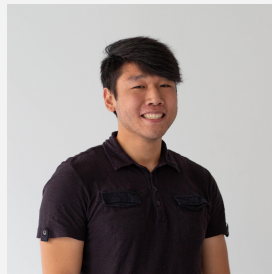
CASE STUDY: LevelUp with Uber

PURUIT Uber



Abdel

Abdel, a Moroccan immigrant, had to drop out of school because he was unable to finance his education. To support his family, he worked as a cashier, deli server, sales person, food truck server, slaughter house manager, bookkeeper, Central Park Tourist Guide, pedicab driver, limo driver and finally, an Uber driver. After going through the Pursuit LevelUp program, Abdel is now a software developer for Uber Eats.



Alex

At 16, Alex started working full time to help support his family. He enrolled in college but had to drop out for financial reasons. After working as a cooking and an UberEats driver, Alex enrolled in Pursuit to transform his career. He now works as a software engineer at Uber.

[More information about Pursuit LevelUp](#)

III New pipelines and specific recruiting sources for diverse and nontraditional talent

To create opportunities for the target population to get hired at the best companies, earn the highest salaries possible, and become entrepreneurs and leaders in technology, **new programs are necessary to increase access and build trust and relationships with leading companies and CEOs.**

CASE STUDY: FUTURE FINTECH LEADERS

Future FinTech Leaders is a partnership between Pursuit and Partnership for NYC's FinTech Innovation Lab to create a pipeline of diverse and non-traditional talent into technology and empower them to become entrepreneurs and leaders in the Fintech industry.



Caroline
iOS Engineer



Steven
Engineer at Aladdin
Product Group
BlackRock



Daniel
Front End Engineer



OUR RECOMMENDATION

Work with and incentivize employers to **pilot, track results of, and scale effective employment models**



4. Post-hire Success

Retention after initial employment is a problem that parallels college success.

There is a parallel between college graduation and job retention for low-income populations. Because low-income non-college degree-holding individuals **lack professional experience and networks**

- For individuals in the target population, getting employed is only half the battle
- Barriers to success persist even after employment (e.g. financial stability, professional integration, confidence)
- Adults need support throughout employment to advance their career and ensure long-term retention

Additionally, the 58% of New Yorkers who have less than three months of savings on hand and more than 20% who have no credit profile whatsoever will **require financial literacy guidance to achieve financial well-being**.

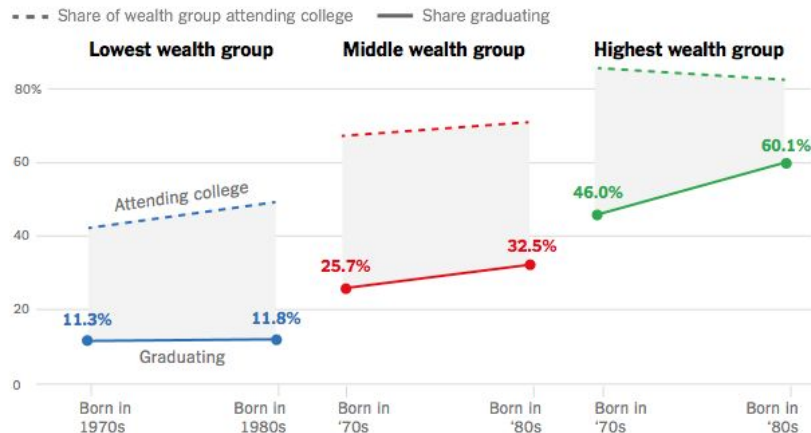
Source: Interviews with Pursuit's fellows, Survey with target population, Workshop participants

Learning from College Attrition Rates for Low-income Populations

The New York Times

More Students, and Yet...

For the poorest wealth group, college attendance has risen, but college graduation has not.



[Link to Article](#)

Training programs such as Pursuit provide follow-on programs to support career growth and retention



36 months to build your career

Following Pursuit Core, Pursuit supports its fellows and help them progress in their careers through Pursuit Advance, a structured 36-month career support program with:

- 1-on-1 coaching with a Career Advancement Manager
- Continued skill building
- Career pathing support



However, employers frequently do not have the internal capacity to reskill / upskill low-wage, blue-collar workers. Most employer training dollars are for enhancing the capabilities of existing white collar workers.

Potential initiatives to support employers can include:

- Fund initiatives and intermediaries that enable employers to design and implement effective post-hire success programs such as apprenticeships, extended internships, and career advancement programs
- Expand onboarding best-practices at employers and enable financial management training
- Expand early career programs such as Future FinTech Leaders to support career acceleration and leadership development
- Incentivize and employers to track and report on hiring, retention, and career advancement for target audience

OUR RECOMMENDATION

Fund and support **intermediaries to work with employers** to ensure professional integration, career advancement, and financial wellbeing for workers





**Connected Pathways to Tech Employment
September 2020**

For more information about Pursuit,
please visit pursuit.org



pursuit.org



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[@joinpursuit](https://twitter.com/joinpursuit)