DECEMBER 2022

CHICAGO'S TECH RESKILLING IMPERATIVE

How to Accelerate Growth and Expand Opportunity

P33

About Us

P33 is a privately funded non-profit focused on driving inclusive, global tech and innovation leadership in Chicago. P33's work is anchored in deep research and driven by a need to unlock the potential of the digital age to solve some of the toughest problems facing Chicago, such as equitable access to digital careers, talent retention, deep science commercialization, and gaps in our growth-stage startup ecosystem. Launched in 2019, P33 is co-chaired by Penny Pritzker, former Secretary of Commerce and founder and chairman of PSP Partners; Chris Gladwin, CEO and Cofounder of Ocient and Cleversafe; and Kelly Welsh, Former President of the Civic Committee of The Commercial Club of Chicago.

The P33 Tech Talent Alliance is a collective of tech and talent executives from 50+ companies representing more than 100,000 Chicagoland employees, who work together to identify critical tech talent needs for the region, and then co-design and launch new solutions.

P33 Tech Talent Alliance

53

Companies

110K+

Local Employees

Executive Summary

Chicago has a transformational opportunity to grow the economy and reduce inequality. Companies face an acute challenge in filling the best-paid, highest-growth roles in technology and data. Filling these roles is critical for Chicago's companies–from Fortune 500 corporations adapting to stay competitive, to the start-ups that will be the source of job growth and wealth creation. And these jobs provide life-changing career opportunities that will spread wealth to Black and Latino communities that are underrepresented in tech. In short, building a stronger tech workforce that also reflects the city's population is essential for Chicago to remain a great US city for the next few decades.

Solutions are available. Companies tell our team at P33 that they are ready to try new strategies. Higher education and workforce leaders tell us the same. Yet the data shows we have not yet chosen to seize the moment. It's past time.

Four realities define this opportunity:

- The demand for tech talent in Chicago and Illinois outstrips supply, and will continue to do so indefinitely if we don't take large-scale action.
- We are dramatically underutilizing important strategies for developing new tech talent due to several breakdowns in our reskilling systems.
- Models to address these breakdowns and unlock the region's human capital are clear, and feasible to implement, if companies and educators are serious about change.
- Achieving this reskilling transformation will provide desperately needed economic growth and access to wealth-creating opportunities for low-income populations in fields that are uniquely future-proof.

The most critical ingredient for success is companies embracing new models of talent sourcing, staffing and talent development. Every company can benefit greatly from adopting or expanding apprenticeships, bootcamps, community college partnerships, or new training partnerships.

On the supply side, **colleges and workforce programs need to better serve the market's needs** with ready talent. And as a city we need to strengthen critical system elements, including an effective intermediary; more, and more flexible, funding; and support for individuals' life needs.

We propose a few viable models for how Chicago can address the breakdowns, implement the critical system elements, and ultimately enable effective and large-volume tech reskilling.

We should be using all available tools to grow the tech workforce, expand opportunity, and fill critical job openings to enable economic growth. Despite high-profile lay-offs in tech in the fall of 2022, hiring demand for these roles remains strong across industries, and the history of almost every economic downturn of the last century shows that jobs that are technologically and analytically intensive come back more quickly from a recession and at an elevated demand compared to before the downturn. And this is an opportune moment: Google's recent commitment to the Thompson Center heightened concerns about the availability of tech talent for other companies at the same time Chicago received an $18.5M award from the US Department of Commerce to build employer-led training in fields like tech. Read on to find out how we can do so together.

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THE TALENT NEED...

PART 01

Chicago companies are struggling to fill some high-volume talent needs, especially in software engineering and related functions, as well as critical but lower-volume roles (e.g., cybersecurity), and emerging needs in AI and elsewhere.

Last year, our team at P33 collected data from our P33 Tech Talent Alliance companies that revealed more than **90% of companies were anticipating growth in their software engineering and data teams**, and more than 75% were anticipating staffing growth across several tech functions, including cloud, DevOps, product, and cybersecurity. **50% anticipated a significant increase in their software teams.**[1]

Earlier this year, in a solution design session with several of our company partners that committed to building new tech reskilling solutions as part of our Good Jobs Chicago initiative through the US Department of Commerce funding, the technology and hiring leaders in the room identified the same priorities:

- Full-stack software engineers
- Cloud engineers
- DevOps
- Data Analysts

Data from Lightcast (formerly Emsi Burning Glass) corroborates this and shows the extent of the need: there were more than **161,000 unique job postings** for tech roles in Chicagoland in the 12 months to September 2022, **up 32%** from the prior year, with the largest demand for software talent. And these jobs pay well: **$100,000 salaries** are attainable within a few few years of work. **How will we feed this growth?**

160K+

Job Postings

32%

Growth

...IS NOT BEING MET

Chicago has three primary ways to grow a tech workforce: attract talent from outside the city; expand and diversify college programs that launch tech careers; and transition existing workers from other fields and roles into tech roles.

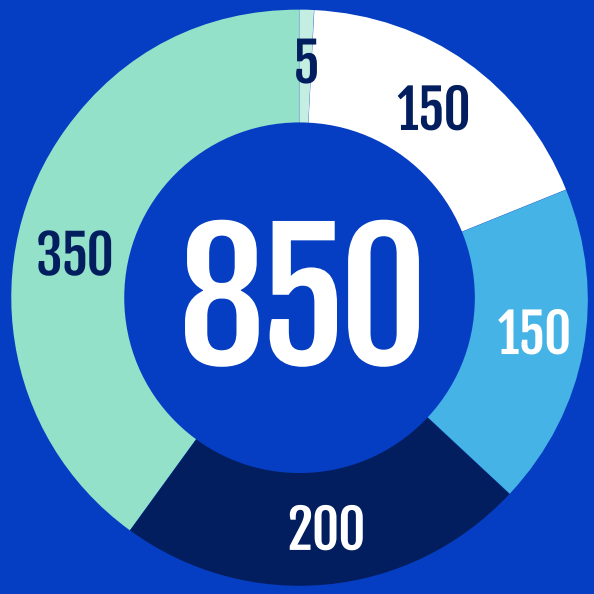
P33 and others are working on national talent attraction through the new TechChicago initiative, but success in the near or medium term will likely mean erasing the current deficit of tech talent migration, as shown by CBRE's Scoring Tech Talent report.[2] And while college pathways can provide the biggest boost to the size and diversity of our tech workforce, and P33 among others have committed to that issue on a large scale, we won't see large payoffs for several years–and even then the talent source alone is insufficient to meet the talent need.

That leaves **reskilling**. And companies say they are interested–that they have run pilots or have some small-scale partnerships–but that they want to do more. This direct signal from our partners comports with national research showing companies overwhelmingly recognizing the increased importance of reskilling and upskilling.[3]

The primary reskilling models for helping somebody get into a skilled tech field with a new employer are:

Against 160,000 tech job postings, ~800 is woefully insufficient to meet the current need–much less the growing need. Our annual production of tech professionals is tens of thousands behind where it needs to be.

Chicago is missing opportunities to create economic growth, help more people benefit from our tech economy, and position ourselves to compete as a city for the next thirty years.



Source: Lightcast

Chicago is underutilizing each one of these models to our great detriment. Total output for the region each year is around 800 high-skilled tech-ready graduates coming out of these pathways.

SYSTEM BREAKDOWNS

PART 02

We don't have a functioning tech reskilling market in Chicago, as companies aren't buying the product on offer. The volume of "nontraditional" hires is far too low, and the partnerships that companies have with workforce development programs are largely viewed as a civic act rather than a solution to the talent problem. This inhibits scale and fails to engage the work of ensuring graduates are fully ready to perform in the most in-demand roles.

The systems breakdown at several points on the supply side, demand side, and in the systems within which these transactions occur (or don't).

Supply-Side Challenges

Misalignment on Requirements

Graduates aren't *quite* what companies are looking for

Skills Misalignment: Programs aren't training for what companies most need

Lack of practical experience: Few programs complement "classroom" learning with authentic, extensive hands-on experience

Inconsistent Quality

The experience is frustrating for companies

Quality shortcomings: Some program graduates don't have the capabilities promised, and aren't ready for the jobs companies most need to fill

Customer service is lacking, and educational institutions and training programs are difficult to navigate

Slow to adapt: Most providers aren't sufficiently responsive to changing company needs

Fragmentation and Sub-Scale Operations

No simple, large-volume solutions for companies

Fragmentation: There are many programs that all seem similar and are difficult to compare on quality measures

Sub-Scale: The best programs produce too few graduates to contribute meaningfully to a regional "solution" or gain status as a priority hiring channel

Organizational and Model Weakness

Too few providers are effective businesses

Few reskilling provider programs are strong across the critical functions of learning design, sales, customer service, growth and operational excellence

Demand-Side Challenges

Closed Doors

Company practices don't align with stated goals on hiring from new talent pools

Exclusionary requirements: Bachelors-degree requirements immediately eliminate many reskilling candidates

Risk aversion: Expecting new-hire profiles to match those of existing staff because it is more comfortable

Competition for Attention

Companies already have "too many things"

Multitude of sourcing tools and partners: Talent acquisition teams have many tech tools for sourcing and many hiring channels so they have limited bandwidth for a new one

Existing nonprofit partners: Most medium-large companies already have multiple nonprofit partners (often with internal champions) and find it difficult to get broad buy-in on "another one" even if the value proposition is different

Unwelcoming Environments

Companies are failing to support nontraditional hires to succeed

Few companies effectively support talent from nontraditional backgrounds to thrive by creating **inclusive cultures, eliminating stigma, and providing mentors and supports** to overcome initial career development hurdles

System Challenges

Lack of funding

Funding for training, wages, and supports is scarce

Low-income people struggle to find financing on acceptable terms for the best programs, especially bootcamps

Alternative financing models such as Income-Share Agreements are still in infancy and have many doubters

Philanthropy provides life support to workforce programs and community colleges but not scale capital

Public funding is fragmented and has too many attached requirements to enable entrepreneurial growth of reskilling businesses

Life Challenges

We don't account for complicated lives of the adults who might benefit from reskilling

Finances: Separate from the tuition costs of a program, lack of a financial reserve to meet living costs during training makes participation impossible for many

Transportation time and costs make it difficult to access in-person learning opportunities

High Child-Care Costs makes it financially impossible or unwise for many to participate in in-person learning, or to focus during remote learning

Psycho-Social Support: Few providers supply the psychological and emotional support for pursuing a path that may seem beyond reach for those without family or peers having followed similar paths

MODELS FOR A FUTURE RESKILLING SYSTEM IN CHICAGO

PART 03

We have a long way to go to address the challenges and seize the opportunities, but we are underway. Several companies from P33's Tech Talent Alliance joined us this summer to start designing a new system of high-quality, high-volume tech reskilling in Chicago. The effort was given a boost when a collaboration called Good Jobs Chicago was awarded an $18.5M grant from the US Department of Commerce, with roughly $4M of that for work that P33 lead with Discovery Partners Institute (DPI) around tech job training. Together, we can build the largest vehicle in the country for moving Black and Latino residents into high-wage tech jobs.

We argue for four promising models. All can be pursued right now, simultaneously. Our economy and our city will be stronger if we make progress on all of them.

01 THE POWER OF THE MARKET

02 HIRING CONSORTIUM

03 UPSKILL THE SYSTEM

04 REDEFINE THE ENTRY LEVEL

"JPMorgan Chase proudly partners with P33, Discovery Partners Institute, and other Chicago companies to grow technology talent in Chicago through the Good Jobs Grant. We have successfully expanded our talent pipeline beyond the traditional 4-year degree path to associate degrees, bootcamps and apprenticeships. We're passionate about creating sustainable ecosystems and supporting public/private partnerships to advance equity and inclusion. The strategies emerging from this collaboration create outcomes that lead to high-wage career paths – especially for communities of color and those under-represented in the tech sector." **– BRITTANY SCOTT, EXECUTIVE DIRECTOR, GLOBAL TECHNOLOGY, JPMORGAN CHASE**

Current Reskilling Efforts: Good Jobs Chicago

- Good Jobs Chicago is an initiative to build new talent development pathways into high-wage jobs in technology, healthcare, manufacturing and logistics.
- GJC received **$18.5M** from the US Economic Development Administration
- P33 and DPI are co-leading the technology portion of the effort
- Participating companies: United Airlines, JPMorgan Chase, Accenture, Transunion, Allstate, Blue Cross Blue Shield, Kin + Carta, Slalom, Protiviti, Microsoft, Optiver

01 The Power of the Market

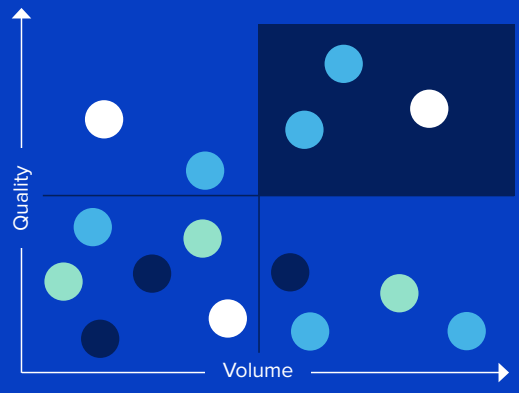
Bet on the best, biggest reskilling providers with viable commercial models, helping the market solve the reskilling gap by clarifying the choices for companies seeking new solutions

- Identify the best providers and be comfortable "picking winners" based on key criteria:
    - Quality
    - Scale
    - Commercial model viability
    - Organizational effectiveness
    - Demonstrated ability to promote diverse candidates
- Promote the best providers in order to help them stand out to commercial customers amidst the market fragmentation and absence of market discipline
- Connect those providers to customers (companies hiring tech talent), funding (return-seeking, philanthropic, and public) and partners to help them get traction in Chicago and recruit diverse candidates.

Strong Contenders

- For-profit providers are the strongest candidates, including **Bitwise Industries, Revature, General Assembly, Tech Elevator, and Multiverse.**
    - Some of these have unimpressive records on diversity, so we must use the power of collective spending to ensure diversity is prioritized.
- Non-profits with a strong case include **Merit America, Per Scholas, YUPRO, Apprenti and i.c. stars**

Reskill Partners



- **Discovery Partners Institute** recently launched a tech apprenticeship. Given its attachment to the University of Illinois and attendant resources, it might be able to achieve large scale and quality.

Why This Model: It invests in the organizations most ready to deliver outcomes, and is grounded in commercial relationships rather than ill-defined partnerships.

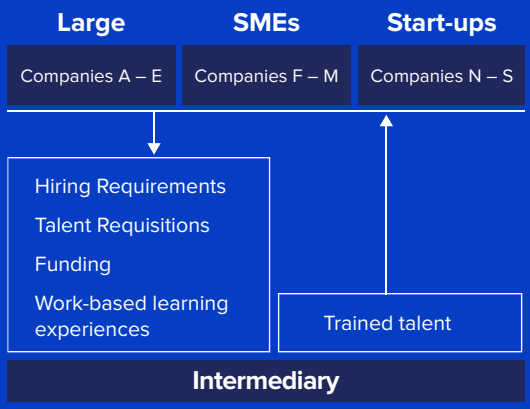
02

Hiring Consortium

Curate best-of-breed providers to serve a consortium of invested employers whose aggregate demand creates necessary training scale

1. Aggregate Demand in a Talent Buyers' Consortium

- Identify common talent needs across companies, and aggregate individual company hiring demands into at-scale training cohorts
- Enables medium and small companies to buy into a high-quality talent pipeline; these companies otherwise lack hiring scale to build bespoke partnerships
- Addresses market fragmentation and information asymmetry
- Smooths demand for talent suppliers



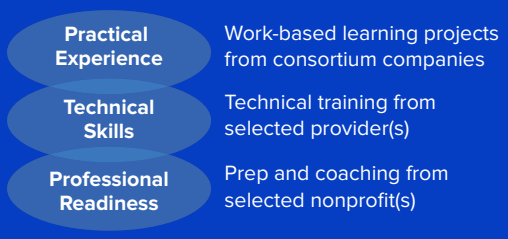
2. Curate the Best Talent Providers

- Identify the best providers delivering complete talent solutions
- Create relevant stack of best-of-breed partners to deliver technical skills, professional readiness,and practical experience

3. Finance to Grow the Market

- Financial sustainability is designed into the model, with all consortium companies investing in and hiring from the cohorts
- Capture talent acquisition and diversity recruiting spend
- Equitable financing solutions will expand access to low-income individuals
- Up-front investment will address working capital needs of talent developers

Talent Development Stack



Why This Model: Hiring consortium will facilitate wider participation of companies, create scaled cohorts for training efficiency, and enable better quality; curating training programs will address information asymmetry and market fragmentation, and enable quality control.

03

Upskill the System

Harness the power of an intermediary to provide market intelligence and technical assistance to community colleges and other training providers seeking to become significant sources of tech talent for Chicago companies

Why This Model: Community colleges and other public systems have inherent scale, are committed to the region over the long term, and have relevant public-serving missions, so helping them achieve greatness is a smart long-term investment.

04 Redefine the Entry Level

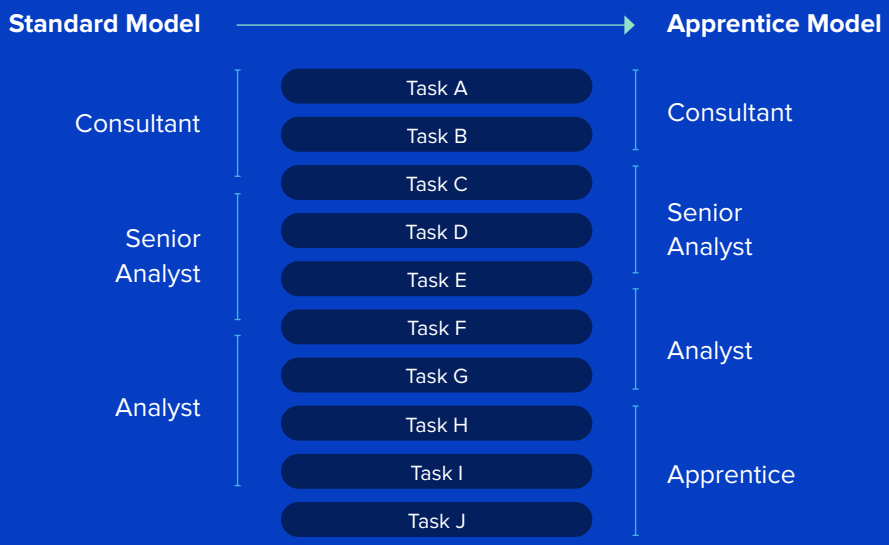
Restructure entry-level roles to be more accessible to those with lower skill levels

Create a new “apprentice” title for those without college degrees or without the usual required experience. The apprentice, now the most junior member of the team, takes some of the lower-skill tasks from the current junior member of the team. This achieves three goals:

1. Enables discovery of talented individuals whose life circumstances made a college degree impossible or impractical up to this point;
2. Increases team diversity; and
3. Allows the formerly junior staff to focus on more meaningful tasks and stay more engaged.

The apprentice role is simply the starting point; apprentices then prove themselves and continue their career development on the standard track with the company after ~12 months.

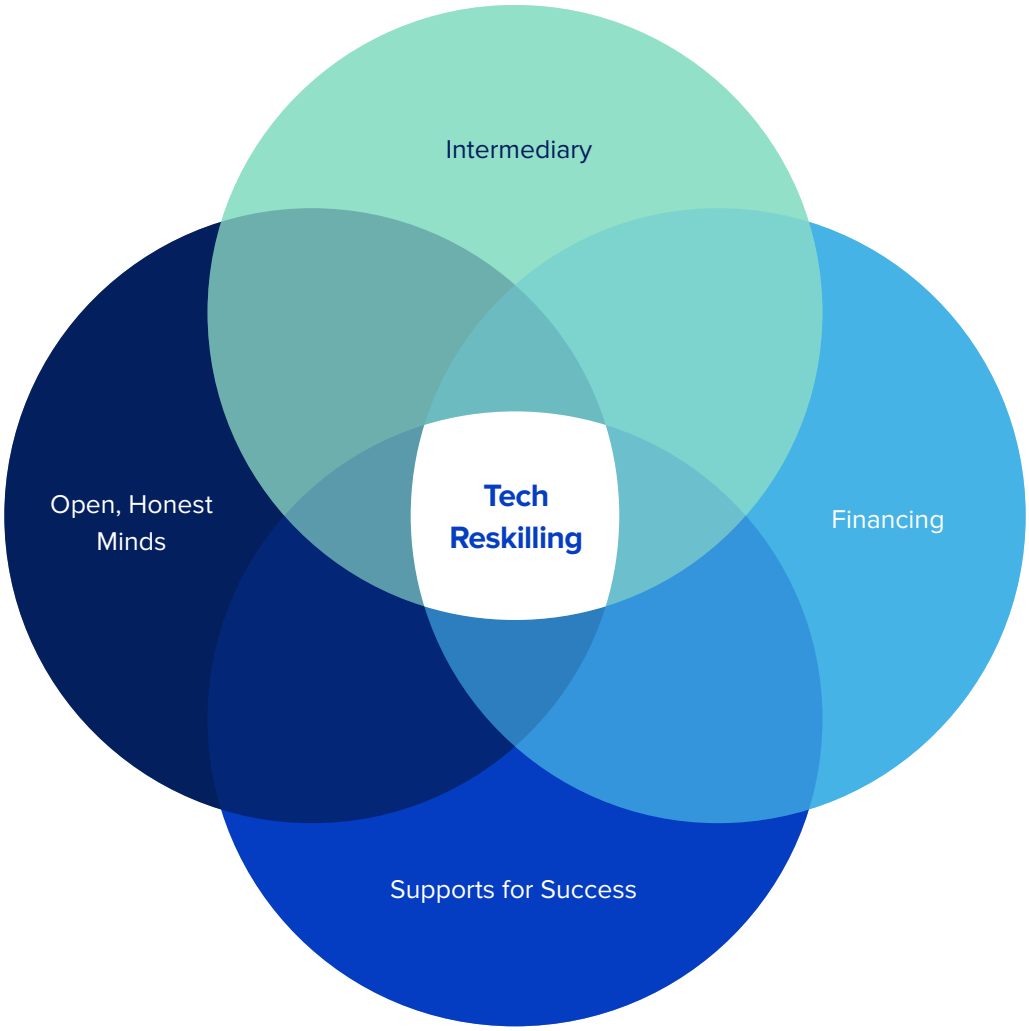
See how Accenture has used this model to hire more diverse talent and create enormous new career opportunity for Chicagoans traditionally excluded from high-wage opportunities with large companies.



Why This Model: Simplicity: no new funding or operational partnerships are needed. It ensures career development happens within a relevant work context. And it improves team effectiveness and employee engagement by allowing all team members to operate at the top of their skillset.

Critical Ingredients

To enable the tech reskilling market in Chicago to flourish–and to remain flourishing–all of us must collaborate to ensure these critical ingredients are in the mix:



Intermediary

One entity, trusted by employers and training partners, and conversant in business, technology and learning, that can help all parties achieve their goals at maximum scale with minimum friction.

The intermediary's primary functions are:

- **Market Intelligence and Discovery:** Understanding which roles companies are trying to fill, what profiles they are seeking, and what types of solutions will work for their organizations, and conveying those insights to education and training partners.
- **Sell the Idea!:** Evidence from Chicago and around the country suggests that an advocate for these models that is credible to and understands business is essential to increasing adoption of apprenticeships and other reskilling models.
- **Source Work-Based Learning:** Sourcing authentic project and internship opportunities from companies to enable colleges and workforce programs to provide the richest possible career development experience for learners. Currently, colleges and programs struggle to find authentic work-based learning opportunities for more than niche programs.
- **Coordination:** Creating a forum for problem-solving across systems and partnerships, and coordinating partners to collaborate where their potential to deliver effective reskilling at scale is stronger together than alone.
- **Concierge Support to Companies:** Advising companies on the landscape of provider options, which will be a best fit for their needs, and then helping facilitate a productive initial connection.

Who? P33 plays this role in Chicago's tech sector, alongside the The P33 Tech Talent Alliance of 50+ companies. But creating an operational partnership with the Chicago Apprentice Network, World Business Chicago and DPI might unlock new growth.

Financing

The Need: Flexible funds that can be used to expand access for low-income individuals to the best reskilling opportunities, and also support life needs that exist during reskilling.

Three sources are most promising:

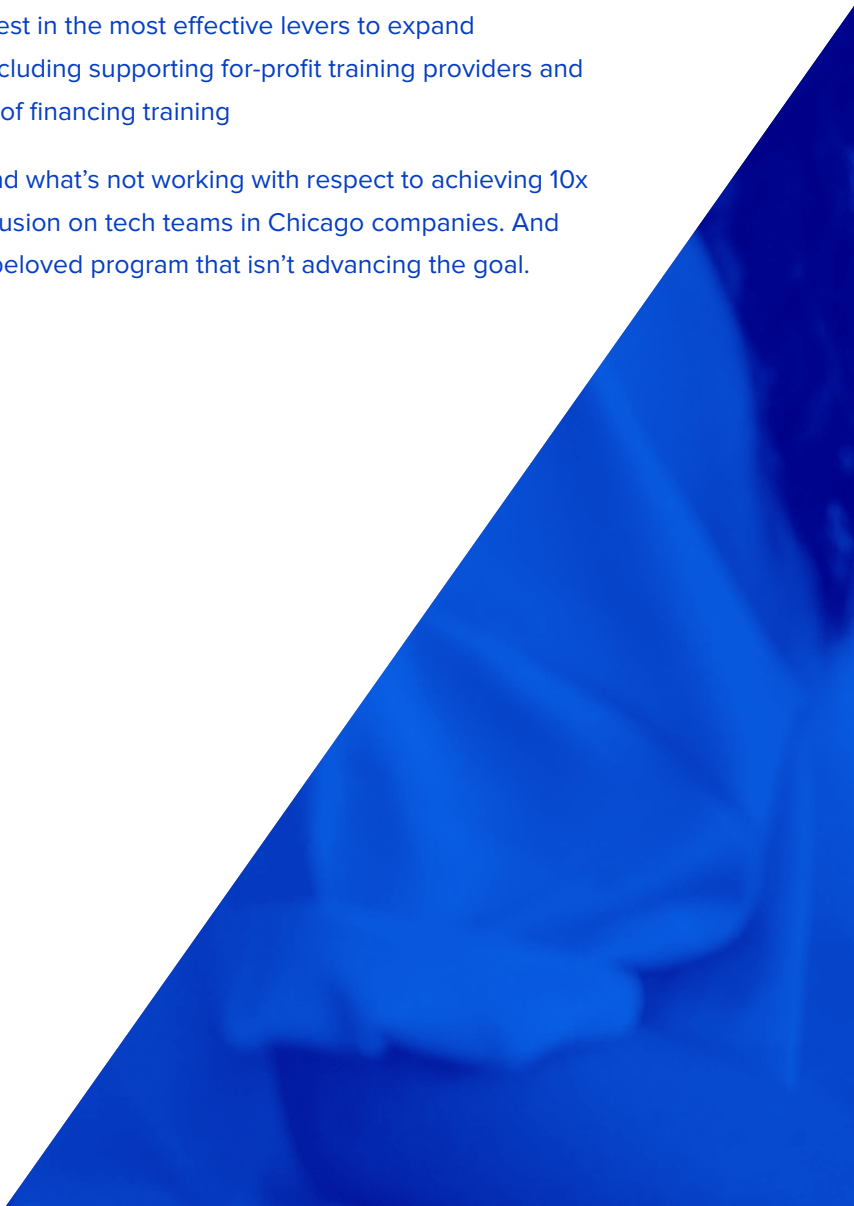
- **Company Investment**
    - Enterprise partnerships with the most capable, large-scale providers, enabling program investment and scale efficiencies while also expanding accessibility to low-income participants
    - Internalizing the costs of skilling through apprenticeship programs
- **Alternative Financing Models**
    - Career Impact Bonds, or “ethical income share agreements” in which a financing entity covers the price of a reskilling program for an individual, and the individual pays back the investment with modest interest only after securing high-wage employment. We understand some versions of this concept have proven predatory to learners, but they needn’t be; a well-designed instrument would align the interests of learners, educators and lenders, with appropriate protections for each.
- **College-bootcamp partnerships** that bring the most relevant tech skilling into the classroom in a way that can be funded through tuition dollars subsidized by student financial aid.

Supports for Success

- **Coaching, Advising, Mentorship**
    - Organize a stable of partners able to provide these supports to reskilling participants from underrepresented backgrounds when those services aren't otherwise provided
    - Provide this during reskilling AND for at least one year post-hire
- **Building Inclusive Cultures**
    - This is the most difficult aspect of vision to implement
    - We need new partners to help push–and support–organizational culture change within companies receiving reskilled talent to ensure new hires stay and thrive
    - This is critical to ensure the individual's potential and well-being is maximized and the company harvests maximum value from the investment in reskilling
- **Logistical Supports**
    - Source vouchers or other resources to address childcare, transportation, broadband or laptop needs for low-income participants

Open, Honest Minds

- **Open Minds**
    - Companies willing to test new hiring models, source talent from different places with different profiles than they're used to, and push difficult internal conversations about creative inclusive cultures in which diverse staff thrive
    - College leaders willing to work with faculty to find new learning models that better prepare students for in-demand jobs
    - Philanthropy willing to invest in the most effective levers to expand reskilling opportunities, including supporting for-profit training providers and underwriting new models of financing training
- **Honesty** about what's working and what's not working with respect to achieving 10x scale improving diversity and inclusion on tech teams in Chicago companies. And willingness to stop supporting a beloved program that isn't advancing the goal.



PROGRAM SNAPSHOTS

PART 04

Apprenticeships

Workforce Development System

Community Colleges

Bootcamps

Apprenticeships

Apprenticeships are trendy, and have been trumpeted by Chicago's current and former mayors, and our current and former governors, and our current and two most recent presidents. Over the last decade, a stated goal of leaders in this work has been expanding it from the building trades into "nontraditional" roles, like tech and healthcare. Yet the official data suggests fewer than five people each year in Chicagoland complete a Registered Apprenticeship in a high-demand tech field. That is less than one-tenth of one percent of all apprenticeships in the region, and clearly not a meaningful contribution to our tech talent needs.[4]

Active Registered Apprentices

by Occupation, Average Wages, and Geography

	CHICAGOLAND	ILLINOIS	NATIONAL
Tech occupations paying more than $50,000	2	255[5]	2,858
All tech occupations	16	583[6]	4,661
All occupations	11,699	16,996	363,694

Sources: US Department of Labor – Registered Apprenticeship Partners Information Management Data Systems

Only 2 currently active Registered Apprentices in Chicagoland are in programs where completers make at least $50,000.

Small-a apprenticeship

The paltry numbers of registered tech apprentices give a false reading on the promise of the apprenticeship model in tech. Three companies in P33's Tech Talent Alliance have taken their own path on this issue, sidestepping the regulations and formal structures tied to Registered Apprenticeships and building programs that deliver enormous value with much the same program elements. This mirrors the Chicago Apprentice Network–the major force for expanding the model here over the last five years–in which 70% of apprentices are not formally registered.

Accenture, JPMorgan Chase, and United Airlines built new on-ramps to tech roles for graduates of community colleges or workforce programs such as i.c.stars or YearUp. Accenture committed to hiring 20% of early career tech talent this way; the others are newer to this, but growing.

The Takeaway

Registered Apprenticeship is non-existent in technology roles in Chicago. But apprentice-like programs that open doors to tech jobs for those without four-year degrees, and, ideally, provide on-the-job training and mentorship, have shown scale potential within individual companies and adoptability across multiple companies. These models have created enormous new opportunity for Chicagoans without 4-year degrees to start tech careers, and ultimately that is what matters to the city. We simply need to increase the number of companies using these models, and increase the size of the programs each year as a few of our partners are already doing.

One caution is that the city has been lauding Accenture and JPMorgan for several years as leaders in tech apprenticeship. In November 2022, McDonald's also announced it is launching an apprenticeship in cybersecurity. Where are the ambitious others willing to join them?

Workforce Development System

The public workforce development system – led locally by the Chicago Cook Workforce Partnership (CCWP) and at the state level by the Illinois Department of Commerce and Economic Opportunity – should get some credit for making efforts in the direction of tech career opportunity. Of all the residents to whom CCWP gives training vouchers (called “Individual Training Accounts”), about 10% receive training in “IT” occupations. That’s about 300 people in Cook County and much better than the one tenth of one percent figure for apprenticeships, but also not in line with where the good-jobs growth is. Those who do receive training in IT end up earning better wages on average than for any ITA investment in another field. Why not do more of this?

Roughly 300 people in Cook County receive ITA vouchers to train for tech careers. Data is not shared by the system, but we assume conservatively that half of those lead to roles paying an average of $50,000, with many other trainings for tech-support and network administration roles that are lower wage. That implies 150 high-wage tech employees coming out of the public workforce system in Cook County every year.

Takeaway

The public workforce system has delivered great value in supporting jobseekers with funding for tech careers, and are investing more in it than several years ago. However, the allocation of funding to tech careers is still too small. The system is held back by a tendency towards a deferential approach to customers, allowing recipients of ITA vouchers a vast range of career paths to choose from. The principle of “customer choice” is enshrined in the federal law that oversees these funds. But that doesn’t preclude systems like CCWP from selecting a narrow set of high-value fields from which customers could choose. If leaders were willing to make more strategic decisions about where to invest limited training dollars, more individuals would achieve family-sustaining careers, more companies would find critical talent to feed growth, and the city economy would grow faster.

300

Vouchers for IT Careers annually in Chicago-Cook

150

Vouchers for High-Wage Tech Roles annually in Chicago-Cook

Community Colleges

Community colleges are positioned to be the most powerful engines of economic mobility in Chicago, Illinois, and across the country. In Illinois, 2-year colleges serve more than 40% of all students enrolled in undergraduate education and training.[7]

Community colleges generally award Associate degrees (AA) and certificates. On average, an AA is more valuable than a certificate, but just as an AA in a high-demand field can generate earnings above those of Bachelors' Degree (BA) holders, so an in-demand certificate can get people into jobs out-earning AA or BA holders.

STUDENT VALUE = CREDENTIAL LEVEL + INSTITUTION QUALITY + PROGRAM RELEVANCE & QUALITY

And the opportunity is there: in strategy sessions with our Tech Talent Alliance companies, 20% expressed interest in sourcing more talent from community colleges, but weren't quite sure how to do so. Lack of clarity is understandable, but few companies have made any substantial efforts to build relationships with community colleges to develop this promising source of talent.

Yet output isn't meeting hiring demand. In the entire State of Illinois in 2021, community colleges produced 1,742 credentials in programs relevant to tech and data, including Associate Degrees and certificates. But only 1,021 of those were in programs whose graduates tend to make at least $35,000 annually 2 years after completion, and only 366 in programs that pay at least $50,000 2 years later. The tech jobs Chicago companies most need to fill all pay considerably more than $50,000 after two years, so we consider only those 366 as truly serving the high-growth tech talent demand. Notwithstanding that some graduates transfer to four-year programs to pursue relevant bachelors degrees, this data shows that **community colleges in Illinois are not turning out enough graduates in the right fields for our tech economy.**[8]

Community College Tech Credentials and Annual Earnings – State of Illinois

Community College Tech Credentials Awarded and Annual Earnings - State of Illinois

	< $35K	$35 - 50K	> $50K	TOTAL
Associate	56	225	366	647
2-year certificate	98	41	-	139
< 1-year certificate	567	389	-	956
Total	721	655	366	1,742

Sources: Illinois Board of Higher Education; US Department of Education College Scorecard

Takeaway

In a state with more than 188,000 postings for well-paid tech jobs in the year up to September 2022, 366 community college graduates statewide, and 184 in Chicagoland with relevant credentials is a wake-up call for companies and others who can help grow that number. We know that community college leaders are interested in doing more, and the City Colleges of Chicago for one example has taken important steps the last few years launching a new software developer major, partnering with the University of Chicago on data science programs, and building a suite of tech-focused programs at the Englewood-based Kennedy King College to complement the already strong programming at northwest side Wilbur Wright College. On the company side, Accenture and JPMorgan Chase are hiring City Colleges graduates for tech roles in growing numbers.

But both sides must lean into this problem even harder. Colleges won't succeed if companies don't join them in shaping those new programs, providing students with critical work-based learning opportunities, and then hiring the graduates into well-paid roles. This can be done through bilateral relationships between companies and colleges, but it is more effectively done in collaboration with a regional intermediary such as P33.

Bootcamps

Bootcamps are generally privately funded, as opposed to apprenticeships, workforce programs, and community colleges that use direct government investment. So it would appear less political than either cultural or the result of some malfunctioning market dynamic that Chicago has lower numbers of tech bootcamp grads and has lower growth in its number of tech bootcamp grads than nearly all the cities we compete with.

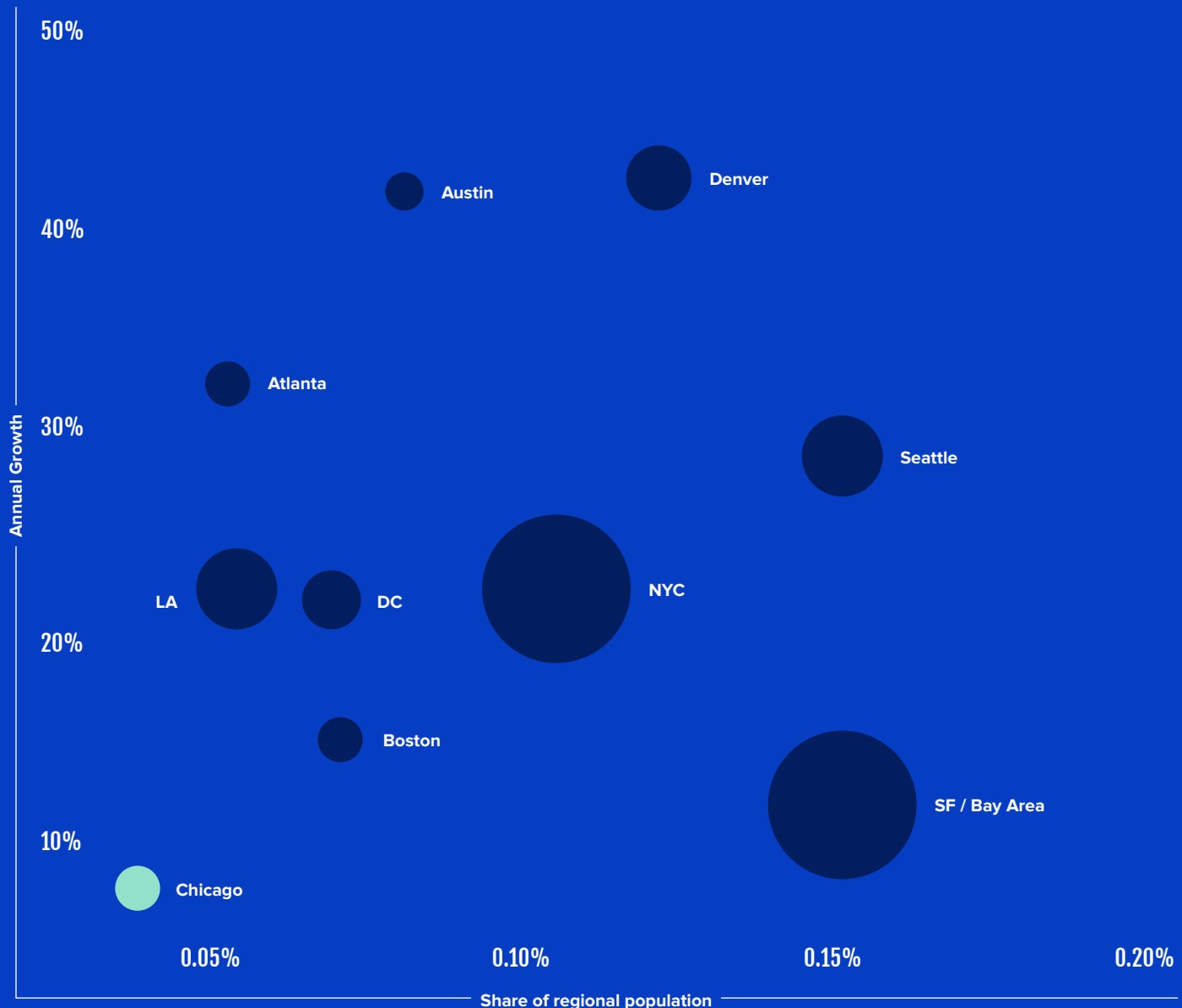
According to CareerKarma's 2021 State of the Bootcamp Market report, 2,400 bootcamp graduates lived in the Chicago area. Of the 10 cities that report profiles, that puts us 9th out of 10, only ahead of Austin, which had 1,700. But since our regional population is more than four times larger than Austin's, it is hardly something to celebrate. The top three cities are way out in front of us: New York has 20,600 graduates; the Bay Area, 14,700; and Los Angeles, 6,400.

What's more, our growth in number of graduates is 10th out of those 10–particularly surprising since percentage growth should be easier from our comparatively small baseline. Our growth rate translates to about 100 additional bootcamp grads living in Chicago per year. We suspect that number is an undercount, and generously estimate a total production of 300+ across all the bootcamps in the city and online. But that is still a paltry number in a city this large with nearly every company trying to hire more tech talent.

Most of the brand-name and lesser known bootcamps are trying to serve the Chicago market. If companies open their aperture on talent sourcing, it could lead to growth in the tech talent pool and help companies address their talent shortages.

Bootcamp Graduates by City, 2020

Bubble size equals total number of graduates living in region



Sources: CareerKarma, State of the Bootcamp Market, 2021

Conclusions and Recommendations

Demand for tech talent outstrips supply. This gap presents an opportunity to increase economic growth and improve diversity and inclusion in tech through wider use of reskilling models that can help more adults transition into tech careers–and, done right, can expand economic opportunity to Black and Latino communities currently underrepresented in high-wage tech fields.

P33, DPI, City Colleges of Chicago, the Chicago Apprentice Network and other partners are building a regional tech reskilling ecosystem that is trusted by employers to deliver ready tech talent, and delivers that talent in large volumes, in order to materially expand economic growth and economic opportunity.

Four models of tech reskilling offer the greatest promise to get large numbers of Chicagoans–especially Black and Latino Chicagoans–into tech careers:

- *Picking winners*–i.e., funneling investment and partnership opportunities to the training partners best able to provide high-quality and diverse talent in large volume
- Organize a *buying consortium* of employers around a best-of-breed combination of providers that can prepare individuals with the tech skills and professional readiness to succeed
- *Continuous system improvement* by providing market intelligence and program supports to community colleges and workforce programs
- *Redefine the entry level*, adapting and adopting the apprentice-like model that Accenture has deployed with great success in opening its doors to “nontraditional” candidates

Across these models, the **critical ingredients** of an effective tech reskilling system are:

- *Intermediary* organizations that can provide intelligence, grow the market, broker partnerships, and provide technical assistance across the ecosystem
- *Financing* to help low-income individuals gain access to the best reskilling opportunities and to support their life needs during the program
- *Supports for success*, including coaching, childcare and transportation
- *Open, Honest Minds*, that allow companies and colleges to try new approaches, and everybody in the ecosystem to acknowledge what is and isn’t helping us achieve the scale and quality of tech reskilling we need

Every organization can advance this agenda...

What Companies Can Do

- Identify tech roles to fill with reskilling pathways, particular those that are (a) hard to fill, or hard to retain, and (b) don't actually require a bachelor's degree to be successful
- Select the most appropriate reskilling option to fill those roles and start a conversation with the relevant partners:
    - Community colleges (call City Colleges)
    - Enterprise talent solutions (e.g., Bitwise, General Assembly, Revature, Tech Elevator)
    - DPI Apprenticeship
    - Redefining entry-level roles to be more accessible
- *For any of these, please reach out to us at P33 for guidance on how to navigate the options or introductions to your best-fit partners!* *Matthew.Muench@p33chicago.com*

What the Workforce System Can Do

- *Prioritize tech:* Increase the share of Individual Training Accounts (ITAs) and other training investments going to tech roles
- *Collaborate with community colleges* to focus on investing in a few high-quality, high-throughput programs and cut those delivering marginal value
- *Find new training providers:* Seek high-quality tech training providers to add to the Eligible Training Provider List

What Community Colleges Can Do

- *Focus*: Invest in the programs with the highest *employer* demand (i.e., paying strong wages), not just student interest; eliminate programs offering marginal value
- *Partner* with 3rd party training providers (including bootcamps) and work-based-learning programs in order to ensure students acquire the most in-demand skills and have authentic work preparation
- Embed *work-based learning* early and widely
- *Build capacity:* Strengthen in-house expertise on tech and build sales and customer success capabilities to better serve companies
- Embed industry *credentials and other skills validation* (e.g., HackerRank scores) into certificate and degree programs

What Philanthropy Can Do

- Foster *innovation in financing* models for workforce training
- Encourage *service integration* around coaching, childcare and transportation support for low-income individuals attempting to reskill for tech jobs
- *Deploy funding and pressure* to encourage system investment in fewer, more effective tech reskilling providers

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Jacqueline Justice, led the design and production of this report.

Endnotes

1 https://p33chicago.com/tech-talent-report/

2 https://www.cbre.com/insights/reports/scoring-tech-talent-in-north-america-2021

3 CompTIA, "Workforce Learning Trends 2021," https://www.comptia.org/content/research/workforce-learning-trends-2021; World Economic Forum, "Towards a Reskilling Revolution," 2018, https://www3.weforum.org/docs/WEF_FOW_Reskilling_Revolution.pdf

4 https://www.dol.gov/agencies/eta/apprenticeship/about/statistics/2021

5 Note, 238 of the 255 come from one program in Peoria run by Avid Solutions.

6 Note, 565 of the 583 come from one program in Peoria run by Avid Solutions.

7 http://www.ibhe.org/EnrollmentsDegrees/Search.aspx

8 http://www.ibhe.org/EnrollmentsDegrees/Search.aspx; https://collegescorecard.ed.gov/

Photography

Photos by Benjamin Suter, Hide Obara, Michael Descharles, Microsoft 365, and Stephan Cassara found on Unsplash.
Photos by Ryutaro Tsukata found on Pexels.