Jobs That Mobilize:

A Data-Driven Playbook for America's Workforce

By Katherine Townsend Kiernan, Mariano Mamertino, Frank Steemers, and Stuart Andreason

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Executive Summary

Across America, communities are struggling to connect workers with meaningful job opportunities, even as employers face persistent talent shortages. The Jobs That Mobilize (JTM) framework transforms workforce data into actionable insights, creating clear pathways to economic mobility. By aligning the interests of workers, employers, educators, and community leaders, our proven process helps regions identify and grow the jobs that drive both individual advancement and broader economic prosperity. This playbook provides a blueprint for success in each community.

In the following pages, we outline this process, empowering communities to leverage data more effectively to drive economic mobility and growth.

The JTM Playbook: Six Steps to Workforce Transformation

1. Map the Skill Landscape

- Analyze the region's unique skill concentrations
- Identify existing workforce strengths and gaps
- Assess geographic and generational mobility patterns
- Calculate location quotients for key industries

2. Identify Jobs That Mobilize (JTMs)

- Score occupations across four key dimensions: worker opportunity, employer demand, community impact, and strategic economic value
- Generate a list of potential JTMs
- Validate with local stakeholders

3. Build Detailed Skill Profiles

- Map required technical competencies for each job
- Identify essential work-ready skills
- Group skills into functional categories
- Set proficiency benchmarks

4. Validate with Employers

- Establish common skill language
- Define proficiency levels for each role
- Align credentialing requirements
- Create standardized assessment frameworks

5. Map Career Pathways

- Identify skill-based transition opportunities
- Locate untapped talent pools
- Define feeder roles into JTMs
- Chart paths to higher-paying target occupations

6. Design Training Solutions

- Develop targeted upskilling programs
- Create skill-based credentials
- Build partnerships with education providers

Introduction

Big data promised to revolutionize how Americans find better jobs and build careers. We now collect more information about workers, skills, and opportunities than ever before. But this wealth of data has created a new problem: it sits scattered across thousands of separate systems, telling different parts of the same story. Employers can't find qualified workers, even as job training programs struggle to place their graduates. Schools don't know which skills local companies need most, while workforce agencies can't track which career paths actually lead to higher wages. The fundamental challenge isn't gathering more information—it's making sense of the information we already have and putting it to work. Only when we bridge these gaps can data finally deliver on its promise to help Americans climb the economic ladder.

The Jobs That Mobilize (JTM) framework creates a system where workers, employers, schools, and community leaders are finally able to work from the same playbook. By clearing the way for complex data to be understood and utilized by a wide array of critical stakeholders, we've built a model that works across communities large and small, urban and rural, growing and shrinking. It's not just about filling job openings—it's about finding and growing jobs that propel individual advancement while boosting widespread economic prosperity.

This report outlines the imperative to reimagine workforce and economic development in the big data era. It explores the key questions our metrics address and demonstrates how leaders can apply these to manage critical workforce challenges. Our approach identifies jobs that meet current needs while simultaneously addressing the question, "What kind of training programs can produce highly qualified talent to fill these economically beneficial roles?" For employers facing persistent hiring challenges, it provides a proven framework for identifying, accessing, and developing talent pools they may have overlooked.

Good jobs, like the regions they're situated in, are unique to the local context they serve. We provide a blueprint for each community to discover its optimal job set—a list of occupations tailored to local resources, priorities, and conditions. As an example, we detail our implementation in Houston, highlighting the process for identifying actionable JTMs. An initial key finding: Houston workers transitioning into JTMs are seeing an average wage gain of 14.9%.

The JTM framework is rooted in complex data, but its guiding principle is simple: widespread change happens when built on common ground. This report outlines a collaborative framework that empowers communities, workers, employers, schools, and leaders to use data more cohesively and comprehensively, driving meaningful change for all.

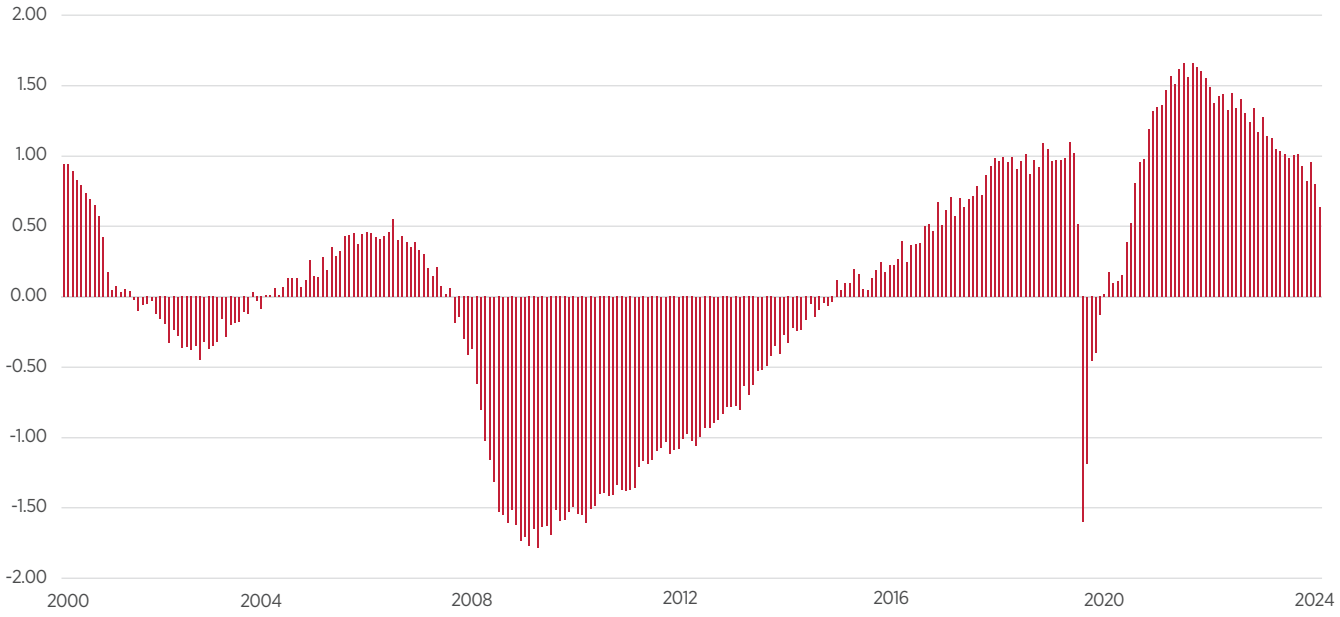
SECTION I: A New Approach to Workforce Alignment

A data revolution is transforming how we understand and solve workforce challenges. Previously, fragmented information systems made it difficult to sync up data and connect crucial dots between education, employment, and economic mobility. Like the parable of the blind men and the elephant, key stakeholders—workforce agencies, educational institutions, and employers—often understood their own data but had limited visibility into the rest of the system.

But today's integrated data analytics reveal the complex web of relationships between skills, jobs, and career advancement—connections we knew existed but couldn't systematically analyze. In the past, employers often found themselves guessing what they truly needed, leading to a frustrating cycle of costly hiring and firing as they tried to fill skill gaps. This hit-or-miss approach relied heavily on outdated metrics like degrees and job titles, which didn't always reflect the actual skills required for success. Now, with a data-driven approach, we have the opportunity to move beyond these crude measures, pinpointing the specific skills they need, making the hiring process more efficient and effective.

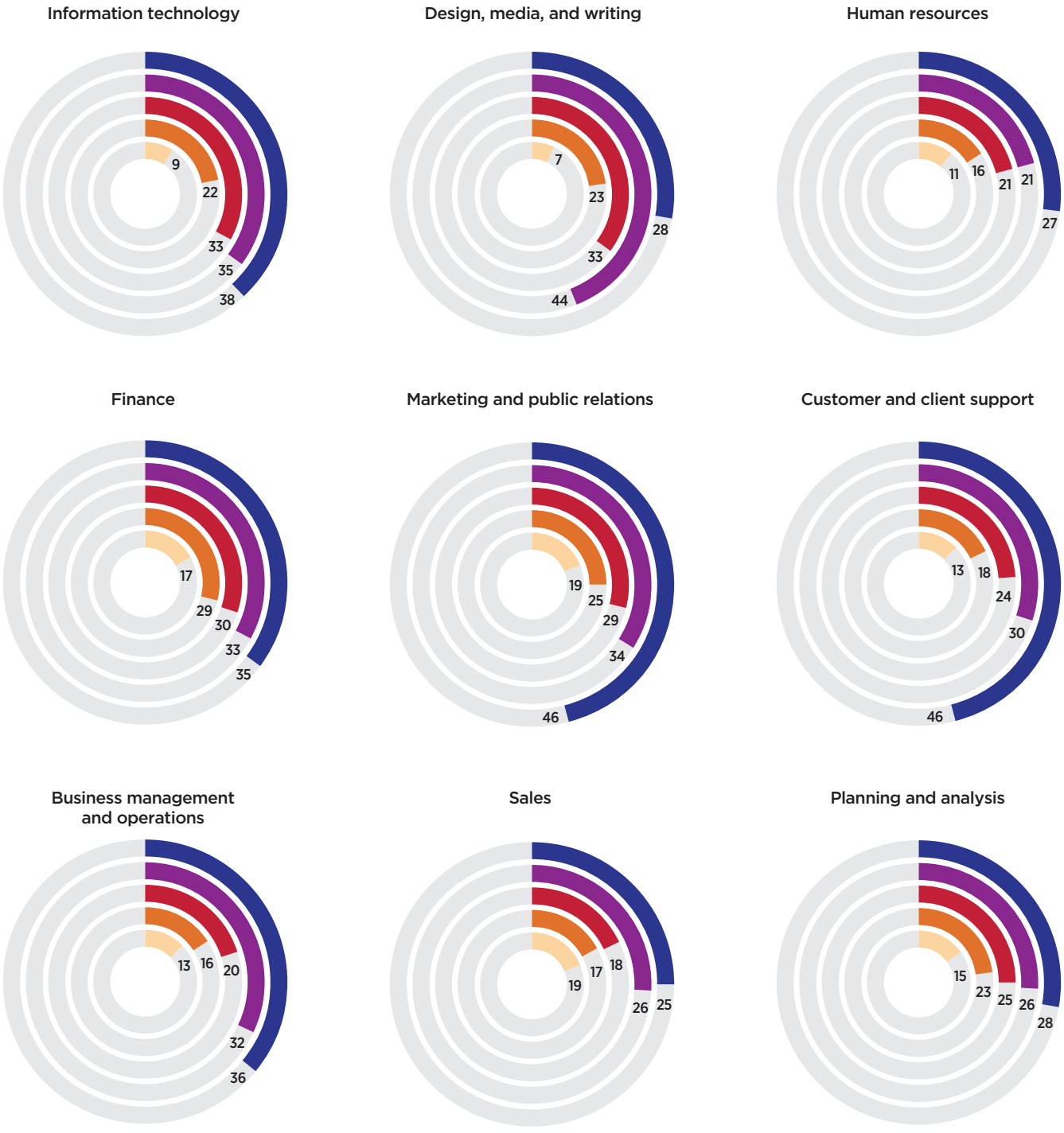
At the same time, today's economic landscape is markedly different from a decade ago, intensifying the need for a systemic approach. The labor market has tightened, primarily due to an aging workforce. While job creation was once the holy grail of economic development, local economies now grapple more with unfilled positions than a lack of jobs. But creating jobs is far easier than producing qualified workers or building a long-term talent pipeline. Consequently, capable individuals stay stuck in dead-end jobs while employers face severe talent shortages. While Burning Glass Institute's Labor Market Tightness Index[1] has eased from pandemic highs in 2021, the labor market is still tighter than at most points in the last two and a half decades. With approximately 10,000 Americans turning 65 each day as the unusually large Baby Boomer generation reaches retirement age, this dynamic is likely to persist.

Figure 1. Labor Market Tightness Index



Meanwhile, the skills powering our economy are in flux. For the average job, 37% of the key skills required as of 2016 were supplanted by wholly new ones during the following five years. The half-life of skills is shrinking, leading to faster obsolescence. Nearly three-quarters of jobs underwent more changes from 2019 to 2021 than from 2016 through 2018.

Figure 2. Share of top 20 requested skills that changed, 2016-2021 (%)



Employers are generally aware that there are pools of talent ready to tap. But most struggle with how to find these workers or, if they manage to do that, to verify their skills in a scalable way. In a 2022 McKinsey survey of employers in several major metro areas, nearly all had taken steps toward implementing skills-based hiring, though less than half of them reported that they felt confident that their skills-based hiring strategies adequately identified the talent they needed to be competitive.

THE VALUE OF CONVERTING BIG DATA INTO ACTIONABLE INSIGHTS

With the advent of big data analytics, we can now map employer needs with extraordinary precision, allowing for more nuanced, targeted, and actionable insights into talent-job mismatches. This data-driven approach can replace the crude metrics of the past, which relied heavily on educational qualifications and job titles.

But we can take this technology even further, allowing us to identify roles that simultaneously benefit all stakeholders—jobs that offer workers upward mobility, address critical talent shortages for employers, promote equity in the community, and drive regional economic growth.

UNCOVERING HIDDEN TALENT POOLS

Employers are well aware that talent is out there—often in unexpected places. But knowing where to look is difficult and costly. This skill-based approach can reveal untapped sources of talent by highlighting that workers in declining industries or occupations often possess skills needed for in-demand roles in growing sectors. A more granular understanding of skill requirements can uncover individuals who are underemployed relative to their skills, creating opportunities to better utilize their talents. Consider the case of a retail worker who might require only a few additional technical skills to transition into a higher-paying customer support role in the tech industry. By focusing on skills, employers can more easily identify workers with the potential to excel in new roles, even if their career histories seem unrelated, unlocking previously untapped talent.

ALIGNING STAKEHOLDER INTERESTS

Big data analytics allows us to identify common skill requirements across different industries and job roles. **By breaking jobs down into their component skills, we can discover overlaps that weren't previously apparent in a traditional job-title based understanding of the labor market**. This granular view enables us to identify roles that simultaneously address the needs of multiple stakeholders.

For instance, we might find that a particular skill set is in high demand across several growing industries, offers good wages, and aligns with the existing skills of underemployed workers in the community. This alignment of interests creates a win-win situation for workers seeking better opportunities, employers needing talent, and local economies seeking growth and inclusivity.

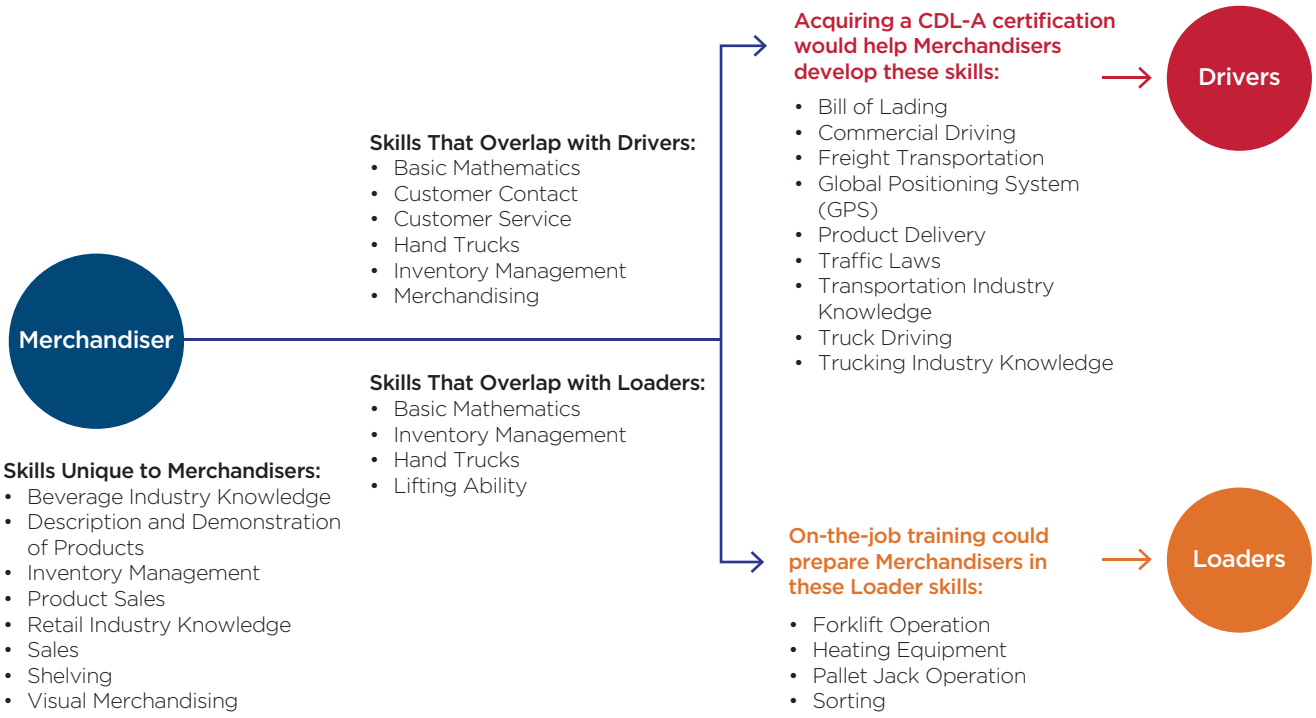
PAVING NEW AVENUES FOR UPWARD MOBILITY

Breaking jobs down into skills makes it easier to identify stepping stones between different roles and industries. Big data analytics can reveal skill adjacencies—where the skills required for one job are similar or complementary to those needed in a higher-paying role. This information allows us to design targeted upskilling programs that bridge these gaps efficiently.

For example, we recently worked with a major packaged goods company to uncover which roles had optimal skills overlap with harder-to-fill occupations. It turned out that Merchandisers' skills positioned them to move into driving and loading roles, both of which pay significantly more. This analysis helped the company determine the most efficient training formats for each role.

By mapping skill-based pathways, we can create clearer and more accessible routes for career advancement, especially for workers who might otherwise feel trapped in low-wage jobs.

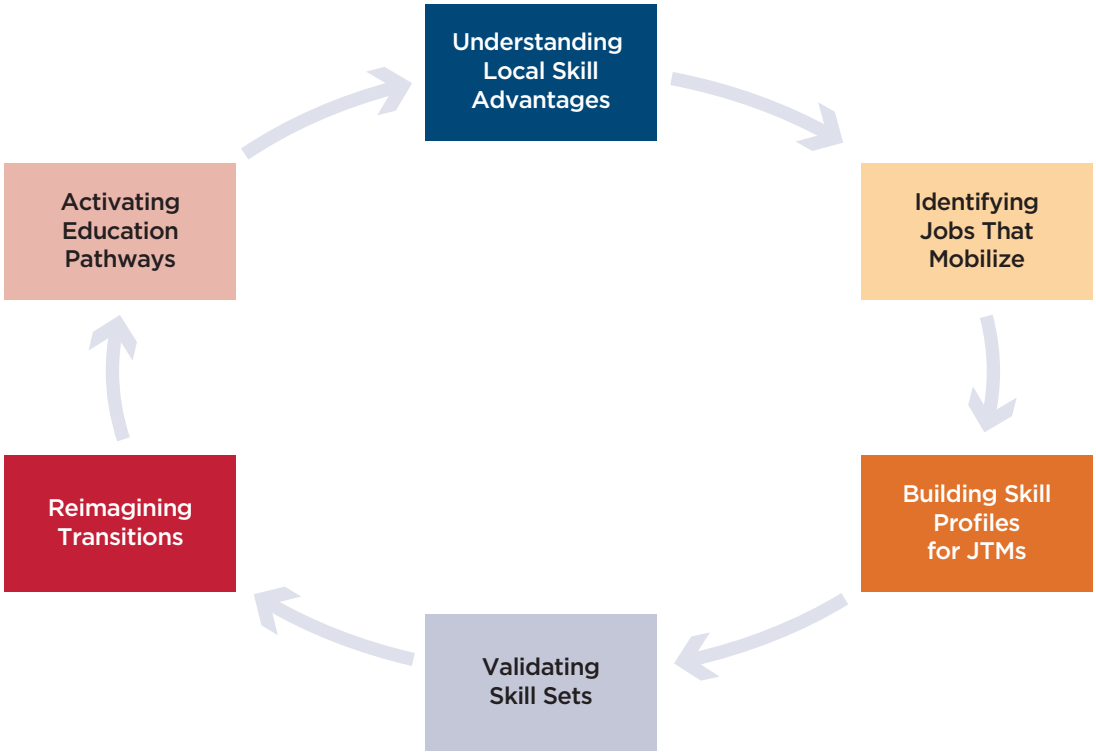
Merchandiser Skill Pathway



SECTION II: Applying the Jobs That Mobilize (JTM) Framework

As big data analytics are poised to transform how we tackle workforce development challenges, it's essential to create a framework that helps all stakeholders—employers, educators, and community leaders—understand how to leverage this data for their interconnected goals. Without a clear structure, the potential of big data may be lost, leaving each group to navigate the complexities alone rather than collaborating effectively to drive meaningful change.

Each component of the JTM framework informs the others, enabling continuous refinement of strategies throughout the process. By adopting a holistic approach rather than treating each step in isolation, we can create adaptive workforce solutions that better address real-world needs. Here's how the JTM framework breaks down:



This approach keeps us flexible and ready to adjust as we learn more about what works best for the community.

UNDERSTANDING LOCAL SKILL ADVANTAGES

We start by taking a close look at what makes each community's workforce unique. Using up-to-date job market data and our own special tools, we figure out where each region truly shines in terms of skills, not just job titles. Here's what we look at:

- Challenges with moving up (both geographically and between generations)
- Concentrations of skills in specific sectors
- Location quotients that show where the local job market performs best.

The last three points are baked into the "strategy" component of our JTM formula. But it's often helpful to look at each of these on their own when we're kicking off a project. This gives us a clear picture of what a local job market excels at—as well what does not. That insight helps communities decide which industries to focus on and set other big-picture goals.

IDENTIFYING JOBS THAT MOBILIZE

The Jobs That Mobilize framework tackles challenges faced by four key groups at once:

1. Employers looking to fill critical roles and address skills gaps
2. Workers seeking well-paying jobs with growth potential
3. Communities striving for equality and inclusivity
4. Local leaders needing workers to drive growth in key sectors and the broader economy

To address these needs, we've built our data analytics around four pillars that reflect the priorities of specific stakeholders. (For a full list of data series and sources, see the Appendix on p.24.) These metrics are flexible and can be tailored to the priorities of each region.

The Four Pillars of the Jobs That Mobilize Framework

Employers

- Employment growth, 2022-32
- Share of entrants
- Share of workers aged 55 and over
- Voluntary quits rate
- Wage growth
- Generative AI exposure
- Share of part-time workers
- Share of part-time workers, under 24 years old

Workers

- Median annual wage
- Probability transitioning into higher paying occupation
- Promotion rate
- Transition rate into unemployment
- Typical years of schooling
- Voluntary quits rate
- GAI exposure

Equity

- Wage parity by race
- Integration index
- Wage parity by gender

Strategy

- Skills Set Centrality
- Industry Dispersion
- Geographic Dispersion

Each job is assigned a score for each of the four metrics, with higher scores indicating the occupation's percentile rank compared to other jobs.[2] To pinpoint the roles that best fulfill all four pillars, we use a composite score of these metrics.

To illustrate the framework in action, we analyzed national data on logistics industry jobs that typically do not require a college degree. Among 13 possible jobs,[3] three occupations stood out by meeting JTM's high standards of job quality: Logisticians, Transportation Inspectors, and Crane and Tower Operators.

These positions show strong growth potential: with projected employment of 1.3 million workers by 2033—an 11.9% gain over 10 years compared to just 1.1% growth projected for all non-degree occupations. They also offer exceptional job security: from 2019 to 2023, only 2% of workers in these roles transitioned to unemployment, on average, versus 3.8% for other logistics roles and 3.9% for all occupations.

The financial rewards are significant: **workers in these positions earn an average of $10,800 more annually than the median pay for high school graduates in logistics**. Perhaps most importantly, these roles have substantial untapped potential—approximately 3.9 million workers currently hold positions with similar skill sets but seldom transition into these higher-paying roles.

Each of the three roles demonstrates the effectiveness of the JTM framework:

- **Logisticians:** These roles are on the cusp of requiring a bachelor's degree or less, making them ideal for skills-based practices. This educational threshold highlights the access pillar of the JTM framework, demonstrating that non-degreed workers can be just as valuable as those with a college degree. Additionally, these positions help transition non-degreed workers into roles sometimes assumed to require a degree, effectively opening a new level of job opportunities. This showcases the framework's ability to reveal the value of non-degreed workers to various stakeholders. Without the framework, valuable roles like Logisticians might be overlooked or underestimated in terms of quality and potential for non-degreed workers, or their importance to employers and the economy more broadly.
- **Transportation Inspectors:** These roles excel in balancing the needs of both workers and employers, scoring higher than 95% and 89% of all non-degree jobs, respectively. This demonstrates both their market value and effectiveness in meeting stakeholder needs.
- **Crane and Tower Operators:** These positions offer robust career paths for all workers and are highly valued by employers. They highlight the opportunities within a specific role, providing high mobility and stability to workers. Additionally, these roles teach skills that are valued in higher-paying occupations across the industry and are often required for management positions.

While our data-driven approach provides a solid foundation, considering local context and stakeholder input is crucial to ensuring the insights drive actionable results. For example, in the Houston project, the "refining" process saw the addition of electricians to the JTM list to support the work Houston is doing focused on the energy transition.

It's important to note that in some cases, what makes a job a JTM is that it sets workers up for an even more promising role—what we call "target occupations." For example, the Cardiovascular Tech occupation often feeds into Health Informatics Specialist roles—the median for which pays roughly $28,000 more annually—due to an overlap in skill groups like Cardiology, Hematology, and General Medical Tests and Procedures.

BUILDING SKILL PROFILES

For each JTM on the final list, we draw up a comprehensive skill inventory that encompasses both technical and work-ready skills. This process involves:

- Analyzing local and national job posting data
- Collaborating with employers to define and prioritize skills
- Categorizing skills into broader, functional groups

These detailed skill profiles are essential for the subsequent validation process and for mapping potential job transitions.

THE JTM SCORE AS A DIAGNOSTIC TOOL

While our methodology for scoring jobs based on the four pillars primarily serves as a screening mechanism to identify high-value jobs, the JTM composite score can, in certain instances, be used uncover areas for targeted improvement beyond the framework's scope.

For example, when a set of occupations scores high on the Strategy pillar—indicating their critical importance to a sector or industry—but low on another dimension, our methodology can suggest initiatives beyond traditional training programs. Here are some examples:

High Strategy, Low Worker Score	High Strategy, Low Employer Score	High Strategy, Low Diversity Score
This scenario often indicates issues with job quality or accessibility. Possible solutions might involve: • Reducing unnecessary educational requirements to increase access • Reassessing and potentially raising wage structures • Improving benefits packages, including health-care and paid time off • Implementing flexible work arrangements or improved work-life balance policies	This combination could suggest challenges in talent attraction or retention, possibly due to an aging workforce. Initiatives to address this might include: • Creating "returnship" programs to attract experienced professionals back to the workforce • Implementing knowledge transfer initiatives to capture expertise from retiring workers • Developing robust succession planning and leadership development programs	This combination signals an opportunity for employers to diversify their talent pool. Initiatives could include: • Strengthening partnerships with Historically Black Colleges and Universities (HBCUs), tribal colleges, or other minority serving institutions • Implementing mentorship programs for underrepresented groups

By leveraging the JTM composite score as a diagnostic tool, communities and employers can develop nuanced, targeted strategies that address specific challenges within their high-priority occupations. This approach ensures that workforce development efforts are not only focused on training but also on creating a more holistic and sustainable talent ecosystem.

Basic	Intermediate	Advanced	Expert
Limited Experience	Can work with limited supervision	Can manage tasks or projects independently	• Specialized skill set • Role model & mentor

VALIDATING SKILL SETS

This crucial step brings employers and workforce development professionals together to:

- Establish a common language for skills across industries
- Define skill levels and proficiency requirements
- Align on credentialing standards
- Create a standardized framework benefiting both employers and job seekers
- Maintain a knowledge flow between educators, training providers, and the labor market to stay updated on rising or declining skill demands.

The next step is defining skill levels to provide a clear understanding of proficiency requirements for each skill. Through our deep analysis of local job postings data and through focus groups with employers across sectors, we created a skill matrix for each of the target sectors and for skills that exist in many sectors, our so called "Work-Ready" skills.

The following template provides a definition and four levels of aptitude for each skill based on conversations with employers. The four proficiency levels are:

- Basic: Foundational knowledge with limited experience
- Intermediate: Demonstrated ability with supervision
- Advanced: Capable of independent task management
- Expert: Leadership-level mastery and specialized expertise

REIMAGINING TRANSITIONS

Using the validated skill sets, we map potential job-to-job transitions, focusing on:

- Identifying skill overlaps between occupations
- Highlighting untapped labor pools with transferable skills
- Defining "feeder" roles that can lead to JTMs
- Outlining "target occupations" for further career advancement

This reimagining of career pathways directly influences the design of education and training programs.

ACTIVATING EDUCATION PATHWAYS

This step involves partnering with educational institutions and training providers to:

- Develop or adapt credentials aligned with JTM skill requirements
- Create targeted upskilling programs for workers in feeder roles
- Design flexible learning pathways that accommodate diverse backgrounds

The outcomes of these education initiatives feed back into the local skill landscape, potentially revealing new advantages and opportunities, thus restarting the cycle.

SECTION III: The JTM Framework in Action: The Houston Experience

The Jobs That Mobilize (JTM) framework isn't just a theoretical construct—it's a practical tool that's already making a difference in real communities. To illustrate how this approach works in practice, let's examine our partnership with the Greater Houston Partnership (GHP) and UpSkill Houston.

BACKGROUND: HOUSTON'S WORKFORCE CHALLENGES AND ECONOMIC LANDSCAPE

The Houston metropolitan area boasts a diverse economy driven by key industries including energy, advanced manufacturing, life sciences, transportation, aviation, and corporate services. Houston's population of 7.3 million is characterized by strong healthcare and energy sectors, and demographic diversity. Around 36% of the population lives below twice the federal poverty line, compared to the national average of 30%.

Houston faced a complex set of workforce challenges as it transitioned from an industrial to a knowledge-based, technology-driven economy. This shift created a rapidly evolving skills gap, requiring an increasingly adaptable and tech-savvy workforce to maintain economic growth and global competitiveness. Key concerns included overdependence on external talent recruitment, underutilization of local workforce potential, need for clearer pathways from low-wage positions to emerging tech roles, and a real risk of low-wage workers being displaced without clear pathways to emerging opportunities.

One of the defining challenges identified by our partners was that **the Houston metro area's workforce development system was "resource rich but systems poor"—a fragmented constellation of community organizations, educators, and employers resulting in disconnected services and missed opportunities for more comprehensive and tailored worker support**. Community organizations tended to offer limited, predefined programs that fed into a set menu of roles, rather than being tailored to individuals' existing skills and experiences or employers' hiring other pain points. Meanwhile, employers tended to focus on immediate job requirements rather than viewing entry-level positions as potential talent pools for higher-skilled roles within their organizations.

The JTM project addressed these challenges using a systems approach—and, ultimately, to build a more resilient, skilled, and fully engaged workforce capable of adapting to rapid economic changes. **The project has brought together diverse stakeholders, including:**

- **135+ employers partnered through UpSkill Houston**
- **GHP representing 1,000+ member companies (employing a combined 25% of the region's workforce)**
- **Nine community college systems and Texas State Technical College**

UNDERSTANDING LOCAL SKILL ADVANTAGES

Our first step in Houston was to conduct a deep dive into the region's unique skill landscape. We analyzed real-time labor market data and applied our proprietary metrics to identify Houston's competitive advantages in terms of skills. This analysis revealed that Houston had particular strengths in healthcare, energy, and manufacturing sectors.

We also examined geographic and intergenerational mobility challenges specific to Houston, such as the concentration of low-income communities in certain areas and the historical barriers to entry in high-paying energy sector jobs. Analysis of sector-specific skill densities and location quotients revealed Houston's labor market strengths that weren't immediately apparent from traditional economic data.

IDENTIFYING JOBS THAT MOBILIZE

Building on this local skill analysis, we mined our data to identify jobs that aligned with Houston's target sectors, offered good wages and career progression potential, were in high demand from employers, had the potential to support a diverse workforce, and played a critical role in Houston's long-term economic growth. The list emerged through both data analysis and multiple rounds of comparing data with the on-the-ground observations of employers in each industry. We further refined the list based on discussions with GHP, UpSkill Houston, and other stakeholders.

This process ultimately identified 39 JTMs across various industries, including:

Occupation	Industry
Automotive Body and Related Repairers	Trades
Automotive Service Technicians and Mechanics	Energy
Billing and Posting Clerks	Professional Services
Bookkeeping, Accounting, and Auditing Clerks	Professional Services
Cardiovascular Technologists and Technicians	Healthcare
Cargo and Freight Agents	Advanced Manufacturing
Carpenters	Energy
Computer Network Support Specialists	Tech
Cost Estimators	Professional Services
Dental Assistants	Healthcare
Electro-Mechanical and Mechatronics Technologists and Technicians	Trades
First-Line Supervisors of Construction Trades and Extraction Workers	Energy
First-Line Supervisors of Material-Moving Machine and Vehicle Operators	Trades
First-Line Supervisors of Mechanics, Installers, and Repairers	Trades
First-Line Supervisors of Office and Administrative Support Workers	Professional Services
General and Operations Managers	Professional Services
Health Technologists and Technicians, All Other	Healthcare
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	Trades
Heavy and Tractor-Trailer Truck Drivers	Energy
Industrial Engineering Technologists and Technicians	Energy
Industrial Machinery Mechanics	Energy
Industrial Truck and Tractor Operators	Advanced Manufacturing
Light Truck Drivers	Energy
Logisticians	Professional Services
Machinists	Trades
Maintenance and Repair Workers, General	Energy
Medical and Clinical Laboratory Technicians	Healthcare
Medical Equipment Preparers	Healthcare
Medical Records Specialists	Healthcare
Ophthalmic Medical Technicians	Healthcare
Paralegals and Legal Assistants	Professional Services
Payroll and Timekeeping Clerks	Professional Services
Pharmacy Technicians	Healthcare
Power Plant Operators, Distributors, and Dispatchers	Trades
Radiologic Technologists and Technicians	Healthcare
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	Advanced Manufacturing
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	Professional Services
Telecommunications Equipment Installers and Repairers, Except Line Installers	Trades
Weighers, Measurers, Checkers, and Samplers, Recordkeeping	Trades

BUILDING SKILL PROFILES FOR JTMS

For each identified JTM, we created a comprehensive skill inventory. This process involved analyzing both local and national job posting data to understand the specific skills required for these roles in the Houston context. We also met with local employers to define and prioritize skills.

This process identified 164 skills across sectors, with varying numbers per industry (e.g., 40 for healthcare, 57 for professional/IT). Each skill was defined with four distinct levels of competency, creating a robust foundation for subsequent project phases. For example, Houston employers deconstructed **Communication** into the following skill levels:

Skill Proficiency Breakdown for Communication

	Level One: Basic	Level Two: Intermediate	Level Three: Advanced	Level Four: Expert
Communication	• Conveys information using simple language and basic communication tools. • Demonstrates a basic understanding of verbal and non-verbal cues. • May struggle with articulating thoughts clearly and effectively. • Relies on straightforward communication methods and may lack sophistication in conveying complex ideas.	• Communicates ideas and information clearly using a variety of channels, including verbal, written, and non-verbal methods. • Demonstrates improved proficiency in articulating thoughts and ideas. • Uses appropriate language and tone depending on the audience and context. • Shows the ability to actively listen and respond appropriately to others' communication.	• Communicates with clarity across different channels • Demonstrates advanced verbal and written communication skills, including the ability to convey complex ideas. • Effectively utilizes non-verbal cues to enhance understanding and convey emotions. • Adapts communication style to suit diverse audiences and situations, demonstrating empathy and cultural sensitivity.	• Demonstrating exceptional clarity, persuasiveness, and impact. • Excels in both verbal and written communication, employing advanced techniques to engage and influence audiences effectively. • Proficiently uses non-verbal communication to enhance message delivery and build rapport. • Acts as a communication leader within the organization.

Drawing from our work with Houston healthcare employers, here is the skill level breakdown for **Medical Equipment and Technology**:

Skill Proficiency Breakdown for Medical Equipment and Technology

	Level One: Basic	Level Two: Intermediate	Level Three: Advanced	Level Four: Expert
Medical Equipment and Technology	• Demonstrates foundational knowledge of medical equipment and technology, including basic understanding of medical telemetry. Capable of operating simple medical devices and technology under supervision. Follows established protocols for equipment setup and basic troubleshooting.	• Possesses proficiency in operating a range of medical equipment and technology, including basic medical telemetry devices. Able to troubleshoot and resolve common equipment issues independently. Participates in equipment maintenance tasks and ensures proper calibration.	• Exhibits expertise in medical equipment and technology, including advanced medical telemetry systems. Capable of troubleshooting complex equipment malfunctions and performing preventive maintenance. Proficient in integrating medical technology into clinical workflows to enhance patient care.	• Recognized as a leader, with extensive experience and specialized knowledge. Proficient in managing and optimizing medical telemetry systems and other advanced equipment. Often consulted for expertise in technology procurement, implementation, and training, and serves as a mentor or educator in the field.

This process prompted employers to zero in on core skills—and the level of competency for those—required for workers to succeed in each role. For example, 75% of participating Houston employers across industries indicated that an intermediate level of communication skills is necessary for entry-level workers. By comparison, only 42% considered an intermediate level of self-motivation is sufficient for success.

VALIDATING SKILL SETS

Once we developed detailed skill profiles for each JTM, we engaged in a rigorous validation process with Houston employers. This step was crucial to ensure that our data-driven insights aligned with the on-the-ground reality of Houston's job market.

We organized a series of workshops and meetings with employers across different sectors. During these sessions, we presented our skill profiles and gathered feedback on their accuracy and completeness. This process often led to refinements in our skill inventories.

Skill validation for Houston's healthcare JTMs found that employers valued a balance of technical proficiency, soft skills, and the ability to meet regulatory requirements. Technical skills and medical knowledge were deemed crucial; these often required formal education or another form of hands-on training. However, equally important were work-ready skills, such as those involving bedside manner. The exact contours of specific skills often varied by industry. For example, in a healthcare setting,

empathy was often a crucial part of communication skills—whereas construction and manufacturing employers tended to value the ability to deliver facts clearly and directly. That said, many interpersonal skills are transferable from industries like customer service or retail, where handling interactions and managing stress are key components.

For each JTM, this process generated a list of skills ranked by importance. Here is how employers rated skills used by Cardiology Technicians and Technologists:

Cardiology Technicians and Technologists: Top Skills and Certifications			
	Skill Name	**Skill Category**	**Priority**
1	Basic Cardiac Life Support	*Cardiology*	Necessary
2	Cath Lab	*Cardiology*	Nice to Have
3	Cardiac Catheterization	*Cardiology*	Nice to Have
4	Cardiac Dysrhythmia	*Cardiology*	Necessary
5	Cardiac Rhythm	*Cardiology*	Necessary
6	Cardiac Stress Testing	*Cardiology*	Nice to Have
7	Electrocardiography	*General Medical Tests and Procedures*	Necessary
8	Radiology	*General Medical Tests and Procedures*	Nice to Have
9	Medical Telemetry	*Medical Equipment and Technology*	Nice to Have
10	Medical Ultrasonography	*Medical Imaging*	Nice to Have
11	Echocardiography	*Medical Imaging*	Necessary
12	Advanced Cardiovascular Life Support (ACLS)	*Certification*	Nice to Have
13	American Registry for Diagnostic Medical Sonography (ARDMS)	*Certification*	Unnecessary
14	American Registry of Radiologic Technologists (ARRT)	*Certification*	Nice to Have
15	Basic Life Support (BLS)	*Certification*	Necessary
16	Registered Cardiovascular Invasive Specialist (RCIS)	*Certification*	Nice to Have
17	Registered Diagnostic Cardiac Sonographer (RDCS)	*Certification*	Nice to Have
18	Registered Vascular Technologist (RVT)	*Certification*	Necessary

Houston employers then revised the existing definitions of skills deemed "necessary" to clarify what workers need to be successful in the role. For example, here is how they added nuance to and expanded on the existing definition for "Cardiology."

- **Original:** Cardiology as a workforce skill involves diagnosing, treating, and managing a variety of heart-related conditions to enhance patient well-being and prevent disease progression.
- **Post-Skill Validation:** Cardiology as a workforce skill encompasses diagnosing, treating, and managing heart and blood vessel conditions to enhance patient well-being and prevent disease progression. Patient education on cardiovascular risks is important, as is general knowledge around cardiovascular illness.

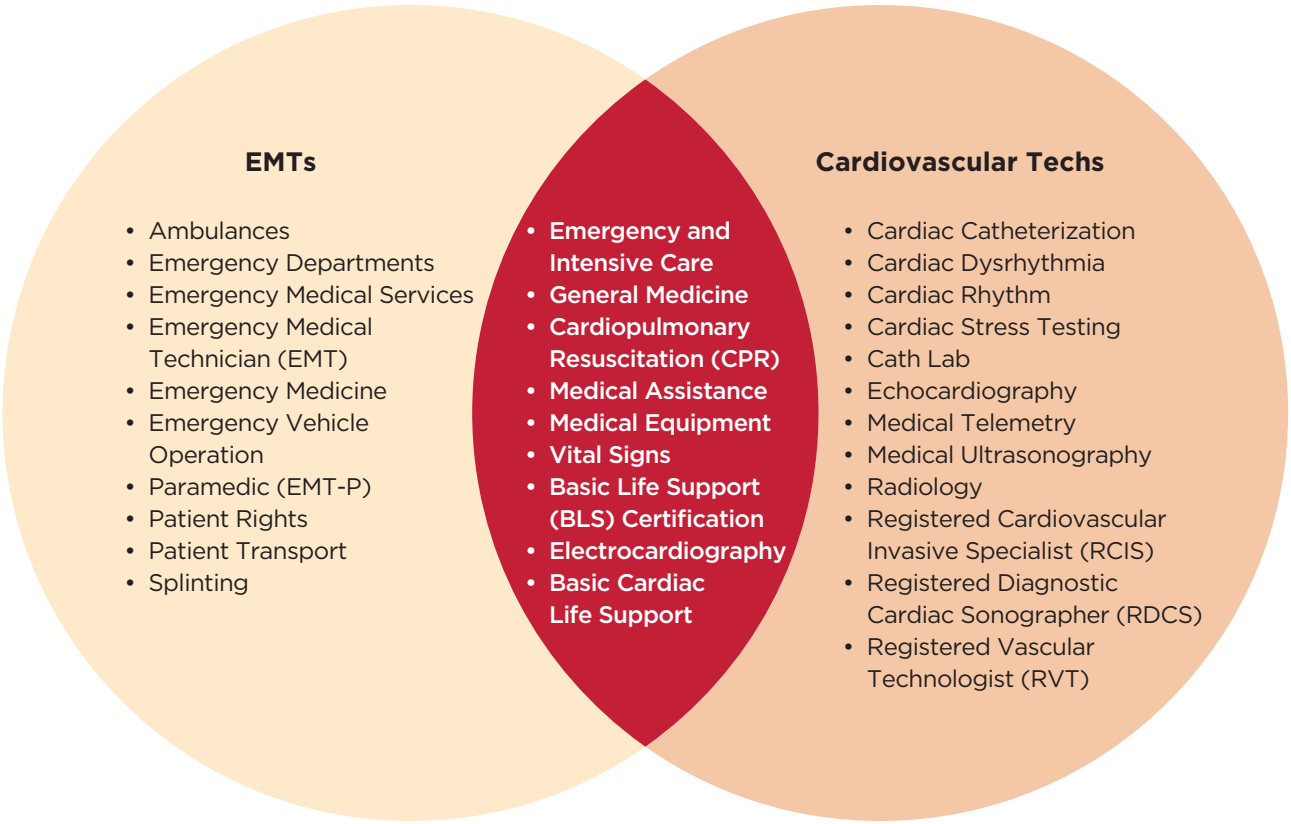
Finally, to each "necessary" skill, they assigned a skill level drawn from the previous exercise, indicating the minimum level of expertise required to be hired and promoted. For instance, employers determined that Intermediate Cardiology skills were necessary for hiring, while an Advanced level was the prerequisite for promotion.

The best method of assessing these skills varied based on factors like industry, skill level, and employer. For example, Houston employers overall cited behavioral interviewing as the top way to identify and assess skill proficiency levels. However, when it came to Cardiology, the city's healthcare employers identified written tests, simulations, and behavioral interviewing as the top examples for establishing skill competency for intermediate skill levels. Meanwhile, to assess advanced Cardiology skills, they selected peer review and behavioral interviewing.

REIMAGINING TRANSITIONS

Precise skill definition and categorization are crucial for identifying untapped labor pools through skill similarity matching. With validated skill profiles in hand, we were able to map out potential career pathways within and across sectors. This process revealed connections between different roles based on skill adjacencies.

Our analysis and employer validation indicated that Emergency Medical Technician had the highest degree of skill overlap with the Cardiovascular Tech JTM—including in important, high-value skill groups like Cardiology, Medical Ultrasonography, and Medication Administration—making this transition a logical one. The median EMT who moves into the role of Cardiovascular Tech typically sees a salary gain of 27%.



Even for the relatively technical field of healthcare, feeder roles often come from other sectors. Using Houston healthcare JTMs as an example, our analysis and consultations with employers resulted in 101 occupations with high skill similarity and historical transitions. Among the most common:

	Feeder Title
»	**Retail Salespersons**
»	**Cashiers**
»	**Teaching Assistants, Postsecondary**
»	**Customer Service Representatives**
»	**Residential Advisors**
»	**Receptionists and Information Clerks**
»	**Tour and Travel Guides**
»	**Orderlies**
»	**Veterinary Assistants and Laboratory Animal Caretakers**
»	**Surgical Assistants**
»	**Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers**
»	**Protective Service Workers, All Other**
»	**Medical Secretaries and Administrative Assistants**
»	**Childcare Workers**

ACTIVATING EDUCATION PATHWAYS

This phase involves collaboration with local educational institutions to tailor existing training programs to align with the skill needs of Houston's JTMs. We are also collaborating with local training providers to design curricula that directly address the skill gaps identified in our previous analysis. In many cases, workers are not "work-ready" for the JTMs employers need. In this case, local training providers and other worker serving organizations are working, through our skills matrices, to help workers understand the value they can bring to a role and how they can better develop and refine those skills. Each employer recognized that the "work-ready" skills are a critical base for Houstonians to become successful in their careers.

THE IMPACT

The JTM process has transformed how communities connect workers with critical jobs, creating a more efficient and integrated process. Instead of offering a limited menu of standardized programs, organizations can now map personalized pathways based on workers' existing skills and experience. This approach achieves what often seems impossible: combining customization with scalability.

The work undertaken has catalyzed a mindset shift among many participating employers putting skills at the forefront of broader human resources strategies. Some report that the JTM work drove them to research how employees historically advance within their organizations, guiding them in redesigning hiring and promotion practices. Several healthcare institutions exemplify this evolution. The JTM process has also encouraged some healthcare employers to view entry-level roles as potential talent pools for clinical or allied health roles. They now strategically use positions like food preparers, patient transporters, and security guards as launching pads for advancement into healthcare-related roles, helping support workers who demonstrate key skills in these roles to train for these higher-skilled positions where talent is scarce, creating a sustainable internal pipeline.

The JTM framework has helped community organizations and education providers engage effectively with employers by creating a consistent, scalable process for validating skills and preparing individuals for specific roles. By creating a common language and framework for skills assessment across industries, the work-ready skills matrix in particular has helped them understand proficiency levels required by employers. Working closely with employers on these has transformed how community organizations and educators prepare candidates for desirable roles. This collaboration revealed crucial prerequisites often overlooked in traditional job preparation practices—from mastering different interview formats to understanding unwritten workplace norms. By identifying essential "work-ready" skills and learning directly from employers why these matter, organizations can now explicitly teach the professional behaviors that were previously assumed or left to chance.

The application of the JTM framework in Houston has begun to show promising results. Workers transitioning into JTMs in Houston have seen an average wage gain of 14.9%, significantly boosting their economic mobility overall.

While the work in Houston is ongoing, the preliminary results demonstrate the potential of the JTM framework to drive meaningful change in local labor markets. By aligning the interests of workers, employers, and the broader community, we're helping to create a blueprint for economic mobility and sustainable growth in Houston and beyond.

Conclusion

Traditional workforce development faces multiple challenges in identifying high-impact opportunities that simultaneously benefit workers, employers, and local economies. The JTM framework addresses this through precise data analytics that unbundle jobs into their component skills, revealing previously hidden connections between roles and industries.

One of the strengths of the JTM framework is its flexibility. Each community can use it to identify the jobs that make the most sense for their local economy and workforce. What works in a big city might be different from what works in a smaller town, and that's okay.

Bottom line: the most practical approach to workforce development is finally possible. By aligning everyone's interests and using data to guide decisions, the JTM framework empowers communities to create meaningful opportunities for their residents and fosters economic growth for all.

Appendix: A Detailed Overview of the JTM Framework

WORKER METRIC

JTMs must be both springboards to higher-value opportunities—regardless of educational pedigree—and entry points for diverse candidates. Worker priorities focus on three main job characteristics: wages, access, and mobility. This underscores the importance of collaboration between community organizations, employers, and educators to refine JTMs to fully represent worker perspectives.

Given that around 62% of Americans 25 and up lack a bachelor's degree, not requiring a degree is a key criterion for ensuring JTMs offer opportunities to a broader community segment and provide growth avenues for historically lower-wage workers. To capture this access dynamic, we evaluate only occupations that don't typically require a bachelor's degree.

KEY QUESTIONS:

- Which occupations offer strong opportunities for workers in terms of wages, job mobility, or accessibility?
- What jobs provide good career pathways for workers?
- Which occupations balance good pay with reasonable entry requirements?

This pillar comprises the following data: median annual wage; probability transitioning into a higher paying occupation; promotion rate; transition rate into unemployment; typical years of schooling; voluntary quits rate; exposure to generative artificial intelligence (AI).

Variable	Description	Source
Generative AI exposure (z-score)	GAI exposure scores evaluate tasks within occupations based on how easily they can be performed or enhanced by AI, reflecting potential impacts on job roles due to AI advancements.	Felten, Raj, Seamans (2021)
Quits rate (% of employment)	The average monthly share of workers quitting their job, with occupation quits from CPS benchmarked to industry quits from JOLTS.	Current Population Survey, IPUMS-CPS, University of Minnesota; Bureau of Labor Statistics Job Openings and Labor Turnover Survey
Typical years of schooling (years)	Median years of schooling, 2018-2022.	American Community Survey, IPUMS-ACS, University of Minnesota
Median annual wage ($)	Median annual wage, 2023.	Bureau of Labor Statistics Occupational Employment and Wage Statistics
Transitions into unemployment (% of employment)	The average monthly transition rate from being employed in the occupation to reporting being unemployed, 2019-2023.	Current Population Survey, IPUMS-CPS, University of Minnesota
Promotion rate (% of employment)	The share of workers within an occupation who were promoted at their job within 5 years of starting.	People Data Labs
Probability of moving into a higher paying occupation (% probability)	The probability of moving into a higher paying occupation in five years, subject to the constraint that the destination occupation's wage is no higher than ~250% of the current occupation's wage.	People Data Labs, Bureau of Labor Statistics Occupational Employment and Wage Statistics
Wage parity by race/ethnicity (% difference)	The percent difference in wages between White workers and Black, Hispanic, and Native American workers, after taking out the impact of education, gender, age, immigration, state, and industry.	American Community Survey, IPUMS-ACS, University of Minnesota
Wage parity by gender (% difference)	The percent difference in wages between men and women, after taking out the impact of education, race/ethnicity, age, immigration, state, and industry.	American Community Survey, IPUMS-ACS, University of Minnesota
Racial integration index (index score)	This metric measures how similar the demographics of an occupation are to the demographics of the population at large. Occupations with identical demographic composition to the overall population have a score of 1, and as the score decreases it means that the occupation is becoming more different racially from the overall population.	American Community Survey, IPUMS-ACS, University of Minnesota

EMPLOYER METRIC

This metric focuses on occupations that employers need for success and find hard to fill or retain. We identify these roles by analyzing several trends in job posting data: total volume, rate of growth, wage growth, retirements and new entrants, quit rates, exposure to generative artificial intelligence, and the share of part time workers in a role.

KEY QUESTIONS:

- Which occupations are experiencing high demand from employers, both now and in the future?
- Where are the current and projected "pain points" for employers in terms of workforce needs?
- Which occupations are facing potential shortages due to factors like an aging workforce or high turnover?

This pillar comprises the following data series from the BLS: projected employment growth from 2022 to 2032; share of new entrants; share of workers aged 55 and over; voluntary quits rate; wage growth based on the Employment Cost Index; and share of part-time workers under 24 years. It also includes an AI exposure score based on Burning Glass Institute calculations.

Variable	Description	Source
Projected 10-year employment growth (% growth)	Projected percent change in number of employed in a given occupation over 10-year period (2023 to 2033).	Bureau of Labor Statistics Employment Projections
New entrants (% of employment)	Share of workers who entered an occupation, measured as the 10-year age group that starts after the typical years of schooling for that occupation (for management jobs the starting age is determined by the 10th percentile in the management occupation distribution), 2018-2022.	American Community Survey, IPUMS-ACS, University of Minnesota
Workers aged 55 and above (% of employment)	Share of workers aged 55 and above, 2018-2022.	American Community Survey, IPUMS-ACS, University of Minnesota
Part-time workers (% of employment)	Share of workers in a given occupation who work part-time, 2018-2022.	American Community Survey, IPUMS-ACS, University of Minnesota
Wage growth (% growth)	Wage growth estimation from 2019 to 2022 for detailed occupations based on a regression model built on predicting the Employment Cost Index on aggregated occupation level.	Bureau of Labor Statistics Employment Cost Index, Haver Analytics, American Community Survey, IPUMS-ACS, University of Minnesota
Generative AI exposure (z-score)	GAI exposure scores evaluate tasks within occupations based on how easily they can be performed or enhanced by AI, reflecting potential impacts on job roles due to AI advancements.	Felten, Raj, Seamans (2021)
Quits rate (% of employment)	The average monthly share of workers quitting their job, with occupation quits from CPS benchmarked to industry quits from JOLTS.	Current Population Survey, IPUMS-CPS, University of Minnesota; Bureau of Labor Statistics Job Openings and Labor Turnover Survey

EQUITY METRIC

By focusing on JTMs, communities can enhance workplace inclusivity and drive inclusive economic growth. Currently, our labor market is falling short in delivering mobility and success to many minority workers. Black, Native, and Hispanic workers, as well as women, consistently experience worse outcomes than their peers. To improve diversity or inclusivity, we identify occupations with consistent pathways for minorities (defined as women or Black, Native, or Hispanic workers) or those that promote wage parity. We also prioritize occupations with smaller or nonexistent wage gaps between minorities and their peers to help alleviate wealth disparities between communities.

KEY QUESTIONS:

- Which occupations can help reduce wage inequality or occupational segregation?
- What jobs offer opportunities to improve equity for Black, Native, Hispanic, and women workers?
- Which occupations show the most promise for increasing diversity and inclusion in the workforce?

This pillar comprises the following datasets: integration index to measure the changing share of Black and Hispanic workers within an occupation, designed to capture how similar the demographics of an occupation are to the demographics of the population at large; wage parity by race, and wage parity by gender.

Variable	Description	Source
Wage parity by race/ethnicity (% difference)	The percent difference in wages between White workers and Black, Hispanic, and Native American workers, after taking out the impact of education, gender, age, immigration, state, and industry.	American Community Survey, IPUMS-ACS, University of Minnesota
Wage parity by gender (% difference)	The percent difference in wages between men and women, after taking out the impact of education, race/ethnicity, age, immigration, state, and industry.	American Community Survey, IPUMS-ACS, University of Minnesota
Racial integration index (index score)	This metric measures how similar the demographics of an occupation are to the demographics of the population at large. Occupations with identical demographic composition to the overall population have a score of 1, and as the score decreases it means that the occupation is becoming more different racially from the overall population.	American Community Survey, IPUMS-ACS, University of Minnesot

STRATEGY METRIC

Key Questions:

- Which occupations are strategically important for the growth and development of key industries because of their niche skill sets?
- Which occupations are central to skill networks within an industry, allowing for knowledge transfer and innovation?
- What jobs allow an economy to specialize in high-growth industries or in areas that capitalize on local resources?

To determine the most crucial jobs for driving broad economic success within a target sector, we examine industry dispersion, geographic dispersion, and occupation centrality.

- Skillset Centrality: An occupation with a high score indicates that it is a key connector, moving information or skills across the sector. Jobs with lower scores may be specific to some firms within the industry or involve unique skillsets. (We prioritize higher scores for this submetric as this paper uses national data and most communities will likely prioritize jobs with high transferability. However, this submetric can be adjusted to emphasize lower scores in areas with an unusual density of workers with a certain skill set, aiming to leverage this competitive advantage.)
- Geographic Dispersion: Geographic dispersion measures if an occupation is common across metro areas. The more dispersed, the higher the index. A high score here means that human capital is readily available. It could also show competitive advantage when the score is low, but the specific community has a lot of workers within that occupation.
- Industry Dispersion: Industry dispersion measures if an occupation is common across different industries. The more industries represented, the higher the score. A high score here means that talent may be sourced from other, less strategic industries. It also helps manage downside risks, i.e. if the investment doesn't pan out as expected, newly trained workers will have locally available alternatives.

Endnotes

[1] While labor market tightness is often measured by the unemployment rate, BGI's Labor Market Tightness Index is a more comprehensive measure that takes into account a host of indicators from a broad range of sources, including unemployment rate, employment to population ratio, percent positions not able to fill, quits rate (JOLTS), the ratio of job openings to hire, and other indicators to create a smoother and more accurate indicator.

[2] For all metrics except strategy, each job is compared to other jobs that typically require less than a bachelor's degree. For the strategy metric, the comparison is made within the same industry among jobs that also typically require less than a bachelor's degree.

[3] These include: Logisticians; Managers of Transportation, Storage, and Distribution; Transportation Inspectors; Supervisors of Aircraft Cargo Handling; First-Line Supervisors of Material-Moving Machine and Vehicle Operators; First-Line Supervisors of Other Transportation Workers; Crane and Tower Operators; General and Operations Managers; Excavating and Loading Machine Operators in Surface Mining; Production, Planning, and Expediting Clerks; Industrial Truck and Tractor Operators; Laborers and Freight, Stock, and Material Movers by Hand; Cargo and Freight Agents; Shipping, Receiving, and Inventory Clerks; and Hand Packers and Packagers.

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