



Tech Jobs Are in High Demand, but Are They High Quality?

Understanding Job Quality in the Technology Sector

AT A GLANCE

High-quality pathways prepare students for good jobs—but what do we really mean by that? JFF's Quality Jobs Framework provides an expanded definition of quality jobs, highlighting job characteristics all workers deserve in addition to good pay and benefits, such as flexibility, autonomy, stability, and advancement opportunities. By examining national data, we explore what measures of job quality the technology sector is strong in and where it could stand to improve.

With a growing demand for more technology roles and skills and a shortage of qualified workers leading to the emergence of more technology pathways, we explore this question: **Does the technology sector pass our new definition of job quality?**

AUTHORS

Megan Ramos Manager, JFF

Ronesha Jones Senior Manager, JFF

Sarah Jenness Director, JFF

Anna O'Connor Senior Director, JFF

About

About Jobs for the Future

Jobs for the Future (JFF) drives transformation of the U.S. education and workforce systems to achieve equitable economic advancement for all.

www.jff.org

JFF has extensive expertise in supporting onramps to digital jobs. Visit this link to learn more: www.jff.org/idea/jobs-future-building-inclusivedigital-jobs-strategy

About JFF's Language Choices

JFF is committed to using language that promotes equity and human dignity, rooted in the strengths of the people and communities we serve. We develop our content with the awareness that language can perpetuate privilege but also can educate, empower, and drive positive change to create a more equitable society. We routinely reevaluate our efforts as usage evolves.

info.jff.org/language-matters

The contents of this resource were developed under a grant from the U.S. Department of Education's Education Innovation and Research program. However, those contents do not necessarily represent the policy of the U.S. Department of Education, and you should not assume endorsement by the federal government.





Table of Contents

Introduction	4
Technology Sector at a Glance	5
Research Considerations	5
Compensation	6
Advancement	7
Agency & Culture	8
Structure	9
Recommended Actions	10
1. Design pathways with job quality in mind.	10
2. Promote job quality awareness through robust regional data collection.	10
3. Facilitate cross-sector collaboration to enhance understanding of job opportunities and job quality within the sector.	10
4. Support education and training programs to address gaps in the sector.	11
5. Advocate for policy reform that enhances job quality.	11
Research Considerations	12
Sector Definition Discrepancies	12
Challenges in Employee Perspective Data	13
Limited Data Availability	13
Endnotes	14

Introduction

More than half of the people in the U.S. labor force-92 million workers-lack quality jobs and face systemic barriers to advancement. Jobs for the Future (JFF) released new standards-the Quality Jobs Framework-to redefine what it means to work in a quality job, looking beyond the traditional measures of pay and benefits.¹ In addition to family-sustaining wages and benefits that provide comprehensive health care and retirement savings, workers deserve job flexibility, autonomy, stability, and advancement opportunities. These characteristics reflect an optimal definition of job quality and may not be present in many industries or occupations. Though the practices that lead to these characteristics will look different across industries, all industries can aspire to and move toward implementing these characteristics.

As education and workforce leaders provide better options for students and jobseekers to advance along education-to-career pathways, we must also consider these new standards of quality jobs when identifying which industries and sectors to focus on that lead to promising credentials. One such emerging sector is technology, with the rising need for computing skills and an extreme shortage of qualified workers.

In fact, in 2022, only 90,000 computer science majors graduated to fill over 450,000 computing job openings nationwide.² We know there is demand for more tech workers but does the sector meet our new definition of job quality?



CLICK TO ACCESS OUR QUALITY JOBS FRAMEWORK.

Technology Sector at a Glance

Technology jobs are not a typical industry, but an occupational cluster. Tech jobs can be found across all sectors of the economy—from manufacturing, to government, to professional services. In this analysis, references to the tech sector or tech jobs encompass a wide range of occupations across industries, not just occupations at tech companies. The technology sector demonstrates notable job quality strengths. Compensation stands out, consistently meeting or exceeding the national average, and employers tend toward prioritizing holistic employee well-being by offering comprehensive benefits packages, such as supporting work-life balance through paid leave and remote work.

Despite recent layoffs in the tech sector, job security is still a notable strength, with a lower percentage of layoffs and discharges compared to the average across all industries and job opening projections that exceed the national average.³

Despite these strengths, the sector needs to improve other areas that would push it toward meeting our comprehensive new definition of quality jobs. Diversity and inclusion remain crucial considerations, as significant underrepresentation of Black and Latine workers continues, and the sector is predominantly male.

Research Considerations

This research encountered limitations stemming from unavailable key data and variability in technology definitions, which constrained the breadth and depth of our analysis. This document uses the term, technology sector, to encompass varying definitions (see <u>Sector</u> <u>Definition Discrepancies on page 12</u>). We recognize these constraints and advocate for future research to address these gaps to understand the subject matter comprehensively.

Review the <u>Research Considerations</u> <u>Section on page 12</u> for more information.

* Elements with this symbol note the unavailability of key data and challenges in employer perspective data.





Compensation

All forms of pay, benefits, and leave that enable all workers to support themselves and their dependents at the local cost of living.

Living Wage

Across technology sector occupations, wages exhibit significant variability. On average, these roles have an hourly pay of \$59.43, compared to the national average wage of \$34.69 per hour as of March 2024.⁴

Focusing on specific occupations, the lowest average hourly wage in the sector is \$27.83 for computer user support specialists, while the highest reaches \$78.88 for computer information systems managers.⁵



Tech Job Hourly Wage Variability

LOWEST AVERAGE VS. HIGHEST AVERAGE



Comprehensive Benefits

The technology sector aligns with the national average in offering comprehensive benefits packages for workers in the form of employersponsored health insurance and retirement savings plans.⁶

Paid Leave

While paid leave varies greatly across the technology sector, the average offering is six weeks of paid family and sick leave and at least 15 additional paid vacation days per year.⁷ Notably, the percentage of workers with access to paid family leave in the technology sector is more than double the average across industries.⁸

Pay Equity and Transparency

According to the <u>Payscale Compensation Report</u>, 50% of HR respondents from the technology sector expressed their organizations' intentions to conduct a pay equity analysis along race or gender lines, on par with the overall average of 52% across all industries.⁹

The highest-paid occupation in the technology sector is computer and information systems managers, where 70% of workers are male and 65% are white. Additionally, the lowest-paid occupation, computer user support specialists, is made up of 71% male workers and 63% white workers, indicating an overrepresentation of male workers and white workers throughout the sector.¹⁰



Advancement

The policies and practices that provide all workers with equitable opportunities to grow their skills, knowledge, and careers within their organization or industry.

Skills-Based Practices

In the technology sector, 66% of role titles require a bachelor's degree, 82.9% of role titles necessitate prior work experience, and 15.2% require credentials.¹¹

Some tech companies are early adopters of skillsbased practices and learn-to-earn programs, including apprenticeships. Still, these are not yet widespread, which means at this point, a bachelor's degree is a common entry point into technology jobs.

Transparent Career Pathways*

Fifty-seven percent of respondents in the technology sector express satisfaction with existing career advancement opportunities, including promotion and learning new skills, compared to 50% of respondents across all industries.¹²

Career Coaching and Training

The technology sector trends slightly above the average in providing financial support to employees for formal training and education for skill development, as well as offering formal leadership coaching and/or mentoring programs.¹³

Inclusive Internal Advancement*

Forty-four percent of respondents within the technology sector reported that they would likely be promoted at their primary job, trending higher than the 30% of respondents across industries who said the same.¹⁴ **Tech Sector Work Requirements**





Agency & Culture

The extent to which all workers are encouraged and supported to use their expertise to drive change within their organization and have a sense of belonging and value in the workplace.

Belonging and Psychological Safety*

Seventy percent of workers in the technology sector report enjoying their day-to-day work (for example, good coworkers/managers, pleasant work environment, manageable stress level), which is comparable to workers in other industries.¹⁵

Ability to Organize*

There are several avenues through which workers can organize, including grassroots movements, employee resource groups, and advocacy networks, all of which contribute to shaping the industry's approach to worker representation and collective action.

While comprehensive data is difficult to source, the technology sector had a union membership rate of 7.8% in 2023, exceeding the average union membership rate of 6.9% in the private sector. Recent data shows a decline in union membership, with a 1.3 percentage point drop from 2022 to 2023.¹⁶

Opportunities for Input*

Fifty-two percent of workers within the technology sector report having the power to change things about their job that they are not satisfied with, on par with 50% of workers overall.¹⁷

Meaningful Commitment to Diversity, Equity, and Inclusion (DEI)

Demographically, the technology sector remains predominantly male-driven, with male workers comprising 69% of the workforce in 2023.¹⁸ Compared to national demographics, the data reveals underrepresentation of Black and Latine workers, with the national averages at 13.6% and 19.1%, respectively.¹⁹



Tech Workforce Demographics²⁰ COMPARED TO U.S. POPULATION



Structure

The foundational elements that support a safe, healthy, and stable environment for all workers.

Safe, Healthy, and Accessible Workplaces*

This sector is characterized by low physical risk. Technology jobs are largely sedentary, with workers spending 88.9% of their workday sitting.²¹ Comprehensive data related to discrimination, harassment, and accommodations for workers with disabilities within the technology sector is limited. Discussions should extend beyond physical safety to encompass broader issues of inclusivity, equity, and support for all.

Job Security*

The technology sector is stable and growing. The job security landscape is notable, with the rate of layoffs and discharges at 0.9%, below the overall average across all private industries at 1.2% in February 2024.²²

This data may be surprising due to reports of recent layoffs within the tech sector, but the technology sector encompasses a broad spectrum of occupations. Certain segments and companies may be experiencing layoffs, such as high-profile tech companies, but the broader sector experiences resilience and continued growth. Projections indicate that employment will grow faster than other industries, with 377,500 openings a year through 2032.²³

Fair Scheduling

Part-time and full-time workers within the technology sector maintain an average workweek of 36.5 hours as of March 2024, slightly exceeding the national average across industries, which was 34.4 hours in March 2024.²⁴

Additionally, 54.6% of workers in the technology sector operate from home for some or all of their hours, a notable contrast to the average across industries, which stood at 23% as of March 2024.²⁵ This high percentage of remote work suggests the prevalence of flexibility, providing workers with greater control over their work hours and arrangements.



Percentage Working from Home SOME OR ALL HOURS



* Elements with this symbol note the unavailability of key data and challenges in employer perspective data.

Recommended Actions

Below you can explore five key avenues for pathways leaders to assess the quality of tech jobs in their communities better and to address gaps.

2



Design pathways with job quality in mind.

- Ensure pathways programs of study include rigorous core academics as well as careerfocused learning to develop both employability skills, such as communication and critical thinking, and technical skills, such as coding and network security.
- When offering career exploration opportunities, highlight technology professionals from populations that have long been underrepresented in tech, including Black, Latine, Indigenous, and female workers.
- When offering career exposure activities like job shadows and mock interviews, provide students with guidance for asking questions related to job quality.

Promote job quality awareness through robust regional data collection.

- Collaborate with local organizations to disseminate information about the Quality Jobs Framework and apply the framework to your region's technology sector.
- Building on the findings from <u>Gallup's</u> <u>Great Jobs Report</u>, collect data from local technology workers about agency and culture, including work-life balance, job satisfaction, belonging and psychological safety, and opportunities for worker voice.²⁶
- Collaborate with HR to collect more data on job classification, advancement opportunities, and job safety and security.

3

Facilitate cross-sector collaboration to enhance understanding of job opportunities and job quality within the sector.

- Establish forums and roundtable discussions involving sector leaders, policymakers, and educational institutions to agree on an aligned definition of the technology sector and key steps to maintain and enhance job quality.
- Utilize this resource to benchmark companies against sector averages, promoting transparency and continuous improvement.
- Collaborate across education, workforce, and industry to develop effective strategies for recruiting, supporting, and retaining a more diverse workforce, particularly in terms of racial and gender diversity.
- Build pathways into and within the sector that ensure learners and workers have opportunities to earn the range of credentials and degrees the sector requires.

Support education and training programs to address gaps in the sector.

- Invest in and promote programs that enhance skills, make direct connections to employers, support career advancement, and align with the framework's principles.
- Foster partnerships between educational institutions and employers to ensure workforce training aligns with the evolving needs of quality jobs in the technology sector.
- Foster partnerships between educational institutions and employers to ensure accessibility of training and work-based learning opportunities to groups that have long been underrepresented in the technology sector.



Advocate for policy reform that enhances job quality.

- Support pay transparency efforts, encouraging employers to include salary ranges in the job descriptions.
- Secure funding that supports strengthening the connection between learning and work, such as education-to-career pathways and workbased learning opportunities that prepare people to enter quality technology jobs.
- Advocate for equitable and inclusive hiring practices prioritizing local workers, including skills-first hiring and fair chance hiring that provide greater access to quality jobs.
- Advocate for improved paid family and medical leave at the state and local levels.

For more detailed information and possible actions to support policy reform in your area, review the blog, <u>Four State and Local Policy Trends That Help Advance Job Quality</u>.²⁷



Research Considerations

Sector Definition Discrepancies

One of the primary limitations for determining quality indicators of the technology sector is that there is neither a widely shared definition of the sector nor a classification of what specific occupations fall within that definition. This makes data collection and analysis difficult because different sources use different occupations when referring to technology. This limitation underscores the necessity for a more precise and up-to-date definition of the technology sector. **The table below shows how technology occupations are organized and included under various groups.**

TITLE	DEFINITION	SOURCE
Computer and Mathematical Occupations	Computer and mathematical occupations is a major occupational group that comprises the following occupations: <u>information</u> <u>security analysts</u> ; <u>computer systems analysts</u> ; <u>computer and</u> <u>information research scientists</u> ; <u>computer network support</u> <u>specialists</u> ; <u>computer user support specialists</u> ; <u>database architects</u> ; <u>database administrators</u> ; <u>computer network architects</u> ; <u>network</u> <u>and computer systems administrators</u> ; <u>web developers</u> ; <u>web and</u> <u>digital interface designers</u> ; <u>computer programmers</u> ; <u>software quality</u> ; <u>assurance analysts and testers</u> ; <u>software developers</u> ; <u>computer</u> <u>occupations</u> , <u>all other</u> ; <u>actuaries</u> ; <u>mathematicals</u> ; <u>mathematical</u> <u>science occupations</u> , <u>all other</u>	 Bureau of Labor Statistics (BLS) Gallup
Information Technology Occupations	Information technology occupations are defined by a specific series of Standard Occupational Classification (SOC) codes: • 11-3021, 11-9041 • 15-1211-2, 15-1221, 15-1231-2, 15-1241-4, 15-1251-5, 15-1299, 15-2051 • 17-2061 • 27-1014, 27-1024 • 51-9162	• Lightcast
Information Industry	The information industry encompasses roles engaged in producing and processing information and cultural products and providing means for their distribution, including publishing, broadcasting, telecommunications, web search portals, and data processing. This industry is defined by NAICS 51.	 BLS Society for Human Resources Management Pew Research Center
Technology Industry	Payscale, an American compensation software and data company, defines the technology industry to include business entities that develop and manufacture technology.	• Payscale

Challenges in Employee Perspective Data

Finding data that reflected employee perspective, especially in elements requiring subjective input, was difficult. Namely, with data sourced from Gallup, more information within the data set and sufficient sample sizes for confident statements on work-life balance, job satisfaction, and related aspects within this sector were needed, potentially affecting the confidence of insights.

Limited Data Availability

Efforts to locate sector-level information for all elements outlined in the Quality Jobs Framework proved challenging. This limitation underscores the importance of addressing data availability gaps to facilitate more comprehensive assessments.

The two elements that were not successfully obtained for this analysis are:

- Proper job classification, which examines whether workers are properly classified (as employees, contractors, etc.) based on clear and transparent criteria and in accordance with local law and whether they receive proper benefits and protections based on that classification.
- Transparent human resources function, which examines workers' access to transparent and responsive support on work issues, their comfort in seeking out that support, and clear communication of workers' rights.



Endnotes

- 1 Jobs for the Future, Quality Jobs Framework (Boston, Massachusetts: JFF, August 29, 2023) <u>https://www.jff.org/idea/quality-jobs-framework.</u>
- 2 Jing Liu, Cameron Conrad, and David Blazar, "Computer Science for All? The Impact of High School Computer Science Courses on College Majors and Earnings," *EdWorkingPaper* (Annenberg Institute at Brown University, 2024), <u>https://edworkingpapers.com/sites/default/files/ai24-904.pdf.</u>
- 3 "Table 5. Layoffs and Discharges Levels and Rates by Industry and Region, Seasonally Adjusted," U.S. Bureau of Labor Statistics, accessed April 5, 2024, https://www.bls.gov/news.release/jolts.t05.htm.
- 4 "Real Earnings News Release," U.S. Bureau of Labor Statistics, accessed April 5, 2024, <u>https://www.bls.gov/news.release/realer.t01.</u> <u>htm#re_table1.f1.</u>
- 5 Lightcast, Lightcast Q4 2023: Industry Snapshot Report Computer Systems Design Services in the United States (Moscow, Idaho: Lightcast, 2024).
- 6 "2023 Employee Benefits Survey," Society for Human Resource Management (SHRM), accessed April 5, 2024, <u>https://www.shrm.org/topics-tools/research/employee-benefits-survey.</u>
- 7 "Benefits Survey," SHRM, https://www.shrm.org/topics-tools/research/employee-benefits-survey.
- 8 Drew DeSilver, Access to Paid Family Leave Varies Widely Across Employers (Washington, DC: Pew Research Center, March 23, 2017), https://www.pewresearch.org/short-reads/2017/03/23/access-to-paid-family-leave-varies-widely-across-employers-industries.
- 9 PayScale, 2023 Compensation Best Practices Report (Seattle, Washington: PayScale, 2024) <u>https://www.payscale.com/content/report/2023-compensation-best-practices-report.pdf.</u>
- 10 Lightcast, Industry Snapshot.
- 11 "Computer and Mathematical Workers," U.S. Bureau of Labor Statistics, accessed April 16, 2024, <u>https://www.bls.gov/ors/factsheet/</u>pdf/computer-and-mathematical-occupations.pdf.
- 12 Jonathan Rothwell et al., "Not Just a Job: New Evidence on the Quality of Work in the United States," ed. Lawrence Katz, Nichole Smith, and Bledi Taska, 2019, <u>https://content.gallup.com/data/Gallup_Great_Jobs_Survey_2019_2020.csv.</u>
- 13 "Benefits Survey," SHRM, https://www.shrm.org/topics-tools/research/employee-benefits-survey.
- 14 Rothwell et al., "Not Just a Job," https://content.gallup.com/data/Gallup_Great_Jobs_Survey_2019_2020.csv.
- 15 Rothwell et al., "Not Just a Job," https://content.gallup.com/data/Gallup_Great_Jobs_Survey_2019_2020.csv.
- 16 "Table 3. Union Affiliation of Employed Wage and Salary Workers by Occupation and Industry," U.S. Bureau of Labor Statistics, accessed April 5, 2024, <u>https://www.bls.gov/news.release/union2.t03.htm.</u>
- 17 Rothwell et al., "Not Just a Job," https://content.gallup.com/data/Gallup_Great_Jobs_Survey_2019_2020.csv.
- 18 Lightcast, Industry Snapshot.
- 19 "Quick Facts: United States," U.S. Census Bureau, accessed April 5, 2024, <u>https://www.census.gov/quickfacts/fact/table/US/PST045222</u>; Lightcast, *Industry Snapshot.*
- 20 Lightcast, Industry Snapshot and U.S. Census, 2023, https://www.census.gov/quickfacts/fact/table/US/PST045222.
- 21 "Computer," BLS, https://www.bls.gov/ors/factsheet/pdf/computer-and-mathematical-occupations.pdf.
- 22 "Table 5," BLS, 2024, https://www.bls.gov/news.release/jolts.t05.htm.
- 23 "Computer and Information Technology Occupations," U.S. Bureau of Labor Statistics, accessed April 5, 2024, https://www.bls.gov/och/computer-and-information-technology/home.htm.
- 24 Table B-2. Average Weekly Hours and Overtime of All Employees on Private Nonfarm Payrolls by Industry Sector, Seasonally Adjusted," U.S. Bureau of Labor Statistics, accessed April 5, 2024, <u>https://www.bls.gov/news.release/empsit.t18.htm.</u>
- 25 "Labor Force Statistics from the Current Population Survey," U.S. Bureau of Labor Statistics, accessed April 5, 2024, <u>https://www.bls.gov/cps/telework.htm#data</u>.
- 26 Rothwell et al., "Not Just a Job," https://content.gallup.com/data/Gallup_Great_Jobs_Survey_2019_2020.csv.
- 27 Molly Blankenship, David Bradley, and Holly Siino, Four State and Local Policy Trends That Help Advance Job Quality (Boston, Massachusetts: JFF, January 16, 2024) https://www.jff.org/four-state-and-local-policy-trends-that-help-advance-job-quality.



Building a Future That Works **For Everyone**

BOSTON | WASHINGTON, DC | OAKLAND, CA