



WHEN IS A JOB JUST A JOB —AND WHEN CAN IT LAUNCH A CAREER?

THE REAL ECONOMIC OPPORTUNITIES OF MIDDLE-SKILL WORK

AT A GLANCE

This report studies the career advancement prospects of people entering middle-skill jobs through the unprecedented analysis of nearly 4 million resumes of middle-skill jobseekers. It highlights the types of occupations that offer the strongest opportunities for financial stability and true economic advancement.

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ABOUT THIS REPORT

What does it take to move into the middle class in early 21st-century America? This report tells an important part of the story: the career advancement prospects of people entering middle-skill jobs.

For decades, middle-skill work offered strong economic opportunities without requiring a four-year college degree. But it's hard for many middle-skill workers to get ahead today. Our research finds that, contrary to conventional wisdom, different middle-skill jobs offer considerable differences in advancement potential and financial stability.

This report is based on the unprecedented analysis of nearly 4 million resumes of middle-skill jobseekers across the country. To add dimension to the data, the authors created four fictional characters whose career trajectories represent typical experiences revealed by the research. Their narratives, referenced throughout the report, are intended to illustrate the millions of people struggling to find middle-skill work that offers financial stability and true economic advancement.

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INTRODUCTION

Imagine four young adults from the same low-income neighborhood, all looking for work: Jessica, Zach, Nicole, and Anthony.¹



Jessica



Zach



Nicole



Anthony

Each has different interests and different talents, but they share a common, simple dream: They want to find good jobs that help them leave behind their families' constant worries about paying the bills. They want the chance to start a career, advance over time, and earn enough money one day to support families of their own. In short, like millions of Americans before them, they want to make it to the middle class.

After high school, some try college, some go right to work. But by their early 20s, each lands an entry-level job they hope

will open doors to a career: Jessica in health care, Zach in business, Nicole in information technology (IT), and Anthony in manufacturing.²

So what happens next? Can their promising entry-level positions propel the four of them forward? Can they move out of poverty and into the middle class? That's the story this paper tells. Who advances? And who's stuck in place? Who loses their job and can't find another good one? Who seems all set, secure in a stable job for life? And, most important, why does everything turn out the way it does?

The report uses a new type of research—analysis of data pulled from the resumes of people looking for work across the country—to illuminate the potential of middle-skill jobs to promote career advancement and income growth. JFF's partner in the study, Burning Glass Technologies, examined nearly 4 million resumes, making this by far the most extensive analysis of resume data to date.³ Burning Glass culled the resumes from its proprietary database of 78 million resumes (see “The Power of Resume Data”).⁴

Why the focus on middle-skill jobs? Long hailed as the foundation of financial stability and economic mobility, middle-skill jobs typically pay a living wage, starting today at roughly \$15 per hour.⁵

They require some education beyond high school—a two-year associate's degree or a short-term credential—but less than a bachelor's degree.⁶ These jobs make up more than half of the U.S. labor market, at about 53 percent.⁷ And they are still the jobs that people in all parts of the country count on to improve their lives (see “What are Middle-Skill Jobs?”).

However, the middle-skill landscape has changed dramatically in recent decades. Today, different middle-skill jobs offer considerable variation in economic opportunity. Some positions do meet expectations—they are truly the first step toward well-paid careers that offer substantial opportunities for economic advancement. But others that traditionally have been considered smart moves actually provide static wages and little or no chance for advancement.

To highlight and explain these differences, JFF and Burning Glass developed a new way of classifying and comparing the advancement potential of middle-skill work. We call it the “Opportunity Framework,” and it identifies three categories of entry-level jobs that provide completely different levels of career potential: lifetime jobs, springboard jobs, and static jobs.⁸



LIFETIME JOBS

Lifetime jobs are careers in themselves. Dental hygienists are an example. Workers rarely advance to higher-level positions, but these jobs usually pay well and offer long-term stability. Lifetime jobs are common in health care. Some high-demand roles in advanced manufacturing, such as welders and machinists, are also lifetime jobs.



SPRINGBOARD JOBS

Springboard jobs lead to careers. Human resource (HR) assistants are an example. Workers often advance to different roles with more responsibility and greater pay within the same career area. Business and IT feature many springboard jobs.



STATIC JOBS

Static jobs don't typically lead to careers. Medical assistants and assemblers of electrical equipment are examples. They offer low pay compared to other middle-skill roles and suffer from high turnover. There is little potential for advancement into higher-paying occupations or positions with greater responsibility. Our research found a greater prevalence of static jobs in traditional manufacturing occupations and in some health care positions.

A CLOSER LOOK

THE POWER OF RESUME DATA: NEW TECHNOLOGY ILLUMINATES REAL-WORLD CAREER PATHS



This report makes use of a novel data source—millions of resumes of real U.S. jobseekers. Known as “resume data,” its unique value is the ability to measure the actual career progressions of large segments of the workforce over time, as well as the educational experiences that led to those careers.

For this study, Burning Glass Technologies used specialized software to capture educational and employment information in aggregate and analyze it for trends. Its proprietary database of 78 million resumes came from a variety of partners, including recruitment and staffing agencies, workforce agencies, and job boards. The Burning Glass methodology anonymized all of the data and did not use any personally identifiable information.⁹

The analyses were based on a subset of 15 million resumes of middle-skill workers. Ultimately, 3.7 million of these resumes were selected for the study, because they represented the four career areas targeted—health care, business, IT, and manufacturing. By comparison, the primary longitudinal career survey run by the U.S. Bureau of Labor Statistics has a sample size of only 7,000, which is too small for occupationally-specific analyses.¹⁰

A more detailed discussion of resume data and the study’s methodology appears in the Appendix.



While it is well established that some postsecondary education is necessary for obtaining a middle-skill job, our analysis also uncovered clear differences in the impact of different credentials on the career trajectories described above. Some credentials play a critical role in driving

What Exactly are Middle-Skill Jobs?

Middle-skill jobs typically include a broad set of occupations, such as auto mechanics, bookkeepers, physical therapy assistants, welders, and many more. These positions generally require some education beyond high school but not a four-year degree.

Low-skill jobs, by contrast, usually require only a high school diploma, while high-skill jobs require a bachelor's degree and, often, an advanced degree.¹¹

For this analysis, JFF / Burning Glass further defined middle-skill roles as those paying more than \$15 per hour and offering substantial opportunity for workers without a bachelor's degree.

advancement from the entry level. But others don't appear to affect advancement at all.

This report builds on Burning Glass research identifying two types of non-degree credentials that serve very different functions in careers: door-opening credentials and career-advancing credentials.¹²

Door-opening credentials are necessary to demonstrate that a jobseeker has the skills required for an entry-level position but offer little to aid advancement. Examples are common across all types of jobs—lifetime, springboard, and static—in all four career areas in this study.

Career-advancing credentials are not necessary to obtain an entry-level job, but they are significant factors in accelerating advancement to higher-level positions within a career area. Workers in springboard jobs in IT and business often need these credentials to demonstrate their qualifications for a promotion.

Appreciation of the distinct outcomes likely to result from different types of middle-skill jobs and credentials is essential for understanding today's labor market and expanding economic opportunity to more people. While each individual's career trajectory is unique, and based on personal, social, cultural,

and other factors beyond the labor market, this report is intended to provide new insights into the real avenues for economic advancement.

We hope our findings will spark improvements in education and training that more often lead to advancement, and not just job placement. As the economy continues its rapid pace of change, it will become more and more important for people from all backgrounds to understand what career opportunities best match their capabilities—and how to pursue them. As automation and other global shifts drive further economic change, the Opportunity Framework should be revisited—and potentially revised—so it continues to reflect actual career pathways in the labor market.

Structure of this Report

The rest of this paper proceeds in three parts. The first sets up our Opportunity Framework by describing five years in the careers of the fictional characters created for the report. The next part discusses each type of job in the Opportunity Framework in depth—lifetime, springboard, and static—using the characters to illustrate the impact of education and training decisions on real people. It incorporates discussion of door-opening and career-advancing credentials, as well as the skills that lead to advancement. In the final section, we recommend how education and workforce development leaders and policymakers can improve career training to increase economic advancement in our country, especially for low-income people and others underserved by existing systems.¹³

FOUR FRIENDS FIND JOBS: ARE THEY ON THEIR WAY TO THE MIDDLE CLASS?

Here we pick up the story of the young adults from the Introduction: Jessica, Zach, Nicole, and Anthony. Their fictional experiences in the job market illustrate common career trajectories that emerged in the JFF / Burning Glass study and formed the basis for the Opportunity Framework. We describe a five-year span in the life of each character in order to reflect the five-year analysis of career data that the resume research is based on.¹⁴

After high school, each of the friends spends different amounts of time figuring out what they want to do—what kind of job they'd like to try, what kind of career they hope to launch. For the purpose of telling their stories succinctly, the five-year clock starts ticking once they secure their first middle-skill job, which is detailed in the beginning of each timeline below. The midpoint of each timeline checks in with each character a few years into their career to see whether they have stayed in the same job or made a change. The end of the timeline tells where each character has landed and where they are likely headed after their first five years of middle-skill work.

While their biographical details are fictitious, their pay reflects real life. The wages each character earns are typical salaries in their occupations.

Following this narrative, the report circles back to the big-picture findings that each character's story demonstrates.



Jessica Lands a **LIFETIME JOB** in Health Care



FIRST JOB

As the oldest of four children, Jessica is used to taking care of people, from stomach aches to sprained ankles. She is thrilled to study nursing at community college. It takes several years, because she works part time and still helps out with her siblings, but she earns an associate's degree. Her favorite part is the clinical practicum, where she cares for patients under the supervision of a nursing instructor. Finally, she passes the licensed practical nurse (LPN) exam and lands a nursing job at a hospital.



MOVING UP?

Jessica has been an LPN at a local hospital for three years. She loves her work, despite regular overnight shifts. She starts out earning almost \$21 per hour and gets a small raise each year. Jessica still lives at home and is proud that she can give money to her mother each month to help cover family expenses. But she's also starting to look ahead and trying to save up for her own apartment.



FIVE YEARS LATER

Jessica asks a friend from the hospital to be her roommate and they rent a great two-bedroom apartment. She continues to like her LPN job but wonders if she'll ever be able to buy a little house of her own, while earning a bit over \$24 per hour. The Registered Nurses at the hospital earn much more; they start at \$32 per hour, which would be about \$20,000 more than her current annual salary. But she'd have to go back to school to earn an RN license and a bachelor's degree.¹⁵ While the local community college offers an associate's degree-level RN program, nurses employed in her hospital must have a bachelor's degree. So for now, she's just pondering the possibilities.



FIRST JOB

Zach always wanted to run his own business. In high school, he sold custom-printed T-shirts and after graduation tries starting a small DJ company. But he can't get far without funding or connections. A relative suggests his people skills make him a good fit for human resources. He's not excited at first but does some research and sees potential for a career. After a few months, he finds an entry-level position as an HR assistant.



MOVING UP?

Zach has been an HR assistant for four years and earns about \$18 per hour. But he really wants to do more than clerical work and screening resumes. His supervisor recommends that he earn a Professional in Human Resources (PHR) certification to show that he's ready to advance to the next level. That would be a big promotion to HR specialist, someone who interacts regularly with employees. Fortunately, it's easy to prepare online; he watches instructional videos at night and takes practice tests.



FIVE YEARS LATER

About five years after Zach was hired, he passes the PHR exam. With his new certification, Zach gets a job as an HR specialist at a clothing company. He earns about \$28 per hour and enjoys interviewing candidates, training new employees, and learning about organizational culture. If he continues to advance, the next step would be HR manager. But that's a major leap—the pay is \$50 per hour—and it requires a lot more experience and maybe more schooling. So Zach is content to stay put for now and keep learning new skills.



Zach Finds a **SPRINGBOARD** **JOB** in Business



Nicole Finds a **SPRINGBOARD** **JOB** in Information Technology



FIRST JOB

Nicole was the go-to student for computer problems in high school; all of the teachers asked her for help. She knows exactly what she wants to do after graduation and even starts taking community college classes in IT during her senior year. After graduation, Nicole immediately enrolls at the college full time and earns an associate's degree in 18 months. She easily passes the certification exam for CompTIA A+ and she is the first of her friends to get a job—as a computer support specialist.



MOVING UP?

Nicole earns about \$23 per hour as a computer support specialist and is excited to launch her career. She spent hours researching careers when she was in high school, so she already knows how to get ahead. To be promoted to computer network support specialist, which pays about \$30 per hour, she needs certification as a Cisco Certified Network Associate (CCNA). She already bought the textbooks and can't wait to start studying.



FIVE YEARS LATER

The CCNA exam was a breeze for Nicole and being a computer network support specialist is a blast. Earning \$30 per hour is great, too. But Nicole always thinks ahead and she has her eye on a managerial position: network administrator. That pays \$37 per hour. For her first promotion, she gained web server skills and taught herself all about networks. She'll need training in information security this time. But she moved up quickly before, by earning short-term certifications rather than a bachelor's degree, and she's optimistic she can do it again.



FIRST JOB

Anthony desperately wants a break from school after graduation. He lives at home and gets intermittent gigs as a house painter. But he has a girlfriend and eventually a young son, and he needs better and steadier pay to cover expenses. A guy on his painting crew clues him in to entry-level manufacturing—no college necessary. He has good references and a high school vocational certificate. Within a few months, he finds a job as a machine operator at a heavy equipment manufacturer.



MOVING UP?

Anthony is doing well as a machine operator. He likes the regular hours. He hangs out after work with other guys from the factory floor and asks a lot of questions about the high-tech equipment. But after two years, he barely earns more than when he was hired at \$16 per hour. He starts to consider going back to school; maybe he could get a higher-paying position at the factory. Then reality sets in. His company loses a couple of contracts and starts layoffs.



FIVE YEARS LATER

Anthony survives the first round of layoffs. But later he loses his job, too. Machine operators with more seniority stay. There's no similar work around and he doesn't want to move his young family. Painting is too inconsistent. But "Help Wanted" signs abound in stores and restaurants. He reluctantly takes a job at a big discount chain and delivers pizza at night. If he could just save money for a few months of training, he'd have a shot at finding a higher-paid job as a computer numeric control (CNC) machine operator, using more modern computer-driven equipment, at the new advanced manufacturing plant across town.¹⁶



Anthony Gets a **STATIC JOB** in Manufacturing

THE OPPORTUNITY FRAMEWORK: MEASURING ADVANCEMENT IN MIDDLE-SKILL CAREERS

When it comes to discussions about economic opportunity, there is a tendency to lump all middle-skill jobs together. This is common even though the “middle-skill” category includes a wide variety of occupations—sales assistants, paralegals, medical assistants, and warehouse supervisors, to name just a few. And each occupation offers stark differences in three key factors: stability, advancement prospects, and pay. (See definitions of each term in “Measuring Job Transitions” below.)

Measuring Job Transitions

TERM	DEFINITION
Job Stability	The likelihood that a jobseeker will be employed in the same occupation five years after entering the position. (In this analysis, if someone moves to a new employer but remains in a role with a similar title and duties, that is not considered a change.)
Career Stability	The likelihood that a jobseeker will be employed in an occupation within the same career area as the starting occupation within five years.
Advancement	Progression from a starting occupation to a different occupation within the same career area, with a median salary that is at least 10 percent higher than the starting occupation salary, within five years. For example, moving from a bookkeeper (\$18/hour starting salary) to an accountant (\$32/hour starting salary) would constitute advancement.
Pay	Workers in each occupation are assumed to be paid the median wage for that occupation based on federal employment statistics. ¹⁷

Our analysis debunks some of the conventional wisdom about middle-skill work. The best practice in education and training programs is to use carefully planned models called “career pathways” to guide students in making decisions by showing them how individuals are expected to progress from one job to another and what steps they need to take to succeed. By contrast, the information extracted from resumes demonstrates the actual career progressions of real people.

Below, we explore each type of middle-skill job revealed in the resume data—lifetime jobs, springboard jobs, and static jobs—using the fictional young adults and data analysis to highlight the distinctions among the Opportunity Framework categories. We also investigate the role of postsecondary credentials in career advancement—why some offer the surest way for individuals to advance their careers, and others don’t matter at all.



LIFETIME JOBS: LPN, DENTAL HYGIENIST, MACHINIST

Lifetime jobs *are* careers. They pay well and offer a high level of stability.¹⁸ For many workers, they are a final step on a career path. Some people do get promoted to different jobs, with greater responsibility and pay, but many don’t. However—and this is the most important factor—the entry-level jobs where they begin are good bets in themselves. They tend to be well paid relative to other middle-skill jobs, offer high job security, and bring modest, but consistent wage increases over time—all crucial components of maintaining one’s place in the middle class.

As Jessica’s story illustrates, lifetime jobs are common in health care. Jessica’s first

job after college was as an LPN and, five years later, she has the same position. But rather than feeling frustrated that she has not received a promotion, Jessica is thrilled to have the job she has always wanted and to earn enough to contribute to her family’s household expenses and start saving to live on her own.

Jessica has completed several continuing education courses to maintain her license. If she decides to go back to school, she could earn a higher-level nursing credential and is virtually guaranteed to find work as an RN. That’s another lifetime job, one that requires higher pay and greater responsibility, and one that

pays significantly more. Her starting salary would be about \$20,000 more than she currently earns.

But for Jessica, the advantages of staying an LPN are clear. Five years after she joined the hospital, she earns a little more than \$24 per hour, which amounts to almost \$50,000 per year. That’s already \$2.50 per hour higher than her starting wage, and she expects to continue getting

raises each year. While the five-year salary increase is considered “moderate” compared to some other occupations in the study, LPN is one of the highest-paying middle-skill health care jobs in the study and the job stability is “very high.”¹⁹ Whether Jessica remains an LPN forever or moves up to an RN position, she appears to be well situated in the middle class or above for the rest of her life.

TABLE 1

Career Areas: Percent of Employment by Opportunity Category

BUSINESS	LIFETIME JOBS	SPRINGBOARD JOBS	STATIC JOBS
 HEALTH CARE	55%	5%	40%
 BUSINESS	20%	80%	1%
 IT	16%	84%	0%
 MANUFACTURING	38%	0%	62%

Note: The total proportion of the three types of jobs in the Business category is greater than 100% due to rounding.



MOST LIFETIME JOBS ARE IN HEALTH CARE AND ADVANCED MANUFACTURING

Most lifetime jobs analyzed for this report were found within health care and advanced manufacturing (see Table 1).

In health care, roles such as respiratory therapist, radiology technician, and surgery technician are good examples of lifetime jobs, in addition to the more

widely known positions of LPN and dental hygienist. It’s worth noting that the health care field overall offers only moderate job stability (44 percent) and moderate career stability (54 percent). However, both job and career stability tend to be higher in the specific health care occupations that

are considered lifetime jobs, with lower job and career stability in lower-wage health care roles, such as medical assistant, pharmacy technician, and phlebotomist.

As Jessica's experience shows, lifetime jobs such as LPN and dental hygienist tend to have both very high job stability and career stability. These metrics indicate that individuals in these occupations tend to stay both in the same job and remain within the health care field.

For example, in the study, the majority of LPNs (64 percent) remained in the same position during the five-year period. Nearly all (86 percent) remained in the health care field. Dental hygienists, an occupation with a higher starting salary of \$34.77 per hour, show a similar pattern. With job stability of 77 percent, around three-quarters of dental hygienists remain in the same job after five years. An even higher percentage (83 percent) remain in the health care field. Overall, middle-skill workers in these occupations tend to stay and build careers by staying in the same position since the work is fairly well compensated, stable, and aligns directly with the training required.

We see a similar dynamic with certain manufacturing roles, particularly those with more advanced training requirements such as machinists and welders. Those roles pay higher wages than other

manufacturing roles, for example \$19 per hour for machinists and \$18 per hour for welders, compared to \$15.50 for the occupation group as a whole.²⁰ They also provide higher levels of job stability, with two-thirds of workers remaining in those occupations for at least five years, compared with just two-fifths of manufacturing workers in general.

ROLE OF CREDENTIALS: LICENSING DETERMINES ADVANCEMENT

In health care, the licensed nature of the field requires jobseekers to earn credentials both to obtain their starting positions and to earn additional credentials in order to advance. For example, only individuals with a valid license from the state board can be hired as LPNs, nursing assistants, and dental hygienists.²¹ The licensing system has the advantage of creating clear signals for jobseekers about the specific training required for a job and ensuring that training programs meet certain quality standards.

While professional licenses can help clarify entry-level expectations for workers and reduce biases in the hiring process, they can also create unnecessary barriers for workers. This is particularly true when it comes to the portability of credentials across state lines.²² While efforts are underway to improve systems

of reciprocity between state licensing systems, this remains a challenge.

Many lifetime jobs in manufacturing do not have the same clear training requirements as lifetime jobs in health care. Burning Glass research has found that with the exception of the certifications from the American Welding Society (AWS), which function as door-openers for entry-level welders, there is not yet an ecosystem of manufacturing industry certifications or licenses with robust

employer demand.²³ However, Registered Apprenticeships, such as the Industrial Manufacturing Technician Apprenticeship, are gaining prominence among advanced manufacturing employers in particular, and can support job stability.²⁴ More broadly, unions also play an important role in supporting lifetime jobs in manufacturing for their members.



SPRINGBOARD JOBS: HR ASSISTANT, COMPUTER SUPPORT SPECIALIST, BOOKKEEPER

Springboard jobs *lead* to careers. They offer high advancement within their career areas. Some of these entry-level jobs offer relatively low pay (\$18 per hour for a bookkeeper, for example), but they serve as gateways to better positions. Their low-to-moderate job stability is an advantage, not a concern, because it results from the high turnover as people advance to new jobs.

As the stories of both Zach and Nicole illustrate, springboard jobs are common in business and IT. Overall, 15 percent of middle-skill business workers and 16 percent of those in IT advance within five years. These figures are the highest advancement rates across all four of the

career areas studied. At least 65 percent of workers in each field (i.e., business and IT) remain in their career area after five years.

After stalled efforts to start a DJ company, Zach spends four years as an HR assistant, which he does not always enjoy. But once he commits to the field and is ready to move up, he makes a huge leap in pay and responsibilities, and he still has more advancement potential on the horizon. As an HR assistant, he earns about \$18 per hour. That jumps to \$28 per hour when he becomes an HR specialist, which pays about \$58,000 per year.

As Zach's experience illustrates, the majority of HR assistants and HR specialists remained in the business field (at 81 percent and 72 percent, respectively). Further, career advancement potential is particularly high among HR assistants, with 38 percent advancing to higher-paying positions. HR specialists see somewhat lower advancement (16 percent), though this occupation remains a good opportunity with an hourly wage that can easily top \$30 per hour.

Nicole, who starts her career as a computer support specialist, also vaults ahead from her entry-level job and is the highest paid of the four friends at the end of five years. She earns \$30 per hour as a network support specialist, which brings her about \$62,000 per year. And she is likely to continue advancing in her career. The next step is network administrator, a position that pays nearly \$37.50 per hour, or almost \$78,000 per year.

SPRINGBOARD JOBS ARE COMMON IN IT AND BUSINESS

Nicole's path is not uncommon within the IT field or compared to other computer user support specialists. The occupation has high career advancement, with around 20 percent of workers moving up within five years. Even more striking, nearly one-third (31 percent) of network support specialists advance, providing evidence that Nicole will likely be well-poised to move into a higher-level role in coming years.

contribute to the strong career stability among these IT occupations. While 60 percent of user support specialists remain in IT, the figure is just over 70 percent for network support specialists and network administrators.

Both Zach and Nicole landed squarely in the middle class and they appear to be on their way to continue moving up within their career areas.

It is interesting to note that advancement among network administrators is significantly lower (13 percent) than among network support specialists because the network administrator role typically functions as the top of the career ladder for middle-skill IT jobs. Generally, the high rates of advancement within IT likely

ROLE OF CREDENTIALS: INDUSTRY CERTIFICATIONS FUEL ADVANCEMENT

In HR and in IT, industry certifications allow jobseekers with either a high school diploma or an associate's degree to build discrete, in-demand skills and to progress at rates comparable to those with a bachelor's degree but no certification.²⁵

For example, within HR, 50 percent of PHR certification holders with an associate's degree advance within five years. But only 43 percent of individuals with a bachelor's degree and no certification advance within that timeframe.

Within the IT field, there is a rich ecosystem of industry-recognized credentials. About 40 percent of computer support specialists with an associate's degree and either a Cisco Certified Network Associate (CCNA) or a Microsoft Certified Solutions Expert (MCSE) credential advance within five years. This compares with only 23 percent of those with a bachelor's degree but no certification.

Nicole would not have been able to advance from computer support specialist to network support specialist without earning a CCNA certification.²⁶ Among computer support specialists and network support specialists, advancement within five years is approximately twice as high among workers with a CCNA (43 percent) compared to those with no certification (22 percent). The trend is similar—though not as pronounced—among network support specialists. Forty-six percent of CCNA holders in that occupation advance, compared to 33 percent of those without the certification.

Another career-advancing credential, MCSE certification, has similar benefits for advancement as the CCNA. Among both computer support specialists and user support specialists with either the CCNA or MCSE, career stability is significantly higher than for those without a certification. For example, while only 39 percent of computer user support specialists without a certification remain in the field for five years, 79 percent of those with either a CCNA or MCSE certification remain.



STATIC JOBS: PRODUCTION ASSEMBLER, MEDICAL ASSISTANT

Static jobs typically do not become careers and they typically do not lead to higher-paying jobs. They are just jobs. They are characterized by low pay, low stability, and low advancement potential from the entry level. Many who start in static jobs move into other occupations in entirely different fields, such as retail clerk or customer service representative. Often, departing employees leave by choice in search of better pay, stability, and/or advancement opportunities in another field. Others are forced to leave, due to layoffs. Either way, their movement rarely constitutes advancement.

As Anthony's story illustrates, certain types of manufacturing jobs are static. Only 1 percent of manufacturing workers with resumes analyzed in the JFF / Burning Glass study advanced to a higher-paying occupation in the field—the lowest level of advancement across all four career areas analyzed.²⁷ Further, with career stability of 48 percent, manufacturing is the only career area in the study in which less than half of workers remain in the field for at least five years.²⁸ This shows that more than half left the career area for completely different work.²⁹ Wages in static

manufacturing jobs such as inspector, machine setter, and assembler tend to be relatively low, typically between \$15 and \$17 per hour.³⁰

Although resume data cannot always illuminate why individuals make the career choices they do, there are likely a number of factors influencing manufacturing to create these low advancement and stability rates. Some are external, such as overseas competition and advanced technologies, while some are internal, such as a lack of defined career advancement opportunities.

Once Anthony decided to become a machine operator, he learned the trade and found a job with a wage of \$15.79 per hour in just a few months. And he continued for several years, outlasting many of his peers who were laid off from the heavy equipment manufacturer. But his lack of advanced training eventually caught up with him, too, and he lost his own job.

It is certainly possible that Anthony will find another machine operator job someday, and he will definitely keep looking and asking everyone he meets. With a 9 percent decline in machine operators projected over the next decade,

however, Anthony faces competition for a limited number of jobs aligned with his experience. He's working two retail jobs to pay the family bills, while also trying to find something better. Anthony has looked into the CNC machining program

at the local community college and the apprenticeship program offered by a large advanced manufacturer across town, where he could work while he receives additional training.

STATIC JOBS ARE FOUND WITHIN MANUFACTURING AND HEALTH CARE

Anthony's experience as a machine operator is similar to trends in many other manufacturing occupations. Sixty percent of middle-skill manufacturing workers are employed in static jobs.³¹ Job stability for manufacturing workers is 42 percent, indicating that more than half of workers leave these roles within five years.

Across all manufacturing roles, advancement rates are between 2 and 3 percent. The career transition data in this analysis showed evidence of manufacturing workers moving into customer service, maintenance, and transportation occupations, which are typically lower paying and often unrelated to their training.

Manufacturing workers also face challenging employment dynamics. They are 3.5 times more likely than the average worker to be employed as temporary workers, making them particularly

vulnerable to business cycles and shifts within individual companies where they work.³²

Several health care occupations also fall into the static jobs category. Health care is notable for having a significant number of jobs on both ends of the pay/advancement spectrum. For example, with lower starting wages, around \$14 to \$15 per hour, medical assistants and pharmacy technicians have little opportunity to advance. Respectively, 9 and 12 percent of these workers advance to higher-wage positions in their field.

However, an important difference between static roles in manufacturing and in health care is the risk and volatility associated with the manufacturing industry. During the Great Recession, manufacturing was hit particularly hard and unemployment of manufacturing workers spiked as high as 13 percent in 2010. Meanwhile, unemployment peaked at 3 percent for

health care practitioners and 8 percent for lower-skilled health care support workers.³³

This dynamic might be shifting in the near future: manufacturing employment is up over the last 8 years and a recent survey of over 500 manufacturing sites conducted through the U.S. Department of Labor's American Apprenticeship Initiative found that three-quarters anticipated hiring in the next five years, largely due to retirements.³⁴

But looking longer term, as automation changes the workforce, manufacturing jobs are at much greater risk of becoming obsolete. Based on methodology from Oxford University researchers, welders have a high risk of losing their jobs to automation and machinists have a moderate risk, while virtually all clinical health care roles are at low risk, given the interpersonal nature of the work.³⁵ This means workers entering the health care field are likely to have a more stable long-term career.

ROLE OF CREDENTIALS: INDUSTRY CERTIFICATIONS OPEN DOORS TO ENTRY-LEVEL JOBS

Had Anthony pursued a job as a welder instead of a machine operator, he would have had stronger employment prospects. While industry certifications open doors to entry-level jobs in many fields, manufacturing recognizes relatively few industry certifications. The most prominent exception, as noted above, is certification from the American Welding Society. An AWS certification would not only have helped Anthony land a higher-paying first job than CNC operator; over time, it also would have better supported both his job stability and his career stability, potentially even avoiding or delaying his layoff.

JFF / Burning Glass research shows that 70 percent of welders with an AWS certification remain in the occupation five years later, as compared to only 35 percent of those without the certification. AWS-certified welders are also more likely to remain in the broader manufacturing field: close to 70 percent of welders with the certification remain in manufacturing jobs five years later, compared to around half of those without it.

TABLE 2

Transition Metrics for Selected Roles³⁶

BUSINESS

OCCUPATION	JOB STABILITY	CAREER STABILITY	ADVANCEMENT	MEDIAN HOURLY WAGE	OPPORTUNITY CATEGORY
Bookkeeping, Accounting, and Auditing Clerks	42%	79%	24%	\$17.91	
Executive Secretaries and Executive Administrative Assistants	39%	70%	12%	\$25.66	
Human Resources Specialists	43%	72%	16%	\$28.06	
Human Resources Assistants, Except Payroll and Timekeeping	30%	81%	38%	\$18.32	

IT

OCCUPATION	JOB STABILITY	CAREER STABILITY	ADVANCEMENT	MEDIAN HOURLY WAGE	OPPORTUNITY CATEGORY
Computer User Support Specialists	39%	60%	21%	\$23.38	
Network and Computer Systems Administrators	42%	71%	13%	\$37.41	
Computer Network Support Specialists	34%	72%	31%	\$29.93	

HEALTH CARE

OCCUPATION	JOB STABILITY	CAREER STABILITY	ADVANCEMENT	MEDIAN HOURLY WAGE	OPPORTUNITY CATEGORY
Dental Hygienists	77%	83%	1%	\$34.77	
Radiologic Technologists	65%	76%	6%	\$27.25	
Respiratory Therapists	72%	81%	6%	\$27.78	
Surgical Technologists	55%	68%	5%	\$21.31	
Home Health Aides	42%	57%	6%	\$10.54	
Medical Assistants	48%	61%	9%	\$14.71	
Pharmacy Technicians	52%	60%	6%	\$14.62	

MANUFACTURING

OCCUPATION	JOB STABILITY	CAREER STABILITY	ADVANCEMENT	MEDIAN HOURLY WAGE	OPPORTUNITY CATEGORY
Machinists	53%	65%	3%	\$19.49	
Welding, Soldering, and Brazing Workers	55%	63%	2%	\$18.23	
Inspectors, Testers, Sorters, Samplers, and Weighers	39%	44%	2%	\$17.31	
Machine Tool Cutting Setters, Operators, and Tenders, Metal and Plastic	43%	59%	8%	\$15.79	
Electrical, Electronics, and Electromechanical Assemblers	31%	40%	3%	\$15.07	

Technical Skills and Management Skills Spur Advancement

In order to advance to better positions, middle-skill workers generally need more than deep occupation-specific technical skills; they also need the ability to manage people and projects effectively. The JFF / Burning Glass study shows that people with both types of skills are more likely to advance than people without them. Ideally, education and training programs would integrate these skills and new employees would further cultivate them from the moment they enter the workforce.

Below we have compiled some key findings on what those skills are in three industry sectors. The information in this section is based on analysis of the gaps in skills between middle-skill workers who advance to new jobs with higher wages, and those who do not advance.³⁷

MANUFACTURING

While career advancement appears limited in manufacturing, both technical skills and management skills seem to be most relevant among those who do advance. For example, a welder who wants to become a supervisor needs to understand not just management generally, but management of technical employees in particular. The five skills most associated with advancement for a welder are: scheduling, planning, supervisory skills, quality assurance and control, and problem solving. Similarly, for a CNC machine operator, the five skills most associated with advancement are: supervisory skills, scheduling, planning, leadership, and problem solving.³⁸

BUSINESS

Similarly, in business, the workers who advance are those who take on more leadership responsibilities in supervision, planning, and project management, and also develop further technical competencies in their specific fields. HR assistants need to have a broad knowledge of various HR skills (e.g., performance management) and regulatory skills (e.g., knowledge of the Family and Medical Leave Act) in order to advance. The five skills most associated with advancement for HR specialists, however, are more strategic: succession planning, employee engagement, labor relations, organizational development, and HR management.

IT

IT roles value a combination of technical skills and nonspecialized skills that cut across a broad range of job types. While IT roles are commonly viewed as technical professions, fully one in four skills advertised in IT roles are for foundational skills such as communication and problem solving.³⁹ In contrast to the other career areas discussed, advancement within IT tends to be associated with mastery of technical skills, such as developing systems administration and networking knowledge. To advance from a computer network support specialist to a network administrator, software engineering, systems engineering, information security, and knowledge of programming languages are the skills most associated with advancement on resumes.

RECOMMENDATIONS

The Opportunity Framework in particular and career outcomes data more generally can serve as drivers of an education and workforce system that emphasizes advancement, as opposed to just job placement, as a success metric. This analysis adds a wholly new dimension—success over time—to the available data that programs and policymakers use to develop and evaluate programs.

This section highlights how education and workforce leaders and policymakers can use the Opportunity Framework and career outcomes data to increase economic advancement for low-income workers. We also suggest future applications of career outcomes data within the research community. These recommendations align with the current trend of increasingly leveraging job market data and career outcomes data for higher education and workforce investment decisions.⁴⁰ They also offer new ways to understand and address breakdowns in the application of career pathways, and create opportunities for a more nuanced understanding of the phrase “good jobs.”

RECOMMENDATIONS FOR TRAINING PROGRAMS

Both the Opportunity Framework and career outcomes data can be powerful tools for rethinking the selection and design of training programs, career pathways, and related support services. Possible applications of these resources include:

- **Improving Decision Making**

- **Regarding Program Offerings:**

- When developing programs, training providers can apply the Opportunity Framework to consider whether the training offered prepares students for lifetime, springboard, or static jobs. Program justification decisions are commonly made based on critical data elements, including the wages offered in the target (i.e., first) job, the projected growth of the target occupations, and regional supply-and-demand dynamics. The Opportunity Framework in particular and career outcomes data generally provide a basis by which programs can understand career growth potential for graduates. For example, this study found dramatically better career outcomes for workers in advanced manufacturing roles versus traditional manufacturing occupations.

- **Building Bridges to Advancement**

- **Opportunities:** The Opportunity Framework allows training providers to tailor the design of programs to better facilitate worker advancement over time. In the case of static jobs, this means the development of bridge programs which specifically help workers move to lifetime or springboard roles in the same field. For example, programs training certified nursing assistants can help students better understand and complete the requirements to become LPNs. Because workers in static roles may have lower incoming academic preparedness or more vulnerable financial situations, these programs can address gaps in academic content while also providing supportive services to ensure that students can both work and remain in school. These programs can be offered in both traditional academic settings and as work-based learning opportunities to move students into advanced positions within their own companies.

- **Designing and Revising Curricula with Advancement in Mind:**

- Programs that integrate specific skills associated with advancement and earnings growth will better prepare students to advance beyond their first job. For example, bookkeepers who

know financial analysis and computer support specialists who understand systems administration are each more than twice as likely to advance as their counterparts who do not know these skills. Designing curricula with advancement skills built in and creating a series of stackable micro-credentials are approaches to guiding students along an advancement pathway.

- **Leveraging Industry Certifications**

for Advancement: In occupations with well-developed industry certifications, these credentials outperform degrees as a means of advancement. For example, computer support specialists with a CCNA or MCSE networking certification and only a high school degree are more likely to advance than those with a bachelor's degree with no certifications. Training providers can take advantage of these certifications to offer shorter, more efficient, and more impactful programs than traditional degree offerings.

- **Targeting Employer Engagement Efforts Based on the Framework:**

Employers are interested in finding, hiring, and retaining strong talent. Training providers can use the Opportunity Framework to target

and engage with employers around the messaging for specific jobs.

Training providers can also work with employers to develop customized advancement opportunities linked to specific trainings for workers in static or springboard jobs.

- **Providing Academic and Career Guidance Based on the Opportunity Framework:**

Counselors can structure career planning based on specific strategies students will need to adopt based on whether their first job is a static, springboard, or lifetime role. This might include emphasizing the importance of lifelong learning, or helping students recognize when their career may be “stuck,” and what they can do to keep moving. For jobseekers in static and springboard jobs, this means understanding what the next opportunities are and what skills and credentials are required to get there. Lifetime job programs can emphasize lateral advancement strategies (switching between jobs with the same occupational title) or specialization as a means to drive greater wage growth.

When appropriate, counselors should steer jobseekers into lifetime or springboard roles over static roles. Of course, some students may not be academically ready, or may not have the resources, to engage in the longer, more expensive training often required for lifetime and springboard jobs. In such cases, counselors can advise jobseekers on how they could transition from a static job to something else—most likely by going back to school—once they are ready to do so.

RECOMMENDATIONS FOR POLICYMAKERS

Career outcomes data, such as resume data, student longitudinal records, wage and job placement data, tax records, and workforce system data, have the potential to greatly enhance the ability of policymakers to understand the real career progressions of their students and workers. Some potential policy applications of this data include:

- **Allocating Training Resources to Jobs with Advancement Potential:** When used in conjunction with student outcomes data, the Opportunity Framework can help policymakers better understand which programs and pathways offer strong opportunities for students and workers, enabling them to allocate training resources more strategically. This could include the creation of incentives for institutions

to incorporate curricula into their training programs that promote advancement, even in jobs that are traditionally more static.

- **Encouraging Regional Economic Developers to Prioritize Sectors with Advancement Outcomes:**

While a company's site-selection decisions depend on a variety of factors, access to skilled talent is critical. Both the Opportunity Framework and career outcomes data can help economic developers understand the potential benefits to pursuing a specific company or sector, and to better make the case for how the local workforce can best meet these workforce needs. In time, this can create more good jobs with advancement potential across the community.

- **Building Career Outcomes**

Data Systems: States and other government agencies can look to make career outcomes data accessible to stakeholders in higher education, K-12, the workforce system, and related policy positions. While still nascent, there are promising approaches to tracking career outcomes though a range of sources including administrative data (e.g., wage records), surveys, or as this study has done, large-scale collection of resumes.⁴¹ Using these data systems, policymakers can ensure that higher education and workforce development programs apply these data to inform program design and evaluate program effectiveness. They can also promote additional research on best practices to promote career advancement.

RECOMMENDATIONS FOR FURTHER RESEARCH

Career outcomes data opens up a number of new opportunities to further our understanding of the linkages between education, skills, credentials, and career advancement. This is an emerging field of research with a number of approaches under development by innovative researchers inside and outside of academia. One is establishing a multidisciplinary

community of practice around the use of novel forms of career outcomes data, including resume data, student longitudinal records, wage and job placement data, tax records, and workforce system data, along with traditional economics data and survey data. The community of practice could also explore topics such as:

- Learning how career changes vary by geography, race, gender, and other demographics, and how they are affected by recessions and other business-cycle dynamics.
- Examining how institutional, degree, or program-of-study type impact job market outcomes or more generally the extent to which they include characteristics that lead to strong advancement and earnings growth.
- Conducting research on how leading postsecondary institutions can apply this data to inform program design and student services.

Conclusion

Through its innovative use of resume data, this report provides new insights into which types of middle-skill jobs are most likely to lead to career advancement for millions of people like Jessica, Zach, Nicole, and Anthony. This study shows how both the Opportunity Framework and career outcomes data more broadly allow for a more nuanced understanding of which middle-skill careers offer strong employment opportunities for students and workers, and the fundamental differences among lifetime, springboard, and static jobs.

This approach has the potential to fundamentally shift how education and training programs and policymakers understand and support career pathways. Further, as the economy continues to evolve, there are ample opportunities to leverage these data to better understand shifts due to automation and other emerging workforce trends. The authors encourage researchers, practitioners, and policymakers to engage with the framework—and, when possible, other career outcomes data—to promote economic advancement for all.

APPENDIX: METHODOLOGY

JFF commissioned Burning Glass Technologies to perform the resume data collection and analysis for this study.

Analysis of resume data is a powerful new research tool whose full potential is just beginning to be leveraged. While one resume can show a lot about a person's work history and education, a million resumes can show a lot about large segments of the workforce. Researchers use specialized software to capture the educational and employment information in aggregate (with no personally identifiable information) and analyze it for trends.

This study used a nationwide sample of 3.7 million middle-skill resumes that span nearly 20 years in order to illuminate trends in middle-skill career progression.

The research focused on four career areas that account for 51 percent of U.S. middle-skill jobs: business, IT, manufacturing, and health care (see Table A1). Using these career areas allowed the JFF / Burning Glass team to highlight the drivers of career advancement in a variety of occupations and to understand the relative importance of various skills and credentials (see Table A2).

TABLE A1. GLOSSARY OF KEY TERMS USED IN STUDY

TERMS	DEFINITION
<p>Career Area</p>	<p>A broad category of multiple related occupations. For this study, the career areas are based on the U.S. Department of Labor’s Standard Occupational Classification (SOC) codes, which divide all occupations into 23 major groups organized by the specific skills required and the work activities involved.⁴² This study examines four career areas:</p> <ul style="list-style-type: none"> ✚ Health Care, in this report, consists of Health Care Practitioners, and Technical and Health Care Support occupations 📁 Business, in this report, consists of Business and Financial Operations, and Office and Administrative Support occupations 🖥 IT, in this report, consists of Computer and Mathematical occupations 🔧 Manufacturing, in this report, consists of Production occupations
<p>Middle-Skill Occupation</p>	<p>A job that pays at least \$15 per hour and requires skills typically attained through some education beyond high school but not a four-year college degree. In order to be considered middle skill for this analysis, the study required that at least 20 percent of online job postings for a specific occupation indicate a desire for a sub-bachelor’s degree credential. The following are examples of middle-skill occupations in each career area in the study:</p> <ul style="list-style-type: none"> ✚ Health care—dental hygienist, lab technician, medical assistant, nurse (LPN) 📁 Business—administrative assistant, HR specialist, bookkeeper 🖥 IT—computer user support specialist, network support specialist, network system administrator 🔧 Manufacturing—machine operator, welder, CNC machinist, CNC programmer

TABLE A2. CAREER AREA SELECTION CRITERIA

CAREER AREA	# OF MIDDLE-SKILL WORKERS ⁴³	% OF MIDDLE-SKILL WORKFORCE	PROSPECTS FOR GROWTH	CREDENTIALS REQUIRED	AVERAGE SALARY (APPROX.) ⁴⁴
 Health Care	3.6 million	6% of middle-skill workforce	High growth (17%) Low unemployment (1.7%)	Licensed, commonly at associate's degree level	\$47,000
 IT	1.7 million	3% of middle-skill workforce	High growth (13%) Low unemployment (2.6%)	Robust ecosystem of industry certifications	\$73,000
 Manufacturing	4.6 million	8% of middle-skill workforce	Low growth (-3%) High unemployment (5.7%)	Mix of apprenticeships, degrees, and on-the-job training	\$43,000
 Business	19 million	34% of middle-skill workforce	Largest middle-skill occupation group	Rarely specialized, most occupations do not require a bachelor's degree	\$54,000

HOW DOES THIS REPORT USE RESUME DATA?

Within each broad career area, the JFF / Burning Glass team selected a set of three to five specific occupations to study, based upon their alignment with large education and training programs below the bachelor's degree level. The researchers analyzed the resumes of all individuals employed in the target occupations at any point during the 20-year period. Their goal was to understand typical career progression patterns between occupations during the first five years of employment in the occupation as well as the worker characteristics that were associated with advancement (or lack thereof). Analysis of each occupation included these factors (see Table A3 for a comparison of each metric for each career area):

- Job stability
- Career stability
- Advancement
- Common “next-step” occupations
- Salary

Since resumes do not typically include salary information, these data were drawn from the Occupational Employment Statistics at the U.S. Department of Labor's Bureau of Labor Statistics.

SELECTION OF RESUME SAMPLE

This study uses data from Burning Glass Technologies' proprietary database of more than 78 million resumes. Resumes were sourced from a variety of Burning Glass partners, including recruitment and staffing agencies, workforce agencies, and job boards. Analyses are based on a subset of 15 million middle-skill worker resumes dating back as far as 1997.

Of the 15 million resumes, 3.7 million were selected for the study because they were in the four career areas and met other key criteria. To capture job transitions for workers over the span of their career, Burning Glass selected resumes for inclusion in this study based on the following:

1. Jobseekers must have entered into a middle-skill occupation and stayed for at least six months.
2. Jobseekers must have at least five years of experience following their entrance into a middle-skill occupation.

TABLE A3. CAREER AREAS: A COMPARISON OF STABILITY, ADVANCEMENT, AND PAY

CAREER AREA	NUMBER OF RESUMES ANALYZED	DOMINANT TYPE OF OPPORTUNITY CATEGORY	JOB STABILITY	CAREER STABILITY	ADVANCEMENT	STARTING HOURLY WAGE OF RESUME SAMPLE	5-YEAR HOURLY WAGE	WAGE INCREASE
 Health Care	543,000	Lifetime	Moderate 44%	Moderate 54%	Moderate 5%	\$20.70	\$24.46	20%
 Business	2,300,000	Springboard	Moderate 40%	High 69%	High 16%	\$31.50	\$28.54	17%
 IT	359,000	Springboard	Moderate 39%	High 65%	High 16%	\$31.50	\$34.11	12%
 Manufacturing	477,000	Static	Moderate 42%	Low 48%	Low 1%	\$22.28	\$25.11	13%

ASSESSING STATIC, SPRINGBOARD, AND LIFETIME JOBS

We synthesized the job transition data and salary data to place each job into one of the three categories of the Opportunity Framework, based on the following definitions:

- **Static jobs** consist of two categories—jobs with low-wages and little advancement, as well as unstable jobs. Low-wage, low-advancement jobs are occupations with a median wage of less than \$18 per hour and advancement of less than 10 percent. Unstable jobs are those with high turnover, where at least 50 percent of job holders change within five years, or jobs where at least 40 percent of job holders change career areas within five years. Many static jobs fit into both categories.
- **Springboard jobs** have a high rate of advancement. At least 10 percent of job holders move to higher-paying roles in the same career area within five years.
- **Lifetime jobs** have a median wage of over \$18 per hour with at least 50 percent of job holders staying in the same occupation for five years, or 60 percent of job holders staying within the same career area for five years—or they have a median wage of over \$23 per hour.

METHODOLOGY FOR IDENTIFYING CAREER AREAS

Career areas were derived from the 23 high-level occupation families listed in the Standard Occupation Classification (SOC) system used by the U.S. Bureau of Labor Statistics (BLS) to classify workers.

The SOC system is a federal statistical standard used by federal agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data, according to the bureau’s website. “All workers are classified into one of 867 detailed occupations according to their occupational definition. To facilitate classification, detailed occupations are combined to form 459 broad occupations, 98 minor groups, and 23 major groups.”⁴⁵

In this study, Health Care Support Occupations and Health Care Practitioners and Technical Occupations were merged to create the Health Care Career Area; in addition, Office and Administrative Support Occupations and Business and Financial Operations Occupations were merged to create the Business/Clerical Career Area. These SOC occupation families were merged because of evidence that workers frequently move between these groups as they advance within the career area.

The career areas selected for inclusion and analysis offer a broad range of opportunity for middle-skill workers. Career areas were selected based upon the following indicators:

1. ***Size of opportunity:*** indicates the number of middle-skill occupations within a given occupation family. Occupation families with a large number of middle-skill occupations that were also sizably represented in the data set were prioritized for inclusion in the analysis.
2. ***Prospects:*** indicates the unemployment rate, the geographic distribution, and the expected growth rate of a given occupation family. Occupational families were prioritized by low unemployment rates, the geographical diversity of middle-skill roles, and the expected growth rates for middle-skill occupations.
3. ***Value of opportunity:*** highlights the wage distribution for entry-level and top-level occupations within a given occupation family. High-value jobs provide opportunities for middle-skill workers to increase their salary as they advance within an occupation.
4. ***Entry-level credentials and training pathways:*** Occupational families selected for inclusion have a high percentage of entry-level jobs which require a sub-bachelor's degree credential, on-the-job training, apprenticeships, industry-recognized certifications, or specialized training and licensing.

Because salary information is not typically included on resumes, wage data for career areas is from the 2015 BLS's Occupational Employment Statistics survey. The OES is a semiannual survey that collects data from employers nationally to estimate wages for over 900 occupations. The OES provides a widely accepted and standardized approach to assessing the occupations in this study.

UNDERSTANDING ADVANCEMENT

Burning Glass designed a metric termed “skill ratio” as a variable to understand the skills tied to advancement. The ratio is the result of the percentage of workers who report having a given skill when they advance divided by the percentage of workers who report having that skill prior to advancement. The resulting ratio gives us an idea of how important a particular skill is to advancement; a high skill ratio indicates that the skill is essential to performing the duties of the destination occupation and therefore, once obtained, may help facilitate advancement.

For example, 5 percent of HR specialists report having succession planning skills prior to becoming an HR specialist. However, 20 percent of workers who advanced into the role report having succession planning as an HR specialist; this translates into a skill ratio of 3.87. Succession planning as a skill is 3 to 4 times more important as an HR specialist than it is in a lower-level occupation.

THRESHOLDS FOR CLASSIFICATION OF INDICATORS

Thresholds for the classification of indicators were not set based upon any external research; instead, they were set as a means of demonstrating the relative differences between the data that emerged in our analysis. After reviewing the data set, the research team determined it best to break the data down into smaller relative categories in order to communicate the findings in a more sensible, contextualized manner. Table A4 lists the numerical values assigned to the thresholds utilized in the report.

TABLE A4. THRESHOLDS FOR INDICATOR CLASSIFICATION

CATEGORY	JOB STABILITY		CAREER STABILITY		ADVANCEMENT		SALARY INCREASE	
	Career Area	Occupation	Career Area	Occupation	Career Area	Occupation	Career Area	Occupation
Very High	>55%	>60%	>70%	>80%	>25%	>30%	N/A	>35%
High	45-55%	50-59%	60-69%	70-79%	15-25%	20%-30%	N/A	20%-35%
Moderate	35-45%	40-49%	50-60%	60-69%	5-15%	10-20%	N/A	10%-20%
Low	<35%	<40%	<50%	<60%	<5%	<10%	N/A	<10%

LIMITATIONS

Not all middle-skill job openings require a resume from candidates, and not all workers actively look for jobs. As a result, resumes, especially among people with lower-skill roles, may be overrepresentative of workers seeking advancement and/or more professional roles. Further, jobs in the trades and others filled mainly through word-of-mouth recruitment are generally underrepresented in resume databases. Overall, the data may be upwardly biased and our conclusions on advancement may be considered representative of the upper bound of middle-skill workers.

Additionally, the use of SOC codes prevents insight into the dynamics of advancement within occupations. For example, entry-level workers may receive a substantial wage increase within their current role when they secure a certain credential, certification, or develop a new skill. In addition, because we utilize SOC codes, all salaries are assigned based on the national average for each occupation.

Endnotes

- 1 The names refer to fictional characters created by the authors to illustrate career trajectories representing typical experiences of workers reflected in the research for this report.
- 2 The career areas used in this report are drawn from U.S. Bureau of Labor Statistics data known as the Standard Occupational Classification (SOC) system. They were derived from the 23 high-level occupation families used to classify workers, with the following modifications: Business and Financial Operations and Office and Administrative Support are merged into a Business category; Healthcare Practitioners and Technical are merged with Healthcare Support Occupations into a Health Care category; and Management Occupations are recoded into the relevant functional occupation group where possible. For example, Human Resources Managers are reclassified into the Business group. Please note that Production Occupations are those typically involved in manufacturing-related activities, including fabrication, maintenance, assembly, and repair, and are collected into a Manufacturing category in this report. Sample occupations from this group include: team assemblers, welders, and machinists. For a full list of production occupations from the Bureau of Labor Statistics, see: “Occupational Employment and Wages, May 2017,” Occupational Employment Statistics, U.S. Department of Labor, Bureau of Labor Statistics, last modified March 30, 2018, <https://www.bls.gov/oes/current/oes510000.htm>.
- 3 Prior studies of career progression have been smaller in scale or have relied on resumes collected from a single employer, creating a small, more homogeneous sample. For example, the NYC Labor Market Information Service conducted an analysis of medical career paths, using work history and resume data in partnership with PayScale and Monster Government Solutions. See: A New Career Map Methodology (New York: NYC Labor Market Information Service, 2015), https://www.gc.cuny.edu/CUNY_GC/media/365-Images/Uploads%20for%20LMIS/Reports%20and%20Briefs/September-2015-NYCLMIS-CCP-Methods-Final.pdf. In addition, Opportunity Nation conducted a study on the retail sector, using resume data from CareerBuilder.com. See: “An Issue Brief from Opportunity Nation,” Opportunity Nation, n.d., <https://opportunitynation.org/retails-opportunity/>.
- 4 Unless otherwise noted, all data in this report are drawn from the JFF / Burning Glass analysis.
- 5 Living wages vary by region. See: “Living Wage Calculator,” Massachusetts Institute of Technology, 2018, <http://livingwage.mit.edu/>.
- 6 Harry J. Holzer and Robert I. Lerman, *America’s Forgotten Middle-Skill Jobs: Education and Training Requirements in the Next Decade and Beyond* (Washington, DC: The Workforce Alliance, 2008), https://www.urban.org/research/publication/americas-forgotten-middle-skill-jobs/view/full_report.
- 7 *United States’ Forgotten Middle* (Washington, DC: National Skills Coalition, 2017), <https://www.nationalskillscoalition.org/resources/publications/2017-middle-skills-fact-sheets/file/United-States-MiddleSkills.pdf>.
- 8 Full technical definitions of each job category are in the Methodology appendix.
- 9 *The Narrow Ladder: The Value of Industry Certifications in the Job Market* (Boston: Burning Glass Technologies, 2017), http://burning-glass.com/wp-content/uploads/BurningGlass_certifications_2017.pdf.
- 10 An individual’s ability to navigate these opportunities and secure a job is affected by a variety of personal, social, and cultural factors, which are not the main focus of this report since they cannot be gleaned from resume data.
- 11 This report is based on aggregate career path and skills data compiled by Burning Glass Technologies. Researchers did not use any personally identifiable information. Burning Glass Technologies has developed a database of millions of recent resumes. When a resume enters the system, the name, address, and other identifying details are encrypted so that they are not accessible to the research team. Researchers group together resumes with similar characteristics so that they can determine which types of transitions and career progressions commonly occur at a population level.

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- 12 “The National Longitudinal Survey of Youth,” U.S. Department of Labor, Bureau of Labor Statistics, 1997, <https://www.nlsinfo.org/content/cohorts/nlsy97/intro-to-the-sample/nlsy97-sample-introduction-0/table-nlsy97-sample-sizes>.
- 13 High-skill jobs make up the second largest part of the labor market (31 percent). They typically require a bachelor’s degree and, often, an advanced degree specific to the occupation. They are most common in professional, technical, and managerial fields. By contrast, low-skill jobs generally require only a high school diploma. They make up the smallest part of the labor market (16 percent) and consist of many service occupations, such as store clerks, restaurant servers, and landscape crew members.
- 14 Even though the resume analysis included individuals within the target occupations who were at different points in their careers, we’ve chosen to follow these characters from the time at which they enter the workforce because of the particular relevance of this scenario to education and training.
- 15 In some cases, an individual with an associate’s degree may be eligible to take the Registered Nurse examination, the NCLEX-RN. However, there is a nationwide trend toward hiring nurses at the bachelor’s degree level, which is reflected in the recent update of the O*NET description for this occupation. See: “Summary Report for: Registered Nurses,” O*NET OnLine, 2017, <https://www.onetonline.org/link/summary/29-1141.00#Education>.
- 16 “CNC” stands for “computer numeric controlled,” a type of high-tech manufacturing equipment that uses computer programs to manipulate machine-shop tools.
- 17 Based on the Bureau of Labor Statistics Occupational Employment Statistics data released in May 2015. See: “OES Data,” Occupational Employment Statistics, U.S. Department of Labor, Bureau of Labor Statistics, last modified March 30, 2018, <https://www.bls.gov/oes/tables.htm>.
- 18 Few remain with the same employer throughout their career—and this is becoming even less common. Workers in lifetime jobs may change companies but tend to remain in the same occupation over time.
- 19 Registered Nurses earn more; however, this occupation increasingly requires a bachelor’s degree and therefore is not considered a middle-skill job in this study.
- 20 Based on the Bureau of Labor Statistics Occupational Employment Statistics data released in May 2015. See: Bureau of Labor Statistics, “OES Data,” <https://www.bls.gov/oes/tables.htm>.
- 21 The specific requirements for state licensure may be different from state to state.
- 22 Ryan Nunn, *Occupational Licensing and American Workers* (Washington, DC: Brookings Institution, 2016, http://www.hamiltonproject.org/assets/files/occupational_licensing_and_american_workers.pdf.
- 23 *The Narrow Ladder: The Value of Industry Certifications in the Job Market* (Boston: Burning Glass Technologies, 2017), <http://burning-glass.com/research/certifications/>; Other manufacturing certifications, such as the Manufacturing Skill Standards Council’s Certified Production Technician, are gaining prominence but are not yet widely used across the field. More information on the CPT is available at: <http://www.msscusa.org>.
- 24 The Industrial Manufacturing Technician Apprenticeship is an 18-month Registered Apprenticeship that trains workers in advanced manufacturing competencies. Additional information is available at <https://www.imtapprenticeship.org>.
- 25 Certificates issued by education and training providers vary greatly in quality and in the specific skills addressed, leading employers to value them less. The JFF / Burning Glass analysis of a subset of certificates in the target career areas, including the Home Health Aide Certificate, Medical Assisting Certificate, Accounting Certificate, Welding Certificate, and Machine Operator Certificate, found that these credentials do not support advancement among workers at the associate’s or bachelor’s degree level. However, they are associated with higher levels of career stability, as workers with certificates tend to stay in the field for which they trained.

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- 26 Nicole is also a perfect example of the door-opening credential dynamic. She was able to land her first job in IT in part because she had not only an associate's degree, but also a CompTIA A+ certification. The associate's degree by itself would not have been enough. For Nicole and other computer user support specialists, the A+ certification not only provides entry into the occupation but also supports job and career stability.
- 27 Variation in geographies and among specific employers likely has an impact on the opportunities available to workers in these occupations. Further, this analysis does not account for intra-occupational advancement. As a result, the researchers were unable to see gains in salary or responsibility that took place within our target occupations. In some cases, welders—and individuals in other static jobs—may be able to advance within an occupation and see a boost in earnings.
- 28 Of course, manufacturing workers who advance within the same firm are unlikely to create a resume, creating a potential point of bias in the types of workers reflected in the resume data.
- 29 This challenging dynamic is illustrated by the fact that manufacturing workers are approximately 3.5 times more likely to be employed in the employment services industry, compared to the average worker. This indicates that there is a significant presence of contract workers in the sector and suggests that manufacturing workers are more vulnerable to both the dynamics of the business cycle and to shifts within the particular firm they are supporting. See: Jessica R. Nicholson, *Temporary Help Workers in the U.S. Labor Market* (Washington, DC: U.S. Department of Commerce, Economics and Statistics Administration, 2015), <http://www.esa.doc.gov/sites/default/files/temporary-help-workers-in-the-us-labor-market.pdf>.
- 30 See Table 2 for a full list of wages in static manufacturing occupations.
- 31 Sixty percent of middle-skill manufacturing workers are employed in jobs classified as static, compared to 80 percent of manufacturing workers overall.
- 32 Nicholson, *Temporary Help Works in the U.S. Labor Market*.
- 33 Labor Force Statistics from the Current Population Survey," U.S. Bureau of Labor Statistics, n.d., <https://www.bls.gov/cps/>.
- 34 Forthcoming report from JFF's U.S. Department of Labor's American Apprenticeship Initiative, "Results of an Industry Needs Assessment," Report to the Manufacturing Apprenticeship and Growth Workshop at the AFL-CIO 28th Constitutional Convention, October 23, 2017.
- 35 For the published research, see: Carl Benedikt Frey and Michael A. Osborne, "The Future of Employment: How Susceptible Are Jobs to Computerisation?" (PhD diss., University of Oxford, 2013), https://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf; Burning Glass defines occupations in the top quartile of computerization risk as "high," and those occupations in the third quartile of automation risk as "moderate."
- 36 Note for Production SOCs: In order to ensure robust sample sizes and accurate coding, SOCs in the production occupation family are coded at the "broad SOC" level, according to the Bureau of Labor Statistics categorization. For example, the broad SOC, "Machine Tool Cutting Setters, Operators, and Tenders, Metal and Plastic" referred to in the text as "machine operators" is comprised of the following five "detailed SOCs": Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic; Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic; Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic; Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic; and Milling and Planning Machine Setters, Operators, and Tenders, Metal and Plastic.

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- 37 The skills highlighted here do not represent the full suite of skills that are necessary to advance. Further, the credential analysis does not include the health care career area because many health care occupations require government-regulated licenses or other specific credentials. Regardless of skill type or level, it is typically not possible to advance without the relevant credential. See Appendix for additional methodological information.
- 38 The data in this section are based upon the “skills ratio,” devised by Burning Glass Technologies, which identifies the specific skills most associated with advancement. The ratio compares the percent of individuals who start in a specific job with a given skill to those who advance with that same skill.
- 39 These skills are known by a variety of names, including “soft skills” and “employability skills.” Burning Glass uses the term “baseline skills,” as defined in this report: *The Human Factor: The Hard Time Employers Have Finding Soft Skills* (Boston: Burning Glass Technologies, 2015), http://burning-glass.com/wp-content/uploads/Human_Factor_Baseline_Skills_FINAL.pdf.
- 40 For example, the U.S. Department of Labor’s TAACCCT grant applications required this information.
- 41 For example, the U.S. Department of Education’s College Scorecard (<https://collegescorecard.ed.gov>) provides students and their families with outcomes data on two- and four-year institutions. Academic researchers, including Raj Chetty, have studied economic mobility (though not career outcomes) through administrative data. See: Raj Chetty et al., *The Fading American Dream: Trends in Absolute Income Mobility Since 1940* (Cambridge, MA: National Bureau of Economic Research, 2016), http://www.equality-of-opportunity.org/papers/abs_mobility_paper.pdf; Bruce Katz, “Career Advice for a 16-Year-Old American,” Brookings, September 16, 2011, <https://www.brookings.edu/research/opportunity-clusters-identifying-pathways-to-good-jobs-in-metro-new-orleans/career>; this study uses the Current Population Survey to construct career pathways.
- 42 For additional detail, see: “2000 Standard Occupational Classification (SOC) User Guide,” U.S. Department of Labor, Bureau of Labor Statistics, last modified March 25, 2011, <https://www.bls.gov/soc/socguide.htm>.
- 43 This is from the Occupational Employment Series data from the Bureau of Labor Statistics. It represents employed workers in 2015.
- 44 Based on the Bureau of Labor Statistics Occupational Employment Statistics data released in May 2015. See: Bureau of Labor Statistics, “OES Data,” <https://www.bls.gov/oes/tables.htm>.
- 45 For additional detail, see: U.S. Bureau of Labor Statistics. “Standard Occupational Classification,” <https://www.bls.gov/soc/>.