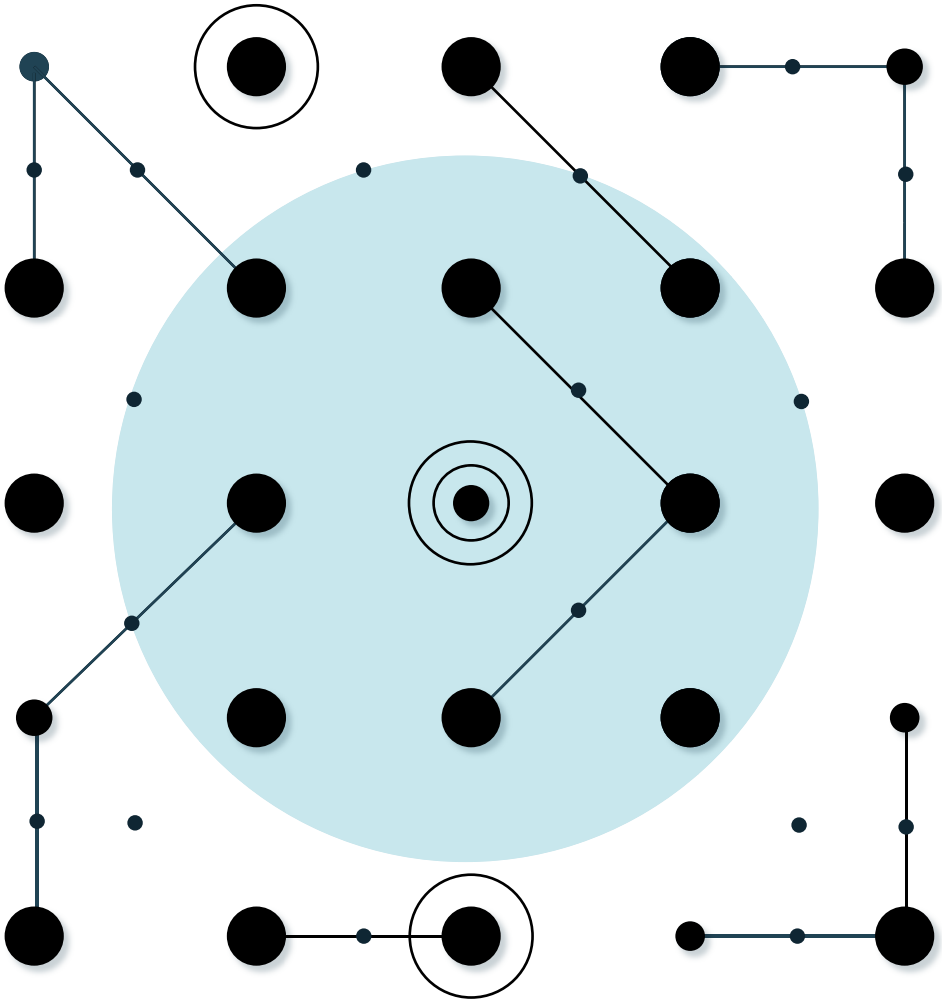

# THE DIGITAL TALENT FORECAST:

## Mapping the Evolving Role of Digital Skills in a Dynamic Labor Market

Lightcast GENERAL ASSEMBLY W/A Whiteboard Advisors

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ABOUT THE ORGANIZATIONS

## About General Assembly

» General Assembly helps businesses create sustainable talent pipelines for businesses and build transparent career pathways to the most transformational work. Offering employer-driven, practitioner-taught training in high-demand fields like data, technology, design, and business, General Assembly's global reach, massive community, and leading outcomes have created an international community of professionals nearly one million strong. The most innovative companies rely on General Assembly's talent pipeline as a service model to benchmark talent, train employees, hire candidates, and increase diversity. Our unmatched scale, flexible training delivery, expert instructors, and employer-tested assessments have enabled hundreds of companies to fill their talent gaps and hundreds of thousands of individuals to pursue the work they love. General Assembly is a member of the Adecco Group, the world's leading talent advisory and solutions company.

## About Lightcast

» Lightcast provides trusted global labor market data, analytics, and expert guidance that empowers communities, corporations, and learning providers to make informed decisions and navigate the increasingly complex world of work. With a database of more than one billion job postings and career profiles, our team provides best-in-class customer service with robust data, clear analysis, and expert guidance on skills, jobs, and opportunities.

Headquartered in Boston, Massachusetts, and Moscow, Idaho, Lightcast is active in more than 30 countries and has offices in the United Kingdom, Italy, New Zealand, and India. The company is backed by global private equity leader KKR.

For more, visit www.lightcast.io

## About Whiteboard Advisors

» Whiteboard Advisors brings unmatched understanding of policy and market trends to our work with the most transformative organizations and entrepreneurs in education and work. Our team of researchers, policy wonks, and storytellers takes breakthrough ideas to scale to reimagine how we learn, work, and live.

## FOREWORD

**Lisa Lewin** (CEO, General Assembly) & **Matt Sigelman** (Former CEO, Lightcast)

» Six years ago, General Assembly and Burning Glass joined forces to explore the rise of a new kind of occupation, which we dubbed "hybrid jobs." As we described in our white paper, *Blurring Lines*, these jobs "combine programming skills and 'offline skills' such as analysis, design, or marketing" — bringing together capabilities that historically may have been viewed as solely the purview of technologists or creatives or managers. We predicted that such jobs would become increasingly important in a labor market that, at the time, was changing faster than ever.

Today, many of the trends we identified then have moved faster than we could have ever imagined. In 2015, we anticipated that the rise of hybrid jobs would result in a "talent shortage" and heightened competition among employers. We also predicted that the expansion of hybrid jobs would become increasingly prevalent across industries, business lines, and geographies. We noted, too, that the traditional higher education system was ill-equipped to meet the needs of employers as the pace of change accelerated and demand for hybrid jobs proliferated.

Since then, the world has changed in fundamental, and unpredictable, ways — particularly in the face of a global pandemic. Consider these findings from our new report:

**» Some 83% of all retail postings mention at least one digital skill.**

**» Data analysis now dominates operations roles, appearing in 18% of all postings. Other data-related skills appear in 46% of all postings for operations jobs.**

**» Marketing is now a highly digital role: *all* postings for marketing jobs mention at least one digital skill.**

While these findings suggest that specialized digital skills are becoming increasingly important, one of the most striking conclusions is that jobs are not becoming hyper-technical. Instead, they are becoming *increasingly* hybrid, mixing human and technical skills – and employers and workers alike are still struggling to keep up.

At the same time, the report highlights that the need for specific digital skills shouldn't overshadow a broader need for non-digital skills, including so-called "soft" skills (like collaboration) and business skills (like project management).

Half of all computer occupations, for example, require at least one business skill. Too often, companies still tend to narrowly seek candidates with a set of specific technology skills, at the expense of talented generalists or energetic career changers who could succeed in the role with some additional training.

To that end, we have also learned far more about the ways that technology can amplify the biases and inequities that are so prevalent throughout American society. We are collectively paying increased attention to the systemic injustices that have kept so many workers from pursuing and achieving economic mobility. We recognize that we can combat inequity by expanding the definition of who qualifies for these increasingly hybrid jobs, and exploring how we can more effectively train and assess candidates for roles based on future potential and capabilities more than past experience or pedigree.

We hope *The Digital Talent Forecast* – a sort of sequel to *Blurring Lines* – can help business leaders, researchers, and policymakers better understand how the role of technology continues to evolve and reshape every facet of the labor market.

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**» Both of our organizations' missions are rooted in the idea that the status quo needs to change, and that better data can help us make decisions that will foster a more equitable and prosperous society.**

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We hope those insights can contribute to a broader conversation about what it takes to create a labor market that is truly inclusive, and to ensure that businesses and individuals alike are prepared to adapt to future disruptions, whatever they may be.

## EXECUTIVE SUMMARY

» Not long ago, the rise of tech-focused jobs like artificial intelligence specialist, robotics engineer, and data scientist was the hottest topic among education providers and labor market analysts. The impacts of technological change on the U.S. economy were widely felt: prior to the COVID-19 pandemic, a majority of businesses reported laying off white-collar workers because technology made their jobs "irrelevant or redundant."

Of course, the narrative was never as simple as the "robots are coming for our jobs" headlines would suggest. The continued rise of hybrid jobs reflects the fact that tech skills are increasingly required in nearly all roles—and the growth of the tech industry has also spurred growth in demand for adjacent skill sets like management, marketing, and operations.

The need to understand the evolving role of tech skills in the labor market has, in some ways, taken on renewed urgency in the wake of the pandemic. Facing a rocky road to economic recovery, policymakers and employers are in search of new strategies to not just get Americans back to work, but also ensure that the country's workforce is prepared to navigate a volatile increasingly tech-driven economic landscape.

The events of the past year have also shed light on the pervasive and painful equity gaps that have always been endemic in American society—and sparked new efforts to create paths to economic mobility for workers who face systemic barriers to advancement and opportunity.

Against that backdrop, the rising demand for tech skills presents opportunities, as well as questions.

What fields are seeing the greatest increase in demand for technology skills, and how can the needs of those fields be met? How do the perspectives of enterprise tech and talent leaders align with, and respond to, shifts in demand? How can a better understanding of what's happening now help us understand what may happen in the future? How can business leaders best articulate their talent needs in a marketplace where job descriptions are increasingly becoming laundry lists of desired skills that may or may not actually align with the needs of employers—and may dissuade would-be applicants wary of not meeting the extensive qualifications?

General Assembly and Lightcast have unique viewpoints into the real-time talent and skill needs faced by both employers and geographic regions at a time of economic change. This paper incorporates original research from Lightcast, as well as insights from General Assembly's Standards Board members, to shed light on the present challenges and opportunities facing a labor market that is increasingly defined by digital skills.

## WHAT ARE DIGITAL SKILLS, EXACTLY?

**» For more than a decade, business leaders have sounded alarms about the shortage of tech talent, often using language more appropriate for the battlefield ("war for talent") than for the boardroom.**

But despite – or, perhaps, because of – widespread attention to the technological change reshaping the labor market, the actual term "digital skills" is rarely clearly defined.

The term "digital skills" has wide variability across two dimensions: the level of the skill (ranging from introductory/basic to highly specialized or sophisticated), and the type of skills (e.g., the difference between the skills required to interact with technology, and the skills required to develop or maintain a particular tool).

The range of definitions and uses for "digital skills" vary across both of these dimensions. For example, a home care company may define their need for "digital skills" as the ability for their frontline home care workers to effectively manage care profiles online or upload health information (a relatively basic technology skill, and one that focuses on using technology, not creating it). On the other hand, a financial services company might consider "digital skills" the skills to use massive data sets and complex algorithms to create a new digital tool for identifying fraud at scale (requiring a higher level of technology skill and developing an entirely new technology).

In many job descriptions, it's not uncommon to see "digital skills" manifest as a loosely defined but high-powered and desirable collection of buzzwords like machine learning, agile methodology, and big data. Trying to pin down a more precise definition, though, is not always a straightforward task. You can define a digital skill as a **skill required to interact with a specific digital technology** (especially a new or emerging one), like knowing how to manipulate an API using Python or use specific software tools like AutoCAD or Workday. Or you can define digital skills as the **broad collection of skills required to develop and manage those new technologies**, like the ability to develop web applications, or familiarity with Amazon Web Services.

For the purposes of this report, we focus on the digital and technical skills that are more specialized. Lightcast's research looks at specifically digital skills emerging at every level across a variety of industries, and establishes a baseline by examining all the most sought-after skills within the narrower field of computer occupations.

## WHERE ARE DIGITAL SKILLS FOUND?

» The demand for technology-related skills has expanded well beyond the tech industry itself. "We think of a digital role as someone who reports to a CTO," said Seth Rogin, Chief Executive Officer at the consulting firm Magnolia Media Partners. "The truth is, virtually every role has some aspect of technology within it."

Put another way, the roles that General Assembly and Burning Glass once referred to as hybrid jobs are increasingly becoming known as, well, jobs.

This change is occurring, in part, because digital skills are becoming increasingly relevant even in industries and roles outside of the tech sector. The ensuing demand for talent has spawned entire programs dedicated to skills like data analysis, which have become increasingly relevant in a growing number of occupations. "Everyone is looking for people that are very comfortable reading data and analyzing data," said Martin Lange, Director of Client Experience Strategy for BNY Mellon.

It may not come as a surprise, then, that skill demands are outpacing businesses' ability to supply the talent with those skills.

Meeting this demand requires companies to understand their internal skill needs, and hire effectively to meet those needs. But in many companies, the feedback from hiring manager to HR to candidates is slow and highly imperfect. As a result, in the words of Marilyn McDonald, Sr. Vice President Customer Interoperability for Mastercard, "Job descriptions lag behind what actually happens."

This timing lag exacerbates a related problem in hiring that is sometimes described as a "kitchen sink" approach: hiring managers, unsure of how best to address the pain points they are experiencing on their teams and business units, provide HR or talent teams with a long list of skills that might be needed, rather than a shorter list of the skills most highly correlated with success or most urgently needed. And HR, often working from a previous job description or requisition, adds new skills to the old ones, rarely ever deleting previous requested skills. As a result, "when looking across job descriptions, the vast majority of them read like they're looking for unicorns, In that they want every digital skill set across the planet," according to Lange.

This approach all too often leads to a "zero-sum game" in which companies compete for a small pool of skilled talent rather than investing in skill development among other promising candidates.

The kitchen sink approach is especially detrimental to the candidates who are less likely to apply if they don't meet every one of the requirements. Troublingly but unsurprisingly, a body of research shows that those most likely to be dissuaded are disproportionately female, Black, or Latinx workers. Many are among the 70+ million workers without college degrees who are skilled through alternative routes (often referred to as STARs), but are overlooked because they lack the educational credentials called for by most job descriptions. As McDonald put it, "When you consider that most women won't apply for a job if they don't meet most of the job criteria, it makes it worse."

For employers, a focus on credentials and qualifications often gets in the way of understanding how well a candidate can actually put those skills into practice. "A lot of job descriptions have required skills on paper, but there's no way to prove that these people are actually proficient and have a high quality understanding of what they're doing," said Lange. "For example, I can get an Agile certification with a six-week course, but that doesn't mean I have actually practiced Agile and have gathered real-world experience therein. You cannot teach 'experience.'"

For workers, the same focus on skills often comes at the expense of a more strategic approach to putting those skills into practice. According to Steven Longstreet, Hilton's Head of Advanced Analytics, Business Intelligence and Automation, "Throughout the traditional hiring process there's too much focus on an exact or particular skill set, disregarding the candidate as a whole. Often this skill focus is detrimentally platform-specific failing to understand where the candidates current abilities could not only transfer but significantly contribute to the collective acumen and enablement for the rest of the organization."

In short, a clearer understanding of the need for digital skills across the labor market is an equity imperative as well as an economic one. Mapping the propagation of tech skills across industries can help employers understand what to look for, provide candidates greater clarity into the skills they should focus on, and enable training providers to tailor their offerings to the needs of specific industries. Just as importantly, a digital talent forecast may also help businesses look inward at their own hiring practices, and change job descriptions to rely less on proxies like the college degree and more on the skills themselves.

With a more specific understanding of what skills they are likely to need both now and in the future, can businesses rethink their approach to hiring and recruiting in ways that unlock opportunity and help build a more inclusive economy?

## RESEARCH METHODOLOGY

» In spring 2021, Lightcast pulled skills information from its database of over 13 million job postings. We looked at a specific subset of both industries and occupations—designed not to present a comprehensive picture of the U.S. economy, but rather a representative sample of major sectors and roles that are seeing noteworthy trends with regard to specialized digital skills.

We chose the tech, retail, and manufacturing industries because together, they comprise a large section of the American economy; and because they include a wide variety of roles at different levels of pay, types of skill, and type of career trajectory. We also looked at key business roles: occupations in sales and marketing, management, human resources, and operations.

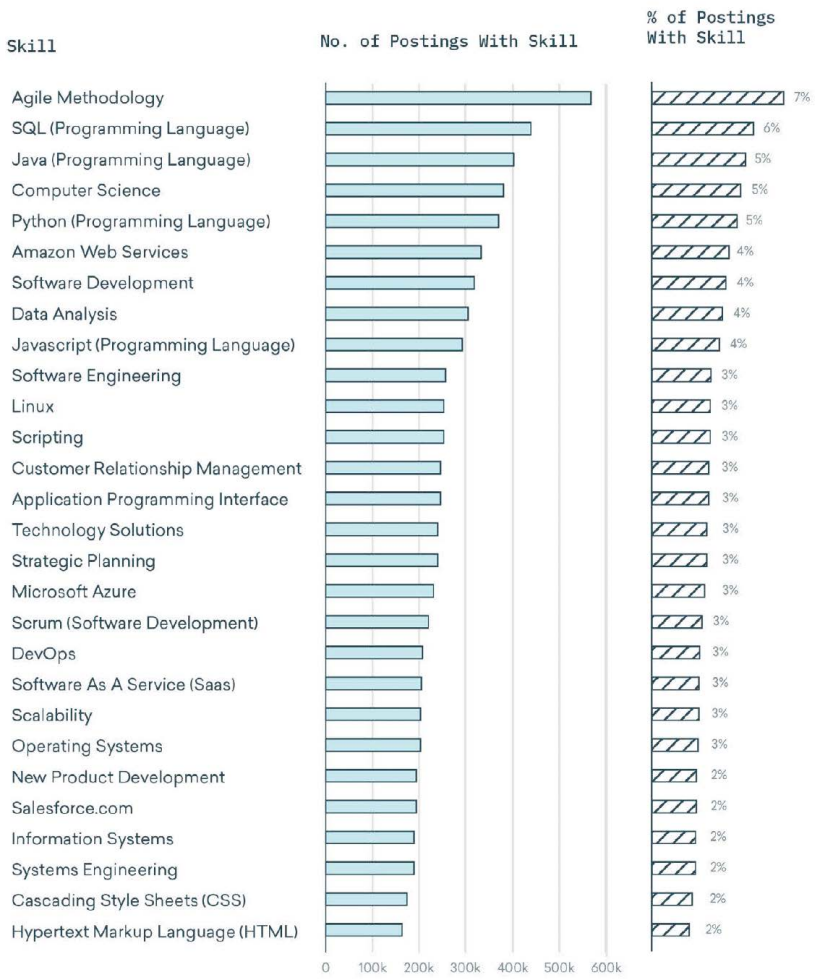
It should be noted that our methodology for the tech industry varied slightly. Whereas for other industries and occupations, we pulled the most in-demand skills (skills appearing in at least 1% of all postings), and qualitatively further curated digital skills from that pool, for the tech industry we pulled the entire list of the top skills. We varied our methods in this case for two reasons: in the first place, because jobs in the tech industry is of course the most likely to have a near-universal need for specialized digital skills; and second, because seeing what non-digital skills are highly sought after in the most digital industries can help us understand the wider skill sets in which digital skills prove most useful.

***RESEARCHERS' NOTE:*** *While it's useful to see the overall demand for digital skills within an industry, industry-level data by itself doesn't offer a complete picture. An industry may have high demand for digital skills, but only in a few specialized roles, while most of its day-to-day work is non-digital. Moreover, many highly digital roles – like marketing or software development – cross industry lines. For example, while companies exclusively devoted to technical services are captured by the "Professional, Scientific, and Technical Services" designation, firms across all industries need and hire tech professionals. To capture these workers embedded throughout the whole economy, you need to study them as an occupation—hence our inclusion of specific occupational insights as well.*

## Scientific, Professional, and Technical Services

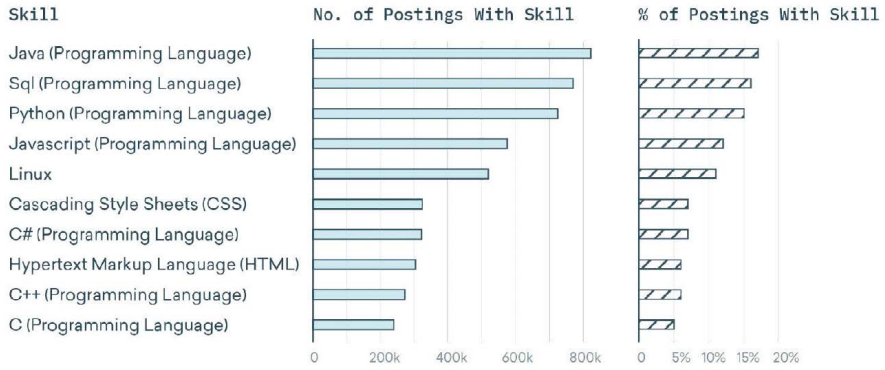
**» Industry Overview:** Professional, Scientific, and Technical Services has well over 9 million jobs, for which the median annual salary is $119,000. The industry also sees a high monthly posting volume, with an average of over 470,000 posts per month. It also has the both the strongest past and highest expected future growth of any of the industries surveyed, with 10% growth since 2015 and 9% projected by 2025.

This is the sector that hosts most of what we think of as "tech." It's no surprise, then, that the Professional, Scientific, and Technical services industry is far and away the most highly digital. 95% of all postings mention a digital skill.



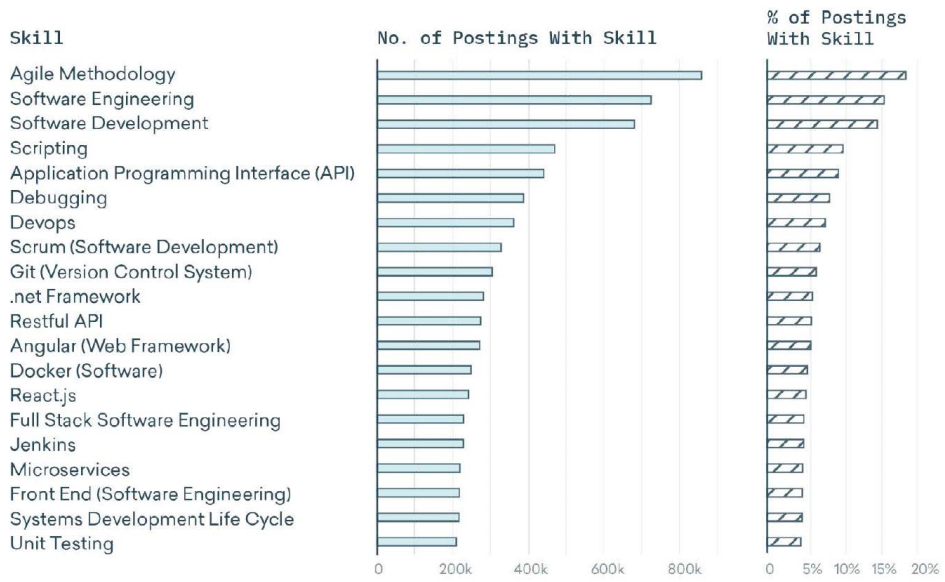

Source: Lightcast Data

» **Digital Talent Forecast:** An understanding of the need for tech skills should start with an evaluation of the skills needed in tech occupations. Today, programming languages are a baseline requirement for tech work. At least one language appears in all computer occupation postings. Of these languages, Java is the most popular, appearing in 17% of postings.



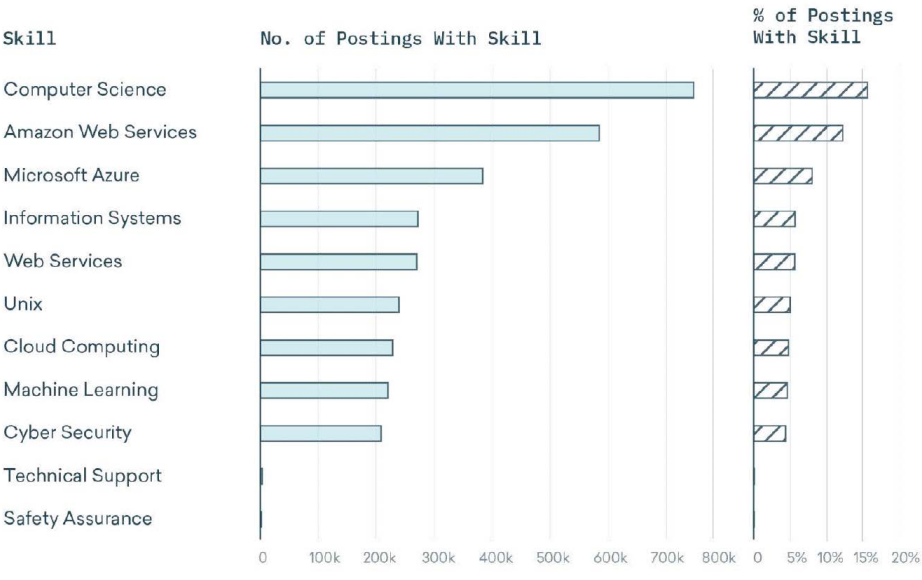

Source: Lightcast Data

In addition, software development completely dominates as a domain within the tech industry. All job postings mention at least one software related skill, and nearly half mention two. This reflects the enormous growth in this field over the past 10 years—growth which is likely to continue over the next decade.



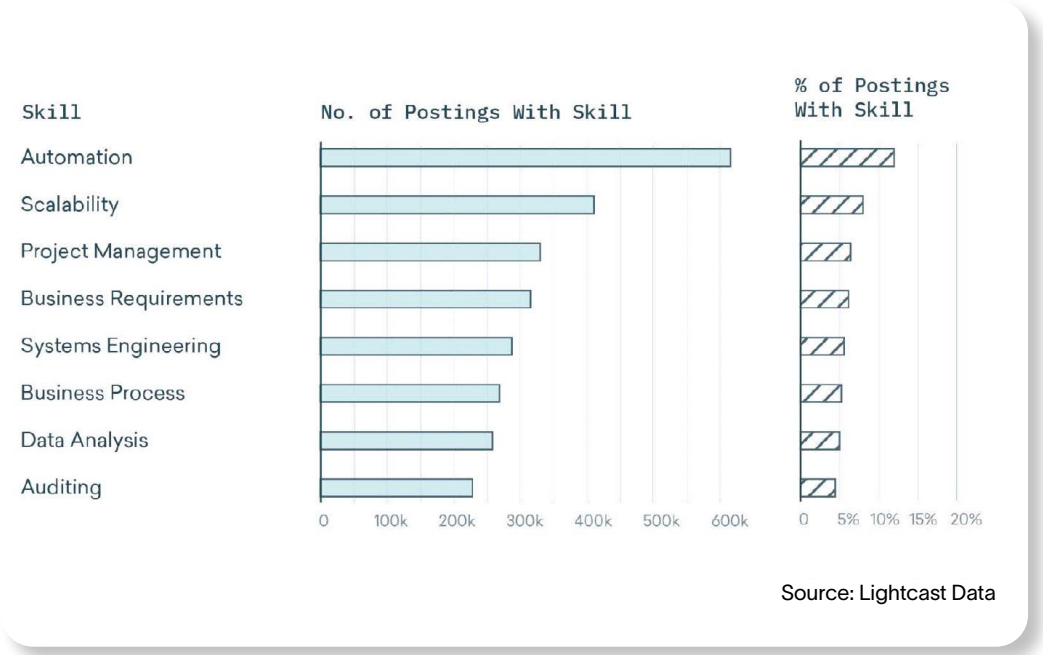

Source: Lightcast Data

While skills related to IT show up significantly less than software development, it's still a massive area of needed expertise. 76% of computer occupation posts mention an IT skill.




Source: Lightcast Data

Interestingly, while our research finds that tech skills are present in non-tech industries, we also see business skills becoming more important in tech—perhaps not a surprise within the context of hybrid jobs. Half of all posts for computer occupations mention at least one business skill.




Source: Lightcast Data

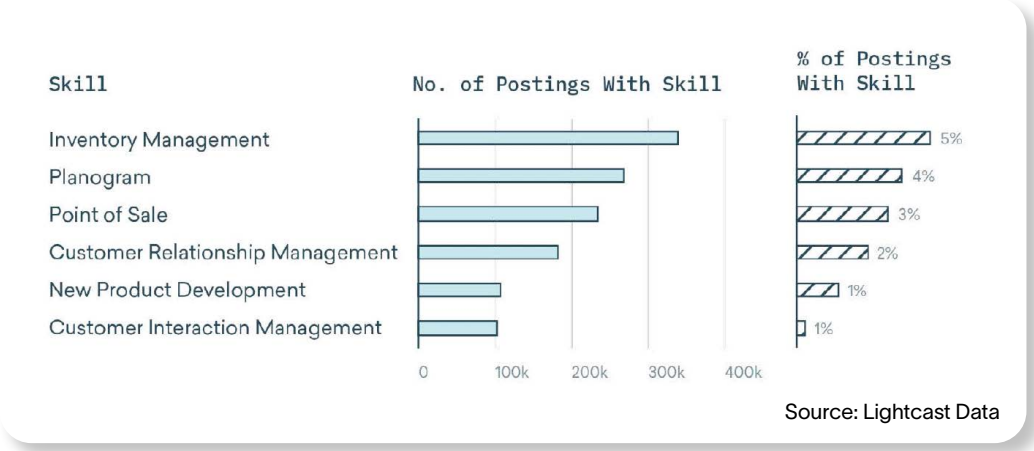
» **Key Takeaways:** Many of the most valuable tech roles today—product manager, solutions architect, software development project lead—are in fact hybrid jobs rather than hyper-technical specialist roles. These jobs combine clearly delineated, measurable competencies with more elusive abilities: like domain expertise in a specific industry, an instinct for working well across teams, a winning managerial style, or troubleshooting capacity. Interestingly enough, the most sought-after software development skill, agile methodology, is arguably also a business skill.

These findings suggest that increasingly, finding the most high-ROI tech talent may not be a matter of the most arcane programming language or most cutting-edge data management system. Instead of posting exclusively for the maximum number of tech-specific skills (as exciting as these skills are), companies should consider bringing in proven talent from a variety of business contexts, and orienting them to the specific demands of the tech world via targeted approaches to reskilling and upskilling.

## Retail

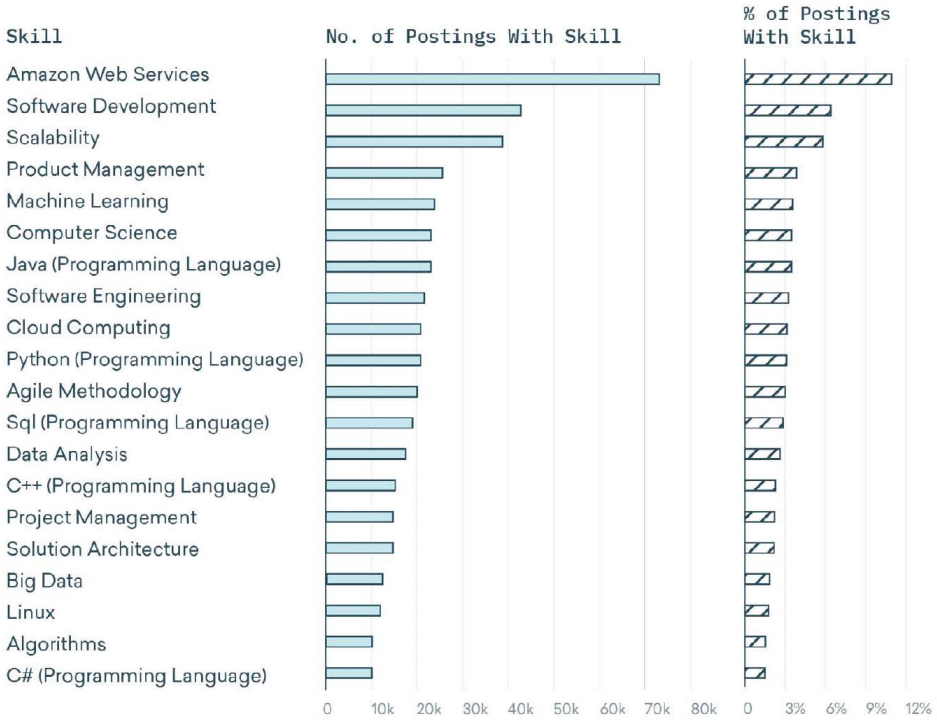
**» Industry Overview:** Retail hosts nearly 15 million jobs, for which the median earning is around $42,000 per month. The industry sees over 500,000 job postings per month. Between 2015 and 2020, the retail sector actually shrank by 5%, and is projected to contract by another 1% by 2025 amidst ongoing digital transformation. Unlike the rest of the industries discussed here, retail suffered a small net contraction during 2020-2021, losing over 43,000 jobs in the wake of the pandemic.

**» Digital Talent Forecast:** Retail's skill landscape is, on an industry level, one of the least digitized, with only 17% of its posting containing a digital skill. And while in some cases digitization occurs at the occupational level rather than the industry level (for example, some manufacturing occupations are much more digitally focused than the overall industry), retail is a low-digital context through both occupational and industry-specific lenses. However, the lack of digital skills in retail should be taken with a grain of salt: as seen above, retail is a simply enormous sector, with sharply different requirements for its white-collar and service segments.




Source: Lightcast Data

When we narrow our focus to the smaller e-commerce industry, for example, we see a much higher volume of digital skills: 69% of all postings feature a digital skill.




Source: Lightcast Data

The presence of digital skills in the retail sector, where they do exist, is likely a reflection of the ways in which retail companies are using new technologies to better monitor and attend to customer needs. "The continuing revolution around retail is an individualized understanding and decisioning at the customer level. Understanding the lifecycle, behaviors, journeys, touchpoints and feedback unlock disproportionally advantageous opportunities to drive product roadmaps and marketing optimization. The space is evolving faster than ever due to increasing regulation and customer expectations on transparency which require talented individuals to solution for tomorrow instead of two years ago. " said Hilton's Steven Longstreet.

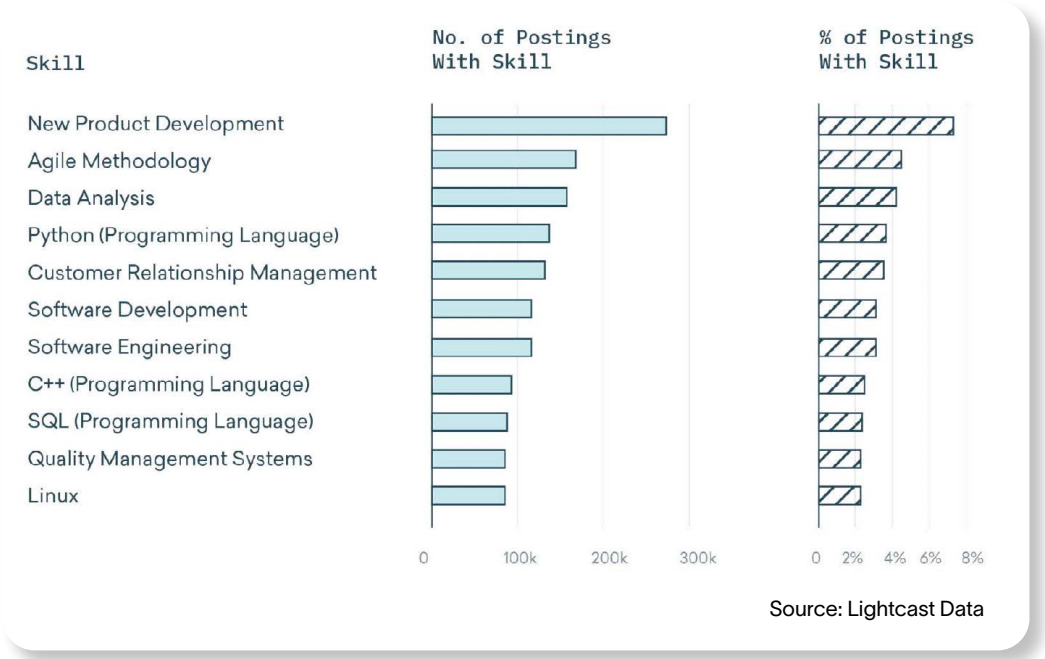
» **Key Takeaways:** Like manufacturing, retail's broad base of workers has relatively little use for digital skills, with most of the demand for tech skills driven by the need for expertise in specific software tools. But it's worth contrasting this picture with that of the e-commerce sub-industry. The skill profile of the e-commerce industry much more closely resembles a tech occupation, with Amazon web services, software development, and scalability leading the way.

That distinction suggests that in retail, any push to hire for digital skills is inextricable from long-term strategy. Companies should consider whether a brick-and-mortar operation alone will allow them to be competitive in the changing retail landscape. The choice is even more urgent due to the events of 2020, when e-commerce grew by 4% as retail as a whole lost over 40,000 jobs. Companies that do pivot to a web-based model would do well to adopt the advice offered in the earlier section on tech occupations: consider hiring for business skills and training for tech skills, rather than waiting for an ideal candidate equally qualified in both arenas.

## Manufacturing

» **Industry Overview:** There are roughly 12 million manufacturing jobs in the United States, with relatively high median annual earnings of about $88,000. Over 275,000 manufacturing jobs are posted online every month. Since 2015, manufacturing has more or less held steady, neither shrinking nor contracting. By 2025, the industry is projected to grow by only 1%.

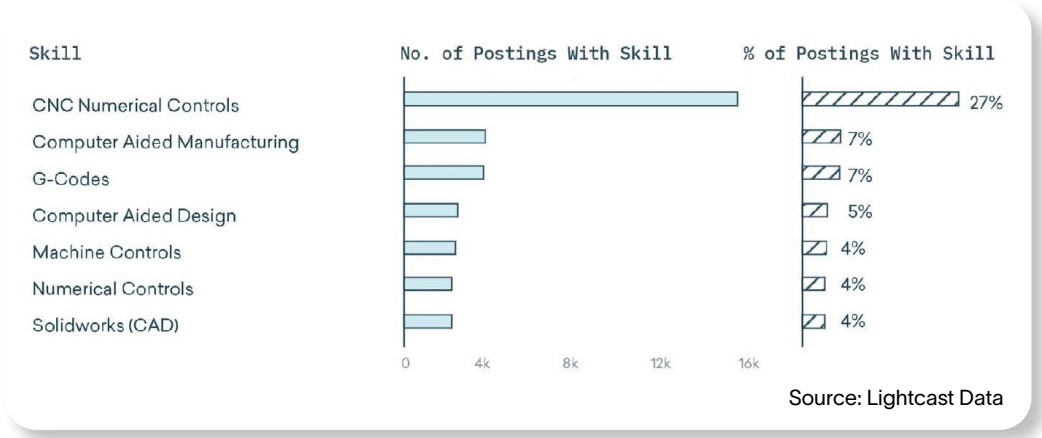
» **Digital Talent Forecast:** The manufacturing industry as a whole is more digital than individual manufacturing occupations. Thirty-eight percent of all posts within the manufacturing industry call for one or more digital skills, compared to only 11% of posts for manufacturing occupations. Skills like Computer Numerical Controls and New Product Development are the only ones whose digital component is central to their function. Blueprinting and Production Scheduling are digital only insofar as they generally involve specific softwares.




Source: Lightcast Data

This incongruity illustrates an important element of the digital skills landscape: the uneven distribution of demand. While digital skills are in high demand within the manufacturing industry, and being posted for heavily, those skills are primarily relevant in a few specific roles that do not apply to the bulk of manufacturing occupations. Manufacturing is, therefore, an example of the way that a given industry can cross new frontiers in digital technology in ways that are completely irrelevant to the bulk of its needed roles.

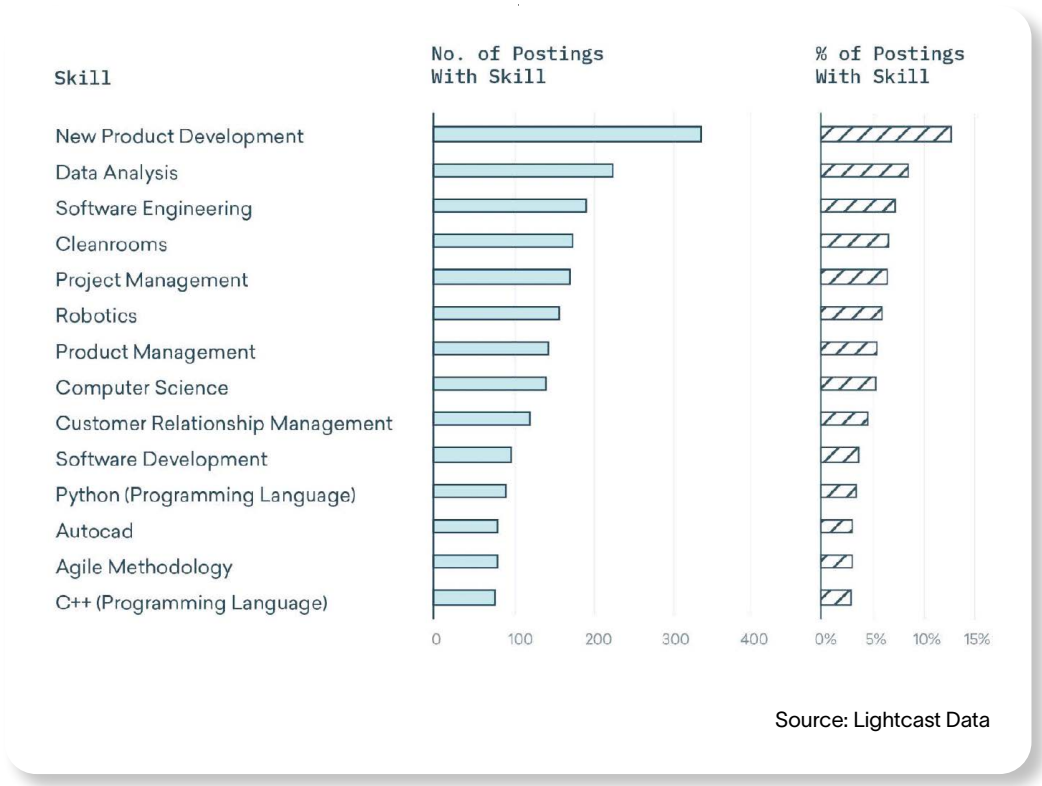
That said, some occupations within the manufacturing sector are digitizing much more rapidly—and leading to increased need for specialized expertise. As a 2015 report from Brookings put it, "These technologies dramatically reduce the time between designing and building a product, but mastering them requires specialized workforce training." The rise of advanced software tools that can more accurately simulate real-world environments, manufacturing companies increasingly need workers with the skills to design, model, and test products in a virtual space. For instance, 58% of machining postings mention a digital skill.




Source: Lightcast Data

Of these, CNC numerical control – e.g., the use of computer programs to control specific machines – is by far the most important, reflected in 27% of machining postings.

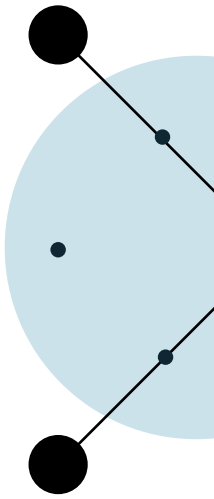
And as with retail, it's worth noting that the more specialized the sub-industry, the higher the chance of high demand for digital skills. In semiconductor manufacturing, for example. 83% of all postings mention at least one digital skill.




Source: Lightcast Data

» **Key Takeaways:** Sub-occupations and sub-industries within manufacturing tend to be more digital than in the sector as a whole because manufacturing only tends to require digital skills for a narrow set of roles that are tightly linked to the specific type of production occurring. However, just because the industry overall needs fewer digital skills doesn't mean they are easy to find. While CNC appears in just 2% of postings for production occupations, it appears in only 1% of postings, a dearth that represents over 20,000 jobs. And the roles that do require CNC will only become more necessary as automation increases.

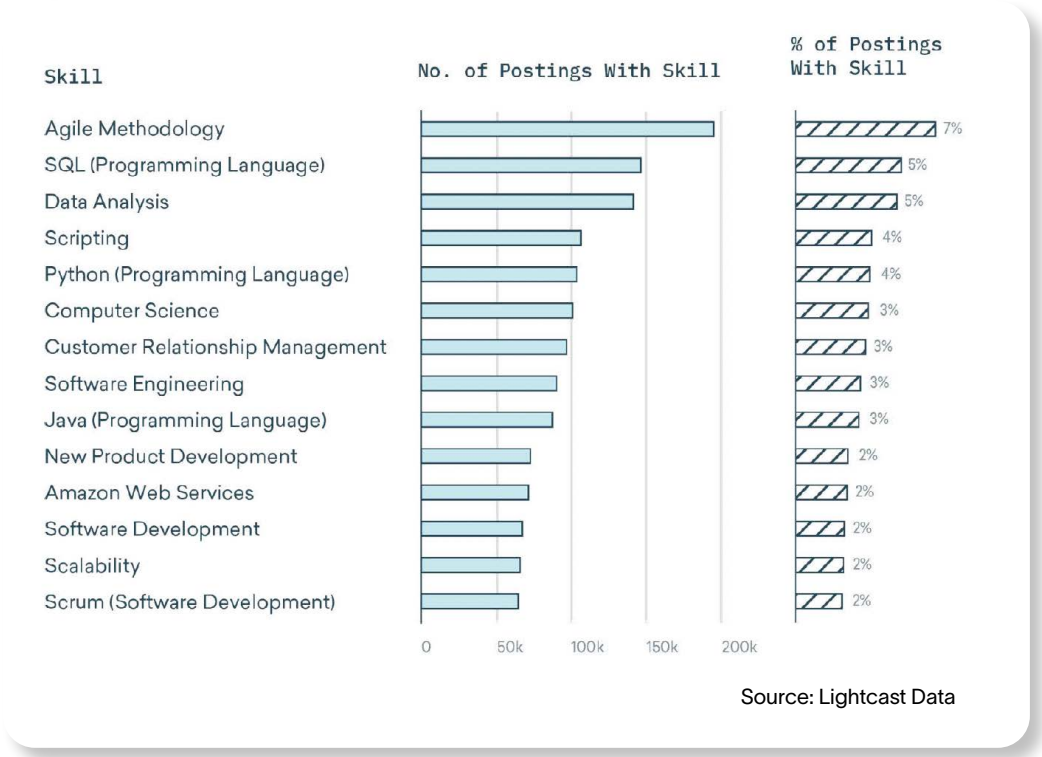
Luckily, because demand for digital skills in manufacturing is fairly limited, the solution is straightforward. Manufacturing companies should work to increase the supply of CNC skills (in demand across almost every manufacturing sub-industry) whether by partnering with local community colleges and trade schools, or by developing their own in-house training program.



## Finance and Insurance

» **Industry Overview:** Finance and Insurance currently has around 6 million jobs, which pay a median salary of $137,000. There are about 200,000 postings for finance and insurance jobs per month. The industry has grown by 5% since 2020, with slightly slower growth (3%) projected by 2025.

» **Digital Talent Forecast:** Forty-nine percent of all postings in finance and insurance mention a digital skill. The sector is more digital than either manufacturing or retail as a whole, but nowhere near Professional, Scientific, and Technical Services.

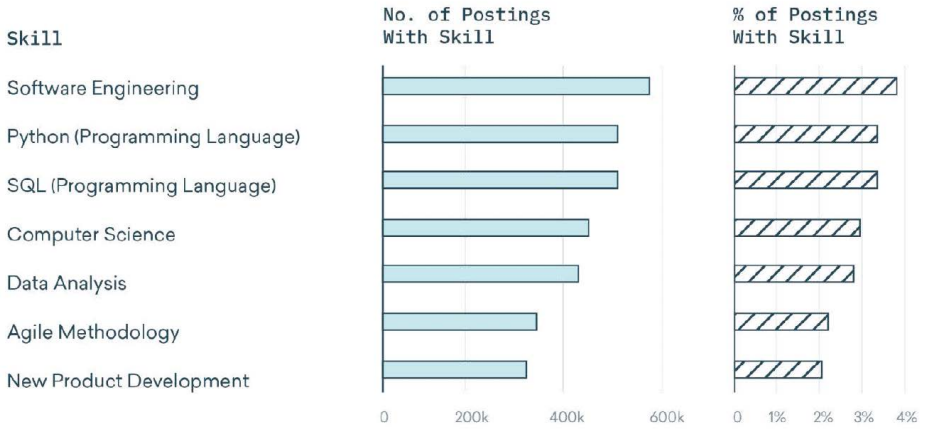



Source: Lightcast Data

» **Key Takeaways:** The demand for software development skills is high in the finance industry, with agile methodology called for in 7% of all postings, and scripting, software engineering, new product development, Java, scalability, scrum, also appearing. Demand seems to be split for software development skills and data analysis, likely reflecting parallel demand for financial analysts and new financial and banking products and technologies. Companies should avoid lumping these skills together in one monolithic tech category, since experienced data analytics talent can come from a much wider experiential pool than software development.

# Management

**» Occupational Overview:** Management of Companies and Enterprises has over 2 million jobs. The median yearly salary is – as one might expect – among the highest of any occupation or industry, nearly $150,000. This industry sees relatively little posting activity, with an average of only 9,000 job postings per month. However, it has seen robust growth in past years: 7% since 2015, and a further 5% projected by 2025.




Source: Lightcast Data

**» Digital Talent Forecast:** Digital Talent Forecast: Management of companies and enterprises is relatively low in demand for digital skills, with only 21% of posts mentioning at least one digital skill.

**» Key Takeaways:** As with finance, we see split demand in the management industry: companies are looking for skills pertaining both to project management and new product development, as well as data analysis.

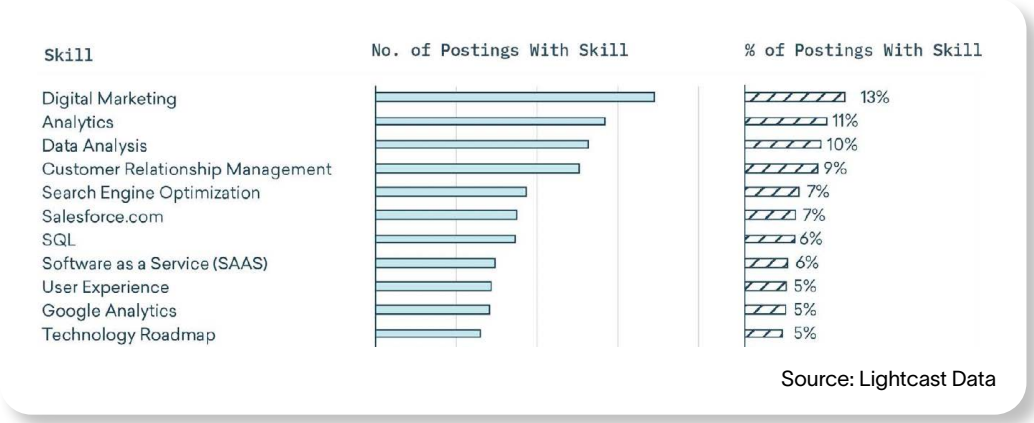
Given that the management industry comprises both consultants and private equity firms, the context for these skills probably varies widely on a firm by firm basis. At some firms, roles will comprise a hybrid mix of business, analysis, and software skills. At others, roles will remain siloed into front-facing business-skill heavy roles, and back-office tech roles. Companies should give serious consideration as to which strategy they wish to adopt long-term: each requires a very different candidate, even though the aggregate skill demand may be the same on paper.

## Sales and Marketing

» **Occupational Overview:** Sales is an enormous section of the labor market, with over 13 million jobs. The median compensation is roughly $31,000 per year for all sales roles, and about $65,000 per year for white-collar, non retail sales roles. There are over 500,000 unique postings for sales roles every month. Crucially, the highest-paid sales roles are growing the fastest. While sales as a whole shrank by 8% since 2020 and is only projected to grow by 1% by 2025, white collar sales jobs grew by 1% since 2015, and are expected to add another 4% by 2025.

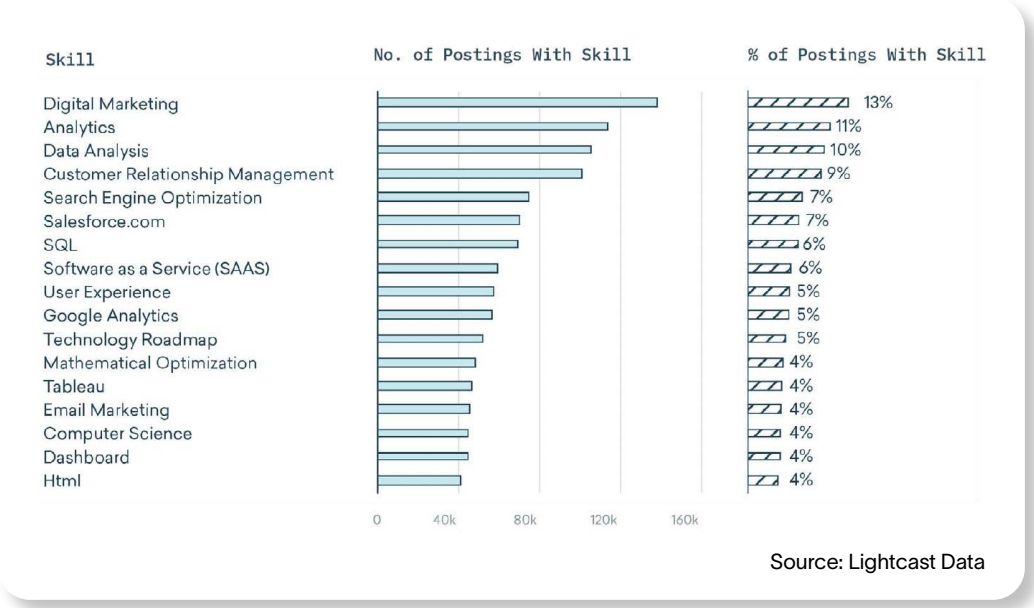
But sales' growth, while impressive, is nothing compared to that of the marketing industry. Between 2015 and 2020, marketing occupations grew by a staggering 29%, with 10% further growth projected by 2025. The median salary for a marketing position is higher than for sales: $75,000 a year. Only in total job volume does marketing lag behind sales: there are currently 1.2 million marketing jobs in the labor market, with just over 100,000 unique postings per month.

» **Digital Talent Forecast:** Interestingly, sales as a field is much less digitized than marketing. According to our analysis, 31% of sales posting mention digital skills, while 100% of marketing posts mention at least one, and 8% mention at least two.




Source: Lightcast Data

Among all occupations we examined, marketing is second only to operations in its digital skill levels.




Source: Lightcast Data

This may be because sales tends to involve highly interpersonal communication designed to persuade one person at a time, while marketing can be thought of as strategic communication designed to reach large numbers of people.

"Sales is a traditional profession, with people who have done it for a long time and are used to their own ways of engaging people," said Martin Lange. "But steak dinners and stuff like that are not that easy to come by anymore. To be in this sales environment, you have to become more familiar with digital tools. That's actually a big gap, and a massive opportunity to digitally enable salespeople a lot more. But sales doesn't necessarily have the tools quite yet."

Lange's analysis bears out in a closer look at the data. The most prominent digital skills in sales involve ways to automate the sales process, as with customer relationship management tools like Salesforce.

Marketing, on the other hand, is significantly more sophisticated as an industry when it comes to tech skills. Data analysis is an important sub-theme within marketing, with 36% of posts for marketing jobs mentioning an analytics skill. While content production (Digital marketing and SEO) remains important, the presence of skills like SQL in marketing job postings suggests that some marketing roles look more like an analyst or data scientist than a copywriter.

» **Key Takeaways:** Sales is one of the least digital of the white collar occupations. The majority of its digital skills involve specific software, such as Salesforce, rather than broader competencies, with the exception of analytics.

To some degree, the presence of digital skills in sales job postings probably reflects overlap with marketing. But it may also simply be a matter of posting patterns that are misaligned with real needs. While sales managers and marketing support may benefit from the ability to examine large volumes of sales data looking for patterns, being an effective salesperson involves a set of abilities that have remained remarkably stable in a fast-changing world. The fact that these abilities—proactivity, interpersonal communication—are largely intangible does not make them less relevant.

Companies should avoid the error of believing that selling a high-tech product requires a high-tech skillset. While some types of sales (often sales engineering roles) do require deep domain expertise, sales skills tend to retain their value across industry contexts. Losing out on these sales-specific abilities by posting for too high a level of digital and analytic skill would be a mistake.

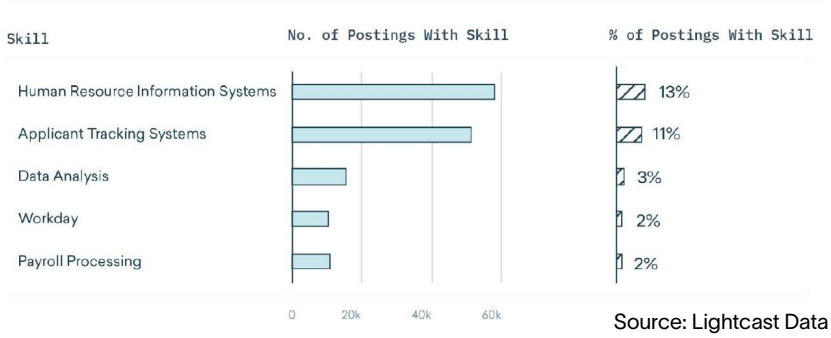
Unlike sales, marketing is one of the most highly digital occupations, with 100% of postings mentioning at least one digital skill. Marketing is often considered a soft-skill, communications-based role. But a world of hybrid jobs tends to blur distinctions between hard and soft, quantitative and qualitative. Based on the requisite skills, many marketing jobs are beginning to resemble data analytics roles, with skill sets like data analysis, SQL, and computer science all appearing much more frequently in job postings.

Marketing roles increasingly involve the use of data to optimize sales, set long-term business strategies, and even develop new products. The hybrid nature of marketing roles makes it even more important to understand the specific needs of your company when searching for new talent. In a copywriting role, for instance, SEO is an amplifier skill: it adds efficiency and maximizes the impact of work, rather than being strictly necessary for the work itself. In a market research role, on the other hand, data analytics is likely to be a core skill, while communication is an amplifier. Zeroing in on which skills take priority in a given context will help companies recruit from the widest possible pool, while ensuring that the requirements of the job match the real needs of the company, rather than generic occupational standards rapidly becoming outdated.

## HR

**» Occupational Overview:** Human resources is a relatively small but fast-growing occupation, with just shy of a million jobs in the current labor market, and over 50,000 unique postings monthly. Human resource roles saw 22% growth since 2015, with another 5% growth projected by 2025. The median annual salary is roughly $65,000.

**» Digital Talent Forecast:** HR is about as digitized as sales, with 31% of all postings mentioning a digital skill. This is almost entirely accounted for by HR operations systems such as Workday.




Source: Lightcast Data

Data analysis appears in a small amount of postings (3%). What's perhaps more notable is not its prominence, but the fact that it appears across all types of business roles. From sales to marketing, from human resources to operations, data analysis is one of the most consistent and highly sought after skills.

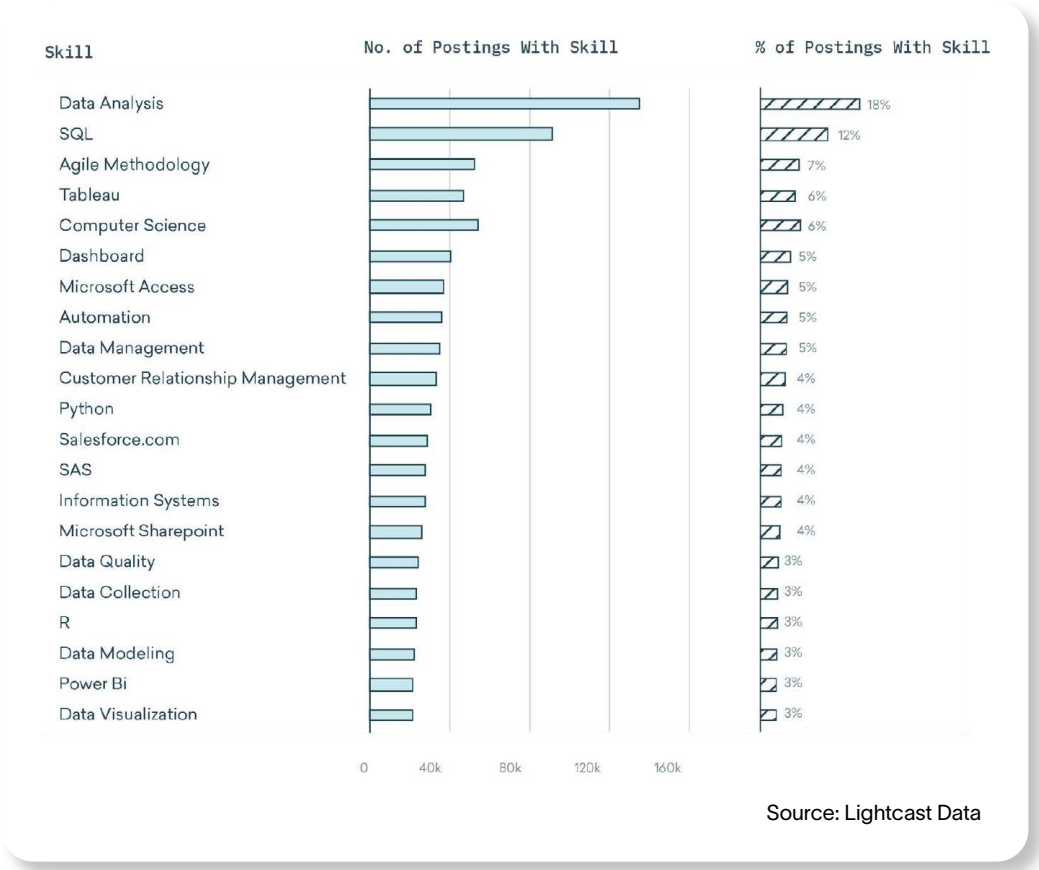
» **Key Takeaways:** HR is relatively low in digital skills, with most of the ones that appear pertaining to specific softwares. The exception is data analysis. While data analysis can be a powerful tool to build talent pipelines, the high demand for data skills across disparate industries and occupations means that posting for HR managers with digital skills may not be the best strategy for companies. Finding experienced HR personnel, defining concrete needs around data analytics, and providing the requisite training is much likelier to succeed.

## Operations

» **Occupational Overview:** For the purposes of this analysis, operations roles include business and financial analysts, project managers, and consultants. There are over 8 million operations jobs in the current economy, and over 200,000 unique postings per month. Median compensation is just over $72,000 annually. Like marketing and HR, operations roles saw high growth – 19% – between 2015 and 2020. The field is expected to see another 6% increase by 2025.

Of all occupations we examined, it is the single most digitized area outside tech, with 100% of postings mentioning at least one digital skill, and 11% mentioning at least two. It's fair to say, then, that operations has fully made the transition to a hybrid job.

» **Digital Talent Forecast:** Four programming languages appear in postings for operations roles: SQL, SAS, Python, and R. Altogether, programming languages appear in 23% of all postings for these roles. The only other business role that prominently includes programming languages in its digital skills is marketing, which offers further evidence for cross-pollination between these two roles.




Source: Lightcast Data

More than in any other domain, data analysis is king in operations roles, appearing in 18% of all postings. Other data-related skills appear in 46% of all postings for these roles.

» **Key Takeaways:** Aside from marketing, operations is the mostly highly digital occupation group analyzed here. This is partly due to it being a broad category that includes a variety of consultants, business analysts, and financial specialists.

But the demand for digital skills, and specifically digital skills related to data management and analysis, is striking. Interestingly, operations shares this focus on data analysis with marketing. Companies trying to fill these highly analytical operations roles should consider hiring from marketing departments, where workers often develop a baseline confidence with data, talent tends to be cheaper, and communication experience provides a valuable amplifier skill.

## CONCLUSION: LOOKING AHEAD

» Like a weather forecast, the digital talent forecast is not a prediction of the future. It's an examination of the current state of digital skill needs across occupations and industries, with the aim of using those present variables to make informed guesses about what the future may hold. With that in mind, what key lessons can business leaders take away from the insights included in this report?

» **Core skills versus amplifiers.** When is a given digital skill mission-critical for success in a certain industry or occupation? When is it useful to perform a certain role, but not mandatory? As the rise of hybrid jobs continues to blur the lines between technical and non-technical roles, it will become harder to distinguish when tech skills are "core" to a certain function (e.g., mandatory Salesforce expertise for a marketing leader) or simply amplify that function (e.g., data analysis that can make a salesperson more effective). Employers should pay close attention to which skills are "needed" versus "wanted" for each role, and consider creating such a breakdown in job postings to differentiate between these two types of digital skill.

» **Unlikely partners**. Our research uncovered some similarities that may surprise readers, such as the significant overlaps – and similar digital skill profiles – of marketing and operations roles. That's a further reminder that hiring based on a "kitchen sink" job posting often leaves qualified candidates on the table. How can existing employees, with a fairly limited investment in reskilling and upskilling, fill critical roles that require similar skill sets?

» **Training:** Perhaps the most frequent finding across all industries and occupations is that a targeted need for specific digital skills shouldn't overshadow a broader need for non-digital skills (often called "human" or "soft" skills). But too often, companies tend to zero in on candidates with those specific tech skills at the expense of talented candidates who could succeed in the role with a small amount of training. As hybrid jobs become ever more ubiquitous in a range of industries, employers will need to shift their hiring paradigms — to focus on hiring effective communicators and collaborators and training them in digital skills, rather than the other way around. As a growing body of evidence demonstrates the return on investment of this model compared with exorbitant recruiting costs, businesses are increasingly turning to new models of training that can help future-proof their workforce.

It's worth concluding with a final caveat: the pace of technological change is getting faster, and the pandemic is continuing to test the limits of our powers of prediction. Just as COVID-19 caused unexpected disruptions in our ability to forecast the weather, so too have prognostications about the future of the labor market become harder and harder to make with confidence.

But one thing that's certain is that it's easier to plan for the future, and pivot as needed, than it is to make decisions from scratch.

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**That's the ultimate purpose of this report:** to equip business leaders and talent decision-makers with tangible present-day information that can inform long-term plans, and set up employers and workers alike for continued success and resilience—however those plans may change.

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## ABOUT THIS REPORT

» Lightcast is an industry-leading economic data and analytics firm, specializing in labor market data, analyses, and consulting services for employers, higher education institutions, and economic/workforce development professionals. General Assembly is the leader in career transformation, working both with individuals as they pursue new opportunities in tech, data, marketing, and design and with businesses undergoing large-scale digital transformation.

In light of the massive disruptions caused by the pandemic, and facing a once-in-a-generation "great resignation," we teamed up to bring together the rich insights of Lightcast' data with perspectives from the executives on General Assembly's standards boards. Together, we hope to create more clarity about how employers, hiring managers, and recruiters can send the proper signals in a tumultuous labor market to find the talent they need to succeed in our post-COVID economy.

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