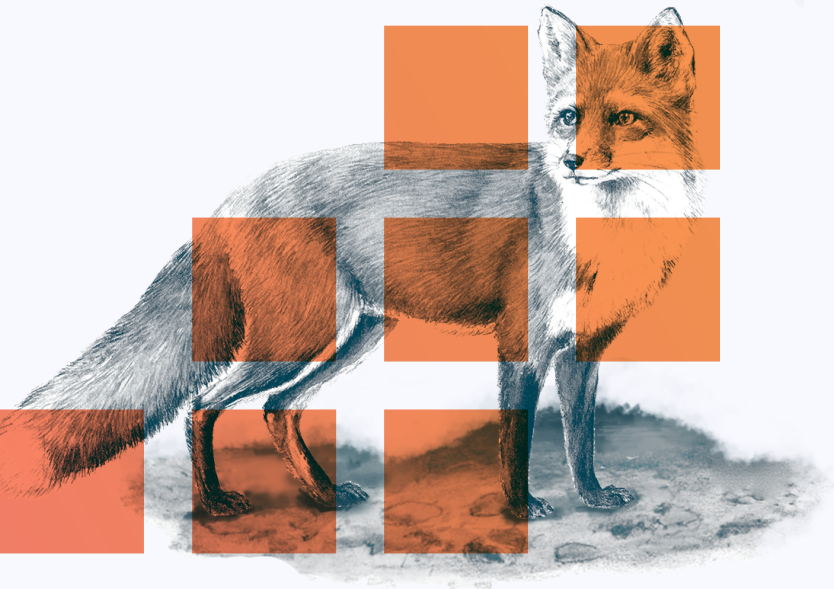




# Resilient Skills



The Survivor Skills That  
the Class of COVID-19  
Should Pursue



“

**A fox knows  
many things.**

**A hedgehog  
knows one  
big thing.**

”

—Isaiah Berlin

## **Resilient Skills**

The Survivor Skills That the Class  
of COVID-19 Should Pursue

SEPTEMBER 2020

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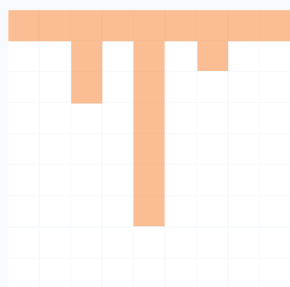
# Introduction

The class of 2020, once poised to graduate into the strongest economy in recent memory, became the class of COVID-19 overnight. Now this fresh cohort of young people is staring down an intimidating labor market where 10% of American adults are unemployed.

Navigating the tumultuous new economy will be all about **resilient skills: skills that have either remained or increased in demand** despite the economic shutdown and the fastest recession in U.S. recorded history.

Resilient skills, like resilient people, flourish no matter what. They take a licking and keep on ticking. These will be the survivor skills for the class of COVID-19—indeed, for anyone searching for new or better employment. Resilient skills are the skills that graduates should highlight on their resumes and current students should focus on gaining.

< Breadth of knowledge >



> Depth of knowledge <

Resilient workers are what you might call “T-shaped.”

As the name suggests, the T-shaped worker has broad interdisciplinary competence combined with deep, narrow expertise. They are both generalist and specialist. As Isaiah Berlin famously said: “A fox knows many things. A hedgehog knows one big thing.” The resilient worker is both fox and hedgehog: they know a little about many things, and they know a lot about one or two subject matters.

To become this resilient, T-shaped worker, you need resilient skills. In this article, we analyze resilient skills in three categories: **(1) human skills, (2) technical skills, and (3) hard-to-find skills.**

## Human and Technical Skills

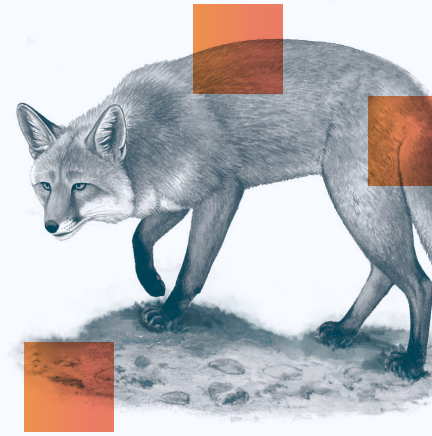
People commonly distinguish between two chief types of skills: *hard* vs. *soft* (or *common*). In this paper, we use the terms *technical* vs. *human*. We believe these terms better capture the nature of the distinction. *Hard* can denote the idea that a skill is difficult to master, while *soft* sounds weak and *common* sounds ordinary and quotidian. None of these connotations are necessarily true, so we want to avoid them.

We chose the term *human skill* to refer to skills that are specifically human. They are skills that all humans share to some degree, and which set us apart from machines and artificial intelligence. We chose the term *technical skill* to refer to the abilities to perform discrete tasks and those tasks which require specialized domain knowledge. Neither human nor technical skills are more important than the other, neither can be totally separated from the other, and both are indispensable to the current economy and human civilization.

Note: *Technical skills* is the broad category. Later, we'll also examine *technology skills* (*tech skills*, for short), which are a subset of technical skills, not a synonym for them.

# Resilient human skills

Human skills provide the generalist foundation. They create the fox, so to speak. Much of the discourse around jobs and education encourages students to be hedgehogs: to specialize in narrow, highly in-demand skill sets (as in the now proverbial “learn to code” advice). But as David Epstein demonstrates in his 2019 book, *Range: How Generalists Triumph in a Specialized World*, we underestimate the importance of the fox at our own peril.



In study after study across domains as diverse as medicine, sports, and firefighting, Epstein discovered that specialists (hedgehogs) tend to succeed in “kind” environments, while generalists (foxes) perform well in “wicked” environments. What’s the difference?

A kind environment is stable, predictable, and easier to navigate. The rules are clear and outcomes fairly foreseeable. Like chess. As complex as chess can be, once you know the rules, you’ve got it. You can plan and count on formulaic outcomes. A wicked environment, on the other hand, is unstable, unpredictable, and difficult to navigate. Like a military operation. You may have a plan, but rarely do you have every shred of information you need, and as everyone knows, nothing in a military operation ever goes according to plan.

As Epstein notes, generalists tend to succeed better than specialists in wicked environments. This is because generalists can draw on a breadth of knowledge, make connections across contexts, and create abstract models using limited information. In wicked environments, “our greatest strength is the exact opposite of narrow specialization,” Epstein says. “It is the ability to integrate broadly.”<sup>1</sup>

The 2020 economy is a prime example of a wicked environment. Has anything this year been stable or predictable? 2020 is full of curveballs and complex challenges that require creative solutions. It is for these challenges that generalist, human skills—skills commonly associated with the liberal arts—will prepare you. Since human skills are useful in diverse real-world situations, they remain resilient throughout economic upheaval.

As this wicked economic environment has unfolded, we’ve been gathering job market data on resilient skills to give inspiration and direction for COVID-19 grads.

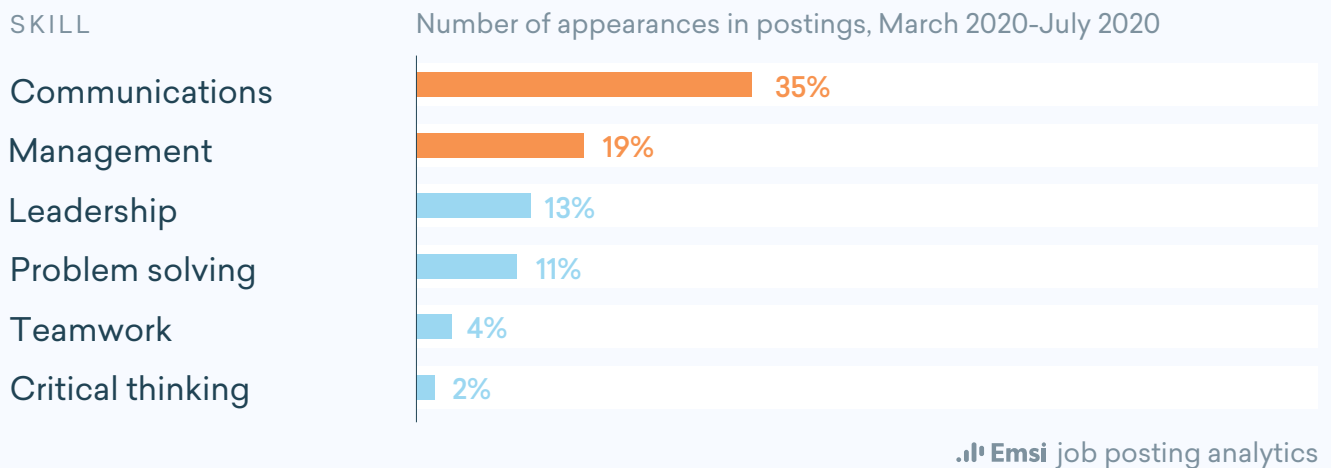
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<sup>1</sup> David Epstein, *Range: How Generalists Triumph in a Specialized World* (New York: Riverhead Books, 2019), 29.

The chart below lists the top six resilient human skills, based on the number of times they are requested in job postings. Communications is the number-one skill, requested in 35% of job postings. Management follows at 19%, and leadership at 13%.

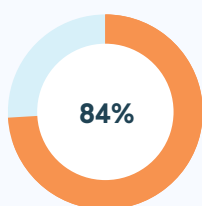
FIGURE 1

## Human skills in job postings

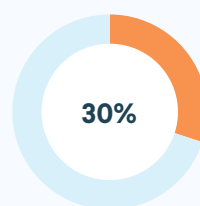


These six human skills are in demand across the board. Eighty-four percent of job postings, no matter the industry, mention at least one of these skills (and in fact, if you include a wider range of human skills than the particularly resilient ones highlighted here, 100% of postings call for at least one human skill). Over 30% mention two or more of these skills.

This is a critical point for new graduates, because these human skills are the skills you probably *already have*. Of course, you will gain many technical skills through ongoing education and work experience, but understanding your human skills is how many of you will get a foot in the door of a good career.



Postings with at least one of these six human skills

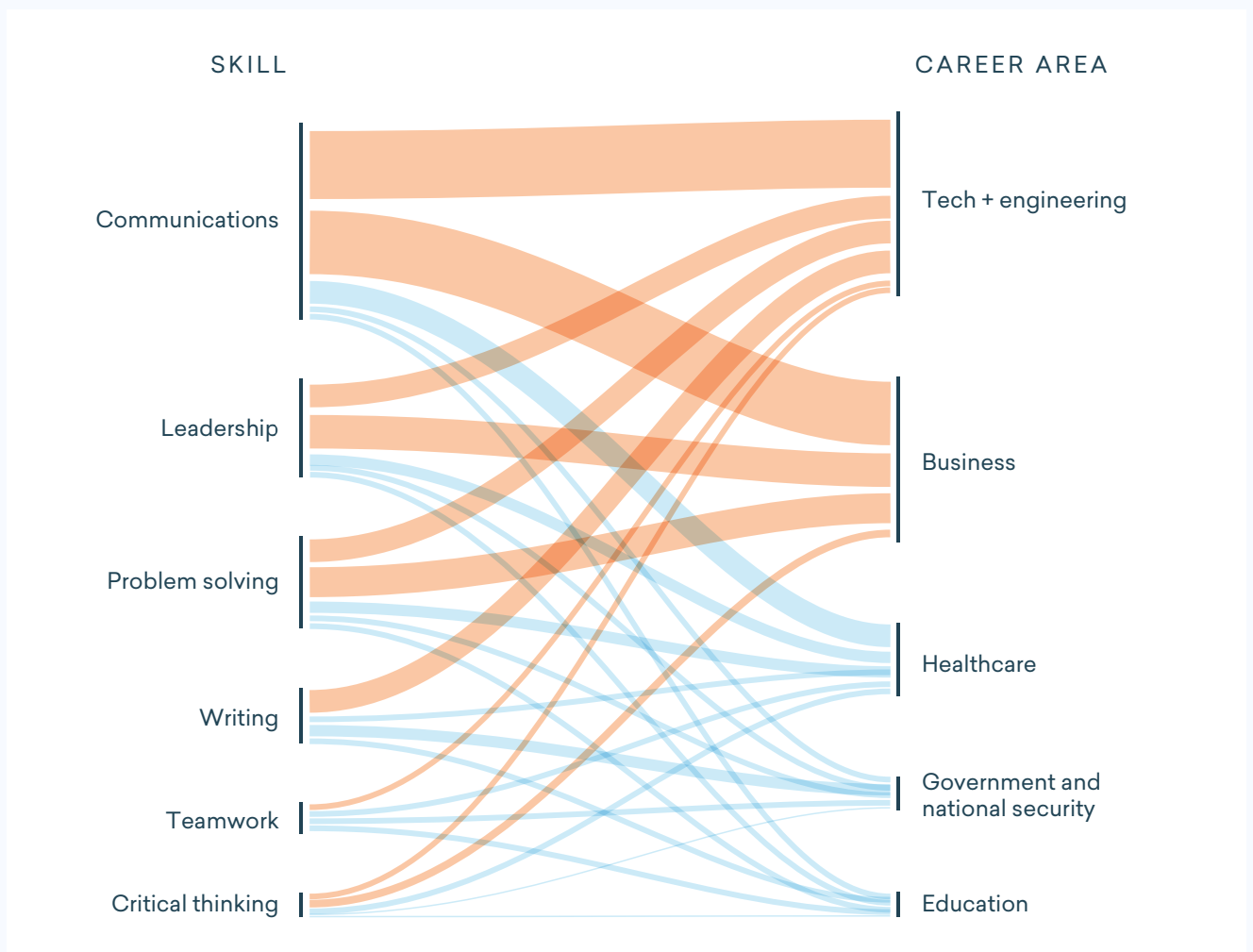


Postings with two or more human skills

The chart below illustrates the common career pathways for workers with human skills. Note the variety of career destinations. Clearly, many highly technical careers need human skills such as communications, leadership, problem-solving, writing, etc. Human skills, in other words, aren't just good for teachers, poets, and Starbucks baristas. Employers are clearly seeking human skills in a wide range of roles—from tech to healthcare to business. In fact, some of the greatest demand for human skills is in STEM jobs like tech and engineering.

FIGURE 2

## Human skills are sought in many highly diverse roles



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The bottom line is this: human skills help forge highly adaptable workers because they translate to such a variety of industries. So as you consider which technical skills to pursue, don't underestimate the importance of the human skills you already have. They are the bedrock upon which you can build an entire career.



# Resilient technical skills

Now that we've addressed the importance of building a foundation with resilient human skills, let's explore the resilient technical skills that graduates and jobseekers should consider adding on top of this foundation. While human skills help people become adaptable, technical skills help people fill hyper-specialized roles.

## In general, technical skills fall into two categories:

- 1 Technology ("tech") skills** – Skills that help you make new products.
- 2 Core business skills** – Skills that help you market and sell those products and operate the business.

It's like a restaurant. You need chefs who assemble the ingredients as well as servers who deliver the final product and support customers. Most products and services work this way. One team uses tech skills to create something new, the other team uses core business skills to deliver and make sure things are running smoothly. The two teams are completely dependent on each other.

First, we will discuss a series of tech skills, then we will explore core business skills.

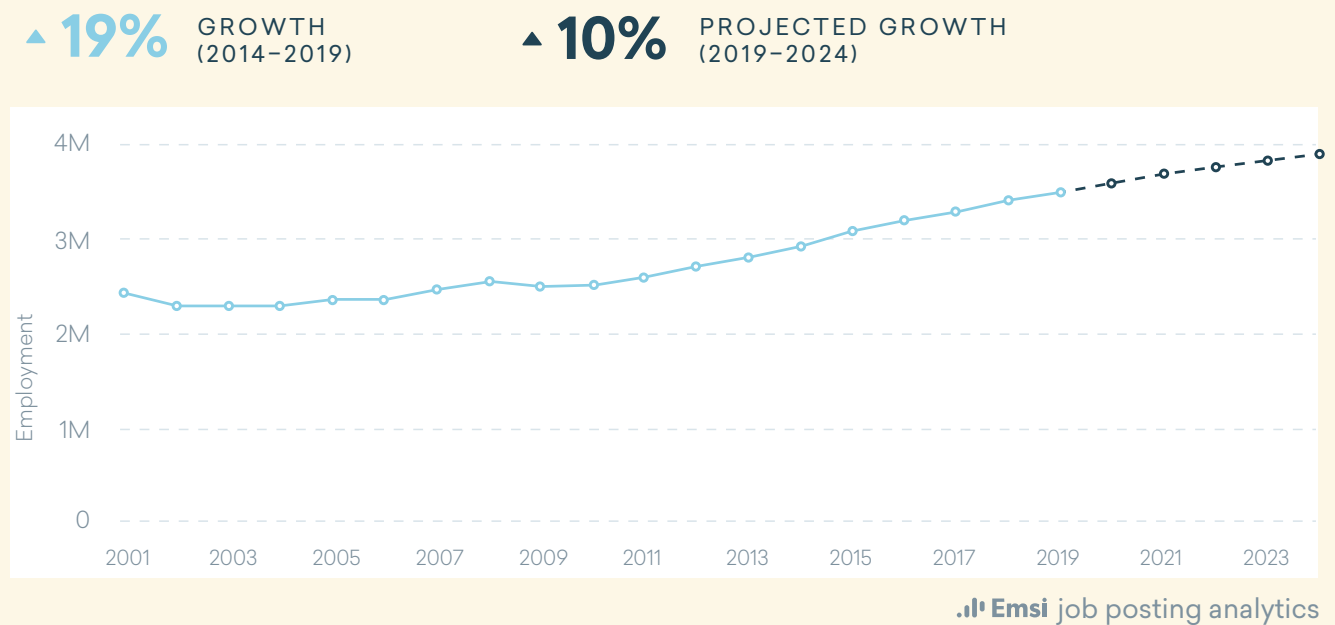


# 1. Technology (“Tech”) skills: a massive area of increasing demand

Technology is not just a rapidly growing field, it is a field that has dramatically changed the entire economy. Companies need workers who can build, manage, understand, and innovate with software and telecommunications products. In fact, companies can't afford to do without these kinds of skilled workers. In the last five years alone, jobs associated with tech skills have grown by 19%.

FIGURE 3

## Growth of tech skills



These skills build on each other to encompass every aspect of the massive software infrastructure we now live and work in. In the following five subsections, we will discuss four types of tech skills that build on each other in this way:

- Programming languages enable the basics of computing.
- Software development creates the apps and programs we all use.
- Data science and analytics manage the lakes of data generated by these apps and programs.
- IT systems enable the platforms on which we interface with all this information to operate smoothly and securely.

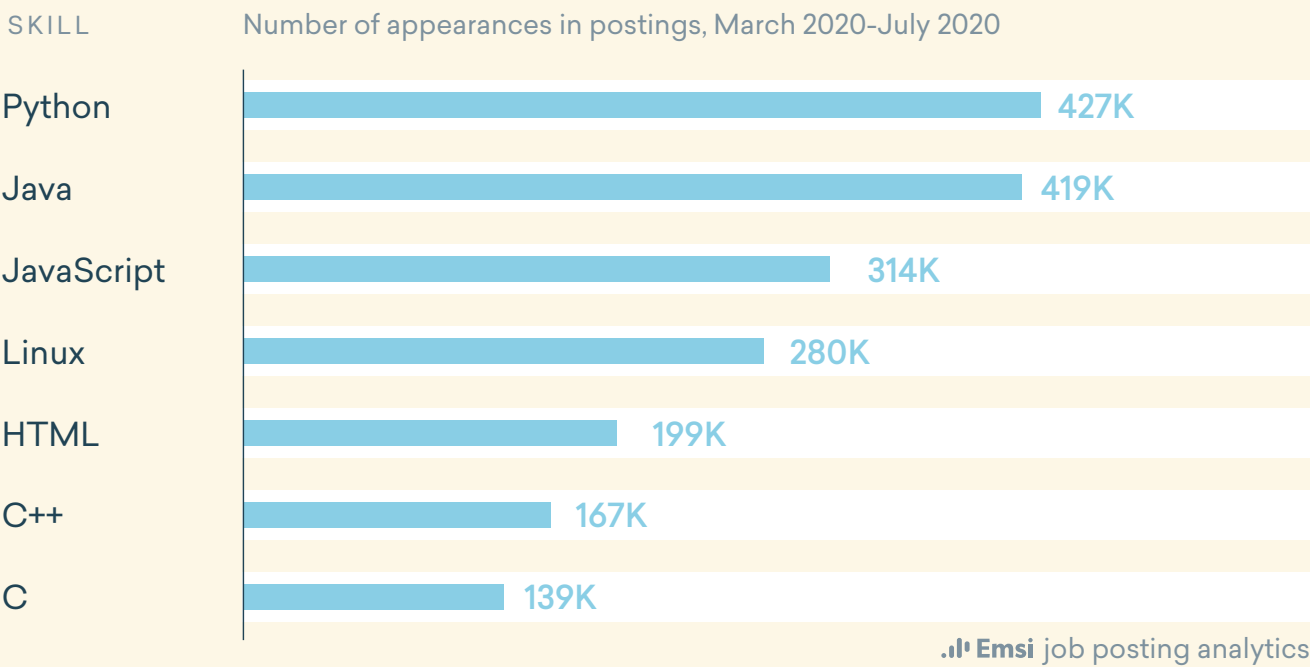
# Programming languages

It’s a well-known fact, but we would like to stress this here: first and foremost, fluency in one or more of the programming languages is the basis for all the other tech work we discuss below. **JavaScript**, **HTML**, and **Linux** are used to build web pages and user interfaces. **Java**, **C**, **C++**, and **Python** are general purpose languages that can be used to manage data, build computer systems, and develop apps. Most of companies today are developing (or using) mission critical software, and these are the primary skills that such employers need in order to be successful.

FIGURE 4

Appear in 8% of all postings

## Tech skills in job postings



### Sample Posting

SAMPLE JOB: Web developer

MEDIAN SALARY: \$69K

COMPANY POSTING: Revature

PROJECTED FIVE-YEAR GROWTH: 11%

## Software development

Once the programming languages are covered, companies turn their attention to the strategies and systems used to create the vital software they sell to customers and use to run their business. Transportation, takeout, groceries, banking, communications—more and more of our daily lives are organized by apps. It's no surprise that skills around software development are in high demand.

Some of the skills here, like **Kubernetes** and **Angular**, are systems for building web applications. Some, like **debugging** and **scripting**, are software management and maintenance processes that take practice to master. And others, like **full stack engineering** and **front-end engineering**, require a thorough command of the development operation.

The best way to break into the field of software development is to familiarize yourself with a few of the more DIY-accessible skills and acquire a few of the programming languages discussed in the preceding section.

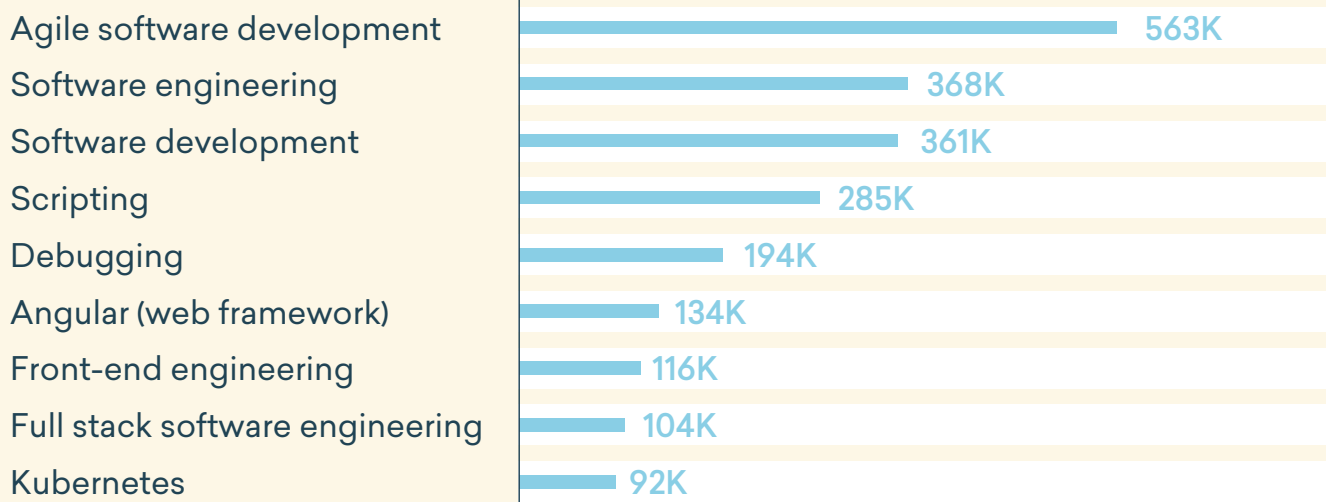
FIGURE 5

Appear in **9%** of all postings

### Software development skills in job postings

SKILL

Number of appearances in postings, March 2020–July 2020



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### Sample Posting

**SAMPLE JOB:** Software designer

**MEDIAN SALARY:** \$106K

**COMPANY POSTING:** Amazon

**PROJECTED FIVE-YEAR GROWTH:** 14%

## Data Science / Analytics

Beneath all the software we create and the bustle of modern life—streaming services, Google documents, text messages, financial transactions, iPhone storage—lie the enormous repositories of raw data that support it. The unseen work of storing, managing, analyzing, and interpreting this data is only likely to grow, given the IDC's prediction that by 2021, worldwide data usage will increase by 61%, from 33 to 175 zettabytes. With new oceans of data accumulating in our world, it's unsurprising that we found several resilient skills related to analyzing data.

FIGURE 6

Appear in **6%** of all postings

### Data analytics skills in job postings

SKILL

Number of appearances in postings, March 2020–July 2020

SQL (programming language)

501K

Microsoft Azure

198K

Data warehousing

196K

Machine learning

152K

Cloud computing

139K

Big data

115K

Tableau

110K

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### Sample Posting

JOB TITLE: Research analyst

MEDIAN SALARY: **\$63K**

COMPANY POSTING: Anthem

PROJECTED FIVE-YEAR GROWTH: **13%**

## Information Technology systems

IT is an ever-growing field. Businesses of all types already store oceans of data on Amazon server farms, which leads to soaring demand for familiarity with **Amazon web services**. As work-from-home becomes increasingly popular, **telecommunications** management may prove to be one of IT's major functions. Meanwhile, the sheer amount of sensitive information exchanged and business transactions completed online requires more and progressively sophisticated **cybersecurity** experts (an unmet need we discuss in [Build, Don't Buy: A Better Way to Solve the Cybersecurity Crisis](#)).

Of our IT-related resilient skills, the only discrete task is **authorization**, which is a way of managing access to different levels of secure information (usually handled by an IT administrator). Amazon web services and telecommunications indicate familiarity with the platforms in question. Cybersecurity is a complex network of skills that can include everything from certified ethical hacking to malware detection to penetration testing.

FIGURE 7

Appear in **3%** of all postings

### IT skills in job postings

SKILL

Number of appearances in postings, March 2020–July 2020

Amazon web services

319K

Telecommunications

170K

Cybersecurity

145K

Authorization (computing)

96K

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### Sample Posting

JOB TITLE: Security officer

MEDIAN SALARY:

\$98K

COMPANY POSTING: Boeing

PROJECTED FIVE-YEAR GROWTH:

5%

## 2. Core business functions: the basis of a successful firm

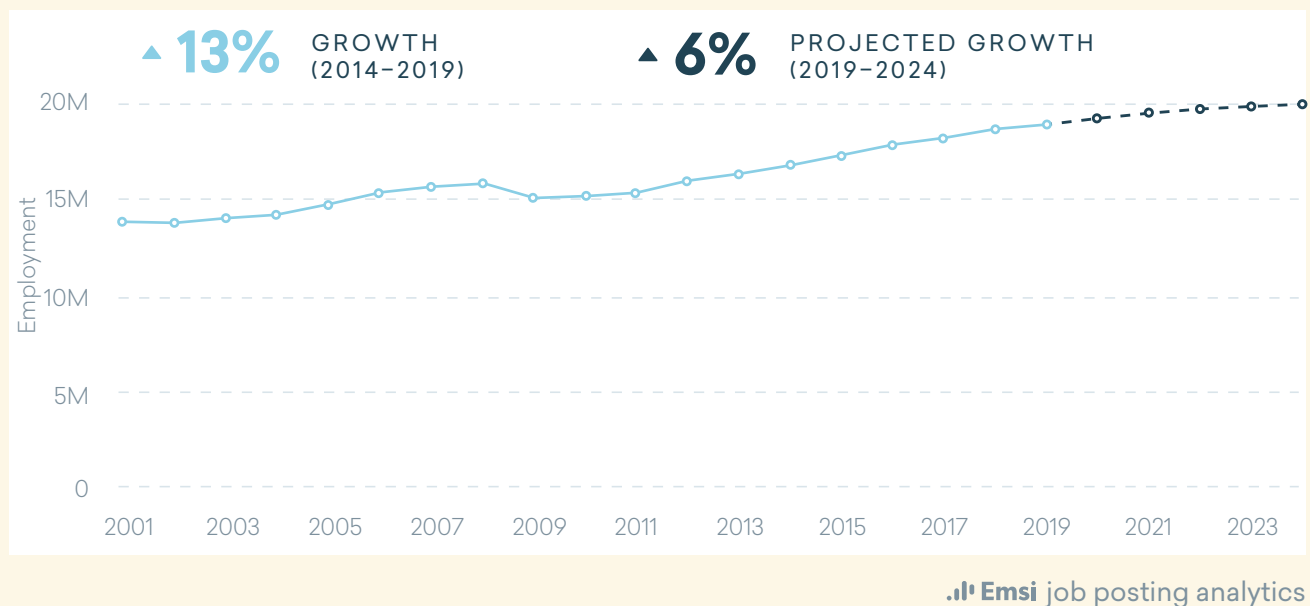
Tech skills can easily steal the spotlight, but we shouldn't overlook the importance of core business skills. To revert to our restaurant analogy, core business skills don't make the food, but they do deliver the food, make sure the customer is happy, and keep the business humming along.

In terms of raw numbers, core business skills dwarf technical skills. Businesses have a voracious appetite for workers who can execute in sales, marketing, finance, and the like. In fact, 54% percent of the top 10 careers for college graduates are in these core business roles.

The jobs related to these core business functions have grown a significant 13% over the past five years and are projected to continue growing.

FIGURE 8

### Growth of core business functions



Our resilient business skills fall into four areas: **sales, marketing, finance,** and **operational oversight.**

We found a total of 20 resilient technical skills associated with sales (this is not counting human skills). Sales skills are in demand in a whopping 23% of job postings, which is not surprising since sales jobs comprise such an enormous slice (15 million jobs) of the US economy. Sales can also offer high wages, as well as opportunities to advance your career. Historically, higher-paid, career-track sales jobs have been resilient during economic downturns. For example, during the 2008 recession, financial sales jobs grew by 16%.<sup>2</sup> Sales jobs can be a good bet during lean times—especially the sales jobs that pay well.

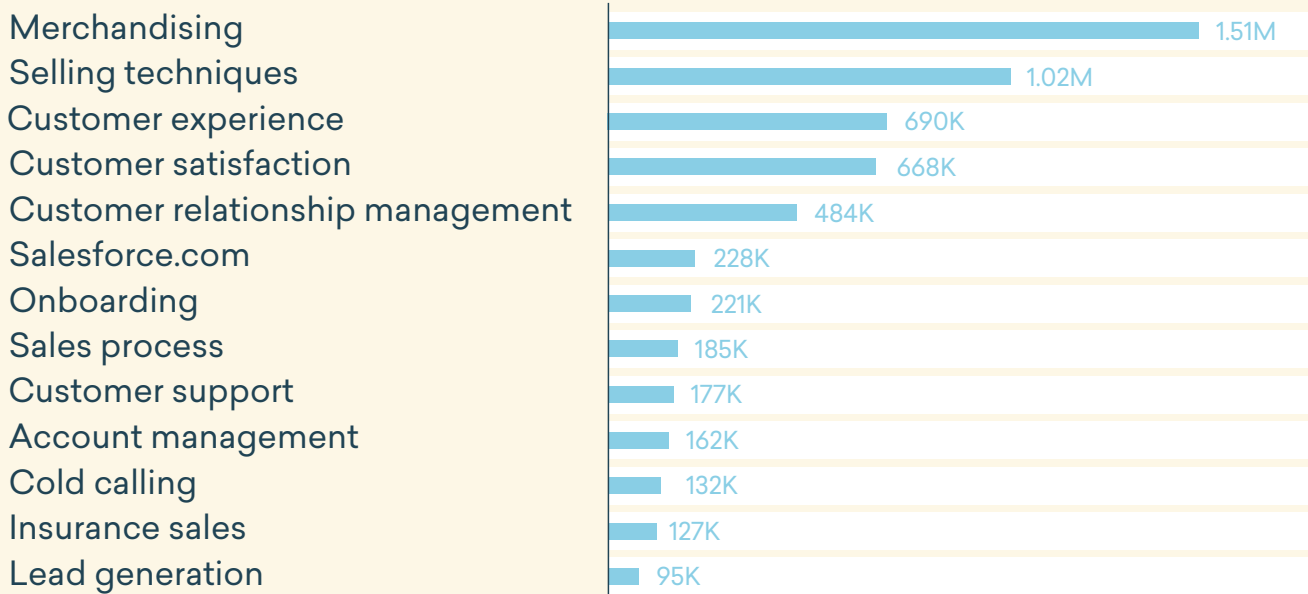
FIGURE 9

## Sales skills in job postings

Appear in **23%** of all postings

### SKILL

Number of appearances in postings, March 2020–July 2020



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## Sample Posting

**JOB TITLE:** Account executive

**MEDIAN SALARY:** **\$59K**

**COMPANY POSTING:** Oracle Corporation

**PROJECTED FIVE-YEAR GROWTH:** **5%**

<sup>2</sup> Saleh, et al., “Degrees at Work,” [economicmodeling.com](https://www.economicmodeling.com/degrees-at-work/), Emsi, August 2019, <https://www.economicmodeling.com/degrees-at-work/>

# Marketing

Marketing is an essential part of any organization’s growth strategy. That’s probably why several of our resilient marketing skills—such as marketing strategies and experience with key performance indicators—are geared toward long-term planning rather than day-to-day content production.

Furthermore, a combination of marketing skills plus basic technical skills is often an attractive combination for burgeoning SaaS (software-as-a-service) companies. Given the overlap between the skills required for operations, marketing, and product development, the versatility of marketing skills makes them a smart bet for people interested in a possible career transition.

FIGURE 10

## Marketing Skills in job postings

Appear in **3%** of all postings

SKILL

Number of appearances in postings, March 2020–July 2020

Key performance indicators

269K

Business requirements

250K

Go-to-market strategy

81K

Product marketing

66K

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## Sample Posting

**JOB TITLE:** Content manager

**MEDIAN SALARY:** \$62K

**COMPANY POSTING:** Comcast

**PROJECTED FIVE-YEAR GROWTH:** 6%



# Accounting & Finance

Accounting skills revolve around a fairly narrow set of tasks that keep cash flow regular and books balanced. Finance, on the other hand, encompasses a wider set of abilities: both bigger-picture financial strategy within firms, and financial services that banks and investment firms provide. Both skillsets are available in business schools as well as through short-term certifying institutions and programs.

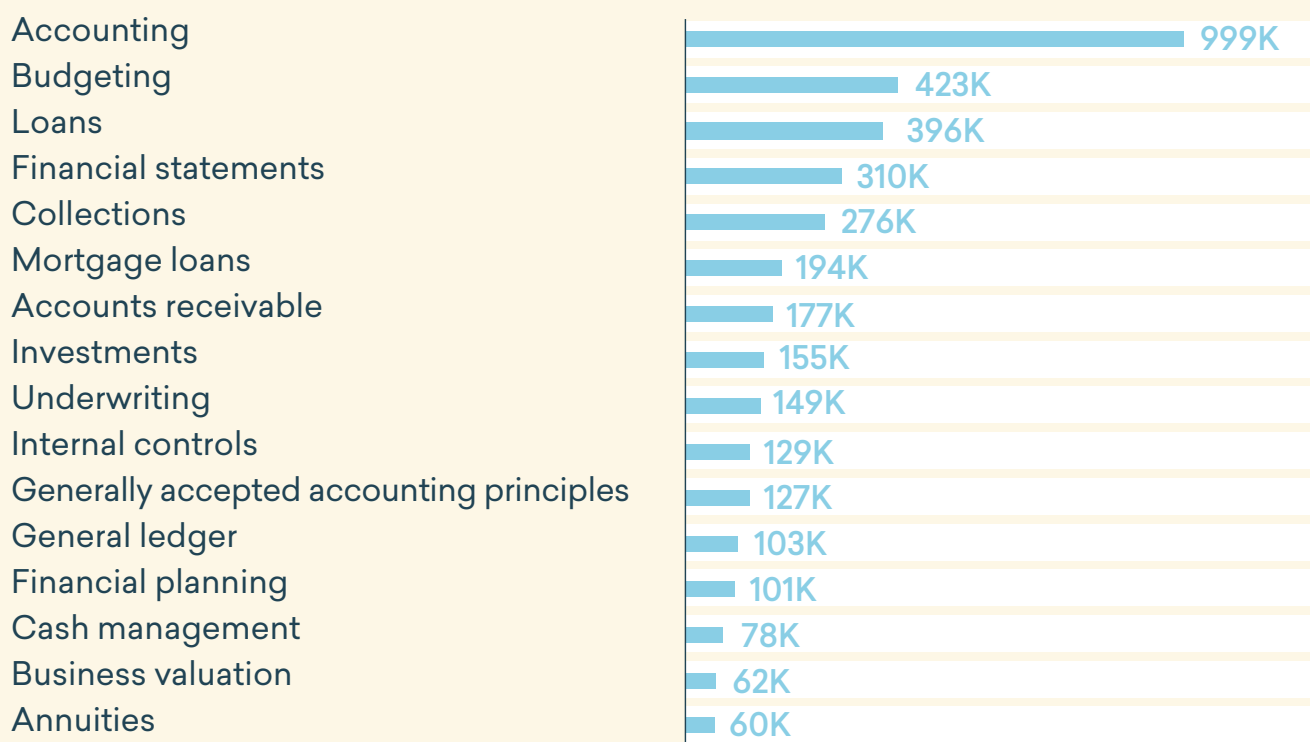
FIGURE 11

Appear in **16%** of all postings

## Finance and Accounting skills in job postings

SKILL

Number of appearances in postings, March 2020–July 2020



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## Sample Posting

**JOB TITLE:** Financial analyst

**COMPANY POSTING:** Deloitte

**MEDIAN SALARY:** **\$86K**

**PROJECTED FIVE-YEAR GROWTH:** **6%**

# Operations

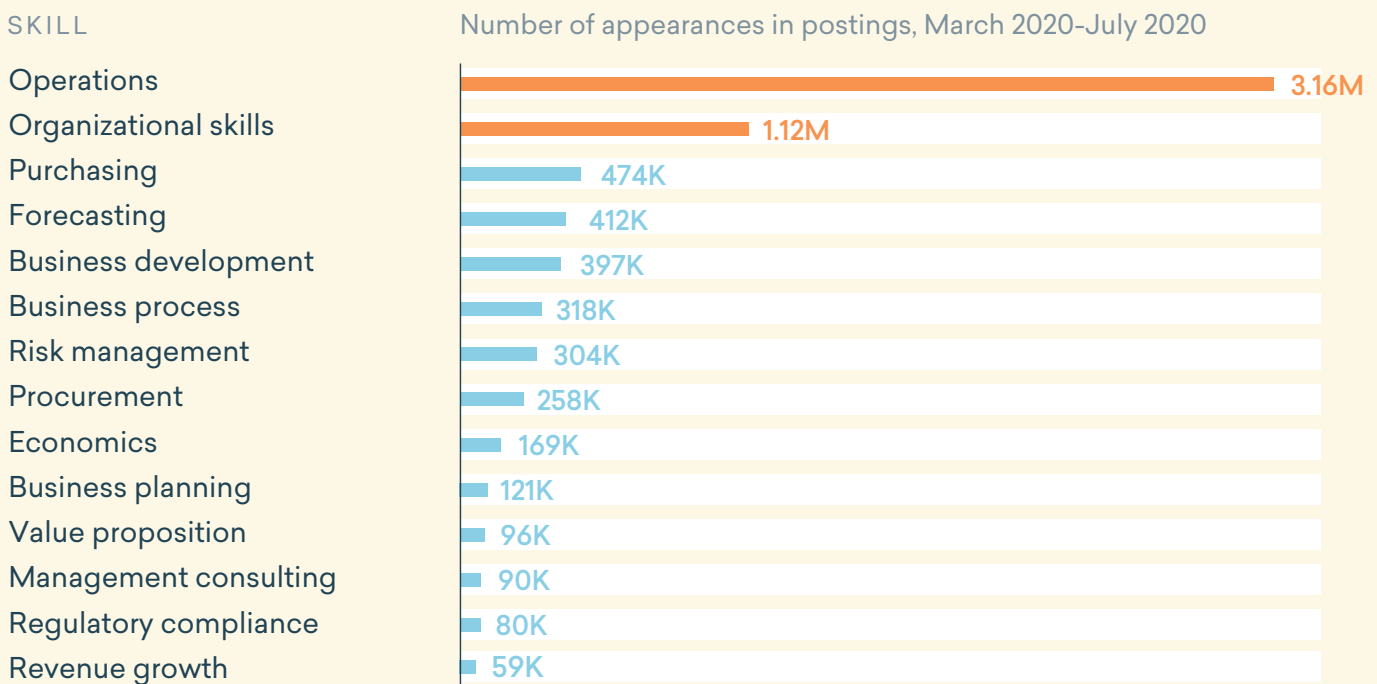
Operational oversight is in some ways a combination of sales, marketing, and finance, but with a focus on long-term strategy and decision-making. For example, **procurement** and **purchasing** are skills that a logistics manager or CFO would employ in order to keep a supply chain moving or manage a firm's expansion. **Revenue growth** falls under the purview of marketing managers, sales managers, business analysts, and consultants alike. Most of the skills listed here are consistent with this pattern. They aren't limited to a single role, and are characterized by a focus on strategy and leadership.

A common misconception among students and graduates is that operational oversight skills are open only to those who formally majored in business. But the truth is that graduates of many different programs have already acquired the fundamental prerequisites. That's because most of these skills boil down to analysis (ordering information, finding patterns, making predictions), and analytical skills are taught in a variety of programs. This is at least part of the reason why students from a wide variety of non-business backgrounds succeed in business.

FIGURE 12

Appear in **28%** of all postings

## Operational Oversight skills in job postings



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## Sample Posting

JOB TITLE: Operations manager

MEDIAN SALARY: **\$100K**

COMPANY POSTING: FedEx

PROJECTED FIVE-YEAR GROWTH: **7%**

# Hard-to-find skills

So far, we've discussed resilient human skills and resilient technical skills. Now, in our third and final section, we want to especially highlight hard-to-find skills: skills for which demand is high, yet supply is low. Because of these gaps between supply and demand, these skills make great opportunities for the following types of jobseekers:

- People who possess the skill in question, but who would in other circumstances struggle to get a foot in the door (such as someone with resume gaps, an unusual employment record, or an incomplete education).
- People who may want or need further training or education.
- People who want to land a new job as quickly as possible by entering a field with minimal competition.

We'll address some of the largest skills gaps below.

Interestingly, two hard-to-find skills—**key performance indicators**, a progress tracking framework, and **Tableau**, a data visualization software—already appeared among our resilient skills. This means that demand for these skills is both stable *and* urgent. Such skills are worth jobseekers' special attention.

Perhaps the most notable hard-to-find skill, especially for those just entering the workforce, is **interpersonal communication**. Interpersonal communication is yet another example of a highly sought-after human skill that many graduates possess and that will help equip you for a variety of jobs. Other skills gaps occur in **persuasive communication** and **content creation**. Employers, in other words, are desperate for workers who can think, write, and speak effectively to different audiences.

Two of the skills gaps are IT-related: **certified information system auditor** and **certified information systems security**. There is enormous unmet demand for cybersecurity roles—a demand that far outstrips the demand for almost any other IT role and is likely to only keep growing.

**Relational databases, data compilation, data visualization, and statistics** are four skills that remind us of the importance of data management and analysis to the current business world. And because demand for data skills comes from so many different sectors, this skillset is a powerful tool for those looking to build on top of their human skill foundation. Statistics should be of special note to college and high-school students, as it is an especially easy skill to acquire for any student willing to take a math class or two.

FIGURE 14

## Supply and demand gaps in job postings

| Supply | Demand | Gap



**Business-continuity planning, governance, operational excellence, risk-analysis,** and **risk-aversion** are all business skills aimed at a common end: helping businesses succeed in complex markets in a highly uncertain world. Risk-analysis may be of particular interest to new graduates, especially those outside of business schools. While objects of analysis differ, the practice of analysis is an interdisciplinary and often highly transferable skill. If you are trained to analyze texts, historical patterns, or sociological factors, you can advance even further with a basic grounding in statistics or a technical skill like Tableau.

FIGURE 15

## Examples of jobs that require hard-to-find skills

### Key performance indicators/ Tableau

SAMPLE JOB: Engagement manager

MEDIAN ADVERTISED SALARY: \$75K

PROJECTED FIVE-YEAR GROWTH: 7%

COMPANY POSTING: Humana, Inc.

### Interpersonal communication/ persuasive communication/ content creation

SAMPLE JOB: Technical writer

MEDIAN ADVERTISED SALARY: \$70K

PROJECTED FIVE-YEAR GROWTH: 8%

COMPANY POSTING: Parsons Corporation

### Relational databases/data compilation/data visualization/ statistics

SAMPLE JOB: Data architect

MEDIAN ADVERTISED SALARY: \$130K

PROJECTED FIVE-YEAR GROWTH: 8%

COMPANY POSTING: Bayer corporation

### Business continuity planning/ governance/operational excellence/risk analysis/and risk aversion

SAMPLE JOB: Business intelligence analyst

MEDIAN ADVERTISED SALARY: \$90K

PROJECTED FIVE-YEAR GROWTH: 6%

COMPANY POSTING: Verizon

# Conclusion

So maybe that internship in DC is no longer available. Maybe your dream job disappeared in the wake of economic contraction. Maybe you're considering whether you should pursue the next level of education at all.

Whatever your situation, remember that a skillset doesn't equip you for one job and one job alone. The skills you'll acquire in college courses and in jobs on your career journey can indeed help you find many opportunities you may have overlooked.

## We hope this report benefits a number of audiences:

- **College graduates and incoming college students** as they plan and prepare for careers. Our hope is that this gives them hope, as well as some added direction on how to think about the labor market today.
- **Educational institutions** as they work to build programs (be they more oriented to foxes or hedgehogs) that are both relevant and valuable in today's economy and as they work to communicate with students about what to pursue in this wicked economy.
- **Policymakers** as they think about and create policies designed to help people get back to work, as well as direction for those organizations that are on the front-lines of helping learners and dislocated workers.
- **Workforce and economic development organizations** as they communicate the opportunity of resilient skills to workers who may be stalled in their careers, and help connect those workers to employers.
- **Businesses** as they invest in the skills of their employees and recruit skilled workers from all types of undergraduate programs.

The path to this kind of resilience lies in fostering interdependent combinations of human and technical skills. Neither human skills nor technical skills can make you resilient by themselves. You need both. As we said earlier, resilience is about being both the hedgehog and the fox: the curious generalist capable of transformation, and the expert who can offer knowledge tailored to the problems of the moment.

It is the adaptability of human skills, coupled with the deep knowledge of technical prowess, that will allow workers to both survive and thrive—no matter how wicked the environment.

In the end, the resilience of workers is the resilience of the economy as a whole. With the right combinations of skills, the Class of COVID-19—indeed, the entire labor market—can emerge from this moment stronger than ever.

If you have questions or comments about  
this report, please contact Rob Sentz:  
[rob@economicmodeling.com](mailto:rob@economicmodeling.com)



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