

Covid-19 and the workforce



Covid-19 has the world gripped in a public health emergency that will have lasting effects on daily life for many months, if not years, to come. The pandemic has unfolded faster than anything the world has previously experienced. According to JPMorgan, the world economy will contract 12% from January to March 2020. From stalled manufacturing in China, to the evaporation of seafood markets in the UK, to a freeze in demand for Kenyan flowers, few countries or industries will be sheltered from this unprecedented economic shock.

In less than two months, Covid-19 has created arguably the world's largest collective shift in social activity and working practices. Research firm Global Workplace Analytics estimated in a 2018 report that 4.3 million people in the US worked remotely, representing just 3.2% of the country's workforce. In a March 2020 survey of 464 executives by MIT Technology Review Insights, over two-thirds reported that more than 80% of their workforce is now working remotely.

As business leaders seek to safeguard not only the health of staff, but the health and productivity of their companies, the pandemic has thrown up many questions—some that require immediate answers, others that need a longer term plan. This report explores a new data set, developed by future-of-work AI company Faethm, to examine the degree to which “business critical” jobs across industries are “remoteable,” and to what extent those jobs could be supported with AI and automation technologies in the future.

Overall, this report argues that the effect of private- and public-sector responses to Covid-19 will accelerate the pace of AI innovation, and will have a positive long-term effect on millions of jobs that are already highly remoteable and readily augmented by technology. Jobs that require human interaction are fertile ground for potential future automation or other technologies that would reduce health and productivity risks.

Critical workers for managing the pandemic response

Measures to contain the spread of COVID-19 infections have taken many forms globally, but most have centered around attempts to radically reduce human interaction, through enforced or self-imposed quarantines, increasing social distancing and by enterprises and organizations employing various remote working strategies. Less than three months ago, China’s lock-down of over 750 million citizens seemed extreme; as of this writing, scores of countries globally have issued similar orders collectively requiring over 3.9 billion people to stay home, half of the world’s population.

In March 2020, MIT Technology Review polled 464 Global Panel executive members on the current state of their company’s remote workforce. Some 68% of respondents indicated that 80% or more of their employees are currently working from home, and another 15% say

Methodology

Faethm’s analytics platform deconstructs employment data across thousands of jobs into their constituent tasks and categorizes which of those tasks require close human interaction, the degree to which the tasks are essential during a pandemic (including health care, government services, vital legal functions, police, as well as food delivery, distribution and production), and how remoteable they are in terms of being effectively performed from home or outside the office.

Jobs that have high levels of human interaction while providing an “essential” service are identified as high

risk. This means that the worker’s health is at increased risk, as well as the productivity of the job itself because of many other pandemic-related disruptions or market conditions. This classification allows a number of assumptions; first, it allows employers to identify priority jobs for workplace interventions to decrease staff risk. Second, it informs deployment of technologies that enable remote working. Third, it informs automation design, to remove workers at risk from infection. Finally, it points to jobs that will benefit from emerging technology in the years ahead, allowing for necessary retraining.

What level of human interaction is required within jobs, and to what degree are they “remoteable”?

What proportion of those jobs within each industry are “business critical” during a pandemic?

What job categories are suitable for greater AI augmentation or automation in the future?

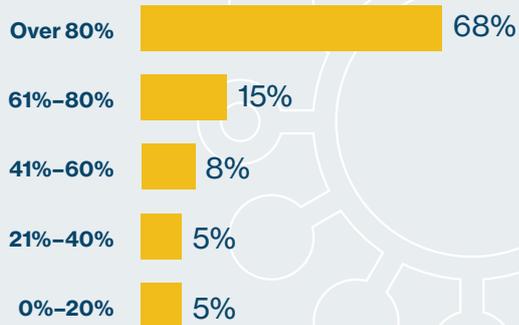
between 60% and 80% are (see Figure 1). Few (less than 10%) say that 20% or less of staff are currently remotely deployed. Remote working tools are also widespread. Businesses say that more than 85% of knowledge workers have access to e-mail and videoconferencing services, although HR self-service tools and workflow management are less widely available.

Faethm data analysis of the US employment market show the degree of human interaction in thousands of job categories, as well as how well suited that job is to remote working (see Figure 2).

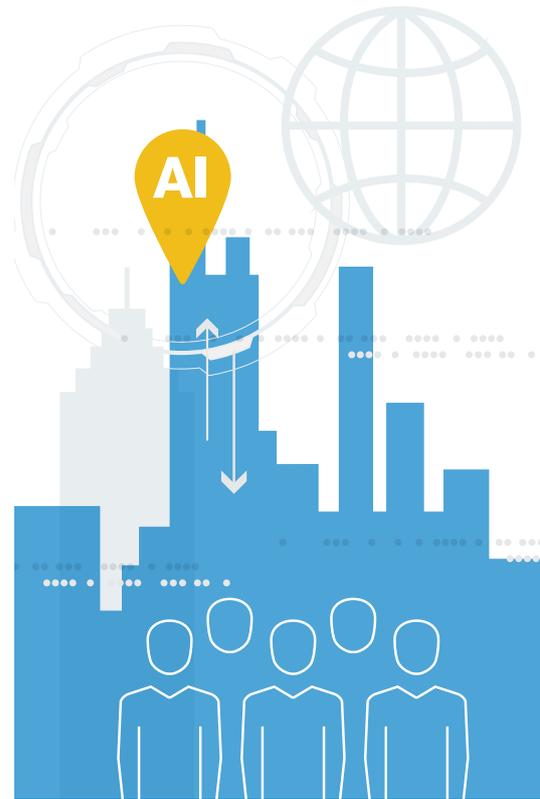
Across the top of the chart are roles that can be performed remotely, regardless of how much human interaction is ordinarily required. These include those in professional services and administrative functions, where, if businesses invest in the necessary information and communications infrastructure, they are able to send workers home with limited disruption to productivity. Michael Priddis, CEO at Faethm says that “the key intervention here is to design work and provide enabling technologies so that these people can continue to work, to deliver value, and to prepare the company for the likely continued hard times ahead. Getting these people as close to ‘business as usual’ as fast as possible will also likely reduce the likelihood of redundancies, if the predictions of imminent recession do come true.”

Across the bottom are jobs that cannot easily switch to remote working and require a high level of human interaction. In the bottom right are jobs that are high risk.

Figure 1: What proportion of your workforce is currently working remotely?
(% of respondents)



Source: MIT Technology Review Insights survey, 2020

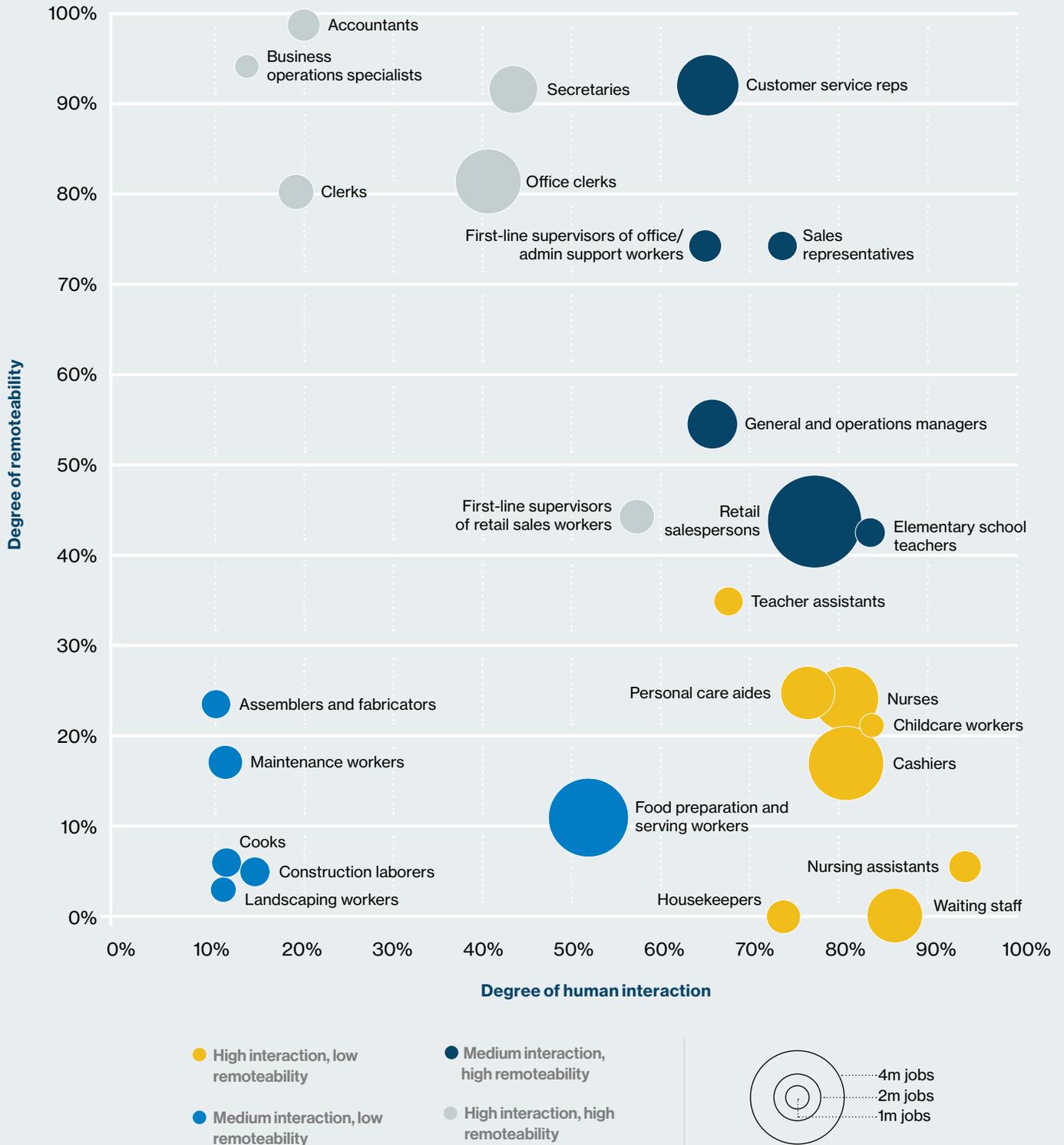


The growth of AI-enabled tools and processes is already having tremendous impact augmenting jobs and automating tasks across jobs and industries.

In these positions, such as nursery-school teachers and care home assistants, workers are not able to avoid contact with people. Construction laborers and assemblers on the other hand, work on site—either in teams or alone—but are better able to avoid direct human contact.

Across all categories, the data reveal there are about 32 million workers highly exposed to pandemic risk, because they require human interaction and are not easily converted for remote working. Of those, over 22 million are also in essential jobs (see Methodology box), and over half of them in health care alone. These jobs are particularly valuable to a society at risk from prolonged health crises. By contrast, there are nearly 45 million workers whose jobs are suitable for remote working and

Figure 2: Task-level analysis of US job categories by degree of human interaction and remoteability, 2020



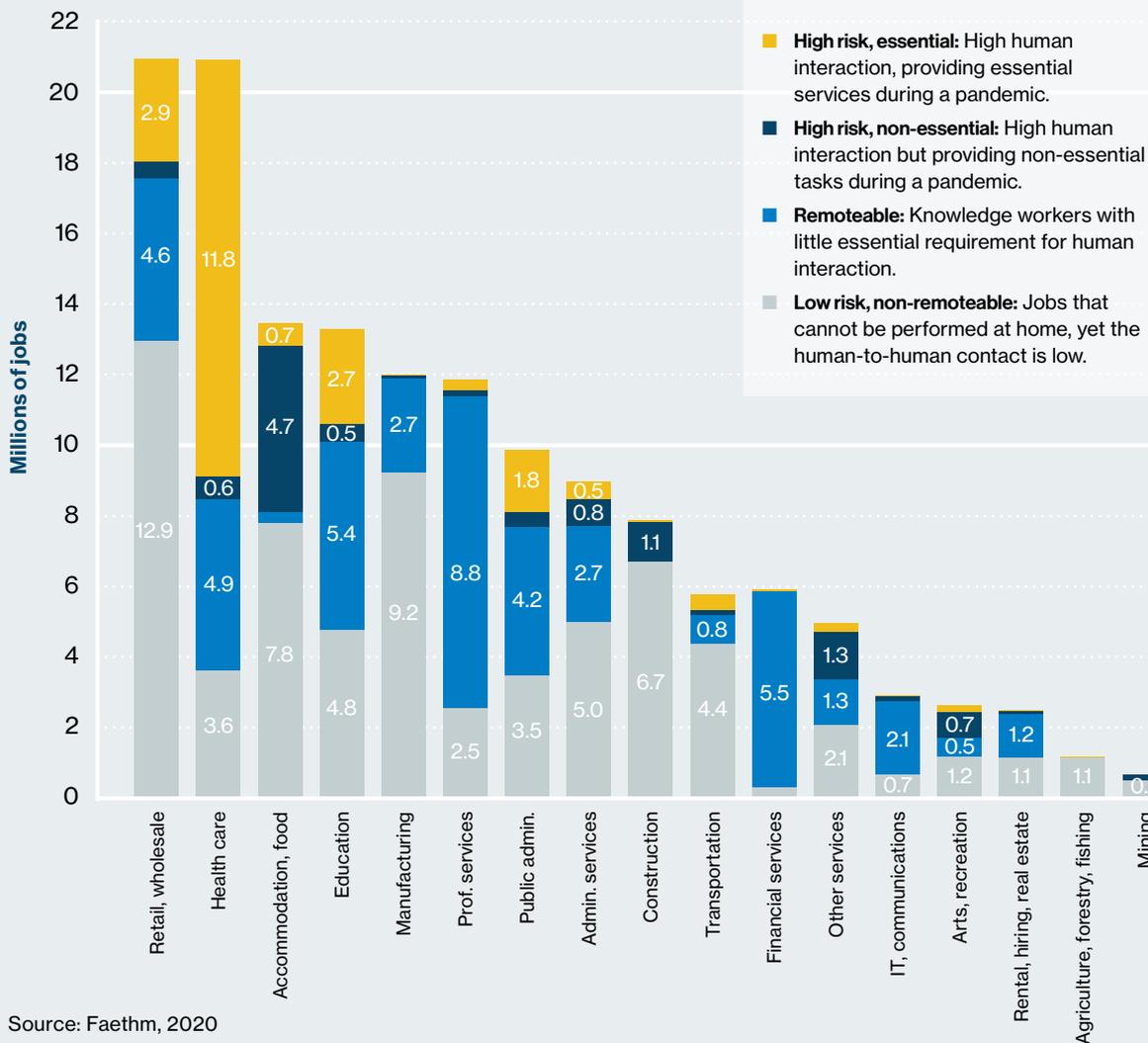
Source: Faethm, 2020

thus more resilient in the current environment (such as financial services; see Figure 3). Health care has a high-risk workforce. More than half of employees are in high-interaction and pandemic-essential roles. Just a quarter of roles within the industry are suitable for remote working. There may be further opportunities to increase the proportion of health-care workers in remoteable positions, says Priddis. “Some of these are likely to be embedded alongside more at-risk workers. For example, administrative staff in emergency rooms may not need to be there. We could help to reduce the Covid-19

risk to these people by identifying them and getting them out of harm’s way quickly.”

The retail and wholesale industries, with the largest combined workforce overall, also have a sizeable number of high-risk jobs—almost three million—comprised of cashiers and store assistants. Not only are individuals performing these jobs at risk of infection, they are also roles that, if not performed effectively for any reason (e.g., changing business circumstances, forced redundancies), would create a risk to society.

Figure 3: Jobs in US industries, categorized by risk level (degree of human interaction), importance during a pandemic, and suitability for remote working, 2020



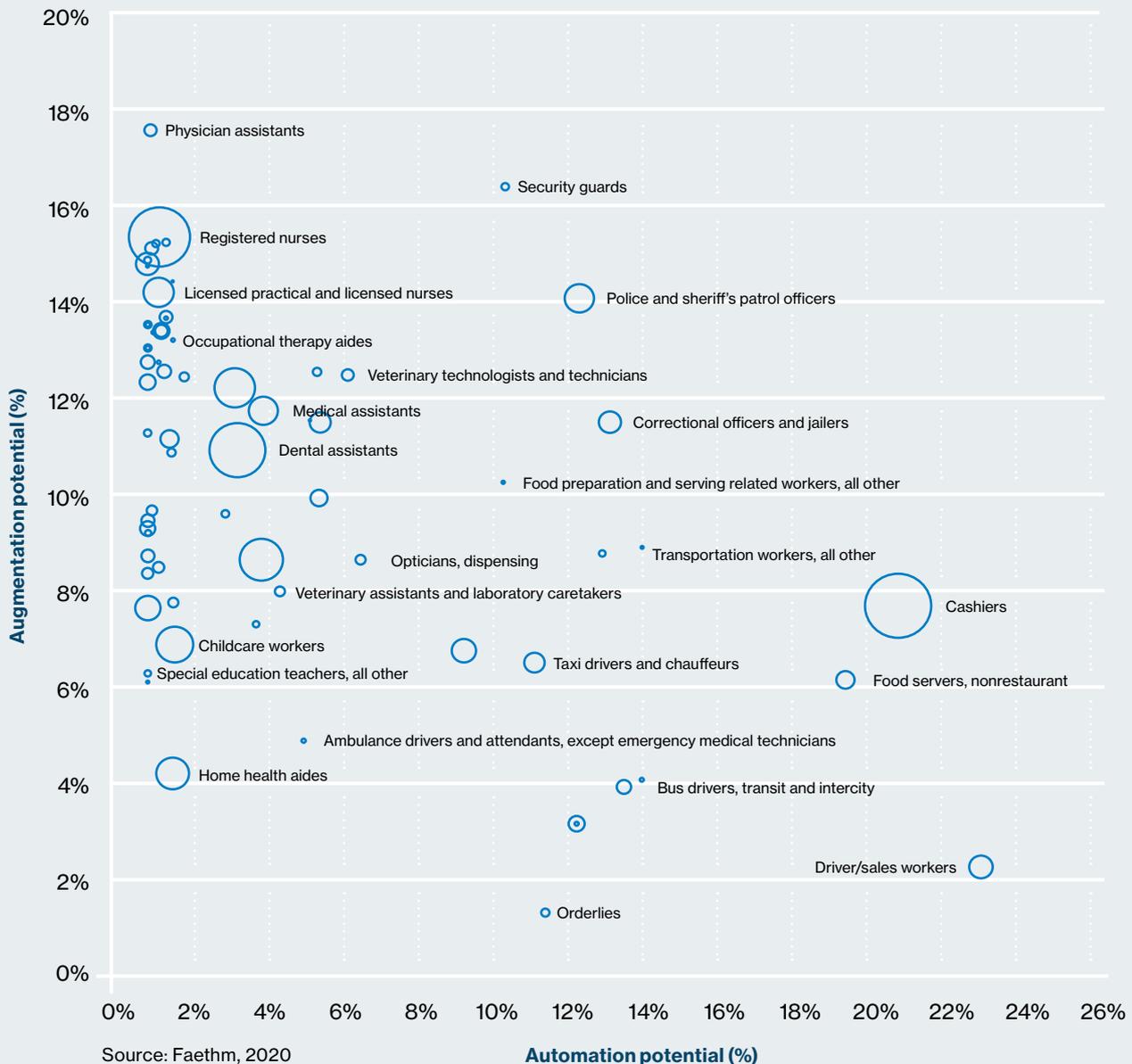
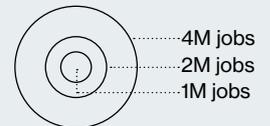
Source: Faethm, 2020

Many, if not most, of the 35 million jobs identified above will experience two levels of disruption. Initially, social distancing requirements and reduced operating hours will make it difficult for those workers to perform their tasks, and this will make their labor less valuable. The second disruption will be a rapid shock to consumption and demand for goods and services. In the wake of Covid-19, after daily life resumes and market conditions rebound, we are likely to see heightened risk-awareness, and commitment to using best available technologies for business continuity.

AI will boost pandemic resilience

The growth of AI-enabled tools and processes is already having tremendous impact augmenting jobs and automating tasks across jobs and industries. The global impact that Covid-19 is having on jobs—disrupting normal business processes as a result of extreme measures to contain its spread—is putting more scrutiny on how AI can assist in mitigating the risk of pandemic exposure, by making certain jobs more productive and effective when they are required to be done remotely, or under different operational conditions in a health crisis. It will also

Figure 4: Augmentation and automation potential for high-risk US job roles , 2020



spur companies to examine jobs that are high risk but non-essential, placing those jobs at a higher risk of automation in the aftermath of the pandemic.

Figure 4 shows the degree to which high risk roles (those that are needed during the pandemic and require human interaction) are augmentable with emerging technology such as artificial intelligence—meaning that workers will have AI to assist them in their jobs, improving decision-making and increasing efficiency—as well as the degree to which tasks within those jobs can be automated by technology, essentially leaving less of the job to be performed by a human.

Toward the top of Figure 4 are jobs that can benefit from greater augmentation with AI. These include specialist medical roles such as anesthesiologists, nurses, and health technologists. Increased use of technology to augment those roles will likely make them more valuable and resilient in any future pandemic. Along the bottom are the roles where AI assistance is currently less feasible. These include home health aides, sales workers, and drivers. The roles on the right of the chart are also those where a greater proportion of their constituent tasks can be fully automated. As Covid-19 continues to spread, these jobs may become at risk, as retailers and restaurants will over time seek to operate with fewer cashiers and serving staff. In essence, some jobs will simply be hard to keep in the future—AI and

robotic solutions for grocery store self check-out and remote tele-medicine will keep populations safer in the next pandemic. “Covid-19 has changed the automation conversation dramatically, in less than two months,” says Priddis. “In January no one was advocating that every grocery check-out be automated immediately, everywhere, because we were worried about the individual’s financial position. Now we’re advocating immediate automation, because we’re worried about workers’ lives, and their risk as a transmitter to others who they interact with.”

Overall, pandemic preparedness accelerate the pace of AI innovation in high risk job categories, causing both “job-positive” and “job-negative” effects. The “pandemic effect” of accelerating AI might not hold true for the readily remoteable knowledge-worker roles. These roles have much potential for augmentation, for example with increasing analytics capabilities and workflow management tools, yet they are more likely to become victim to the economic fallout of the pandemic than through a business continuity imperative.

Many lessons will be learned through Covid-19. The broad deployment of AI in critical roles across health care and the supply chain will ultimately have a positive impact, making essential jobs safer and more effective, and boosting the readiness of economies such as the US to manage pandemics in the future.

Key takeaways

- 1 **Work will change, and faster**—Directly related to the Covid-19 pandemic, between 32 and 50 million US jobs could be increasingly assisted by technology to reduce health risks posed by human interaction and safeguard productivity in a time of crisis.
- 2 **New technology maps**—Rarely, if ever before, have business managers navigated such a confluence of events as the Covid-19 outbreak is triggering today, which combines immediate social and economic shocks with potentially repositioning the technology roadmap for their business around AI, automation, and the future of work.
- 3 **Job positive and job negative effects**—Business leaders must take rapid steps to identify high risk roles, protect and future-proof productivity within those roles, and provide training and development or new career pathways for workers. They can use the human interaction risk versus pandemic criticality matrix (Figure 2) to identify those roles. The augmentation versus automation matrix (Figure 4) points to job functions capable of AI enhancement or automation and identify workers for whom specific training and career development will be required.
- 4 **A policy approach to work and resilience**—Over the longer term, governments should guide industrial development, technology policy, and education systems toward ensuring national resilience in the next pandemic. This includes providing support for businesses that provide essential front-line services and ensuring that high-risk roles benefit from best available technology in the future.

“Covid-19 and the workforce: Critical workers, productivity, and the future of AI” is an executive briefing paper by MIT Technology Review Insights published as part of The global AI agenda series. It is based on data and research provided by Faethm. Claire Beatty was the editor of this report, Nicola Crepaldi was the producer.

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Footnotes

- 1 “5 charts that show the global economic impact of coronavirus,” World Economic Forum, March 31, 2020
- 2 “China’s Economy Suffers Historic Slump Due to Virus Shutdown,” Bloomberg, March 16, 2020
- 3 “Coronavirus: ‘severe shock’ to UK fishing as markets dry up,” The Guardian, March 18, 2020
- 4 “Kenya Destroys Fresh Roses as Virus Crashes Demand in Europe,” Bloomberg, March 19, 2020
- 5 “Global virus cases near a million as Spain, Britain see record deaths,” AFP, April 2, 2020

Illustrations

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