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The Work Ahead in Healthcare: Digital Delivers at the Frontlines of Care

The pandemic has clarified the role and value of digital technologies and approaches for healthcare providers, according to our recent study. Providers are using AI and intelligent machines to personalize care and change how care is delivered.

THE WORK AHEAD

Executive Summary

Healthcare organizations are beginning to articulate a clear agenda as the pandemic accelerates efforts to reduce operating costs and seek new channels for improving the patient experience, while embracing whole-person care.

It's different now. After being pummeled by the global pandemic, healthcare providers are operating in an environment that was unthinkable just 12 months ago. When the crisis struck, it hit healthcare first and hardest. With both their operations and their margins under immense pressure, providers were compelled to rapidly innovate – using every tool at their disposal, including digital technology.

While it was clear in our **2016 Work Ahead** study that providers understood digital technologies and approaches would play a larger role in the industry's future, they didn't seem quite sure of its utility. In our current study, healthcare organizations are beginning to articulate a clear agenda as the pandemic accelerates efforts to reduce operating costs and seek new channels for improving the patient experience, while embracing whole-person care. Whether through telehealth, automation of routine processes or new, consumer-to-business (C2B), on-demand healthcare platforms, digitally-powered healthcare has finally arrived.

To understand the changing nature of healthcare delivery and administration in a world dominated by digital and disrupted by COVID-19, we surveyed 4,000 business leaders around the world and across industries, including 235 healthcare providers (see methodology, page 19). We found an executive class eager to apply advanced technologies such as artificial intelligence (AI), intelligent machines and Internet of Things (IoT) to change how care is delivered and work gets done. It took a pandemic to accelerate this long-overdue modernization drive, but providers now have the momentum to capture opportunities and are gearing up for the work ahead. (For our report on healthcare payers, see "**Gaining a Foothold in the Digital Health Future**.")

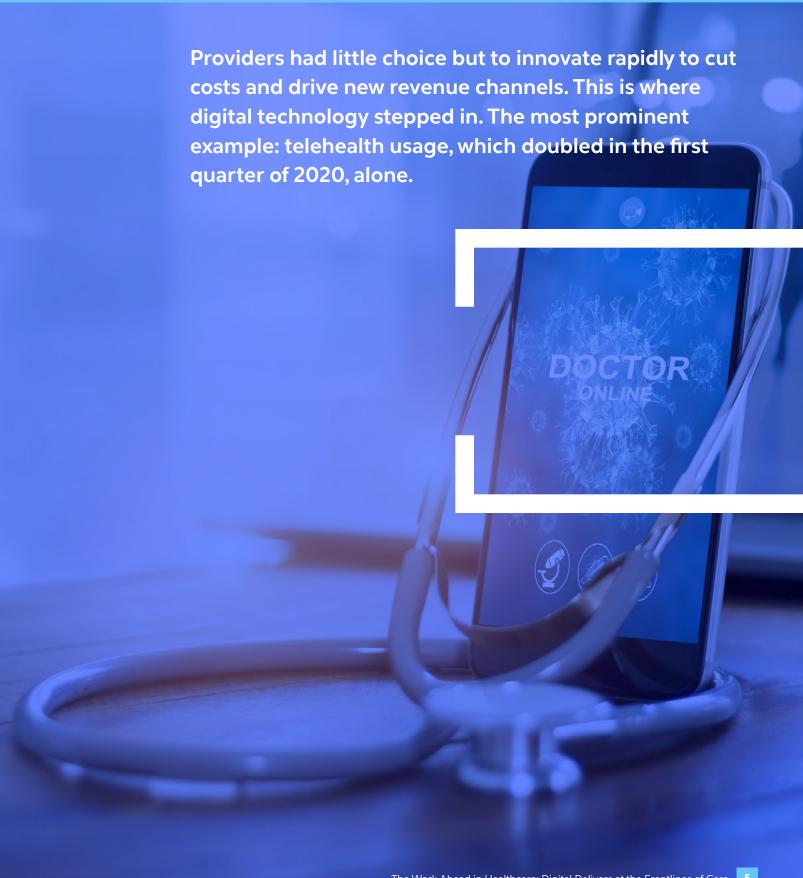A number of key themes emerged from our research and analysis:

1 **The COVID-19 crisis: a catalyst for change.** The pandemic has accelerated provider adoption of innovative practices, including how they use space, source critical supplies, manage staffing and treat patients. Nearly 70% of healthcare providers said the pandemic has pushed them to take significant action either in parts of the organization or throughout the enterprise. While the full ramifications of the pandemic are not totally clear, the confluence of clinical safety requirements, regulatory change, insurance coverage and technology capability has bolstered rapid telehealth adoption – and it's likely here to stay.

2 **Moderate budget growth will necessitate a close look at future digital technology investments.** IT spending growth – including on digital technology – is modest following the revenue hit providers experienced during the crisis. While none of the provider respondents said their digital budgets would decline, over half said their budgets were in the anemic range of below 5% of revenues now. While nearly half (45%) said their budgets would move into the 5% to 10% of revenues range by 2023, these cautious spending levels will present tough near-term choices for providers as they determine implementation priorities.

3 **It's AI implementation time.** Despite slowed IT spending, providers remain bullish on their ability to ramp up digital technology implementation. A sizable percentage – 38% – said they will have an AI implementation by 2023. That figure outstrips all other digital technology investments except IoT. This intended pace of AI implementation may be optimistic considering stated IT spending projections.

4 **Machines are joining the team.** While still in the early stages, machines are poised to take on more work across the board – from providing feedback and process improvement through data mining and executing physical tasks. With high hopes for next-level care delivery, providers expect work to migrate from employees to intelligent machines across a wide variety of tasks. By 2023, the mean adoption of intelligent machines among providers is expected to grow by 38% to almost one-quarter of the work done across the range of tasks defined in our study, representing a steady disruption of the work/role relationship.

5 **Change skills, not workers.** While machine adoption has not yet resulted in serious job displacement, changes in roles and work will require new skills as task allocation evolves. Skill demands will not only grow, but organizations will also have to adjust hiring practices and adopt new measures like "robotics quotient" to evaluate their ability to work and interact with machines and robots.

6 **Deriving meaningful benefits.** The proliferation of medical devices and health information technology (HIT) adoption has generated a hoard of meaningful data that can be used to improve patient management and administration. Providers are optimistic about using digital technology to automate processes and connect with patient data, and expect to realize measurable operational benefits that go beyond traditional priority areas.

The healthcare innovation imperative

Providers had little choice but to innovate rapidly to cut costs and drive new revenue channels. This is where digital technology stepped in. The most prominent example: telehealth usage, which doubled in the first quarter of 2020, alone.

The pandemic has been an unprecedented crisis for healthcare providers. Facing a deadly pathogen with a limited toolkit, providers suddenly had to reengineer care protocols, redesign workspaces and rethink workflows – all while short on personal protection equipment and critical medical supplies.

Over 80% of providers said COVID-19 had an immediate impact on their business performance, and nearly two-thirds (64%) said they had to redesign their workplace to accommodate safe distancing. Meanwhile, as medical centers deferred and canceled high-margin procedures such as elective surgery, the industry lost an estimated $50 billion per month between March and June 2020.[1]

Providers had little choice but to innovate rapidly to cut costs and drive new revenue channels. This is where digital technology stepped in. The most prominent example: telehealth usage, which doubled in the first quarter of 2020, alone.[2] This rapid adoption didn't happen by accident; a number of dynamics had already converged to facilitate the seemingly overnight switch to remote care.

In addition to the proliferation of smartphones, home computers and 5G networking that is placing powerful information transfer and processing power into consumers' hands, consumer-driven business models had already been proved through e-business platforms. This foundation was further bolstered by more flexible regulations and expanded reimbursement rules that will support continued telehealth adoption.[3] As this takes hold, new levels of personalized care will be delivered remotely through transportable health records and patient and health data mined through analytics and leveraged by AI-driven automation (see Quick Take, page 8).
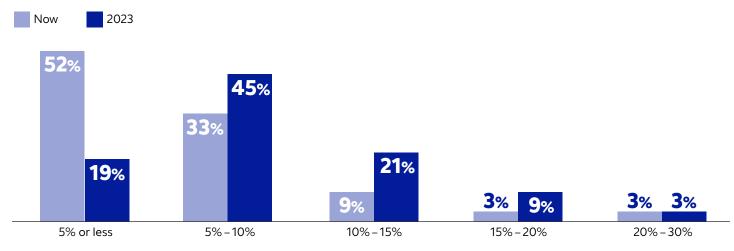
Dollars and sense of digital

On the cost side, facing intense margin pressures, a sizable majority (71%) of providers said they've invested in digital technologies and approaches to drive operational efficiency and cost savings – crucial in an industry where an estimated 20% of built-in costs are due to waste.[4] While many (41%) have seen modest gains as a result of these investments, nearly one-third report moderate (18%) or large (11%) performance improvements. Such promising results have executives looking for bigger returns going forward.

One school of thought is that AI initiatives – through achieved cost-efficiencies – will more than pay for themselves. Perhaps true, but organizations still must make the upfront IT investment to attain this cost-efficiency posture.

Spending, however, has been relatively modest. Over half said their technology budgets were pegged at less than 5% of revenues now, although nearly half (45%) said their budgets would move into the 5% to 10% range by 2023 (see Figure 1).

IT budgets will grow, but modestly

Respondents were asked about the percent of revenues invested in technology, now and in 2023. (Percent of respondents)

Legend: Now | 2023

	5% or less	5% – 10%	10% – 15%	15% – 20%	20% – 30%
Now	52%	33%	9%	3%	3%
2023	19%	45%	21%	9%	3%

Response base: 235 healthcare providers
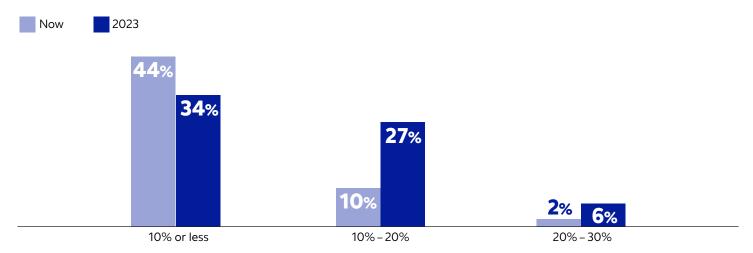Source: Cognizant Center for the Future of Work
Figure 1

On the revenue side, providers are looking to digital channels to take up the slack (see Figure 2). While one-third of respondents indicate their digital channel revenues will remain in the below 10% range in 2023, the shift is clear: Over one-quarter of respondents expect to earn the higher 10% to 20% of revenues through digital by 2023 vs. just 10% of respondents today. A greater percent are also in the more bullish 20% to 30% range for 2023.
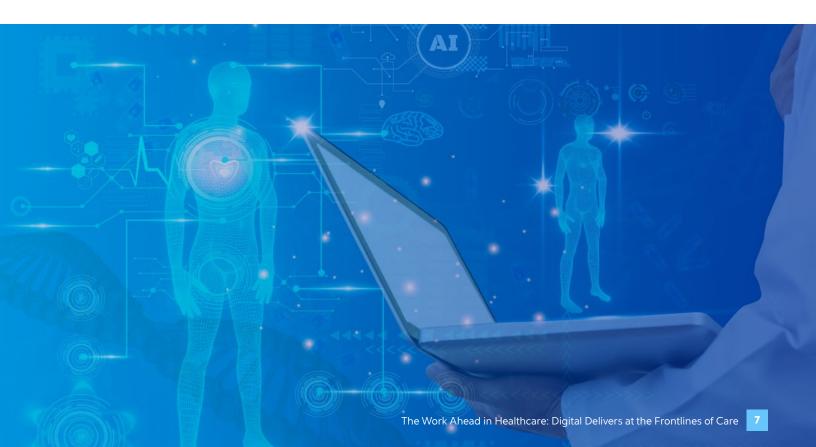
Providers look to digital channels to boost revenues

Respondents were asked to identify the percent of company revenues they receive from digital channels, now and in 2023.
(Percent of respondents)

■ Now   ■ 2023

	10% or less	10% – 20%	20% – 30%
Now	44%	10%	2%
2023	34%	27%	6%

Response base: 235 healthcare providers
Source: Cognizant Center for the Future of Work
Figure 2

Quick Take Rise of the healthcare platform

While the pandemic didn't start the telehealth transition, it certainly shifted it into higher gear. With the proliferation of mobile technology, devices, clinical data and AI, most respondents (90%) said they believe this new pace of industry disruption will only accelerate in the future. With the technology and market demand in place, providers are eyeing on-demand healthcare platforms as new channels to deliver a variety of healthcare services from various service suppliers.

Most respondents (71%) say this new "platform economy" will impact their work by 2023. Traditional providers may not be the only ones defining this potentially high-margin market; it is also drawing attention from e-business giants like Amazon and Google, masters of the online service model.

For providers, new platform-based models are likely to come into play in various forms:

❚ **Technology platforms.** With this model, technology vendors provide the platform and application programming interfaces (API) to enable providers to deliver medical expertise to consumers. Potential technology partners might include vendors such as Apple and Microsoft.

❚ **Healthcare anywhere.** Telehealth has demonstrated that care can be delivered through virtual encounters. Providers can use AI-driven agents and advanced analytics to leverage the telehealth infrastructure to deliver services globally, on a 24/7 basis.

❚ **McHealth.** Like McDonald's, this model would offer branded services at one-stop locations where healthcare consumers know the menu and pricing before they walk in the door. Already deployed at pharmacies (CVS, Walgreens) and large chains (Walmart), these entities will use interoperable data to access a consumer's record, which will eliminate paperwork and administrative costs – personalized care at a budget price.

❚ **Hospital as-a-service.** By leveraging new networking capabilities, providers can operate as a central control hub. Here, they could manage and monitor patients and extend resources through a subscription- or consumption-based model. An example is Mercy Virtual's "hospital without beds," a remote monitoring and in-home service to 43 hospitals and patients across five states.[5]

❚ **Clinical powerhouse.** A number of academic medical centers and large health systems, such as Mayo, Cleveland Clinic, Johns Hopkins and Stanford University, have already established national (and global) brands to develop specialized, best-in-class care delivery spanning various geographies. These brands can leverage expertise in various specialties, backed by outcomes-based research to deliver high-quality, potentially lower cost care.

Future outcomes pivot on AI

9

Almost all respondents (96%) said AI would impact their work going forward. Further, the technologies with the highest level of implementation are AI and IoT.

Even before the pandemic, because of its fragmented structure and complex process interactions, healthcare introduced vast opportunities for operational innovation.

Often, teams form on a moment's notice, and pertinent institutional knowledge is dynamic. Time-pressured decisions have highly consequential outcomes on a minute-by-minute basis.

While digital technology can greatly support these dynamics and improve healthcare delivery, implementing it is not an insignificant endeavor. The effort is often disruptive. Yet, it is this very complexity in healthcare delivery that presents a target-rich environment for automation.

Using rules-based systems and machine-learning algorithms, automation can facilitate process execution, drawing on specific patient histories to improve treatment. By applying AI to these functions, organizations can expedite prior authorization, identify fraud and waste, and automate billing, coding and patient scheduling.
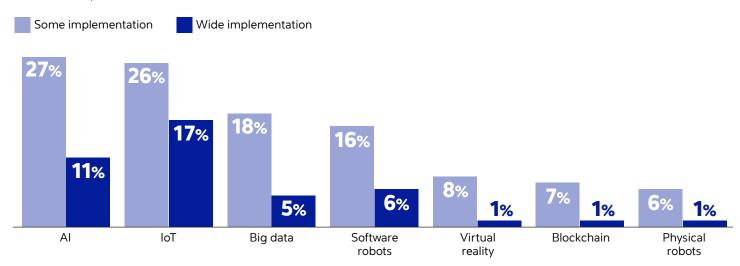
In our study, almost all respondents (96%) said AI would impact their work going forward. Further, the technologies with the

highest level of implementation are AI and IoT (see Figure 3). Providers are looking to AI to help achieve both strategic and tactical objectives. According to Gartner, 20% of all patient interactions will involve some form of AI enablement within clinical or nonclinical processes by 2023 – up from less than 4% today.[6]

The momentum is real: Roughly 38% of providers say they have active AI implementations on-site. Another 32% say they are in pilot mode, while another 22% are still in the exploration stage. In the short term, most providers are using AI for routine operations such as management of beds and staffing. However, the bigger goal calls for moving to more complex functions, such as clinical decision support.

Technologies with the least uptake are virtual reality, blockchain and physical robots, with less than 10% of providers citing any implementations by 2023.

AI and IoT are top tech targets

Respondents were asked about the progress they've made in implementing a variety of technologies to augment processes. (Percent of respondents)
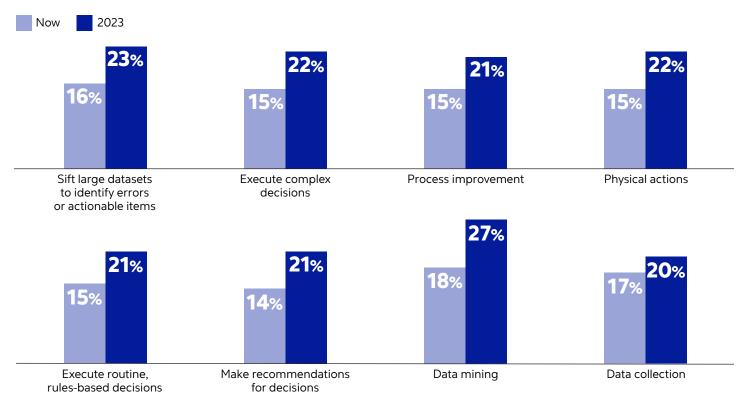

Legend: Some implementation | Wide implementation

Technology	Some implementation	Wide implementation
AI	27%	11%
IoT	26%	17%
Big data	18%	5%
Software robots	16%	6%
Virtual reality	8%	1%
Blockchain	7%	1%
Physical robots	6%	1%

Response base: 235 healthcare providers
Source: Cognizant Center for the Future of Work
Figure 3

The shift toward intelligent machines

Respondents were asked to what extent the following activities are carried out by machines vs. employees, today and in 2023. (Mean amount of work executed by machines)

Now 2023

23% 16% — Sift large datasets to identify errors or actionable items

22% 15% — Execute complex decisions

21% 15% — Process improvement

22% 15% — Physical actions

21% 15% — Execute routine, rules-based decisions

21% 14% — Make recommendations for decisions

27% 18% — Data mining

20% 17% — Data collection

Response base: 235 healthcare providers
Source: Cognizant Center for the Future of Work
Figure 4

Machines: they're on their way

As AI implementations move forward, intelligent machines are already taking on more tasks, with even adoption across all areas measured in this study (see Figure 4). This suggests that machines are already displacing elements of human work in routine, rules-based processes, such as administrative workflows (i.e., claims processing), while augmenting non-routine tasks such as complex decision-making and diagnostics.

Using the mean measure of adoption across all the tasks in our study, on average, 16% of work is executed by machines today, and that figure is expected to increase to 22% by 2023. Currently, the greatest use of machines is in the area of data mining, and that will continue into 2023. Another standout area includes machines making recommendations for decision making (from 14% to 21%).

According to the chief financial officer at a large U.S. healthcare provider, intelligent machines are helping to improve not just productivity and efficiency but also patient care. His organization is using AI algorithms to help clinicians make informed decisions based on years of accumulated data. "Because of medical imaging diagnostics, radiologists can look for high-level details which the naked eye cannot," he said. "So, it is not just the productivity increase; it is also the quality of work that gets a big thumbs-up with the use of (AI) technology."

As AI use evolves from machine-learning to deep-learning models, providers will be able to more fully leverage a bevy of information beyond clinical data, such as lifestyle statistics, genetic content and cellular analysis. Almost all respondents (96%) said they expect more access to data and more analysis to come with it. All of these factors combined will lead to new levels of patient-centered, personalized care.

Enhancing work, not displacing workers (so far)

The conversion to digitally-powered healthcare portends a great deal of organizational change. In our 2016 study, most providers (80%) expressed concern that automated technology (i.e., robots) would replace people in their jobs. Having gained experience with AI enablement, it now appears those fears – for now at least – were overblown. Mitigating factors such as labor substitution, talent shortages, regulation and social acceptance are bridling the feared labor decline.[7]

To wit, only half (54%) of the providers in our current study expressed the same concern as in 2016. While the vast majority (92%) do expect jobs and skills to change to a great extent, 94% expect workers to collaborate with machines to perform their role functions in the foreseeable future. To that end, some organizations are beginning to adopt "robotics quotient" measures, which is a way of scoring their employees' ability to work effectively with robots.[8]

Digitally-enabling processes will require multidisciplinary skills across many healthcare roles, including IT, clinical systems leaders, operations managers, patient experience designers and healthcare leadership. Organizations will be challenged to execute on this work because of talent gaps across key areas, from process optimization to automation technology. In fact, 89% of respondents said they anticipate global talent shortages going forward as skills requirements change.

Anticipated skills needs have shifted significantly since our last study. In 2016, respondents forecast that the most important skill set by 2020 would be leadership, with decision making, analytical skills and strategic thinking ranked highest. Our current study reveals a shift in focus to innovation, with respondents ranking decision making, customer care and learning as most important by 2023. The largest area of increase was in learning, which grew from 20% of respondents naming this skill in 2016 to 57% in our current study, followed by decision making, which increased from 44% to 68% of respondents over the same time period.

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Outcomes: patient care and beyond

In a number of areas, the percentage of respondents expecting improvement from applying digital technologies will more than double. The greatest improvements will be seen in decision-making, followed by customer experience and employee experience.

Ultimately, healthcare organizations will measure digital technology not by its potential but by its impact. How respondents view that impact has evolved from basic concerns about the technology itself, to how it can now be used to improve operations and delivery of care.

In 2016, providers predicted that the greatest factors impacting their work would be nascent issues such as security and privacy, cloud technology and regulations. Now, with some experience in hand, most providers consider the most impactful drivers to be the very same technologies they're using to improve performance: AI and physical work automation (see Figure 5).
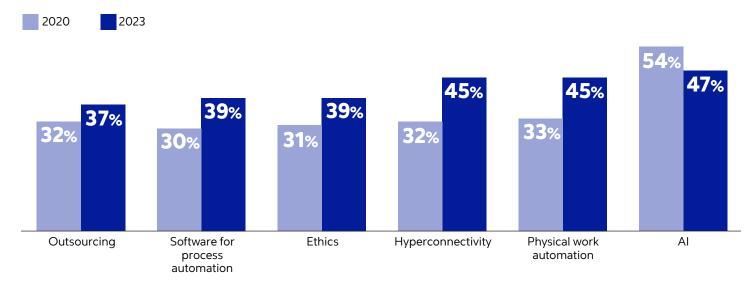
These findings are also congruent with providers' efforts to use technology to create a safe work environment for staff and patients. With two in five (42%) respondents expecting less personal and social contact with patients as a result of the pandemic, providers are looking to automation and physical robots to help close the gap. Robots have already been used to process lab results, pack medical devices and perform surgery.

Once again, necessity has inspired providers to use robots to protect frontline workers, performing roles such as disinfecting personal protection equipment, retrieving and storing supplies and delivering medicine to patients in hospitals.

The confluence of these events has also accelerated the impact of hyperconnectivity and physical work automation for providers. Hyperconnectivity (45%) is tied to social distancing goals, as it entails the pulling of data from devices for remote monitoring of patients. The impact of this innovation is not only that it changes operational support, but that it also feeds the data repository that can be leveraged for other automated mechanisms. Digital technology begets more digital technology.

Hyperconnectivity, physical automation, AI are key drivers
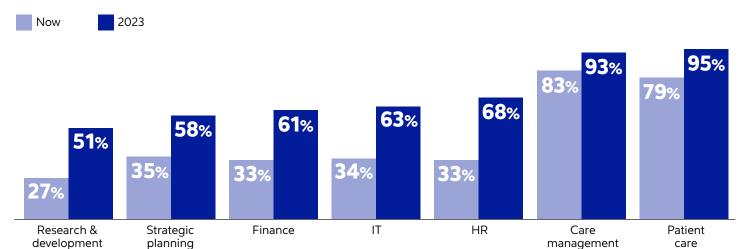
In our 2016 and current study, respondents were asked the degree of impact the following forces will have on work in the coming years. (Percent naming "strong impact")

■ 2020   ■ 2023

	Outsourcing	Software for process automation	Ethics	Hyperconnectivity	Physical work automation	AI
2020	32%	30%	31%	32%	33%	54%
2023	37%	39%	39%	45%	45%	47%

(2020 data is from our 2016 study; 2023 data is from our current study)
Response base: 235 healthcare providers
Source: Cognizant Center for the Future of Work
Figure 5

Intense digital focus on patients and care management

Respondents were asked to describe their progress today and by 2023 in implementing emerging technologies to augment workforce performance in the following business processes. (Percent of respondents who said they had achieved some degree of automation: implemented projects/some augmentation, implemented projects/good augmentation or implemented widespread workforce augmentation)

Legend: Now (light blue) | 2023 (dark blue)

Business Process	Now	2023
Research & development	27%	51%
Strategic planning	35%	58%
Finance	33%	61%
IT	34%	63%
HR	33%	68%
Care management	83%	93%
Patient care	79%	95%

Base: 235 healthcare providers
Source: Cognizant Center for the Future of Work
Figure 6

Leaders build on telehealth success

A marker of providers' maturity in digital adoption is these organizations' deployment of technology to improve workforce performance in core process areas. On average, one-third (32%) of providers said they've augmented the 12 key process areas in our study either partially or to a widespread degree already, compared with 54% who said they expected to do so by 2023.

Not surprisingly, the processes in which providers have made the most progress by far in terms of augmentation are in care management and patient care (see Figure 6). While the impetus for this is at first intuitive, it has also been intensified by the telehealth phenomenon. Virtual healthcare consumes much attention when it comes to process augmentation because it requires not only digitizing interactions between clinicians and patients, but also coordinating systems and data between internal support processes and external partners, such as insurance payers.

Digital augmentation will also be necessary as providers seek cost efficiencies through automation and optimization of traditional business areas. After care management and patient care, the areas most often identified for digital augmentation include HR, IT, finance, strategic planning and research & development.

Targeting critical outcomes

A final measure of digital technology's criticality is that it is being used not only in specific process areas, but also to achieve specific outcomes – particularly for those process interactions that are complex, time-sensitive and often prone to human error. As the industry shifts toward value-based care, traditional inefficiencies in payer-provider models, such as prior authorizations, can be eliminated almost completely through automation. New opportunities include the use of AI, analytics and social determinants data to identify patients and populations at risk of outbreaks and complications or in need of specific care management services.

While three-quarters of respondents said their organization had made little or no increase in augmentation in 2020, almost half (46%) expect a moderate to large increase by 2023. In a number of areas, the percentage of respondents expecting improvement in targeted areas will more than double (see Figure 7). The strongest growth area for improved performance is decision-making, followed by customer experience and employee experience.
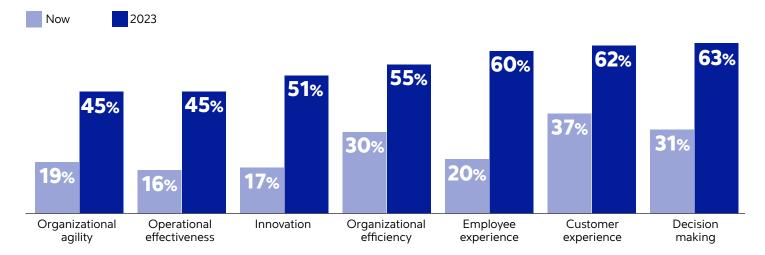
Clinical decision making is a prominent candidate for AI-enabled algorithms, as these systems can use patient data and statistics to guide complex diagnostics and treatment options

in a comprehensive and rapid manner. Against the backdrop of the pandemic, it's only become more vital to target these high-impact opportunities, and further, it might explain why providers believe they can expand AI-based augmentation with limited budgets. Customer engagement and employee experience will also benefit from the same personalized, process-driven capabilities.

In addition to operational effectiveness, an increasing number of providers said digital technology would improve innovation in their settings, tripling from 17% in 2020 to 51% by 2023.
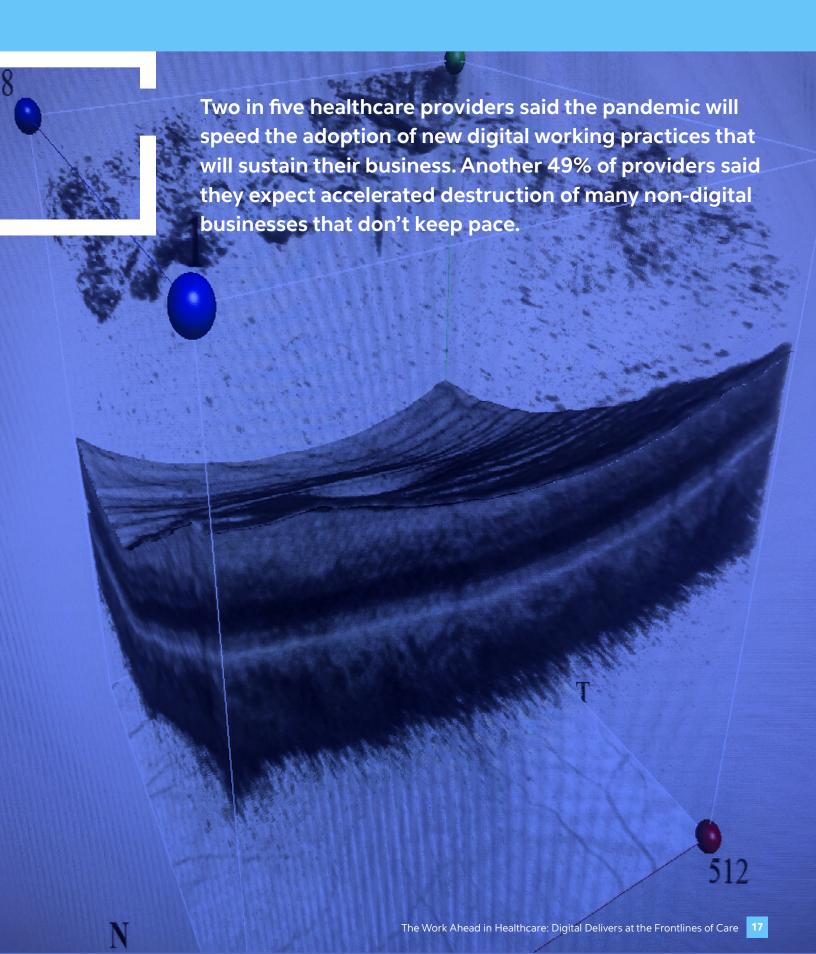
Great expectations for improved outcomes

Respondents were asked what progress they'd made in improving the following outcomes using technology to augment process performance. (Percent citing a moderate, large or very large increase)

Now ■ 2023

	Now	2023
Organizational agility	19%	45%
Operational effectiveness	16%	45%
Innovation	17%	51%
Organizational efficiency	30%	55%
Employee experience	20%	60%
Customer experience	37%	62%
Decision making	31%	63%

Base: 235 healthcare providers
Cognizant Center for the Future of Work
Figure 7

Recommendations

Two in five healthcare providers said the pandemic will speed the adoption of new digital working practices that will sustain their business. Another 49% of providers said they expect accelerated destruction of many non-digital businesses that don't keep pace.

Healthcare providers are signaling a growing appetite for digital technology deployment. A checklist for next-level change includes:

❚ **Take out costs.** Providers are looking to automation to boost operational efficiencies. They can derive further savings by consolidating and standardizing clinical and non-clinical applications in the IT portfolio to reduce IT operating costs. Further, moving non-core operations such as revenue cycle and supply chain operations to outcome-based or volume-based pricing models can help optimize operating costs consistent with volumes.

❚ **Deliver care@home.** Because of the pandemic, almost half (43%) of providers say there will be less personal and social contact with customers, which has pushed the adoption of telehealth. Even after the pandemic, its implementation and contextualization will likely have a broad impact on cost and utilization of medical services. Combined with AI-driven technology, telehealth will personalize medical treatment, reduce exposure of frontline workers and likely reduce the cost of care.

❚ **Implement low-touch healthcare.** To achieve social distancing and safety objectives, 35% of providers said they could lower costs by streamlining their use of office space. Digital technology can be used to safely provide visit summaries and orders and digital scheduling of follow-up appointments, while touchless payments could be enabled (Apple Pay, Google Pay, etc.) at the point of care or before or after the visit to avoid physical handling of paper and surfaces.

> By making innovative use of data and meeting the skills challenge, providers can capitalize on new market opportunities, faster and more efficiently.

❚ **Digital: do or die?** The shifts in consumer behavior, combined with regulatory easing and powerful new technologies, are already pushing the uptake of digital initiatives in healthcare. These market changes may help define healthcare provider leadership going forward. Two in five (41%) of provider respondents said the pandemic will speed the adoption of new digital working practices that will sustain their business. Yet, another 49% of providers said they expect accelerated destruction of many non-digital businesses that don't keep pace.

❚ **Payers and providers: getting it together.** Payers and providers are interdependent in the same healthcare ecosystem. The emergence of digital technology in the crisis provides the opportunity for these entities to invest in new models of collaboration to maximize operating efficiency, reduce waste and duplicated effort, maximize information delivery speed and improve patient care. In addition to offering new consumer-facing services, opportunities exist to use AI, analytics and social determinants data to identify patients and populations at risk of outbreaks, complications, or in need of specific care management services. Traditional inefficiencies in traditional payer-provider models such as prior authorizations can be eliminated almost completely by automating with newer technologies.

Ready for next-level gains

Coming through the pandemic, healthcare organizations are ramping up their use of digital technology as they redefine healthcare delivery. Their rapid adoption of telehealth in crisis demonstrates their ability to go further. By making innovative use of data and meeting the skills challenge, providers can capitalize on new market opportunities, faster and more efficiently. The raw power of AI – with deep learning just over the horizon – holds great promise as adoption increases. Up ahead, providers have many opportunities and thorny ethical challenges to navigate as digital technology shapes the work ahead in healthcare.
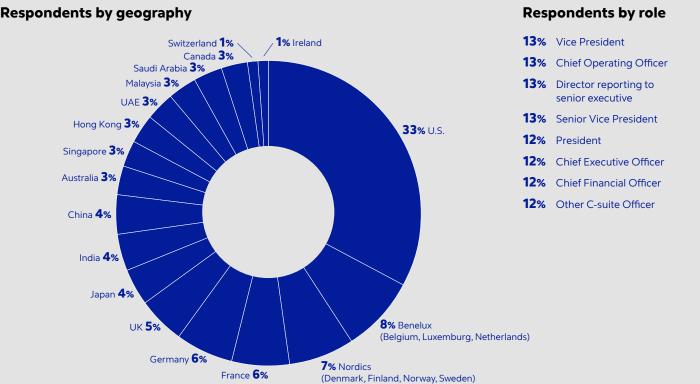
Methodology

Cognizant commissioned Oxford Economics to design and conduct a study of 4,000 C-suite and senior executives, including 235 healthcare providers. The survey was conducted between June 2020 and August 2020 via computer-assisted telephone interviewing (CATI). Approximately one-third of the questions were identical to those included in the 2016 Work Ahead study, allowing us to compare responses and track shifting attitudes toward technology and the future of work.

Respondents were from the U.S., Canada, UK, Ireland, France, Germany, Switzerland, Benelux (Belgium, Luxemburg, Netherlands), Nordics (Denmark, Finland, Norway, Sweden), Singapore, Australia, Malaysia, Japan, China, Hong Kong, India, Saudi Arabia and UAE. They represent 14 industries, evenly distributed across banking, consumer goods, education, healthcare (including both payers and providers), information services, insurance, life sciences, manufacturing, media and entertainment, oil and gas, retail, transportation and logistics, travel and hospitality, and utilities. All respondents come from organizations with over $250 million in revenue; one-third are

from organizations with between $250 million and $499 million in revenue, one-third from organizations with between $500 million and $999 million in revenue, and one-third with $1 billion or more in revenue.

In addition to the quantitative survey, Oxford Economics conducted 30 in-depth interviews with executives across the countries and industries surveyed. Interviewees who responded to the survey have a track record of using emerging technology to augment business processes. The conversations covered the major themes in this report, providing real-life case studies on the challenges faced by businesses and the actions they are taking, at a time when the coronavirus pandemic was spreading around the world and companies were formulating their strategic responses. The resulting insights offer a variety of perspectives on the changing future of work.

The following figures represent the demographics of the 4,000 respondents from the full global study.

Respondents by geography

Switzerland **1%**   **1%** Ireland
Canada **3%**
Saudi Arabia **3%**
Malaysia **3%**
UAE **3%**
Hong Kong **3%**
Singapore **3%**
Australia **3%**
China **4%**
India **4%**
Japan **4%**
UK **5%**
Germany **6%**
France **6%**

33% U.S.

8% Benelux
(Belgium, Luxemburg, Netherlands)

7% Nordics
(Denmark, Finland, Norway, Sweden)

Respondents by role

13% Vice President

13% Chief Operating Officer

13% Director reporting to senior executive

13% Senior Vice President

12% President

12% Chief Executive Officer

12% Chief Financial Officer

12% Other C-suite Officer

(Percentages may not equal 100% due to rounding)

About the author

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Patricia (Trish) Birch is Senior Vice-President & Global Practice Leader, Healthcare Consulting, at Cognizant. In this role, she leads Cognizant's Healthcare Consulting Practice, serving providers, payers, pharmacy benefit managers, public sector organizations and other companies serving the healthcare industry. She has years of hands-on experience managing and executing complex business and technology programs, and has served many of the largest organizations across the industry. She is a member of Cognizant's healthcare leadership team.

Trish joined Cognizant in 2010 and has more than three decades of experience in operations and management consulting, including seven years as a C-level operations and information technology executive, 15 years as a consulting managing partner, and 10 years as a member of the board of trustees for a large healthcare system. She is also a published author and speaker on issues facing the industry.
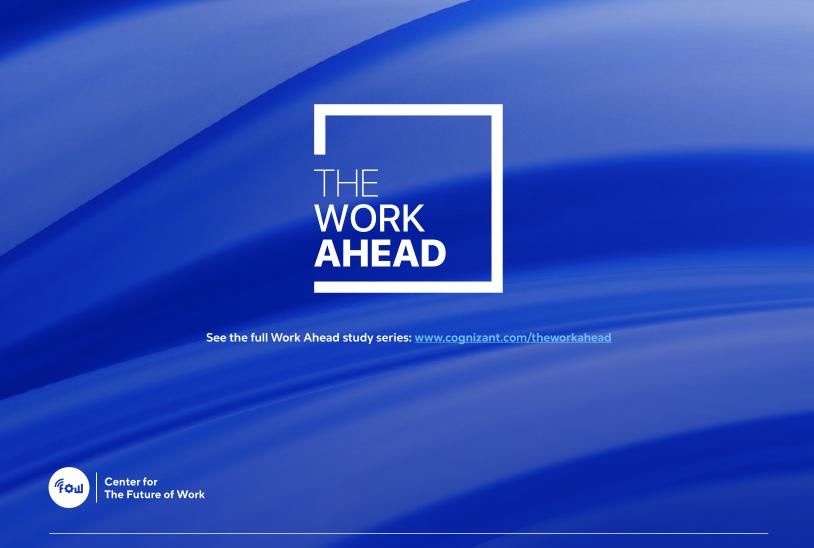
In addition, Trish has worked internationally, serving clients in Europe and China, and led practices at other leading consultancies. Trish was named to the 2015 Women Leaders in Consulting list by *Consulting Magazine* and received the Excellence in Client Service award. She also was honored with the Cognizant CEO Leadership Award in 2017.

Trish graduated from Boston University with a degree in finance and also has an MBA from Jacksonvile University.

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