future health index 2022

Global report

Healthcare hits reset

Priorities shift as healthcare leaders navigate a changed world

The Future Health Index is commissioned by Philips

Contents

Research premise

This is the largest global survey analyzing the top priorities and concerns of healthcare leaders*.

The Future Health Index 2022 report – now in its seventh year – is based on proprietary research conducted in 15 countries.

In 2022, the Future Health Index focuses on how data and advanced analytics are giving healthcare providers new tools which enhance their ability to deliver care to all sectors of their communities, both in and out of a traditional hospital setting.

Responses from almost
3,000
healthcare leaders

Across
15
countries

Countries included in the research

Australia	India	Russia
Brazil	Indonesia	Saudi Arabia
China	Italy	Singapore
France	Netherlands	South Africa
Germany	Poland	United States

* Healthcare leader is defined as a C-suite or senior executive decision maker/influencer working in a hospital, medical practice, imaging center/office-based lab, ambulatory center or urgent care facility

Foreword

Over the past two years, pressure on the healthcare industry has been unrelenting. The pandemic has continued to challenge resources, systems and the provision of care at every turn and in every country around the world. Today, as we emerge from the pandemic, we see healthcare leaders embarking on a reset – refocusing on a number of new and existing priorities, from addressing staff shortages, to extending care delivery, to leveraging big data and predictive analytics, as they navigate new realities in medical management.

The Future Health Index 2022 report provides a detailed picture of the most pressing priorities for today's healthcare leaders – and reveals what they plan to do about them. Top of the list are staff satisfaction and retention, which have become increasingly difficult to maintain in a sector facing widescale labor shortages. Next is the drive to extend care delivery beyond hospital walls, which has been accelerated by the pandemic, and continues to fuel investments in digital health technologies and capabilities.

Meanwhile, as we highlighted in last year's report, a sharp focus on social responsibility has had a positive effect in promoting greener healthcare systems. However, for some, the change has not been fast enough, with our latest research revealing that many leaders are now accelerating their sustainability plans, in line with the evolving expectations of patients.

Finally, unlocking the power of big data and predictive analytics has presented some of the most significant opportunities for healthcare leaders to improve the quality, cost and speed of care. But the pace of development is slow, and leaders recognize the need to strengthen their investments with strong strategic partnerships, staff training and governance in order to maximize their returns.

In summary, this 2022 report reflects a resetting of priorities and of care delivery itself, as healthcare leaders navigate a fundamentally changed world.

"As we emerge from the pandemic, we see healthcare leaders embarking on a reset.

Jan Kimpen
Philips Chief Medical Officer

In the hospital sector, the COVID situation hit us hard... future investments fell behind a bit... we are now clearly looking to the future again.

Operation Room Department Head
Urban hospital, Germany

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Emerging from the pandemic, healthcare leaders reassess their needs

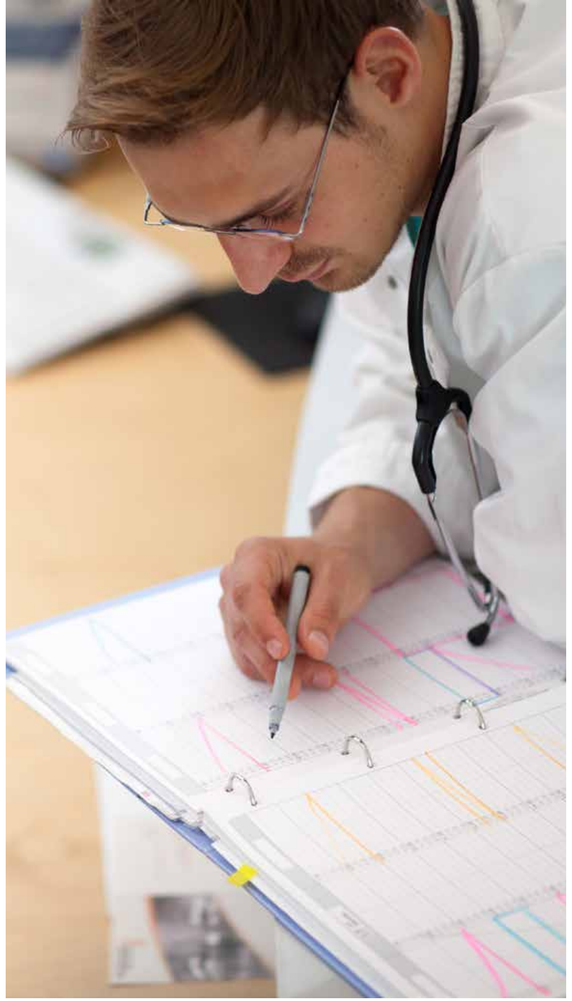
A much-needed refocus on staff

The pandemic has exacerbated the difficulties faced by healthcare leaders before the crisis. Today, healthcare leaders face a human capital crisis: the 'great resignation' has serious consequences for the industry, leading to the closure of facilities, in some cases. This is an issue that must be addressed in order to fix other challenges.

Evolving the approach to care delivery

The pandemic has led healthcare leaders to act with agility, build resilience and adopt smarter ways of working to help future-proof care. It has also pushed them to rethink how care is delivered. In many cases, healthcare leaders have continued to use care practices that were adopted more widely during the pandemic, including virtual care.

The following chapter explores the current priorities for healthcare leaders and how their planned investments in digital technology can support these priorities.



Healthcare leaders refocus on staff satisfaction and retention

A job that takes two people to complete is being given to only one person to do. It must be hard for our staff.

Department Head of Neurology
Urban hospital, China

Tackling the human capital crisis is top of mind

Employee retention is a serious issue in healthcare systems across the world: global demand for healthcare workers is predicted to rise to 80 million staff by 2030*. With supply of healthcare workers expected to reach just 65 million over the same period, this leaves a significant** 15 million shortfall. Driven by aging populations and economic and population growth, this demand is anticipated to be highest in middle-income countries.

Coupled with this is the departure of staff: more than half of all healthcare workers worldwide are experiencing burnout that, if not addressed, could cause many to leave their fields***. The consequences of poor staff retention are severe and include high costs associated with replacing staff, which affect patient care and staff morale.

Staff satisfaction and retention ranks as the highest priority for healthcare leaders

This may explain why staff satisfaction and retention are, together, top of healthcare leaders' priority lists, both today and three years from now (30% today, 28% in three years). However, the underlying reasons behind this vary from country to country. In the United States, for example, it is driven by the 'great resignation' and competing salaries from other sectors. In India, it is the ever-increasing demand for more healthcare professionals that is the driver, while in China the priority is focused around the specific need for doctors and nurses.

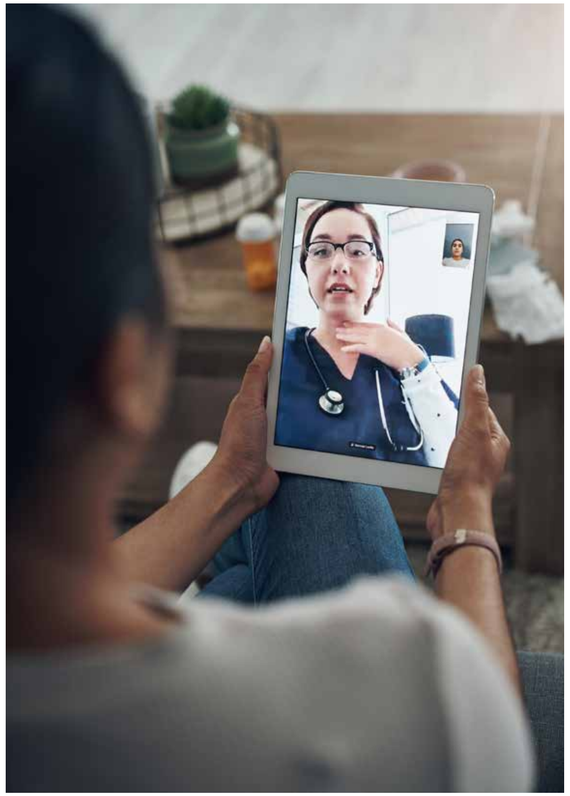
Investing in technology can help alleviate the burdens faced by healthcare professionals

The Future Health Index 2020**** report found that younger healthcare professionals who work in smart facilities are more likely than their peers in both digital and analog facilities to be satisfied in their work. By placing such an emphasis on technology in their facilities, leaders are likely to be simultaneously improving staff experience and satisfaction.

Three countries stand out as prioritizing staff satisfaction and retention the most three years from now

* https://human-resources-health.biomedcentral.com/articles/10.1186/s12960-017-0187-2
** https://human-resources-health.biomedcentral.com/articles/10.1186/s12960-017-0187-2
*** https://www.eurekalert.org/news-releases/728104
**** https://www.philips.com/a-w/about/news/future-health-index/reports/2020/the-age-of-opportunity.html

Expanding care beyond hospital walls gains momentum



Extending care is another top priority for leaders

The value of delivering care beyond hospital walls was in evidence during the pandemic*, with digital tools such as contact tracing apps and telehealth consultations helping to keep communities safe while ensuring continuity of care.

Today, healthcare leaders view extending care delivery as their highest priority after staff satisfaction and retention. This reflects the Future Health Index 2021 report, which found that 24% of healthcare leaders would prioritize extended care in the following three years.

Notably, there is also a continuing acceleration in the rise in ambulatory care, one of the fastest-growing segments of the healthcare industry**. This focus is also closely aligned with the Quadruple Aim as it meets the needs of both patients and staff, while improving outcomes and considerably reducing costs.

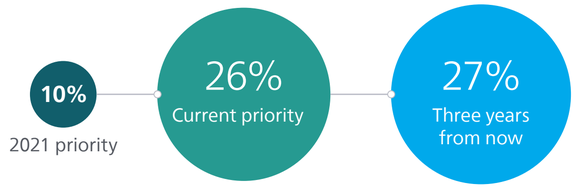
> *We see an increasing shift in care outside of the big box hospital model and into the home setting.*
>
> **Chief Operating Officer**
> Urban hospital, Australia

To deliver this care, leaders continue to invest in enabling technologies

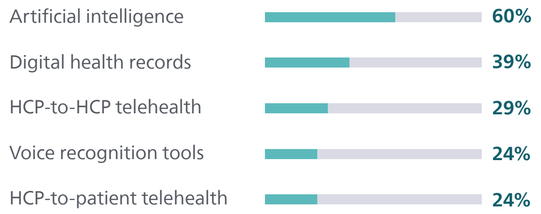
These technologies include digital health records, telehealth and artificial intelligence (AI) tools that can enhance efficiency, improve care and connect remote communities. Such technologies remain a top investment for healthcare leaders, highlighting how leaders are building on advances made during the pandemic when telehealth played a key role.

The pandemic spurred a huge surge in investment in telehealth. A 2020 analysis*** by Frost & Sullivan found that the telehealth market in the US alone was predicted to display seven-fold growth by 2025. In 2021, 64% of healthcare leaders were investing in it. Now, with the technology already in place, healthcare leaders are looking to secure the right technology infrastructure to ensure they get maximum value from telehealth.

Extending care delivery has grown to be a priority today and three years from now



Digital health records and AI are the leading digital technology investments today



* https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/telehealth-a-quarter-trillion-dollar-post-covid-19-reality
** https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/walking-out-of-the-hospital-the-continued-rise-of-ambulatory-care-and-how-to-take-advantage-of-it
*** https://www.frost.com/news/press-releases/telehealth-to-experience-massive-growth-with-covid-19-pandemic-says-frost-sullivan/

Tackling health inequalities within the community

Healthcare leaders are prioritizing social responsibility

Health inequalities are complex and far-reaching, and affect a broad range of communities. Key factors include socioeconomic status, geographic location, race and ethnicity, and gender and sexual identity.

The pandemic highlighted health inequalities across society, leading to a call from the World Health Organization for global action to address such issues*. This year's research found that social responsibility, including addressing health inequalities, has become one of healthcare leaders' top priorities both now and in the future. One-quarter (25%) of healthcare leaders say that being a socially responsible healthcare provider is one of their primary responsibilities and, in many cases, are already acting on this sense of responsibility. Over half (58%) say they either have initiatives in place to help tackle health inequity or are currently developing such initiatives. A recent snapshot** of the ways US hospitals are working to limit health disparities showed community outreach programs, healthy food access schemes, volunteering, and diversity and inclusion planning. These activities are mirrored in private sector hospitals around the world.

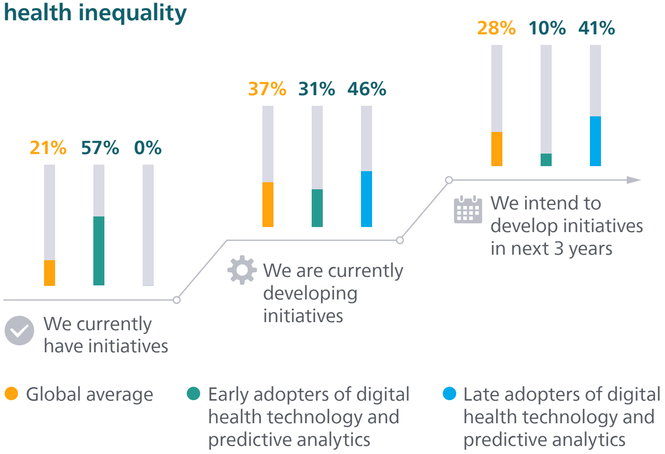
Technology plays a part in tackling such disparities

Over two-thirds (68%) of healthcare leaders say that the use of predictive analytics can have a positive impact on health inequality. For example, predictive analytics can provide fast and accurate insights around risk scores and collective health issues. These insights help to proactively identify groups of people at risk, particularly among poorer and more vulnerable groups. Hospitals are then able to incorporate this information into planning for community health issues such as disease outbreaks and cancer incidence, improving the healthcare delivered to these underserved groups. Underlining this link, healthcare leaders who say they are early adopters of technology and predictive analytics are more likely than those who are late adopters to have initiatives to deal with health inequalities in place, highlighting how technology adoption can address health inequality.

With two-thirds of the world's population lacking access to basic medical imaging technology***, one initiative that is making a difference by bringing quality care to patients in need is PURE, a non-profit organization dedicated to enhancing ultrasound education and use in the developing world. Participating physicians in the US and Europe use tele-ultrasound to support emergency medicine residents in Kigali, Rwanda, who in turn share their learning with healthcare professionals in rural areas, boosting the country's emergency medicine facilities.

Social responsibility is a growing priority for healthcare leaders

Early adopters in technology are ahead in dealing with health inequality



Why addressing health inequalities is on the agenda

Health inequalities have been sharply magnified in the past two years. Those from minority communities experienced disproportionate rates of illness and death due to COVID-19. This is attributed**** to increased risk of exposure to the virus due to living, working and transportation situations. They also faced greater risk of experiencing serious illness if infected due to higher rates of underlying health conditions. The social and economic effects of the pandemic also threaten to reverse progress toward gender equality, with a recent global study reporting increased disruptions in reproductive health services, as well as finding that women have experienced negative social and economic***** impacts to a greater extent than men. At a global level, acute issues such as poor supply and limited infrastructure are now under greater scrutiny, with healthcare leaders and governments under increasing pressure to respond.

* https://www.who.int/campaigns/world-health-day/2021
** https://www.beckershospitalreview.com/hospital-management-administration/how-us-news-top-10-hospitals-work-to-limit-health-disparities-inequities.html
*** https://www.theatlantic.com/health/archive/2016/09/radiology-gap/501803/
**** https://www.kff.org/coronavirus-covid-19/issue-brief/communities-of-color-at-higher-risk-for-health-and-economic-challenges-due-to-covid-19/
***** https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(22)00008-3.pdf

Embarking on a fast track to sustainability

Healthcare leaders are prioritizing environmental sustainability

The Future Health Index 2021 report found that just 4% of healthcare leaders saw implementing sustainability practices as a priority, although many (58%) agreed it would become a priority by 2024.

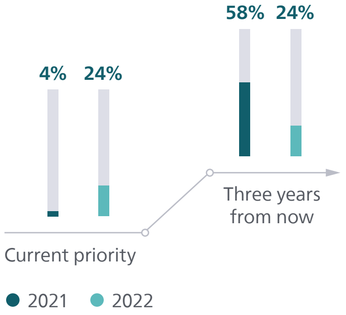
Today, the picture is very different. This year's findings suggest that healthcare leaders have fast-tracked their sustainability plans. Almost one-quarter (24%) are prioritizing sustainability, and the same number plan to do so three years from now. This shift may be explained by both the public commitment of 50 countries to develop climate-resilient and low-carbon health systems as part of the COP26 Health Programme* in late 2021, and a resetting of expectations as leaders embark upon implementing their sustainability plans.

Healthcare leaders in urban facilities are more likely than their peers in rural facilities to prioritize sustainability (26% vs 19%), demonstrating the role of patients and healthcare workers in driving sustainability. In urban areas where there is a wider choice of facilities, healthcare leaders are more likely to feel pressure to meet patient demands for sustainable practices in order to attract and keep patients**. Equally, sustainability is increasingly playing a key part in recruiting talent in areas where there is significant competition. However, while leaders in rural facilities are currently behind those in urban facilities in prioritizing sustainability, they are set to surpass them in terms of the issue three years from now (29% vs 25%).

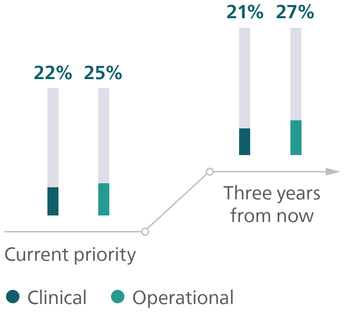
There are also differences in attitudes towards sustainability between operational and clinical healthcare leaders

Clinical leaders are less likely to prioritize sustainability than their operational colleagues today and this difference is even greater in the future. However, they can also have an impact on emissions reductions, for example by prescribing medications that are manufactured with a lower carbon footprint or advocating for equipment that has zero landfill at the end of its life. For hospitals and healthcare facilities to achieve their sustainability goals, both clinical and operational leaders must play an equal part in carbon reduction.

Sustainability as a priority in 2021 and 2022



Operational leaders taking the lead in addressing sustainability



Healthcare leaders in Australia and Poland are ahead of most other countries in prioritizing sustainability

The role of sustainability in healthcare

With the healthcare industry being one of the most carbon-intensive industries, leaders have long faced calls to adopt more sustainable practices. The supply chain is one of the most important areas on which to focus. Other common initiatives include increased use of renewable energy, expanding the circularity of products and materials, efficient construction practices, and replacing harmful chemicals with safer alternatives. Organizations such as Health Care Without Harm*** are leading the growing demand for sustainability with a range of initiatives, including tools for facilities to control their waste management and education programs on the health impacts of climate change.

* https://www.bmj.com/content/375/bmj.n2734
** https://betterbusiness.torkusa.com/sustainable-hospitals-healthcare/
*** https://noharm-europe.org/

“It's better to prevent than to cure... there will be greater possibilities for prevention using advancements in digital [health] technology.

Chief Medical Information Officer
Urban hospital, the Netherlands

2
Unlocking the power of data

Confidence is high

Healthcare leaders are increasingly using data in both operational and clinical workflows. Doing so helps improve efficiencies and guides swifter, more informed decision-making to help treat patients faster. The effective use of data has become a key component for healthcare leaders as they look to tackle the organizational crises within their facilities, helping to extend and improve care.

Healthcare leaders are confident that the wealth of critical, high-quality data they have at their fingertips can unlock enormous potential. Analyzing this information allows them to create robust healthcare strategies and unlock actionable insights that can enable new ways of predicting, diagnosing and treating diseases. These insights in turn can help to fuel greater efficiencies while reducing treatment costs and improving the quality of care.

Navigating the remaining frustrations

Yet, while they acknowledge the value of data, healthcare leaders continue to experience frustrations, such as siloed data and limited infrastructure, in capturing and deploying that data effectively. Keenly aware that they lack the internal resources to unlock the true potential of the information they have, they are looking to their peers and other partners for support, training, and knowledge sharing.

The following chapter explores what healthcare leaders value in data and their current challenges to data utilization, proposes solutions to those challenges and looks at how partnerships can help.

Mixed views from patients on data sharing

The Lancet's 2020 study, *Public perceptions on data sharing: key insights from the UK and the USA*, examined public attitudes towards data sharing*, data access and the use of AI in healthcare. Most of those questioned were happy to share their data with their doctor. However, there was a suggestion that patients were concerned that data might not be protected from commercial end-use. Respondents were less probable to be willing to share their details with an institution that was likely to use the data for commercial purposes (e.g. insurance company) than a public body (e.g. government, research institution). The implication is that more needs to be done to educate, inform and reassure the public on how their health data is used.

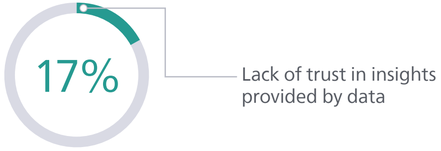
Healthcare data proves its worth

Healthcare leaders are confident in the value that data can bring to their work

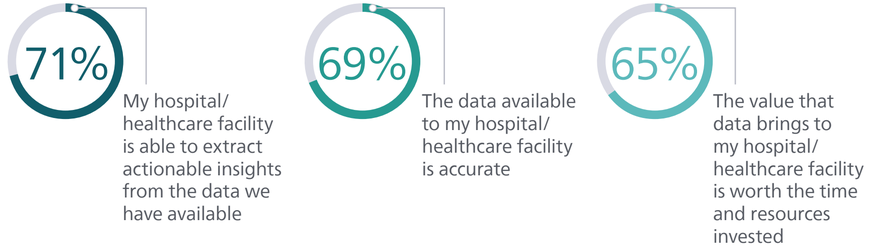
Data plays a crucial role in delivering healthcare, helping to **drive smarter clinical decisions and encourage greater operational efficiency**. Actionable insights provide healthcare leaders with operational forecasting and clinical predictions, and enhance both the patient and staff experience. Nearly two-thirds (65%) of healthcare leaders believe the value data brings in areas such as digital health records, patient monitoring and medical devices makes the time and resource investments required worthwhile.

Trust in the insights provided by data is also strong across both clinical and operational settings, while confidence in data utilization is particularly high among clinical leaders, who are more likely to have a positive outlook on data than their peers who work on the operational side.

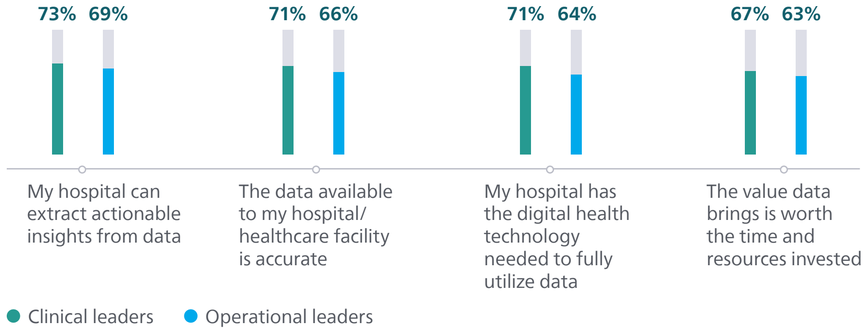
Lack of trust is among the lowest barriers to using data



Confidence in data utilization



Clinical leaders are more likely to show confidence in data utilization than operational leaders



* https://www.thelancet.com/journals/landig/article/PIIS2589-7500(20)30161-8/fulltext

Regardless of their rate of technology adoption, healthcare leaders still encounter data challenges

Despite their confidence, many leaders are frustrated about the lack of progress in embedding data throughout care pathways

Limited technology infrastructure; staff reluctance or data illiteracy; the sheer amount of data to be processed: most of these barriers have been a constant presence for healthcare leaders since the Future Health Index research began in 2016.

Technology infrastructure limitations

Almost one-quarter (23%) of healthcare leaders say this is the top impediment. However, with technologies like digital health records close to the top of leaders' investment priority lists, it is also clear that they are trying to address this.

Siloed data

Just over half (51%) of healthcare leaders say that data silos hinder their ability to utilize data effectively. This is closely linked to the fact that 20% of healthcare leaders have difficulties managing a high volume of data and 19% have difficulties obtaining data. Grouped with frustrations surrounding technology infrastructure and staff knowledge, leaders may struggle to resolve data access and management challenges. Siloed data is a greater issue for healthcare leaders in small- (56%) and medium-sized (51%) hospitals (based on the number of locations), than for their peers in larger hospitals (39%). This suggests that multi-site facilities are, by necessity, taking more action to address the issue of data silos.

Data security and policy

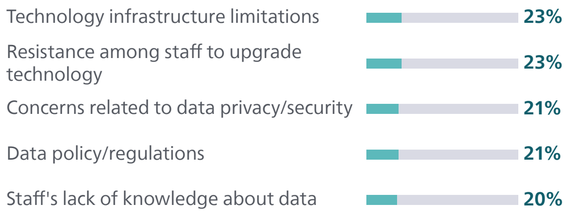
One in five (21%) leaders say that data policy and/or regulations impede their ability to use data to its full potential, with the same number citing concerns about data privacy and security. This is not surprising considering the volume and scale of reported healthcare data breaches.

Staff knowledge and mindset

Today's healthcare leaders report inadequate staff understanding of how to use data (20%) and staff feeling overwhelmed by the volume of data (55%). Staff resistance to using more advanced technologies can present challenges too. Healthcare leaders see staff development as vital, with about one-fifth (22%) saying that training and educating staff would most support them in using data.

With data considered the bedrock of so many digital technologies that underpin efficiencies, care outcomes and patient and staff experiences, these obstacles can impact leaders' ability to deliver on key priorities, like expanding care and improving staff morale.

Top barriers to effective use of data



Ransomware: an invisible yet growing threat for healthcare systems

A type of malicious software designed to block access to computer systems until a sum of money is paid, ransomware attacks represent a significant risk to healthcare organizations. The Federal Bureau of Investigation's (FBI) 2021 Internet Crime Report* found that the healthcare sector faced the most ransomware attacks in 2021 compared to any other critical infrastructure sector. A heavy reliance on technology to treat patients, coupled with the high volume of data typically held by hospitals and healthcare facilities, means they are especially vulnerable to being targeted by hackers. Such attacks create delays in medical procedures, can lead to longer patient stays and increase patient mortality rates, as well as requiring extensive funds to resolve the impacts of the attack – a ransomware attack on the Irish healthcare system in May 2021 resulted in costs of more than €100 million**.

* https://www.ic3.gov/Media/PDF/AnnualReport/2021_IC3Report.pdf
** https://www.cpomagazine.com/cyber-security/irish-healthcare-system-requires-more-than-100-million-to-recover-from-the-conti-ransomware-attack/

Driving data adoption across care settings

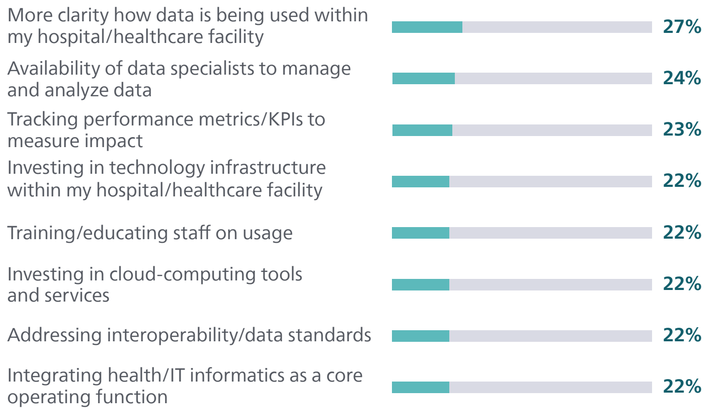
Leaders pinpoint key measures to improve adoption of data technologies

Healthcare leaders are considering several initiatives to help drive uptake of data-centric healthcare technologies, including staff training, improved tracking, and the addition of data specialists to manage and analyze data.

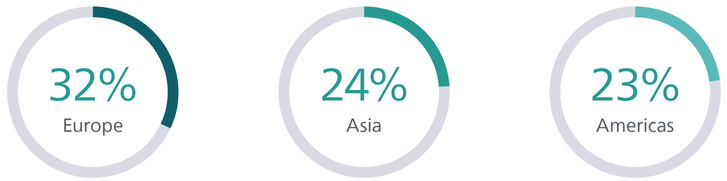
Just over one-fifth (21%) of all healthcare leaders surveyed say that implementing data security and privacy systems would be most helpful, a need that also ranked highly in the Future Health Index 2021 report. Interestingly, despite data privacy and security being concerns for these leaders, this isn't a significant priority for them, either today or three years from now.

Healthcare leaders in Europe (32%) are more likely to want more clarity on how data is being used compared to those in Asia (24%) or the Americas (23%), reflecting stricter data privacy regulations in the European Union. This is observed in the fact that healthcare leaders in the Netherlands are more likely to want clarity than their peers in most of the countries surveyed.

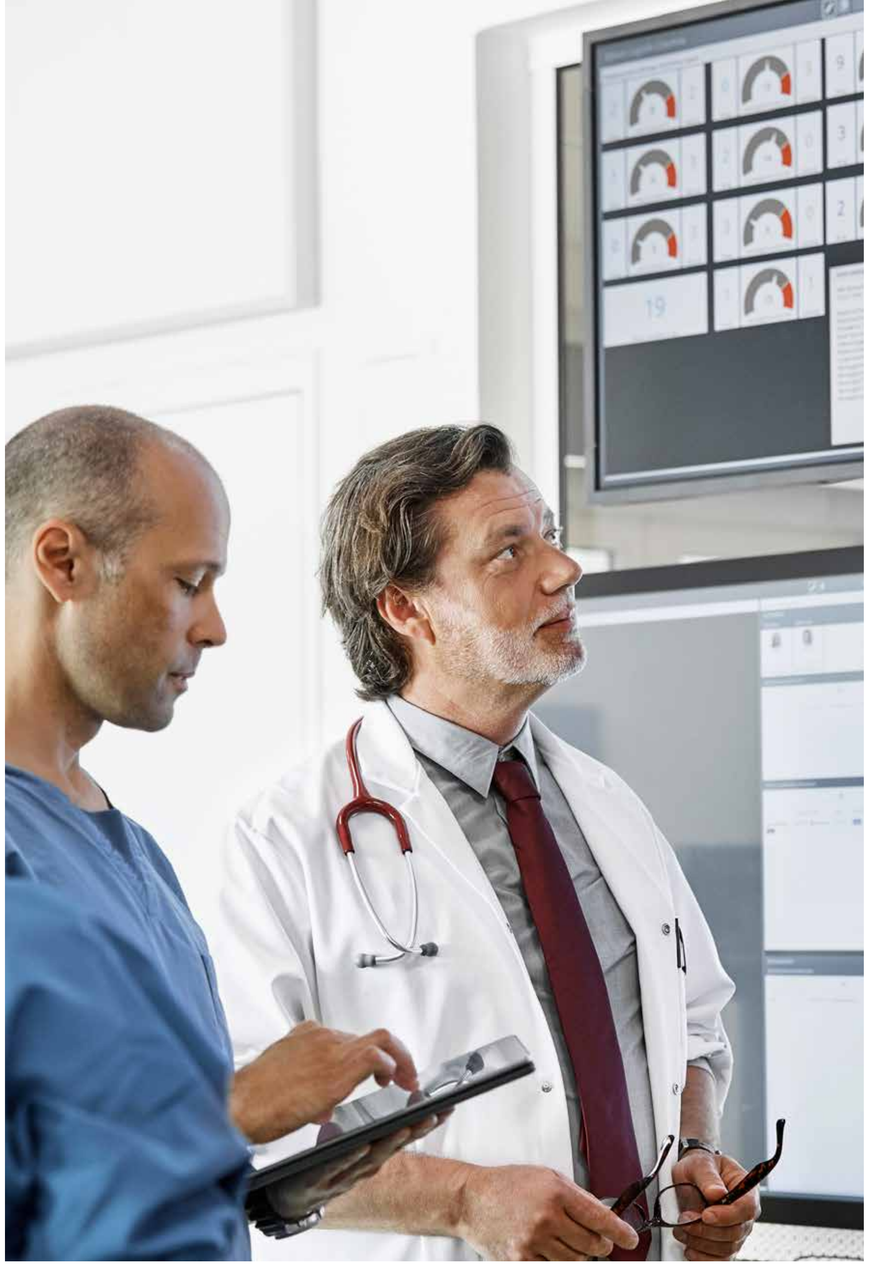
Top factors that would support healthcare leaders in fully utilizing data



Healthcare leaders in Europe are most likely to seek clarity on how their data is being used



Europe – France, Germany, Italy, Netherlands, Poland, Russia
Asia – China, India, Indonesia, Singapore
Americas – Brazil, the US



The divide between early and late technology adopters

There is a gap between early- and late-adopting hospitals and healthcare facilities when it comes to data technology

Unlike early adopters, late adopters feel that in order to succeed with new data strategies, they need: more clarity around how data is being used, greater access to data specialists and better tracking of performance metrics and KPIs. One way of addressing these concerns could be through forging mentoring partnerships with early adopters in other hospitals and healthcare facilities.

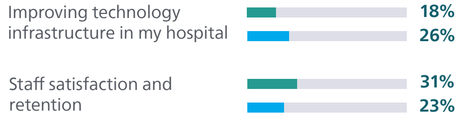
Late adopters are more likely to report having issues among staff when it comes to upgrading technology (32% vs. 21%), suggesting early adopters may have more systems in place to help their staff adjust to changes in technology. Late adopters are also more likely to experience a lack of data interoperability across technology platforms (25% vs. 18%). When it is difficult for late adopters to upgrade technology due to challenges with training staff, they are also less likely to resolve interoperability issues. These hospitals could benefit from multifaceted solutions that help train staff for an easier transition to advanced technology, enabling them to use data more effectively.

Investment priorities differ too

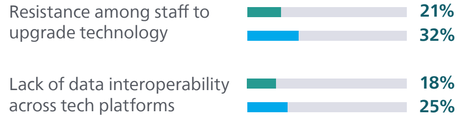
Late adopters are more likely to be investing in voice recognition tools (35% vs. 20%), perhaps because many are still catching up when it comes to digital health records. Many hospitals that are still in the process of adopting digital health records rely on manual record-keeping, and therefore have a greater need to invest in voice recognition to help save time.

Indeed, late adopters are more likely to prioritize improving the technology infrastructure in their hospital (26% vs. 18%) and driving efficiencies in the hospital (27% vs. 20%). On the other hand, early adopters have moved on to prioritize more recent needs in healthcare, like telehealth (27% vs. 20%) and staff satisfaction and retention (31% vs. 23%).

Differences in current priorities between early and late adopters of digital health technology

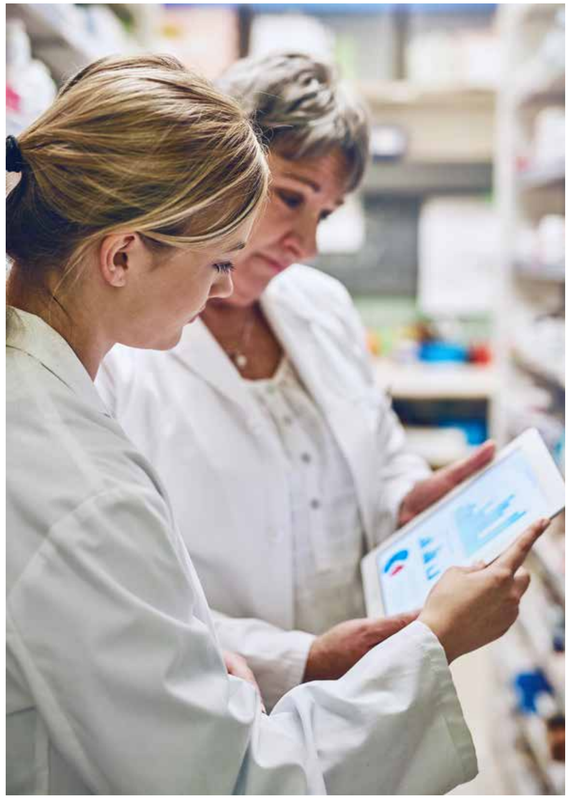


Differences in barriers to using data between early and late adopters of digital health technology



- Early adopters of digital health technology
- Late adopters of digital health technology

A growing need for collaboration with peers



Healthcare leaders know they can't do it alone

In the Future Health Index 2021 report, more than one-third (41%) of healthcare leaders said they believed strategic partnerships were the best way to successfully implement digital health technologies.

Such partnerships offer rich opportunities to access skills, knowledge and expertise from technology companies. They also enable a more bespoke approach for each hospital or healthcare system and present less risk.

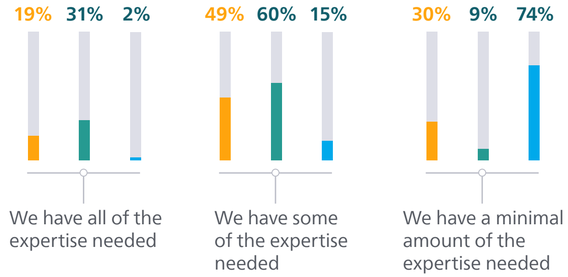
Today, research shows the need for partnerships is even more pressing, regardless of where leaders are on their adoption journeys. Fewer than one-fifth (19%) say they have all the expertise they need internally to make full use of the available data. And, there are still 69% of early adopters who do not yet have all of the expertise they need to fully utilize data.

Learning from peers

It is clear that healthcare leaders place significant value in what they can learn from their peers, particularly in relation to data. Over one-third (37%) today say that other hospitals and healthcare facilities would be the external partner of preference to help them fully utilize data, and more than one-quarter of healthcare leaders say that success stories from other hospitals or healthcare facilities would strengthen their trust in predictive analytics.

The COVID-19 pandemic resulted in many strong healthcare partnerships that improved the agility of – and access to – the healthcare sector. Collaboration with hospitals and healthcare systems, once considered competitors*, demonstrated the power of partnerships in advancing patient care.

Early adopters of technology are investing heavily in the right expertise today



Healthcare leaders in Singapore and the United States are most likely to say they have all the internal expertise they need

* https://www.healthleadersmedia.com/innovation/unexpected-side-effect-covid-19-collaboration

Leaders are keen to partner with healthcare technology companies

Partnering with healthcare technology companies is seen to offer numerous benefits

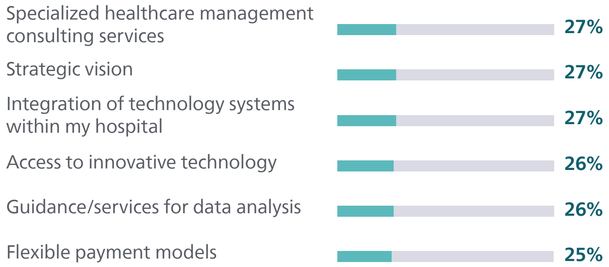
Last year's research found that 36% of healthcare leaders wanted to collaborate with health IT or informatics companies to help drive digital transformation. This trend continues in 2022, with one-third (33%) of healthcare leaders citing health technology companies as a partner of preference.

There are particular areas of knowledge that leaders want to tap into with these partnerships. They seek extensive support from strategic partnerships with health technology companies, in areas including: **strategic vision, specialized healthcare management consulting services, guidance/services for data analysis, access to innovative technology, and flexible payment models**. The varied range of areas that leaders are looking for support with implies that partnering with companies with broad healthcare expertise would be most beneficial in order to collaborate in all of these priority areas.

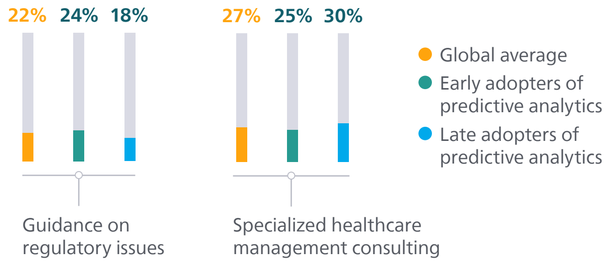
Unsurprisingly, they also look to health technology companies to support their staff, with over one-quarter (26%) citing staff training and education as the most important benefit from such a partnership.

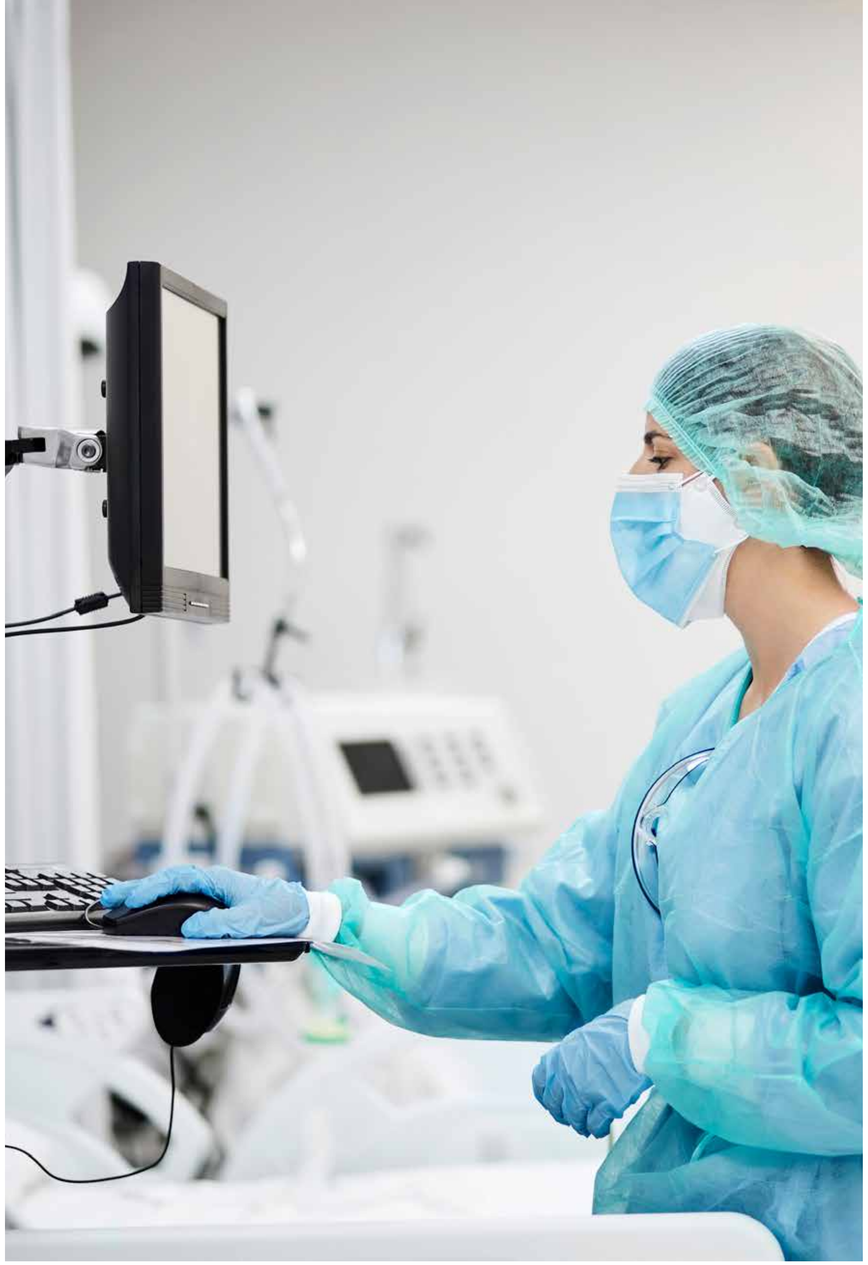
Partnership requirements also vary depending on the maturity of technology adoption. For example, healthcare leaders who are early adopters of predictive analytics are more likely to seek guidance on regulatory issues from a partnership than their late-adopting peers, who express greater preference for healthcare management consulting.

The support healthcare leaders seek from health technology companies



Differences between what early and late adopters of predictive analytics want from a partnership





A physician using AI will be a much better physician than one without AI.

Department Head of Radiology
Urban hospital, the Netherlands

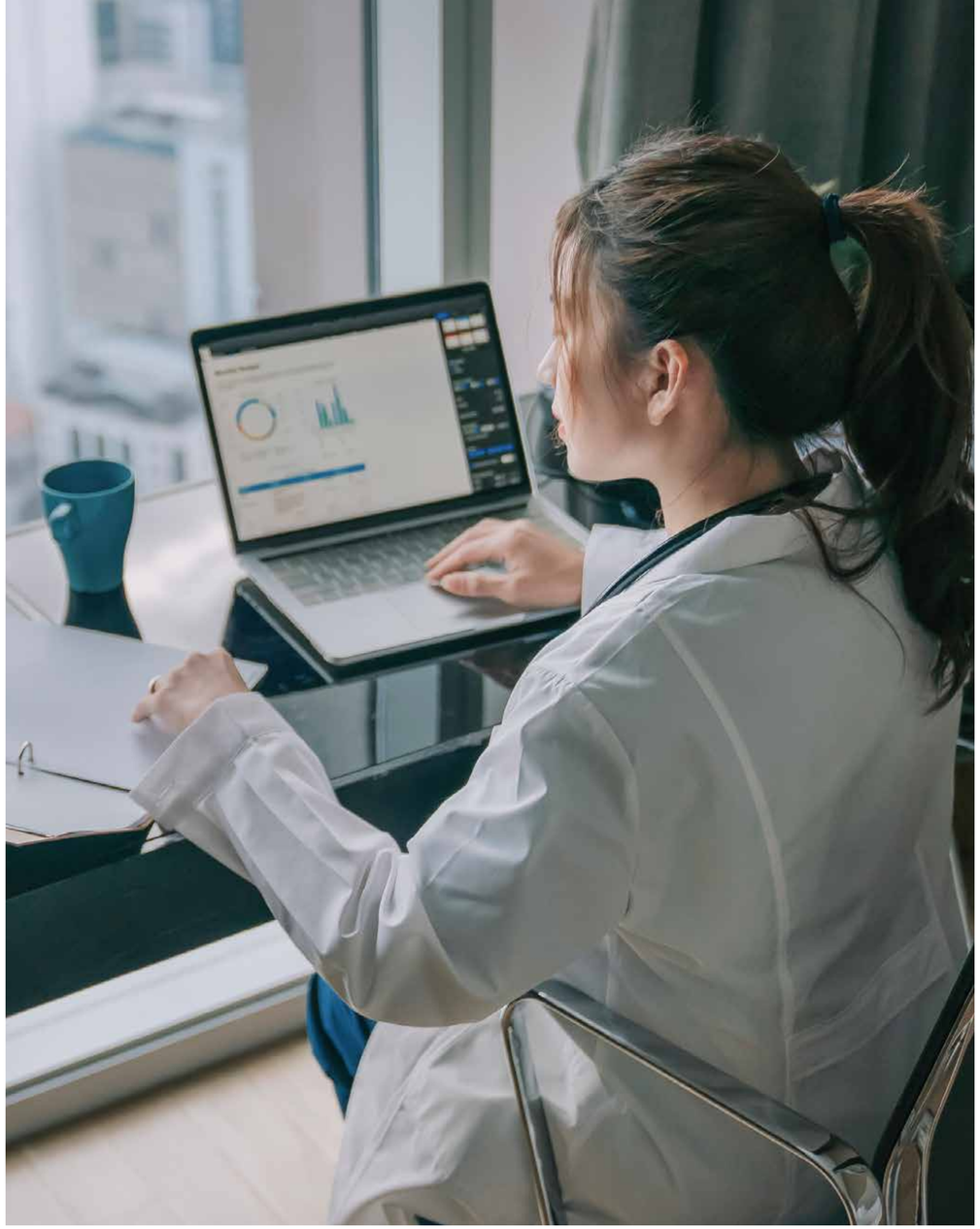
3
How predictive analytics can supercharge care

Huge potential across healthcare

Healthcare leaders recognize the potential of predictive analytics to drive a step change in their ability to achieve their key priorities. At a clinical level, predictive analytics can help healthcare providers deliver the right care, to the right patient, at the right time. Operationally, it equips healthcare systems with the ability to identify trends, enhancing care and reducing costs. But our study suggests that, regardless of their stage of adoption, healthcare leaders are still struggling to unlock its full value.

Without support, implementation lags behind

Building trust around data capture, storage and governance, while encouraging more widespread and consistent adoption of predictive analytics, are some of the key concerns of healthcare leaders highlighted in the research findings. The gap between the significant improvements to healthcare that data analytics can provide, and the reality of how it is used today, suggests that more technological support is needed to turn predictive analytics into a platform to supercharge care.



Leaders focus on the benefits of predictive analytics

Predictive technologies are seen to improve care and lessen the administrative burden

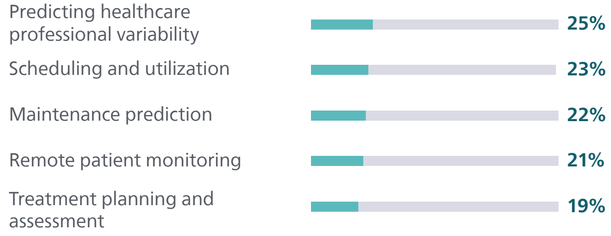
A broad term used to describe advanced analytics that makes predictions about future events, behaviors and outcomes, predictive analytics increasingly plays a key role in **advancing care, improving patient outcomes and the staff experience**. Offering both real-time and future clinical decision support, from diagnosis to prognosis and treatment, predictive technologies are a valuable tool across healthcare settings. This was reflected in the Future Health Index 2021 report, where healthcare leaders cited predictive technologies as an important way of preparing for the future, and something they planned to invest in during the next three years (40%).

Today, **many leaders have already embarked on this journey**, with 56% reporting they have already adopted, or are in the process of adopting, predictive analytics in some form, in their hospital or healthcare facility.

Healthcare leaders are generally united in their recognition of the potential of predictive analytics to improve care outcomes and deliver on their other priorities. The areas they feel predictive analytics could most benefit their hospital or healthcare facility are broad and span both clinical and operational spheres. They include expanding access to healthcare and driving healthcare transformation more generally, for example through improving scheduling and remote patient monitoring.

Healthcare leaders believe patients will see the biggest positive impact from predictive analytics in clinical settings

Healthcare leaders believe predictive analytics will have a positive impact across operational workflows too



The promise of predictive analytics is still out of reach for many healthcare leaders

Uptake of predictive analytics remains uneven

Predictive analytics promises to transform healthcare. But, while healthcare leaders acknowledge the benefits of the technology, its uptake remains uneven, with Singapore, the US and Brazil far ahead of most European countries. There is also a marked difference in adoption rates between developed and emerging countries (28% vs 20%).

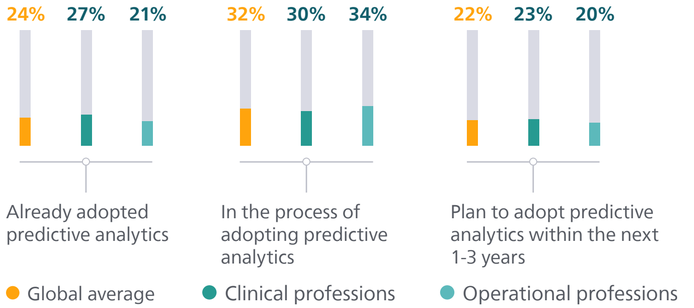
Those healthcare leaders who are furthest along in their adoption of predictive analytics do not think they are making the most of its potential. For example, about one-fifth (21%) of first-to-innovate leaders see predictive analytics as delivering the most impact in remote patient monitoring, yet just 12% are using it in this area. It is likely that the barriers to data adoption, highlighted in the previous chapter, are fueling this gap between current and potential use of predictive analytics. Unless leaders are able to address them, their adoption journeys are likely to stall.

However, there are pockets of experience that leaders can draw on for guidance as they look to drive adoption of predictive analytics in their own facilities. Healthcare leaders in Asia report the highest rates of adoption. **At a global level, healthcare leaders in clinical positions have higher rates of adoption than their peers in operational roles**, particularly those working in radiology (31%), where predictive analytics is being used as one of several tools to help clinicians analyze and diagnose images more quickly. Given the preference of many healthcare leaders to learn from their peers, such leaders are well placed to share learnings and best practice with those in the earlier stages of adoption.

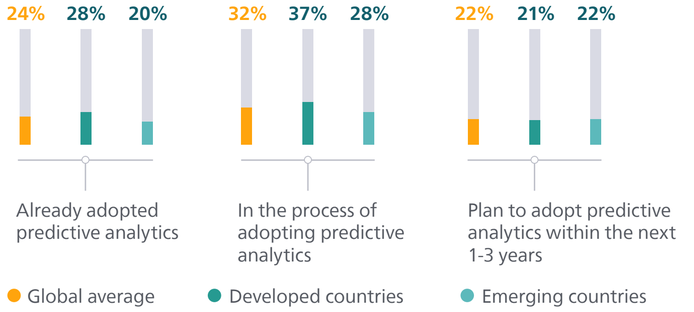
> *For us, predictive analytics is part of our roadmap. When we talk about analytics, we want it to be predictive. We want it to be proactive in its ability to provide real time data that we can action.*

Chief Information Officer, suburban hospital, United States

Predictive analytics adoption by operational vs. clinical leaders

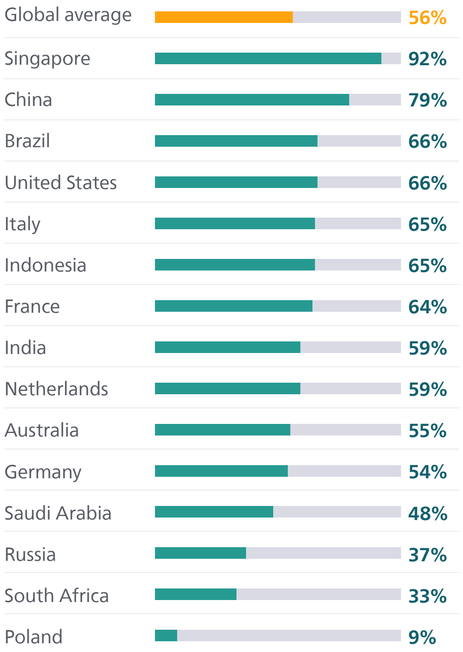


Stage of adoption of predictive analytics by country type



Rates of predictive analytics adoption by country

Those who have already adopted or are currently in the process of adopting predictive analytics



Security and privacy concerns remain as roadblocks to progress

Data security and privacy are critical factors for healthcare leaders as they seek to foster trust in predictive analytics among staff and patients

Around the world, healthcare data breaches are on the rise. Over 90% of global healthcare organizations have reported at least one security breach within the last three years*. It is against this global backdrop that healthcare leaders are citing greater data security and privacy systems and protocols as the top way to strengthen trust in predictive analytics in both operational and clinical settings.

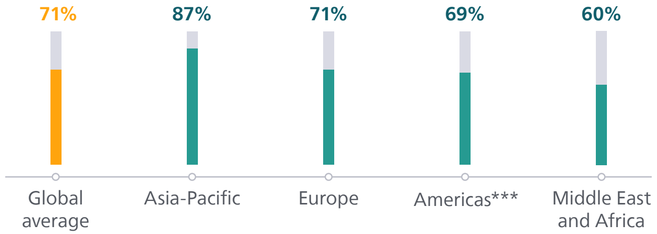
Those in developed countries (29%) are more likely than those in emerging markets (25%) to cite **increased transparency** in how insights are determined on the operational side. This is likely due to the European countries in our research where stringent European data regulations like GDPR place a lot of responsibility for data protection and responsible data use on healthcare providers. Developed countries are also more likely than emerging countries (28% vs 23%) to want **improved regulations related to data security and privacy**. Initiatives like the European Health Data Space** – a European Commission-led project to promote health data exchange across Europe – improve healthcare, policy-making and research, while ensuring strict protection of the privacy of citizens. Such programs can help to address these concerns and hopefully improve the safe adoption of technologies like predictive analytics.

It is clear that while there is a desire to invest in predictive analytics, healthcare leaders are still keen to ensure the human touch is not lost. Over one-quarter (29%) say that increased human involvement, where a human always makes the final decision, is one of the top factors that could potentially enhance their trust in predictive analytics.

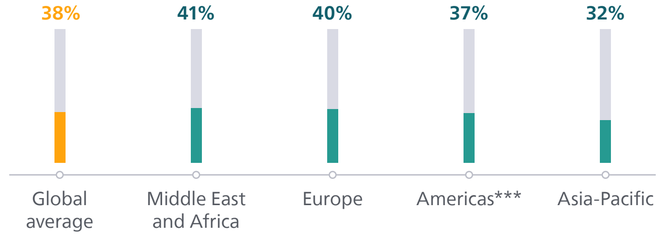
> *In healthcare, I don't think there's any data that's worth protecting more than patient health data.*

Chief Operating Officer
Urban hospital, Germany

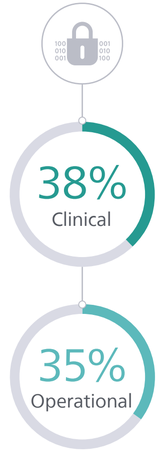
Trust in predictive analytics by region across clinical settings



Healthcare leaders cite improved data security/privacy as one of their top means to increase trust in predictive analytics in clinical settings



Data security is key to unlocking trust in predictive analytics in both clinical and operational settings



* https://www.beckershospitalreview.com/cybersecurity/data-breaches-have-lasting-financial-effects-on-hospitals-report-suggests.html
** https://ec.europa.eu/health/ehealth-digital-health-and-care/european-health-data-space_en
*** US and Brazil only

Conclusion

Conclusion

Jan Kimpen, Philips Chief Medical Officer

The Future Health Index 2022 paints a picture of a sector that has seen dramatic transformation in recent years, which has accelerated rapidly over the past 12 months. Rather than continuing to focus solely on the pandemic, we see today's healthcare leaders radically shifting their priorities to meet new realities in medical management. Specifically, leaders have indicated three key priorities for 2022 and beyond:

Improving the staff experience

With the sector facing a significant 15 million labor shortfall by 2030, improving the staff experience has become a top priority for today's leaders. This year's report has shown that leaders believe increased training in digital health technologies will be key to progress, helping staff feel less overwhelmed by data-centric processes and more ready to embrace new workflows. However, increased training is just one piece of the puzzle – fixing the labor crisis in the long term will ultimately depend on the successful coordination of governments, regulators and the industry as a whole to improve working conditions across the board.

Bridging the gap between the promise of predictive analytics and current usage

From data silos and interoperability concerns to technology infrastructure limitations, many factors are to blame for the uneven uptake of predictive analytics to date. The good news is, we're now seeing a number of leaders pioneering this technology and inspiring others to drive adoption in their own facilities. As more organizations reap the rewards of machine-generated insights in both clinical and operational settings, such as enhanced decision-making and lowered administrative burdens, we expect to see increased demand for peer-to-peer mentorships between early and late adopters, as well as strategic partnerships with health technology companies, bringing the whole sector up to speed.

Addressing threats to healthcare data security

With the industry experiencing record surges in data breaches, one in five leaders now cite data privacy and security as top concerns. This year's report has shown how effective initiatives like the European Health Data Space can be in addressing such concerns. However, the future of healthcare data security will depend as much on educational initiatives for leaders as it will on vendors following security-by-design principles – infusing security from product design and development through testing and deployment, with robust policies and procedures for monitoring, updates and incident response management, as has long been standard practice in other industries like financial services.

All things considered, our sector has taken stock and reprioritized in the wake of another year of transformations, and against a growing backdrop of complex challenges that will endure far beyond the pandemic, from staff shortages and security threats to the rapid rise of chronic diseases. Ultimately, we see healthcare leaders embarking on a reset to meet the demands of a fundamentally changed world – a world they hope to shape and improve with the help of data and predictive analytics.

Glossary of terms

Glossary of terms

Ambulatory primary care center
Outpatient care centers (e.g., urgent care, walk-in clinics, etc.)

Analog facilities
Most or all patient data is handled in a paper-based format or using traditional communications, e.g., phone, fax, etc.

Artificial intelligence (AI)
AI refers to the use of machine learning and other methods that may mimic intelligent human behaviors, resulting in a machine or program that can sense, reason, act and adapt to assist with different tasks.

B2B health technology companies
Companies that sell products, equipment, or solutions to hospitals and healthcare facilities.

Data privacy
The culture expectations, organizational regulations and legislation that protect personal information from unauthorized use and dissemination.

Data security
Protecting data against unauthorized access.

Digital facilities
Simple/basic technologies are used, with most or all patient data and communications being handled electronically.

Digital health records
Technology that can store a variety of health information, including medical history, test results, health indicators, etc. Digital health records can be used within a certain healthcare facility, across different healthcare facilities, by only the patients themselves, by one healthcare professional or across all healthcare professionals involved in a patient's care. Electronic medical records (EMRs) and electronic health records (EHRs) fall within the term 'digital health records'.

Digital health technology
A variety of technology that transmits or shares health data. The technology can take a variety of forms, including but not limited to home health monitors, digital health records, equipment in hospitals and health or fitness tracker devices.

Digital transformation
The integration of digital technology into all aspects of how a healthcare business interacts with patients, healthcare providers and regulators.

Early adopters of digital health technology
Early adopters are defined as leaders who indicated that, compared to other hospitals or facilities, they are among the first to adopt an innovation or they adopt innovations before most others.

Early adopters of digital health technology and predictive analytics
These leaders are defined as those who are the first to adopt innovations in digital health technology and who have already adopted predictive analytics.

Early adopters of predictive analytics
Early adopters are defined as leaders who indicated that their hospital has already adopted predictive analytics or is in the process of adopting predictive analytics.

Global non-governmental organizations
A nonprofit organization that operates independently of any government.

Health equity or equality
The absence of unfair, avoidable or remediable differences among groups of people, whether those groups are defined socially, economically, demographically, or geographically or by other dimensions of inequality.

Health IT/Informatics companies
Companies that build communications protocols within healthcare systems (e.g., Cerner, Epic, etc.)

Health technology companies
Companies that sell or provide wearables, health apps and other technology to the general public.

Healthcare leader
A C-suite or senior executive working in a hospital, medical practice, imaging center/office-based lab, or urgent care facility who is a final decision-maker or has influence in making decisions.

Healthcare professional
All medical staff (including doctors, nurses, surgeons, specialists, etc.), and excludes administrative staff.

Healthcare professional-to-healthcare professional telehealth
Virtual communication between healthcare professionals through sharing images, recommending treatment plans, etc.

Healthcare professional-to-patient telehealth
Communication between healthcare professionals and their patients via video calls, patient portals, etc.

Interoperability
The ability of health information systems to work together within and across organizational boundaries, regardless of brand, operating system or hardware.

Late adopters of digital health technology
Late adopters are defined as leaders who indicated that, compared to other hospitals or facilities, they adopt innovations later than most others.

Late adopters of digital health technology and predictive analytics
These leaders are defined as those who are among the last to adopt innovations in digital health technology and have no plans to adopt predictive analytics.

Late adopters of predictive analytics
Late adopters are defined as leaders who have not yet adopted predictive analytics but they are planning to in the future.

Machine learning
A process of AI that provides systems with the ability to automatically learn and improve from experience without being explicitly (re)programed.

Out-of-hospital procedural environments
Care centers such as ambulatory surgical centers, office-based labs, etc.

Predictive analytics
A branch of advanced analytics that makes predictions about future events, behaviors, and outcomes.

Predictive technologies
A body of tools capable of discovering and analyzing patterns in data so that past behavior can be used to forecast likely future behavior.

Quadruple Aim: Philips makes value-based care principles actionable by addressing the Quadruple Aim:

- Improved patient experience – improving the patient experience of care (including quality and satisfaction)
- Better health outcomes – improving the health of individuals and populations
- Improved staff experience – improving the work-life balance of healthcare professionals
- Lower cost of care – reducing the per capita cost of healthcare

Remote patient monitoring
Technology that provides care teams with the tools they need to remotely track the health of their patients outside of conventional clinical settings (e.g., at home), collaborate with the patients' other healthcare professional(s) and help detect problems before they lead to readmissions. Examples of this include cardiac implant surveillance, vital-sign sensors at home, etc.

Resilience
The capacity of hospitals or healthcare systems to quickly recover from challenges.

Smart facilities
Advanced connected care technologies are used, in addition to patient data and communications being handled electronically.

Social responsibility
Individuals and companies have a duty to act in the best interests of their environment and society as a whole.

Staff
This refers to all staff, including physicians, nurses, administrative employees, etc.

Sustainability
Meeting the environmental needs of the present without compromising the ability of future generations to meet their own needs.

Technology infrastructure
Foundational technology services, software, equipment, facilities and structures upon which the capabilities of nations, cities and organizations are built. This includes both IT infrastructure and traditional infrastructure that is sufficiently advanced such that it can be considered modern technology.

Telehealth/virtual care
The distribution of health-related services and information via electronic information and telecommunication technologies.

Value-based care
The concept of healthcare professionals receiving reimbursement based on patient health outcomes rather than on the volume of tests or procedures completed.

Voice recognition tools/software
A tool used to convert spoken language into text by using speech recognition algorithms.

Research methodology

Research methodology

Research overview and objectives

Commencing in 2016, Royal Philips has conducted original research every year with the goal of understanding the ways various countries around the world are addressing global health challenges and how they are improving and expanding their ability to care for their communities. With a growing list of competing needs facing healthcare leaders, the Future Health Index 2022 focuses on the expanding role digital tools and connected care technology is playing in the ability to deliver more accessible, affordable and customized healthcare.

The first Future Health Index released in 2016, measured perceptions of how healthcare was experienced on both sides of the patient-professional divide. The following year, the research compared perceptions to the reality of health systems in each country that was studied. In 2018, the Future Health Index identified key challenges to the large-scale adoption of value-based healthcare and overall improved access, evaluating where connected care technology could speed up the transformation process. In 2019, the Future Health Index explored the healthcare experience for both patients and healthcare professionals and how technology was moving us to a new era of healthcare delivery transformation. In 2020, the Future Health Index examined the expectations and experiences of healthcare professionals aged under 40. Last year, the Future Health Index 2021 considered how healthcare leaders* were meeting the continuing demands of the pandemic and what the new reality of healthcare post-crisis might look like.

In 2022, the Future Health Index concentrates on how healthcare leaders are now refocusing on the priorities and initiatives which were paused during the pandemic. They are increasingly incorporating data, advanced analytics tools and artificial intelligence to mitigate operational and clinical challenges and to enhance their ability to deliver care to communities both in and out of traditional hospital settings. With the pandemic in their rear-view mirror, they are now looking to leverage their growing technology capabilities in a variety of directions. From rethinking how much care needs to occur in a hospital or healthcare facility to expanding social responsibility and sustainability initiatives, technology is giving healthcare leaders the ability to execute customized strategies to fit the exact needs of their communities.

To provide a holistic understanding of the current healthcare systems around the world, the study upon which the Future Health Index 2022 is based incorporates insights derived from a quantitative survey and a series of qualitative interviews.

* Healthcare leader is defined as a C-suite or senior executive working in a hospital, medical practice, imaging center/office-based lab, or urgent care facility who is a final decision-maker or has influence in making decisions.

Research methodology

2022 quantitative survey methodology

The quantitative portion of the study was executed by iResearch, a global business and consumer research services firm employing a mixed methodology of online and telephone surveying.

2,900 healthcare leaders in 15 countries (Australia, Brazil, China*, France, Germany, India, Indonesia, Italy, the Netherlands, Poland, Russia, Saudi Arabia, Singapore, South Africa and the United States) participated in a 15-20 minute survey in their native language from December 2021 – February 2022. 200 healthcare leaders in each of the 15 countries completed the survey, except in Indonesia where the total sample was 100.

Below shows the specific sample size, estimated margin of error** at the 95% confidence level, and interviewing methodology used for each country.

	Unweighted sample size (N=)	**Estimated margin of error** (percentage points)	**Interview methodology**
Australia	200	+/- 7.0	Online and telephone
Brazil	200	+/- 6.5	Online and telephone
China	200	+/- 7.5	Online and telephone
France	200	+/- 7.0	Online and telephone
Germany	200	+/- 6.5	Online and telephone
India	200	+/- 6.0	Online and telephone
Indonesia	100	+/- 6.5	Online and telephone
Italy	200	+/- 7.0	Online and telephone
Netherlands	200	+/- 6.5	Online and telephone
Poland	200	+/- 7.0	Online and telephone
Russia	200	+/- 6.0	Online and telephone
Saudi Arabia	200	+/- 6.5	Online and telephone
Singapore	200	+/- 8.0	Online and telephone
South Africa	200	+/- 7.0	Online and telephone
United States	200	+/- 7.5	Online and telephone
Total	**2,900**	**+/- 3.5**	

Question localizations

In some instances, certain questions needed to be adjusted slightly for relevance within specific countries. Care was taken to ensure the meaning of the question remained as close to the original, English version, as possible.

2022 qualitative interviews methodology

The qualitative portion of the Future Health Index 2022 was conducted by the KJT Group, a market research and consulting firm which specializes in the healthcare industry. To provide context and additional depth to the quantitative data, the quantitative survey results were supplemented with findings from a series of 45-minute interviews with healthcare leaders in their native language. These interviews were conducted during the month of March 2022. There were 30 participants, six from each of the following markets: Australia, China, Germany, the Netherlands and the United States.

* Survey data is representative of Mainland China only and does not include Taiwan or Hong Kong.

** Estimated margin of error is the margin of error that would be associated with a sample of this size for the full healthcare leader population in each country. However, this is estimated since robust data is not available on the number of healthcare leaders in each country surveyed.

The Future Health Index is commissioned by Philips.

To see the full report visit
www.philips.com/futurehealthindex-2022

The Future Health Index 2022 report examines the experiences of almost 3,000 healthcare leaders and their expectations for the future. The research for the Future Health Index 2022 report was conducted in 15 countries (Australia, Brazil, China, France, Germany, India, Indonesia, Italy, the Netherlands, Poland, Russia, Saudi Arabia, Singapore, South Africa, and the United States). The study combines a quantitative survey and qualitative interviews conducted from December 2021 – March 2022.

www.philips.com/futurehealthindex-2022