



Singapore

# Healthcare hits reset

Priorities shift as healthcare leaders navigate a changed world



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# 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 traditional hospital settings.



## 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

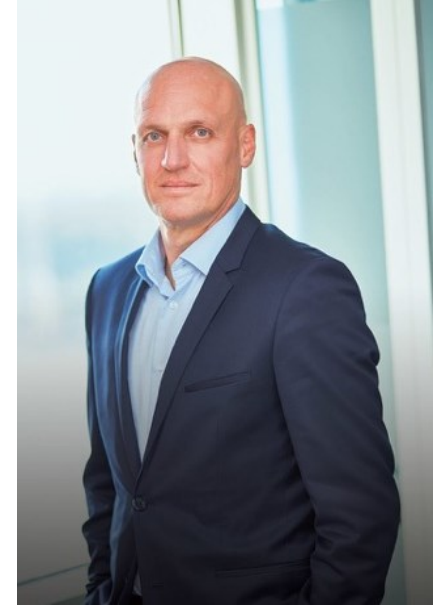
Over the past two years, pressure on the healthcare industry has been unrelenting. The pandemic has continued to challenge resources, systems and the provision of care at every turn and in every country around the world. Today, as we emerge from the pandemic, we see healthcare leaders embarking on a great 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 great reset.*

**Jan Kimpen**  
Philips Chief Medical Officer



## Emerging from the pandemic, healthcare leaders reassess their priorities

### **A much-needed refocus on staff**

The pandemic has exacerbated the staffing difficulties faced by healthcare leaders in Singapore, with many Singaporean nationals leaving their jobs and foreign workers returning to their home countries. In a bid to mitigate the impact of staffing challenges on care delivery, healthcare leaders in Singapore are prioritizing staff satisfaction and retention.

### **Greater momentum for social responsibility and sustainability**

At the same time, despite the shifts in priorities caused by COVID-19, such as addressing staffing issues and expanding remote care, healthcare leaders in Singapore continue to pursue their long-term goals, which include health equity and sustainability. The need to make healthcare more accessible and affordable is already a focus for both government and healthcare leaders and will continue to be a priority. Initiatives to make the country's healthcare system greener are predicted to become more prominent in the future.

**The following insights explore the current priorities for healthcare leaders in Singapore and how their planned investments in digital technology can support these priorities.**

# Healthcare leaders refocus on staff satisfaction and retention

## Mirroring global workforce pressures, staff satisfaction and retention are top of mind for Singaporean healthcare leaders

The COVID-19 pandemic has placed tremendous stress on the health system in Singapore. A ministerial statement by Dr Janil Puthuchery, Senior Minister of State for Health, in November 2021, pointed to the workforce crunch faced by hospitals in Singapore, with many healthcare workers becoming increasingly overworked and feeling exhausted due to the ongoing pandemic. A large proportion of them worked long hours and did not take leave\*.

In the first half of 2021, 1,500 healthcare workers in Singapore resigned from their jobs. This was 75% of the average annual number of resignations pre-pandemic\*\*. Foreign healthcare workers in Singapore resigned in greater numbers too, with many of them returning to their home countries\*.

In view of these trends, the Singapore Ministry of Health stepped up its efforts to support staff well-being. These include working with healthcare providers and relevant agencies to address issues

on working hours and working conditions, focusing on career development and training, improving staff engagement, and promoting mental wellness\*\*\*.

Against this backdrop, almost one-third (32%) of healthcare leaders in Singapore are placing staff satisfaction and retention at the top of their priority list, a figure comparable to the Asian (33%) and European (32%) averages. While the focus on improving staff satisfaction (18%) is slightly higher than it was in 2021 (15%), the emphasis on staff retention has increased significantly. Today, 15% of Singaporean healthcare leaders consider it a top priority (vs. 9% in 2021).

While in 2021 most leaders predicted that staff satisfaction and shortages would no longer need to be prioritized in the years to come, today they believe that staffing issues will be of great importance in the foreseeable future and addressing them will need to remain at the top of their agenda, as these cannot be quickly or easily resolved.

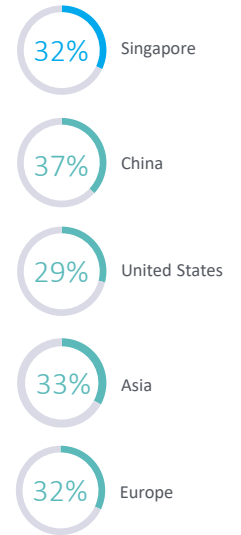
## Staff satisfaction and retention are expected to remain the top priority in Singapore



## Increasing staff satisfaction and addressing staff retention is a top priority now and in three years' time



## Staff satisfaction and retention as a top priority today



\* <https://www.moh.gov.sg/news-highlights/details/ministerial-statement-by-dr-janil-puthuchery-senior-minister-of-state-ministry-of-health-on-update-on-icu-and-hospital-capacity-1-november-2021>

\*\* <https://www.moh.gov.sg/news-highlights/details/impact-of-covid-19-on-resignation-and-recruitment-of-healthcare-professionals/>

\*\*\* <https://www.moh.gov.sg/news-highlights/details/keeping-healthcare-affordable-and-improving-the-well-being-of-healthcare-workers>

# Ensuring social responsibility and sustainable access to care is a long-term effort

## Despite ongoing efforts to make healthcare accessible and affordable, future challenges remain

Making healthcare affordable and accessible to all is an imperative for health systems around the world. Being a socially responsible healthcare provider is seen as a key priority by one-quarter (25%) of healthcare leaders in Singapore today, almost double the number seen in 2021 (13%). As healthcare access and affordability have been on the Singapore government's agenda for many years, it is not surprising that 43% of Singaporean leaders have health equality initiatives already in place, with an additional 49% in the process of doing so. This puts Singapore far ahead of other countries when it comes to the adoption of health equality initiatives.

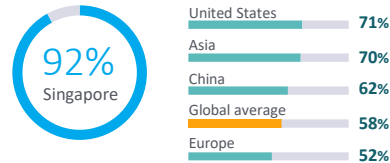
Despite government and healthcare leaders' efforts to ensure quality healthcare is accessible and affordable to the entire

population, some challenges lie ahead. The healthcare cost burden is projected to rise significantly in the coming years, in line with the country's aging population. Government healthcare expenditure had doubled from \$11 billion in 2010 to \$21 billion in 2016\*. With this rate of increase proving unsustainable in the long-term, a rethink on how healthcare is delivered is needed\*\*.

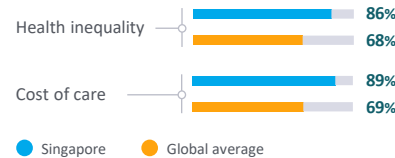
With these challenges in mind, Singaporean healthcare leaders are turning to technology in the hope of finding data-driven solutions: most (86%) leaders, significantly more than the global average (69%), believe that using predictive analytics could enhance health equality, while 89% say it could also help reduce the cost of care. These findings reinforce the importance of extracting actionable insights from currently available data to support sustainable healthcare delivery for future generations.

## Social responsibility is a growing priority for healthcare leaders in Singapore

Currently have or are currently developing health equality initiatives



## Singaporean leaders are more likely than the global average to believe predictive analytics can positively impact health inequality and the cost of care



## Healthier SG Strategy for more sustainable healthcare

The Singaporean government's Healthier SG strategy<sup>^</sup>, launched in March 2022, introduced fundamental changes to the country's healthcare system. It aims to move the nation from a 'sick care' model to a more sustainable 'health care' model, promoting preventative care over treatment and focusing on establishing healthier habits in Singaporeans, thereby reducing the need for healthcare services. When announcing the new model, Health Minister Ong Ye Kung named the necessary support structures to make the reform successful: increasing the numbers and competencies of the healthcare workforce, transforming the healthcare financing model to better reflect desired health outcomes, and facilitating data flow across the healthcare ecosystem<sup>^^</sup>.

\* <https://www.straitstimes.com/singapore/health/rate-of-growth-in-healthcare-spending-unsustainable-gan>

\*\* [https://www.mof.gov.sg/docs/librariesprovider3/budget2022/download/pdf/fy2022\\_budget\\_statement.pdf](https://www.mof.gov.sg/docs/librariesprovider3/budget2022/download/pdf/fy2022_budget_statement.pdf)

^^ <https://www.moh.gov.sg/news-highlights/details/promoting-overall-healthier-living-while-targeting-specific-sub-populations>

^^ <https://www.moh.gov.sg/news-highlights/details/speech-by-mr-ong-ye-kung-minister-for-health-at-the-ministry-of-health-committee-of-supply-debate-2022>

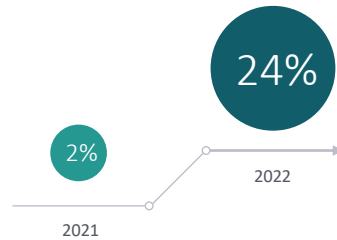
# Singapore leaders fast track sustainable healthcare

## Singaporean healthcare leaders are prioritizing environmental sustainability

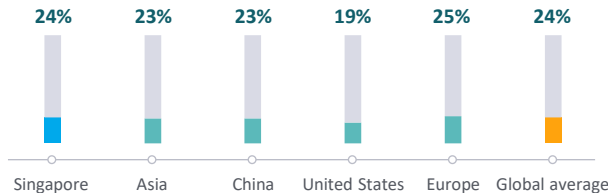
The Future Health Index 2021 found that just 2% of leaders in Singapore saw sustainability as a top priority. Today, there is a noticeable shift in their attitudes. Almost one-quarter (24%) of Singaporean healthcare leaders put sustainability practices at the top of their agenda, placing the country on par with the European (25%) and global average (24%), and ahead of the United States (19%), showing that leaders in Singapore have embarked on a journey toward a net-zero future.

According to the Singaporean Ministry of Health, public hospitals in Singapore are actively planning and adopting sustainability measures to meet the goal of reducing carbon emissions in the public sector put forward by the GreenGov.SG movement, a key enabler of Singapore's sustainability agenda outlined in the Singapore Green Plan 2030\*. With the pandemic necessitating a shift to remote care, its impact on reducing the carbon footprint of healthcare visits by limiting the need for travel and making savings in time, energy and disposable materials cannot be overlooked\*\*.

## How Singaporean leaders prioritized sustainability in 2021 and 2022



## Today, Singapore is among leaders in prioritizing sustainability initiatives



## Hospitals respond to the Singapore Green Plan 2030

In February 2021, the Singaporean government released a nationwide plan focused on advancing Singapore's agenda in sustainable development<sup>^</sup>. The GreenGov.SG initiative, a key enabler of the Green Plan 2030, sets measures and targets to cut carbon emission within the public sector<sup>^^</sup>. With that, Singapore public hospitals are taking measures to meet the GreenGov.SG targets<sup>^^^</sup>. Some of the key areas include renewable energy, more sustainable practices, circularity, recycling and ecodesign. An example of the latter is the Ng Teng Fong Hospital<sup>^^^^</sup>, which is recognized for its sustainable design, including a water supply heated by solar panels, sensor-based lighting, rainwater use for rooftop gardens irrigation, and use of NEWater for cooling.

\* <https://www.mse.gov.sg/resource-room/category/2021-07-12-press-release-on-greenov>

\*\* <https://www.liebertpub.com/doi/10.1089/tmj.2009.0105>

<sup>^</sup> <https://www.ncsc.gov.sg/media/press-release/joint-media-release-by-ncsc-mse-mti-mot-mnd-and-moe-good-progress-made-on-the-singapore-green-plan-2030-as-government-accelerates-decarbonisation-and-sustainability-efforts>

<sup>^^</sup> <https://www.mse.gov.sg/resource-room/category/2021-07-12-press-release-on-greenov>

<sup>^^^</sup> <https://www.straitstimes.com/singapore/singapore-hospitals-draw-up-plans-to-meet-greenovsg-targets-and-heal-earth>

<sup>^^^^</sup> <https://www.ntfgh.com.sg/About-NTFGH/Awards-Achievements/Pages/Hospital-Design.aspx>





## 2

# Unlocking the power of data

### **A strong sense of confidence**

Healthcare leaders in Singapore are increasingly using data across 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 more important for healthcare leaders as they look to tackle the organizational crisis within their facilities; it is helping to extend and improve care. Singaporean healthcare leaders are also confident that the data they have available holds enormous potential to transform care delivery.

### **Navigating the remaining frustrations**

Yet, while they acknowledge the value of data, healthcare leaders report that they continue to experience obstacles to effectively exchanging and managing that data. Keenly aware of the need for better data integration across the health system, healthcare leaders recognize the value of partnerships to unlock the power of data.

**The following chapter explores how Singaporean healthcare leaders are currently using data and the solutions they consider that could potentially help them tackle existing challenges and unlock the power of data.**

# Continuing the journey to digitization

## With digital health records in place and telehealth becoming a norm, leaders seek new ways to extract value from data

Singapore’s health system continues to embrace digital transformation in line with the Smart Nation initiative to build a digital-first Singapore where a digital government, digital economy and digital society harness technology to transform health, transport urban living, government services and businesses\*.

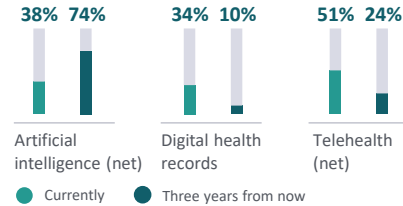
The COVID-19 pandemic accelerated digitization, helping to pave the way for a future-proof Singaporean healthcare system. Data sharing is a key element of this digital transformation and more needs to be done in this area. However, protection of patient privacy is imperative\*\*. With cybersecurity risks growing globally, it is important that healthcare organizations strengthen their technical and security infrastructure within their systems to ensure patient health data remains secure\*\*\*. These trends are likely leading to Singaporean healthcare leaders’ current prioritization of investment in digital healthcare records (34%).

The shift to virtual care is a key priority recognized by one in five (20%) Singaporean healthcare leaders, and a current investment area named by more than half (51%) of leaders.

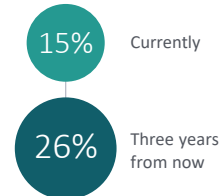
As the use of telehealth has grown during the COVID-19 pandemic, thereby increasing access to care, leaders in Singapore have prioritized solutions that would allow them to further extend care delivery beyond hospital walls, aligning with the governmental push to move “Beyond Hospital to Community” \*\*\*\*. Today, 15% of leaders make it their priority, while 26% aim to prioritize it within the next three years. The government continues to play a big role in supporting the transition, both initiating and subsidizing e-health initiatives.

Their efforts, along with healthcare leaders prioritizing the simplification, aggregation and connection of patient data (20%) and investing in remote patient monitoring solutions (14%) form a strong foundation for a digitized, connected, data-driven future of care.

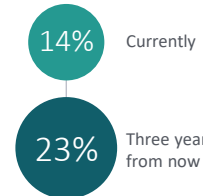
## Digital health records, telehealth and AI are key investment areas today



## Leaders in Singapore increasingly prioritize extending care delivery beyond the hospital walls



## Investments in remote patient monitoring solutions are expected to rise in the next 3 years



## One patient, one record

The National Electronic Health Record (NEHR), owned by the Ministry of Health and managed by the Integrated Health Information Systems (IHIS), is a key enabler of Singapore’s strategic vision for “One Patient, One Health Record”. The NEHR provides secure access to a patient’s health data by authorized clinicians and healthcare professionals, enabling greater coordination and informed decision-making and supporting more accurate diagnosis, better treatment, and patient-centric integrated care. Since 2011, the NEHR has been progressively deployed to both public and private healthcare institutions across Singapore^\*. Technical and process enhancements over the years have helped to ensure data security^^.

\* <https://www.smartnation.gov.sg/about-smart-nation/transforming-singapore>

\*\* <https://www.straitstimes.com/singapore/health/private-healthcare-players-vvos-need-to-step-up-data-sharing-says-healthtech-chief>

\*\*\* <https://www.healthcareitnews.com/news/security-improvements-singapore-s-national-electronic-health-record-be-done-year-end>

\*\*\*\*<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8521861/>

^ <https://www.ihis.com.sg/nehr/about-nehr>

^^ <https://www.moh.gov.sg/news-highlights/details/speech-by-dr-janil-puthucheary-senior-minister-of-state-for-health-at-the-ministry-of-health-committee-of-supply-debate-2021-on-friday-5-march-2021>

# Healthcare data proves its worth

## Healthcare leaders in Singapore are confident in their ability to make use of data


Singaporean healthcare leaders are significantly more likely to recognize the benefits that data offers than leaders in other countries. 91% of leaders in Singapore agree that the value of data to their facility is worth the time and resources invested, a number significantly higher than in other countries such as the United States (82%) or China (53%), and one-and-a-half times larger than the European average (60%). Currently, 37% of leaders report they are collecting, storing and sharing data with other parties (such as other healthcare facilities or health tech companies) in clinical settings, and more than one-quarter

do so in operational settings. Additionally, about a third of leaders state they are using data for both descriptive (35% in clinical and 31% in operational settings) and predictive analytics (32% in both settings).

Along with their confidence in the value of data, healthcare leaders in Singapore are positive about their ability to make the best use of it. Most (91%) leaders say they have access to necessary technology and can extract actionable insights from data. And, while half of the leaders trust they have all the expertise needed internally to fully utilize data, another 46% believe they have at least some of this expertise.

## Healthcare leaders in Singapore believe they have the technology and skills to extract actionable insights from data

My facility has the digital health technology needed to fully utilize data  91%

My facility is able to extract actionable insights from the data we have  90%



## The Clinician's ZEDOC platform

Last year, Singapore's health technology agency, Integrated Health Information Systems (IHIS), along with digital health leader, The Clinician, launched ZEDOC across Singapore's public healthcare system<sup>^</sup>. ZEDOC measures and improves the health outcomes and experiences of patients and enables healthcare providers to digitally capture health data from patients outside the hospital and analyze the data in real-time. The program replaces existing paper-based forms with an integrated digital platform that automates data capture. Analysis of this data should allow physicians to better engage with patients beyond hospital walls and inform them of early health risks and complications. The result: more personalized care, based on a complete picture of each patient's health status and experiences.

## Confidence in the value of data is higher in Singapore than in other countries



<sup>^</sup> <https://www.asiaone.com/business/clinician-begins-rollout-patient-reported-outcome-and-experience-measures-singapore-public>

## Data silos and security concerns remain a barrier to full data



### Despite high confidence in data and technology, Singaporean healthcare leaders recognize the limitations hindering their ability to fully utilize it

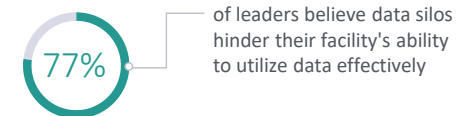
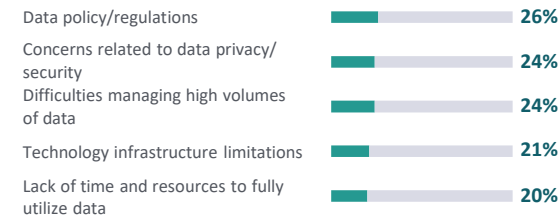
While the Singapore government prioritizes technological development, emphasizing the role of technology in transforming healthcare\*, Singaporean healthcare leaders face several challenges to achieving data-driven healthcare, like their counterparts around the world.

The primary challenge recognized by 77% of leaders is the prevalence of data silos. Difficulties related to data-sharing, such as a lack of guidance, methodologies and systematic approaches to sharing data\*\*, can affect healthcare facilities' ability to share and exchange information, thereby contributing to data silos and impacting the effective use of data.

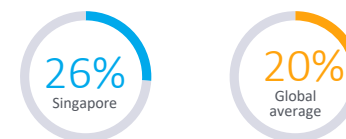
Additionally, more than one-quarter (26%) of healthcare leaders in Singapore perceive data policy and regulations as a barrier to data utilization, while a similar number (24%) cite obstacles related to data privacy and security.

Many Singaporean healthcare leaders also experience challenges related to the volume of data being collected. Almost one-quarter (24%) of leaders state that difficulties managing high volumes of data constitute a barrier to its full utilization, and one in five (20%) leaders are concerned that they lack sufficient time and resources to make the best use out of it.

### Top barriers to effective use of data



### Leaders in Singapore are more likely to prioritize data security and privacy than leaders globally



\* <https://www.smartnation.gov.sg/files/publications/smart-nation-strategy-nov2018.pdf>

\*\* <https://www.imda.gov.sg/news-and-events/Media-Room/Media-Releases/2019/Enabling-Data-Driven-Innovation-Through-Trusted-Data-Sharing-In-A-Digital-Economy>

# A growing need for collaboration

## Leaders in Singapore realize that partnerships are key to success

To help alleviate data utilization barriers, Singaporean healthcare leaders are open to working with external partners. Many of them are already collaborating and sharing data with third party organizations across clinical (37%) and operational (28%) settings.

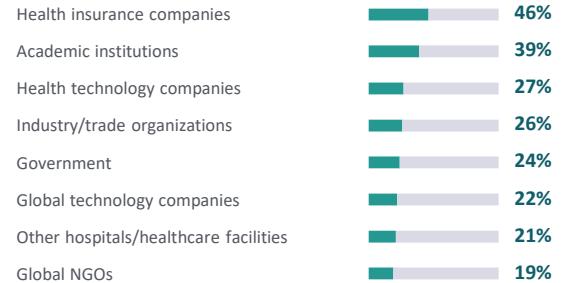
Currently, Singaporean healthcare leaders see value in partnering with health insurance companies (46%), followed by academic institutions (39%), health technology companies (27%), industry trade organizations (26%) and government (24%). The breadth of valued partners underlines the need of multi-disciplinary collaboration in navigating the opportunities and challenges to full data utilization that Singaporean healthcare leaders face as they work to further enhance patient care.

With technological advances driving successful partnerships, healthcare leaders in Singapore recognize the benefits of partnering with health technology companies, with more than one-quarter (27%) considering such partnerships to be most beneficial.

Leaders believe that joining forces with health technology companies could provide healthcare facilities with counsel on contingency planning (32%), support technology integration (28%), and provide guidance on regulatory issues (27%) and data analysis (27%).

The range of areas that leaders seek support with suggests that partnering with companies with varied healthcare expertise would be most beneficial in order to collaborate in all these priority areas.

## Singaporean healthcare leaders' preferences for types of strategic partnerships to enhance data utilization



## The support Singaporean healthcare leaders seek from health technology companies



# 3

## How predictive analytics can supercharge care

### **Huge potential across healthcare in Singapore**

Singaporean healthcare leaders recognize the potential of both predictive analytics and artificial intelligence (AI).

At a clinical level, predictive analytics can help healthcare providers improve the patient experience, reduce the cost of care and improve health outcomes. Operationally, predictive analytics equips healthcare systems with the ability to identify trends and form predictions, which may ease some of the administrative burden.

### **A commitment to further adoption of digital technology**

Already seeing its benefits, healthcare leaders in Singapore lead the way in confidence in predictive technology. They believe that investments in predictive technologies will allow them to seamlessly deliver remote care and reduce healthcare costs, thereby improving the staff experience, benefitting patients and contributing to positive changes in population health.

**This chapter looks at the benefits of, and barriers to, the adoption of predictive analytics as viewed by healthcare leaders in Singapore.**



## Leaders look toward an AI-driven future

### Leaders' focus on AI is strong and predicted to grow

With high levels of trust in data, they are turning toward AI and predictive analytics to extract the most value out of information they have.

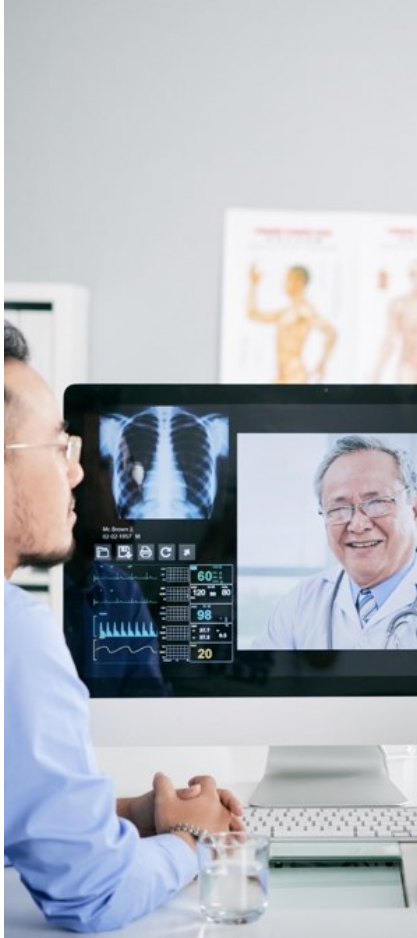
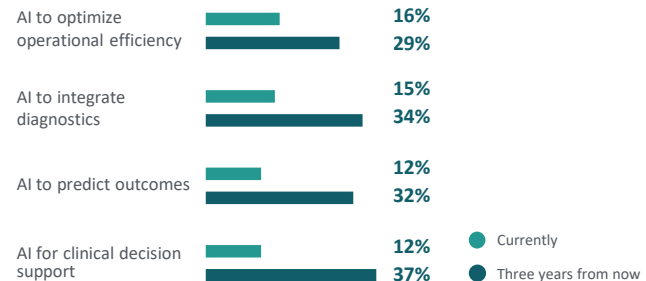
More than one third (38%) of Singaporean healthcare leaders consider AI a key priority today, while three quarters (74%) predict it will become a top priority within the next three years. While artificial intelligence is currently most used in operational settings (16%), the highest growth in AI investments (25 percentage points) is expected within the area of clinical decision support, which includes uses related to diagnosis or treatment recommendations, early warning scores, automatic disease detection and clinical decision guidelines.

In addition to its applications across clinical and operational settings, AI can also help resolve some of the challenges related to data privacy and security.

### Prioritization of investment in AI is set to double within three years



### Investments in different areas of AI application



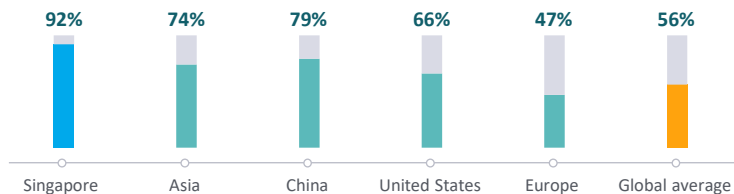
# Singapore leads the way in predictive analytics adoption

## Predictive technologies currently dominate in operational settings

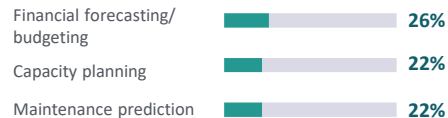
While Singaporean healthcare leaders see artificial intelligence as a key investment for the near future, many are already utilizing predictive analytics in some capacity. Almost half (45%) of their hospitals or healthcare facilities have already adopted the technology, with a similar figure (47%) currently in the process of doing so. This puts Singapore far ahead of other countries, with the percentage of those already working with predictive analytics (92%) almost twice as high as the European average (47%), significantly higher than the 15-country average (56%), and before other countries such as the United States (66%) or China (79%).

As with AI adoption, predictive analytics are more likely to be used today in operational settings (87%), supporting tasks such as financial forecasting (26%), capacity planning (22%) and maintenance prediction (22%). However, when asked about the areas where their facilities could most benefit from predictive technologies, leaders are significantly more likely to indicate clinical uses (92%).

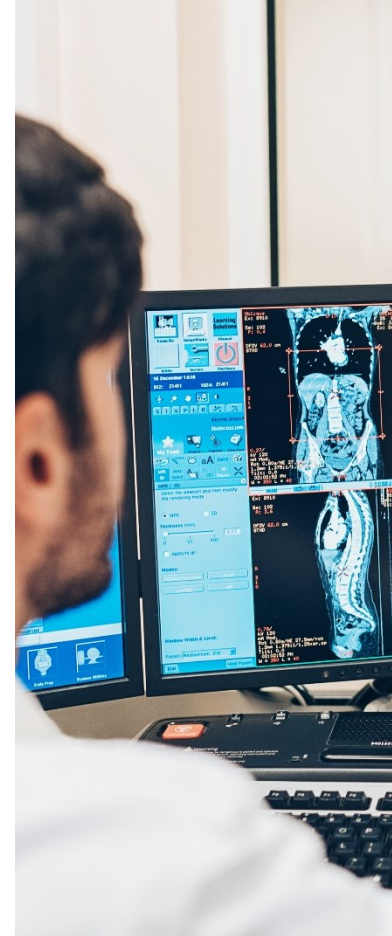
## The rate of predictive analytics adoption (already adopted or in the process of adopting predictive analytics) is higher in Singapore than in other countries



## Top areas of current use of predictive analytics are across operations



## Aspects of care where predictive analytics can have most positive impact





# Confidence in predictive technology is high, and so are the hopes for its use

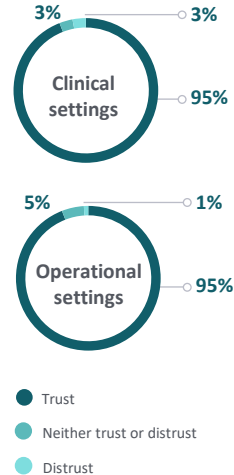
## Predictive technologies are seen to make a tangible difference to patients and staff

Singaporean leaders firmly believe that implementing advanced analytics benefits their patients. Most leaders believe that the use of predictive modeling can enhance the patient experience (91%), make care more affordable (89%), improve health outcomes (88%), and enhance population health management (88%).

Singapore is committed to promoting preventative care and enabling care delivery outside of healthcare facilities through its Healthier SG initiative\*. Predictive analytics can offer the potential to help the country achieve this\*\*. About one-quarter (25%) of the country's healthcare leaders believe that predictive technologies would support their facilities in post-acute care management and remote patient monitoring, while one in five (19%) see applications in chronic disease management.

Compared to the 15-country average (71% in clinical settings and 72% in operational settings), the level of trust in predictive analytics shown by leaders in Singapore is extremely high (95%). With the government actively promoting advanced technologies and data already proving its worth, leaders unequivocally support further investments in predictive analytics. The key challenge slowing down Singapore's progress today is ensuring that healthcare facilities are equipped with data security systems and protocols, a factor which could strengthen their trust in predictive analytics even further.

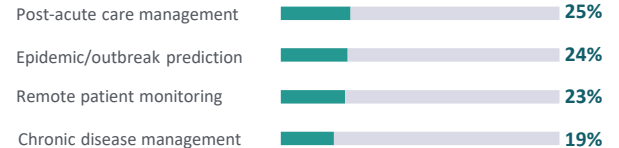
## Levels of trust in predictive analytics among Singaporean healthcare leaders



## Healthcare leaders believe predictive analytics will have a largely positive impact in clinical settings



## Singaporean healthcare leaders see the biggest potential of predictive analytics in areas related to population health and remote care



\* <https://www.healthiersg.gov.sg/about/>

\*\* <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8521861/>



Conclusion

# Conclusion

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 embarking on a reset – radically shifting their priorities to meet new norms in medical management. Specifically, leaders have indicated three key priorities for 2022 and beyond:



## Address the human capital crisis

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.



## Continue with digital transformation to improve interoperability and fully unlock the potential of healthcare data

From data silos and interoperability concerns to technology infrastructure limitations, many factors are to blame for the fact a gap remains between the promise of data and today's reality. The good news is, these barriers are eroding. 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.



## Close the healthcare equality gap, expand care and prioritize sustainability

While leaders have fast tracked both health equality and environmental initiatives, it is clear that to make a real difference this focus must increase. The technology investments they are making for clinical care, like telehealth, can have big implications for equality and sustainability, and these benefits should be considered in purchasing and implementation decisions. With ambitions to expand care delivery beyond their walls and focus on health equality initiatives, establishing partnerships with other community stakeholders offers many routes to deepening the impact of their programs. Such partnerships can help to ensure hospitals are addressing the unique issues faced by their local communities.

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 exponential rise of chronic diseases. Ultimately, we see healthcare leaders embarking on a great 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)programmed.

## **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 report 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 rearview 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 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 report 2022 is based incorporates insights derived from a quantitative survey and a series of qualitative interviews conducted around the world.

\* 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 on-line 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	2900	+/- 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](http://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](http://www.philips.com/futurehealthindex-2022)