future health index 2022

South Africa

Healthcare hits reset

Priorities shift as healthcare leaders navigate a changed world

The Future Health Index is commissioned by Philips

Contents

Research premise

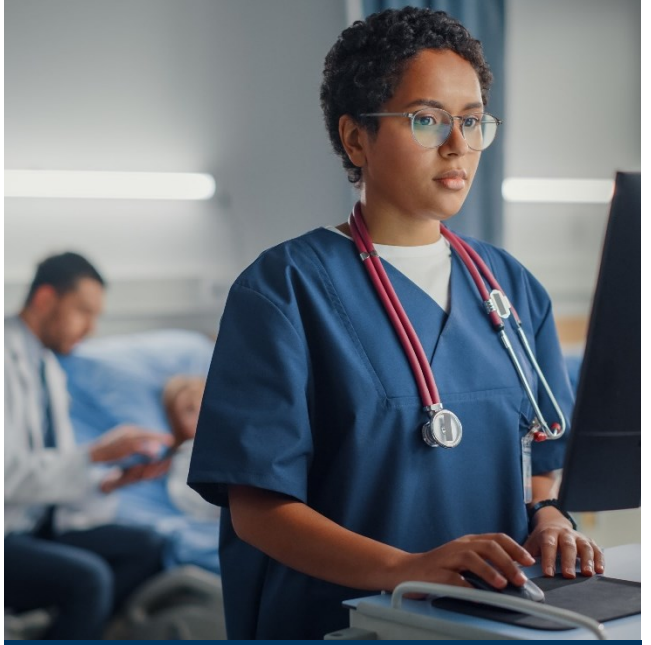
This is the largest global survey analyzing the top priorities and concerns of healthcare leaders*.

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 traditional hospital settings.

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 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 is staff satisfaction and retention. Healthcare leaders in South Africa see staff shortages as the most pressing issue they face today and one that should be addressed before they can focus on other priorities, such as extending care beyond the hospital walls.

In parallel, as we highlighted in last year's report, a sharp focus on social responsibility has had a positive effect in promoting greener healthcare systems, yet in South Africa, the change has not been fast enough. While many local leaders recognize the importance of broader social responsibility, they still encounter obstacles to implementing initiatives aimed at tackling the health inequalities South Africa is currently facing.

For many, though, this is where the potential and power of AI and predictive analytics bring true opportunity for change.

In South Africa, investment in AI and adoption of predictive analytics are both on an encouraging upward trajectory. While there is more to do in this space to ensure these investments translate into tangible shifts towards the future of care, local leadership is optimistic.

Most South African leaders (89%) see the potential benefit of the technology in operational settings and 93% in clinical applications, but leaders are most hopeful about benefits to the staff experience (59%) and health inequality (59%).

In summary, this 2022 report reflects a resetting of priorities and of care delivery itself, as healthcare leaders reprioritize care fundamentals to change care to the way it should be – accessible, reliable and efficient.

Romulen Pillay
Philips South Africa Managing Director

1

Emerging from the pandemic, healthcare leaders reassess their needs

A much-needed refocus on staff

Following the pandemic, South African leaders are facing significant staff shortages. Understaffing is taking a heavy toll on the healthcare system, especially in rural areas, where workforce shortages are more acute. Consequently, healthcare leaders in South Africa see staff retention and satisfaction as the most pressing issue they face today and one that should be addressed before they can focus on other priorities, such as extending care beyond the hospital walls.

A conscious shift to social responsibility

New models of care delivery, like telehealth, that were quickly rolled out during the pandemic, have highlighted the country's health inequalities. As a result, social responsibility, such as addressing health inequalities, moved up their list of priorities.

While many leaders recognize the importance of broader social responsibility, they still encounter obstacles to implementing initiatives aimed at tackling the health inequalities South Africa is currently facing.

The following chapter explore the current priorities for healthcare leaders in South Africa and how their planned investments can support these priorities.

Healthcare leaders increase their focus on staff

Staff experience is top of mind

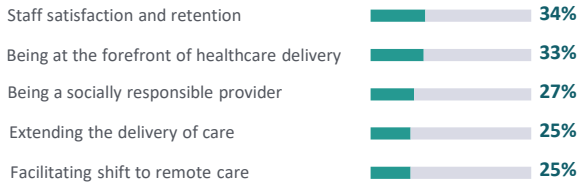
Across the globe, the COVID-19 pandemic exacerbated challenges that healthcare leaders face daily, with South Africa being no different. Like many other countries, the South African healthcare system is facing an employee shortage which, coupled with an ageing workforce*, is pushing leaders to prioritize staff retention. According to government data, South Africa's healthcare system will require an additional 88,000 primary care workers by 2025, with a significant increase in the number of specialists needed, just to account for population growth alone**.

Healthcare leaders in South Africa know that ensuring staff satisfaction is crucial to retaining the workers they currently employ. Improving the staff experience will not only help with retention, but it will also lead to higher quality patient care for more of the population***.

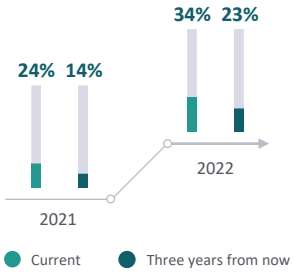
Aware that without intervention they are facing an even bigger crisis, South African healthcare leaders are refocusing on employee well-being and are committed to addressing staff-related issues. The number of leaders prioritizing improving staff satisfaction and retention (34%) today has increased sharply from 2021 (24%) and is higher than the global average of 30% and of countries like India (31%), Australia (27%) and Brazil (22%).

At the same time, South African healthcare leaders, like their global counterparts also have many other competing priorities, indicating long to-do lists in the wake of the pandemic.

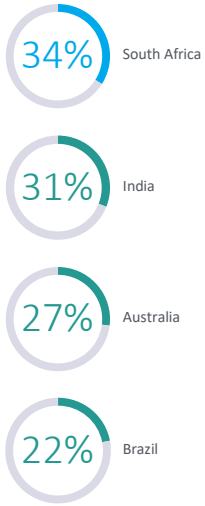
Top priorities of South African healthcare leaders today



Addressing staff satisfaction and retention has gained importance since last year



Country comparison of staff satisfaction and retention as a top priority



* https://www.dailymaverick.co.za/article/2021-10-07-south-africas-ageing-nurses-a-looming-healthcare-crisis/
** https://businesstech.co.za/news/lifestyle/430618/south-africa-faces-massive-healthcare-worker-shortage/
*** https://www.richtmann.org/journal/index.php/ajis/article/view/12875/12471

Investing to expand care delivery

Leaders recognize the need to invest in remote technologies as extending care becomes a growing priority

The COVID-19 pandemic forced healthcare systems in most countries, including South Africa, to find ways to deliver more care outside of the hospital.

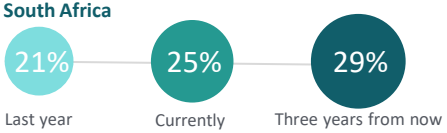
Today, building on their experiences during the pandemic, extending care beyond existing facilities is among the top priorities for healthcare leaders both globally (26%) and in South Africa (25%), and is expected to further gain importance in the future (29% South Africa, 27% globally). Reflecting this, leaders in South Africa continue to invest in technologies that aid in delivering care outside of hospitals, such as telehealth (48%) and remote patient monitoring (27%).

Increasing investments in artificial intelligence

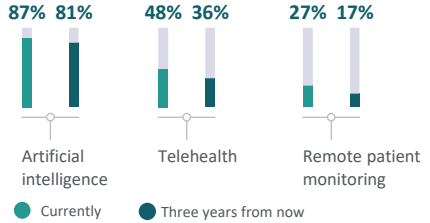
Along with investments in telehealth, South African leaders are increasing investments in artificial intelligence (AI) to aid their transition to more data- and technology-driven care. Last year, investments in AI were far from the top of healthcare leaders' agendas, with just 15% citing it as an area of investment.

Today that number is almost six times higher, with 87% of leaders reporting they are currently investing in AI, significantly more than the 60% global average. AI-enabled technologies can not only help to deliver care in innovative ways, but can also reduce the workload of staff by automating routine tasks, thereby improving the staff experience, too.

Extending care continues to be a growing priority in South Africa



AI, telehealth and remote monitoring solutions are top investment areas today



Relaxation of telehealth rules during COVID-19

Before the pandemic, the Health Professions Council of South Africa (HPCSA) had implemented a stricter set of regulations for telemedicine under the General Ethical Guidelines for Good Practices of Telemedicine (2014 Guidelines). Under the HPCSA's initial regulations, first-time consultations were barred, meaning services had to involve a face-to-face consultation with a healthcare provider. This included a physical examination of the patient in a clinical setting prior to using any telehealth services. As a national lockdown commenced at the start of the pandemic, the HPCSA relaxed its stance, issuing three amendments to the guidelines. In December 2021, these amendments were extended indefinitely allowing telehealth to be used more widely on a permanent basis.*

* https://www.hpcsa.co.za/Uploads/Professional_Practice/Conduct%20%26%20Ethics/Booklet_10_Telehealth_Dec_2021_v2.pdf

A conscious move to social responsibility

Digital access barriers are high

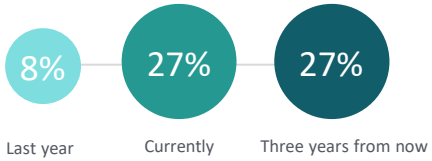
While South African leaders can utilize telehealth and remote monitoring to extend care beyond hospital walls, patients in rural areas continue to face uneven access to these types of digital healthcare. Lack of internet access in these areas is a significant factor. Only 8.3% of South Africans have fixed internet at home and in rural areas internet access is particularly low. For example, Limpopo, the most predominantly rural province*, has the lowest percentage of overall internet penetration, with just 58.4% of households able to access the internet in any capacity**. Another significant challenge is the country's energy crisis, resulting in unpredictable electricity supplies.

Unequal healthcare systems

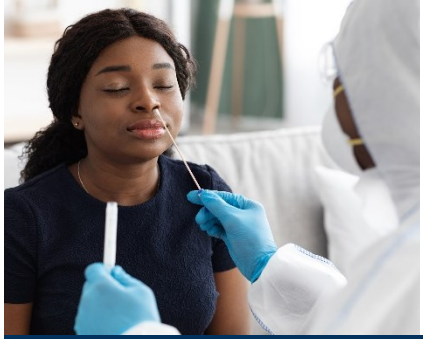
Further worsening health inequalities is the country's two-tiered healthcare system, where the public sector caters for about 80% of the population and the private sector serves around 20%. The public sector – which accounts for approximately 48% of total healthcare spending*** – is underfunded, while the high cost of private care is out of reach for most South Africans****. The result is huge variances in the quality of care that South Africans receive. For example, during the pandemic, with turnaround times for simple COVID-19 tests, public health patients averaged between 14 and 20 days, whereas in the private sector they were just 24 to 48 hours*****.

In a bid to address these health inequalities, 27% of leaders have pushed social responsibility to the top of their priority list this year. However, while this is a top priority both now and in the future, action in this area is limited. Healthcare leaders in South Africa are significantly behind the global average when it comes to implementing initiatives to help combat the inequalities (32% vs. 58%).

Social responsibility is a higher priority for South African leaders today, compared to last year



South African leaders are behind other countries in developing health equity initiatives



Engaging future healthcare professionals in rural South Africa

Along with poor internet access, staff shortages are contributing further to inequalities, with a projection that an additional 97,000 health workers of all types will be needed by 2025 to address inequities across provinces^. Aiming to help combat this, programs from organizations such as the Umthombo Youth Development Foundation (UYDF) are designed to improve recruitment strategies for health systems in rural areas. The UYDF addresses shortages of healthcare workers in rural areas with scholarship and mentorship programs to help young people studying health science. The hope is that once a student graduates, they will honor their work back contracts and secure a position at a hospital in their rural home community^^.

* https://ageconsearch.umn.edu/record/15607/files/bp050009.pdf
** http://www.statssa.gov.za/publications/P0318/P03182020.pdf
*** https://www.pwc.co.za/en/publications/south-african-healthcare-reimagined.html
**** https://www.wits.ac.za/news/latest-news/opinion/2021/2021-07/healthcare-in-south-africa-how-inequity-is-contributing-to-inefficiency.html#:~:text=South%20Africa%20has%20a%20two,around%2027%25%20of%20the%20population
***** https://www.spotlightnsp.co.za/2020/06/24/covid-19-stark-differences-between-public-and-private-sector-testing/
^ https://businesstech.co.za/news/lifestyle/430618/south-africa-faces-massive-healthcare-worker-shortage/
^^ https://www.umthomboyouth.org.za/what-we-do/our-objective

2

Unlocking the power of data

Despite understanding the value of data, frustrations surrounding its usage persist

Healthcare leaders in South Africa recognize the benefits data can bring to healthcare. With high levels of trust in the insights provided, they are ready and willing to make better use of the information they have on hand. However, challenges such as technology limitations, concerns around data privacy and limited knowledge of data usage among both senior leadership and staff hinder their ability to utilize it to its full potential. This is delaying South Africa's ability to improve, develop and deliver better care with the support of advanced analytics.

Navigating the remaining challenges

Yet, while they may face challenges to fuller data use, South African healthcare leaders are also able to identify potential solutions to overcoming these challenges. Increased clarity on how data is being used within their facility is near the top of the list, as well as continuing to invest in technology infrastructure and data security systems. Staff are also key to maximizing its potential, and leaders recognize the need for more education to support employees. Leaders are looking to partner with external organizations, such as trade organizations and health tech companies, to address these issues and help bring their facilities to the forefront of healthcare delivery.

The following chapter explores how South African healthcare leaders are currently using data and the steps they could take to tackle existing challenges and unlock its potential.

Obstacles remain in the journey to complete data utilization

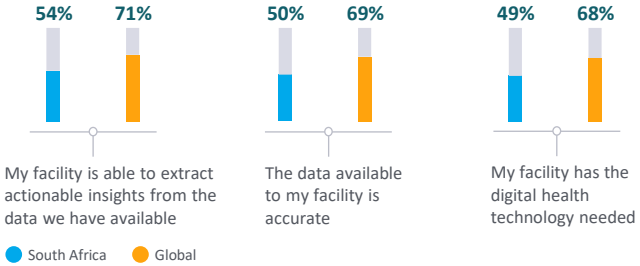
Despite understanding the value of data, South African leaders are facing many challenges when it comes to utilization

South African leaders are positive about what data can do for them, with 51% agreeing that the value of data is worth the time and resources invested. However, despite this, they face several barriers to more effective use of data.

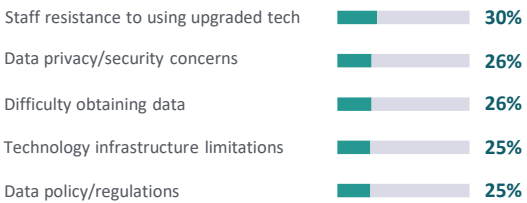
Many South African hospitals lack extensive policies and regulations regarding data integrity*. This is likely why only half (50%) of leaders believe the data accessible to their facility is accurate, a number significantly lower than the global average (69%). Coupled with a lack of accurate data, just 54% believe they can extract actionable insights from the data they do have available, while 51% struggle to employ the data to help inform their decision making.

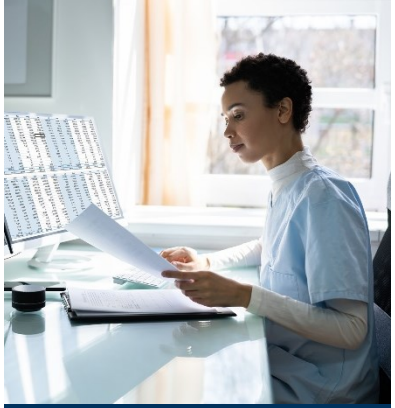
Lack of sufficient technological infrastructure is another impediment, with only half (49%) saying their facility has the digital health technology needed to fully utilize data (vs. 68% globally). A quarter (25%) of South African leaders name infrastructural shortcomings, such as slow internet and outdated software, as a top barrier to effective data use. Even with technology upgrades in place, leaders need to focus on upskilling their current workforce as well as recruiting those with higher technical skill levels to be able to fully utilize the new technology.

South African leaders are more likely than the global average to believe they lack accurate data and the correct technology to fully utilize it



Top barriers to effective use of data





The National Digital Strategy for South Africa 2019-2024

Recognizing the benefits that digital health technologies can bring to health systems, The National Digital Strategy for South Africa 2019-2024 was created to help strengthen governance frameworks, establish broadband infrastructure and create integrated platforms for the development of information systems in the country. Along with developing a complete health electronic record and the digitization of health systems, the strategy is focused on the development of digital health knowledge for workers. One of the nine strategic interventions to be achieved by 2024 is to develop a digital health workforce plan focused on establishing the critical technical skills required to drive successful implementation of the overall digital strategy**. Such skills can also play a part in addressing barriers to healthcare data use.

* https://www.researchgate.net/publication/348835666_Data_Integrity_Challenges_in_Health_Information_Systems_in_South_Africa
** https://www.health.gov.za/wp-content/uploads/2020/11/national-digital-strategy-for-south-africa-2019-2024-b.pdf

Leaders identify solutions to data utilization challenges

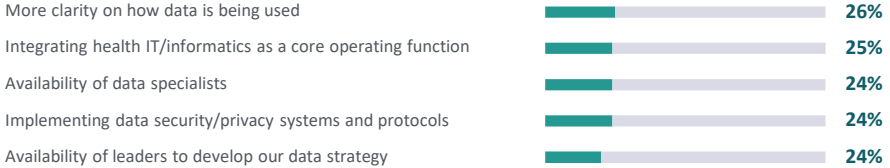
A variety of solutions are needed to boost data utilization

South African healthcare leaders recognize that one of the main ways of improving data utilization is increasing expertise in this area among their staff. While 64% agree their facility has some of the internal expertise needed, just 4% believe they have all of it. Consequently, hiring data specialists (24%) and training current staff on data utilization (20%), also feature prominently among South African healthcare leaders' top means of improving data usage. Many also seek expertise at a higher level. One-quarter (24%) of South African healthcare leaders believe that having a data strategy developed at the executive level, e.g., by a Chief Data Officer, would be helpful to improve data utilization.

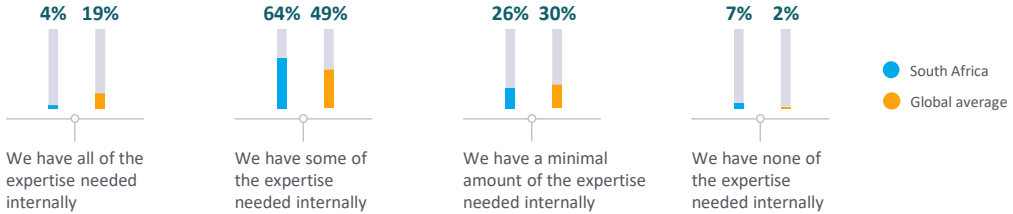
As South African healthcare leaders struggle with staff shortages and a limited technology infrastructure, they are identifying ways to overcome these obstacles and maximize the data they have available.

Top of their list of ways to improve data utilization are increased clarity on data usage in their facilities (26%) and integrating informatics as a core function (25%). Although the need for this type of technology is clearly recognized, severe funding constraints in the public sector make it difficult for many hospitals and healthcare facilities to maintain or purchase upgraded IT equipment*.

South African leaders believe increased clarity on current data usage would most benefit them in effectively using data



South African leaders are aware their facilities could use more internal expertise to fully utilize data



* https://www.trade.gov/country-commercial-guides/south-africa-healthcare-medical-devices-and-pharmaceuticals

Partnering with external organizations can help overcome barriers

South African leaders are aware they cannot do it alone

South African healthcare leaders realize external partnerships can offer opportunities to access skills, advanced technology and expertise. Currently, most of them cite their industry organizations (35%) as their partner of preference, more than double the number who chose this option in 2021.

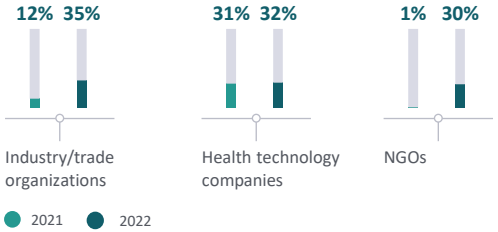
In 2021, nearly one-third (31%) of South African leaders valued partnerships with health technology companies and they remain a top preference today (32%).

When the pandemic forced leaders to rethink how they could continue to service patients amidst a strict lockdown, adopting new solutions provided by health tech companies allowed for a quick shift toward remote care. As leaders seek to continue advancing their technology capabilities post-pandemic, access to innovative technology solutions is the top service they want health tech companies to provide (33%).

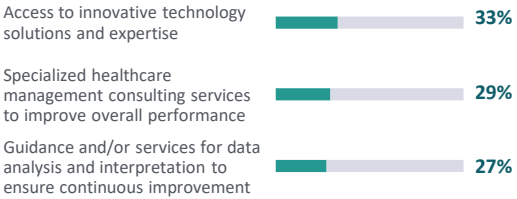
Along with innovative technologies, 27% of healthcare leaders are seeking guidance on data analysis and interpretation from health technology companies.

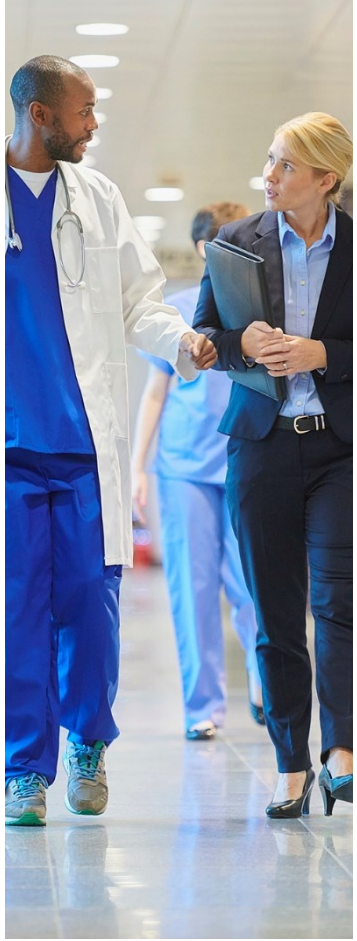
Up from just 1% in 2021, 30% of South African leaders are today considering non-governmental organizations(NGOs) for potential partnerships. Prior to the pandemic, NGOs were already providing much healthcare support in rural areas where resources are scarcer and healthcare coverage poorer, notably through access to numerous skilled workers and capital*. It seems that the pandemic has shone a spotlight on this issue, making NGOs a more important partner, for healthcare leaders.

South African leaders' top partnership preferences are with industry organizations and health insurance companies



The support healthcare leaders seek from health technology companies





* https://www.tandfonline.com/doi/full/10.1080/23311886.2019.1674100

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The potential of predictive analytics to supercharge care

Artificial intelligence (AI) will benefit patients in the long run

AI and advanced analytics is already proving beneficial for healthcare facilities, with investments in these technologies skyrocketing. South African healthcare leaders recognize there is more these technologies can do for them to aid in the delivery of remote care and tackle health inequalities in the country.

High levels of investment in predictive analytics

In South Africa, as in many countries, despite overall optimism around the technology, barriers to the adoption of predictive analytics remain, including concerns around data privacy and security. However, with high investment levels, it is likely that adoption will rise rapidly in the next few years.

The following chapter explores how resolving security and privacy concerns could unlock the power of predictive analytics to make a meaningful difference to South African healthcare.

Leaders look forward to an AI-driven future

Leaders focus on investments in AI now and in the future

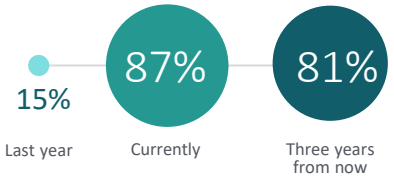
While there are currently no explicit policies for artificial intelligence (AI) in the health sector, the National Digital Health Strategy (NDHS) for South Africa 2019-2024 anticipates that AI, big data, and predictive analytics will support both operational and clinical decisions, having the potential to address issues around the broader social determinants of health*.

Reflecting this, and despite hurdles to full data utilization, leaders in South Africa recognize the promise of (AI) and predictive technologies to transform and improve healthcare.

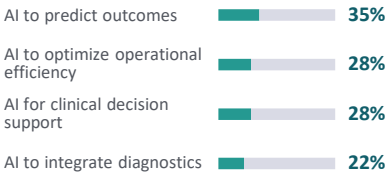
The Future Health Index 2021 found that only 15% of South African leaders were prioritizing investments in AI. This year, that number is almost six times higher (87%). According to NDHS's target timeline, most data science innovations, like AI, will occur before 2023, suggesting now is the prime investment period for advancements in AI and predictive analytics*. This is underlined by healthcare leaders' expectation that investment in AI will drop slightly to 81% three years from now.

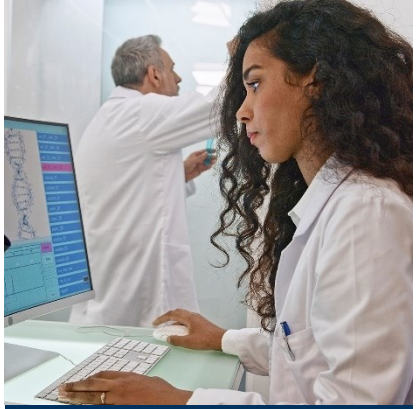
Currently, leaders are primarily investing in AI to predict outcomes (35%), closely followed by optimizing operational efficiency (28%) and clinical decision support (28%).

Investments in AI have grown exponentially since last year



Investments in different areas of AI application





HIV treatment demonstrates the benefits of AI technologies

AI has played a key role in tackling the country's challenges with HIV. Since 2014, Vantage, a data analysis platform, has helped healthcare workers test over five million people for HIV and assisted hundreds of thousands of patients in starting anti-retroviral therapy. Using machine learning, Vantage assesses a clinic's performance against Triple 90 targets, which includes testing 90% of the people at risk for HIV, putting 90% who tested positive on a treatment plan and making sure 90% of those patients take medicine daily. With these analyses, Vantage provides both staffing and operational recommendations**.

* https://www.health.gov.za/wp-content/uploads/2020/11/national-digital-strategy-for-south-africa-2019-2024-b.pdf
** https://www.techrepublic.com/article/south-african-clinics-use-artificial-intelligence-to-expand-hiv-treatment/

Leaders are optimistic about the benefits of predictive analytics

Predictive technology supports healthcare leaders' top priorities

While South African healthcare leaders see AI as a key investment area, current adoption levels of predictive analytics in South Africa (12%) are significantly lower than the global average (24%) and 22% say they have no plans to adopt the technology. However, underscoring their belief in the positive impact predictive analytics can have, most South African healthcare leaders are actively working toward its adoption, with 56% saying they are in the process of adopting it or plan to do so in the next three years.

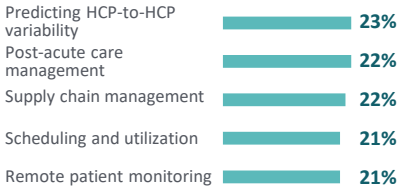
Most leaders (89%) see the potential benefit of the technology in operational settings and 93% in clinical applications. Overall, leaders are most hopeful about benefits to the staff experience (59%) – underlining their focus on staff satisfaction and retention – and health inequality (59%), while 56% trust it could make population health management more efficient.

While only around 20% of the South African population receives private healthcare, this sector accounts for approximately half of all healthcare spending in the country*. As a result, South Africa spends more on private health insurance as a percentage of total expenditure than most other countries, yet the majority of citizens, cannot afford a medical scheme membership**. Over half (56%) of healthcare leaders hope predictive analytics could make care more affordable, thus helping address health disparities.

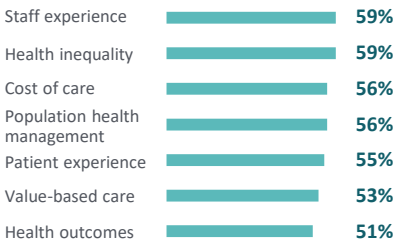
Leaders feel predictive analytics could aid their hospital or healthcare facility across both clinical and operational uses, with predicting HCP-to-HCP variability (23%), post-acute care management (22%) and supply chain management (22%) being the top areas that can benefit the most. In operational uses, predictive analytics may ease the administrative burden, while clinical uses can aid in improving the quality of care.

Most South African leaders expect to have adopted predictive analytics within the next three years

Areas where healthcare leaders see benefits of predictive analytics



Positive impact of predictive analytics on aspects of care



* https://www.pwc.co.za/en/publications/south-african-healthcare-reimagined.html
* https://www.globenewswire.com/news-release/2021/03/16/2193373/28124/en/South-Africa-Medical-Aid-Funding-Report-2020-State-of-the-Industry-Low-Cost-Benefit-Options-Affordability-Outlook-Influencing-Factors-Competition-Industry-Associations.html

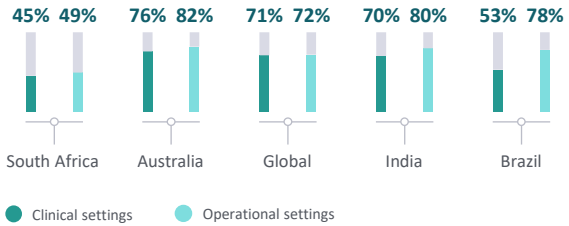
Resolving security and privacy concerns can unlock the value of predictive analytics

Improved data security is critical to building trust in predictive analytics
South African healthcare leaders are far below the global average when it comes to trust in predictive analytics, trusting its use in operational settings (49%) slightly more than in clinical settings (45%), compared to the global average of 71% in clinical and 72% in operational respectively.

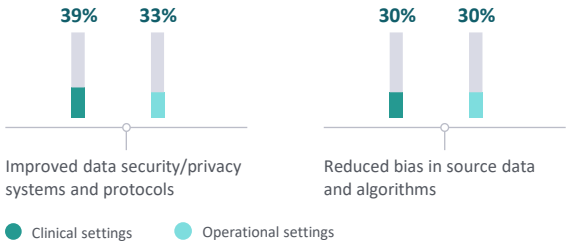
With cybercrime posing a constant threat, it is understandable that leaders cite improved security infrastructure as the top factor that would enhance trust in predictive analytics in both clinical (39%) and operational (33%) settings. In fact, academics suggest that, compared to other countries, cyberattacks on healthcare institutions in South Africa are increasingly probable due to poor cybersecurity infrastructure and a lack of regulations surrounding personal health data*. Interestingly, those working in the private

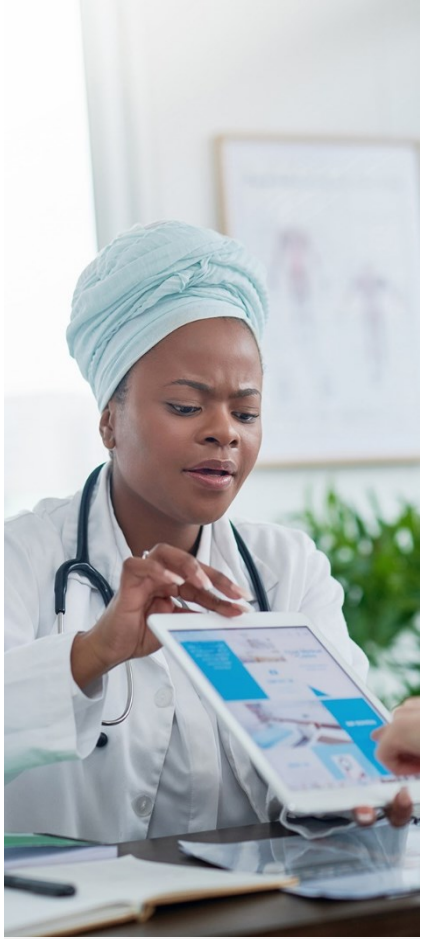
Mitigating source bias is also key to unlocking trust in predictive analytics, with 30% of healthcare leaders in South Africa identifying this as a top factor across settings. Despite the potential of predictive analytics and AI, algorithmic biases are a concern. These biases in the algorithm can lead to misdiagnoses of certain ethnic and gender minorities that are often underrepresented in the datasets**.

South African leaders' levels of trust in predictive analytics are far below the global average



Data security is a top factor that could enhance South African leaders' trust in predictive analytics in both clinical and operational applications





* https://www.easychair.org/publications/paper/2vhT
** https://www.sciencedirect.com/science/article/pii/S2666389921002026

Conclusion

Conclusion

Romulen Pillay, Philips South Africa Managing Director

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 – by focusing on people first:

Improving experiences to retain staff

With the sector facing a significant 15 million labour shortfall by 2030, improving the staff experience has become a top priority for today's leaders. This year's report has shown that South African leaders are most hopeful about the benefits that technology could bring to the staff experience (59%) and health inequality (59%), while 56% trust it could make population health management more efficient.

However, improving staff experience is just one piece of the puzzle – fixing the labour 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.

Enhance internal expertise to unlock the power of data

As South African healthcare leaders struggle with staff shortages and a limited technology infrastructure, they are identifying ways to overcome these obstacles and maximize the data they have available.

In South Africa, one of the main ways leaders believe they can improve data utilization is increasing expertise in this area among their staff. With just 4% bf leaders believing they have all the capabilities they need internally, hiring data specialists (24%) and training current staff on data utilization (20%), feature prominently among South African healthcare leaders' top means of improving data usage.

Investment and adoption of AI and predictive technologies to align to deliver on its true potential.

While there is massive disparity between investment in AI (87%), current adoption levels of predictive analytics in South Africa (12%) are significantly lower than the global average (24%).

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.

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 rearview mirror, they are now looking to leverage their growing technology capabilities in a variety of directions. From rethinking how much care needs 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 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

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