




2020

International Vision Health Scorecard



Globally 1.1 billion people live with vision loss, and 74% of them are 50 years or older.¹ And, as we age, our risk for vision loss rapidly increases. One out of nine 60-year-olds experiences blindness or moderate and severe visual impairment. By age 80, the figure grows to one out of three,² a challenge which will only be compounded as we are living longer lives.

For too long, vision loss has widely been considered and accepted as a natural part of aging, not as a treatable condition. This perspective is self-inflicted, ingrained across society, and unfortunately rampant across the health care sector. Ageism and predominant cultural views perpetuate misperceptions that automatically connect poor health, fragility and disease with growing older. We must shift our thinking, change behavior, and drive policy action to address these systemic challenges.

A staggering 90% of vision loss is avoidable,³ and it costs society in economic terms through

lost productivity and in human terms through isolation, increased risk of falls and mental health impacts. Yet, in spite of this, eye care and vision health often do not receive adequate attention from policymakers, health systems, and even individual health care providers. The COVID-19 pandemic exacerbates this challenge and increases the urgency for action.

The Global Coalition on Aging's (GCOA) inaugural International Vision Health Scorecard aims to change this dynamic. Our ambitious goal is to reframe how global society thinks about, behaves toward, and takes action around vision health and eye care to support healthier and more active aging. The following report focuses on the performance of 15 countries—Australia, Brazil, Canada, China, France, Germany, Italy, Japan, Nigeria, Saudi Arabia, Spain, Sweden, Switzerland, the United Kingdom, and the United States—in six key categories: national commitment and investment, research and innovation, health system preparedness, prevention, access, and societal support.

Our Scorecard reveals significant opportunities to enhance the delivery and experience of eye care. Funding levels are inadequate. The vast majority of research is privately funded. Care and screening are uncoordinated. Wait times to see a specialist are too long. We also showcase many best practices, which illuminate a path forward to drive much-needed change.

Our findings are based on expert insights and perspectives gained through surveys and one-on-one interviews as well as an analysis of available data sources. We are grateful to the multiple, diverse stakeholders across disciplines who contributed their time and insights. Our evaluation is unique not only in its scope and ambition, but also in bringing together vision and eye care experts with aging, economic and public health experts from the private and public sector alike.

We hope you will use the Scorecard as a tool to support advocacy, policy, and research to enhance vision health. We look forward to collaborating with vision health stakeholders in the countries evaluated to find solutions that will accelerate progress toward our shared goals.

Over the coming years, we will monitor progress in the countries we have studied to hold decision makers accountable for acting to improve the lives of people living with or at risk of visual impairment because healthy aging relies on healthy vision.

Michael Hodin, Ph.D.
CEO
Global Coalition on Aging

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Executive Summary

Healthy vision is at the center of healthy aging.

As people lose sight, they are more likely to lose independence, increasing the risk of social isolation and depression along with a greater chance of falls. GCOA developed the International Vision Health Scorecard to drive progress on key policy goals to improve vision health for everyone, especially older adults—to support activity and productivity throughout longer lives.

The International Vision Health Scorecard adds to concerted global health efforts to spur collective action on eye care and reduce preventable vision loss, including major initiatives spearheaded by the World Health Organization (WHO) such as Vision 2020, the Universal eye health global action plan (2014–2019), the World report on vision published in 2019, and new 2030 targets for effective coverage of cataract surgery and refractive errors. *The Lancet Global Health Commission* on Global Eye Health was established in 2019 to contribute evidence and recommendations to enhance global eye health in several of the same areas we explore in this Scorecard. In October 2020, the Vision Loss Expert Group and

Global Burden of Disease Study released new prevalence data of vision loss in partnership with IAPB.

In this Scorecard, we explore how countries perform in distinct, yet interconnected categories that contribute to vision health. The categories are:

- National Commitment and Investment
- Research and Innovation
- Health System Preparedness
- Access
- Prevention
- Societal Support

We define these categories and what we measured within the detailed report findings.

We explore findings and calls to action in depth within each category; however, universal themes emerged from our category findings. Specifically, our report calls on policymakers to:

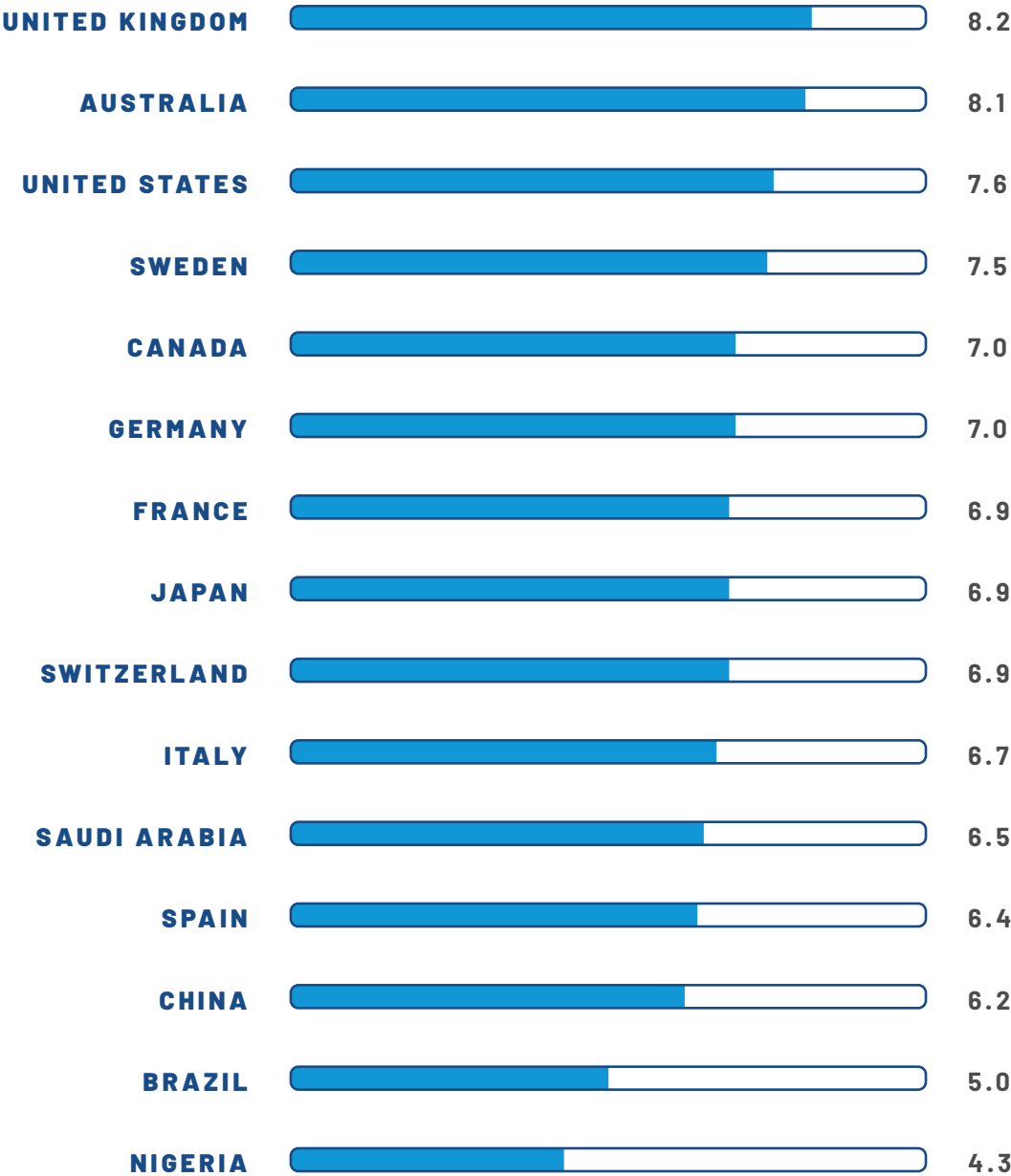
- **Integrate and embed eye care deeply into health systems** to ensure that primary care physicians, specialists, nurses and elder caregivers have the skills necessary to detect eye conditions to speed time to treatment and preserve vision.
- **Enhance research into vision health and increase the use of technology** by exploring new treatments that improve adherence, increasing understanding of the social and economic costs of vision loss, and using technology, such as telehealth and remote monitoring, to ensure timely treatment.
- **Deliver patient-centered care**, and ensure that patients can access the most effective treatments through innovative reimbursement structures that facilitate the approval and funding of emerging treatments to protect sight and improve patient experiences and outcomes.
- **Unify the vision health community and increase collaboration toward key policy goals.** Significant progress can be made if the vision health community comes together to identify policy goals and takes a common, unified approach to advocate for and achieve key priorities.
- **Seize the momentum of global health initiatives**, including The World report on vision and The Decade of Healthy Ageing to ensure increased activity and productivity

among older adults by preventing avoidable vision loss.

We are publishing this Scorecard as the COVID-19 pandemic continues to profoundly impact individuals and families around the world and strain health systems. The pandemic has created unforeseen consequences for older adults, who are at risk of death and severe complications from the coronavirus. At the outset of the pandemic, many patients deferred much needed vision health screenings and treatments, which highlights the need for innovative solutions—in treatment, screening, at-home monitoring, and care delivery—to ensure that patients protect their sight and independence.

These recommendations are detailed more in depth throughout the Scorecard. It is our aim that the Scorecard's findings and calls to action spur meaningful progress to improve vision health and ultimately advance healthy aging, enabling more people to remain active and productive for more years of their lives.

Overall Scores



Methodology

The 2020 International Vision Health Scorecard was developed using primary and secondary data sources collected and analyzed by GCOA.

The primary data consists of interviews with and surveys completed by global key opinion leaders and subject matter experts including advocates, researchers, clinicians, business leaders, and people living with vision loss and blindness.

The secondary data consists of existing research gathered from global authorities including, IAPB, the Organisation for Economic Cooperation and Development (OECD), and WHO, as well as reports from national governments, non-profits, and other publicly available sources. Data sources, key secondary metrics, and the scoring framework are detailed in the appendices of this report.

Framework

We developed the Scorecard to understand the level of attention that governments and health systems place on vision health and to assess their performance at this moment in time. The results serve as a benchmark against which future progress can be measured.

In order to understand how systems are performing today, we sought to answer the following questions:

- Where are successes in vision health and eye care taking place?
- What are the best practices in vision health and what enables their success?
- What motivates action on vision health or drives policymakers to prioritize it?
- What are the barriers to improving detection, diagnosis and treatment?

Categories and Indicators

To evaluate performance, we developed categories to cover a broad range of issues related to vision health. The categories each include a series of qualitative and quantitative indicators, which serve as the basis for scores. The categories and indicators were developed based on an assessment of the current vision health landscape and insights from existing indices, such as The World Bank's Doing Business Report and Health Consumer

Powerhouse's various European health care indices.

Scoring

The methodology of this Scorecard combines qualitative and quantitative data and input across 26 indicators. The data and input are evaluated against metrics and criteria that are used to derive a score of one to three, with one being the lowest, for each metric. Indicator scores are derived by dividing a country's score of the metrics within an indicator by the highest possible score for that indicator. The same process determines a country's overall category score—dividing a country's score by the highest possible score of the category. The individual category scores, in turn, determine the country's overall score.

In instances when data was not available, the metric was removed from the country's highest available score without negative impact. The full list of metrics, indicators, and evaluation criteria are found in the appendices.

Assumptions and Limitations

While the field of vision health is vast and progress and best practices are taking place around the world, our scope is limited to the 15 countries identified and the framework articulated within this section.

This Scorecard does not focus on any one particular vision health condition. As such, the data and findings may not be completely reflective of specific care pathways and patient experiences. The data cited and expert input evaluated are used as illustrative examples and are not intended to be comprehensive of the diversity of conditions and experiences within vision health.

The vast majority of the countries evaluated are classified as high-income by the World Bank. Lower-middle-, middle-, and upper-middle-income countries outperformed high-income countries on various indicators. However, the economic circumstances of developing countries contributed to overall scores, particularly in the categories of research and innovation, access, and prevention.

The goal of this Scorecard is to complement existing efforts by highlighting best practices and opportunities, using GCOA's lens in alignment with the goals of the Decade of Healthy Ageing.

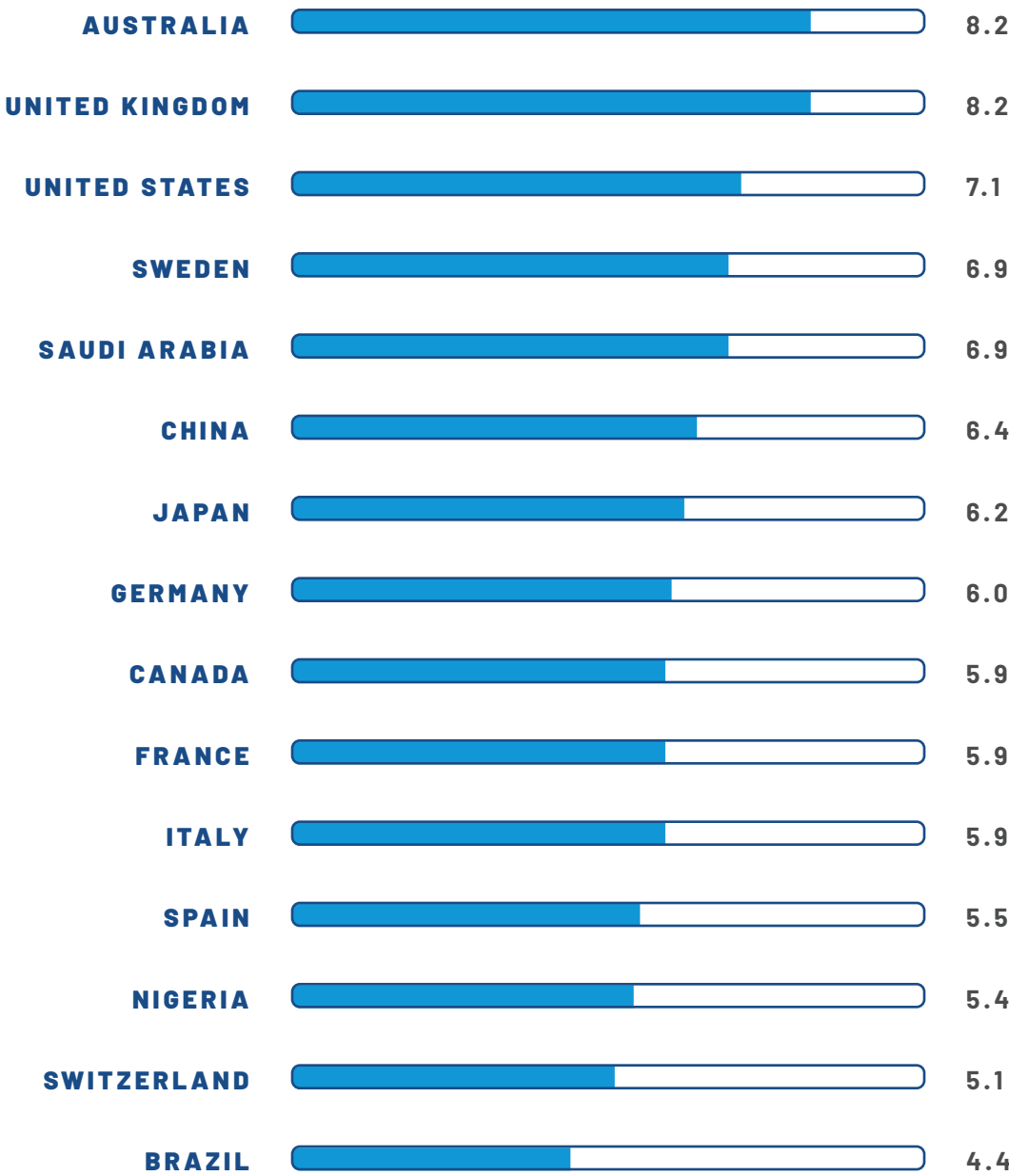
Scores were derived based on insights from leading voices in vision health, and the scoring assumes the reliability of our contributors. The survey was available only in English and performed online. Interviews were conducted in English and surveys were completed from May 2020 through November 2020. Therefore, the results represent a snapshot in time.

DETAILED FINDINGS

National Commitment & Investment

We score a country on its overall commitment to vision health—including funding levels, national-level focus, and the commitment to robust, consistent data collection. This category draws attention to the need for health ministries to intentionally drive action on vision health.

Scores



Key Findings

In most countries, policymakers' focus on vision health is inadequate, and priorities do not receive sufficient funding. Funding for vision health priorities falls short in nearly every country. Governments and health systems account for specific conditions such as cancer or heart disease with specific funding tables or line items; however, very few countries elevate vision health to this level. Even fewer publicly share data on total health spending on diseases of the eye. This metric is tracked by the OECD. Of the OECD countries evaluated, only Germany submits this information.⁴

Advocates report that the most effective tool to spur government action is data that

demonstrates the economic and social costs of vision deterioration and loss—all of which are expected to exponentially grow as we live longer lives. At the outset of Vision 2020, advocates in Australia commissioned economic impact data which was a catalyst for the country's National Framework for Action to Promote Eye Health and Prevent Avoidable Blindness and Vision Loss.

Retina International, along with a number of partners such as Foundation Fighting Blindness in the United States and Fighting Blindness Canada, sponsored a cost of illness study for inherited retinal dystrophies (IRDs). The study, released on World Sight Day 2020, found that the socio-economic costs of IRDs in 2019 were

up to \$31.7 billion in the United States and \$1.6 billion in Canada. Roughly two-thirds of these costs are associated with well-being and nearly 15% of the costs in both countries were associated with decreased productivity.⁵ These figures should inspire action among policymakers, especially because IRDs comprise only a portion of overall visual impairment conditions.

Australia

Two National Level Eye Health Plans

In 2005, the Australian Health Ministers' Conference endorsed the National Framework for Action to Promote Eye Health and Prevent Avoidable Blindness and Vision Loss. This framework identified five key action areas that would significantly reduce preventable blindness. They are: reducing risk; improving early detection; improving access; improving systems and quality; and, improving the evidence base. The framework was the starting point for coordinated and intentional efforts to improve eye care and vision health.

Building on this work, the Australian Government Department of Health released the National Strategic Plan for Macular Disease in March of 2019. Age-related macular degeneration (AMD) impacts people over 50 years of age and accounts for half of the blindness in Australia. The coordinated, multi-stakeholder plan outlines 44 actions to reduce and prevent vision loss. The government has committed to funding the plan at \$3 million over four years.

Few high-income countries have developed and codified national plans to prioritize vision health, established national-level bodies within Ministries of Health, or completed eye health system assessments. Only a few of the high-income countries evaluated—Australia, the United Kingdom, and the United States—have developed and enacted

national-level strategies and plans to improve vision health. Australia has enacted two—the aforementioned National Framework and the National Action Plan for Macular Disease, which was announced in March of 2019. Established National Eye Coordinators and National Eye Health Committees within Ministries of Health appear more frequently in low- and middle-income countries, including China and Saudi Arabia. These positions and bodies are intended to elevate eye care and vision health and have led to important progress. China's National Blindness Prevention Committee convened global stakeholders and experts in blindness prevention and engaged with the National Health and Family Planning Commission on a successful effort to eliminate trachoma.⁶

The United Kingdom, through the National Health Service (NHS), performed a Getting It Right First Time review of ophthalmology, which is the highest volume outpatient specialty in England.⁷ The assessment resulted in 22 evidence-based recommendations to improve treatment and reduce preventable vision loss. This assessment provides foundational knowledge of needed improvements. It reveals opportunities for action. While the U.K. has much work to do to address opportunities identified through Getting It Right First Time, the country is far ahead of those that have not holistically assessed their eye health systems.

Vision health data collection is inconsistent, which prevents successful population-based solutions. Great strides have been made internationally in the collection and analysis of vision health data, notably by the Vision Loss Expert Group. However, within individual countries, national-level data collection efforts range from nonexistent to inconsistent. Eye

health studies are often singular, point-in-time studies and not repeated frequently enough to make meaningful recommendations and adjustments to vision health interventions as to meet current need. For example, the Nigeria National Blindness and Visual Impairment survey shed important light on the prevalence of blindness and severe visual impairment. However, the study was conducted from 2005–2007, which quickly becomes outdated as the population grows older. In the five years between 2012–2017, 600,000 Nigerians turned 65 years old.⁸ This theme is unfortunately all too common. Patients, advocates and providers told us that they are working with outdated data that does not accurately reflect the needs of current populations.

Calls To Action

Raise awareness of the cost of inaction.

Policymakers must know the economic and social toll that blindness and vision loss takes. The economic burden and direct cost to the health system create urgency, which will only grow as our population ages. Advocates, patients and providers who seek progress will spur action by demonstrating that improving vision health is cost effective.

Develop and implement national plans and strategies.

Policymakers should enact national-level plans and strategies to improve vision health. This requires the vision health community—advocates, researchers, and providers—to come together and find common ground to identify and address the most critical shared priorities. In addition to specific vision health plans, governments should include vision health priorities within their overall health strategies and plans.

Collect data consistently and regularly.

Actionable data is needed to design the most effective interventions. Effective population-based approaches rely upon data that reflects current trends to more accurately anticipate future needs. The vision health community should partner with governments to design, fund, and deploy eye health surveys for maximum efficacy.

Perform system-wide vision health

assessments. Governments must perform a holistic review of eye care systems within their countries to gain insight into vision health gaps, which should inform action to improve the system for patients and providers alike.

Drive collective action. The vision health community is comprised of people whose passion for saving sight is literally life changing. This passion will become even more powerful when providers—ophthalmologists, optometrists, and opticians—NGOs, industry, advocates, researchers, and patients unite to drive meaningful action on vision health priorities to influence action with policymakers and governments. Experts in Australia cite collective action and aligning the entire vision health community around shared goals as a key to their policy and advocacy successes.

The United Kingdom

Getting It Right First Time

Ophthalmology is the highest volume outpatient specialty in England, and cataract surgery is the most common operation offered in the National Health Service (NHS). Seeking improvements and the ability to prepare for increased demand due to aging, the NHS performed a system-wide ophthalmology assessment by visiting 120 trusts.

The result is 22 evidenced-based recommendations that can increase capacity, reduce reliance on consultants by using more of the wider care team, ensure more timely diagnosis and treatment, and increase efficiency in cataract surgery, which alone could save the NHS between £15.1 and £31.8 million. The report suggests that training nurses to provide injection treatments for retinal conditions could create capacity for 93,000 more injections as well as ways to improve the referral process so that the patients most in need can be prioritized for timely care.

National Commitment & Investment Scores

● Strong
 ◐ Moderate
 ○ Weak

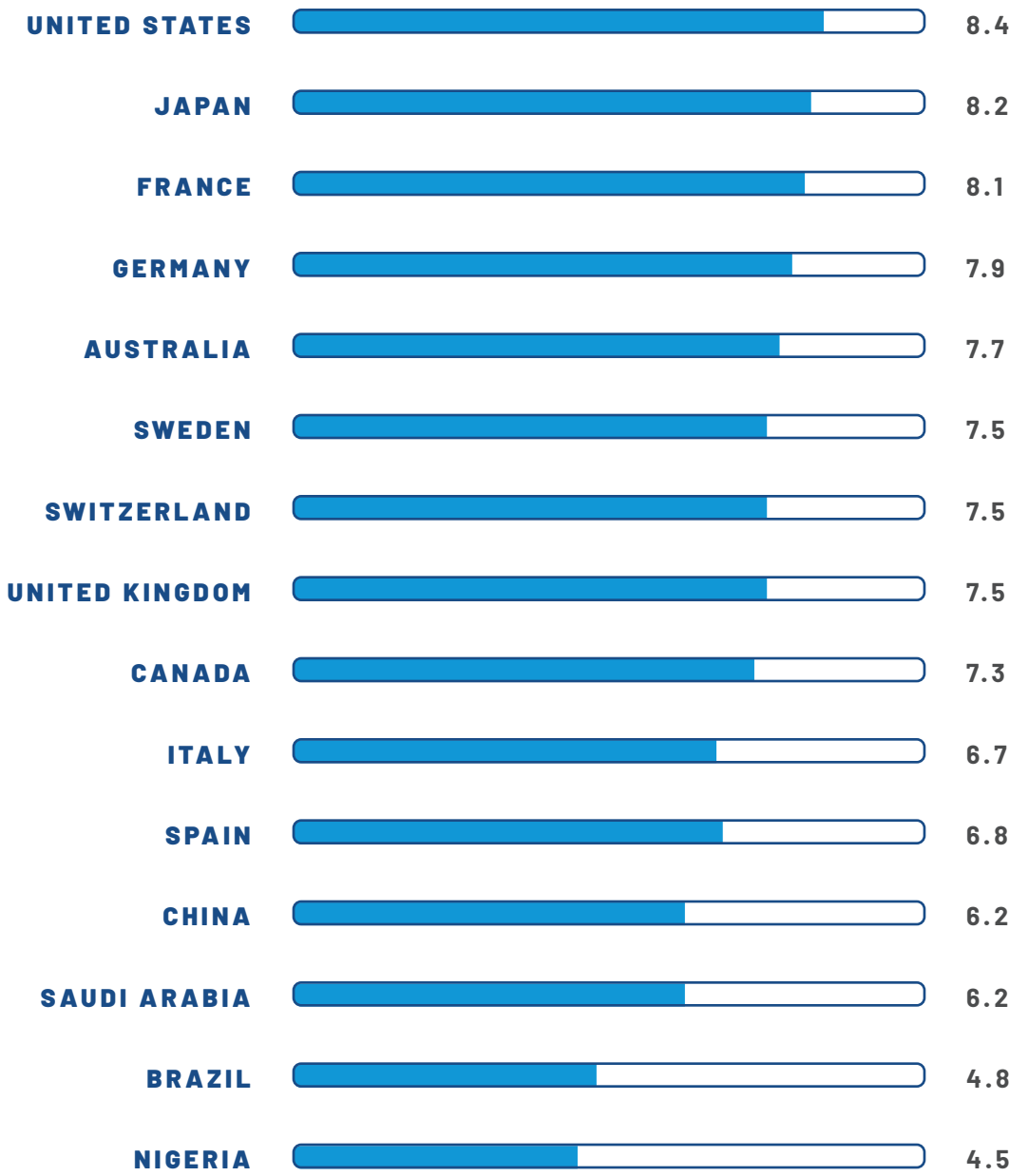
	National Plan & Strategy	System Assessment	Integration	Funding	Data Collection
Australia	●	◐	●	◐	●
Brazil	◐	○	○	◐	◐
Canada	◐	◐	◐	◐	●
China	●	○	◐	◐	◐
France	◐	○	◐	◐	◐
Germany	◐	○	◐	●	●
Italy	◐	○	◐	◐	●
Japan	○	○	◐	◐	●
Nigeria	●	○	◐	●	◐
Saudi Arabia	●	○	◐	◐	◐
Spain	○	○	◐	◐	●
Sweden	◐	○	●	◐	●
Switzerland	○	○	◐	○	◐
United Kingdom	●	●	●	◐	●
United States	●	●	◐	◐	●

DETAILED FINDINGS

Research & Innovation

We score a country on the environment it creates for research and innovation—considering the strength of IP protections, R&D funding, and the use of technology in diagnosis and care. This category highlights the importance of innovation to support better vision health.

Scores



Key Findings

Government support for vision health research falls short. In most instances, private-sector companies, advocates, and nonprofits drive vision health research. Many of the countries

evaluated provide government funding for vision health research, but it is minimal and far from the needed levels of investment for breakthrough treatments. In most instances, research projects compete for funding with proposals in other health research areas. Providers, researchers and advocates in nearly every country evaluated report little to no governmental funding for vision health research priorities. As a result, the vast majority of research on vision health is privately funded by nonprofits, advocacy organizations, and private-sector companies.

A notable exception is the National Eye Institute (NEI) within the National Institutes of Health (NIH) in the United States. It was founded in 1968 and funds vision health research through approximately 1,600 research grants and training awards made to scientists at more than 250 institutions in the United States and around the world. Even with this organization dedicated to vision health research, its funding is far below research funding for diseases and conditions that impact fewer people. Total funding for the NEI represents less than two percent of the NIH's total budget.⁹

The COVID-19 pandemic created unforeseen impacts for people experiencing vision loss, highlighting the need for innovative solutions for detection, diagnosis, and treatment.

Even before the COVID-19 pandemic, it was challenging for patients and providers to detect vision loss in its early stages. Delayed detection results in later diagnosis and ultimately

treatment, creating risk of the condition becoming untreatable. These delays can lead to irreversible vision loss and the associated economic and social impacts from lost productivity and personal activity.

At the outset of the COVID-19 pandemic, patients deferred much needed treatments. Treatment adherence is critical to preventing vision loss. Experts in many countries told us that the number of injections to treat retinal conditions has significantly decreased during the pandemic. Decreases were especially sharp in patients with COVID-19 risk factors, such as older adults and people with diabetes.¹⁰

Many emerging therapeutics such as longer-lasting treatments for retinal conditions and technologies like Artificial Intelligence (AI), at-home Optical Coherence Tomography (OCT), smartphone apps to remotely monitor conditions, the growth of telemedicine, and eye drop bottles that track use have incredible potential to enable stronger care and outcomes. One trend is clear: Technology is at the center of care during the COVID-19 pandemic, and it is shifting the expectations of patients and providers alike.

Government support for R&D has not kept pace with economic growth. While direct government support for R&D has increased in total spending in most countries evaluated, R&D funding growth has lagged behind GDP growth. As a proportion of GDP, R&D funding has increased only in three countries evaluated: Brazil, Canada, and China.

The United States

National Eye Institute

At more than 50 years old, the NEI is a global leader in vision health research. It received \$824 million from the U.S. government in 2020.¹²

Since its founding and through sustained public support of vision health research, the NEI has contributed to major advances that reduce vision loss and treat diseases of the eye.

- NEI-funded research helped show that the VEGF protein grows abnormal blood vessels in the advanced stages of diabetic retinopathy and age-related macular degeneration.
- NEI-funded researchers isolated genes and gene mutations associated with retinitis pigmentosa (RP), and the same researchers are now developing a promising gene therapy to prevent RP vision loss.

Through its Audacious Goals Initiative the NEI is facilitating research that aims to regenerate the retina and restore vision.

Calls to Action

Increase government investment in vision health research. Governments must increase the level of funding for vision health research. The magnitude of the challenge demands it—22% of the world’s population will be 60 years or older by 2050 with over 700 million people expected to experience blindness or moderate to severe visual impairment (MSVI).¹¹

Build on the proliferation of telemedicine accelerated by the COVID-19 pandemic.

Governments can encourage telemedicine by ensuring parity in reimbursement for telemedicine appointments in vision health. Reimbursement rates currently vary and some have been extended temporarily during the COVID-19 pandemic. Policymakers should

extend and make permanent these telemedicine reimbursement improvements.

Spur the development and implementation of new technologies and treatments.

Emerging treatments and technologies hold great promise for patients and providers alike. Governments should support the development of new technologies and treatments through increased R&D funding and incentives, and, after regulatory approval, widely implement and encourage their use. Universally, patients, advocates, and providers see emerging technologies, including at-home monitoring, as holding immense promise to improve vision health.

Research & Innovation Scores

● Strong

◐ Moderate

○ Weak

⊗ Data Not Available

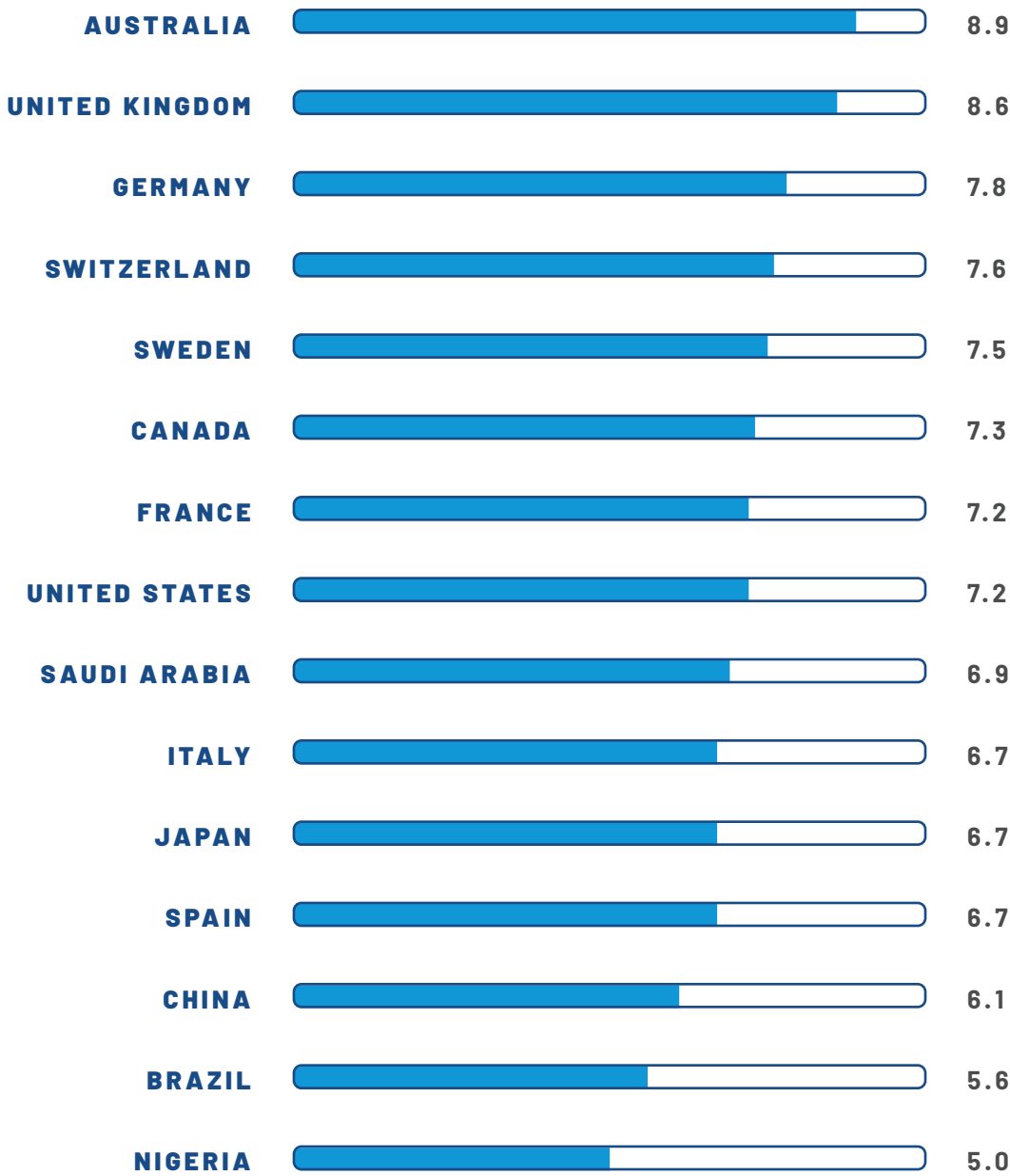
	Innovation Climate	Incentives & Investments	Emerging Treatments	Intellectual Property	Research Climate	Technology in Care and Monitoring
Australia	◐	◐	●	●	●	●
Brazil	◐	●	◐	○	○	○
Canada	◐	●	◐	●	◐	●
China	●	●	●	●	◐	◐
France	●	◐	●	◐	●	●
Germany	●	◐	◐	◐	●	●
Italy	◐	◐	◐	◐	◐	●
Japan	●	◐	⊗	●	●	●
Nigeria	○	○	○	○	○	○
Saudi Arabia	◐	○	●	◐	○	●
Spain	◐	◐	◐	●	◐	◐
Sweden	●	●	●	◐	◐	●
Switzerland	●	◐	◐	◐	●	●
United Kingdom	●	◐	●	◐	●	●
United States	●	●	●	●	●	●

DETAILED FINDINGS

Health System Preparedness

We score a country on the strength of its health system—weighing its capacity, the skills of its workforce, and its responsiveness to patients—in an effort to advance patient-centered care. This category focuses on ensuring that the healthcare system and workforce are prepared to meet the population’s vision health needs.

Scores



Key Findings

Many countries expect ophthalmologist shortages, which will only be compounded as our global population ages. This is exacerbated by the global maldistribution of ophthalmologists and the lack of coordination among optometrists and other providers.

Demand for eye care and vision health services is expected to increase rapidly as a result of the aging of our global population. And our population is aging faster than the ophthalmology profession is growing, signaling a strain on eye care delivery.

As one example, in the United Kingdom, demand is expected to increase by 50% over the next 20 years and the workforce has not grown to meet today's demand, let alone that of the future. And these shortages have negative consequences—over 20 people a month lose their vision because of delays in follow-up care.¹³ In other nations, many country-level experts indicate that a shortage may not exist today, but is expected in the future. Notably, they report that governments have not effectively acted to increase the number of providers.

This shortage will be even more pronounced in the developing world as providers are unevenly distributed globally. Roughly 66% of the world's ophthalmologists are concentrated in only 13 countries.¹⁴ This underscores the point that ophthalmologists are only one part of meeting global demand for eye care. All eye health providers—ophthalmologists, optometrists, and opticians—must work collaboratively to meet the need, while also leveraging health care personnel across the system including primary care physicians, specialists, nurses and elder caregivers to help detect, diagnose, and in some cases, treat eye diseases and conditions.

Vision health knowledge and skills are lacking outside of ophthalmology and optometry, and skills vary among vision health providers based on scopes of practice and country-specific guidelines.

Primary care physicians, specialists, nurses and elder caregivers—in most instances—lack the knowledge to effectively partner with eye care providers. This places significant burden on ophthalmologists and optometrists and often means that patients with vision loss are seen only after symptoms appear.

Skills among optometrists also vary based on specific scopes of practice from country to country. In France, optometrists are not allowed to write prescriptions for eyeglasses and contact lenses. The European Council of Optometry and Optics (ECOO) found that in some European countries, optometrists can use drugs as part of diagnostic exams, and only in the United Kingdom can optometrists use therapeutics.¹⁵ Experts in Sweden tell us that optometrists engage with patients at pivotal moments to ensure that care can be given at the right level to use the full power of the eye care workforce.

Among ophthalmologists, continuing education requirements are uneven, which can create different skill levels and impact quality care over time. Continuing Medical Education (CME) and Continuing Professional Development (CPD) requirements vary across the countries evaluated. Having the most up-to-date knowledge and skills is critical to ensuring quality care in an industry that evolves as quickly as health care. CME and CPD programs in Italy, Japan, and Sweden are informal and unmonitored, which creates a risk for uneven care. Australia and the United Kingdom have formal, monitored programs with minimum

requirements and sanctions, and require CME and CPD for re-licensing.

Patient-centered care fosters a responsive and coordinated approach to prevention, treatment, and care. Countries are elevating the voice of the patient to drive patient-centered care, which is critical in vision health as people often indicate that losing sight is one of their biggest fears. It also combats ageism in health care, by listening to and responding to the expressed concerns of older adults and treating conditions as opposed to accepting them as a normal part of aging.

Considering Patient Reported Outcome Measurements (PROMs) and Patient Reported Experience Measurements (PREMs) can add value to every aspect of vision health—from the research agenda to health system changes to policy—and ultimately to the delivery of eye care overall. No uniform approach to using PROMs and PREMs exists and their application varies across conditions, care settings, and countries. The United Kingdom was the first country to routinely collect PROMs system-wide.¹⁶

Calls to Action

Ensure workforce levels are sufficient to meet demand today and in the future. Governments

must focus on all-of-the-above human resources solutions, which includes ensuring the appropriate number and distribution of ophthalmologists, optometrists, opticians and allied professionals as well as building knowledge among primary care physicians, nurses, and elder caregivers.

Train and leverage the community of caregivers. Eye care must be a core skill among the broader community of health care professionals, including primary care physicians, nurses, and elder caregivers, who are on the front lines to ensure healthy aging. Their training will enhance early detection and speed time to diagnosis and necessary treatment.

Drive patient-centered eye care. A defined, standardized set of PROMs and PREMs in vision health will

Sweden

National Cataract Register¹⁷

Sweden incorporated PROMs into its National Cataract Register (NCR) in 1994 with questionnaires before surgery and six months after surgery. The survey was updated 10 years later and is comprised of three questions.

- Do you find that your sight at present in some way causes you difficulty in everyday life?
- Are you satisfied or dissatisfied with your sight at present?
- Do you have difficulty with any of the following activities because of your sight?

The questionnaire then lists several activities such as reading the newspaper or recognizing faces.

On average 40 clinics participate and 5,000 surveys are completed annually. The results provide clinicians the ability to understand why patient reported outcomes may differ from clinical outcomes and adapt care as needed.

accelerate efforts to advance person-centered eye care. Further, a collaborative international approach would allow for comparisons to identify, elevate, and replicate the best system attributes to ensure that patients are at the center of care and their voices are heard.

Health System Preparedness Scores

● Strong
◐ Moderate
○ Weak

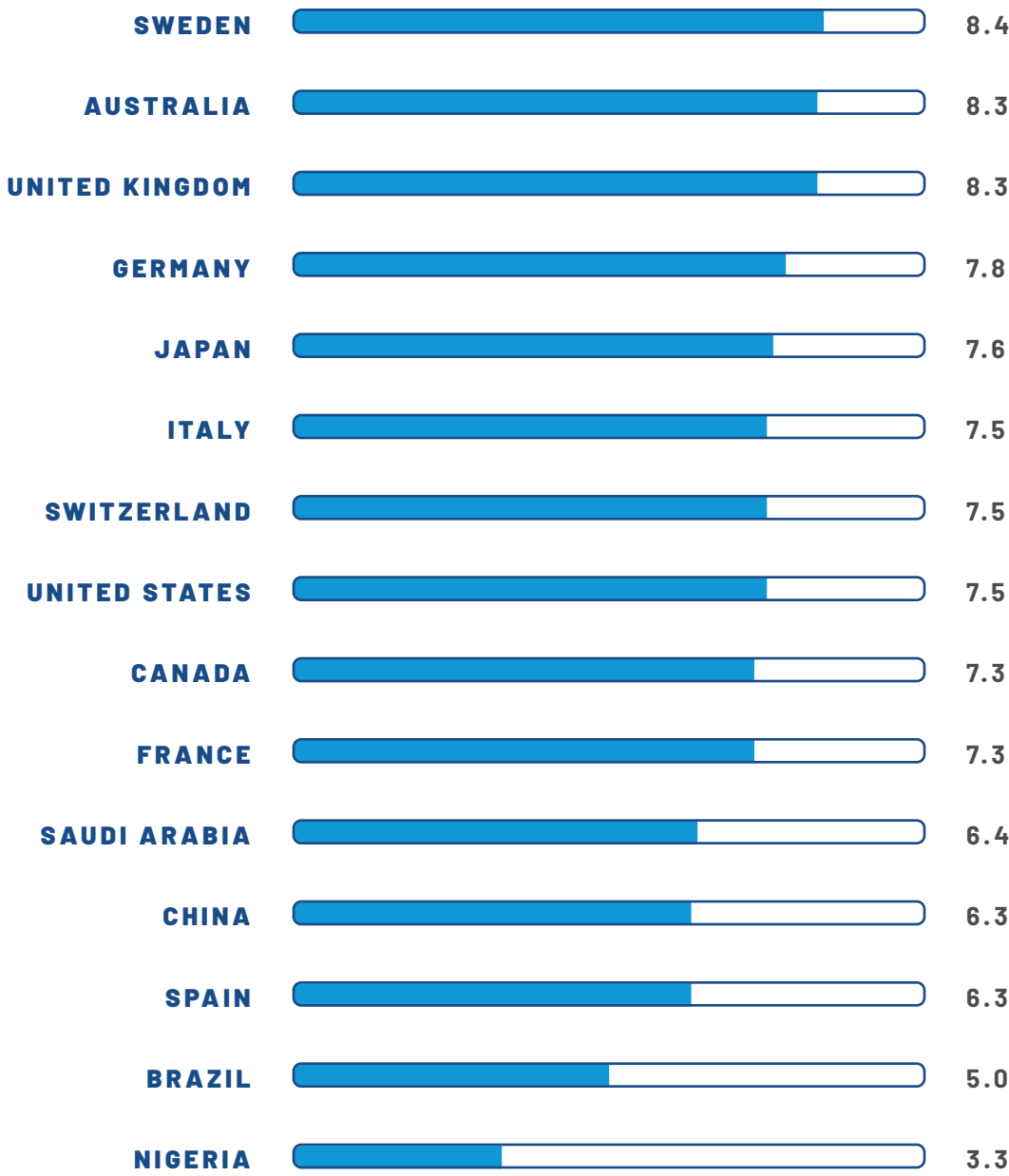
	System Strength	Capacity	Skills	Patient Responsiveness
Australia	◐	●	●	●
Brazil	○	◐	◐	◐
Canada	◐	◐	●	●
China	◐	◐	○	◐
France	◐	◐	◐	●
Germany	◐	◐	●	●
Italy	◐	◐	◐	●
Japan	◐	◐	●	●
Nigeria	◐	◐	◐	◐
Saudi Arabia	◐	◐	◐	◐
Spain	◐	◐	◐	●
Sweden	◐	◐	◐	●
Switzerland	●	●	◐	●
United Kingdom	●	●	●	●
United States	○	●	●	●

DETAILED FINDINGS

Access

We score a country on how well patients can access eye care—considering wait times for consultations and treatment, the distribution of the eye care workforce, and the cost of care. This category brings focus to the need for people to get care when they need it to successfully reduce preventable vision loss.

Scores



Key Findings

Unmet need persists in underserved communities despite outreach efforts. The countries evaluated in the Scorecard take vastly different approaches to providing eye care to underserved communities—whether that be because of geography or socioeconomic status. In most instances, outreach is informal without coordination between governmental, non-governmental, and volunteer-led outreach. This fragmented approach leads to gaps, which persist because ophthalmologists are most often concentrated in urban centers.¹⁸

Out of a personal drive to improve health care, one ophthalmologist in Brazil began a task force to screen for diabetic retinopathy. The program, which started with 200 patients, inspired others, and now is a model for outreach in dozens of cities throughout the country.

In Australia, advocates and experts developed Strong Eyes, Strong Communities—a blueprint to improve vision health for Aboriginal and Torres Strait Islander communities. The plan makes the case that reaching underserved populations in a coordinated way requires a strong partnership among government, communities, providers, and others.

Some countries are training health care providers in rural or remote areas to provide primary eye care. Nigeria is beginning this process by training providers in the country's primary health care centers. This is a best practice that should be extended even further into the health care ecosystem with nurses and at-home elder caregivers.

Wait times are too long, putting patients at risk for irreversible vision loss. Policy interventions to reduce wait times vary widely, and have mixed results. The quickest time from diagnosis to treatment is critical to prevent vision loss, especially when delayed care can lead to irreversible vision loss.

The challenge is particularly acute in Canada, where the wait time after referral to see an ophthalmologist is 27.5 weeks.¹⁹ The Province of Ontario uses a prioritization scheme to ensure patients who urgently need eye surgery can promptly be seen. However, as of August 2020, the lowest priority patients are the only ones who, on average, are seen within target times for their first appointment.²⁰

Other countries take similar steps as Canada to prioritize the patients most in need. It is common to temporarily fund increased capacity; however, those efforts only reduce backlogs in the short term, and wait times increase again as the root problem remains unaddressed.

Coverage for eye health is inconsistent, leading to gaps in access with wide-ranging and frequently unaffordable costs. Patients defer or delay needed care—risking life-long vision loss—because health insurance limits coverage.

Medicare—the government-run insurance program for older adults in the United States—does not cover routine vision exams—patients pay 100% out-of-pocket for exams and eyeglasses and contact lenses.²¹ Unsurprisingly, 43% of Medicare beneficiaries who have trouble seeing report not having had an eye exam within the past year.²² Medicare Advantage requires

patients to fail on the insurer's preferred treatment before receiving the treatment prescribed by their providers. Advocates and providers report that this can create unnecessary treatment delays and put patients at risk for irreversible vision loss.

Coverage inconsistencies create access issues. Glaucoma treatments around the world are out of reach for many. In Nigeria, a one-year supply of a glaucoma treatment costs more than 24% of median household income. The same supply is roughly 10% of median household income in China. China's challenges are compounded by a wide variation in cost. Cataract surgery, for example, can range from \$536 to \$1293 (USD), and the patients with reimbursement range from 36% to 71%.²³

In the vast majority of countries evaluated, people are able to buy over-the-counter reading glasses to correct minimal visual impairment. Over-the-counter vision correction is prohibited

in Brazil, placing burden on patients to make appointments and on providers to take time and resources away from more pressing and urgent cases.

Calls to Action

Integrate vision health into primary care.

Policymakers must increase access to eye care through a holistic approach that meets patients where they are. Training primary care physicians to screen and diagnose eye conditions integrates vision health into this frequent point of care. Elder caregivers, at-risk adults, and family members need education to spot the signs of vision loss to hasten detection, diagnosis, and sight-saving treatment and encourage action to prevent further visual impairment.

Reduce wait times by making system improvements through increased efficiency.

Policy interventions alone have a mixed impact on long-term wait time reduction. Systems must identify and solve the root of the problem and be held accountable to increase efficiency so that patients can promptly get care.

Increase coverage and drive innovative payment and reimbursement.

Access to treatments is critical and advocates and providers should continue to work with governments to ensure patients can receive the care they need. In Canada, the Newfoundland provincial government had set a maximum limit of 15 injections for retinal conditions. Providers and advocates successfully lobbied the

Nigeria

Integrating Eye Care into Primary Health Care

In 2019, the National Council on Health approved a plan to introduce primary eye care into primary health care centers across the country, expanding access into rural areas. In partnership with WHO, Nigeria created the National Primary Eye Care Trainee Manual, which details the knowledge and skills primary health care workers need to diagnose eye conditions.

In-country advocates, experts, and providers support the program and its goals; however, they are skeptical that it will realize its promise. They note that the new program has the potential to make a significant impact, but that proof of adoption and execution is yet to be seen.

government to remove this lifetime cap, which prevented access to sight-saving treatment. Governments must intentionally create effective reimbursement from refraction correction through surgery. Policymakers should review reimbursement structures for diagnosis, treatment, telehealth, and technology to ensure that patients can receive the care they need.

Access Scores

● Strong
◐ Moderate
○ Weak

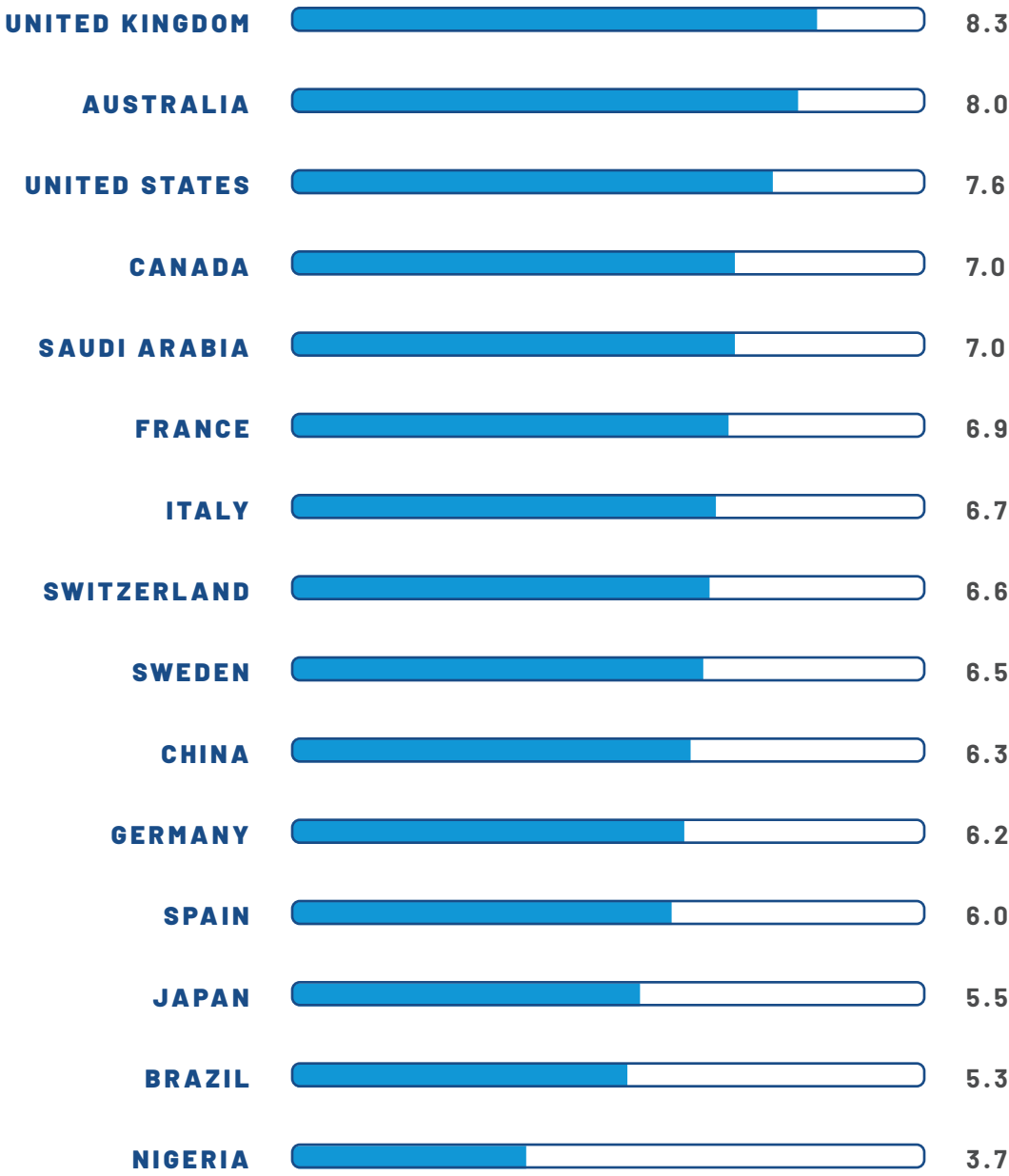
	Insurance Coverage	Wait Times	Affordability	Underserved Outreach
Australia	●	●	●	●
Brazil	○	○	◐	○
Canada	●	○	●	◐
China	◐	◐	◐	◐
France	●	◐	●	○
Germany	●	◐	●	◐
Italy	●	◐	◐	●
Japan	●	◐	●	◐
Nigeria	○	◐	○	○
Saudi Arabia	●	◐	◐	◐
Spain	●	◐	◐	○
Sweden	●	◐	●	◐
Switzerland	●	◐	●	◐
United Kingdom	●	●	●	●
United States	◐	◐	●	◐

DETAILED FINDINGS

Prevention

We score a country on its focus on preventing vision loss, weighing the coordination of care, interventions to reach at-risk populations, and efforts to increase awareness of eye diseases and symptoms. This category highlights the importance of early detection as the key to improve vision health.

Scores



Key Findings

Vision health is not embedded across the health system, which creates gaps in care.

In many countries, primary eye care takes place separately from secondary or tertiary eye care. As a consequence, eye care is frequently uncoordinated, leading to inconsistencies. Regulations and scope of practice among opticians and optometrists vary from country to country, which can create barriers for patients as they navigate screenings and care.

Knowledge of eye conditions and diseases is lacking in primary and specialty care. In the United States, as an example, studies show that family physicians' referrals to ophthalmologists result in long-term consultations. However, family physicians mostly refer patients with diabetes to endocrinologists and nutritionists, which unfortunately neglects the impact of diabetes on vision health.²⁴

Every country studied has significant opportunities to reach at-risk populations, particularly people with diabetes. In-country advocates, patients and providers all report that governments and health systems have opportunities to improve outreach to at-risk populations, including people with diabetes.

Diabetic retinopathy (DR) is a leading cause of blindness globally.²⁵ In spite of that, The DR Barometer, spearheaded by a coalition of advocacy groups including the International Federation on Ageing and the International Diabetes Foundation, found that many ophthalmologists have not received specific training on diabetic retinopathy, ranging from 58% in Japan to just six percent in Brazil.

The DR Barometer also shows that in Sweden, roughly 90% of patients living with diabetes know that vision loss is a consequence of diabetes; yet, nearly 30% of them have not had an eye exam in the past 12 months. Perhaps even more startling, France achieved near-universal awareness among patients with diabetes, but almost 20% have not had an exam in the past 12 months. The challenge is also acute in Saudi Arabia, where only 55% of patients know that vision loss is a consequence of diabetes.²⁶

In Europe, the vast majority of countries evaluated participated in the development of The Liverpool Declaration, which set goals to reduce diabetes-related vision loss. Retina International found that 29 European countries support the Liverpool Declaration with many making strides toward stated goals; yet, only seven have developed organized screening programs to reach people with diabetes. Of those seven, three are countries within the United Kingdom. Their research also finds that in countries with published guidelines, including the United States and Japan, screenings fall short of recommendations.²⁷

Awareness of eye diseases and conditions is low, and campaigns to raise awareness are primarily driven and funded by advocates.

Euretina estimates that 25 million people across the European Union will be affected by AMD by 2050—an increase of approximately 20%. The vision health community—supported by governments—must raise awareness of AMD to close the gap between guidelines and the utilization of testing and treatment.

For too long, many patients and providers have viewed vision loss as a natural part of aging and accepted the consequences of reduced

independence and activity. However, as we collectively drive toward WHO's healthy aging goals, we must raise awareness so that people can keep their sight and can lead healthier, more active, and longer lives.

Experts in France described a public awareness campaign that created a greater understanding of AMD among the population. The campaign included free screenings for older adults as well as sharing information to build awareness about AMD and its symptoms.

At the outset of the campaign, only three percent of 50 to 70-year-old people in France knew about AMD. The awareness campaign driven and funded by advocates, patients, and providers included videos and TV spots. Five years after it began,

awareness skyrocketed and the campaign has now expanded to include all macular conditions.

While awareness of AMD needs urgent attention, other eye conditions also need increased focus. In Beijing, only 16.6% of residents are aware of glaucoma and 27.8% are aware of cataracts.²⁸

Calls to Action

Embed vision health into specialty care.

Specialists, particularly physicians who see older adults, patients with diabetes, and other at-risk groups, should be regularly trained on eye conditions to ensure prompt diagnosis and referral. Intentional efforts should be made to educate patients so that they understand the risks to their vision and schedule regular eye screenings. Further, health care professionals throughout the ecosystem should also be

educated in eye health, so that nurses, at-home caregivers and others can help detect vision loss before it becomes untreatable.

Canada

Diabetes Outreach Pilot

Canada is piloting a program to encourage people with diabetes to have their vision checked. The pilot proactively reaches out to Canadians living with diabetes. Personal outreach to patients includes sharing information about vision loss and a call to action to schedule vision screenings. In-country advocates report that personal connection and education are effective and have resulted in increased screenings.

The 2019 pilot reached 775 patients. The results highlighted the need for increased screening as five percent of participants had bleeding in the eye and needed urgent treatment; 27% percent had early indication of DR; and, 35% had another eye condition. The pilot found significant barriers, especially among underserved populations. To close this gap and increase equity, 47 tele-ophthalmology sites across the country will be used to add needed infrastructure.

Build public awareness of eye diseases and conditions.

Awareness of eye conditions, particularly AMD, diabetic retinopathy, and other macular conditions remains persistently low. Leveraging Age-Friendly Cities, policymakers should come together with providers, communities, patients, and elder caregivers to develop campaigns that reach targeted audiences and drive awareness of preventable vision loss.

Prevention Scores

● Strong
◐ Moderate
○ Weak

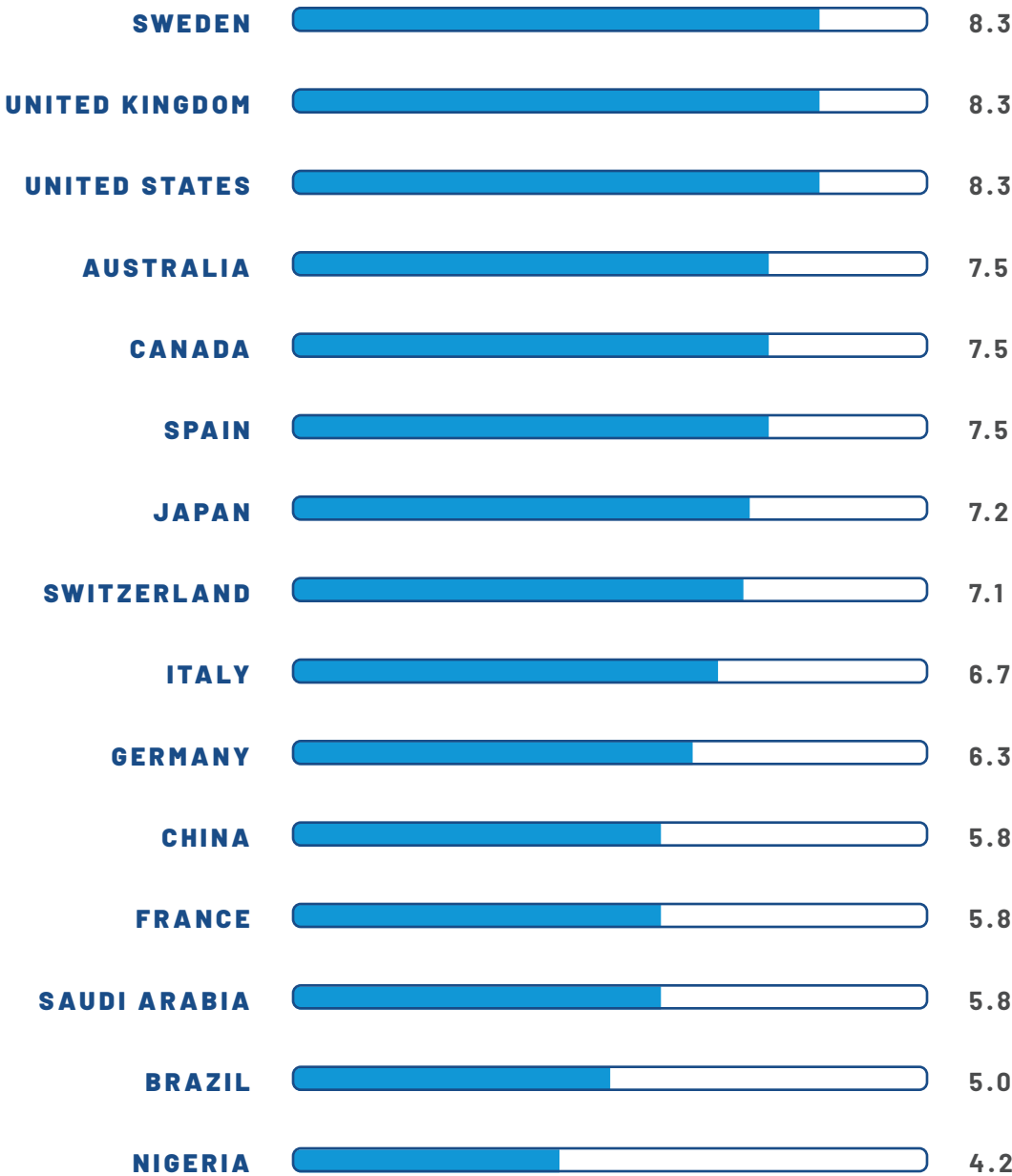
	Coordinated Care	Screening	Effective Diagnosis	Public Awareness
Australia	●	●	○	●
Brazil	◐	○	○	◐
Canada	●	◐	●	◐
China	◐	○	◐	◐
France	◐	◐	●	●
Germany	◐	◐	○	●
Italy	●	◐	●	◐
Japan	◐	◐	◐	◐
Nigeria	○	○	○	○
Saudi Arabia	◐	○	◐	◐
Spain	◐	◐	●	◐
Sweden	◐	●	◐	◐
Switzerland	◐	◐	●	◐
United Kingdom	●	●	●	●
United States	◐	◐	●	◐

DETAILED FINDINGS

Societal Support

We score a country on how well it supports people with vision loss and prepares for demographic shifts, including non-discrimination policies and the development of age-friendly communities. This category brings attention to the need to support people living with vision loss to ensure productive, active lives.

Scores



Key Findings

Assistive support programs to help people live with vision loss fall short and are outdated.

Low-vision rehabilitation services are only available in less than 65% of all countries around the world, and where they do exist, they are often unsupported by the government. Estimates show that only five to 10% of people who need low-vision rehabilitation programs use them.²⁹

Low-vision rehabilitation and assistive devices improve the quality of life for patients. In Australia, older adults with moderate to severe vision impairment who access low-vision devices, talking books, and occupational therapists reported significantly improved quality of life in regard to emotional wellbeing.³⁰ Australia also offers support for assistive devices through its National Disability Insurance scheme. However, experts tell us that financial support falls far short, placing the financial burden on the patient.

In Canada, provinces can create an approved device list, but advocates report that the list in Ontario does not reflect current needs and technologies. For example, smartphones, which are needed for modern life and can open many doors for people with low vision, are not on Ontario's approved device list.³¹

Age-friendly environments are being fostered mostly in urban centers, creating an uneven impact.

Of the countries surveyed, only two—Nigeria and Saudi Arabia—do not have cities that are members of WHO's Global Network for Age-Friendly Cities and Communities. Yet, even countries with member representation in the network fall short. Member cities in Brazil,

China, Germany, and Italy each cover less than one percent of their country's citizens who are 60 years and older.

In Japan, Akita City's Age-friendly Partner Program brings together a broad set of organizations to connect older adults to private-sector companies. As a result, more older people are included in the workforce, and simple solutions are found, including arranging visits to older adults who might be isolated.³² Akita City's population is around 315,000, representing only a small proportion of Japan's total population of 126.5 million.

Calls to Action

Enhance assistive support programs.

Governments should expand and advance assistive support programs to promote and ensure inclusion, autonomy, and quality of life for people living with vision loss.

Expand age-friendly environments into rural and suburban areas.

Non-urban communities must increase the inclusion of older adults, ensuring their perspectives are valued and considered in policymaking.

Societal Support Scores

	● Strong ◐ Moderate ○ Weak	Age-friendly environments	Non-discrimination policies
Australia	●	◐	
Brazil	◐	○	
Canada	●	◐	
China	◐	○	
France	◐	○	
Germany	◐	○	
Italy	◐	◐	
Japan	●	◐	
Nigeria	◐	○	
Saudi Arabia	◐	◐	
Spain	●	○	
Sweden	●	◐	
Switzerland	◐	○	
United Kingdom	●	◐	
United States	●	◐	

Appendix A: Scoring Scale

The Scorecard was developed based on interviews and survey responses from global and country-level experts in vision health, aging, economics, health policy, and advocacy. Their insights are validated and supported by publicly available data sources.

CATEGORY	INDICATOR	METRIC	SCORE OF 1	SCORE OF 2	SCORE OF 3
National Commitment and Investment	National Plan and Strategy	Existence of a national plan or strategy	There is no national plan, strategy or approach	N/A	National plan, strategy or approach exists
		Existence of national eye committees or coordinators	The country has neither a National Eye Committee nor National Eye Coordinator	The country has either a National Eye Committee or National Eye Coordinator	The country has both a National Eye Committee and National Eye Coordinator
		Scope of plan	The country has no official plan or strategy	The country's plan is limited	The country's plan is substantial or comprehensive
	System Assessment	Completion of vision health system assessment	The country has not completed an international or country-specific assessment	The country used an existing assessment tool, or has only completed regional level assessments	The country developed and completed its own national assessment
	Integration	Level of incorporation into health system	Eye care is completely separate from the health system	Eye care is partially integrated into the health system	Eye care is fully integrated into the health system
		Likelihood to enact Universal Eye Care	Unlikely to enact Universal Eye Care	Likely to make progress, but fall short of Universal Eye Care	Has enacted or likely to enact Universal Eye Health
	Funding	Level of funding to vision health priorities	Priorities receive zero government funding	Priorities receive little or partial government funding	Priorities receive significant or full government funding
		Reports on eye disease funding	Does not report total funding on diseases of the eye to international bodies	N/A	Reports total funding on diseases of the eye to international bodies
	Data Collection	Consistency of data collection	Data is not collected in any organized way	Data is collected sporadically and inconsistently	Data is regularly collected
		Level of government involvement in data collection	The government is not involved in data collection	The government is minimally or moderately involved in data collection	The government prescribes data to collect
		Action taken on data	The government does not take action on the data it collects	The government occasionally acts on the data it collects	The government uses data to inform priorities and action

CATEGORY	INDICATOR	METRIC	SCORE OF 1	SCORE OF 2	SCORE OF 3
Research and Innovation		Existence of registries	No clinical quality cataract registry exists	Countries have regional-level clinical quality cataract registries or submit to international registries	Countries run national or international clinical quality cataract registries
		Registry submission	No clinical quality cataract registry exists	Submission to clinical quality cataract registries is voluntary	In at least one instance, submission to clinical quality cataract registries is mandatory
	Innovation Climate	Innovation performance based on income level	The country's innovation performance is below expectation based on income level	The country's innovation performance is in line with expectation based on income level	The country's innovation performance is above expectation based on income level
		Global innovation rankings	World Intellectual Property Organization rank below the top 30 countries for innovation	World Intellectual Property Organization rank in the top 30 countries for innovation	World Intellectual Property Organization rank in the top 10 countries for innovation
		Global competitiveness rankings	World Economic Forum Global Competitiveness Score 69 and below	World Economic Forum Global Competitiveness Score 70 to 79	World Economic Forum Global Competitiveness Score 80 and above
	Incentives & Investment	Level of direct government support for R&D	Lowest 1/3 of countries studied directly funding of R&D as percentage of GDP	Middle 1/3 of countries studied directly funding of R&D as percentage of GDP	Top 1/3 of countries studied directly funding of R&D as percentage of GDP
		Gross R&D expenditures	Lowest 1/3 of countries studied gross R&D expenditures as percentage of GDP	Middle 1/3 of countries studied gross R&D expenditures as percentage of GDP	Top 1/3 of countries studied gross R&D expenditures as percentage of GDP
		Trend in government support for R&D	Decrease in R&D funding since 2000	Flat R&D funding since 2000	Increase in R&D funding since 2000
	Emerging Treatments	Level of support for vision health treatments	The country does not act to spur innovation	The country takes minimal or limited action to spur innovation	The country spurs innovation through incentives, favorable regulation and direct R&D funding
		Implementation of new treatments	The health system is slow to approve and fund emerging treatments	The health system approves and implements emerging treatments, but often after other countries have acted	The government approves and implements new treatments as quickly as the regulatory process allows
	Intellectual Property	Reported efficacy of IP protections	World Economic Forum score 59.9 and below	World Economic Forum score 60 to 79.9	World Economic Forum score above 80
		Total duration of patent process	Longest amount of time to final decision on patent application	Average amount of time to final decision on patent application	Shortest amount of time to final decision on patent application
		Pharmaceutical patent activity	Fewest pharmaceutical patents granted	Average number of pharmaceutical patents granted	Most pharmaceutical patents granted

CATEGORY	INDICATOR	METRIC	SCORE OF 1	SCORE OF 2	SCORE OF 3
	Research Climate	Number of researchers (FTE/million)	Smallest research community	Average-sized research community	Largest research community
		Ophthalmology journal rankings	Home to unranked journals and those ranked tier three and four	Home to at least one tier two journal	Home to at least one tier one journal
	Technology in Care and Monitoring	Electronic Health Records (EHR) approach	No EHR policy or systems	EHR systems operate below national level	Existence of a national EHR policy with a country-wide system
		Support for EHR	No policies exist to encourage adoption	N/A	Policies exist to encourage adoption
		Existence of national law, strategy or policy on telemedicine	No national law, strategy or policy on telemedicine	N/A	National law, strategy or policy on telemedicine exists
		Type of telemonitoring programs	Telemonitoring happens informally	Pilots exist to test and evaluate telemonitoring	Established telemonitoring programs exist
		Reach of telemonitoring programs	Telemonitoring happens on an individual level or programs are at local, district, or provincial levels	Telemonitoring programs are at national levels	Telemonitoring programs are at international levels
		E-health policies define medical jurisdiction, liability or reimbursement	No policies exist	N/A	Policies exist
		E-health policies address patient safety and quality	No policies exist	N/A	Policies exist
		E-health policies protect patient data	No policies exist	N/A	Policies exist
		Speed and adoption of emerging technologies	The health system is slow to approve new technologies	The health systems approves new technologies, but does not act to encourage widespread use	The health system actively approves and promotes technology
	Health System Preparedness	System Strength	Efficiency of health system	Unranked or ranked below 50 in Bloomberg's Healthcare Efficiency Rankings	Ranked between 16 and 50 in Bloomberg's Healthcare Efficiency Rankings
			Citizen views on health system	Fewer than 30% of people think the health system works well	Thirty to 50% of people think the health system works well
			Trend in vision health disability life years (DALYS)	DALYs increased	DALYs remained flat
					DALYs decreased

CATEGORY	INDICATOR	METRIC	SCORE OF 1	SCORE OF 2	SCORE OF 3
	Capacity	Number of ophthalmologists	Number of ophthalmologists per million people is below average	Number of ophthalmologists per million people is average	Number of ophthalmologists per million people is above average
		Number of optometrists	Number of optometrists per million people is below average	Number of optometrists per million people is average	Number of optometrists per million people is above average
		Adequate providers to meet need	A provider shortage exists or is anticipated	N/A	A provider shortage does not exist and is not anticipated
		Efficacy of action to ensure adequate providers to meet need	If shortage, the country has not acted to increase the number of eye care providers	If shortage, the country has taken action to increase the number of eye care providers without results	If shortage, the country has successfully taken action to increase the number of eye care providers
		Efficacy of action to balance providers	The country has not acted to balance providers between urban and rural communities	The country has acted to balance providers between urban and rural communities without results	The country has acted to successfully balance providers between urban and rural communities
	Skills	Existence of compulsory continuing education	Continuing education is voluntary	N/A	Continuing education is mandatory
		Readiness to practice	Recent ophthalmology graduates report being unprepared	Recent ophthalmology graduates report being somewhat prepared	Recent ophthalmology graduates report being well prepared
	Focus on the Patient	Standard approach to patient reported data	Measurement and analysis of patient reported data is not standardized or unavailable	Measurement and analysis of patient reported data standardized in some, but not all cases	Measurement and analysis of patient reported data standardized
		Inclusion of patient reported data in population studies	Patient reported data is not included in population based studies	N/A	Patient reported data is included in population based studies
		Inclusion of patient reported data in outpatient survey	Patient reported data is not included in outpatient surveys	N/A	Patient reported data is included in outpatient surveys
		Existence of formal definition of patient rights	The country has not created a formal definition of patient rights	N/A	The country has created a formal definition of patient rights
Access to Care	Insurance Value	Population covered by insurance	Less than 90% of the population is covered by insurance	90–99% of the population is covered by insurance	100% of the population is covered by insurance
		Insurance coverage of glaucoma	Insurance does not cover glaucoma treatment	Insurance coverage for glaucoma treatment varies	Insurance covers glaucoma treatment

CATEGORY	INDICATOR	METRIC	SCORE OF 1	SCORE OF 2	SCORE OF 3
	Wait Times	Length to see specialist	Patients wait a long time to see a specialist after referral	Patients experience reasonable wait times to see a specialist	Patients are promptly seen by specialists after being referred
		Efficacy of policy intervention	Policies have not been enacted to reduce wait times	Policies have been enacted to reduce wait times, but they are ineffective	Policies have effectively reduced wait times
		Type of policy intervention	Policies establish wait time limits, but without enforcement or limitation	Policies increase capacity and prioritize cases	Policies create incentives for providers to reduce wait times and enable sanctions
	Affordability	Cost of glaucoma treatments	Glaucoma treatments are the highest cost as proportion of median household income	Glaucoma treatments are average cost as proportion of median household income	Glaucoma treatments are the lowest cost as proportion of median household income
		Anti-VEGF coverage	Anti-VEGF treatments are not covered for any use	Anti-VEGF treatments are covered for AMD, DR, or DME	Anti-VEGF treatments are covered for AMD, DR, and DME
		Anti-VEGF treatment	Anti-VEGF treatments are not reimbursed	Anti-VEGF treatments are partially reimbursed	Anti-VEGF are fully reimbursed
		Level of reimbursement	Eye care reimbursement is insufficient	Eye care is supported and reimbursed at average levels	Eye care is reimbursed at full levels
		Out of pocket cost of care	Highest out pocket cost, as proportion of GDP	Average out pocket cost, as proportion of GDP	Lowest out pocket cost, as proportion of GDP
		Trend in out of pocket costs	Out of pocket costs are rising	Out of pocket costs are flat	Out of pocket costs are decreasing
		Trend in consultations, tests, and prescribed medicines skipped due to cost	All metrics are rising	Some metrics are rising, while others are flat or decreasing	All metrics are decreasing
	Underserved Outreach	Efficacy of efforts to balance provider distribution	The country has not acted to balance providers between urban and rural communities	The country has acted to balance providers between urban and rural communities without results	The country has acted to successfully balance providers between urban and rural communities
Prevention	Coordinated Care	Ophthalmologists with training in DR	More than 30% of ophthalmologists report having no training in DR	Fifteen to 30% of ophthalmologists report having no training in DR	Fewer than 15% of ophthalmologists report having no training in DR
		Frequency of screenings among people with diabetes	More than 15% of patients had their last screening 12 months or longer ago	Ten to 15% of patients had their last screening 12 months or longer ago	Fewer than 10% of patients had their last screening 12 months or longer ago
		Level of eye care in primary care	Primary care physicians do not screen for eye conditions	Primary care physicians screen for eye conditions at annual visits	Primary care physicians regularly screen for eye conditions and consult with specialists to coordinate care

CATEGORY	INDICATOR	METRIC	SCORE OF 1	SCORE OF 2	SCORE OF 3	
		Efficacy of interventions to reach at-risk groups	Targeted interventions for at-risk populations do not exist	Targeted interventions for at-risk populations are ineffective or moderately effective	Targeted interventions for at-risk populations are effective or very effective	
	Screenings	Adherence to guidelines	Screenings fall short of guidelines	Screenings are near guidelines	Screenings meet guidelines	
	Effective Diagnosis	Availability and use of OCT	OCT use is limited	OCTs are only available and used in population centers	OCT is widely used throughout the country	
	Awareness	Percentage of patients who waited for symptoms to get checked	More than 30% of people with diabetes have not discussed eye complications (or only after symptoms) with their providers	Twenty to 30% of people with diabetes have not discussed eye complications (or only after symptoms) with their providers	Fewer than 20% of people with diabetes have not discussed eye complications (or only after symptoms) with their providers	
		Percentage of ophthalmologist concerned about late diagnosis	More than 60% of ophthalmologists are concerned about diagnosing DR too late	Thirty to 60% of ophthalmologists are concerned about diagnosing DR too late	Fewer than 30% of ophthalmologists are concerned about diagnosing DR too late	
		Existence and effectiveness of awareness campaigns	Public awareness campaigns to reduce avoidable vision impairment do not exist	Public awareness campaigns to reduce avoidable vision impairment are ineffective or moderately effective	Public awareness campaigns to reduce avoidable vision impairment are effective or very effective	
		Funding sources of awareness campaigns	Public awareness campaigns are funded by the private sector or NGOs	Public awareness campaigns are funded by the private sector, NGOs, and the government	Public awareness campaigns are fully government funded	
	Societal Support	Non-Discrimination	Level of protection	Government efforts fall short and should be strengthened	Government actions are in-line with global standards	Government actions are considered leading
		Age-Friendly environments	Level of action and location	No action is taken to create age-friendly environments	Action is taken to create age-friendly environments but only in urban centers	Comprehensive action is taken to create age-friendly environments but only in urban centers
Existence of age-friendly environments			No cities or communities have joined WHO Network	N/A	Cities and communities have joined WHO Network	
Population covered by age friendly environments			Lowest percentage of people covered	Average percentage of people covered	Highest percentage of people covered	

Appendix B: Key Secondary Data

Australia

Existence of national plan ³³	Yes
Existence of cataract clinical quality registries ³⁴	Yes
WEF Global Competitiveness ranking ³⁵	78.7
WIPO Innovation ranking ³⁶	22
WEF IP protection scores ³⁵	78.6
Patent process duration ³⁷	19.6 months
Researchers (FTE/million) ³⁶	4539.5
SCIMAGO Rankings of Ophthalmology Journals ³⁸	Q1 journal
Bloomberg Health System Efficiency Ranking ³⁹	8
Change in years lived with disability (AMD) ⁴⁰	0.09
Change in years lived with disability (Cataract) ⁴⁰	0.1
Number of ophthalmologists per million ³³	39
Number of optometrists per million ³³	216
Percent of population covered by insurance ⁴¹	100%
Total out of pocket health care cost as percent of GDP ⁴²	1.7
Percent of DR patients having screening in the past 12 months	90% ⁴³
Percent of patients who know vision loss is a consequence of diabetes	93% ⁴³
Percent of patients who discuss vision loss with providers after onset of symptoms	20% ⁴³
Existence of cities with age-friendly environments ⁴⁴	Yes
Percent of 60-year and older covered by age-friendly environments ⁴⁵	7.89

Brazil

Existence of national plan ³³	No
Existence of cataract clinical quality registries ³⁴	No
WEF Global Competitiveness ranking ³⁵	60.9
WIPO Innovation ranking ³⁶	66
WEF IP protection scores ³⁵	49.4
Patent process duration ³⁷	86.4 months
Researchers (FTE/million) ³⁶	881.4
SCIMAGO Rankings of Ophthalmology Journals ³⁸	Q3 journal
Bloomberg Health System Efficiency Ranking ³⁹	51
Change in years lived with disability (AMD) ⁴⁰	0.32
Change in years lived with disability (Cataract) ⁴⁰	0.21
Number of ophthalmologists per million ³³	73
Number of optometrists per million ³³	30

Percent of population covered by insurance 58.5%⁴⁶

Total out of pocket health care cost as percent of GDP⁴² 2.6%

Percent of DR patients having screening in the past 12 months 84%⁴⁷

Percent of patients who know vision loss is a consequence of diabetes 92%⁴⁷

Percent of patients who discuss vision loss with providers after onset of symptoms 28%⁴⁷

Existence of cities with age-friendly environments⁴⁴ Yes

Percent of 60-year and older covered by age-friendly environments⁴⁵ 0.78%

Canada

Existence of national plan ³³	No
Existence of cataract clinical quality registries ³⁴	Yes
WEF Global Competitiveness ranking ³⁵	79.6
WIPO Innovation ranking ³⁶	17
WEF IP protection scores ³⁵	74.5
Patent process duration ³⁷	26.3 months
Researchers (FTE/million) ³⁶	4274.7
SCIMAGO Rankings of Ophthalmology Journals ³⁸	Q4 journal
Bloomberg Health System Efficiency Ranking ³⁹	16
Change in years lived with disability (AMD) ⁴⁰	0.23
Change in years lived with disability (Cataract) ⁴⁰	0.18
Number of ophthalmologists per million ³³	33
Number of optometrists per million ³³	159
Percent of population covered by insurance ⁴¹	100%
Total out of pocket health care cost as percent of GDP ⁴²	1.6%
Percent of DR patients having screening in the past 12 months	96.2% ⁴⁸
Percent of patients who know vision loss is a consequence of diabetes	86% ⁴⁸
Percent of patients who discuss vision loss with providers after onset of symptoms	25% ⁴⁸
Existence of cities with age-friendly environments ⁴⁴	Yes
Percent of 60-year and older covered by age-friendly environments ⁴⁵	23.6%

China

Existence of national plan	Yes
Existence of cataract clinical quality registries ³⁴	Yes
WEF Global Competitiveness ranking ³⁵	72.6
WIPO Innovation ranking ³⁶	14

WEF IP protection scores ³⁵	58.3
Patent process duration ³⁷	22.5 months
Researchers (FTE/million) ³⁶	1234.8
SCIMAGO Rankings of Ophthalmology Journals ³⁸	Q2 journal
Bloomberg Health System Efficiency Ranking ³⁹	20
Change in years lived with disability (AMD) ⁴⁰	0.18
Change in years lived with disability (Cataract) ⁴⁰	0.15
Number of ophthalmologists per million ³³	21
Number of optometrists per million ³³	1
Percent of population covered by insurance ⁴¹	95%
Total out of pocket health care cost as percent of GDP ⁴⁰	1.8%
Percent of DR patients having screening in the past 12 months	90% ⁴⁹
Percent of patients who know vision loss is a consequence of diabetes	82% ⁴⁹
Percent of patients who discuss vision loss with providers after onset of symptoms	45% ⁴⁹
Existence of cities with age-friendly environments ⁴⁴	Yes
Percent of 60-year and older covered by age-friendly environments ⁴⁵	0.33%

France

Existence of national plan ³³	No
Existence of cataract clinical quality registries ³⁴	Yes
WEF Global Competitiveness ranking ³⁵	78.8
WIPO Innovation ranking ³⁶	16
WEF IP protection scores ³⁵	77.6
Patent process duration	N/A
Researchers (FTE/million) ³⁶	4441.1
SCIMAGO Rankings of Ophthalmology Journals ³⁸	Q3 journal
Bloomberg Health System Efficiency Ranking ³⁹	16
Change in years lived with disability (AMD) ⁴⁰	0.19
Change in years lived with disability (Cataract) ⁴⁰	0.14
Number of ophthalmologists per million ³³	110
Number of optometrists per million ³³	47
Percent of population covered by insurance ⁴¹	99.9%
Total out of pocket health care cost as percent of GDP ⁴²	1%
Percent of DR patients having screening in the past 12 months	81% ⁵⁰
Percent of patients who know vision loss is a consequence of diabetes	98% ⁵⁰
Percent of patients who discuss vision loss with providers after onset of symptoms	5% ⁵⁰
Existence of cities with age-friendly environments ⁴⁴	Yes
Percent of 60-year and older covered by age-friendly environments ⁴⁵	8.34

Germany

Existence of national plan ³³	No
Existence of cataract clinical quality registries ³⁴	Yes
WEF Global Competitiveness ranking ³⁵	81.8
WIPO Innovation ranking ³⁶	9
WEF IP protection scores ³⁵	70.9
Patent process duration	N/A
Researchers (FTE/million) ³⁶	5036.2
SCIMAGO Rankings of Ophthalmology Journals ³⁸	Q1 journal
Bloomberg Health System Efficiency Ranking ³⁹	45
Change in years lived with disability (AMD) ⁴⁰	0.14
Change in years lived with disability (Cataract) ⁴⁰	0.17
Number of ophthalmologists per million ³³	82
Number of optometrists per million ³³	277
Percent of population covered by insurance ⁴¹	100%
Total out of pocket health care cost as percent of GDP ⁴²	1.4%
Percent of DR patients having screening in the past 12 months	93% ⁵¹
Percent of patients who know vision loss is a consequence of diabetes	94% ⁵¹
Percent of patients who discuss vision loss with providers after onset of symptoms	29% ⁵¹
Existence of cities with age-friendly environments ⁴⁴	Yes
Percent of 60-year and older covered by age-friendly environments ⁴⁵	0.20%

Italy

Existence of national plan ³³	No
Existence of cataract clinical quality registries ³⁴	Yes
WEF Global Competitiveness ranking ³⁵	71.5
WIPO Innovation ranking ³⁶	30
WEF IP protection scores ³⁵	60.2
Patent process duration	N/A
Researchers (FTE/million) ³⁶	2294.5
SCIMAGO Rankings of Ophthalmology Journals ³⁸	Q2 journal
Bloomberg Health System Efficiency Ranking ³⁹	4
Change in years lived with disability (AMD) ⁴⁰	0.17
Change in years lived with disability (Cataract) ⁴⁰	0.15
Number of ophthalmologists per million ³³	68
Number of optometrists per million ³³	17
Percent of population covered by insurance ⁴¹	100%
Total out of pocket health care cost as percent of GDP ⁴²	2%
Percent of DR patients having screening in the past 12 months	89% ⁵²

Percent of patients who know vision loss is a consequence of diabetes	77% ⁵²
Percent of patients who discuss vision loss with providers after onset of symptoms	17% ⁵²
Existence of cities with age-friendly environments ⁴⁴	Yes
Percent of 60-year and older covered by age-friendly environments ⁴⁵	0.33

Japan

Existence of national plan ³³	No
Existence of cataract clinical quality registries ³⁴	Yes
WEF Global Competitiveness ranking ³⁵	82.3
WIPO Innovation ranking ³⁶	15
WEF IP protection scores ³⁵	83
Patent process duration ³⁷	14.1 months
Researchers (FTE/million) ³⁶	5304.9
SCIMAGO Rankings of Ophthalmology Journals ³⁸	Q1 journal
Bloomberg Health System Efficiency Ranking ³⁹	7
Change in years lived with disability (AMD) ⁴⁰	0.3
Change in years lived with disability (Cataract) ⁴⁰	0.33
Number of ophthalmologists per million ³³	101
Number of optometrists per million ³³	57
Percent of population covered by insurance ⁴¹	100%
Total out of pocket health care cost as percent of GDP ⁴²	1.4%
Percent of DR patients having screening in the past 12 months	86% ⁵³
Percent of patients who know vision loss is a consequence of diabetes	82% ⁵³
Percent of patients who discuss vision loss with providers after onset of symptoms	26% ⁵³
Existence of cities with age-friendly environments ⁴⁴	Yes
Percent of 60-year and older covered by age-friendly environments ⁴⁵	4.66%

Nigeria

Existence of national plan ³³	Yes
Existence of cataract clinical quality registries ³⁴	No
WEF Global Competitiveness ranking ³⁵	48.3
WIPO Innovation ranking ³⁶	114
WEF IP protection scores ³⁵	33.3
Patent process duration	N/A
Researchers (FTE/million)	Does not report to UNESCO ⁵⁴
SCIMAGO Rankings of Ophthalmology Journals ³⁸	Unranked
Bloomberg Health System Efficiency Ranking ³⁹	Unranked
Change in years lived with disability (AMD) ⁴⁰	0.07
Change in years lived with disability (Cataract) ⁴⁰	-0.09

Number of ophthalmologists per million ³³	3
Number of optometrists per million ³³	23
Percent of population covered by insurance	39% ⁵⁵
Total out of pocket health care cost as percent of GDP	4.8%
Percent of DR patients having screening in the past 12 months	N/A
Percent of patients who know vision loss is a consequence of diabetes	N/A
Percent of patients who discuss vision loss with providers after onset of symptoms	N/A
Existence of cities with age-friendly environments ⁴⁴	N
Percent of 60-year and older covered by age-friendly environments ⁴⁵	0%

Saudi Arabia

Existence of national plan ³³	Yes
Existence of cataract clinical quality registries ³⁴	No
WEF Global Competitiveness ranking ³⁵	70
WIPO Innovation ranking ³⁶	68
WEF IP protection scores ³⁵	71.7
Patent process duration ³⁷	26 months
Researchers (FTE/million)	Does not report to UNESCO ⁵⁴
SCIMAGO Rankings of Ophthalmology Journals ³⁸	Q3 journal
Bloomberg Health System Efficiency Ranking ³⁹	46
Change in years lived with disability (AMD) ⁴⁰	-0.02
Change in years lived with disability (Cataract) ⁴⁰	-0.15
Number of ophthalmologists per million ³³	60
Number of optometrists per million ³³	19
Percent of population covered by insurance	100% ⁵⁶
Total out of pocket health care cost as percent of GDP	N/A
Percent of DR patients having screening in the past 12 months	87% ⁵⁷
Percent of patients who know vision loss is a consequence of diabetes	55% ⁵⁷
Percent of patients who discuss vision loss with providers after onset of symptoms	28% ⁵⁷
Existence of cities with age-friendly environments ⁴⁴	No
Percent of 60-year and older covered by age-friendly environments ⁴⁵	0%

Spain

Existence of national plan ³³	No
Existence of cataract clinical quality registries ³⁴	No
WEF Global Competitiveness ranking ³⁵	75.3
WIPO Innovation ranking ³⁶	29
WEF IP protection scores ³⁵	63

Patent process duration ³⁷	9.6 months
Researchers (FTE/million) ³⁶	2873.4
SCIMAGO Rankings of Ophthalmology Journals ³⁸	Q4 journal
Bloomberg Health System Efficiency Ranking ³⁹	3
Change in years lived with disability (AMD) ⁴⁰	0.14
Change in years lived with disability (Cataract) ⁴⁰	0.15
Number of ophthalmologists per million ³³	71
Number of optometrists per million ³³	365
Percent of population covered by insurance ⁴¹	99.99%
Total out of pocket health care cost as percent of GDP ⁴²	2%
Percent of DR patients having screening in the past 12 months	86% ⁵⁸
Percent of patients who know vision loss is a consequence of diabetes	89% ⁵⁸
Percent of patients who discuss vision loss with providers after onset of symptoms	20% ⁵⁸
Existence of cities with age-friendly environments ⁴⁴	Yes
Percent of 60-year and older covered by age-friendly environments ⁴⁵	34.5%

Sweden

Existence of national plan ³³	No
Existence of cataract clinical quality registries ³⁴	Yes
WEF Global Competitiveness ranking ³⁵	81.2
WIPO Innovation ranking ³⁶	2
WEF IP protection scores ³⁵	76.9
Patent process duration ³⁷	30.3 months
Researchers (FTE/million) ³⁶	7268.2
SCIMAGO Rankings of Ophthalmology Journals ³⁸	Unranked
Bloomberg Health System Efficiency Ranking ³⁹	22
Change in years lived with disability (AMD) ⁴⁰	0.08
Change in years lived with disability (Cataract) ⁴⁰	0.01
Number of ophthalmologists per million ³³	78
Number of optometrists per million ³³	210
Percent of population covered by insurance ⁴¹	100%
Total out of pocket health care cost as percent of GDP ⁴²	1.5%
Percent of DR patients having screening in the past 12 months	71% ⁵⁹
Percent of patients who know vision loss is a consequence of diabetes	90% ⁵⁹
Percent of patients who discuss vision loss with providers after onset of symptoms	38% ⁵⁹
Existence of cities with age-friendly environments ⁴⁴	Yes
Percent of 60-year and older covered by age-friendly environments ⁴⁵	13.51%

Switzerland

Existence of national plan ³³	No
Existence of cataract clinical quality registries ³⁴	No
WEF Global Competitiveness ranking ³⁵	82.3
WIPO Innovation ranking ³⁶	1
WEF IP protection scores ³⁵	88.3
Patent process duration	N/A
Researchers (FTE/million) ³⁶	5257.4
SCIMAGO Rankings of Ophthalmology Journals ³⁸	Q1 journal
Bloomberg Health System Efficiency Ranking ³⁹	12
Change in years lived with disability (AMD) ⁴⁰	0.1
Change in years lived with disability (Cataract) ⁴⁰	0.05
Number of ophthalmologists per million ³³	94
Number of optometrists per million ³¹	115
Percent of population covered by insurance ⁴¹	100%
Total out of pocket health care cost as percent of GDP ⁴²	3.4%
Percent of DR patients having screening in the past 12 months	N/A
Percent of patients who know vision loss is a consequence of diabetes	N/A
Percent of patients who discuss vision loss with providers after onset of symptoms	N/A
Existence of cities with age-friendly environments ⁴⁴	Y
Percent of 60-year and older covered by age-friendly environments ⁴⁵	4.73

United Kingdom

Existence of national plan ³³	Yes
Existence of cataract clinical quality registries ³⁴	Yes
WEF Global Competitiveness ranking ³⁵	81.2
WIPO Innovation ranking ³⁶	5
WEF IP protection scores ³⁵	75.5
Patent process duration ³⁷	39 months
Researchers (FTE/million) ³⁶	4377
SCIMAGO Rankings of Ophthalmology Journals ³⁸	Q1 journal
Bloomberg Health System Efficiency Ranking ³⁹	35
Change in years lived with disability (AMD) ⁴⁰	0.04
Change in years lived with disability (Cataract) ⁴⁰	-0.01
Number of ophthalmologists per million ³³	50
Number of optometrists per million ³³	224
Percent of population covered by insurance ⁴¹	100%
Total out of pocket health care cost as percent of GDP ⁴²	1.7%
Percent of DR patients having screening in the past 12 months	94% ⁶⁰

Percent of patients who know vision loss is a consequence of diabetes	88% ⁶⁰
Percent of patients who discuss vision loss with providers after onset of symptoms	29% ⁶⁰
Existence of cities with age-friendly environments ⁴⁴	Yes
Percent of 60-year and older covered by age-friendly environments ⁴⁵	17.26

United States

Existence of national plan ³³	Yes
Existence of cataract clinical quality registries ³⁴	Yes
WEF Global Competitiveness ranking ³⁵	83.7
WIPO Innovation ranking ³⁶	3
WEF IP protection scores ³⁵	78.3
Patent process duration ³⁷	21.8 months
Researchers (FTE/million) ³⁶	4256.3
SCIMAGO Rankings of Ophthalmology Journals ³⁸	Q1 journal
Bloomberg Health System Efficiency Ranking ³⁹	54
Change in years lived with disability (AMD) ⁴⁰	0.25
Change in years lived with disability (Cataract) ⁴⁰	0.18
Number of ophthalmologists per million ³³	60
Number of optometrists per million ³³	129
Percent of population covered by insurance ⁴¹	90.6%
Total out of pocket health care cost as percent of GDP ⁴²	1.8%
Percent of DR patients having screening in the past 12 months	N/A
Percent of patients who know vision loss is a consequence of diabetes	N/A
Percent of patients who discuss vision loss with providers after onset of symptoms	N/A
Existence of cities with age-friendly environments ⁴⁴	Yes
Percent of 60-year and older covered by age-friendly environments ⁴⁵	19.46

Appendix C: Endnotes

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