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APRIL 2019

VISION ATLAS



UPDATED
WORLD BLINDNESS
AND
VISUAL IMPAIRMENT DATA

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“ WHY DO WE NEED THE IAPB VISION ATLAS ”



Today, the world is populated by hundreds of millions of people who are unnecessarily blind or visually impaired from causes that are treatable or preventable. Proven and highly cost-effective solutions exist but have not been taken to scale. The Vision Atlas, launched by the International Agency for Prevention of Blindness (IAPB) is an excellent visualisation tool based on Global Vision Database data. **The Vision Atlas create a public conversation that helps persuade decision-makers in government and the private**

sector to tackle what is largely an avoidable problem.

The IAPB Vision Atlas brings together the latest data and evidence related to avoidable blindness and sight loss; tells the story behind the numbers; presents solutions, and good practice; highlights the opportunities to eliminate some blinding conditions; and warns of emerging threats that, if ignored, could reverse the progress that has been made in reducing prevalence over the past 25 years.

VISION ATLAS

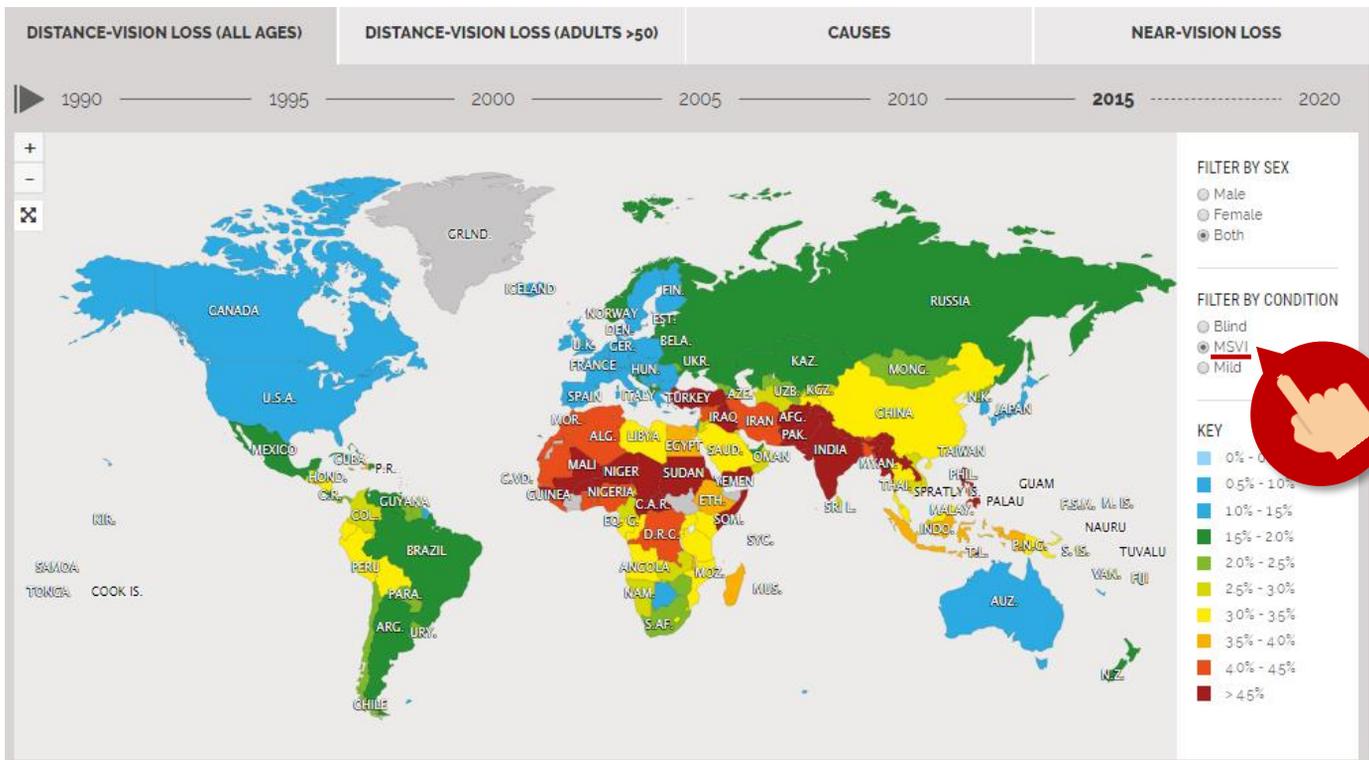


Figure 1. Interactive vision atlas: MSVI data of all ages in 2015
Source: IAPB Vision atlas¹

“ The IAPB Vision Atlas is a compilation of the very latest data and evidence relevant to all those who **believe** that in the 21st Century **no one** should have to live with **avoidable blindness** or sight loss ”

The IAPB Vision Atlas is designed around two main sets of data: the estimates of the burden of blindness and visual impairment made by the Vision Loss Expert Group (VLEG) and national level performance against the key indicators laid out in the World Health Assembly resolution 66.4 ‘Universal Eye Health: a Global Action Plan 2014 – 2019’ (the GAP). The Atlas will include two new maps—the main causes of blindness and visual impairment (by region) and the main causes of near-vision loss (by region, and only for 2015 with projections for 2020) and can be viewed for all ages or for adults over 50. The prevalence data will go back to 1990 and will also include projections

to 2020. These numbers will be by country and can be accessed through a couple of web-based interactive map. Introduced on World Sight Day 2017, they have additional maps for the 21 GBD Regions showing causes and the numbers affected by Near-Vision Loss. The GAP indicator data – a limited, initial survey of available data – gives you CSR/CSC data, human resources and national planning data. Apart from this, the atlas will also include commentary on these numbers along with explanations and easy-to-use tools for various eye conditions. The website will be followed by a published form of the IAPB Vision Atlas that will include all the latest VLEG data covering the

period up to 2015.¹

Together with a more comprehensive breakdown of the causes of visual impairment and projections of prevalence to 2050, provides a rich mix of information and new evidence. These data sets provide a wealth of information relevant to policy makers, health planners, NGOs, eye health professionals, patient groups and advocates.¹

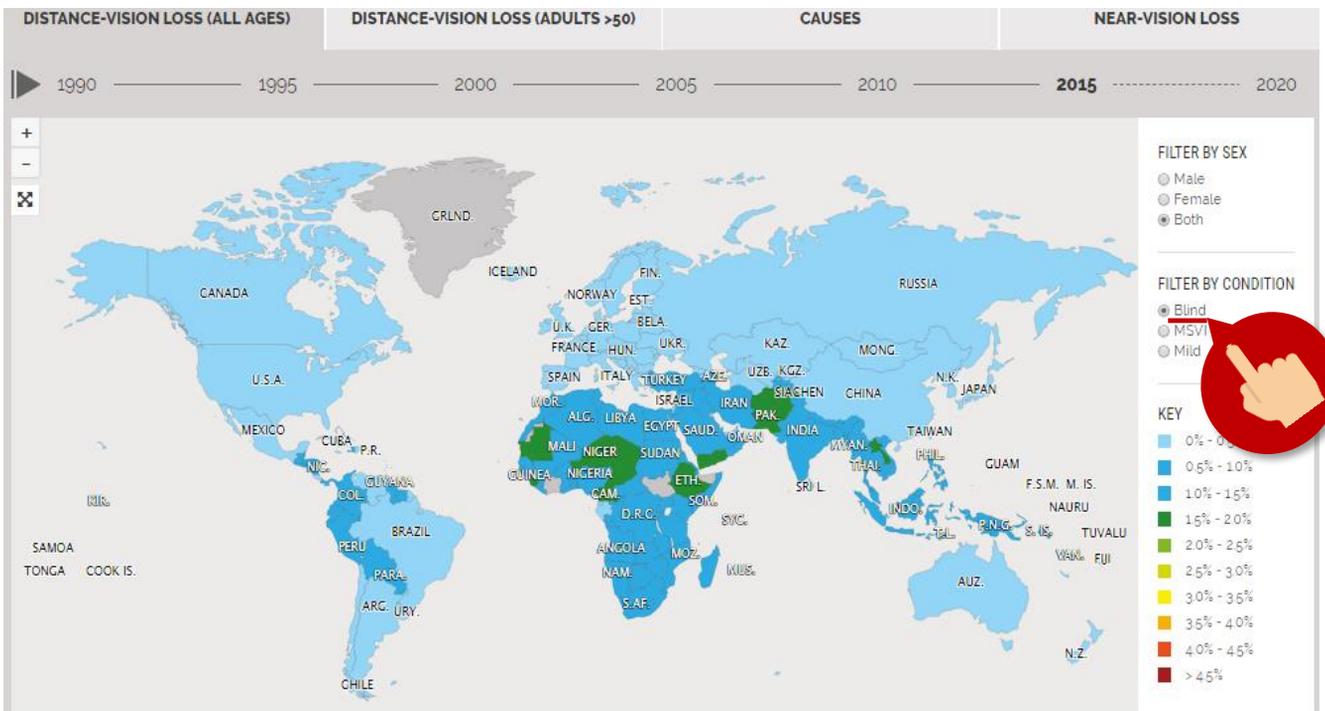


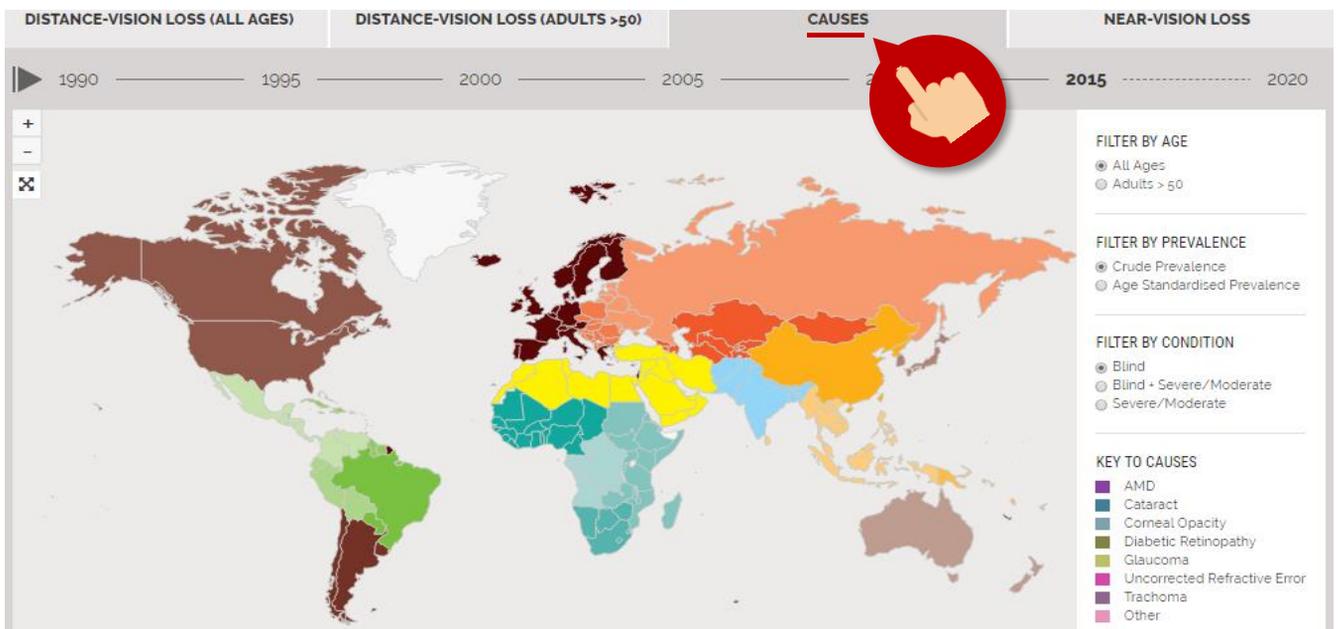
Figure 2. Interactive vision atlas: Blindness data of all ages in 2015
Source: IAPB Vision atlas¹

Given that so much of avoidable sight loss is a consequence of inequity and lack of access for the most disadvantaged members of our global community, The IAPB Vision Atlas is an important resource for those responsible for achieving Universal Health Coverage and the implementation of the Sustainable Development Goals. The VLEG and GAP data are supplemented with a number of articles specially commissioned for the IAPB Vision Atlas.¹

These include a focus on the exciting potential to eliminate Trachoma and Onchocerciasis within the next decade, diseases that have ravaged communities for centuries. Such optimism is tempered by articles on the global explosion in the number of people with myopia and diabetes that threaten to reverse the reduction in vision loss prevalence we have seen over the past 25 years, together with a seemingly inexorable rise in presbyopia.^{1,2}

Other articles focus on the socio-economic impact of vision loss, the cost effectiveness of eye care solutions and case studies on programme approaches and financing of eye health. The IAPB Vision Atlas also identifies a wealth of resources available to help combat avoidable visual impairment and, for those less familiar with the sector, an introduction to the main eye conditions.^{1,2}

Figure 3. Interactive vision atlas: causes of blindness in 2015
Source: IAPB Vision atlas¹



21 GBD Regions

The seven Super Regions are further sub-divided into 21 GBD Regions. Wherever appropriate, across the IAPB Vision Atlas website these colours are retained for the relevant regions.

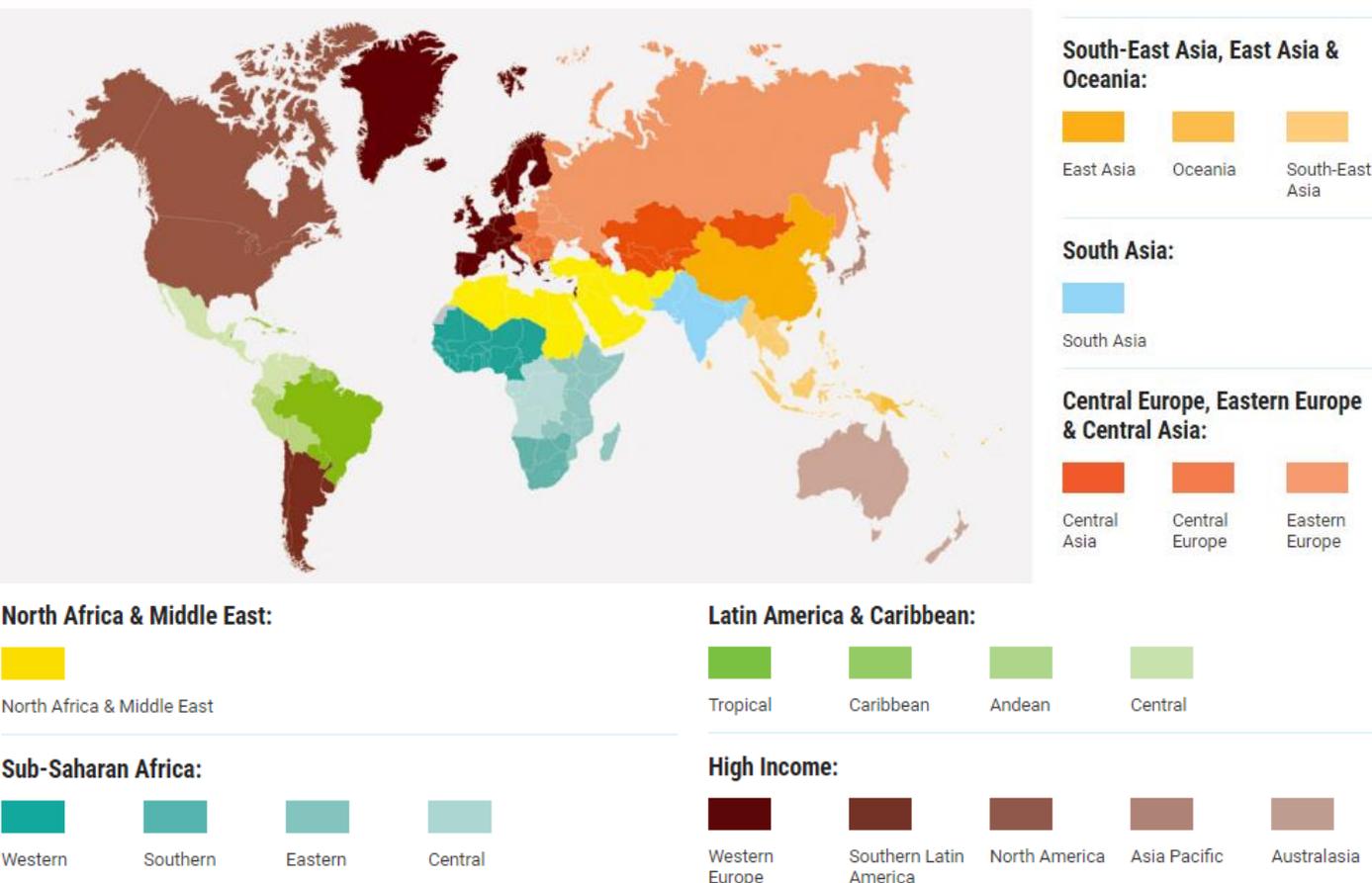
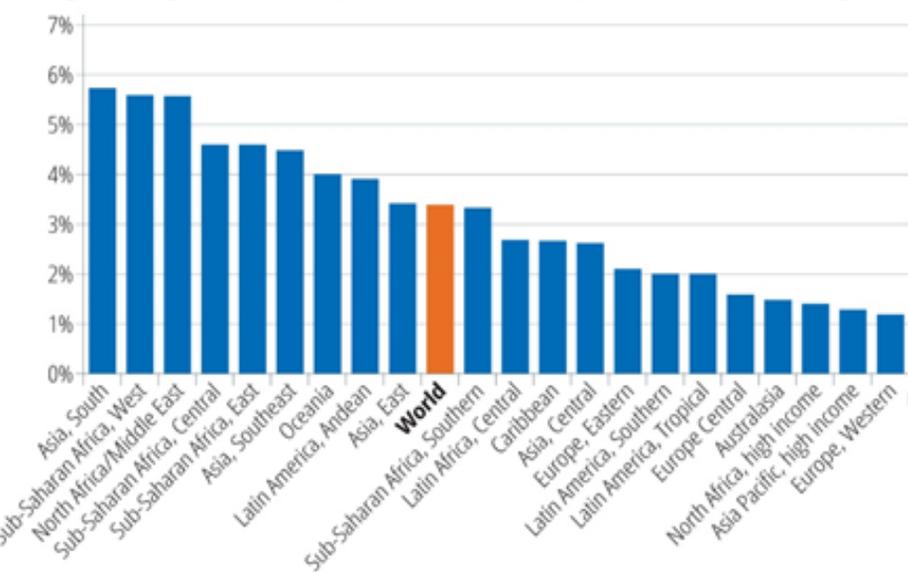


Figure 4. 21 GBD regions of vision atlas
Source: IAPB Vision atlas¹

GLOBAL BURDEN DISEASE REGIONS

Figure 5 Age-standardised prevalence of visual impairment across the 21 regions*



*Based on data from the Vision Loss Expert Group

The group used the 21 regions demarcated by the Global Burden of Disease study to disaggregate the global data and prepare regional estimates. These 21 regions cluster countries according to their physical location but also other factors, including their socio-economic status. Eighty nine percent of visually impaired people live in low- and middle income countries. Three Asian regions are home to 62% of the people in the world with visual impairment, even though they are home to only 51% of the world's population: South Asia (73 million), East Asia (59 million) and

62%

OF ALL PEOPLE WITH VISUAL IMPAIRMENT LIVE IN THREE ASIAN REGIONS



South Asia
73 million



East Asia
59 million



South-East Asia
24 million

Collectively a little over half (51%) of the world's total population live in these three regions

South East Asia (24 million). At the other end of the scale, the five high-income regions account for 14% of the world's population but only 11% of people with visual impairment.^{1,2,3}

Comparing regions is not straightforward if one just looks at the overall numbers or prevalence; this is due to the differences in the age profile in each region; i.e. some populations may have a larger proportion of older people and fewer children compared to others.

A technique called 'age standardisation' makes it possible to compare populations with different age profiles to each other and look at changes over time. The age-standardised prevalence of visual impairment across the 21 regions is shown in Figure 5. The prevalence in poorer regions of the world is more than four times that seen in the high-income regions. The group has also published a second paper that looks at the causes of visual impairment. Figure 6 summarises the estimates of the causes of blindness, moderate to severe visual impairment, and for blindness and visual impairment combined.¹⁻³

Table 1. VLEG estimates of the global number of people who are blind or MSVI, 1990-2050

Source: Flaxman SR, et al²

Year	Global number affected, all ages (millions)	
	Blindness	Moderate to severe visual impairment
1990	31	160
2000	32	176
2010	34	199
2015	36	217
2020	39	237
2030	55	330
2040	80	451
2050	115	588

Table 2. VLEG estimates for future population growth and ageing

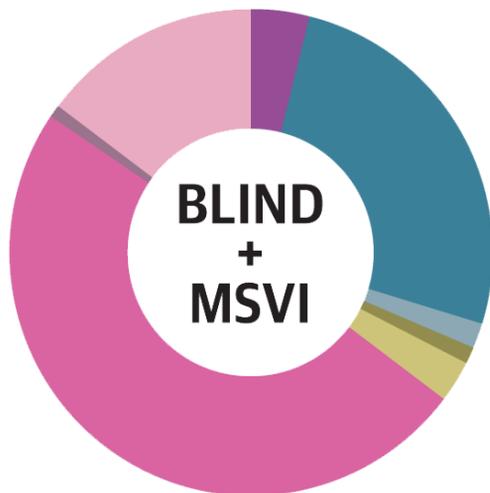
Source: Flaxman SR, et al²

	2015	2050
Global population	7.3bn	9.7bn
> 60 years old	0.9bn	2.1bn
> 80 years old	125m	434m

In 2015, there were an estimated 253 million people with visual impairment worldwide. Of these, 36 million were blind and a further 217 million had moderate to severe visual impairment (MSVI). The prevalence of people that have distance visual impairment is 3.44%, of whom 0.49% are blind and 2.95% have MSVI. A further 1.1 billion people are estimated to have functional presbyopia. As in earlier estimates, cataract continues to be the leading causes of blindness, and uncorrected refractive error the leading cause of MSVI.^{1,2}

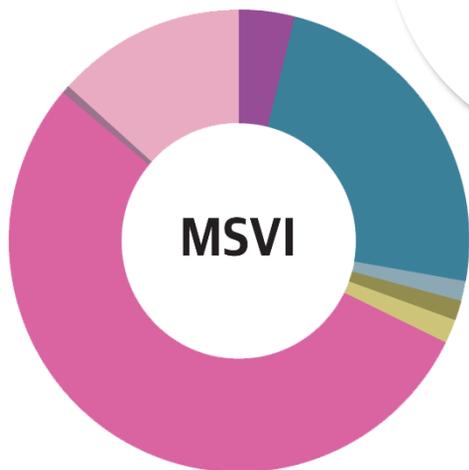
The risk of most eye conditions increases with age; consequently, the prevalence of blindness and MSVI is much greater in older age groups. Of the 253 million visually impaired people worldwide, 80% are aged 50 years or older.^{1,2}

A limitation of the causes estimates is the relatively high percentage of “other” causes (25,5% for blindness; and 13,2% for MSVI with an overall figure of 14,9% for visual impairment). This is because a substantial number of the population studies only report on the more prevalent causes and do not identify or disaggregate the less-common causes such as macular degenerative condition, retinopathies, optic neuropathies, and amblyopia.¹⁻³

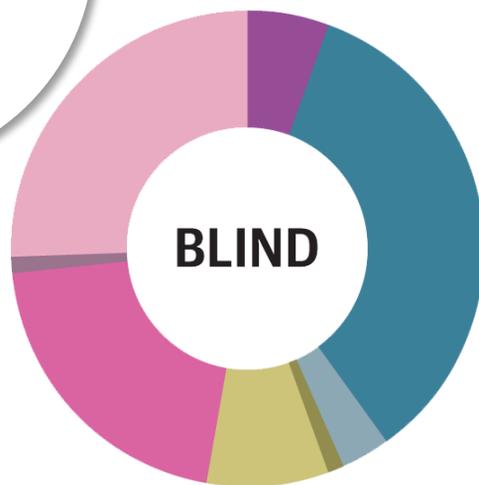


- AMD 4.10%
- Cataract 25.81%
- Corneal Opacity 1.65%
- DR 1.16%
- Glaucoma 2.78%
- URE 48.99%
- Trachoma 0.79%
- Other 14.71%

OVERAL TRENDS AND PATTERNS



- AMD 5.64%
- Cataract 34.47%
- Corneal Opacity 3.46%
- DR 1.07%
- Glaucoma 8.30%
- URE 20.62%
- Trachoma 0.98%
- Other 25.46%



- AMD 4.00%
- Cataract 24.05%
- Corneal Opacity 1.29%
- DR 1.25%
- Glaucoma 1.91%
- URE 53.72%
- Trachoma 0.63%
- Other 13.16%

Figure 6. Causes of global blindness and MSVI
Source: IAPB Vision atlas¹

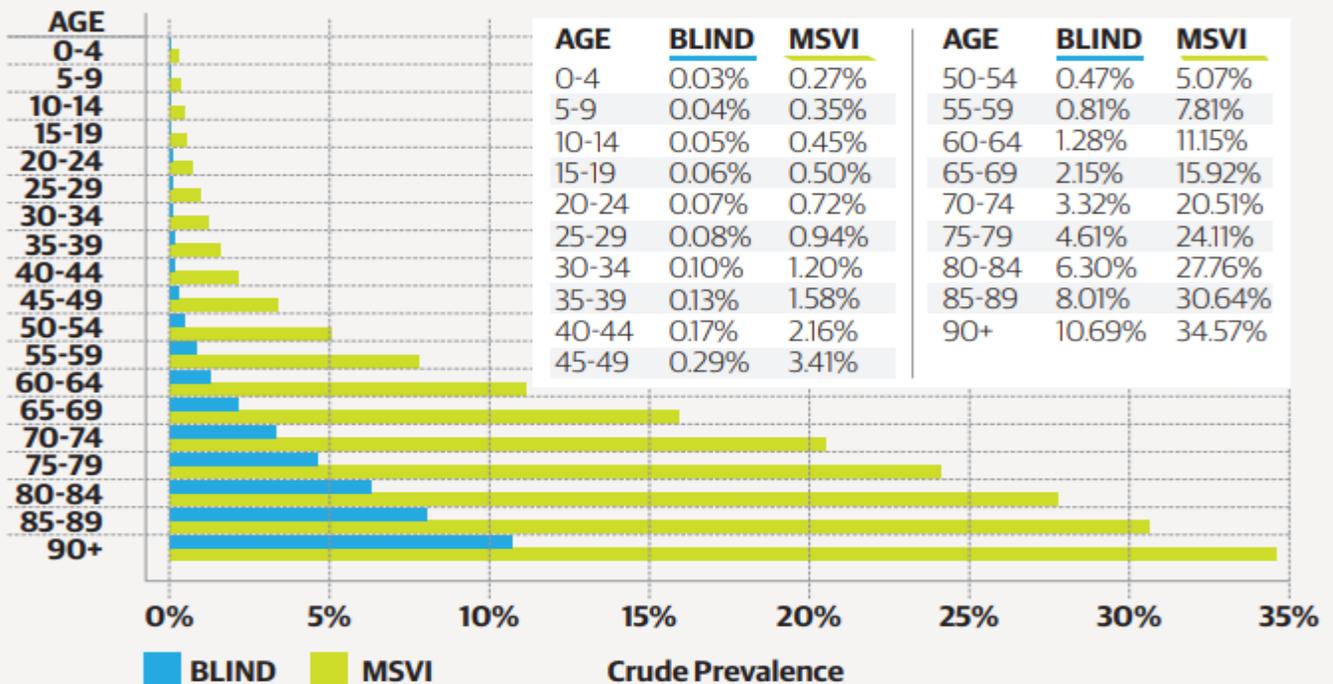


55%
OF VISUALLY
IMPAIRED
PEOPLE
ARE WOMEN

Of the 253 million people in the world who are visually impaired, 55% are women (139 million). A number of factors contribute to this gender imbalance, including the longer life expectancy of women compared with that of men, which means that there are more women in those age groups associated with a higher risk of developing a sight-threatening eye condition. In addition, women are at greater risk of developing certain eye conditions. In some countries, women suffer disadvantages in terms of access to eye health services. This problem is due to multiple socio-economic and cultural factors.^{1,3}

Table 3. Age-standardised prevalence for men and women in 2015 at the global level
Source: IAPB vision atlas¹

	All Ages		
	Men	Women	Gender Ratio
Blind	0.46%	0.49%	1.07
MSVI	2.79%	2.99%	1.07
Blind + MSVI	3.25%	3.48%	1.07



Data correct as at 12th Oct 2017

© IAPB Vision Atlas

Figure 7. Change in crude prevalence for females by ages (global) in 2015
Source: IAPB Vision atlas¹

CHANGES OVER TIME

The group has produced global estimates stretching back to 1990 and have also looked into the future to produce estimates for 2020 to 2050; the results are summarised in Table 1. At first glance, the gradual increase in the absolute number of people who are blind or have MSVI from 1990 to 2015 may seem disappointing. However, over this 25-year period, two very important demographic changes have occurred, both of which would have been expected to give rise to a much greater increase in the absolute number of visually impaired people. First, the global population increased by 38%: from 5.3 billion in 1990 to 7.3 billion in 2015.^{1,4}

Second, the world population aged and the total population over 50 years old almost doubled: from 878 million in 1990 to 1,640 million in 2015. Allowing for these two major changes, there is in fact an underlying decline in the global age-standardised prevalence of blindness (all ages): it has reduced from 4.58% in 1990 to 3.38% in 2015. A number of factors – including a decline in poverty levels, a reduction of the incidence of certain conditions or a later onset of these conditions, improved public health measures and eye health service development – have all contributed to this encouraging progress.^{1,4}

The decline in age-standardised prevalence of visual impairment between 1990 and 2015 in the world and across the seven Super Regions

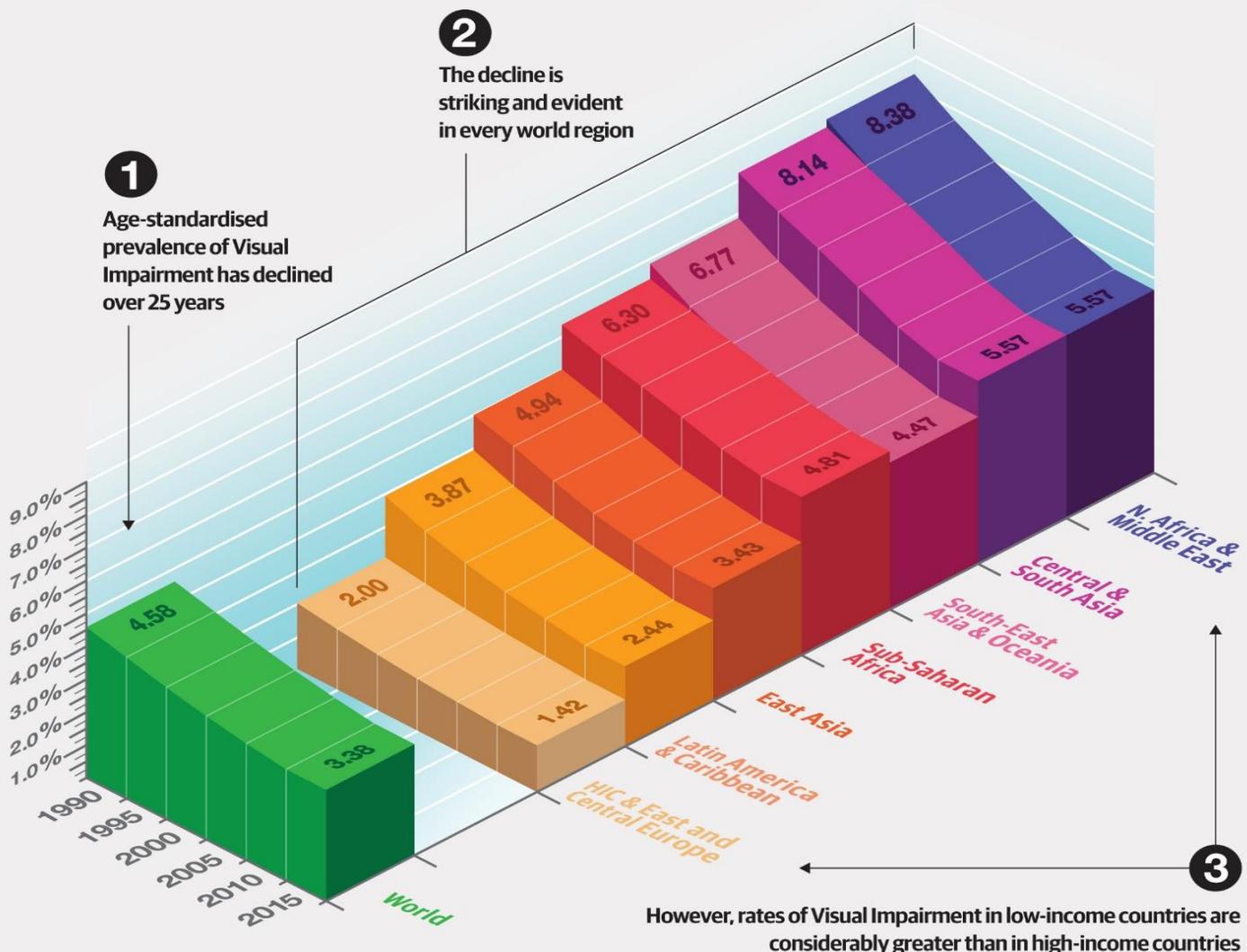


Figure 8. The decline in age-standardized prevalence of visual impairment
Source: IAPB Vision atlas¹

VLEG estimates for the global number of blind and MSVI – 1990 to 2050

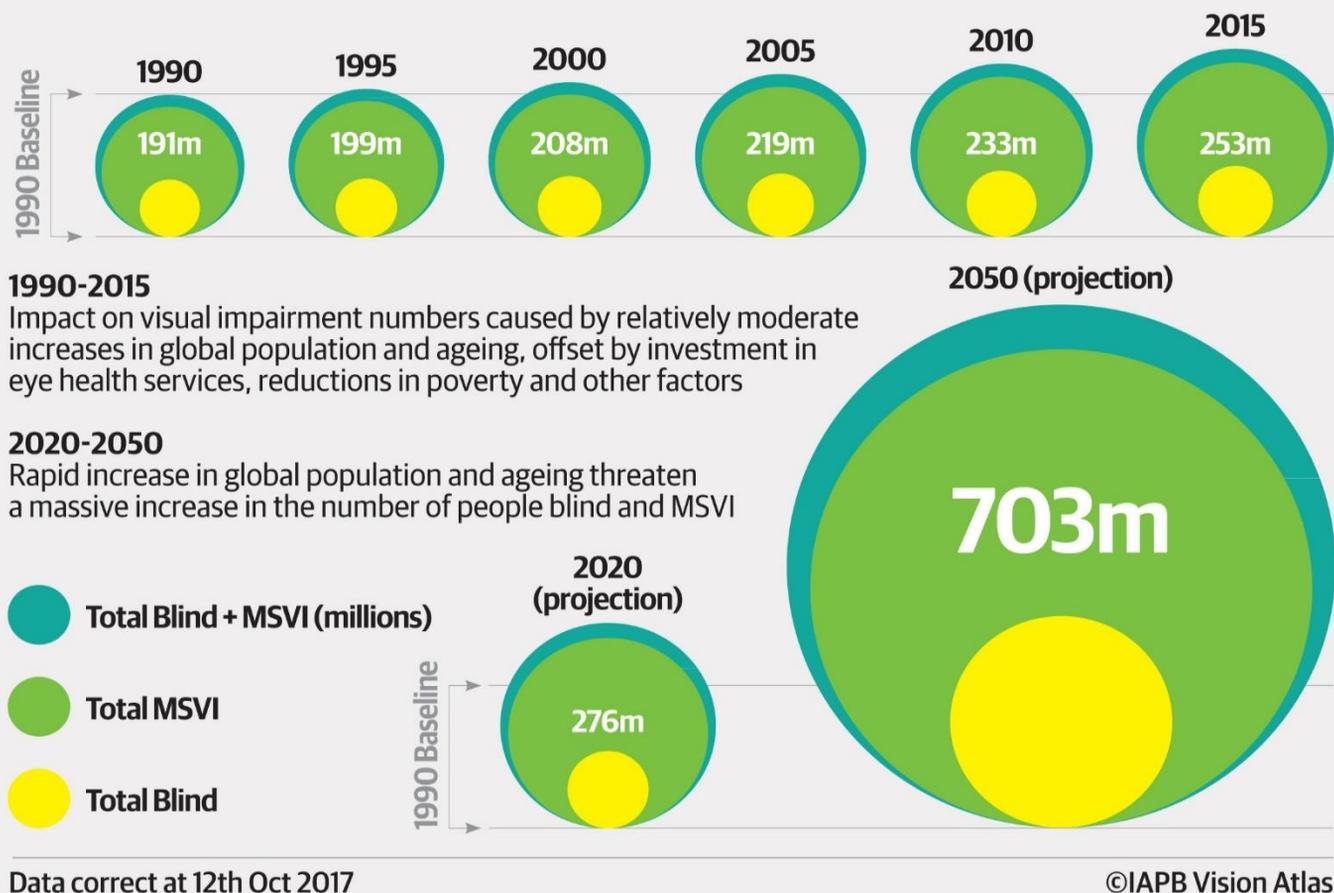


Figure 9. The combination of a growing population and an ageing population threaten a massive increase in the numbers of people who are blind or are MSVI
 Source: IAPB Vision atlas¹

THE FUTURE

United Nations data, which summarised in Table 2, informs us that the global population was 7.3 billion in 2015. This is predicted to rise to 7.8 billion by 2020 and to 9.7 billion by 2050. The growing population is also going to age at a much faster rate than seen in previous years. In 2015, there were 901 million people over the age of 60 (12% of the global population). By 2050, the number of people over the age of 60 is predicted to increase to 2.1 billion (22% of the population).^{1,2,4}

the current estimate of 125 million in 2015 is expected to increase more than threefold by 2050: to 434 million. As observed in Figure 2, the prevalence of visual impairment increases rapidly with age. By age 60, around 1 in 9 people will be either blind or have MSVI. By age 80, the ratio increases considerably: around 1 in 3 people will be either blind or have MSVI.^{1,3,4}

The combination of a growing and an ageing population will result in a massive increase in the number of people who are blind or have MSVI. Two other factors that also present a major risk for the future are the dramatic

increase currently being seen in all parts of the world in the number of people with diabetes (which can cause diabetic retinopathy, a potentially blinding condition) and those with high myopia. Overall, there may be some 703 million people who are blind or have MSVI by the year 2050 (as shown in Figure 9). A massive investment in eye health services, along with protection from out-of-pocket payments for the poorest sectors of society, is needed to ensure universal access to eye health for all and avert a future human and societal catastrophe.^{1,3,4}

An even greater relative increase in the numbers of people aged ≥80 is expected;

WHAT IS THE GLOBAL ACTION PLAN

AT the World Health Assembly in May 2013, governments adopted Resolution 66.4 *Universal Eye Health: a Global Action Plan 2014-2019* making the commitment to act to significantly reduce avoidable blindness around the world and acknowledging the importance of achieving Universal Eye Health.^{1,2,5}

Endorsed by all 194 WHO Member States, it is a commitment to improve eye health for everyone, including access to rehabilitation services for those with visual impairment. This means governments are central to ensuring access to quality eye health services. The Global Action Plan (GAP) builds upon previous VISION 2020 and WHO 2009 – 2013 Action Plans. The GAP sets out objectives and means to achieve significant reductions in avoidable blindness and visual impairment world-wide and the responsibilities of the different stakeholders – governments, WHO and international partners. The objectives are on evidence, used to advocate for political commitment and investment, development and strengthening of national plans advancing universal eye health, and strengthening multi-sector engagement and partnership. A major advance in the 2014-2019 GAP was the introduction of a clear target – a 25% reduction in the number of people with avoidable blindness and visual impairment by the year 2019, compared with the 2010 baseline.^{1,5}

The GAP provides ‘indicators’ to measure progress at the national level: the prevalence and causes of visual impairment, the number of eye care personnel and Cataract Surgical Rate (CSR) and Cataract Surgical Coverage (CSC). The GAP recognizes that provision of effective and accessible eye care services is the key to reducing visual impairment including blindness, and that embedding eye health in the broader health system is necessary, and will reap efficiency and access gains. The emphasis on Universal Eye Health is also reflected in the principles cross-cutting the GAP which include: ensuring universal access and equity; compliance with human rights mechanisms; accounting for health and social needs at all stages of life; and promoting empowerment of people with blindness and visual impairment.^{1,5,6}

“

OUR TARGET IS

↓ 25%

**IN THE NUMBER OF
PEOPLE WITH AVOIDABLE
BLINDNESS AND VISUAL
IMPAIRMENT**

”



The WHO defines universal health coverage (UHC) – and therefore Universal Eye Health – as

“ ensuring that all people have access to needed promotive, preventive, curative and rehabilitative health services, of sufficient quality to be effective, while also ensuring that people do not suffer financial hardship when paying for these services ”

This means that all people should enjoy access to quality eye health, and out-of-pocket payments should not impede access or cause difficulties.



UNIVERSAL EYE HEALTH

a vital component of health coverage

Universal Health Coverage is of great importance as, in essence, it is grounded in the right to health which includes ensuring access to services without discrimination and progressively realising quality health services for all. UHC will require strengthening health systems and providing access to services for all people particularly those unable to pay for or otherwise unable to access health care. If done right UHC can be, as WHO Director General Margaret Chan has called it, ‘a major equalizer’: “Universal health coverage is one of the most powerful social equalizers among all policy options. It is the ultimate expression of fairness.” This applies also to achieving Universal Eye Health and, as such, there are a number of elements that governments and other stakeholders should account for. Eye health needs to be integrated into strengthened health systems, with sufficient and well- distributed services and personnel.^{1,6}

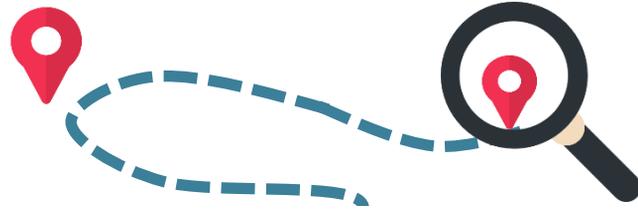
Services must be comprehensive; that is covering the range of causes of vision impairment from promotion, prevention to rehabilitation and care

It will require elimination of barriers that can affect access for vulnerable sectors of the population including women, people with disabilities, older people, indigenous peoples and people living in rural areas.

Finally, point-of-care payment should not prevent access. Advancing towards Universal Eye Health will require maximising opportunities including the SDG UHC target, and advocating for incorporation of eye health such as surgeries, glasses for children and low-vision services within social insurance and other schemes to progress UHC. This is especially important as financing for health is expected to increasingly come from domestic sources. Cataract Surgical Coverage for example, has been recognised within the WHO/World Bank UHC monitoring report as an important indicator for older people’s access to health care, this can support arguments to include Cataract in essential packages. On inclusion of eye health in these schemes it will be crucial to monitor delivery and advocate to ensure that policy translates into practice in a way that progresses towards universal eye health.^{1,6}

COUNTRY DATA

To track global action plan progress



Global Action Plan 2014-2019:
Summary of data collected and
analysed as of July 2017

Super Region	Number of Countries	Population (000s)	Cataract Surgery			Human Resources for Eye Health					National GAP Planning & Evidence					
			Number of Cataract Surgeries	Number of Countries Reporting	Number of Countries with National CSC Data	Number of Ophthalmologists	Number of Countries Reporting	Number of Optometrists	Number of Countries Reporting	Number of AOP	Number of Countries Reporting	Number of Countries conducted a Prevalence Study	Number of Countries conducted a Systems Assessment	Number of Countries with a National Eye Health Coordinator	Number of Countries with a Prevention of Blindness Committee	Number of Countries with a current National Plan?
South Asia	5	1,624,484	6,909,393	5	3	21,609	5	10,440	4	43,646	5	5	4	5	4	5
South-East Asia, East Asia & Oceania	30	2,040,940	3,118,242	17	8	37,623	28	14,376	14	55,682	17	16	10	20	12	11
Sub-Saharan Africa	46	885,132	348,163	28	8	2,075	46	8,900	44	6,390	41	22	7	41	17	19
North Africa & Middle East	21	534,493	477,706	7	1	19,491	21	8,805	11	30,823	12	10	6	13	7	12
Latin America & Caribbean	32	549,578	1,173,185	28	11	29,381	31	21,523	19	5,927	11	13	3	22	18	9
Central Europe, Eastern Europe & Central Asia	29	408,516	281,368	9	3	33,811	28	4,957	12	1,960	2	3	0	2	2	1
High Income	34	1,042,730	3,813,851	8	2	76,847	32	107,551	24	64,537	7	2	2	3	4	3
GLOBAL TOTAL	197	7,085,872	16,121,908	102	36	220,837	191	176,552	128	208,965	95	71	32	106	64	60

WHA resolution identifies five key indicators as well as 13 supplementary indicators that should be measured to monitor progress. IAPB has collected information on the five key indicator plus five of the supplementary indicators from 197 countries.^{1,7}

We will find below an analysis of the data collected. Though the amount of data we collected surpassed our expectation for some of the indicators, it was difficult to get reliable data from countries.

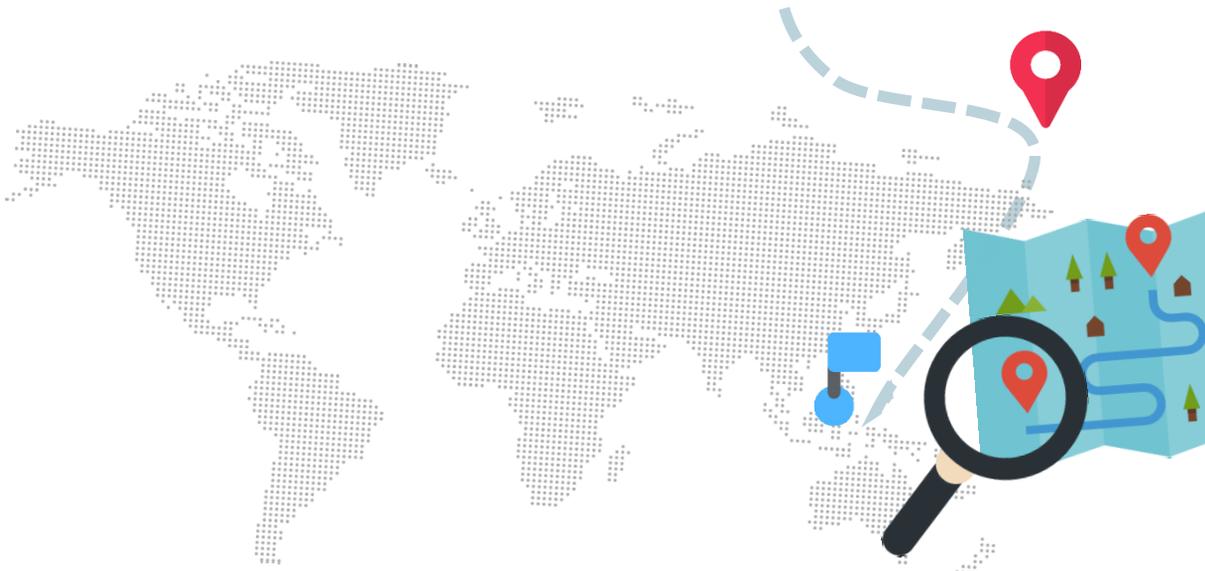
CSR and CSC – What’s the difference?

Cataract Surgical Rate

The Cataract Surgical Rate (CSR) describes the number of Cataract operations performed per year, per million population.

Cataract Surgical Coverage

The Cataract Surgical Coverage (CSC) indicates the proportion of visually impaired individuals with bilateral Cataract who were eligible for surgery and received it. CSC is used to assess the degree to which needs are met by Cataract surgical services; at least 80% coverage (at the 3/60 level) is needed to meet the needs and demands of a population.





**GET EYE HEALTH
MAINSTREAMED**



**MAKE EYE
HEALTH
AFFORDABLE**



**ENSURE EYE
HEALTH IS
EQUITABLE &
INCLUSIVE**



**WORK TOGETHER
IN EYE HEALTH**

economic hardship were identified as one major cause of not accessing eye care services. Financing for health systems in countries needs to ensure that early identification and screening, eye care treatments, essential eye care drugs and assistive devices required are affordable for all, especially for those living in poverty and other marginalised groups.

Ensure eye health is equitable and inclusive.

A recent assessment of avoidable blindness and visual impairment in seven Latin American countries concludes that 'Blindness and moderate visual impairment prevalence were fixed among the most socially disadvantaged, and cataract surgical coverage and optimal outcome were concentrated among the wealthiest'. In addition to build appropriate financing mechanisms, it requires:^{1,6,7}

- a proactive approach in eye health promotion at the community level as part of primary health care
- consistent follow up on community screenings
- sensitization and training of staff to reduce attitudinal, communication and institutional barriers-to-access for patients from socially excluded groups

Work together in eye health

This call for increased resources and focus on eye health comes at a time when many governments are responding to the new and expanded UN Sustainable Development Goal. It is vital that all stakeholders work together at the national level, within a broader national development plan.

CALL FOR ACTION

The Global Action Plan on Universal Eye Health (GAP) requests all stakeholders to join in to realize its ambitious vision: *a world in which nobody is needlessly visually impaired.* A Call for Action to leaders, policy makers and practitioners from inside and

outside the eye health sector addresses four crucial elements:

Get eye health mainstreamed

Eye health affects a country's population at all ages. Eye health is linked to other health issues and also to the social determinants of health and economic poverty. Therefore, treating eye diseases and managing vision loss at individual and societal levels should be integrated within general health systems. Eye health specialists should engage in all health systems' building blocks, including financing schemes. Policy makers and sector strategists must include the promotion of good eye health in their policy frameworks.

Make eye health affordable

In a systematic review of barriers to cataract surgery in Africa, poverty and

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