IAPB Vision Atlas

Magnitude of global vision loss

IAPB evidence series

Key findings: Trends in prevalence of blindness and distance and near vision impairment. *Bourne R, Steinmetz J, Flaxman et al, 2020*

ACKNOWLEDGMENTS

This report has been prepared to summarise latest findings from the Vision Loss Expert Group (VLEG).[1] The 2020 update incorporates data from 528 studies and includes regional estimates and forecasts to 2050.

How to cite:

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The IAPB Vision Atlas is powered by data from the VLEG

Cover Image: Armando Valera Heredia
Image: Graham Coates

Definitions and key concepts

The definitions of vision loss used by the VLEG in 2020 are based on the International Classification of Diseases 11 (2018) classification

Category of vision loss	Visual acuity scale		
	6m	**20ft**	**Decimal**
Blindness	<3/60	<20/400	<0.05
Moderate to severe vision impairment	<6/18 but ≥3/60	<20/70 but ≥20/400	<0.3 but ≥0.05
Mild vision impairment	<6/12 but ≥6/18	<20/40 but ≥20/70	<0.5 but ≥0.3
Near vision impairment	N6 or N8 at 40cm*		

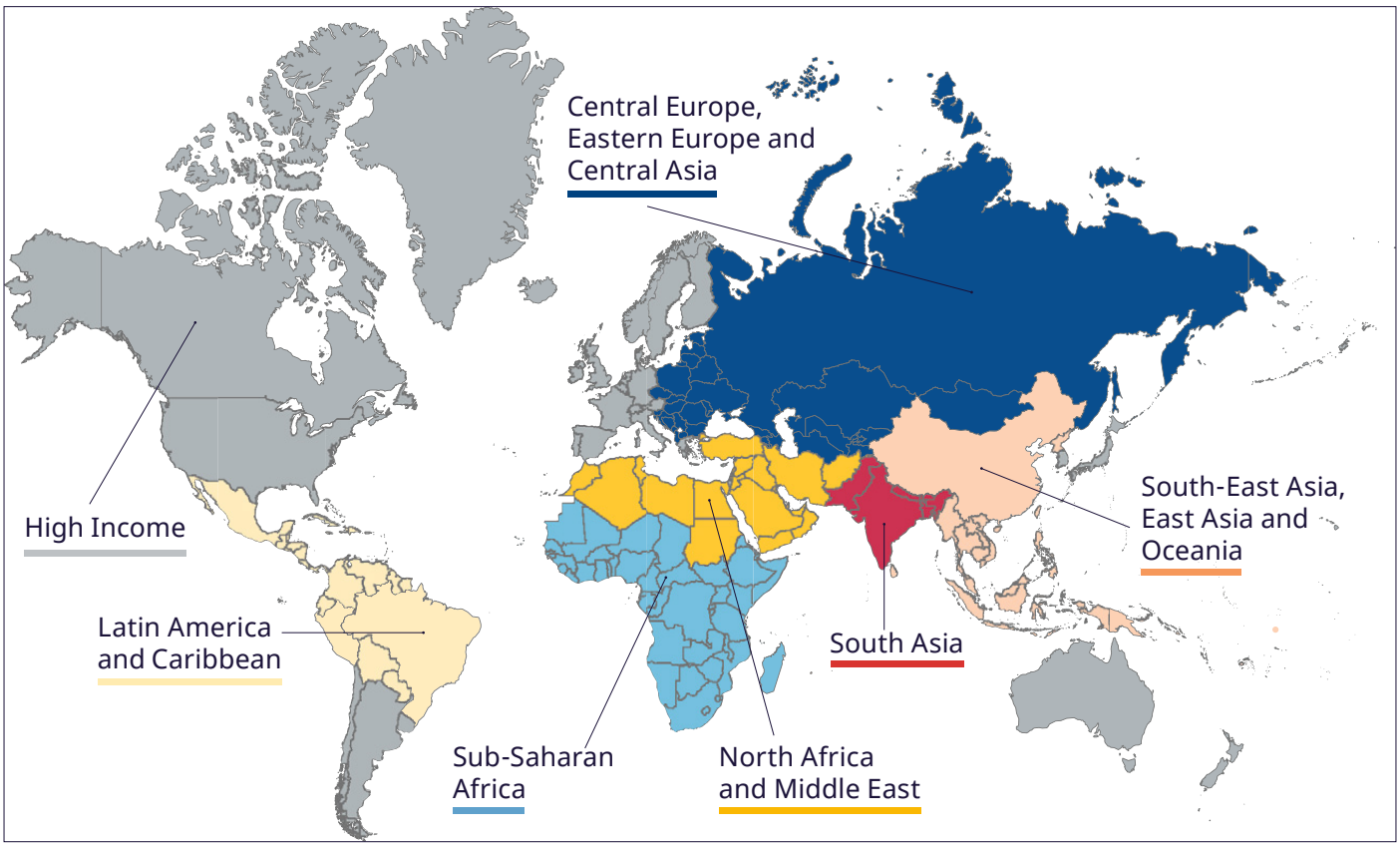
What is the difference between crude and age-standardised prevalence?

Crude prevalence: The actual percentage of vision loss in each country or region. Crude prevalence should be used when assessing the burden of vision loss at the country or regional level.

Age-standardisation: Age-standardised rates are calculated by assuming a country and/or region has an age profile identical to that of a 'standard population'. Age-standardised rates can be helpful when making comparisons between regions.

Global Burden of Disease (GBD) super regions:

The regions used in here are based on the Global Burden of Disease (GBD) regional classification system. GBD created super regions based on epidemiological similarity and geographic closeness.



1.1 billion people live with vision loss

In 2020, the global population was 7.79 billion.[2]

43 million people
are **blind** (crude prevalence: 0.5%).

295 million people
have **moderate to severe vision impairment** (crude prevalence: 3.7%).

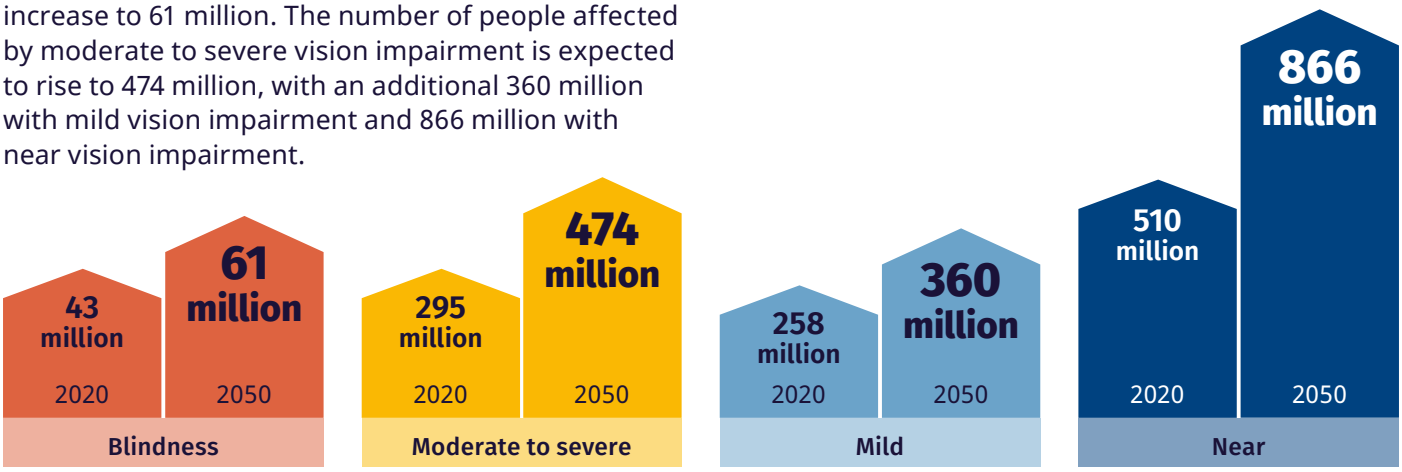
258 million people
have **mild vision impairment** (crude prevalence: 3.3%).

510 million people
have **near vision impairment** (crude prevalence: 6.5%)

Projected burden of vision loss (2020 – 2050)

By 2050, the number of people over 65 will almost double, with the number of persons aged 80 years and over projected to triple. The number of blind people in the global population is predicted to increase to 61 million. The number of people affected by moderate to severe vision impairment is expected to rise to 474 million, with an additional 360 million with mild vision impairment and 866 million with near vision impairment.

The combination of a growing and ageing population, together with lifestyle changes, threaten a massive increase in the numbers of people who are blind or have vision impairment.



Without a substantial intervention, there will be 1.7 billion people living with vision loss by 2050

(GBD) super regions projections	2020		2050
South Asia	335M	→	**519M**
South-East Asia, East Asia and Oceania	383M	→	**520M**
Central Europe, Eastern Europe and Central Asia	72M	→	**86M**
Latin America and Caribbean	78M	→	**140M**
Sub-Saharan Africa	111M	→	**266M**
North Africa and Middle East	54M	→	**116M**
High income	74M	→	**114M**

Vision loss is unequally distributed

There are differences in the ways vision loss affects different population groups

The vast majority of vision loss is experienced by those living in low- and middle-income countries. Good vision and eye health is fundamental to achieving the Sustainable Development Goals (SDGs). Investing in eye health services improves wellbeing, educational attainment, increases workforce and community participation. It provides greater economic opportunities for the individual and their community.

The prevalence of vision loss is higher in some regions.

The Southeast Asia, East Asia and Oceania super region has 35% of the world's vision loss (383 million people with vision loss) and South Asia has 30% of the world's vision loss (335 million people with vision loss). These two GBD super regions also have the highest overall prevalence of vision loss.

Importantly, regional level data cannot depict the diversity of situations within regions, countries, or even within communities. For that reason, regional data (particularly super-regional data) cannot be used to assume that all countries within a region have a similar profile of vision loss.

Two regions are home to

65% **of the world's vision loss**

90% **of those with vision loss**

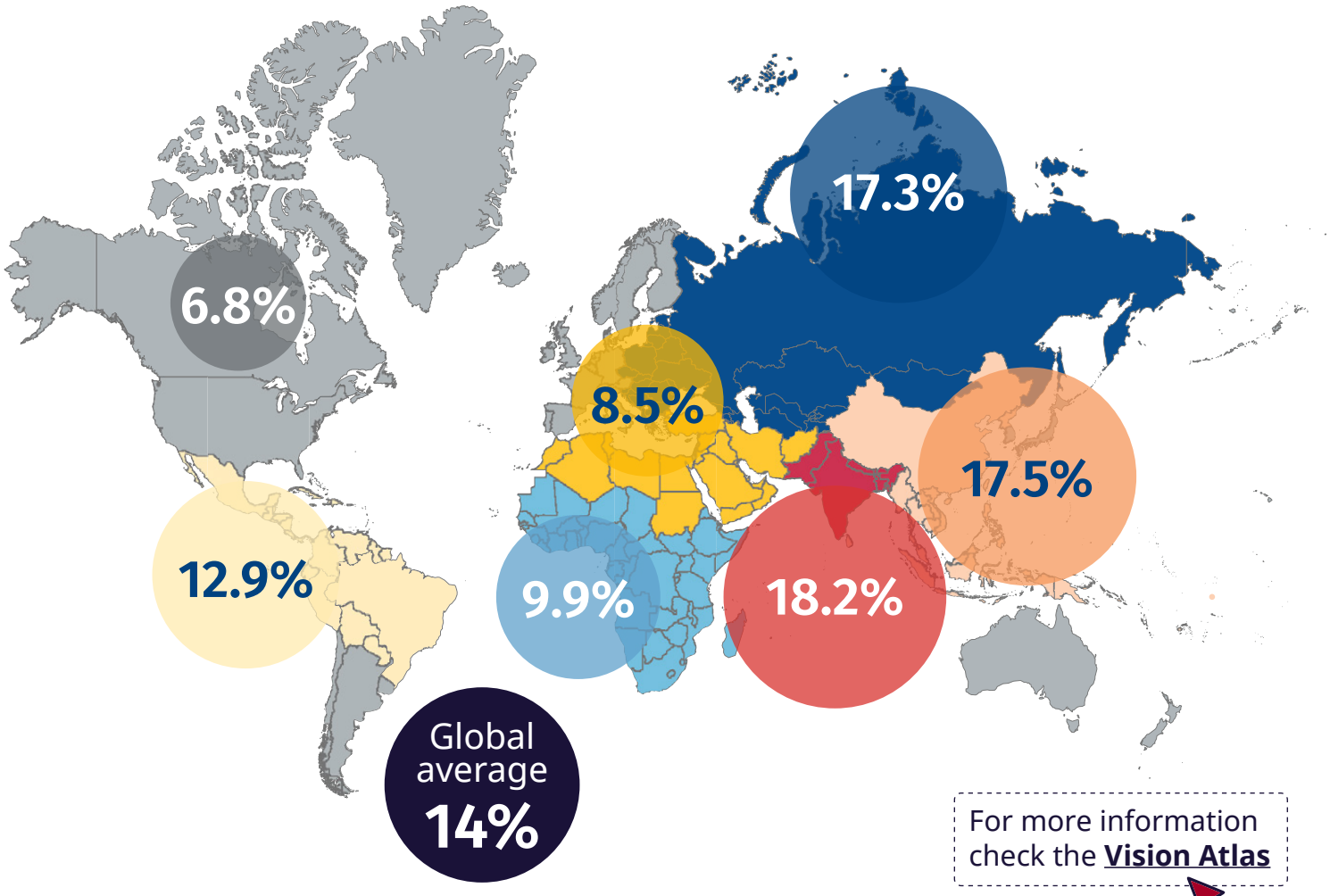
live in low- and middle-income countries:

9% High income

5% Low income

86% Middle income

Figure 1: Prevalence of vision loss (GBD super regions, crude, all ages, 2020)



For more information check the **Vision Atlas**

Countries with the highest number of people with vision loss

The 10 countries that are estimated to have the highest number of persons with vision loss in 2020 also have the largest populations. China and India together account for 49% of the world's total burden of blindness and vision impairment, while their populations represent 37% of the global population.

Table 1. Countries with the most vision loss (2020 estimates, all ages, both sexes)

Country	Population	Vision loss category				Total
		Blindness	Moderate to severe	Mild	Near	
India	1,422M	9.2M	49.1M	79.0M	137.7M	275.0M
China	1,426M	8.9M	57.7M	51.9M	155.7M	274.3M
Indonesia	265M	3.7M	11.5M	10.8M	8.9M	34.9M
Russia	146M	0.6M	3.7M	8.0M	18.5M	30.7M
Brazil	217M	1.8M	8.3M	10.0M	8.6M	28.6M
Bangladesh	161M	0.9M	4.2M	7.5M	14.0M	26.6M
Pakistan	226M	1.8M	6.0M	8.5M	10.1M	26.3M
Nigeria	226M	1.3M	7.8M	5.3M	9.9M	24.3M
USA	331M	0.6M	4.6M	6.7M	4.4M	16.4M
Mexico	132M	0.5M	4.4M	4.7M	6.4M	16.0M

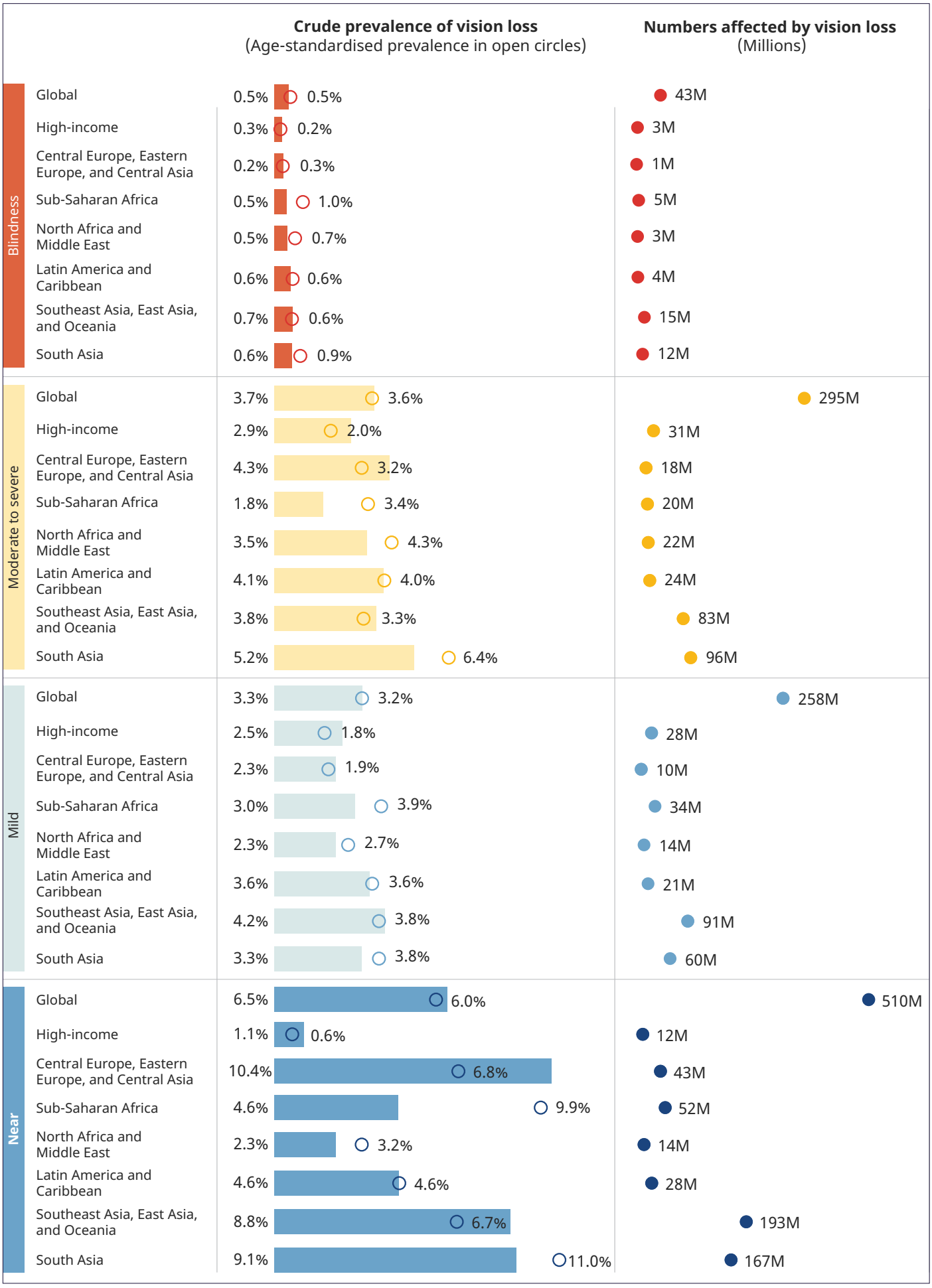
As vision loss is associated with ageing, crude prevalence can be confounded by significant differences in regional age structures. Age-standardisation can take any differences in population age structures into account and calculate the expected prevalence if each region had the same age structure.

After age-standardisation, rates of blindness are the highest in Sub-Saharan Africa indicating that countries in this region are likely to face significant challenges in meeting eye health needs as populations age.

Table 2. Countries with the highest vision loss rates (2020 estimates, age-standardised, all ages, both sexes)

Country	Vision loss category				Total
	Blindness	Moderate to severe	Mild	Near	
Tanzania	1.1%	3.2%	4.5%	16.3%	25.1%
Niger	1.2%	3.6%	4.8%	13.2%	22.8%
Zimbabwe	0.8%	3.0%	3.7%	15.2%	22.8%
Nepal	0.5%	5.1%	2.8%	18.8%	27.2%
India	0.9%	6.6%	4.0%	11.3%	22.7%
Lesotho	1.1%	2.6%	3.7%	15.1%	22.4%
Eswatini	1.0%	2.5%	3.6%	14.6%	21.7%
South Africa	0.8%	2.3%	3.5%	15.0%	21.6%
Namibia	0.8%	2.5%	3.5%	14.3%	21.1%
Botswana	1.0%	2.4%	3.5%	14.1%	21.0%

Figure 2: Vision loss in each GBD super region (crude and age-standardised prevalence, and numbers affected, 2020 estimates, all ages, both sexes)



Vision loss is related to ageing

8%
Children and adolescents (0-19)

Image: Fatima Zehra

19%
Adults (20-49)

Image: Zon Hisham Bin Zainal Abidin

73%
Older adults (50 and over)

Image: Lia Marmelstein

Between 2020 and 2050 it is anticipated that the proportion of the world's population aged 65 years and over is expected to double.[2] As many causes of vision loss are related to ageing and the majority of the those with vision loss (73%) are aged 50 years and older the ageing of the world's population has critical ramifications for age-related diseases such as age-related blindness from cataract, uncorrected refractive error, age-related macular degeneration and glaucoma.

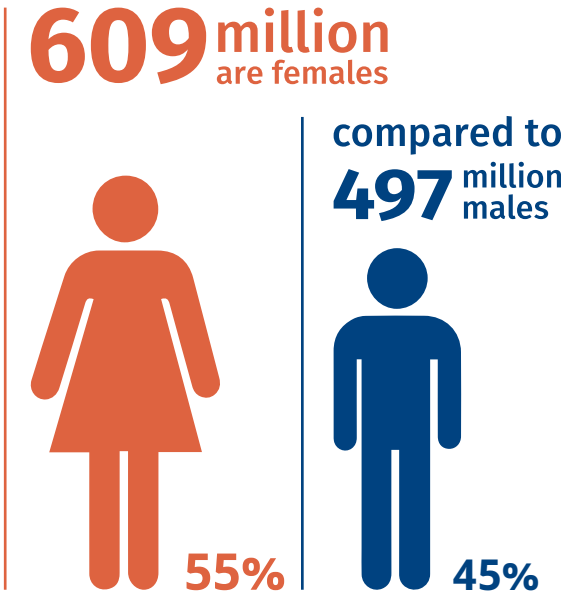
It is also important to note limited data are available for children, particularly from studies that use population-based sampling rather than school-based approaches.

Vision loss is related to gender

There are more females than males with vision loss in every category of vision impairment and blindness. There are several reasons why females experience higher rates and a higher overall burden of vision loss. The average life expectancy of women is longer than for men and many eye conditions are associated with increasing age. Women can also be at greater risk for certain eye conditions. Also, in many countries and many women have less access to eye health services due to various socio-economic and cultural factors.

As population demographics vary markedly around the world it can be helpful to use age-adjusted comparative rates when comparing rates of vision impairment for males and females. These adjusted rates account for differences in the underlying population age structures. Globally women are 8% more likely to be blind, 12% more likely to have moderate to severe vision impairment, 15% more likely to have mild vision impairment and 11% more likely to have near vision impairment.

Of the 1.1 billion people with vision loss:



55% **of all vision loss is experienced by females (all ages, 2020)**

Table 3. **Rates of vision loss are higher in females for all categories of vision loss** (all ages, 2020)

Prevalence and numbers affected	Female	Male	Total	Gender ratio
World population	3,864 million	3,929 million	7,795 million	0.98
Vision loss category				
Blindness				
Numbers affected	24 million	19 million	43 million	
Prevalence	0.61%	0.49%	0.55%	1.24
Age-adjusted comparative prevalence	0.54%	0.50%	0.52%	1.08
Moderate to severe vision impairment				
Numbers affected	163 million	132 million	295 million	
Prevalence	4.15%	3.34%	3.74%	1.24
Age-adjusted comparative prevalence	3.77%	3.37%	3.58%	1.12
Mild vision impairment				
Numbers affected	142 million	116 million	258 million	
Prevalence	3.62%	2.92%	3.27%	1.24
Age-adjusted comparative prevalence	3.42%	2.97%	3.20%	1.15
Near vision impairment				
Numbers affected	280 million	229 million	510 million	
Prevalence	7.13%	5.80%	6.46%	1.23
Age-adjusted comparative prevalence	6.27%	5.64%	5.97%	1.11
All vision loss				
Numbers affected	609 million	497 million	1,106 million	
Prevalence	15.51%	12.55%	14.02%	1.24
Age-adjusted comparative prevalence	14.00%	12.48%	13.27%	1.12

In every region, females experience more vision loss than males

Image: Louis Leeson

Global efforts to systematically prevent and treat vision loss have not kept pace with the increasing burden due to population ageing and growth. Without a substantial investment and intervention, eye care services are unlikely to cope with future needs and 1.7 billion people will be living with vision loss by 2050.

In the World Report on Vision, WHO called for integrated people-centred eye care as part of universal health coverage (UHC). This will make promotive, preventive, treatment and rehabilitative eye care services accessible and affordable for all.

References

1. Bourne, R. et al. Trends in prevalence of blindness and distance and near vision impairment over 30 years: an analysis for the Global Burden of Disease Study. *Lancet Glob. Heal.* (2020) doi:10.2139/ssrn.3582742.
2. United Nations Department of Economic and Social Affairs Population Division. World Population Prospects 2019: Highlights. (2019).

Image: Anurag Kumar