



Eye Research Australia

Clear Insight

The Economic Impact and Cost of Vision Loss in Australia

An Overview of the Report prepared by
Access Economics Pty Limited



The financial support of Alcon Laboratories (Australia) Pty Ltd is gratefully acknowledged.

The Centre for Eye Research Australia is a core partner of the Vision CRC, and is proud to be a partner of Vision 2020. Support from these organisations and the RANZCO Eye Foundation is much appreciated.

August 2004

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Table of Contents

Background	2
Total costs	3
Direct health costs	4
Indirect costs	7
Cost of suffering	8
Frequency and causes of vision loss	10
Projected changes	14
What needs to be done	16
A call to action	17

Figure and Table numbering refers to the complete Access Economics Pty Limited Report: **“Clear Insight - The Economic Impact and Cost of Vision Loss in Australia”** released in August 2004. Copies of this Report are available from <www.cera.org.au> or by calling +61 3 9929 8425.



The Centre for Eye Research Australia (CERA) and the Eye Research Australia Foundation commissioned the independent economic analysts, Access Economics Pty Limited to undertake a full analysis of visual impairment in Australia and report on the economic impact and cost to governments, industry and the community at large. This is the first such independent study of this issue. (This booklet provides a summary of the full Report which was released in August, 2004.)

The Centre for Eye Research Australia is one of Australia's leading eye research centres. It is renowned globally for its work in prevention and establishing the causes and treatment of eye disease, vision loss and blindness through teaching and research. It was established in 1996 around the University of Melbourne's Department of Ophthalmology.

The Centre was established as a collaborative undertaking between the University, the Royal Victorian Eye and Ear Hospital, the Royal Australian and New Zealand College of Ophthalmologists, the Ansell Ophthalmology Foundation, Christian Blind Mission International, the Lions Club of Victoria, Vision Australia Foundation and the Royal Victorian Institute of the Blind.

It is a core partner of the Vision CRC. It is the only centre in Australia designated by the World Health Organisation as a WHO Collaborating Centre for the Prevention of Blindness.

Access Economics Pty Limited provides independent, credible and high quality services in three broad areas:

- Economic publications and model-based forecasting
- Investment advisory services to institutional investors
- Economic advising across all areas of economic policy, including
 - health and welfare advisory services such as disease cost and burden analyses, health financing and workforce modelling.

The skill mix required to deliver this unique combination of services and the strong synergies between them, means Access Economics Pty Limited offers an unmatched level of in-house expertise.



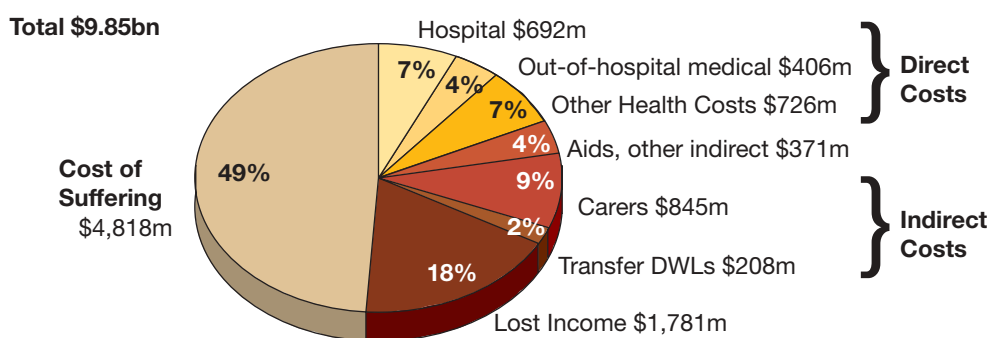
Total costs

The total cost of vision disorders in Australia is estimated to be \$9.85 billion in 2004.

- Total real financial costs (direct and indirect) of visual impairment were over \$5.0 billion in 2004 (over 0.6% of GDP).
- This represents \$252 for every Australian, or \$10,482 for every person over 40 with visual impairment in Australia in 2004.
- The real indirect financial costs of visual impairment are estimated as \$3.2 billion, around 76% more than total direct health costs (\$1.8 billion).
- In addition, there were a further \$850 million of transfer payments - both lost revenue (tax foregone for people with visual impairment and their families and carers) and expenditure (carer and other welfare payments). These are not included in the real cost estimates or the totals.

The real impact of visual impairment in Australia has been overlooked.

Figure 4-1: Composition of total costs, vision disorders, 2004



The net cost of suffering and premature death due to vision loss, over and above its financial costs, is estimated to be a further \$4.8 billion in 2004.

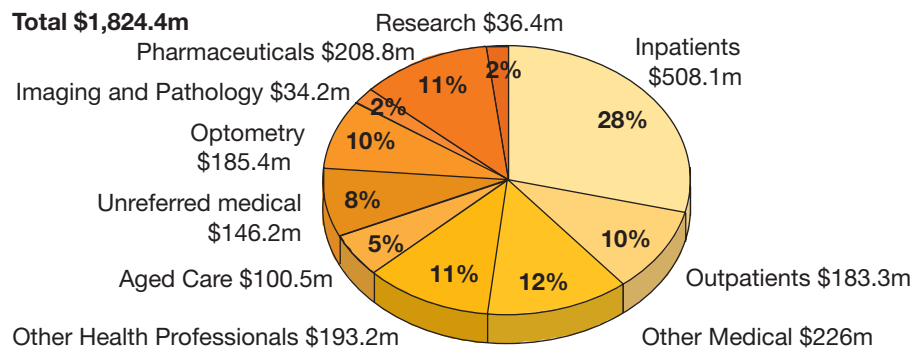


Direct health costs

The direct health costs of treating eye disease are extremely large - \$1.8 billion in 2004.

Costs in 2004 for all disorders of the eye and adnexa are estimated to \$1,824.4m - more than twice the 1993-94 costs.

Figure: 2-4: Direct health cost of diseases of the eye, 2004, \$m, by cost type



Hospital costs have grown substantially in dollar terms, to total \$692.0m, and remain the largest cost item.

- The relative share of hospital costs in 2004 is 37.9% of total costs.

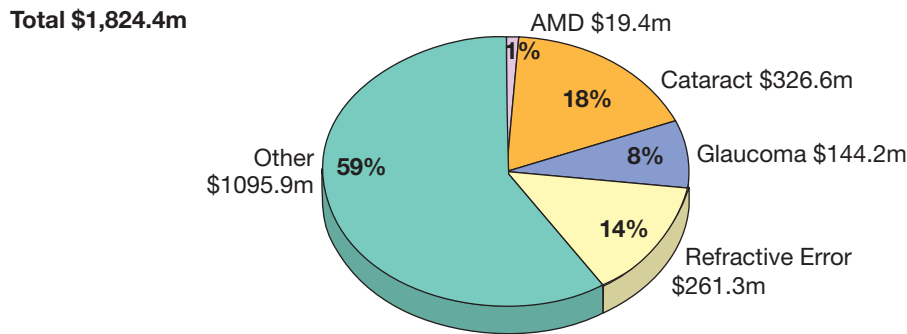
Specialists and other out-of-hospital referred medical costs remain second largest at \$226.0m (12.4%).

- The share of pharmaceutical costs has increased to 11.4% of the total (\$208.8m) and of “other health practitioners” to 10.6% (\$193.2m).

Direct health costs

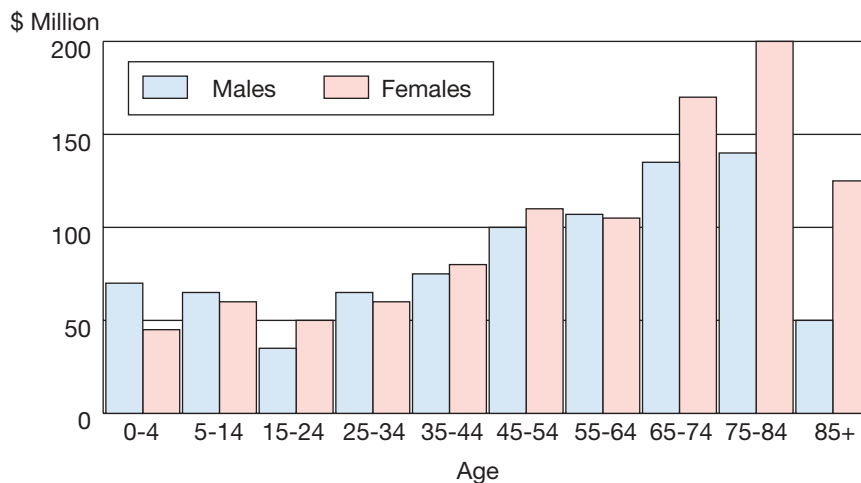
Cataract is the largest single direct health cost condition - \$327 million or 18% of the total.

Figure 2-5: Cost of diseases of the eye, 2004, \$m, by condition



Women aged over 75 are the largest age-gender group. They currently receive \$319m or around \$1 of every \$5.70 spent on eye care.

Figure 2-6: Cost of diseases of the eye, 2004, \$m, by age and gender



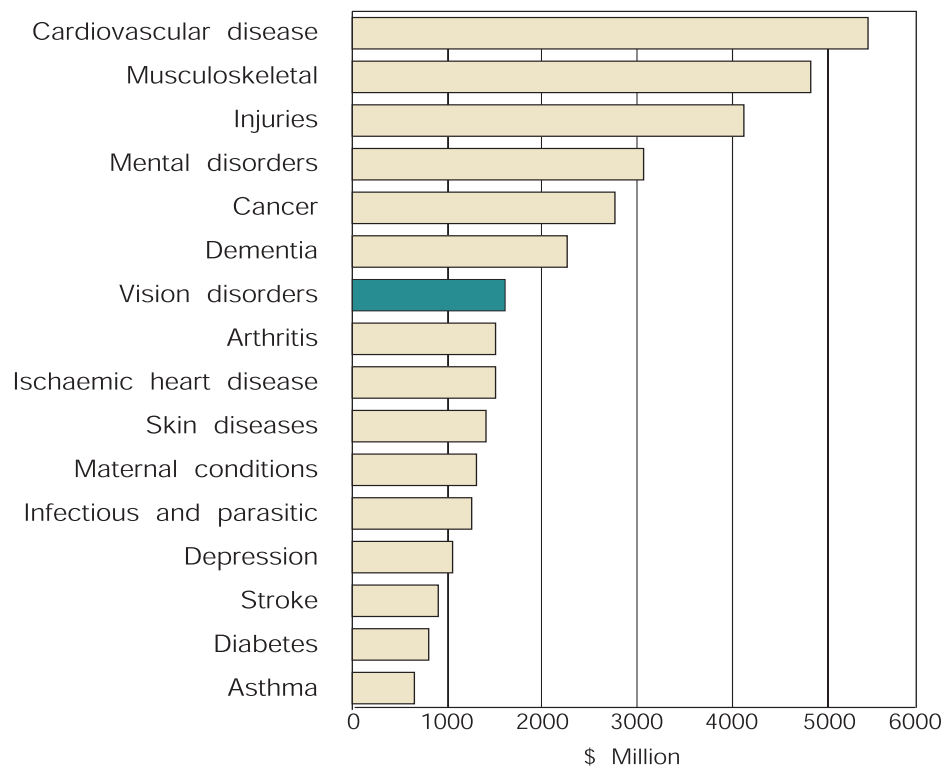
Average health spending on eye care for people over 40 with visual impairment increased to \$2,762 in 2004, compared with \$1,847 in 1993-94.



The direct costs for vision disorders are more than the cost of coronary heart disease, stroke, arthritis or depression.

Spending on vision disorders is more than health spending on two National Health Priority areas - diabetes and asthma - combined.

Figure 2-12: Health cost comparison, national priorities and other, 2000-01, \$m



Spending on eye health research is estimated to have fallen from 2.6% of the total (\$22.1m) in 1993-94 dollars to 2.0% (\$36.4m) in 2004 dollars.

- Public sector research for vision, hearing and speech has fallen steadily from 3.7% of total public sector health R&D spending in 1992-93 to 2.7% by 2000-01 (Access Economics Pty Limited, 2003). Public funding is about 65% of total funding for vision R&D (i.e. twice the private sector), and includes NHMRC grants for 59 vision-related R&D projects in 2002 worth \$7.6 million, the Vision Cooperative Research Centre Grant (CRC) from 2003 of \$A32 million over seven years, and various other smaller University and State/Territory-funded projects.
- In comparison in 2003 the United States, the National Eye Institute (NEI) alone spent US\$653 million on eye R&D <www.eyeresearch.org/naevr/advances.html> for June 2004. In comparison, in 2003 the NHMRC spent AU\$7.6 million on eye R&D, converting to Australian dollars at purchasing power parity, this suggests over 19 times per capita spending by the NEI on vision R&D compared to the NHMRC. If the NEI expenditure were the total US government expenditure, the US would still exceed the Australian spending of eye-related R&D 8 to 1.

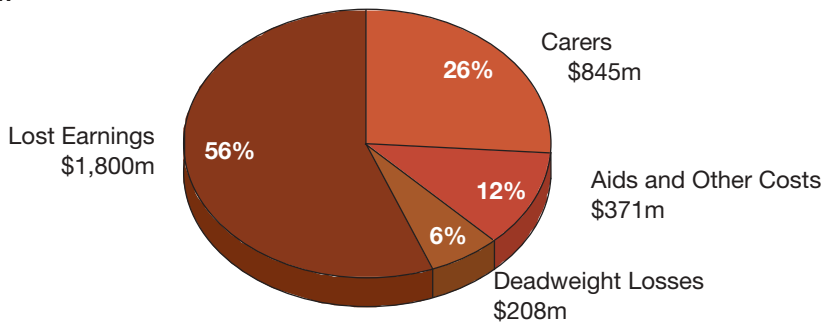
Indirect costs

Even more important are the indirect costs of visual impairment, which are almost twice the direct health costs. Indirect financial costs add another \$3.2 billion to the annual bill for visual impairment.

- Lost earnings for visually impaired and blind people are estimated to cost the economy nearly \$1.8 billion in 2004.
- The cost of carers, including their lost productivity (earnings), is estimated as \$845 million.
- Aids, equipment, home modifications and other indirect costs are estimated as \$371 million.
- Deadweight losses associated with transfer payments (taxation revenue foregone and welfare payments), are estimated as \$208 million.
 - The transfers themselves sum to \$850 million, but are not real economic costs, so are not included in totals.

Figure: Indirect costs of visual impairment

Total \$3.2bn



Visual impairment has significant socio-economic costs.

Data show a higher use of social services and admission to nursing homes for people with visual impairment.

The indirect costs to the community of visual impairment are \$3.2 billion.



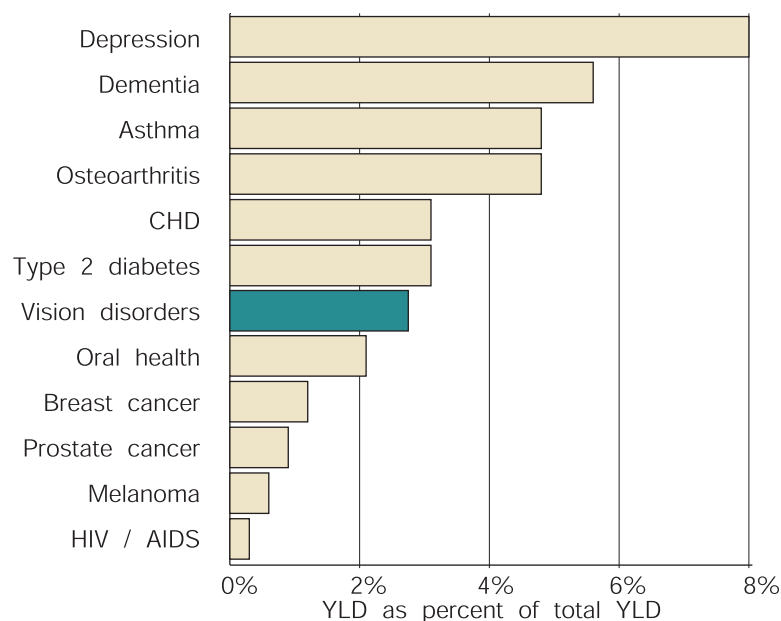
Visual impairment and blindness impose substantial morbidity and premature mortality on the population.

The suffering and premature death associated with visual impairment are estimated to impose a further massive \$4.8 billion - the value of the loss of healthy life, after netting out other costs borne by the visually impaired.

- These calculations are based on attributing the value of a “statistical life” as \$3.7 million. This places a discounted (at 3.3%) life year value at just over \$160,000.
- Sensitivity analysis to these assumptions puts the range from \$3.2 billion to \$9.9 billion.
- In terms of disability adjusted life years, the burden of disease for visual disorders is over 40,000 DALYs in 2004, including an estimate for diabetic retinopathy.

The years of life lost due to disability (YLD) from visual disorders is 2.7% of the national total, similar to that of diabetes and coronary heart disease and significantly greater than the disability burden for breast cancer, prostate cancer, melanoma or HIV/AIDS.

Figure 3-1: Comparison of YLD burden



Cost of suffering

Blindness and cancer are the two most feared health conditions. One third of people list blindness as most feared, one third of people list cancer as most feared, and one third of people list other conditions.

- Of the 70,688 visually impaired Australians who die in 2004, 584 deaths are estimated to result from the visual impairment (an “attributable fraction” for mortality of 0.83%).
- Socio-economic impacts include lower employment rates, higher use of services, social isolation, emotional distress and an earlier need for nursing home care.

Visual impairment prevents healthy and independent ageing. It is associated with the following:

- **Risk of falls increased two times**
- **Risk of depression increased three times**
- **Risk of hip fractures increased four to eight times**

- **Admission to nursing homes three years early**
- **Social dependence increased two times**
- **Social independence decreased two times**

There are well established correlations between visual impairment and higher risk of falls, hip fractures and depression.



Frequency and causes of vision loss

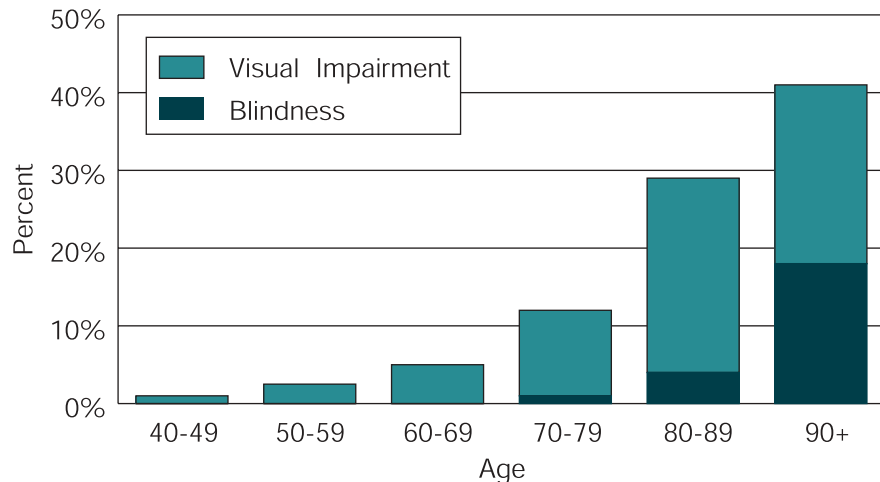
Nearly half a million Australians have impaired vision.

Visual impairment is a huge and overlooked problem in Australia.

Over 480,000 Australians are visually impaired in both eyes (visual acuity <6/12) and over 50,000 of these people are blind (visual acuity <6/60 or visual field <10° diameter).

Nearly 300,000 Australians have visual impairment because of under-corrected refractive error. However, 180,000 Australians have visual impairment due to other causes that cannot be corrected by spectacles.

Figure 1-5: Visual impairment and blindness, % agegroup, Australia, 2004



The prevalence of vision loss trebles with each decade over the age of 40.



Frequency and causes of vision loss

Three quarters of visual impairment and blindness is caused by just 5 conditions:

- **Age-related Macular Degeneration (AMD)**
- **Cataract**
- **Diabetic eye disease**
- **Glaucoma**
- **Uncorrected refractive error**

Figure 1-7: Visual impairment by cause in over-40s, Australia, 2004

Total 480,257

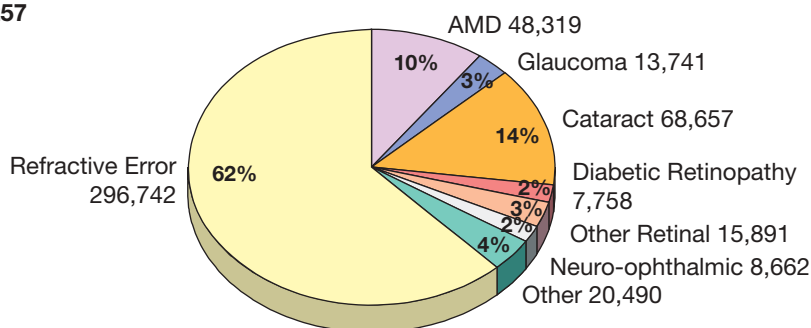
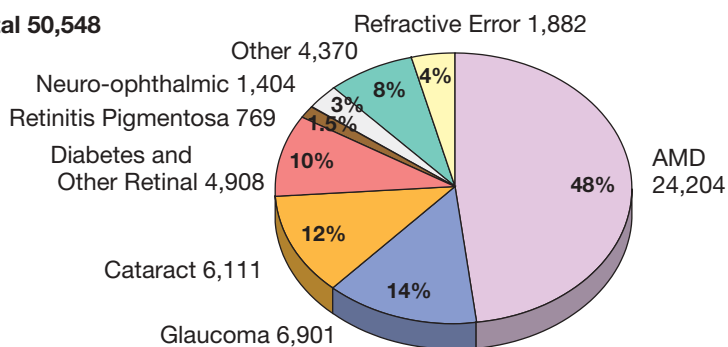


Figure 1-9: Blindness by cause in over-40s, Australia, 2004

Total 50,548



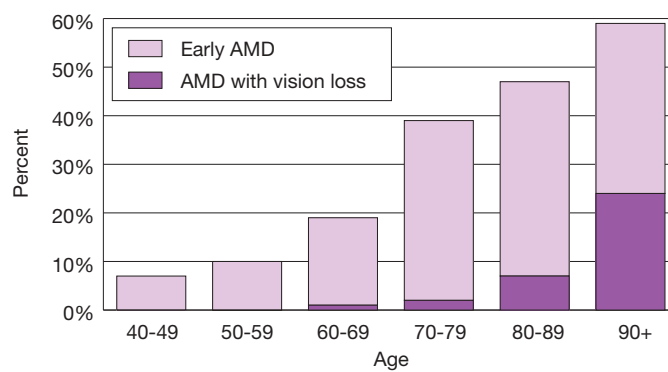
Frequency and causes of vision loss

AMD has a strong family link and cigarette smokers have three times the risk.

Age-related Macular Degeneration (AMD)

AMD is the leading cause of blindness and nearly one person in four who live into their nineties will eventually lose vision from it.

Figure 1-4: Demographic distribution of AMD, Australians over 40

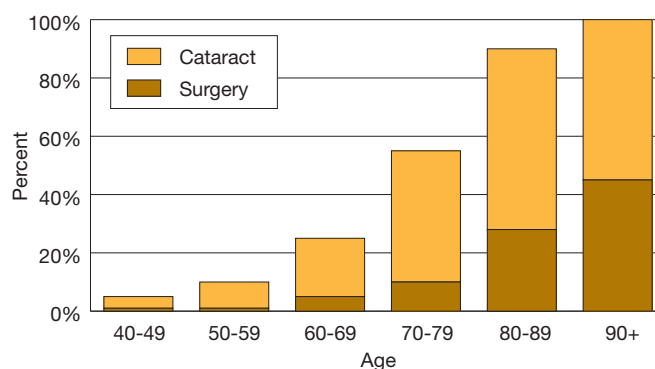


Everyone will develop cataract if they live long enough.

Cataract

Cataract is most common of all elective surgery procedures and the eye condition responsible for the largest single direct health cost. However, cataract surgery is one of the most cost effective operations.

Figure 1-1: Demographic distribution of cataract, Australians over 40



Cigarette smoking and UV exposure increase the risk of developing cataracts.

Vision loss from diabetes can be prevented.

Diabetic Eye Disease

Almost all this vision loss can be prevented by timely treatment. Regular eye exams every 2 years are needed to detect those in need of treatment. Only half those with diabetes have these 2 yearly exams, and one third have never been examined.

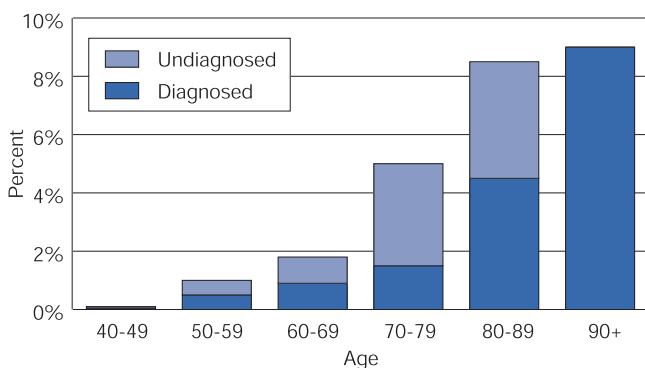


Frequency and causes of vision loss

Glaucoma

Early diagnosis and treatment are important to control glaucoma and protect sight. Half those with glaucoma are undiagnosed and therefore untreated.

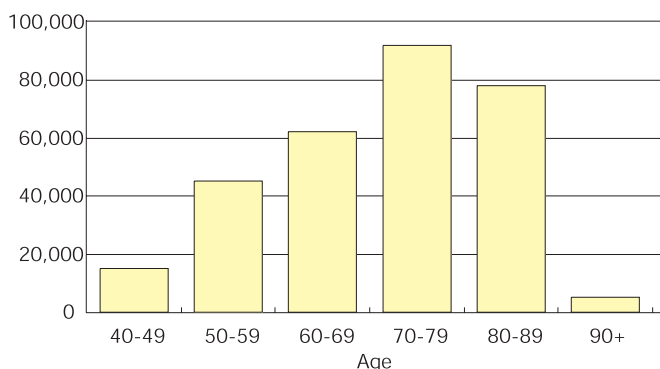
Figure 1-3: Demographic distribution of Glaucoma, Australians over 40



Refractive Error

Over half of those who present with visual impairment could have their vision improved with the correct glasses.

Figure 1-6: Visual impairment due to uncorrected refractive error by age, estimated numbers, Australia, 2004



One person in 11 will develop glaucoma if they live long enough. A family history increases risk at least 4 times.

Visual impairment from refractive error can be eliminated immediately with new glasses.



Projected changes

By 2024 the number of Australians with visual impairment or blindness may increase to nearly 800,000.

The major eye conditions are all highly age-correlated and so visual impairment is projected to increase from 5.4% of the over-40 population today to 6.5% - nearly 800,000 people - by 2024. In addition, blindness is set to increase by 73% over the next two decades to more than 87,000 people over 40.

Figure 1-10: Prevalence of visual impairment and blindness, Australia, 2004-2024

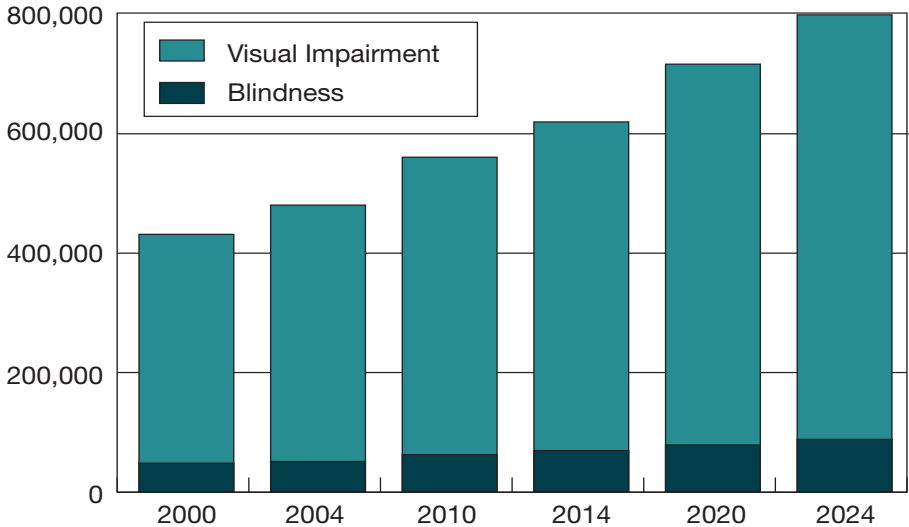
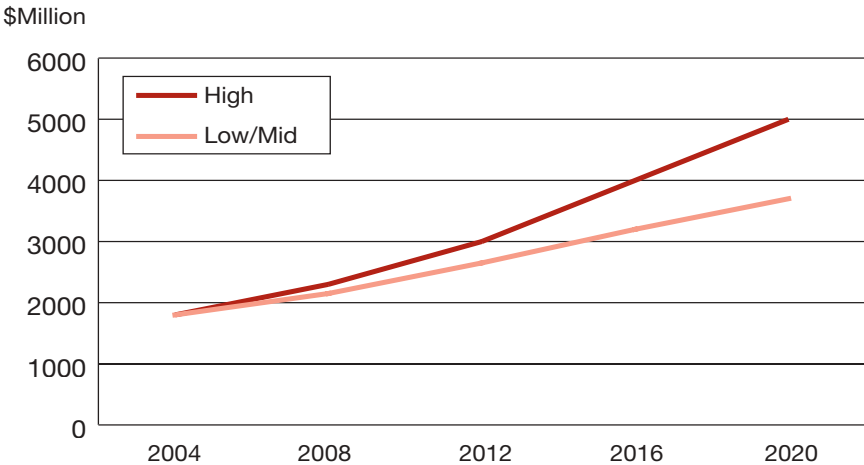


Figure 2-8: Projections of health expenditure for eye care, 2004-2020, \$m



By 2020, direct health costs are conservatively projected to more than double again to \$3.7 billion, primarily due to demographic ageing.



Projected changes

- By the end of next decade, hospital costs for eye care will reach \$1.45 billion, cataract will cost \$668 million per annum, and more than \$1 in every \$2 spent on eye care will be spent on Australians aged 65 and over.
- International comparisons demonstrate similar trends in the US and UK.

Costs of eye care will continue to increase faster than the population because of the increasing proportion of older people.

Figure 2-9: Projections, by type of cost and scenario, 2004-2020, \$m

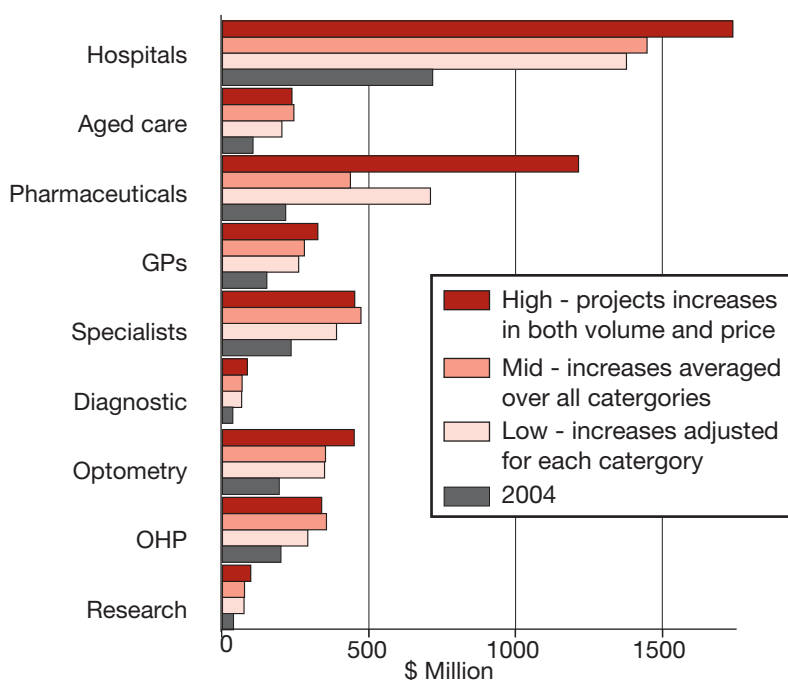
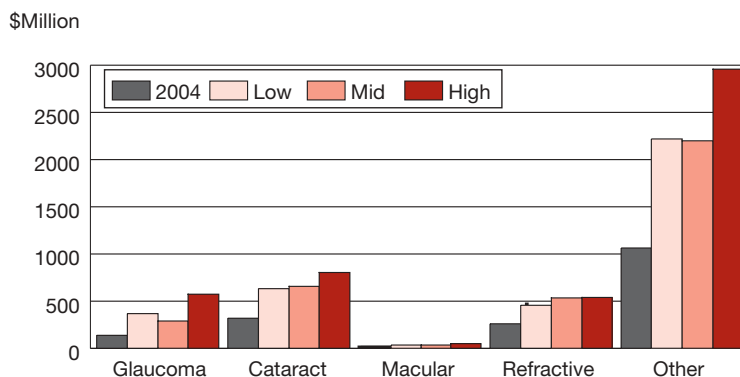


Figure 2-11: Projections, by eye disorder and scenario, 2004-2020, \$m



What needs to be done

Three quarters of visual impairment is unnecessary. It can be either prevented or treated.

Prevention is often more cost-effective than treatment.

Australia needs to take vision loss seriously. Blindness and vision loss have huge and broad-ranging impacts on our society. Much blindness and vision loss can be prevented or treated with cost effective measures.

- Australia has good primary, secondary and tertiary eye care services.
- It also has some of the best data in the world on the distribution and impact of visual impairment from the Centre for Eye Research Australia's Melbourne Vision Impairment Project (VIP) and from other studies. These data reveal looming issues of demographic ageing.

Eye care has a range of proven, low risk, high success and cost effective interventions. In Australia interventions are considered to be cost-effective by the World Bank if they are under AU\$112,000 per QALY (quality adjusted life year).

- Cataract surgery for the first eye at US\$2,020/QALY or the second eye at US\$2,727 is also highly cost effective.
- Regular retinal photographic screening for diabetic retinopathy costs only US\$15,000/QALY even in rural and remote areas.
- US cost effectiveness analysis shows that laser therapies generally cost under US\$20,000 per QALY and most forms are well under US\$10,000.



A call to action

Now is the time to act on the state of vision loss in Australia. To reverse the projected prevalence, cost and burden of this mainly preventable condition, the following must occur:

Appropriately resourced, long-term eye health promotion initiatives to reduce avoidable vision loss.

Adequate funding for eye care services for treatable conditions and for low vision support services.

A substantial increase in research into causes of vision loss and blindness that cannot be prevented or treated at present.

For further information on how you can make a difference to reducing the incidence of vision loss in the Australian community, please contact the Centre for Eye Research Australia. Contact details on back cover.





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