

What is low vision?

An individual with low vision experiences difficulty with everyday tasks even when they use glasses, contact lenses, medicine, or have had surgery to correct the problem.¹ The term indicates that an individual is not blind, but has vision less than normal. Blindness ($\leq 20/200$) is total vision loss, having no light perception or very little so that they must rely mainly on other senses or *vision substitution skills*.² Currently, about 314 million people worldwide have low vision, 45 million of whom are blind.³ In Los Angeles County about 88,000 people, 40 years and older have low vision and 64,000 are blind (Figure 1).⁴ If the prevalence of eye diseases which cause low vision stays the same, the number of people with low vision is expected to increase about 20% to over 106,000 by 2030. This is primarily a consequence of many more baby boomers (those born between 1946 and 1964) turning age 65 and older.

What are the leading causes of low vision and blindness?

Cataracts, diabetic retinopathy, glaucoma, and advanced age-related macular degeneration (AMD) are the most common causes of low vision and related complications among adults aged 40 years and older in the United States (U.S.). Box 1 shows common visual field deficits. Many of these largely preventable causes are affecting millions of middle-aged and older adults. For instance, among individuals 40 years and older, cataracts affect about 20.5 million people, while diabetic retinopathy, glaucoma, and advanced age-related macular degeneration affect 4.1 million, 2.2 million, and 1.8 million people respectively (Figure 2).⁵ Early detection and management of these conditions can substantially reduce the risk for low vision or blindness. Effective treatments are available for some of these conditions. For example, proper blood sugar control can help prevent diabetic retinopathy, and corrective surgery is available for treatment of cataracts.

Box 1. Visual Field Deficits What the Visual Field Looks Like in Late-stage Eye Disease



Diabetic Retinopathy



Glaucoma

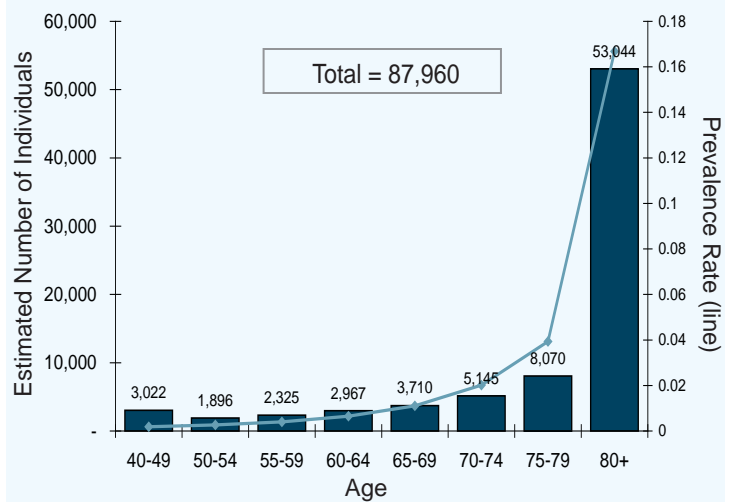


Macular Degeneration



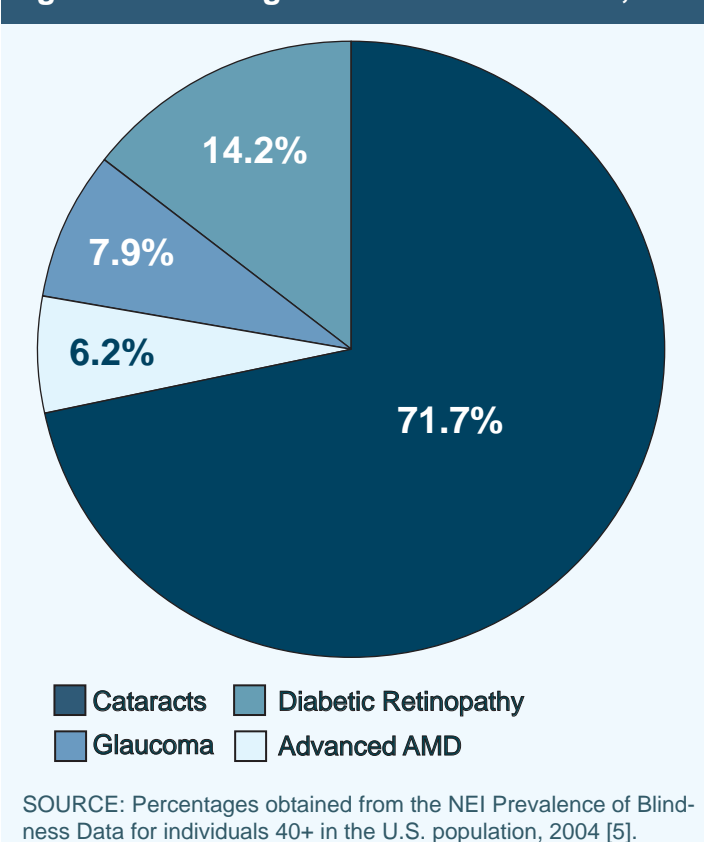
Detached Retina

Figure 1. Estimated Number of Individuals with Low Vision, by Age in Los Angeles County*



*Calculations based on prevalence estimates for the U.S. population from the Eye Diseases Prevalence Research Group, published in Archives of Ophthalmology, 2004. [4]

Figure 2. Leading Causes of Low Vision, U.S.



- Other direct costs: nursing home care, guide dogs, and government programs aimed to help those with low vision (e.g., Department of Education’s Independent Living Services for Older Individuals Who are Blind; American Printing House for the Blind).
- Lost productivity: costs associated with lower numbers of people with low vision in the labor force and the low wages they experience compared to those without low vision.

What can be done in Los Angeles County?

While national and statewide data are available for the number of individuals affected by low vision and blindness, data for Los Angeles County is lacking. Currently, only two population-based studies have analyzed trends on the prevalence of low vision and blindness in LA County; both are studies of Latinos 40 years and older.^{8,9} Further research is needed to more accurately characterize the burden of eye diseases in this county. Moreover, broader outreach to promote awareness of low vision and a better understanding of the needs of people with visual impairment, including driving safety, are needed to help local jurisdictions plan services for this growing group of individuals.

What are the social effects of low vision?

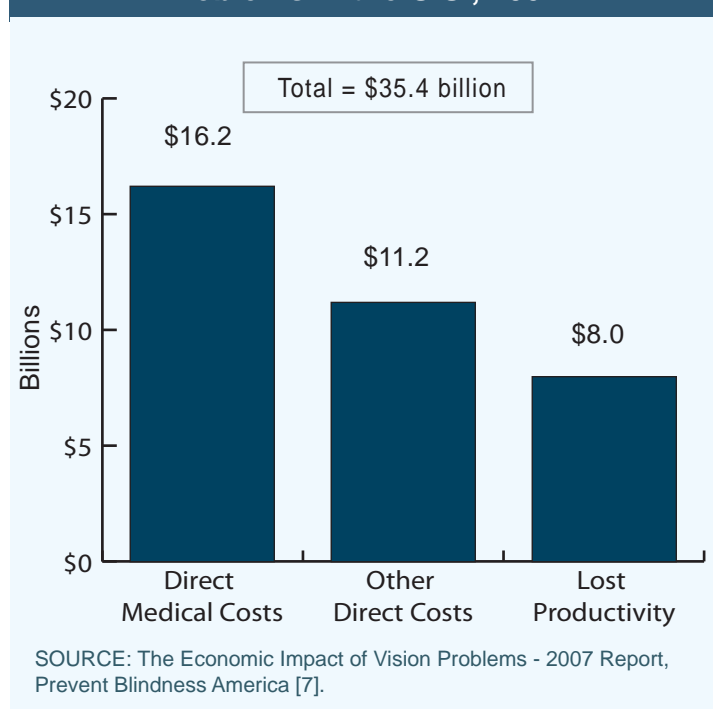
The social impact of low vision and blindness can be substantial. Among those experiencing vision loss, considerable psychosocial and functional consequences can occur including social isolation, diminished productivity, functional disability, and a loss in quality of life. Depression, for instance, is a condition highly prevalent among people with vision loss.⁶

What is the economic impact of low vision?

The Centers for Disease Control and Prevention (CDC) and Prevent Blindness America estimate the total financial burden to the U.S. economy of the four common causes of low vision (AMD, cataract, diabetic retinopathy, and glaucoma) along with other causes of refractive error is \$35.4 billion.⁷ Figure 3 breaks down the costs by category, which include:

- Direct medical costs: outpatient/inpatient services, prescription drugs, and vitamins.

Figure 3. Economic Impact of Vision Problems in the U.S., 2007



Box 2. Did You Know?

- Approximately 1 in 28 Americans, age 40 years and older, are affected by low vision or blindness.¹⁰
- The number of Americans experiencing blindness, aged 40 years and older, is projected to increase by 70%, from 937,000 in 2000 to 1.6 million by 2020.¹⁰
- In the United States, blindness follows only cancer and AIDS as the biggest health outcome feared by the public.¹¹
- Only 1 in 3 visually impaired people of employment age are in the workforce.¹¹
- About 61 million adults in the U.S. are at high risk for serious vision loss, but only half have visited an eye doctor in the past 12 months.¹²

What individuals, health professionals, policy makers, and public service agencies can do

Individuals and families

- Reduce potential risk. Research suggests that prevention and early detection can help to reduce the risk and severity of low vision. These practices include proper nutrition, eliminating tobacco use, obtaining dilated eye exams on time, and visiting your eye doctor if any signs and symptoms of vision loss develop.
- Increase safety and ease of living by seeking help (e.g., rehabilitation services, support groups, transportation options, and accommodations, such as large-print clocks, walking sticks, use of high-contrast colors, and other aids).

Health professionals and other care managers

- Improve coordination of care between primary care physicians, optometrists, and ophthalmologists.
- Early referrals of low vision patients to rehabilitation programs when needed (e.g., Braille Institute Life Skills Curriculum program).

Braille Institute®

Braille Institute is a nonprofit organization whose mission is to eliminate barriers to a fulfilling life caused by blindness and severe sight loss. The Institute provides an environment of hope and encouragement for people who are blind and visually impaired through integrated educational, social, and recreational programs and services. Assistance is provided at five regional centers throughout Southern California and through more than 350 community outreach locations. Each year the Institute provides services to more than 75,000 people.

Solutions in Sight

In celebration of its 90th anniversary in 2010, Braille Institute launched its most ambitious public outreach campaign yet. The campaign, *Solutions in Sight™*, aims to change the way the public views services for people with vision loss. By delving beneath the stereotypes and stigma, the campaign sheds new light on the practical methods people with visual impairments can learn to help them lead productive lives—and how Braille Institute can help.

Organized around various lifestyle themes that highlight the possibilities of living a fulfilling life with low vision, the goal of the campaign is to reach out to people experiencing vision loss, as well as their families, friends, and caregivers. Throughout the year, Braille Institute will host classes, seminars, and events that focus on topics of interest. For more information about *Solutions in Sight* or the Braille Institute please visit: www.solutionsinsight.org or call 1-800-BRAILLE, 1-800-272-4553.

Medical educators

- Develop and require a vision care continuum training module as part of undergraduate medical education during both pre-clinical and clinical years.
- Educate all residents about the vision care continuum, which includes prevention, screening, treatment, and rehabilitation.
- Advocate for continual training in the vision care continuum as a Continuing Medical Education (CME) requirement for licensing, credentialing, and specialty board certification purposes.

Decision-makers in transportation and technology *Transportation*

- Through policies, increase overall safety by removing obstacles; fixing uneven pavement; trimming low tree branches; and increasing the visibility of signs through larger fonts, use of contrasting colors, better lighting, and audio options.
- Educate transportation providers, including taxi drivers, Metro operators, and bus drivers about low vision accommodations such as guide dogs, white canes, and identification cards for individuals who are legally blind.
- Promote greater awareness of low vision and its impact on driving safety by offering pamphlets and other educational information on vision screening and correction at the Department of Motor Vehicles, as part of the driver's license renewal process.

Improving Access to Assistive Technology (AT)

- Provide resources to employers about how to accommodate low vision employees (Americans with Disabilities Act (ADA) guidelines).
- Advocate for state and federal incentives that support employers in making accommodations for employees with low vision (e.g., training on assistive technology, software improvements, and purchasing hardware in support of low vision accommodation).
- Provide resources to produce materials in alternative formats (i.e., braille, large font, audio materials, web sites with text only option



and minimal graphics) and tools to utilize formats otherwise inaccessible to people with low vision (i.e., magnifying glasses, screens that enlarge text).

- Increase knowledge of how simple and inexpensive it is to comply with the ADA guidelines.

Definitions

1. **Age-related macular degeneration (AMD)** is caused by damage to the macula, the small part of the retina that gives sharp, straight-on vision.
2. **Diabetic retinopathy** is caused by the breakage of tiny blood vessels in the retina, resulting in hemorrhages on or in the retina. Remaining vision may be blurred or distorted.
3. **Glaucoma** is a condition in which the fluid pressure inside the eye is too high, causing damage to the optic nerve. If left untreated, vision around the edge of the eye becomes increasingly restricted, narrowing the field of vision.
4. A **cataract** is a clouding of the lens in the eye. If a cataract begins to cause vision loss that interferes with important activities, it can easily be surgically removed and an artificial lens can be implanted in its place.
5. **Functional vision** is used to describe vision loss in terms of the individual's abilities, specifically their activities of daily living (ADLs)

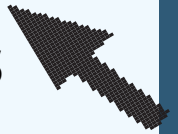
such as reading, getting dressed, orientation, and mobility. This term applies to the individual and should not be applied to one eye or the other.²

6. **Visual impairment** is a term that defines vision loss in terms of organ functions, such as visual acuity loss or visual field loss. An individual can have a visual impairment in one eye, while the other eye is normal.²
7. **Vision substitution skills** refer to the use of senses other than vision (e.g., hearing).

REFERENCES

1. National Eye Institute, National Institutes of Health, NIH publication No. 99-4672. Available online at: <http://www.nei.nih.gov/health/lowvision/LowVisPatBro2.pdf>. Accessed on January 15, 2010.
2. International Council of Ophthalmology. Visual Standards - Aspects and Ranges of Vision Loss. ICO report. Sydney, April 2002.
3. Visual impairment and blindness, fact sheet N°282, May 2009. World Health Organization.
4. Conservative estimates calculated by using the California Department of Finance population data (2008) and applying prevalence rates from The Eye Diseases Prevalence Research Group. Causes and Prevalence of Visual Impairment Among Adults in the United States. *Arch Ophthalmol*. 2004; 122:477-485.
5. NEI Statistics and Data, Prevalence of Blindness Data Tables.
6. Rovner BW, Ganguli M. (1998) Depression and disability associated with impaired vision: The MoVIES Project. *J Am Geriatr Soc* 46:617-19.
7. Prevent Blindness America Report 2007: The Economic Impact of Vision Problems: The toll of major adult eye disorders, visual impairment and blindness on the U.S. economy.
8. Varma R, Ying-Lai M, Klein R, Azen SP. (2004) Prevalence and risk indicators of visual impairment and blindness in Latinos: The Los Angeles Latino Eye Study. *Ophthalmology* 111:1132-40.
9. Globe DR, Wu J, Azen SP, Varma R. (2004) The impact of vision impairment on self-reported visual functioning in Latinos: The Los Angeles Latino Eye Study. *Ophthalmology* 111:1141-49.
10. The Eye Diseases Prevalence Research Group. Causes and Prevalence of Visual Impairment Among Adults in the United States. *Arch Ophthalmol*. 2004; 122:477-485.
11. Braille Institute Facts, 2009: Facts about sight loss and definitions of blindness. Available at: brailleinstitute.org/facts_about_sight_loss. Accessed on January 12, 2010.
12. Vision Health Initiative Facts, Centers for Disease Control and Prevention, November 2009. Available online at: http://www.cdc.gov/visionhealth/basic_information/fast_facts.htm Accessed on January 29, 2010.

ONLINE RESOURCES



The **National Eye Institute (NEI)** is part of the federal government's National Institutes of Health (NIH). Their mission is to "conduct and support research, training, health information dissemination, and other programs with respect to blinding eye diseases, visual disorders, mechanisms of visual function, preservation of sight, and the special health problems and requirements of the blind."

www.nei.nih.gov

The **California Department of Motor Vehicles** offers a *Senior Driver Web* site that provides online assessments and guides on how to maintain your driving independence.

www.dmv.ca.gov/about/senior/senior_top.htm

AARP (formally known as the American Association of Retired Persons), **AAA** (American Automobile Association), and the **American Occupational Therapy Association** have joined together to offer an educational program created by the **American Society on Aging** that offers older adults the opportunity to find out how well they currently fit their personal vehicle, actions they can take to improve their fit, and education about driver safety and community mobility.

www.car-fit.org

The **American Diabetes Association** is an organization working to fight the deadly consequences of diabetes and to help those affected. www.diabetes.org

Braille Institute of America, Inc.

Anita Wright
Los Angeles Regional Director

Adama Dyoniziak, MPH, CPH
Director of Strategic Programs

Courtney Kassel
Director of Marketing and Public Relations

Bill Takeshita, F.A.A.O., F.C.O.V.D.
*Consulting Director of Low Vision Services and Training
Adjunct Professor, Southern California College of Optometry*

Writing, Editing, and Layout
Office of Senior Health
Los Angeles County Department of Public Health

Patricia L. Cummings, MPH
Research Analyst

Gloria Y. Kim, MPH
Research Analyst

Kristin Moschetti
Research Assistant

Dior Hildebrand, RN, PHN
Chief, Policy & Outreach

Tony Kuo, MD, MSHS
Director

Suggested Citation

Low Vision and Blindness Among Adults in Los Angeles County. Office of Senior Health and Braille Institute, February 2010.

Contact Information

Los Angeles Sight Center
Braille Institute
741 North Vermont Avenue
Los Angeles, California 90029
Web: www.brailleinstitute.org
E-mail: la@brailleinstitute.org



*Empowering visually impaired
people to live fulfilling lives*