

# Vision Problems in the U.S.

Prevalence of Adult Vision Impairment and Age-Related Eye Disease in America





Founded in 1908, PREVENT BLINDNESS AMERICA is the nation's leading volunteer eye health and safety organization dedicated to fighting blindness and saving sight. Focused on promoting a continuum of vision care, PREVENT BLINDNESS AMERICA touches the lives of millions of people each year through public and professional education, community and patient service programs and research.

These services are made possible through the generous support of the American public. Together with a network of affiliates, divisions and chapters, it is committed to eliminating preventable blindness in America.



The National Eye Institute (NEI), a component of the National Institutes of Health (NIH), supports and conducts research aimed at improving the prevention, treatment, and rehabilitation of diseases that affect the eye and vision. The NIH, a Federal government agency, is part of the U.S. Department of Health and Human Services. Research is conducted on the NIH campus in Bethesda, Maryland, and at universities, medical schools, hospitals, and other institutions throughout the United States and abroad.

## **Glaucoma**

Glaucoma is a disease that causes a gradual degeneration of cells that make up the optic nerve which carries visual information from the eye to the brain. As the nerve cells die, vision is slowly lost, usually beginning in the periphery. Often, the loss of vision is unnoticeable until a significant amount of nerve damage has occurred. For this reason, as many as half of all people with glaucoma may be unaware of their disease.

The exact cause of primary open-angle glaucoma, the most common form of the disease, is uncertain. Other forms of glaucoma (such as angle-closure, secondary and congenital glaucoma) occur in relation to specific physical causes.

Elevated fluid pressure within the eye (intraocular pressure) seems related in some way to all cases of glaucoma. The majority of cases of glaucoma exhibit intraocular pressure outside normal limits at some time. However, even those cases with apparently normal pressure seem to benefit from treatment aimed at lowering pressure.

Most cases of glaucoma can be controlled and vision loss slowed or halted by treatment. Medications, laser treatments and surgery can be used to lower intraocular pressure. However, any vision lost to glaucoma cannot be restored.

Unfortunately, glaucoma cannot be prevented. Factors that increase the risk of glaucoma include age, race, diabetes, eye trauma, and long-term use of steroid medications.

Glaucoma is traditionally defined by a triad of signs, including the presence of at least two of the following: elevated intraocular pressure, optic disc cupping, and visual field loss. However, case definitions used in the various epidemiologic studies of the disease have differed on specific criteria. Only cases of primary open-angle glaucoma that had clear signs of optic nerve head damage and/or reproducible visual field loss (definite open angle glaucoma) are included in the prevalence estimates.

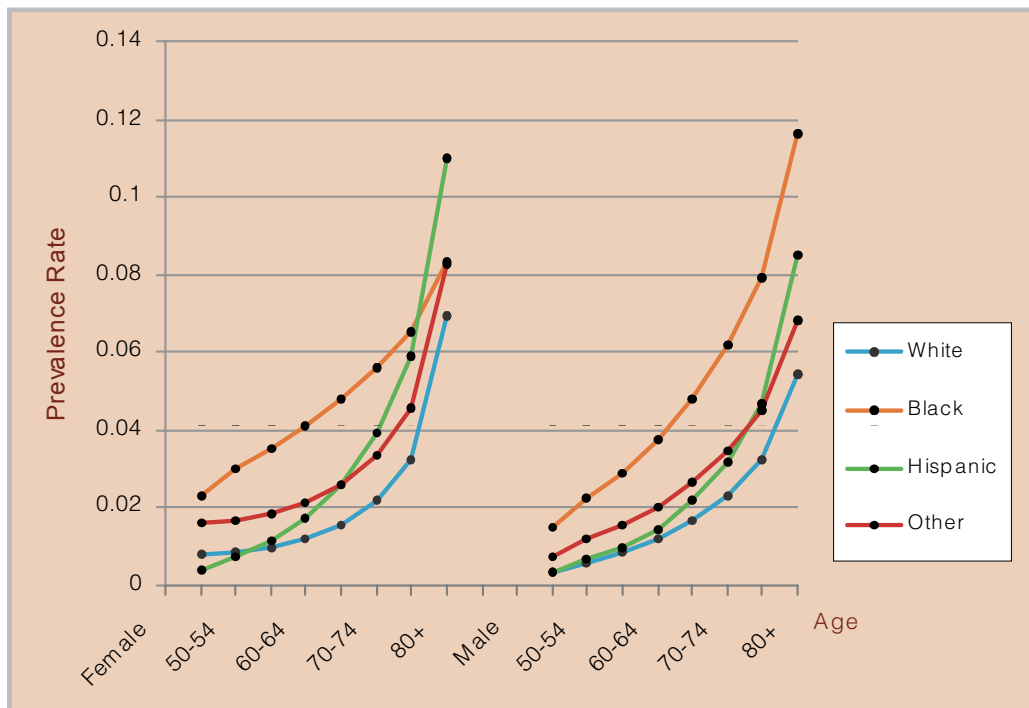
The table on pages 32 and 33 lists state-by-state prevalence estimates for glaucoma by race and sex. Glaucoma affects more than 2.2 million Americans age 40 and older, or about 1.9% of this population. Glaucoma prevalence is

clearly related to age and race (see chart below). In general, glaucoma is more common in Blacks, Hispanics and with increasing age.

In the 65-69 age group, the prevalence rate for White females is about 1.6%, while in Black females, the rate is three times higher at 4.8%. For those age 80 and older, glaucoma affects more than 10% of Black men and Hispanic women.

Glaucoma appears to be more common initially in women, but by age 65, prevalence becomes more comparable between the sexes.

### Estimated Specific Prevalence Rates for Open-Angle Glaucoma



## Estimated Number of Cases of Definite Primary Open Angle Glaucoma in the U.S. Population Age 40 and Older by State, Race and Sex

State	Total	Female	Male	White	Black	Hispanic	Other
<b>Total U.S.</b>	2,227,485	1,417,504	809,981	1,566,362	409,643	131,654	119,826
Alabama	40,012	25,414	14,597	24,165	14,973	244	629
Alaska	2,969	1,749	1,219	1,881	160	55	873
Arizona	36,573	22,416	14,157	28,471	1,550	4,191	2,360
Arkansas	22,925	14,527	8,398	17,155	5,094	189	487
California	238,657	149,449	89,208	136,639	27,072	36,306	38,640
Colorado	26,604	16,750	9,854	21,163	1,660	2,651	1,130
Connecticut	28,754	18,739	10,015	23,558	3,357	986	853
Delaware	6,473	4,063	2,410	4,493	1,716	92	172
District of Columbia	7,324	4,556	2,768	1,120	5,848	159	197
Florida	160,023	99,343	60,680	111,520	25,146	19,481	3,877
Georgia	61,197	38,906	22,292	34,163	24,708	770	1,557
Hawaii	11,648	6,973	4,676	2,019	114	295	9,220
Idaho	8,286	5,146	3,140	7,752	31	214	289
Illinois	99,233	63,885	35,349	68,682	22,646	3,961	3,945
Indiana	45,396	29,266	16,131	37,977	6,091	590	738
Iowa	24,543	16,205	8,338	23,473	559	194	317
Kansas	21,216	13,811	7,405	18,394	1,717	499	606
Kentucky	29,898	19,270	10,627	25,602	3,641	180	474
Louisiana	38,848	24,394	14,454	20,370	17,050	617	810
Maine	10,132	6,577	3,554	9,884	46	34	167
Maryland	45,748	28,859	16,889	25,285	17,649	719	2,095
Massachusetts	50,900	33,613	17,286	43,896	3,521	1,184	2,299
Michigan	78,257	49,598	28,659	57,952	17,217	986	2,102
Minnesota	35,431	23,001	12,430	32,910	1,128	277	1,116
Mississippi	25,940	16,366	9,574	13,352	12,119	151	318
Missouri	46,076	29,840	16,236	37,084	7,592	398	1,002
Montana	6,887	4,318	2,569	6,387	19	64	417
Nebraska	13,418	8,760	4,659	12,274	684	213	248
Nevada	13,108	7,710	5,398	9,445	1,481	984	1,198
New Hampshire	8,581	5,522	3,059	8,285	70	54	173
New Jersey	71,402	45,929	25,473	49,049	13,806	4,453	4,093
New Mexico	13,185	8,157	5,028	7,145	379	4,368	1,293
New York	162,942	105,723	57,218	103,057	36,337	12,875	10,673
North Carolina	66,184	42,092	24,092	42,082	21,867	570	1,664
North Dakota	5,272	3,404	1,868	5,041	16	21	194
Ohio	91,884	59,072	32,813	72,711	16,706	756	1,712
Oklahoma	27,522	17,637	9,885	21,147	2,895	426	3,053
Oregon	25,540	16,169	9,372	23,002	576	530	1,433
Pennsylvania	110,788	71,919	38,870	91,220	16,210	1,247	2,111
Rhode Island	8,706	5,776	2,930	7,706	415	246	338
South Carolina	35,297	22,176	13,121	19,590	14,977	225	505
South Dakota	6,079	3,940	2,139	5,677	24	32	346
Tennessee	45,393	29,103	16,290	33,371	10,943	287	792
Texas	140,088	88,076	52,012	82,085	26,750	25,964	5,289
Utah	10,997	6,829	4,168	9,904	120	465	508
Vermont	4,473	2,896	1,577	4,337	23	27	87
Virginia	56,296	35,496	20,800	35,520	17,538	840	2,399
Washington	40,915	25,780	15,135	34,333	1,802	931	3,848
West Virginia	15,089	9,716	5,373	13,903	891	73	222
Wisconsin	41,013	26,495	14,518	37,062	2,673	445	834
Wyoming	3,362	2,093	1,269	3,070	35	136	122

White Female	White Male	Black Female	Black Male	Hisp. Female	Hisp. Male	Other Female	Other Male	State
1,014,097	552,265	248,085	161,557	81,089	50,564	74,232	45,595	<b>Total U.S.</b>
15,685	8,480	9,180	5,793	145	99	405	224	Alabama
1,097	784	85	75	32	23	535	338	Alaska
17,557	10,915	847	703	2,519	1,672	1,493	867	Arizona
11,031	6,124	3,084	2,010	104	85	308	179	Arkansas
87,483	49,157	15,822	11,250	22,298	14,008	23,846	14,794	California
13,531	7,632	921	739	1,581	1,070	718	412	Colorado
15,552	8,005	2,054	1,303	611	375	521	332	Connecticut
2,873	1,620	1,030	686	54	38	106	66	Delaware
719	401	3,602	2,246	106	53	130	68	District of Columbia
69,489	42,031	14,994	10,152	12,435	7,045	2,426	1,451	Florida
22,184	11,978	15,319	9,389	429	341	973	583	Georgia
1,185	834	46	68	172	123	5,569	3,651	Hawaii
4,838	2,913	14	18	116	98	178	111	Idaho
45,347	23,335	13,826	8,820	2,276	1,685	2,436	1,509	Illinois
24,843	13,134	3,628	2,463	330	260	465	273	Indiana
15,582	7,891	314	245	111	83	198	119	Iowa
12,143	6,251	999	717	287	212	381	225	Kansas
16,677	8,926	2,187	1,453	106	74	300	174	Kentucky
13,184	7,186	10,316	6,734	395	222	499	311	Louisiana
6,431	3,454	20	25	21	14	106	62	Maine
16,320	8,965	10,786	6,863	458	261	1,294	801	Maryland
29,338	14,558	2,113	1,408	737	447	1,426	873	Massachusetts
37,434	20,517	10,304	6,913	567	420	1,294	808	Michigan
21,529	11,381	620	508	155	122	697	418	Minnesota
8,743	4,609	7,330	4,789	90	61	204	114	Mississippi
24,321	12,763	4,647	2,945	239	159	633	369	Missouri
4,010	2,377	8	11	37	27	262	155	Montana
8,083	4,190	403	281	116	97	157	91	Nebraska
5,573	3,872	821	660	563	421	753	445	Nevada
5,351	2,933	34	36	31	23	106	68	New Hampshire
32,197	16,852	8,446	5,360	2,774	1,679	2,512	1,581	New Jersey
4,477	2,668	202	177	2,659	1,710	820	474	New Mexico
67,929	35,128	22,888	13,449	8,404	4,471	6,502	4,170	New York
27,305	14,778	13,418	8,449	307	262	1,062	602	North Carolina
3,262	1,779	6	9	12	9	123	71	North Dakota
47,522	25,189	10,034	6,672	444	312	1,072	640	Ohio
13,750	7,397	1,708	1,187	241	186	1,938	1,115	Oklahoma
14,670	8,332	310	266	298	232	891	542	Oregon
59,941	31,279	9,936	6,275	740	507	1,302	809	Pennsylvania
5,170	2,536	238	177	156	90	211	127	Rhode Island
12,572	7,018	9,153	5,825	127	98	325	180	South Carolina
3,693	1,984	10	15	19	13	219	127	South Dakota
21,724	11,647	6,713	4,231	165	122	501	291	Tennessee
52,887	29,199	15,994	10,756	15,922	10,042	3,274	2,015	Texas
6,189	3,715	57	63	268	197	314	194	Utah
2,815	1,521	10	12	16	10	54	33	Vermont
22,961	12,559	10,491	7,047	523	317	1,522	877	Virginia
21,869	12,464	954	848	520	411	2,436	1,412	Washington
8,999	4,904	534	357	45	28	137	85	West Virginia
24,109	12,952	1,611	1,062	250	194	524	310	Wisconsin
1,922	1,148	17	18	79	57	75	47	Wyoming