

# Vision Problems in the U.S.

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



2008 Update to the Fourth Edition

## 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.

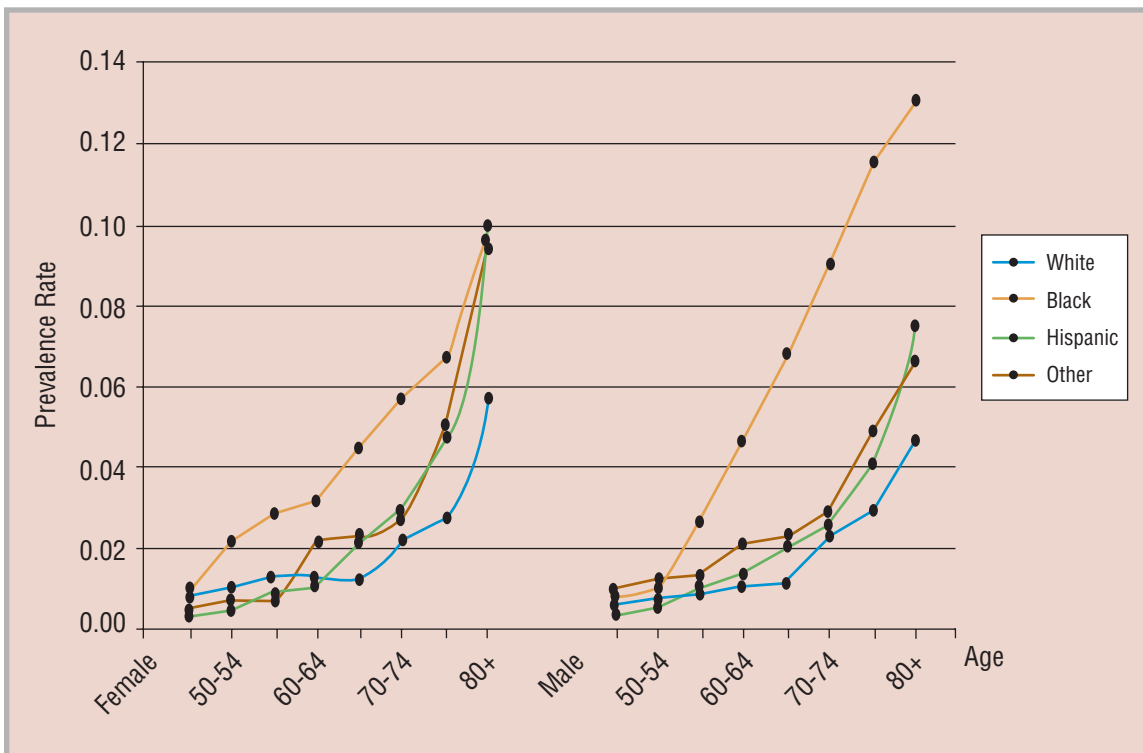
Glaucoma is traditionally defined by a triad of signs, including the presence of at least two of the following: elevated intraocular pressure, optic disc cupping and visual field loss. However, case definitions used in the various epidemiologic studies of the disease have differed on specific criteria. 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 almost 2.3 million Americans age 40 and older, or about 1.9% of this population. Glaucoma prevalence is clearly related to age and race (on p. 31). 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 almost three times higher at 4.6%. 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>	2,290,846	1,388,698	902,148	1,589,670	440,861	153,860	106,455
Alabama	40,621	24,489	16,131	24,387	15,548	297	389
Alaska	3,281	1,858	1,424	2,230	184	70	798
Arizona	39,674	23,485	16,189	30,660	1,926	4,963	2,125
Arkansas	22,742	13,813	8,929	17,007	5,189	269	277
California	249,602	148,472	101,130	139,063	29,533	43,221	37,785
Colorado	27,989	16,870	11,119	22,197	1,860	3,026	906
Connecticut	29,434	18,367	11,068	23,737	3,834	1,225	638
Delaware	7,037	4,207	2,830	4,801	1,968	120	149
District of Columbia	7,157	4,111	3,046	1,062	5,804	176	115
Florida	166,640	99,070	67,570	113,539	28,847	21,402	2,853
Georgia	64,469	38,861	25,608	35,475	26,506	1,156	1,331
Hawaii	12,317	7,221	5,096	2,459	189	305	9,364
Idaho	8,832	5,308	3,525	8,298	46	278	211
Illinois	99,577	60,820	38,756	67,449	23,737	4,929	3,462
Indiana	46,142	28,511	17,630	38,416	6,488	742	495
Iowa	23,651	14,814	8,837	22,559	612	248	232
Kansas	20,611	12,681	7,931	17,758	1,799	607	447
Kentucky	30,265	18,699	11,566	25,995	3,797	211	262
Louisiana	39,541	23,522	16,019	20,581	17,712	689	559
Maine	10,374	6,422	3,952	10,154	72	46	102
Maryland	48,909	29,234	19,675	26,317	19,686	968	1,937
Massachusetts	50,610	31,770	18,841	43,329	4,183	1,441	1,658
Michigan	80,583	48,971	31,612	59,827	18,059	1,177	1,520
Minnesota	35,695	22,046	13,649	33,037	1,323	369	966
Mississippi	26,059	15,552	10,507	13,237	12,436	180	205
Missouri	45,943	28,233	17,710	36,797	8,019	472	655
Montana	7,009	4,217	2,793	6,564	31	76	338
Nebraska	13,013	8,043	4,970	11,807	731	278	198
Nevada	15,517	8,789	6,728	10,859	1,999	1,410	1,249
New Hampshire	9,118	5,609	3,509	8,814	97	77	130
New Jersey	73,158	44,851	28,307	48,990	14,959	5,348	3,861
New Mexico	13,754	8,157	5,596	7,463	459	4,688	1,143
New York	164,395	101,075	63,320	101,305	39,592	14,374	9,123
North Carolina	69,683	42,199	27,484	44,002	23,381	884	1,416
North Dakota	5,045	3,135	1,911	4,843	17	25	160
Ohio	93,852	57,763	36,089	73,894	17,918	894	1,146
Oklahoma	26,767	16,185	10,582	20,861	3,038	537	2,332
Oregon	26,212	15,953	10,258	23,700	662	715	1,135
Pennsylvania	112,325	70,012	42,313	91,756	17,321	1,544	1,705
Rhode Island	8,852	5,610	3,242	7,800	545	325	182
South Carolina	37,509	22,413	15,096	20,922	15,898	321	367
South Dakota	5,923	3,651	2,272	5,552	35	42	294
Tennessee	46,496	28,436	18,061	34,186	11,407	401	502
Texas	145,790	86,920	58,870	83,327	28,242	29,566	4,655
Utah	11,648	6,971	4,677	10,470	142	594	442
Vermont	4,631	2,844	1,786	4,513	34	35	48
Virginia	59,790	35,730	24,060	37,404	19,063	1,114	2,209
Washington	42,820	25,876	16,944	36,025	2,095	1,204	3,497
West Virginia	14,954	9,210	5,744	13,828	929	86	111
Wisconsin	41,344	25,566	15,778	37,194	2,868	589	693
Wyoming	3,486	2,080	1,406	3,218	42	144	81

White Female	White Male	Black Female	Black Male	Hisp. Female	Hisp. Male	Other Female	Other Male	State
991,193	598,477	247,981	192,881	89,804	64,056	59,721	46,735	<b>Total U.S.</b>
15,222	9,165	8,886	6,661	163	134	218	171	Alabama
1,281	948	93	91	37	33	446	351	Alaska
18,453	12,206	981	945	2,830	2,134	1,221	904	Arizona
10,566	6,441	2,953	2,236	139	130	154	123	Arkansas
85,909	53,154	16,000	13,533	25,201	18,020	21,362	16,424	California
13,680	8,517	955	904	1,716	1,310	519	387	Colorado
15,119	8,618	2,183	1,651	724	501	340	298	Connecticut
2,967	1,835	1,094	874	65	54	81	68	Delaware
634	427	3,299	2,505	109	67	69	46	District of Columbia
68,678	44,860	15,849	12,997	12,948	8,454	1,595	1,258	Florida
22,174	13,301	15,371	11,135	600	556	715	616	Georgia
1,436	1,023	81	107	176	129	5,527	3,837	Hawaii
5,027	3,271	20	26	142	136	119	92	Idaho
42,818	24,631	13,409	10,328	2,677	2,252	1,916	1,546	Illinois
24,260	14,157	3,584	2,905	395	347	273	221	Indiana
14,234	8,325	319	293	133	115	128	104	Iowa
11,127	6,631	974	825	333	274	246	201	Kansas
16,322	9,673	2,120	1,677	112	99	145	117	Kentucky
12,846	7,735	9,956	7,756	423	267	297	262	Louisiana
6,304	3,850	33	39	27	19	58	44	Maine
16,461	9,857	11,133	8,554	578	390	1,062	874	Maryland
27,684	15,645	2,338	1,845	855	586	893	764	Massachusetts
37,456	22,371	10,046	8,014	645	531	824	697	Michigan
20,617	12,419	705	618	193	176	530	436	Minnesota
8,298	4,939	7,039	5,398	100	81	115	90	Mississippi
23,041	13,756	4,561	3,459	265	207	366	289	Missouri
3,968	2,596	13	17	44	32	191	147	Montana
7,390	4,418	396	334	144	134	113	84	Nebraska
6,299	4,559	1,001	998	770	640	718	531	Nevada
5,447	3,366	46	51	45	32	71	60	New Hampshire
31,131	17,860	8,464	6,495	3,171	2,177	2,085	1,776	New Jersey
4,539	2,924	224	236	2,733	1,955	661	482	New Mexico
64,120	37,185	23,094	16,498	8,945	5,428	4,915	4,208	New York
27,577	16,425	13,374	10,007	445	439	803	613	North Carolina
3,020	1,823	8	10	14	11	93	68	North Dakota
46,669	27,225	9,955	7,962	503	391	636	510	Ohio
12,903	7,958	1,663	1,374	281	255	1,337	995	Oklahoma
14,601	9,099	336	326	378	336	638	496	Oregon
58,322	33,434	9,886	7,435	879	665	925	780	Pennsylvania
5,023	2,777	292	253	197	128	98	83	Rhode Island
13,000	7,922	9,030	6,868	172	149	211	156	South Carolina
3,443	2,109	14	21	23	18	170	124	South Dakota
21,404	12,783	6,542	4,865	214	187	276	226	Tennessee
51,423	31,904	15,792	12,450	17,185	12,381	2,520	2,135	Texas
6,335	4,135	64	78	328	265	244	199	Utah
2,783	1,731	15	19	21	15	26	22	Vermont
23,246	14,158	10,600	8,464	641	473	1,244	965	Virginia
22,174	13,852	1,038	1,056	637	566	2,027	1,470	Washington
8,578	5,250	521	408	50	36	61	50	West Virginia
23,250	13,943	1,612	1,256	313	276	391	302	Wisconsin
1,934	1,285	19	23	80	64	47	35	Wyoming

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