Eye Conditions and Related Need for Medical Care Among Persons 1–74 Years of Age: United States, 1971–72

This report presents total prevalence estimates for selected eye conditions, decrease in vision from eye pathology, and related need for medical care among the U.S. population ages 1–74 years by age, race, sex, and selected demographic characteristics. These estimates are based on standardized eye examination findings from the national probability sample of the civilian noninstitutionalized population examined in the first National Health and Nutrition Examination Survey, 1971–72.

Data From the National Health Survey
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Cooperation of the U.S. Bureau of the Census and Centers for Disease Control

Under the legislation establishing the National Health Survey, the Public Health Service is authorized to use, insofar as possible, the services or facilities of other Federal, State, or private agencies. In accordance with specifications established by the National Center for Health Statistics, the U.S. Bureau of the Census participated in the design and selection of the sample and carried out the household interview stage of the data collection and certain parts of the statistical processing.

The Centers for Disease Control acted as laboratory consultants and performed a series of biochemical, hematological, and serological assessments on blood specimens of persons participating in the survey.

Contents

Text table

Symbols

- - -	Data not available
. . .	Category not applicable
-	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standards of reliability or precision (more than 30 percent relative standard error)
#	Figure suppressed to comply with confidentiality requirements

Eye Conditions and Related Need for Medical Care

by James P. Ganley, M.D., Dr.P.H., Louisiana State University Medical Center, Shreveport, La., and Jean Roberts, M.S., Division of Health Examination Statistics

Introduction

This report contains estimates of the total prevalence of the various types of eye abnormalities, the need for related medical care, and vision decrease from such pathology among the civilian noninstitutionalized population of the United States, 1–74 years of age. These estimates from the National Center for Health Statistics are based on findings from the standardized ophthalmology examination given the national probability sample of persons examined in the National Health and Nutrition Examination Survey of 1971–72. The findings from this cross-sectional study are analyzed with respect to age, sex, race, and other socioeconomic and demographic factors as well as related medical history.

Highlights

The principal findings from this eye examination in the National Health and Nutrition Examination Survey of 1971–72 include:

- An estimated 70.5 per 1,000 persons ages 1–74 years in the United States were found to have treatable eye conditions so severe or potentially severe that they either are or should be receiving medical care.
- About half of those in need of medical care for eye conditions were receiving such treatment.
- An estimated 72.7 per 1,000 of the population ages 1–74 years had a type of eye pathology found to be causing a decrease in visual acuity.
- The principal conditions causing decrease in vision were cataract and/or aphakia, esotropia or exotropia, macular degeneration, glaucoma, and corneal opacities. Those for which treatment was needed but not being received were blepharitis, cataract, glaucoma, esotropia or exotropia, conjunctivitis, retinal vascular changes, pterygium and benign or malignant neoplasms.
- The prevalence of eye pathology causing decrease in vision and the need for medical treatment of eye conditions were observed (but not statistically significant) to be greater among persons in the lowest income bracket (under $5,000 per year) than among the more affluent.
- Urban residents were observed to be more likely than those living in rural areas to have eye pathology causing decrease in vision and to need treatment for such conditions.
- Black persons were significantly more likely than white persons to need medical care for eye pathology and were observed to be more likely also to have eye pathology causing vision decrease.
- Those living in the South were significantly more likely than persons in other parts of the country to have some eye pathology causing decrease in vision, although the need for care was no greater in the South than elsewhere.

The survey program

The National Health and Nutrition Examination Survey (NHANES I), through which these data were obtained, is one of the major programs of the National Center for Health Statistics that was authorized under the National Health Survey Act of 1956 by the 84th Congress.[1]

In the National Health Examination Survey programs, health data are collected by direct standardized(usually single-visit) examinations of probability samples of the population.[2-5] From these examinations, tests, and measurements, data are obtained on the prevalence of medically defined illness—known as well as previously unknown or undiagnosed conditions—and on the distributions of a variety of health-related physical, physiological, and behavioral measurements. From these, normative data as well as appropriate cutoff points for abnormalities can be determined. Also collected are medical histories and demographic and socioeconomic data on the sample population under study with which the examination findings can be interrelated.

The first National Health and Nutrition Examination Survey was designed to measure the nutritional status of the U.S. population ages 1–74 years and to obtain information on other selected aspects of health—including dental, skin, and eye—of the entire age group as well as more detailed information on health status and medical care needs of adults ages 25–74 years in the civilian noninstitutionalized population. A description of the specific content and plan of operation, including sample design and the data collection forms, has been published.[6]

The U.S. Bureau of the Census participated in designing the national sample and in the initial interviewing in the eligible households in the selected primary sampling units (PSU's) in various parts of the country. Members of the mobile examining center staff did further interviewing and explaining of the examination portion of the program. The sample persons for whom appointments could be made were brought into the specially constructed mobile examination centers that were moved into a central location in each of the PSU's. The team that traveled to the survey locations throughout the country included professional and paraprofessional medical and dental examiners along with technicians, interviewers, and management staff.

The probability sample design used in the survey provided for oversampling at predetermined rates among the poor, preschool children, women of childbearing ages, and the elderly, so that the nutritional status of these high-risk groups could be more accurately estimated. It further provided for a nationally representative subset of 35 of the initially planned PSU's throughout the United States so that some preliminary national findings on the nutritional status of the population could be published before the total survey was completed. This also made possible estimates from those parts of the examination which were included only in this 35–PSU subsample.

During the planning for NHANES I, the National Eye Institute (NEI) indicated an interest in obtaining more definitive information than was available on the prevalence and distribution of specific eye diseases and related conditions throughout the United States as an aid in setting goals and priorities for emphasis in NEI programs. Consistent with the overall objectives of the survey, an evaluation of the treatment needs also was incorporated into the examination.

Two senior ophthalmologists from NEI, Drs. James P. Ganley and Arthur J. Garcia, developed the examination form and standardized protocol for the ophthalmic examination. They were responsible for recruiting and training the ophthalmologists in the examination methodology to minimize interobserver variations as well as for verifying the resultant diagnoses and for other aspects of quality control related to special equipment used in this examination.

The National Center for Health Statistics and NEI jointly decided that the ophthalmology examination would be discontinued after the completion of examinations at 35 locations because of the difficulty of

securing ophthalmologist examiners. Although the size of the sample was not as large as originally planned, these unique national eye examination findings did provide the basis for the analysis needed to meet many of the original purposes of this part of the examination. However, the examined sample is too small to provide reliable national estimates for conditions of low prevalence and the degree of demographic-socioeconomic detail that would have been desirable for planning purposes related to medical care needs in this area.

For the 35 locations at which the ophthalmology examination was given during April 1971 through October 1972, a national probability sample of 14,147 persons was selected to represent the 192.7 million in the target population ages 1–74 years. Those under the age of 1 year were excluded from the sample as were persons 75 years or over because of the difficulties of arranging to bring them into the examining units. Despite intensive efforts, only 10,126 of the sample persons came in for examination. This represents an equivalent of 72.8 percent of the sample persons selected when adjustments are made for the differential sampling rates for the age-sex-income-defined population subgroups. The unadjusted overall response rate was 71.6 percent.[7] Of the 10,126 examined, 9,878 were given the ophthalmology component. This specialty examination was missed for 244 persons because of illness of the ophthalmologist examiners or complications in other parts of the examination.

National estimates in this report are based on weighted observations; that is, the data obtained for each examined person are inflated to the size of the total population of which the sample was representative using the reciprocal of the sampling ratio for the original selection and adjustment for nonresponse. This assumes that the examined person in each of the age-sex-income classes is a random subsample of the sample persons in the same class (appendix I). Although there is evidence from the earlier examination survey and medical history data from the National Health and Nutrition Examination Survey that these are not unreasonable approximations, it is clear that some estimates may be subject to considerable bias when more than one-fourth of the sample persons in a particular age-sex-income class were not examined. The characteristics of examined and nonexamined persons were reviewed. From this review of what is known about nonrespondents and the nature of nonresponse, the likelihood of sizable bias is believed to be small.

Findings that are statistically significant as well as observed differences (not statistically significant at the 5-percent probability level) that may be of interest are discussed. Statistically significant differences at the 5-percent probability level are pointed out.

Statistical notes on the sample design, reliability of the data, and sampling and measurement error are included in appendix I. The ophthalmology examination protocol is described in appendix II, which also includes the recording form used. Data based on the six-digit National Eye Institute codes, including those too unreliable for use in the text or detailed tables, may be found in appendix III to show more complete information on the precise conditions causing vision decrease or needing care; definitions of the demographic and socioeconomic terms used are in appendix V. The correspondence of the eye conditions identified by site and type from this examination under this NEI system with the principal types in the *Eighth Revision International Classification of Diseases, Adapted for Use in the United States* (ICDA–8)[8] as used in this report are included in appendix IV.

Ophthalmology examination

At each of the 35 selected locations throughout the country, 10 sample persons were scheduled to come or be brought into the specifically designed mobile center for each of the morning, afternoon, and evening examination sessions. Examinees included two adults (25–74 years of age) selected to be given the detailed examination in addition to the more limited examination for the nutrition sample. The ophthalmology examination, one of the first procedures scheduled in each session, was similar for persons in the nutrition sample and those in the detailed sample except that a more complete refraction was given the latter group.

The standardized eye examination for all examinees included taking an ocular history regarding known eye disorders or previous surgery; determination of monocular distance visual acuity with usual correction, if any, and with a pinhole test to measure correctability for those with acuity less than 20/20; determination by inspection and standard testing of the type of motility defects; measurement of prescriptions in present glasses; dilatation and, within 20 to 70 minutes thereafter among those with acuity less than 20/40, retinoscopy for detailed examinees and spherical trial lens tests for nutrition examinees; applanation tonometry on examinees ages 20 years and over; and examination of the pupils, lids, globes, conjunctiva, sclera, corneas, anterior chambers, irides, and lenses. The pupils were dilated (except in persons determined on careful examination to have narrow angle glaucoma in which the angle was 10° or narrower) for the spherical refraction and retinoscopy and for the examination of the vitreous and retina.

The methods used for visual acuity testing, mobility testing, pinhole testing, and refraction have been described in the two Series 11 reports analyzing these findings from the NHANES I survey.[9,10] The special procedures used in the various parts of the eye examination are described in appendix II.

Classification of disease or other pathologic conditions

The eye conditions diagnosed in this ophthalmic examination were classified using a six-digit Ophthalmic Disease Code adapted for use in this survey by the National Eye Institute. The first two digits refer to the anatomical site of the disease or injury except for the digits 61, which refer to refractive errors. The second two show the nature or type of disease, injury, or surgical or nonsurgical treatment. The last two identify the etiology of the disease, agent of injury, nonsurgical or surgical treatment indicator, and postoperative state indicator. Data from the entire six-digit NEI diagnoses codes for all conditions occurring at least 10 times and for all conditions decreasing vision, in need of but not receiving medical care, as well as those under medical care are included in appendix III. These are included for reference purposes to show more precisely the specific eye conditions causing vision decrease or needing care, although many of these estimates are not sufficiently reliable for inclusion in the tables and text because of the small numbers of individuals identified with rare conditions and the excessively large sampling variability.

Tables 3–5 contain the prevalence of eye conditions identified from the first four digits of the NEI codes—showing site and type of disease—under the NEI system (table 3) and after conversion to ICDA–8 (tables 4 and 5). These tables are included to give an idea of the various types of eye problems in the population needing care or causing vision decrease although, because of the small sample for which these data are available, they contain more than the usual number of cells with estimates that do not meet the standard of reliability and precision used for statements and the major tables in this report.

Quality control

Procedural manuals for the ophthalmological examination were available to the examiner in each location, as an aid in maintaining standard protocol. In addition, the senior ophthalmologists from NEI developed a protocol for supervised testing, to ensure the accuracy of the ophthalmology examination data and to aid in maintaining uniformity in the examination procedures.

Examinations of all sample persons in the first two

sessions at 24 of the 35 stands were observed and partially replicated by the senior ophthalmologists from NEI, who then evaluated the methods and findings of the examiners and made recommendations when needed. The extent of examiner variability, which cannot be separated from the sampling variability inherent in the survey, is discussed in appendix I.

Additional diagnoses showing site and type (but not etiology, vision decrease, or need for medical care) were added during medical review at NEI using criteria as consistent as possible with those used by the examining ophthalmologists. This was done to ensure uniformity in interpretation of the diagnostic criteria throughout the study.

Findings

Total prevalence

More than one-third (381 per thousand) of the population ages 1–74 years in this country, or an estimated 73.5 million persons in 1971–72 had some abnormality in one or both eyes, either physiologic or pathologic, excluding those limited to refractive errors, arcus senilis, conjunctival melanosis, concretions, pinguecula, inclusions, follicles, and nonsymptomatic phorias (table 1). These conditions ranged from minor ones that do not and may never interfere with normal functioning to more serious types causing visual loss or requiring treatment.

These abnormalities do not necessarily reflect significant abnormalities, but include any changes—benign, pathologic, or physiologic— from the norm of ocular morphology, structure, or function. For example, an individual was considered to have refractive changes in the eye whether conditions were minor or insignificant, such as a myopic cup, conus or crescent or the more significant pigmentary changes in myopic macula.

The prevalence rates of eye pathology increased with successive age groups from 105 per 1,000 preschool children ages 1–5 years to 854 per 1,000 adults ages 65–74 years (figure 1). Females were about as likely as males to have some type of eye pathology; the prevalence rates were 374 and 389 per 1,000 population, respectively (table 1). Across age groups 6–54 years, the prevalence of eye pathology among males was observed to consistently exceed that among females; among the preschool-age population and older adults ages 55–74 years, the rates for females were about the same as for males.

Among the population with eye pathology, the majority (57 percent) had only one type of condition, 23 percent had two, and the remainder had as many as 12 per person. The total prevalence of eye conditions was 677 per 1,000 population ages 1–74 years. The increase with successive age group in the prevalence of eye conditions was substantially more rapid from ages 35–74 years than that shown for the proportion of the population affected in any degree, reflecting the increase in the multiple eye conditions with age.

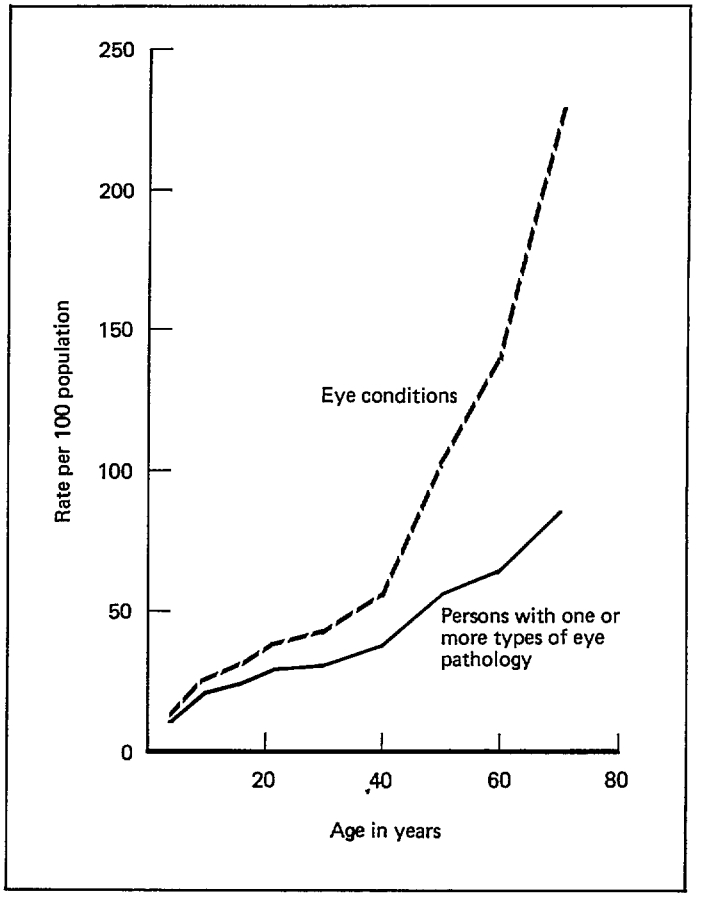

Figure 1. Prevalence rates for eye conditions and the proportion of the population with one or more types of eye pathology among persons ages 1–74 years by age: United States, 1971–72

Types of eye pathology

Parts of the eye most frequently affected by these physiologic and pathologic conditions were the retina

(126.0 per 1,000 population ages 1–74 years), the crystalline lens (116.6 per 1,000), the cornea (111.3 per 1,000), the lids (71.4 per 1,000), and the neuromuscular system of the eye (56.9 per 1,000).

The prevalence of conditions affecting the retina, crystalline lens, and cornea increased rapidly with age (table 2 and figure 2), while the prevalence for those affecting the lids and neuromuscular system of the eye showed no consistent age-related trend until 35 years of age (figure 3). Amblyopia (poor vision in one eye that appears to have no organic disease or one that could be identified by the examiner) is more prevalent among adults ages 25–74 years than among children and younger adults. "Refractive" conditions, which showed no consistent trend with age (table 2), are structural changes of the eye secondary to a refractive

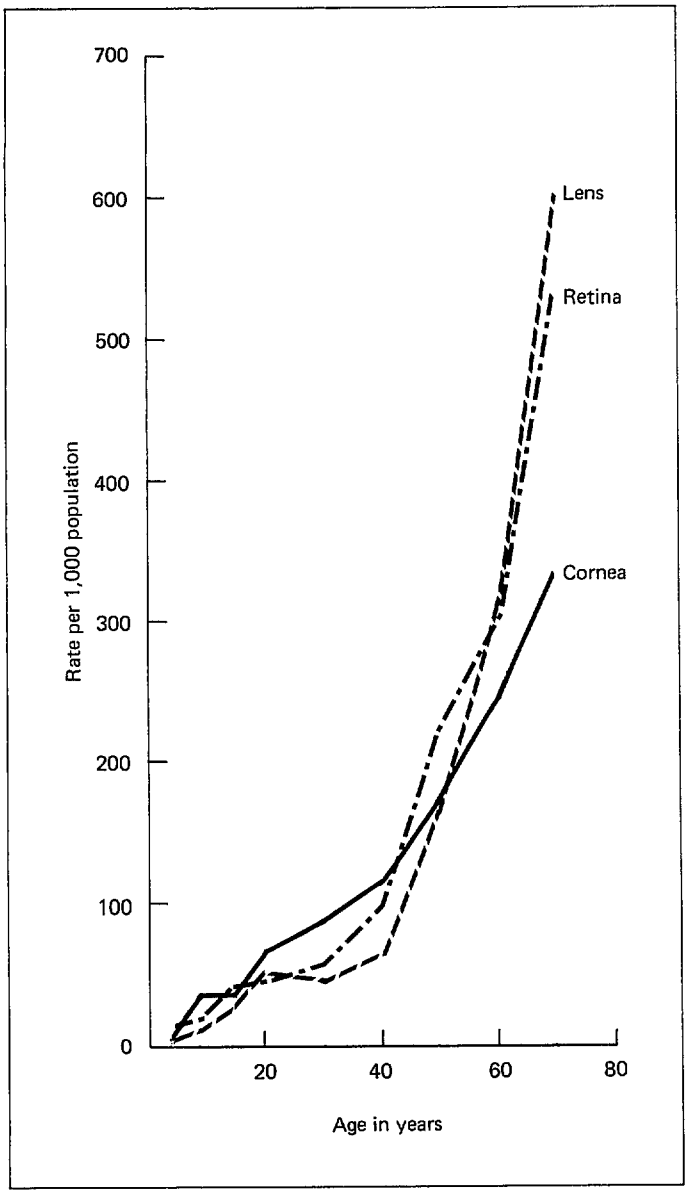

Figure 2. Prevalence rates for eye conditions affecting the retina and cornea among persons ages 1–74 years by age: United States, 1971–72

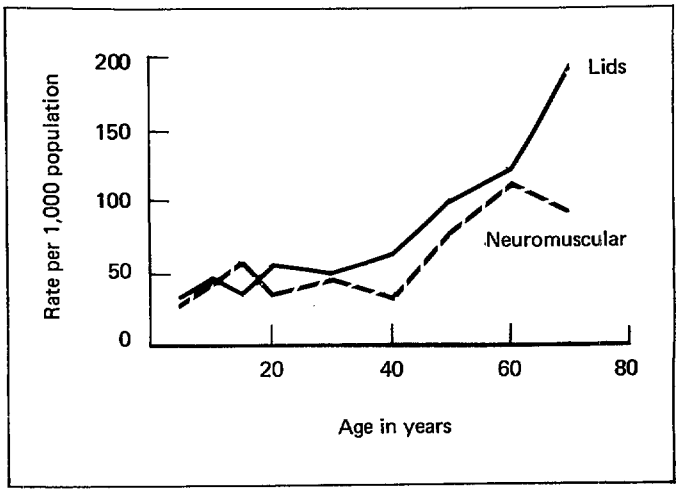

Figure 3. Prevalence rates for eye conditions affecting the lids and neuromuscular system of the eyes among persons ages 1–74 years by age: United States, 1971–72

error such as myopic disc or Fuchs' spot; these changes refer exclusively to myopic refraction, because hyperopia is not associated with structural changes other than small cornea or globe.

Conditions affecting the cornea were observed to be more prevalent among males than females (128.0 per 1,000 males compared with 95.6) as were those affecting the lids (80.3 per 1,000 males compared with 63.0). Females were about as likely as males to have conditions affecting the crystalline lens (123.0 per 1,000 females compared with 109.8 per 1,000 males). Amblyopia occurred significantly more frequently in females than males (32.1 per 1,000 females and 17.4 per 1,000 males).

Across successive age groups, the prevalence of eye pathology affecting the cornea was greater among males than females with differences in rates large enough to be statistically significant at ages 1–5 and 12–44 years. Also across ages to 65 years, amblyopia was observed to occur more frequently in females than males. The estimated prevalence of neuromuscular eye pathology was consistently (but not significantly) greater among females than males across the age range of 1–74 years; the sex difference trend with age in the prevalence of abnormal conditions affecting the lids and crystalline was less consistent.

The principal types of eye pathology (table 3), using the NEI classification system, were changes affecting retinal vessels (84.7 per 1,000 population), opacity or sclerosis of the crystalline lens (56.6 per 1,000 population), corneal opacities (33.5 per 1,000 population), cataract (33.4 per 1,000 population), drusen (29.6 per 1,000 population), blepharitis (24.3 per 1,000 population), amblyopia (significant difference in refractive error of the two eyes, usually secondary to strabismus or anisometropia—25.0 per 1,000 population), exotropia (21.3 per 1,000 population), and pterygium (16.0 per 1,000 population).

Corneal opacities and pterygium were more frequently found among males than females and more frequently among adults ages 45–74 years than younger adults or children, although the increase in prevalence across successive age groups was not consistent.

The prevalence of the other more frequently occurring types of eye pathology generally increased across successive age groups, the trend being most consistent for retinal vascular changes, opacities and cataract of the lens, and drusen of the choroid. Sex differences and age trends in the prevalence of these conditions were not marked enough to be statistically significant at the 5–percent probability level.

In terms of the more widely used ICDA–8 as shown in table 4, the most prevalent types of eye pathology among the U.S. population ages 1–74 years were cataracts (rate of 93.9 per 1,000 population), arteriosclerotic changes affecting the retinal vessels (84.7 per 1,000), strabismus (40.9 per 1,000), corneal opacities (35.2 per 1,000), blepharitis (26.4 per 1,000), pterygium (16.3 per 1,000), conjunctivitis (13.3 per 1,000), and congenital abnormalities of the eyes other than strabismus (9.7 per 1,000). Estimates for these conditions cannot be derived from the data based on the NEI classification shown in table 3 because in that table conditions with very low prevalence (less than 0.5 per 1,000) have been grouped with "all other" for the part of the eye affected.

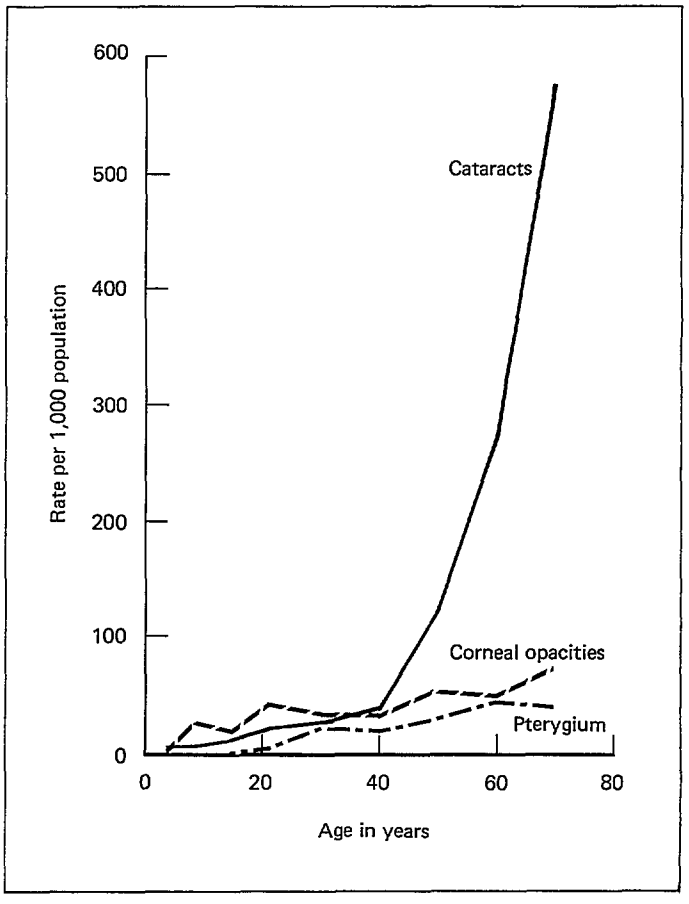

Figure 4. Prevalence rates for selected noninflammatory conditions of the eyes—cataracts, corneal opacities and pterygium—among persons ages 1–74 years by age: United States, 1971–72

Cataracts

The prevalence of *cataracts,* defined here as any loss of transparency of the lens[11] which may or may not be associated with loss of vision, increased with successive age groups from a rate of 4.5 per 1,000 preschool age children 1–5 years to 576.4 per 1,000 adults 65–74 years (figure 4). The rate of increase was most rapid from ages 45 years on. Proportionately more females than males had evidence of a cataract (figure 5); the rates were 103.3 and 83.8, respectively (a difference large enough to be statistically significant at the 5–percent probability level).

Changes affecting retinal vessels

These conditions also showed a rapid generally significant increase in prevalence with age from 8.7 per 1,000 among preschool children ages 1–5 years to 364.2 per 1,000 among adults ages 65–74 years (figure 6). The most rapid rates of increase were among adults from ages 35 years on. Such conditions were observed to be only slightly more prevalent among females than males (87.7 compared with 81.6 per 1,000, respectively).

Strabismus

Strabismus (heterophoria or cross-eyes), which includes conditions of congenital and acquired origin, was more prevalent among adults ages 55–64 years and less prevalent among preschool children ages 1–5 years than at other ages. The rates also were observed to be somewhat higher among teenagers ages 12–17 years, adults ages 45–54 years and those ages 65–74 years than younger children or younger adults, although there was no consistent age-related trend. Females were more likely than males to have such a condition (rates of 49.9 and 31.2 per 1,000, respectively).

Opacities

The prevalence of *opacities* resulting from healed corneal injuries, infections, or other causes ranged from 2.7 per 1,000 among preschool children ages 1–5 years to 70.3 per 1,000 adults ages 65–74 years. The rates were observed to be higher among adults ages 45–74 years and those ages 18–24 years than younger adults or children but showed no consistent increase with age. Males were significantly more likely to have such conditions than females; the rates were 49.6 and 21.9 per 1,000, respectively. This would be expected, because injuries are a major cause, and men would have been more likely than women to engage in

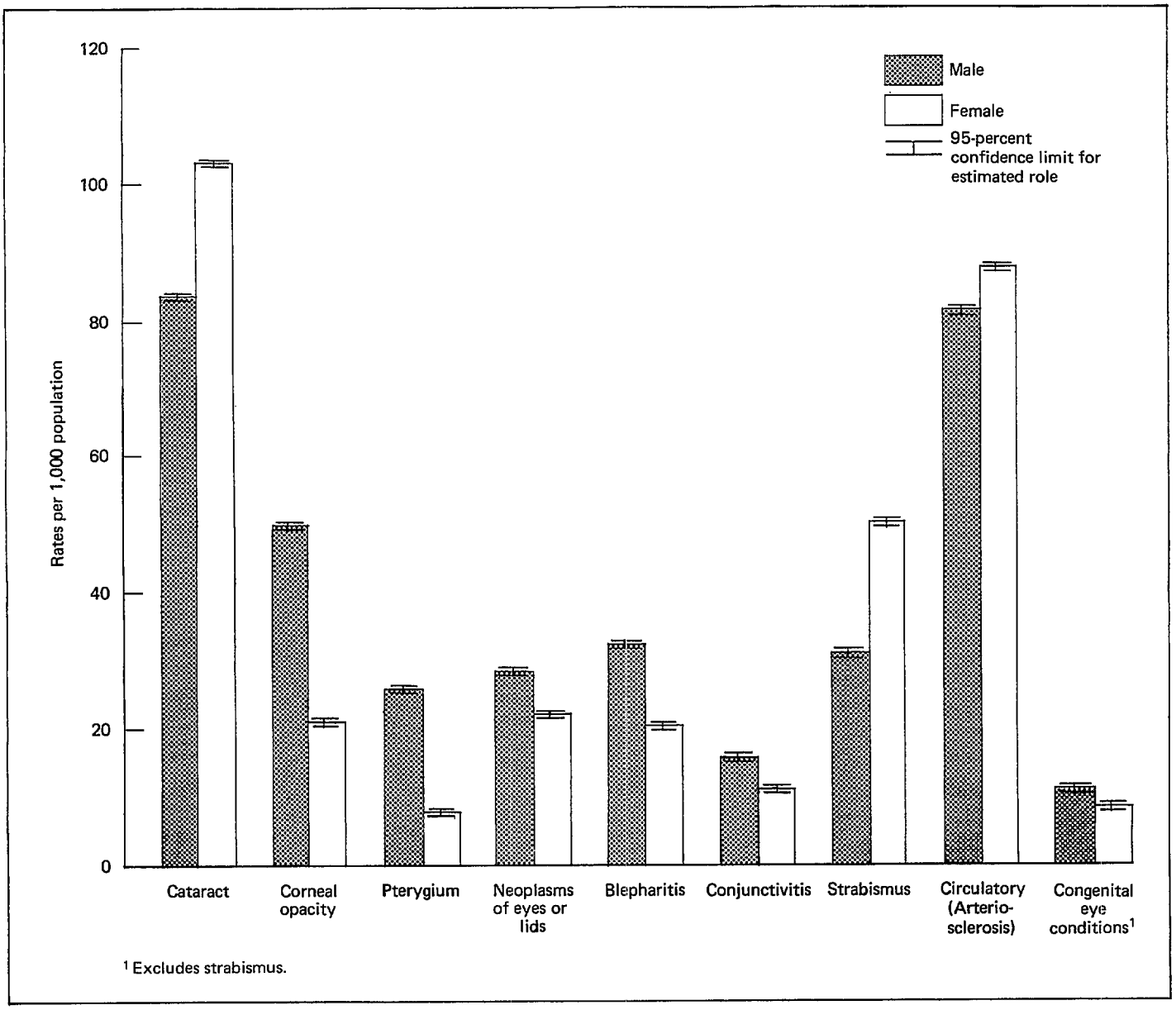

Figure 5. Prevalence rates for the principal types of eye conditions among persons 1–74 years of age: United States, 1971–72

occupations or strenuous sports where such accidents frequently occur.

Blepharitis

Inflammation of the margin of the eyelids caused by bacteria or seborrhea[11] had observed prevalence rates at a minimum of 14.6 per 1,000 for ages 1–5 years and a maximum of 41.9 per 1,000 among the oldest adults in the study, 65–74 years, with no consistent age-related trend. The prevalence was significantly higher among males (32.2 per 1,000) than females (20.9 per 1,000).

Neoplasms

The prevalence rates of malignant and benign or unspecified neoplasms affecting the eye and surrounding tissue generally were observed to increase with successive age groups from 1.9 per 1,000 preschool children ages 1–5 years to 63.5 per 1,000 adults ages 65–74 years. Males were observed to be slightly more likely than females to be affected with rates of 27.9, compared with 22.3 per 1,000, respectively.

Pterygium

This condition, in which a triangular fold of bulbar conjunctiva advances over the cornea, occurs most frequently among persons exposed to chronic conjunctival irritation from wind and sunlight.[11] The condition was found only among adults ages 18 years and over. The prevalence rates generally were observed to increase with successive age groups from 3.0 per 1,000 among young adults ages 18–24 years to over 40.0 per

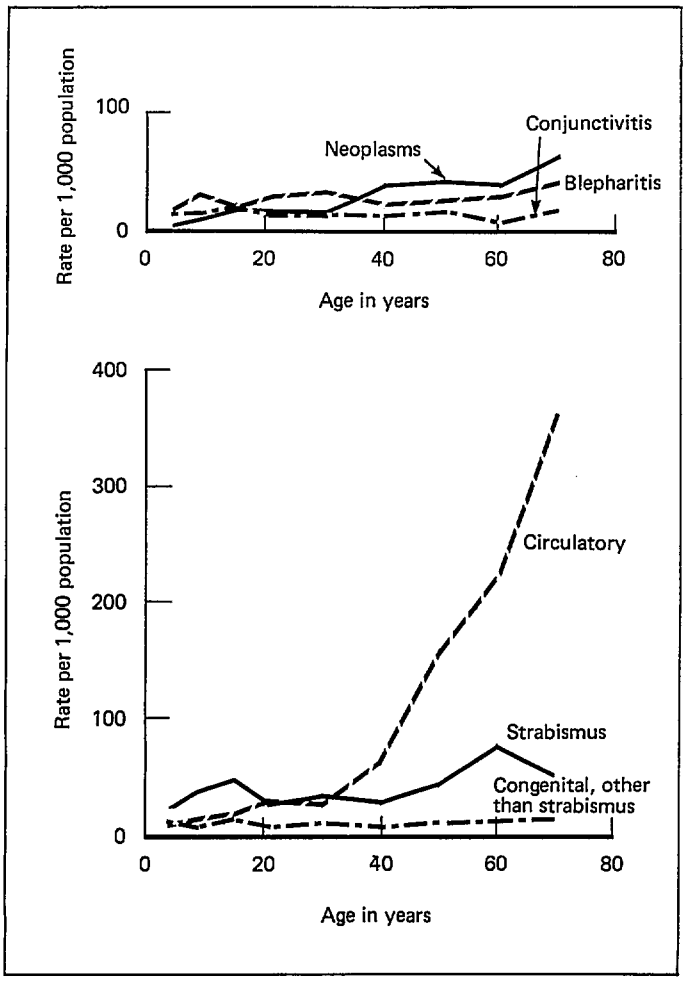

Figure 6. Prevalence rates for selected types of eye conditions among persons 1–74 years of age, by age: United States, 1971-72

1,000 among adults 55–74 years of age. More than three times as many males as females were affected, the rates being 25.4 and 7.6 per 1,000, respectively.

Conjunctivitis

This inflammation of the lining of the posterior surface of the eyelids and anterior surface of the globe caused by infection, allergy, or other irritant,[11] showed no consistent age-related trend. The prevalence was at a maximum for ages 12–17 years (20.0 per 1,000) and a minimum for ages 55–64 years (7.2 per 1,000). Males were significantly more likely to be affected than females (rates of 16.4 and 10.3 per 1,000, respectively).

Congenital eye conditions

Excluding strabismus, congenital eye conditions showed no consistent trend with age. The prevalence rates ranged from a minimum of 6.8 per 1,000 persons ages 35–44 years to a maximum of 13.1 among youths 12–17 years. Males were observed to be slightly more likely than females to have such eye conditions; the respective rates were 11.2 and 7.9 per 1,000.

Causes of blindness

Among these various types of eye pathology, the principal causes of blindness are cataract, glaucoma, diabetic retinopathy, and macular degeneration.

The most prevalent of such conditions were *cataracts*, which were found among an estimated 18 million persons, or 93.9 per 1,000 population, ages 1–74 years (table 4). Nearly three-fourths of those persons showed substantial evidence of cataract on examination ranging from immature to mature conditions, aphakia, and lens opacities. *Macular degeneration* was identified in an estimated 2.5 million persons or 13.1 per 1,000 population (table 3).

Definite or probable *glaucoma* conditions were found among an estimated 1.3 million persons, or 6.4 per 1,000 of the population. An additional 2.4 per 1,000 persons had conditions considered suspect of glaucoma—with evidence of open or wide angle, narrow angle or angle closure, or substantially increased intraocular pressure. Approximately one-third of those with definite or probable glaucoma and one-fifth of those with suspect conditions showed physical evidence of glaucomatous cupping in the disc. Because visual fields were not tested in NHANES, these rates for glaucoma will probably be underestimates of the total prevalence.

Diabetic retinopathy was identified among an estimated 1.9 per 1,000 population. About one-fourth of these were observed to show definite evidence of diabetic involvement of the macula and an additional one-fourth, microaneurisms or neovascularization and/or hard or waxy exudates on the retina. These latter proportions, because of the smallness of the available national sample, do not meet the standards for reliability and precision used in this report.

Vision decrease

An estimated 72.7 persons per 1,000 population ages 1–74 years had one or more types of eye abnormalities causing a decrease in visual acuity, as observed by the examining ophthalmologist in the 1971–72 NHANES. The prevalence of conditions causing visual impairment increased from 11.0 per 1,000 children ages 1–5 years to 363.7 per 1,000 adults ages 65–74 years; the rate of increase was most rapid among older adults ages 55–74 years (figure 7). Males were somewhat less likely than females to have such conditions; the rates were 65.7 and 79.2 per 1,000 ages 1–74 years, respectively. The trend with age was similar for both sexes, and the rates for males generally remained lower than those for females across ages (table 6, figure 8).

The principal conditions causing vision decrease were cataract and/or aphakia (affecting an estimated 29.3 per 1,000 persons ages 1–74 years), esotropia or exotropia (6.6 per 1,000), macular degeneration (5.4

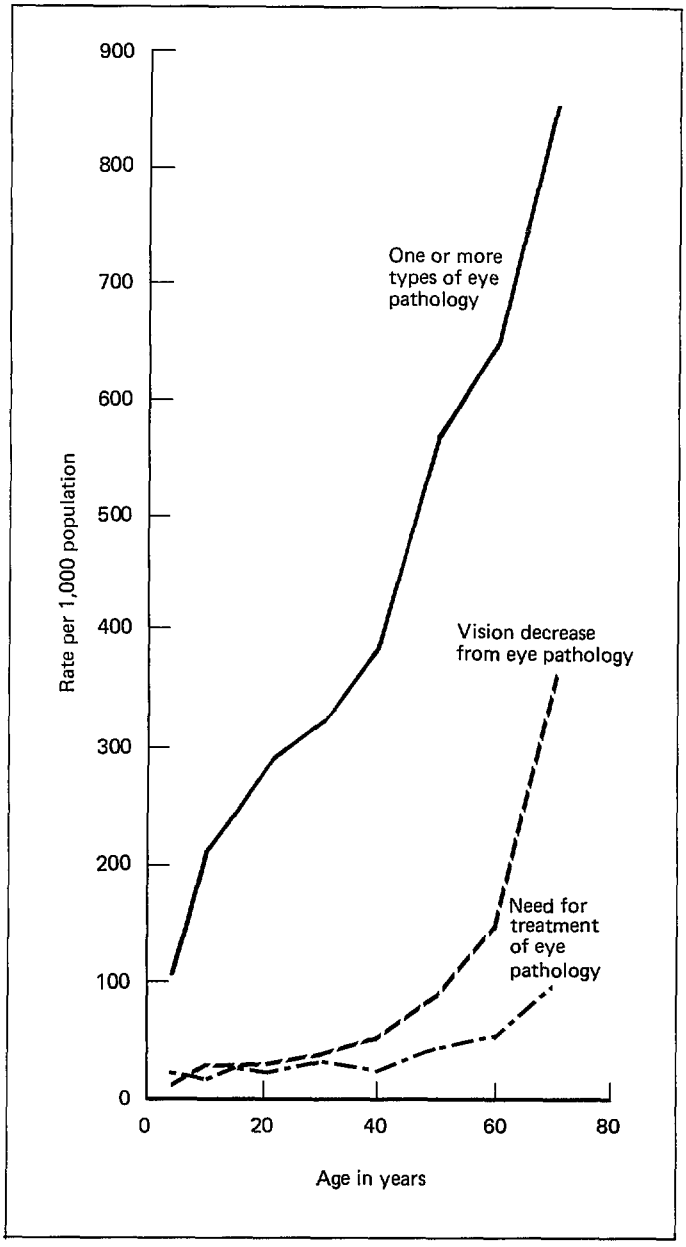

Figure 7. Prevalence rates for eye pathology (one or more conditions), eye pathology causing vision decrease, and need for medical treatment of eye condition(s) among persons 1–74 years of age, by age: United States, 1971–72

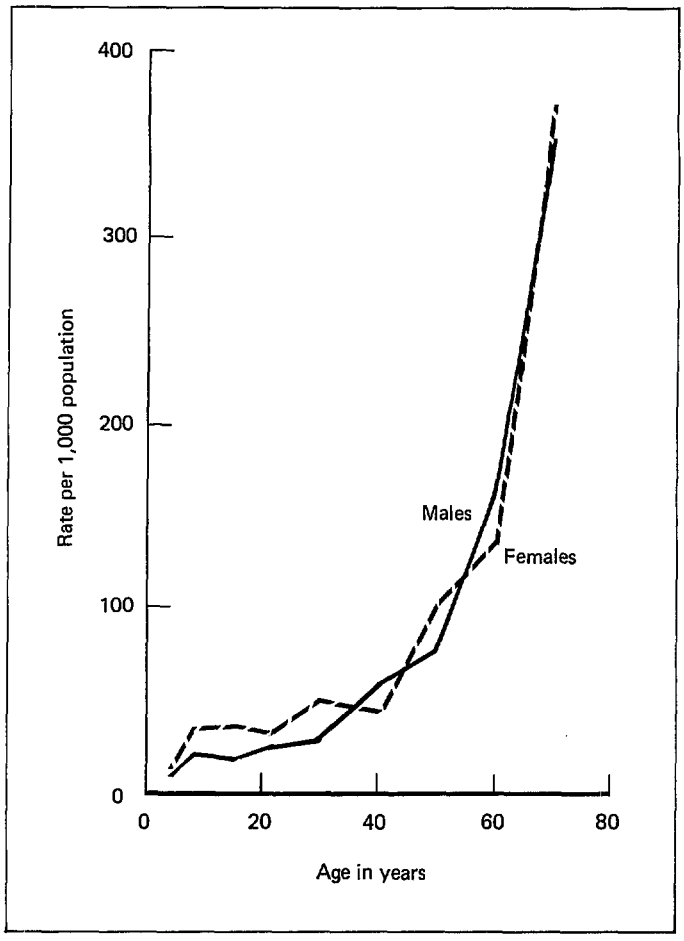

Figure 8. Prevalence rates for eye pathology causing vision decrease among persons ages 1–74 years, by age and sex: United States, 1971–72

per 1,000), glaucoma (3.0 per 1,000), and corneal opacities (1.7 per 1,000).

Among those with eye pathology, about one out of five had conditions causing vision decrease; the proportion varied between 10 and 13 percent at ages 1–44 years, then increased rapidly with age to 43 percent at 65–74 years (figure 8). This age-related trend was generally similar for males and females. The conditions most likely to cause vision decrease were detached retina (62 percent of those with such pathology), glaucoma (47 percent), other conditions of the retina including macular degeneration (46 percent), cataracts (31 percent), symptomatic conditions affecting the eyes (23 percent), inflammatory conditions of the uveal tract (20 percent), strabismus (16 percent), and the inflammatory condition of keratosis (14 percent) (table 5).

Need for treatment

The proportion of the population needing treatment for one or more types of eye pathology was estimated at 34.2 per 1,000 population ages 1–74 years, based on the evaluation of the examining ophthalmologists in the 1971–72 NHANES. The prevalence of need for treatment was nearly 25 per 1,000 population across ages 1–44 years (varying between 16.5 at ages 6–11 years to 30.7 at 25–34 years) then increased consistently with age to 98.2 per 1,000 population at 65–74 years (table 6, figure 9).

Males ages 1–74 years were about as likely as females to need treatment for an eye condition; the rates were 33.8 and 34.6 per 1,000 population, respectively. The trend with age was similar for males and females except among the oldest age group (65–74 years), where the rate was significantly higher among men (120.9 per 1,000) than women (81.2 per 1,000).

The principal conditions needing treatment were

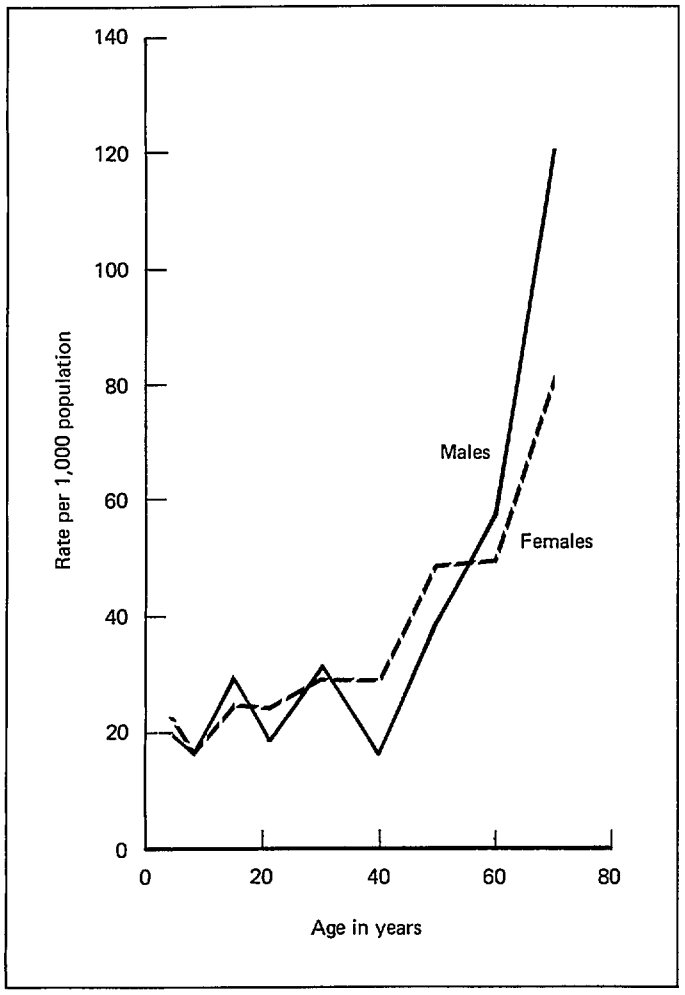

Figure 9. Prevalence rates for eye patholgy needing (but not now receiving) medical treatment among persons ages 1–74 years, by age and sex: United States 1971–72

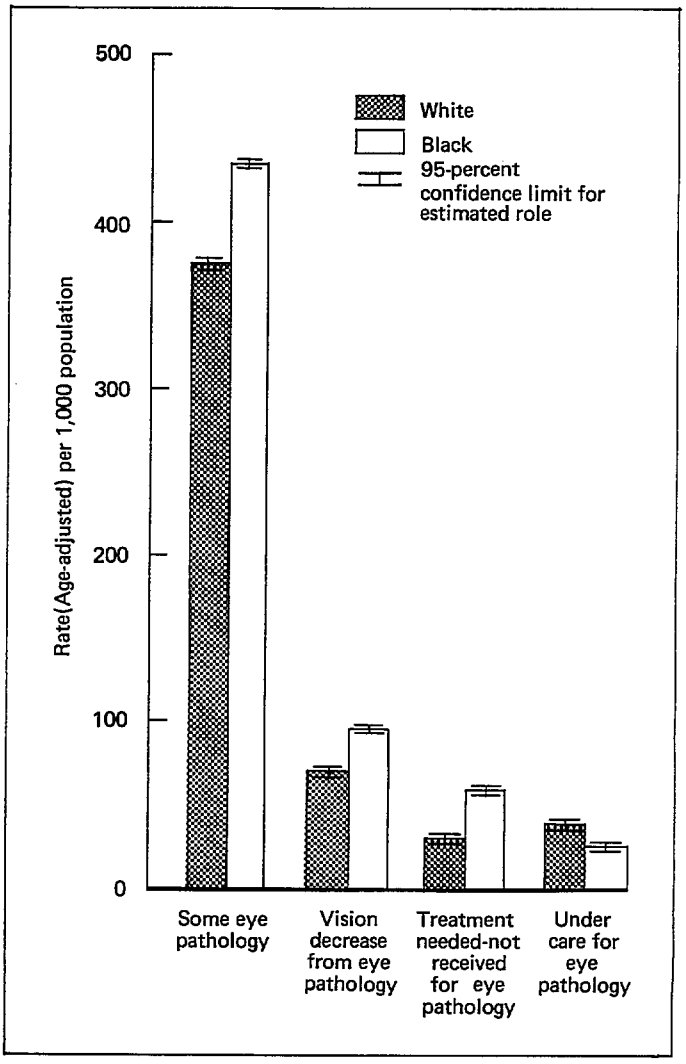

Figure 10. Prevalence rates (age-adjusted) for eye pathology, eye conditions causing decrease in vision, eye conditions needing but not receiving medical treatment, and eye conditions for which care is being received among white and black persons 1-74 years of age: United States, 1971-72

blepharitis (affecting an estimated 5.4 per 1,000 persons 1–74 years), cataract (4.5 per 1,000), glaucoma (3.6 per 1,000), esotropia or exotropia (2.8 per 1,000), conjunctivitis (2.6 per 1,000), retinal vascular changes (1.6 per 1,000), pterygium (1.6 per 1,000), and benign or malignant neoplasms (1.5 per 1,000).

Nearly 9 percent of those with some type of eye pathology needed treatment and were not receiving it. The proportion was highest among preschool children ages 1–5 years (20 percent) but otherwise showed no consistent age-related trend, varying between a low of 6 percent at ages 35–44 years and 11 percent at 12–17 and 65–74 (figure 10). This pattern was generally similar among males and females except at 65–74 years where among those with eye pathology, the proportion of men needing treatment was approximately twice that among women (18.9 percent and 9.5 percent, respectively).

Among those with eye pathology, the conditions most likely to need treatment as determined in the examination, were glaucoma (56 percent), hordeolum or styes (25 percent), blepharitis (20 percent), conjunctivitis (20 percent), inflammatory conditions of the uveal tract (11 percent), and pterygium (10 percent).

Under care

In addition to the 34.2 per 1,000 population ages 1–74 years who were in need of but not receiving treatment for eye pathology, 36.3 per 1,000 were receiving care at the time of the survey for one or more eye conditions (table 6). Therefore, about half (52 percent) of the total population needing treatment for eye pathology was receiving it.

Among males, the additional 31.0 per 1,000 in need treatment for an eye condition and receiving it were slightly less than half of the total needing treatment (64.8 per 1,000); among females, the estimated 41.1 per 1,000 under care were slightly more than half of the total in need of such treatment (75.7 per 1,000). The principal eye conditions for which

medical treatment was being given were esotropia or exotropia (6.3 per 1,000), cataracts (3.9 per 1,000), glaucoma (2.0 per 1,000), retinal vessel changes (1.8 per 1,000), conjunctivitis (1.4 per 1,000), and pterygium (1.2 per 1,000).

Of the total population ages 1–74 years in need of and/or receiving medical treatment for these principal types of eye pathology, those most likely to be receiving medical care were persons with detached retina (84 percent), esotropia or exotropia (69 percent), retinal vessel changes (53 percent), substantial refractive errors (50 percent), corneal opacities (47 percent), cataracts (46 percent), and pterygium (43 percent). In contrast, only about one-third or fewer persons with glaucoma (36 percent), conjunctivitis (35 percent), benign or malignant neoplasms (29 percent), and blepharitis (11 percent) were under care.

Intraocular pressure

National estimates for the distribution of intraocular pressure levels among adults from tonometry measurements obtained in NHANES are shown in table 7. Although elevated intraocular pressure is one characteristic of glaucoma, the ability of the healthy eye to tolerate indefinitely elevated pressure of 20 mm Hg as measured by Schiotz tonometry (the equivalent of approximately 19 mm Hg on the applanation readings obtained in this study) without damage to the optic nerve is recognized.[11] Persons with previously diagnosed glaucoma who are under treatment would be expected to have intraocular pressures maintained at normal levels through medication. The relationship of the diagnoses of glaucoma and the intraocular pressure levels has not been included in this report.

Among U.S. adults 20–74 years of age, the mean intraocular pressure (determined from the average of the three applanation tonometry measurements) was 14.8 mm Hg. Mean levels were observed to increase negligibly with successive age groups from 14.2 mm Hg at ages 20–24 years to 15.8 mm Hg at 65–74 years and were generally similar among men and women (14.7 and 14.8 mm Hg, respectively).

Nearly one-half (46 percent) of the population ages 20–74 years had intraocular pressures of 15 mm Hg or greater; the proportion increased with successive age groups from 35 percent among the youngest adults tested, ages 20–24 years, to 59 percent among those 65–74 years. At ages 20–24 years, the proportion with this degree of pressure elevation was observed to be slightly higher among men (38 percent) than women (32 percent); at 65–74 years of age, the reverse was found (55 percent of men compared with 62 percent of women had this degree of elevation).

Elevated intraocular pressure of 20 mm Hg or more was found among 5 percent of adults 20–74 years of age. This proportion increased substantially with successive age groups from 2 percent among young adults ages 20–24 years to 10 percent among those ages 65–74 years. The increase in this degree of pressure elevation with age groups was observed to be similar for men and women.

The total eye problem

In summary, an estimated 381.1 per 1,000 of the U.S. population ages 1–74 years in 1971–72 had one or more types of eye pathology as identified in this NHANES examination. Nearly one-fifth (18.5 percent) of these, or an estimated 13.6 million persons, with eye pathology were either receiving or in need of treatment for the condition (table A). Nearly one-half of this group—48.5 percent (an estimated 6.6 million persons)—were not receiving but needed such treatment.

Nearly one-fifth (19.1 percent) of those with eye pathology, or an estimated 14.0 million persons, had an eye condition causing decrease in visual acuity.

Defective acuity of no better than 20/50 in one or both eyes with usual correction (with corrective lenses if worn, otherwise without), as determined in the NHANES, was found among an estimated 61.5 per 1,000 population ages 4–74 years. (This corresponds to the rate of 59.2 per 1,000 ages 1–74 years shown in table B, assuming no defective acuity among those whose vision was not tested—those 1–4 years of age). Nearly three-fourths (74.3 percent) of persons 1–74 years with usual visual acuity 20/50 or worse (or about 8.5 million) also had some eye pathology. Nearly half of them (47.8 percent), or 5.4 million persons 1–74 years, had some eye pathology causing decrease in vision.

More than three-fifths (61.1 percent) or an estimated 8.6 million persons 1–74 years of age with eye pathology causing vision decrease still had acuity better than 20/50 with their usual correction.

Race

Vision decrease

The prevalence of eye pathology causing decrease in visual acuity was slightly, but not significantly greater among the black than the white population ages 1–74 years; the estimated rates were 78.7 and 72.1 per 1,000 population, respectively. However, when the rates were standardized to remove the effect of differences in the age distributions of the two populations, the rate for eye pathology causing vision decrease was significantly greater among black persons (95.0 per 1,000) than among white persons (70.6 per 1,000) (table 8). These racial differences were observed among males and females.

Across age, these rates were observed to be somewhat higher for black than white males from ages 12–74 years. Among females, the pattern of racial

Table A. Prevalence rates and prevalence of eye pathology, eye pathology causing vision decrease, and defective usual visual acuity (20/50 or worse) among persons 1–74 years of age, by sex: United States, 1971–72

Type of eye condition	Total	Males	Females
	Rate per 1,000 population		
Eye pathology, one or more types	381.1	388.6	374.2
Eye pathology needing or receiving treatment	70.5	64.8	75.7
Treatment needed (not under care)	34.2	33.8	34.6
Under care	36.3	31.0	41.1
Eye pathology causing vision decrease	72.7	65.7	79.2
Usual visual acuity 20/50 or worse	59.2	55.5	62.8
No eye pathology, usual acuity 20/50 or worse	15.2	5.7	22.0
Eye pathology, usual acuity 20/50 or worse	44.0	49.9	40.8
Eye pathology causing vision decrease, usual acuity 20/50 or worse	28.3	27.2	29.3
Eye pathology causing vision decrease but usual visual acuity still better than 20/50	44.4	38.5	49.9
	Population estimates in thousands		
Eye pathology, one or more types	73,448	36,331	37,117
Eye pathology needing or receiving treatment	13,587	6,068	7,519
Treatment needed (not under care)	6,591	3,160	3,431
Under care	6,996	2,908	4,088
Eye pathology causing vision decrease	14,011	6,148	7,863
Usual visual acuity 20/50 or worse	11,409	5,148	6,225
No eye pathology, usual acuity 20/50 or worse	2,929	586	2,343
Eye pathology, usual acuity 20/50 or worse	8,480	4,532	3,948
Eye pathology causing vision decrease, usual acuity 20/50 or worse	5,464	2,542	2,912
Eye pathology causing vision decrease but usual visual acuity still better than 20/50	8,557	3,606	4,991

differences in these eye conditions causing vision decrease was less consistent—the rates among white females was the higher in age groups 1–11, 18–24, and 45–64 years.

Black males were observed to be more likely to have eye pathology causing vision decrease than black females (age-adjusted rates of 102.8 and 88.4 per 1,000, respectively); the reverse was observed in the white population, among whom the age-adjusted prevalence rate was 62.5 per 1,000 white males, compared with 78.2 for white females.

Among the white population, the prevalence of eye pathology causing vision decrease was substantially lower for younger females than males from 1–34 years of age; among black persons the pattern of sex differences with age in such pathology was less consistent and probably reflected no more than sampling variability.

Treatment needs

The need for treatment of eye pathology in the total population ages 1–74 years was significantly greater among black than white persons (age–adjusted rates of 59.4 and 31.6 per 1,000, respectively) (table 9). Among males and females, the relative extent of need for such care was significantly greater among black than white persons ages 1–74 (age–adjusted rates of 53.3 compared with 32.1 per 1,000 males and 64.9 compared with 31.2 per 1,000 females).

White males were observed to be about as likely as white females and black females as more likely than black males to have eye conditions needing medical care. Among adults 18–74 years, the need for eye treatment was significantly greater for black men and women than it was for their white counterparts (71.3 and 78.7 per 1,000 black men and women, compared with 36.6 and 36.3 per 1,000 white men and women).

Among the population with eye pathology, the proportion needing treatment was observed to be greater for black than white persons, for males and females (8 percent among white males and females, 11 percent for black males and 16 percent for black females).

Under care

The proportion of the population with eye pathology being treated was observed to be greater among the white than the black population ages 1–74 years (age-adjusted rates of 38.0 per 1,000 white persons and 25.0 per 1,000 black persons)(table 10).

When considered in relation to all of those needing treatment for eye pathology, whether or not they are now receiving it, over half the white population ages 1–74 years in need of such care were receiving it (55 percent for both sexes, 50 percent for males and 58 percent for females), compared with only slightly more than one-fourth among the black population (28 percent for both sexes, 26 percent for males and 29 percent for females).

Among adults 18–74 years of age, nearly 79 percent of the group of white women needing eye treatment were receiving it, compared with 51 percent of white men, 32 percent of black women, and 28 percent of black men.

Geographic region

Vision decrease

Eye pathology causing decrease in vision was most prevalent in the South and least prevalent in the West among the total population ages 1–74 years, and among adults 18–74 years, males and females; the differences were large enough to be statistically significant. Age-adjusted rates ranged from 89.6 per 1,000 in the South to 53.9 per 1,000 in the West for the population ages 1–74 years; those in the Northeast and Midwest were similar (72.1 and 73.9 per 1,000, respectively)(table 8).

Treatment needs

The age-adjusted proportion of the population 1–74 years of age in need of treatment for one or more eye conditions ranged from 40.4 per 1,000 in the West to 29.9 per 1,000 in the Northeast, differences too small to reflect no more than sampling variability. Among adults, the range was from 54.6 per 1,000 in the West to 31.6 per 1,000 in the Midwest (table 9).

Among males, the regional distribution of need for treatment was generally similar to that shown for the total population ages 1–74 years. The age-adjusted rates ranged from 47.2 per 1,000 in the West to 25.0 per 1,000 in the Northeast; the differences between these extremes were large enough to be statistically significant.

Among females, the proportion of the population in need of treatment for an eye condition showed essentially no regional variation. The age-adjusted rates for the ages 1–74 years ranged from 34.7 per 1,000 in the West to 33.5 per 1,000 in the Northeast; among women 18–74 years, the range was from 44.7 per 1,000 in the West to 32.2 in the Midwest.

Under care

The age-adjusted proportion of the population under care for an eye condition ranged from 41.2 per 1,000 in the South to 33.8 in the West, differences small enough to reflect no more than sampling variability (table 10). Among males, these rates were observed to be slightly higher in the Midwest and lower in the West and Northeast than the South; the proportion of the female population receiving treatment for an eye condition was highest in the South and lowest in the Midwest.

For the total population with eye pathology who needed or were receiving treatment for it, the proportion under care ranged from 56 percent in the South to 46 percent in the West. Females in the West and, to a more limited extent, those in the South, were more likely than males to be receiving such care (53 percent compared with 38 percent in the West, 59 percent compared with 52 percent in the South); in the Northeast and Midwest, males were about as likely as females to be under care (53 and 54 percent, and 50 and 59 percent, respectively).

Population density

Vision decrease

Eye pathology causing decrease in vision was observed to be more prevalent among urban than rural residents. The respective rates were 75.4 and 67.6 per 1,000 population ages 1–74 years (table 8). Urban rates appeared higher for males and females ages 1–74 years and adults 18–74 years.

Such eye pathology was most prevalent among persons living in the smaller nonurbanized communities of 25,000 or more and the least prevalent among persons in the largest urban communities of 3 million or more. The difference between these respective age-adjusted rates of 132.4 and 53.4 per 1,000 was large enough to be statistically significant. Only in the largest metropolitan communities were the rates of eye pathology causing vision decrease observed to be less than for those in rural areas.

Treatment needs

The extent of need for treatment of an eye condition was observed to be greater among the urban than the rural population. The respective rates were 39.7 and 23.8 per 1,000 population ages 1–74 years (table 9). The greater need for such care was observed to exist among males and females in urban communities.

In rural areas, the need for eye treatment was observed to be greater among males than females; in urban communities, the need for such care was generally somewhat greater among females than males.

Under care

The proportion of the population with eye conditions being treated was observed to be greater in urban than rural areas among males and females (table 10). In both population density areas, females were observed to be more likely to be receiving treatment than males.

Of all those in need of treatment for an eye condition, regardless of whether care was being received, about half of those in need of care in rural and urban areas were observed to be receiving it.

Income

Vision decrease

There was an inverse relationship between eye pathology causing vision decrease and annual family income (figure 11). The age-adjusted prevalence rates

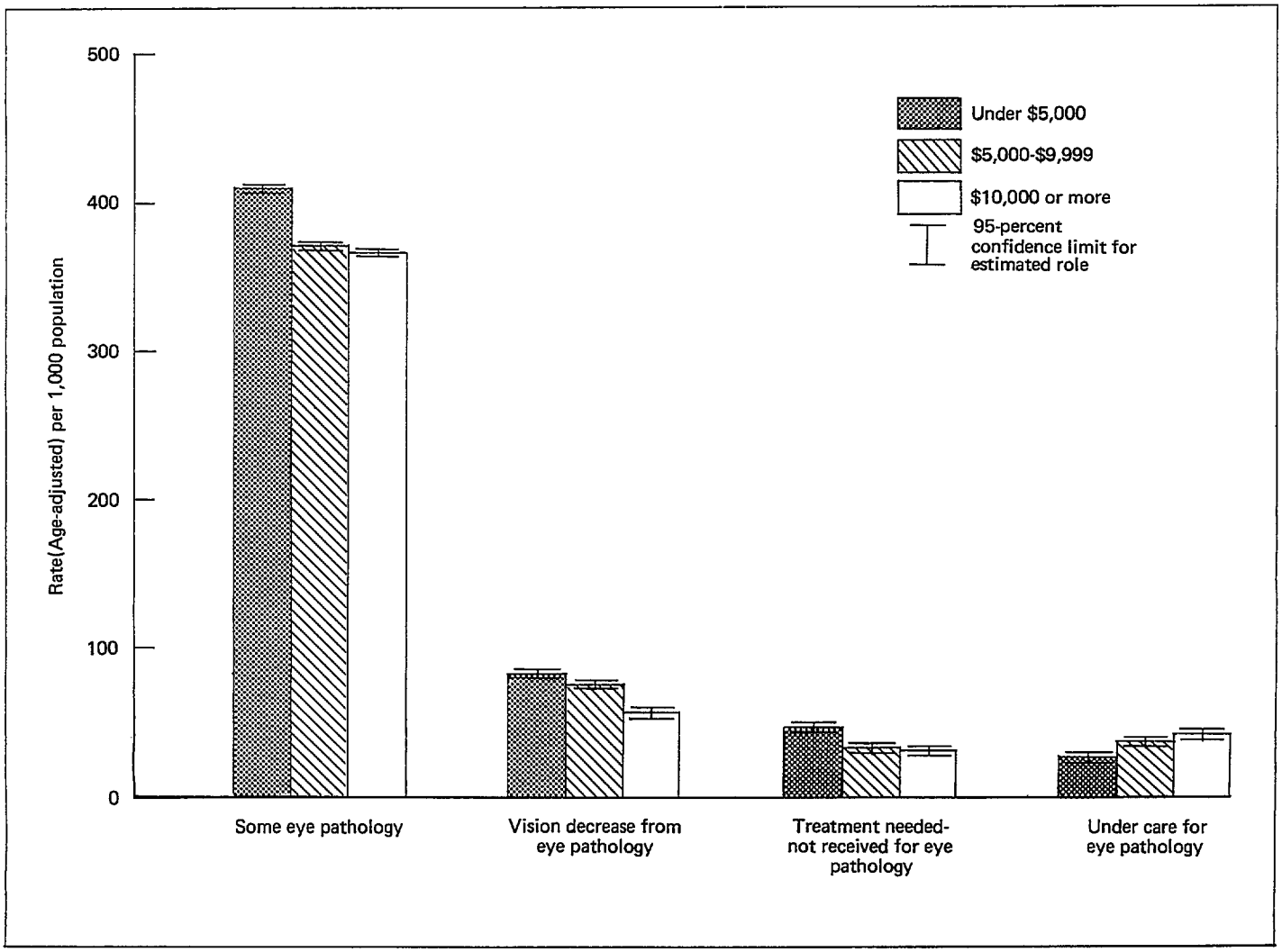

Figure 11. Prevalence rates (age-adjusted) for eye pathology, eye conditions causing decrease in vision, eye conditions needing but not receiving medical treatment, and eye conditions for which care is being received among persons 1–74 years of age, by annual family income: United States, 1971–72

for such pathology were observed to decrease consistently with increasing income from 84.8 per 1,000 population among those in families with annual income under $5,000 to 58.0 in those with income $10,000 or more. This trend for ages 1–74 years as well as for adults was consistent among males and females.

Treatment needs

The need for treatment of eye pathology was also observed to decrease consistently with increase in size of family income. The age-adjusted rates ranged from 41.3 per 1,000 population ages 1–74 years among those in families with income less than $5,000 to 27.4 per 1,000 in the $10,000-and-over bracket (table 9).

Among adults ages 18–74 years in the population with eye pathology, the proportion needing medical treatment was observed to decrease from 50.5 per 1,000 among those in the lowest income bracket (under $5,000) to 30.3 per 1,000 among those with annual income of $10,000 or more.

Under care

The proportion receiving treatment for eye pathology was observed to show a direct association with income. The age-adjusted prevalence rates for those under care ranged from 26.1 per 1,000 population ages 1–74 years with income under $5,000 to 40.6 per 1,000 among those in the $10,000 and over bracket (table 10).

The age-adjusted proportion under care for eye pathology among those determined to be in need of or receiving such care was observed to increase from 39 percent among the population 1–74 years of age in the lowest income level group to 60 percent among those with annual family income of $10,000 or more.

Education

Vision decrease

Eye pathology causing decrease in visual acuity among adults 18–74 years was observed to show a

consistent decrease in prevalence with increasing level of education. The age-adjusted rates declined from 151.0 per 1,000 population with less than 5 years of formal schooling to 44.5 per 1,000 population with 13 years or more, a trend consistent among men and women (table 11).

Treatment needs

The extent of need for treatment of eye pathology also was observed to be inversely related to the education level of adults. The age-adjusted prevalence rates of need for medical care of eye conditions decreased from 71.4 per 1,000 adults 18–74 years with less than 5 years of schooling to a minimum of 17.8 per 1,000 among those with 13 years or more education.

In relation to the extent of eye pathology for which treatment was needed, the age-adjusted proportion was observed to decrease from 15 percent among adults with the least education (less than 5 years) to 5 percent among those with some college education (13 years or more).

Under care

The proportion of the adult population receiving care for eye pathology was observed to be somewhat greater among those with less than 5 years of formal schooling than among those with more education. The respective age-adjusted rates were 46.1 per 1,000 population compared with 30.3 and 33.7.

Among all adults receiving or needing treatment for eye pathology, the proportion being treated was observed to increase consistently with education from 39 percent among those with less than 5 years of completed education to 65 percent with 13 years or more of education.

Comparison with previous studies

National prevalence estimates for eye pathology based on findings from the three previous National Health Examination Surveys of 1960–62 among adults 18–79 years of age, of 1963–65 among children 6–11 years of age, and 1966–70 among youths 12–17 years of age have been published.[12–14]

The initial National Health Examination Survey among adults in 1960–62 included a funduscopic examination performed by the survey physician with an ophthalmoscope during the physical examination. The prevalence of eye pathology as determined for U.S. adults 18–74 years of age in 1960–62, when standardized with the 1971–72 U.S. population distribution, was approximately 35 percent, compared with the prevalence rate of 48 percent among this age range in the 1971-72 national study (NHANES). The higher rates in the more recent study were expected because the eye examination was more comprehensive.

In the 1963–65 National Health Examination Survey among children 6–11 years of age, the examination by the survey pediatrician was limited principally to identification of tropias, phorias, and infectious conditions affecting the lids or conjunctiva. The resultant prevalence rate for eye pathology from the 1963–65 national study among children ages 6–11 years was 9 per 100, compared with the rate of 21 per 100 from the 1971–72 NHANES. In the 1966–70 National Health Examination Survey among youths 12–17 years of age, the examination by the survey pediatrician was more comprehensive than that given the children in 1963–65, including an inspection of the sclerae, pupils, and irides not done in the preceding survey. However, the prevalence of eye pathology among U.S. youths in 1966–70 was only 8 per 100, compared with 24 per 100 in the 1971–72 NHANES. Again, the higher rates from the more recent national survey would be expected because the eye examination was more comprehensive than those in 1963–70 among children and youths.

The prevalence of selected types of eye pathology was determined in 1973–75 among the still-living members of the Framingham (Ma.) study population, who had been under investigation for coronary disease risk factors since 1948 and who were in 1973–75 ages 52–85 years.[15,16] The eye examination given by ophthalmologists included diagnostic identification of cataracts, diabetic retinopathy, macular degeneration, and glaucoma. Among the Framingham group, the prevalence rates found for senile cataract were 9.6 percent, for diabetic retinopathy 1.6 percent, for senile macular degeneration 4.0 percent, and for open-angle glaucoma 1.4 percent. For the comparable age group (65–74 years) the prevalence of senile cataracts among the Framingham study population were observed to be only about one-third the size of the national estimates from NHANES, the rates for diabetic retinopathy and senile macular degeneration three times as large, and the rate for open-angle glaucoma twice as large. These differences may reflect the more thorough eye examination given the Framingham group and the somewhat greater diagnostic precision used there. However, except for the cataract group, the differences did not exceed the confidence limits for the national estimates and hence could be due to sampling variability alone.

Information from the National Health Interview Survey in 1974 on limitation of activity due to visual impairments among the civilian noninstitutionalized population has been published.[17] These data collected by household interview, although not really comparable with NHANES data for those with vision decrease from eye pathology, show a similar pattern of association with income but not with region or sex.

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List of detailed tables

Table 1. Prevalence rates and prevalence of eye conditions, number of eye conditions per person, and persons with one or more types of eye conditions among the population 1–74 years by age and sex with standard errors: United States, 1971–72

Number of eye conditions and sex	*All ages, 1–74 years*	*1–5 years*	*6–11 years*	*12–17 years*	*18–24 years*	*25–34 years*	*35–44 years*	*45–54 years*	*55–64 years*	*65–74 years*
	Age at examination									
Both sexes				Rate per 1,000 population						
Persons with one or more eye conditions	381	105	215	243	292	320	386	571	647	854
All eye conditions	677	129	257	327	393	440	578	1,030	1,430	2,303
Eye conditions per person:										
None	624	890	792	763	710	688	631	427	351	141
1	215	93	169	178	213	218	232	316	276	231
2	87	13	31	41	59	71	102	144	157	232
3 or more	74	4	8	18	18	23	35	113	216	396
Males										
Males with one or more eye conditions	389	103	232	261	309	360	398	590	640	855
All eye conditions	679	125	255	334	406	481	630	994	1,544	2,355
Eye conditions per person:										
None	619	894	779	744	695	648	628	411	358	149
1	227	91	189	203	227	254	222	355	252	228
2	82	13	29	42	60	79	99	123	150	220
3 or more	72	2	3	11	18	19	51	111	240	403
Females										
Females with one or more eye conditions	374	107	197	225	276	283	376	555	653	853
All eye conditions	675	134	259	321	381	404	527	1,063	1,330	2,263
Eye conditions per person:										
None	628	888	804	781	723	724	633	443	347	134
1	204	95	149	153	200	186	242	281	298	233
2	92	13	33	41	58	63	104	164	162	241
3 or more	76	4	14	25	19	27	21	112	193	392
Persons with one or more eye conditions				Population estimate in thousands						
Both sexes	73,448	1,778	5,345	6,031	6,318	8,237	9,341	13,454	12,071	10,873
Males	36,331	889	2,927	3,271	3,259	4,338	4,698	6,674	5,592	4,683
Females	37,117	889	2,418	2,760	3,059	3,899	4,643	6,780	6,479	6,190
Persons with one or more eye conditions				Standard errors of rates						
Both sexes	12.1	14.5	9.9	11.2	13.5	23.3	28.1	34.8	38.8	51.0
Males	15.3	19.9	13.3	15.0	17.8	35.0	37.4	46.2	50.4	67.4
Females	13.3	18.2	14.0	12.5	13.8	21.0	36.8	45.6	49.2	67.0

Table 2. Prevalence rates of eye conditions by part of the eye affected among the population ages 1–74 years according to age and sex with standard errors: United States, 1971–72

Site of eye condition and NEI[1] code		Age[2] at examination										Sex		All ages, both sexes
		All ages, 1–74 years	1–5 years	6–11 years	12–17 years	18–24 years	25–34 years	35–44 years	45–54 years	55–64 years	65–74 years	Male	Female	
		Rate per 1,000 population												Standard error
Amblyopia	–	25	6	20	18	23	30	32	41	27	19	17	32	2.4
Refractive mechanism	61	5	*–	*2	11	*4	*2	6	8	*2	*3	*3	6	0.6
Orbit	62	3	*3	*–	*2	*1	*3	6	*4	6	6	4	3	0.4
Lids	63	71	35	47	37	55	50	64	99	123	193	80	63	4.2
Lacrimal apparatus	64	*0	–	–	–	–	–	–	–	–	*3	*0	*0	*
Conjunctiva	65	29	14	18	28	26	34	32	28	32	55	35	22	2.8
Eyeball	66	2	*0	–	–	*0	*0	1*	9	*5	*5	*4	*0	0.3
Cornea	67	111	8	38	36	68	88	114	174	249	338	128	96	5.2
Sclera	68	4	*1	*4	*0	*5	*2	*3	*1	10	12	4	4	0.6
Anterior chamber	69	14	–	*3	*4	13	7	10	27	22	70	11	18	2.2
Uveal tract	70	7	*1	*1	*4	*4	11	6	17	10	15	8	7	1.2
Iris, pupil	71	38	13	27	41	30	29	28	39	63	103	43	34	3.7
Choroid	73	35	–	*4	7	10	19	50	70	77	118	34	36	3.4
Lens	74	117	*5	12	27	52	47	62	171	317	603	110	123	5.4
Vitreous	75	17	–	*3	*1	*5	*3	13	23	41	102	16	18	1.6
Retina	76	126	15	20	43	47	57	100	223	302	533	126	126	5.9
Optic nerve	77	13	*2	11	8	12	10	13	10	28	29	10	16	2.0
Neuromuscular system	78	57	27	46	59	36	46	34	76	114	94	46	67	3.3
Site not specified	99	2	–	–	*3	–	*0	*2	8	*3	*2	*0	*4	0.3

[1]NEI is the National Eye Institute, National Institutes of Health, U.S. Department of Health and Human Services.
[2]Age-specific detail shown only to indicate trends with age, although most of the estimates do not meet NCHS standard for reliability and precision.

Table 3. Prevalence rate for the more prevalent types of eye conditions by type and part of the eye affected (NEI classification) among the population ages 1–74 years according to age and sex with standard errors: United States, 1971–72

Site and type of eye condition and NEI[1] code		Age[2] at examination										Sex		All ages, both sexes
		All ages, 1–74 years	1–5 years	6–11 years	12–17 years	18–24 years	25–34 years	35–44 years	45–54 years	55–64 years	65–74 years	Male	Female	
		Rate per 1,000 population												Standard error
Lid														
Blepharitis	6320	24	13	26	16	28	31	22	24	25	37	29	20	2.3
Angioma, fibroma	6353	14	*2	6	8	6	8	21	25	27	34	15	14	2.1
Elastosis	6360	6	–	–	–	–	*0	*0	*3	21	52	8	4	0.9
Absent lashes, etc.	6399	6	8	*2	*2	8	*0	*4	8	15	12	6	6	0.9
Conjunctiva														
Dilation, etc.	6500	6	*2	–	*5	*3	7	10	6	12	10	8	3	0.8
Conjunctivitis	6520	13	11	14	20	12	12	12	15	6	16	16	12	2.0
Cornea														
Disease, erosion	6700	14	*1	*5	6	6	15	13	24	30	36	13	15	2.1
Corneal guttata	6768	14	–	–	–	–	*3	16	25	37	78	11	17	2.1
Pterygium	6772	16	–	–	–	*3	20	18	31	46	38	25	8	1.5
Opacity, healed	6789	34	*3	26	16	40	34	33	51	45	65	47	21	3.3
Iris, pupil														
Pupillary membrane	7113	8	8	8	18	12	9	*3	7	*3	*4	7	10	1.2
Anisocoria	7180	10	*1	10	6	10	10	6	9	23	26	13	8	1.6
Choroid														
Drusen	7363	30	–	*3	*3	7	14	41	63	72	99	27	32	2.7
Cataract, other[3]	7460	34	*1	–	*2	*3	*2	8	26	100	285	31	36	3.2
Opacity	7489	57	*3	*3	8	13	20	32	92	173	286	49	64	3.3
Vitreous														
Floater, opacity	7564	8	–	*1	*4	*5	*2	7	14	18	42	7	9	1.2
Retina														
Retinal vascular change	7600	84	9	13	18	28	28	64	161	221	364	82	88	4.5
Macular degeneration	7670,7672	13	–	–	*3	–	*3	11	19	30	85	15	12	2.2
Pigment changes	7694,7695	12	*4	6	10	11	12	13	13	13	28	12	11	2.0
Neuromuscular system														
Esotropia	7862	13	16	24	17	12	6	*5	14	14	6	8	17	2.0
Exotropia, acquired	7864	21	*5	8	27	12	22	20	27	39	36	19	23	2.3
Hypertropia	7866	6	*2	*2	*5	*3	*4	*3	6	20	10	4	8	0.9

[1]NEI is the National Eye Institute, National Institutes of Health, U.S. Department of Health and Human Services.
[2]Age-specific detail shown only to indicate trends with age, although most of the estimates do not meet NCHS standard for reliability and precision.
[3]Other than congenital or traumatic.

Table 4. Prevalence rates for principal types of eye conditions (ICDA—8th revision classifications) among the population ages 1–74 years with standard errors: United States, 1971–72

Eye condition and ICDA code		Age at examination										Sex		All ages, both sexes
		All ages, 1–74 years	1–5 years	6–11 years	12–17 years	18–24 years	25–34 years	35–44 years	45–54 years	55–64 years	65–74 years	Male	Female	
		Rate per 1,000 population												Standard error
Neoplasms	190,224,227,238	25	*2	9	17	16	15	38	40	40	64	28	22	2.6
Metabolic diseases	270,272	2	–	–	*4	–	–	*2	8	*1	7	1	3	0.3
Diseases of blood (anemia)	285	*0	–	–	–	–	*1	–	–	–	*0	–	*0	*
Diseases of nerves, peripheral ganglia	350,358	*1	–	–	–	*2	*1	–	–	*2	*3	*0	*1	*
Inflammatory diseases of eye	360-369	56	30	48	47	57	58	45	67	64	101	63	49	3.3
Conjunctivitis	360	13	12	14	20	12	12	12	15	7	16	16	10	1.9
Blepharitis	361	26	15	30	20	28	33	22	24	28	42	32	21	2.4
Hordeolum	362	*1	*1	–	*2	*3	*0	*0	–	*0	7	*1	*1	*
Keratitis	363	2	*1	*2	*1	*3	*1	*2	*2	*5	*4	*1	3	0.7
Other, various parts of eye	366-369	13	*1	*3	*4	11	12	9	26	24	32	13	13	1.2
Other diseases and conditions of eye	370-379	454	65	167	218	265	310	406	732	1,058	1,714	455	453	6.1
Refractive error	370	5	*0	*2	11	*4	*5	6	8	*2	*3	4	6	1.0
Corneal opacity	371	35	*3	26	17	42	34	34	52	49	70	50	22	3.4
Pterygium	372	16	–	–	–	*3	20	18	31	46	41	25	8	1.6
Strabismus	373	41	23	36	49	27	34	29	46	78	53	31	50	3.4
Cataract	374	94	*4	6	13	24	28	41	122	276	576	84	103	4.5
Glaucoma	375	6	–	*1	*1	8	*5	6	14	12	49	5	8	1.1
Detachment retina	376	*1	–	–	–	–	*1	–	*2	*4	7	*1	*1	*
Other, retina optic nerve	377	78	12	37	45	54	71	121	176	196	302	74	82	4.5
Other, other parts of eye	378	171	22	58	79	102	112	150	258	374	592	173	169	3.2
Other neuromascular conditions and blindness	379	6	–	–	*3	*3	*0	*1	13	21	21	8	4	1.1
Diseases of circulatory system (arteriosclerosis)	440	85	9	13	18	28	28	64	161	221	364	82	88	4.3
Diseases of skin and subcutanious tissue	692,701	6	11	*2	*2	8	*0	*4	8	16	12	7	6	1.1
Congenital eye anomalies	744	10	11	8	13	8	10	7	7	11	13	11	8	1.3
Symptoms referable to nervous system, sense organs	781	7	*2	*3	*5	*3	8	7	10	14	7	6	7	1.1
Accidents	802,870,921,930,997	5	*1	*3	*3	*4	6	2	6	*5	6	7	3	1.0

NOTE: Age-specific detail shown only to indicate trends with age, although most of the estimates do not meet NCHS standard for reliability and precision.

Table 5. Prevalence rates for principal types of eye conditions (ICDA-8th revision classifications)—all eye conditions, conditions causing decrease in vision, conditions needing but not receiving medical care and conditions under medical care among the population ages 1–74 years with standard errors: United States, 1971–72

Eye condition and ICDA code	*All eye conditions*	*Decreasing vision*	*Needing care*	*Receiving care*	*All eye conditions*
	Rate per 1,000 population				*Standard error*
Neoplasms 190, 224, 227, 238	25	*0	*2	*1	2.4
Metabolic conditions 270, 272	*2	–	*0	–	0.3
Blood condition (anemia) 285	*0	–	–	–	*
Diseases of nerves 350, 358	*1	–	*0	*0	*
Inflammatory diseases 360–367	56	*2	9	*3	3.3
Conjuctivitis 360	13	–	*3	*1	2.0
Blepharitis 361	26	*0	*5	*1	2.4
Hordeolum 362	*1	–	*0	*0	*
Keratitis 363	*2	*0	*0	*0	*
Other, uveal tract 366	7	*2	*1	*0	1.2
Other, retina 367	*1	*0	–	–	*
Other, lacrimal system 368	*0	–	–	–	*
Other, other part of eye 369	*4	*0	*0	–	1.1
Other eye conditions 370–379	454	82	25	22	6.1
Refractive errors 370	5	*0	*0	*0	1.0
Corneal opacities 371	35	*2	*1	*1	3.4
Pterygium 372	16	*1	*2	*1	1.6
Strabismus 373	41	*7	*3	*6	3.5
Cataract 374	94	29	*4	*4	4.6
Glaucoma 375	6	*3	4	*2	1.1
Detached retina 376	*1	*1	*0	*1	*
Other, in retina 377	78	36	*6	*4	4.6
Other, in other parts of eye 378	171	*3	*4	*2	3.2
Other neuromuscular conditions and blindness 379	6	*0	*0	*0	1.1
Diseases of circulatory system (arteriosclerotic changes) 440	85	*0	*2	*2	4.4
Diseases of skin (eyelids) 692, 701	6	–	*0	–	1.1
Congenital eye conditions 744	10	*1	0	0	1.4
Symptoms—exophthaloma, nystagmus, visual field defects 781	7	*2	*0	*1	1.1
Accidents, etc. 802, 870, 921, 930	5	*0	*0	*0	1.1

NOTE: Data included to show relative magnitude of the problem, although the estimates for most do not meet NCHS standards for reliability and precision.

Table 6. Prevalence rates for eye conditions causing decrease in vision, needing (but not recieving) medical treatment and under medical care among the population ages 1–74 years by age and sex with standard errors: United States, 1971–72

Age and sex	*Eye conditions*					
	Causing vision decrease	*Needing medical care*	*Under medical care*	*Causing vision decrease*	*Needing medical care*	*Under medical care*
	Rate per 1,000 population			Standard errors		
All ages, 1–74	73	34	36	4.7	4.2	4.7
1–5 years	*11	*21	*8	3.8	9.3	2.9
6–11 years	28	*16	30	5.1	6.6	7.9
12–17 years	28	*28	20	8.0	8.4	6.6
18–24 years	30	22	18	4.8	4.4	4.6
25–34 years	40	*31	29	7.6	8.4	6.3
35–44 years	57	23	24	10.8	6.5	8.8
45–54 years	89	44	48	12.6	9.7	12.6
55–64 years	151	54	62	25.3	11.2	17.8
65–74 years	364	98	127	29.3	11.7	10.8
Males, 1–74 years	66	34	31	...	...	...
Females, 1–74 years	79	35	41	...	...	...

[1]Does not include conditions receiving medical care.

Table 7. Mean intraocular pressure, standard error of the mean and percent distribution of adults ages 20–74 years in the population by age, sex, and race: United States, 1971–72

Tonometry group and sex	*All races*					*White*					*Black*				
	20–74 years	*20–24 years*	*25–44 years*	*45–64 years*	*65–74 years*	*20–74 years*	*20–24 years*	*25–44 years*	*45–64 years*	*65–74 years*	*20–74 years*	*20–24 years*	*25–44 years*	*45–64 years*	*65–74 years*
Both sexes								Percent distribution							
All groups	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than 10.0 mm Hg	4.3	3.2	4.3	5.1	2.4	4.2	3.4	4.3	5.0	2.3	4.1	2.1	4.6	4.6	3.4
10.0–14.9 mm Hg	49.4	61.6	53.4	43.6	38.5	49.7	60.8	54.0	44.5	38.4	47.1	66.3	49.0	35.9	39.1
15.0–19.9 mm Hg	41.4	32.9	39.3	44.6	48.8	41.4	33.8	39.1	44.2	49.5	40.1	26.6	39.3	48.8	41.1
20.0 mm Hg or more	5.0	2.2	3.0	6.6	10.3	4.6	1.9	2.6	6.3	9.8	8.7	5.0	7.1	10.8	16.3
Mean intraocular pressure in mm Hg	14.8	14.2	14.4	15.0	15.8	14.7	14.2	Summary statistics 14.4	15.0	15.8	15.1	14.1	14.7	15.7	16.5
Standard error	2.29	2.44	2.17	3.07	2.73	2.44	2.63	2.34	3.13	2.88	3.05	4.85	3.56	5.45	4.64
Sample examined	6,255	755	2,428	1,423	1,649	4,732	538	1,844	1,088	1,262	1,451	208	547	324	372
Population in thousands	119,852	16,873	48,389	42,137	12,453	106,745	14,721	42,706	38,024	11,294	12,188	2,010	5,174	3,891	1,113
Males								Percent distribution							
All groups	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than 10.0 mm Hg	4.6	2.2	4.7	5.8	3.0	4.9	2.5	4.9	6.0	3.2	2.8	–	3.4	4.0	1.1
10.0-14.9 mm Hg	49.4	59.4	53.3	43.5	42.0	49.7	57.7	54.2	43.8	42.8	48.2	71.9	46.6	41.9	33.4
15.0-19.9 mm Hg	41.1	35.7	39.4	43.4	46.9	40.9	36.7	38.6	43.2	46.9	40.8	28.1	43.4	42.9	47.2
20.0 mm Hg or more	4.8	2.7	2.6	7.3	8.1	4.6	3.1	2.3	7.0	7.2	8.2	–	6.6	11.2	18.3
Mean intraocular pressure in mm Hg	14.7	14.4	14.4	15.0	15.5	14.7	14.4	Summary statistics 14.3	15.0	15.4	15.1	13.8	14.8	15.5	17.3
Standard error	2.57	3.86	2.53	3.50	2.77	2.76	4.14	2.71	3.65	2.85	3.36	7.16	3.94	5.30	5.65
Sample examined	2,412	215	690	694	813	1,852	163	547	531	611	527	49	129	157	192
Population in thousands	56,720	7,886	23,290	20,135	5,409	50,837	6,922	20,782	18,240	4,893	5,378	882	2,184	1,824	488
Females								Percent distribution							
All groups	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than 10.0 mm Hg	3.9	4.1	3.9	4.5	2.0	3.6	4.1	3.8	4.0	1.6	5.1	4.0	5.3	5.4	5.3
10.0–14.9 mm Hg	49.3	63.6	53.4	43.7	35.8	49.7	63.6	53.7	45.2	35.1	46.2	61.4	50.6	28.8	43.6
15.0–19.9 mm Hg	41.7	30.5	39.3	45.8	50.3	42.0	31.4	39.6	45.1	51.5	39.5	25.2	36.6	55.6	36.4
20.0 mm Hg. and over	5.1	1.9	3.4	6.0	11.9	4.7	0.9	2.9	5.8	11.7	9.2	9.3	7.5	10.2	14.7
Mean intraocular pressure in mm Hg	14.8	14.0	14.4	15.0	16.1	14.8	13.9	Summary statistics 14.4	15.0	16.1	15.0	14.4	14.7	15.8	15.9
Standard error	2.28	1.96	2.35	3.01	3.09	2.40	1.93	2.42	3.00	3.31	3.69	5.58	5.03	7.66	6.19
Sample examined	3,843	540	1,738	729	836	2,880	375	1,297	557	651	924	159	418	167	180
Population in thousands	63,132	8,987	25,099	22,022	7,044	55,909	7,799	21,925	19,784	6,401	6,808	1,127	2,990	2,067	624

Table 8. Prevalence rates of eye pathology (actual and standardized) *causing vision decrease* among the population 1–74 years by race, geographic region, population size, and income, with selected standard errors: United States, 1971–72

Characteristic	Eye pathology causing vision decrease						All ages, both sexes
	Actual rates			Standardized rates			
	Both sexes	Males	Females	Both sexes	Males	Females	
Race	Rate per 1,000 population						Standard error
All races[1]	73	66	79	...	...	...	4.7
White	72	64	80	71	62	78	4.7
Black	78	85	74	95	103	88	12.0
Geographic region							
Northeast	75	58	91	72	57	85	10.0
Midwest	71	65	76	74	66	81	14.3
South	92	94	91	90	92	87	8.3
West	52	45	59	54	46	61	7.5
Urban-rural							
All urban places	75	67	83	...	...	...	5.9
Rural areas	68	63	72	69	62	76	7.3
Annual family income							
Under $5,000	124	139	113	85	114	170	9.7
$5,000–$9,999	71	56	85	76	58	93	7.3
$10,000 and over	47	41	54	58	47	60	5.0

[1]Includes other racial groups.

Table 9. Prevalence rates of eye pathology (actual and standardized) *needing but not under medical treatment* among the population 1–74 years by race, geographic region, population size, and income, with selected standard errors: United States, 1971–72

Characteristic	Eye pathology needing but not under medical care						All ages, both sexes
	Actual rates			Standardized rates			
	Both sexes	Males	Females	Both sexes	Males	Females	
Race	Rate per 1,000 population						Standard error
All races[1]	34	34	35	...	...	...	4.2
White	32	32	32	32	32	31	4.3
Black	52	46	58	59	53	65	8.3
Geographic region							
Northeast	30	25	35	30	25	34	4.9
Midwest	34	34	34	35	35	35	13.2
South	33	30	35	32	31	34	7.4
West	39	46	33	40	47	35	5.5
Urban-rural							
All urban places	40	37	42	...	...	...	5.7
Rural areas	24	28	20	24	28	20	6.2
Annual family income							
Under $5,000	52	62	45	41	50	37	7.2
$5,000–$9,999	32	30	35	34	28	38	5.3
$10,000 and over	27	27	28	27	27	29	5.6

[1]Includes other racial groups.

Table 10. Prevalence rates of eye pathology, (actual and standardized) *under medical care* among the population 1–74 years by race, geographic region, population size, and income with selected standard errors: United States, 1971–72

Characteristic	Eye pathology causing vision decrease						All ages, both sexes
	Actual rates			Standardized rates			
	Both sexes	Males	Females	Both sexes	Males	Females	
	Rate per 1,000 population						Standard error
Race							
All races[1]	36	31	41	...	...	...	4.7
White	38	33	44	38	33	43	4.9
Black	20	16	24	25	20	29	5.8
Geographic region							
Northeast	36	29	42	35	28	40	6.4
Midwest	34	34	34	35	34	36	14.4
South	42	33	51	41	32	49	6.3
West	33	28	38	34	29	38	6.5
Urban–rural							
All urban places	41	35	46	...	...	...	6.7
Rural areas	28	23	33	28	22	33	4.3
Annual family income							
Under $5,000	36	29	42	26	18	29	7.2
$5,000–$9,999	35	32	36	36	34	40	5.0
$10,000 and over	36	31	41	41	33	48	6.4

[1]Includes other racial groups.

Table 11. Prevalence rates (actual and standardized) of eye pathology causing decrease in vision, eye conditions needing medical treatment, and those under medical care for eye conditions among adults 18–74 years of age by education level, with standard errors: United States, 1971–72

Eye condition status and years of schooling completed	Eye pathology causing vision decrease						All ages, both sexes
	Actual rates			Standardized rates			
	Both sexes	Males	Females	Both sexes	Males	Females	
	Rate per 1,000 population						Standard error
Condition(s) causing vision decrease							
Education:							
Less than 5 years	306	308	304	151	155	148	35.7
5–8 years	179	175	183	84	86	82	18.6
9–12 years	81	71	89	65	55	73	5.6
13 years or more	58	54	63	44	45	44	7.3
Condition(s) needing medical treatment							
Education:							
Less than 5 years	152	175	124	71	93	48	26.7
5–8 years	56	55	57	38	40	36	8.7
9–12 years	37	34	39	28	24	32	4.8
13 years or more	26	26	25	18	19	17	6.6
Condition(s) under medical care							
Education:							
Less than 5 years	72	81	61	46	37	52	15.2
5–8 years	55	39	71	33	32	35	8.9
9–12 years	39	35	42	30	25	35	7.1
13 years or more	44	33	59	34	26	43	8.6

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Appendix I. Statistical notes

Survey design

The sampling design for the first National Health and Nutrition Examination Survey (NHANES I), conducted in 1971–74, was basically a three-stage stratified, multistage probability sample of loose clusters of persons in land-based segments. The sample was designed to be representative of the civilian noninstitutionalized population 1–74 years of age of the coterminous United States. Excluded from the selection were persons residing in Alaska and Hawaii and those within the coterminous United States who were confined to institutions or residing on lands set aside for use by American Indians. Successive elements dealt with in the process of sampling were primary sampling units (PSU's), census enumeration districts (ED's), segments (clusters of households), households, eligible persons, and finally sample persons.

The starting points in the first stage of this design were the 1960 decennial census lists of addresses and the nearly 1,900 PSU's into which the entire United States was divided. Each PSU was either a standard metropolitan statistical area (SMSA), a single county, or two or three contiguous counties. The PSU's were grouped into 357 strata as they were for use in the 1963–72 National Health Interview Surveys and subsequently collapsed into 40 superstrata for use in the NHANES I.

Of the 40 superstrata, 15 contained single large metropolitan areas of more than 2 million population. Those 15 large metropolitan areas were selected for the sample with certainty. The 25 noncertainty strata were classified into 4 broad geographic regions of approximately equal population and cross-classified into 4 broad population density groups in each region. Then a modified Goodman-Kish controlled selection technique was used to select 2 PSU's from each of the 25 noncertainty superstrata with the probability of selection of a PSU proportionate to its 1960 population so that proportionate representation of specified State groups and rate of population change classes was maintained in the sample. In this manner a total first-stage sample of 65 PSU's was selected. These 65 sample PSU's, or stands, are the areas within which samples of persons would be selected for examination over the 3–year survey period.

To produce national estimates of the nutritional status of the U.S. population at an earlier date, a probability subsample of 35 of the 65 stands was selected. This 35–stand subsample also made it possible to produce national estimates of certain other aspects of health status in the population that were critically needed at an earlier date and estimates of the findings for examination components that for logistic reasons could not be continued for the remainder of the 65 stands. Included among the 35 stands were 10 of the 15 large "certainty" metropolitan areas and 1 stand from each of the 25 "noncertainty" superstrata. The reduction from 15 to 10 large metropolitan areas was accomplished by randomly selecting one stand from multiple-stand standard metropolitan statistical areas (SMSA's), e.g., selecting the southern half of the Chicago SMSA to represent the entire SMSA. (This selection procedure was based on operational considerations, and although unbiased, is recognized as not being statistically optimal.) It is this subsample of 35 stands upon which the findings contained in this report are based.

Although the 1970 census data were used as the frame for selecting the sample within PSU's when they became available, the calendar of operations required that 1960 census data be used for the 35–stand sample of NHANES. Census enumeration districts in each PSU were divided into segments of an expected six housing units each. In urban ED's the segments were clusters of six addresses from the 1960 census listing books. For ED's not having usable addresses, area sampling was employed, and consequently some variation in the segment size occurred. To make the sample representative of the then-current population of the United States, the address or list segments were supplemented by a sample of housing units that had been constructed since 1960.

Within each PSU a systematic sample of segments

was selected. The ED's that fell into the sample were coded into one of two economic classes. The first class, identified as the "poverty stratum," was composed of "current poverty areas" that had been identified by the U.S. Bureau of the Census in 1970 (pre–1970 census), plus other ED's in the PSU with a mean annual income of less than $3,000 in 1959 (based on the 1960 census). The second economic class, the "nonpoverty stratum," included all ED's not designated as belonging to the poverty stratum.

All sample segments classified as being in the poverty stratum were retained in the sample. For those sample segments in nonpoverty-stratum ED's, the selected segments were divided into eight random subgroups, and one of the subgroups was chosen to remain in the NHANES sample. This procedure permitted a separate analysis with adequate reliability of those classified as being below the poverty level and those classified as being above the poverty level.

After identification of the sample segments, a list of all current addresses within the segment boundaries was made, and the households were interviewed to determine the age and sex of each household member, as well as other demographic and socioeconomic information required for the survey.

For selection of persons in sample segments to be examined in the National Health and Nutrition Examination Survey, all household members 1–74 years of age in each segment were listed on a sample selection worksheet, with each household in the segment listed serially. The number of household members in each of the six age-sex groups shown below was listed on the worksheet under the appropriate age-sex group column. The sample selection worksheets then were put in segment number order and a systematic random sample of persons in each age-sex group was selected to be examined using the following sample rates:

Age in years	*Rate*
1–5	1/2
6–19	1/4
20–44, males	1/4
20–44, females	1/2
45–64	1/4
65–74	1

The persons selected in the 35–stand sample of the Health and Nutrition Examination Survey comprised a representative sample of the target population and included 14,147 sample persons 1–74 years of age, of whom 10,126, or 71.6 percent, were examined. When adjustments are made for differential sampling for high-risk groups, the response rate becomes 72.8 percent.

All data presented in this report are based on weighted observations; that is, data recorded for each sample person are inflated to characterize the subuniverse from which that sample person was drawn. The weight for each examined person is a product of the reciprocal of the probability of selecting the person, an adjustment for nonresponse cases (i.e., persons not examined), and a poststratified ratio adjustment that increases precision by bringing survey results into closer alignment with known U.S. population figures.

A more detailed description of the survey design and selection technique can be found in "Plan and operation of the Health and Nutrition Examination Survey, United States, 1971–1973," *Vital and Health Statistics*, Series 1, No. 10a.[6]

Nonresponse

In any health examination survey, after the sample is identified and the sample persons are requested to participate in the examination, the survey meets one of its more severe problems. Usually a sizable number of sample persons will not participate in the examination. Whether an individual participates is determined by many factors, some of which are uncontrollable and therefore may reasonably be treated as an outcome of a random event with a particular probability of occurrence. In this situation the effect of nonparticipation would be only to reduce the sample size, thereby increasing the sampling errors of examination findings. In practice, however, a potential for bias due to nonresponse exists if participation is not random event and if nonparticipants differ from participants. Because of the possibility of bias intensive efforts are made in the National Health and Nutrition Examination Survey to develop and implement procedures and inducements that would reduce the number of nonrespondents and thereby reduce the potential of bias due to nonresponse. These procedures and inducements are discussed in "Plan and operation of the Health and Nutrition Examination Survey," Series 1, No. 10a.[6]

Despite these intensive efforts, 27.2 percent of the sample persons from the first 35 stands were not examined. Consequently, the potential for a sizable bias does exist in the estimates in this publication. From what is known about the nonrespondents and the nature of nonresponse, it is believed that the likelihood of sizable bias is small. For instance, only a small proportion of persons gave reasons for nonparticipation that would lead to the belief that they would never agree to participate in examination surveys and that they might have differed from examined persons with respect to the characteristics under examination. Only 15 percent of the nonrespondents gave as their reasons for nonparticipation "personal illness," "physically unable," "pregnant," "antidoctor," or "fear of finding something wrong." Typical among the reasons given by the other nonrespondents were "unable because of work, school, or household duties"; "suspicious" or skeptical of the program"; "just not interest-

NOTE: A list of references follows the text.

ed in participating"; and "private medical care sufficient" or "just visited doctor."

An analysis of medical history data obtained for most nonexaminees as well as examinees also supports the belief that the likelihood of sizable bias due to nonresponse is small. No large differences were found between the examined group and the nonexamined group in the statistics compared. For example, 11 percent of persons examined reported having an illness or condition that interfered with their eating as compared with 9 percent of persons who were not examined but who had completed a medical history. The proportion of persons examined who reported ever being told by a doctor that they had arthritis was 20 percent; the proportion for high blood pressure was 18 percent; and for diabetes, 4 percent. The corresponding proportions for nonexamined persons were 17 percent for arthritis, 21 percent for high blood pressure, and 4 percent for diabetes.

As mentioned earlier, the data in this report are based on weighted observations, and one of the components of the weight assigned to an examined person was an adjustment for nonresponse. A procedure was adopted that multiplied the reciprocal of the probability of selection of sample persons by a factor that brought estimates based only on examined persons up to a level that would have been achieved if all sample persons had been examined. This nonresponse adjustment factor is the ratio of the sum of sampling weights for all sample persons within a relatively homogeneous class defined by age, sex, and poverty status to the sum of sampling weights for all responding sample persons within the same homogeneous class. To the degree that homogeneous groups that are also homogeneous with respect to the characteristics under study can be defined, the procedure can be effective in reducing the potential bias from nonresponse.

For the 35-stand sample of the National Health and Nutrition Examination Survey, persons were grouped into 20 age-sex-poverty status groups within each stand, yielding 700 separate cells with an average membership of about 20 sample persons each. These adjustment factors were distributed among examined persons as shown in table I.

Table I. Percent distribution of nonresponse adjustment factors, National Health and Nutrition Examination Survey (NHANES I), stands 1-35, 1971-72

Size of factor	*Percent distribution*
Total	100.0
1.00–1.24	38.4
1.25–1.49	31.6
1.50–1.74	12.9
1.75–1.99	8.4
2.00–2.49	6.1
2.50–2.99	1.2
3.00–3.03	1.4

Missing data

Examination surveys are subject to the loss of information not only through the failure to examine all sample persons but also from the failure to complete all examination components and to record the various items of information needed for each of those who come to the examining units.

The extent of missing data for the eye examination ranged from 1.9 percent for those 18–24 years and 45–54 years to 3.6 percent of those 35–44 years of age (table II).

More data are missing among males than among females (4 percent compared with 1 percent) and more among nonwhites than among whites (5 percent compared with less than 2 percent). Only among nonwhite males ages 35–44 years and 25–34 years is the loss sufficient to make the estimates for these groups substantially less reliable than for the others. In those two age groups, 32 percent and 20 percent, respectively, of the eye examinations for nonwhite males were not completed.

No imputation was made to replace missing eye examination data. The assumption has been made here that the distribution by age, sex, race, and other variables of these findings relating to eye pathology among persons with missing data is similar to that among those who were examined.

Small numbers

In some tables, magnitudes are shown for cells for which the sample sizes are so small that the sampling errors may be several times as great as the statistics themselves. In such instances the numbers, if shown, have been included to convey an impression of the overall story of the table.

Sampling and measurement error

This report has referred to efforts to minimize bias and variability of examination methods and measurement techniques. The potential of residual bias due to the high nonresponse rate has also been discussed.

The probability design of the survey makes possible the calculation of sampling errors. Traditionally the role of the sampling error has been the determination of how imprecise the results of a survey may be because they come from the measurement of a sample rather than all elements in the universe.

The estimation of sampling errors for a study of the type of the National Health and Nutrition Examination Survey is difficult for at least three reasons: (1) Measurement error and "pure" sampling error are confounded in the data—it is not easy to find a

Table II. Number of examinees and number and percent of examinees not given eye examination, by age at examination, and number not given eye examination by race and sex: National Health and Nutrition Examination Survey, 1971–72

Examination status, sex, and race	Age at examination									
	All ages, 1–74 years	1–5 years	6–11 years	12–17 years	18–24 years	25–34 years	35–44 years	45–54 years	55–65 years	65–74 years
					Number					
All examinees	10,126	1,489	1,061	1,045	1,015	1,259	1,170	793	630	1,653
Examinees not given eye examination	248	38	25	25	20	31	42	15	14	38
					Percent					
Examinees not given eye examination	2.4	2.6	2.3	2.4	1.9	2.4	3.6	1.9	2.2	2.3
					Number					
Male	171	22	16	15	15	24	30	10	8	31
Female	77	16	9	10	5	7	12	5	6	7
White	115	19	14	12	9	8	12	10	7	24
Male	85	12	10	8	7	7	11	6	4	20
Female	30	7	4	4	2	1	1	4	3	4
Black	133	19	11	13	11	23	30	5	7	14
Male	86	10	6	7	8	17	19	4	4	11
Female	47	9	5	6	3	6	11	1	3	3

procedure that will either completely include both or treat one or the other separately; (2) the survey design and estimation procedures are complex and, accordingly, require computationally involved techniques for the calculation of variances; and (3) hundreds of statistics are presented in the tables in this report, many for subclasses of the population for which there were small numbers of sample cases. Estimates of sampling error are obtained from the sample data and are themselves subject to sampling error, which may be large when the number of cases in a cell is small or, occasionally, when the number of cases is substantial.

Estimates of the standard errors for selected statistics used in this report are presented in the detailed tables. These estimates have been prepared by a replication technique that yields overall variability through observation of variability among random subsamples of the total sample. The standard error is primarily a measure of sampling variability, that is, of the variations that might occur by chance because only a sample of the population has been surveyed. As calculated for this report, the standard error also reflects part of the variation that arises in the measurement process. It does not include estimates of any biases that might exist in the data. The chances are about 68 out of 100 that an estimate from the sample would differ from a complete census by less than the standard error. The chances are about 95 out of 100 that the difference would be less than twice the standard error and about 99 out of 100 that it would be less than 2 1/2 times as large.

Tests of significance

The procedure used in this report for testing the significance of the difference between two rates or percents consisted of dividing the difference between the two rates by the standard error of the difference; that is, a z statistic was computed. An approximation of the standard error of a difference $d = x - y$ of two statistics (rates, percents or other) x and y is given by the formula

$$S_d = (S_x^2 + S_y^2)^{1/2}$$

in which S_x and S_y are the sampling errors respectively, of x and y. If the two groups or measures are positively or negatively correlated, the formula gives an overestimate or underestimate, respectively, of the actual standard error. A 95–percent confidence limit has been used in the text, i.e., $z = d/S_d \leq 1.96$. Patterns of differences or consistent trends in which the differences are not large enough to be statistically significant are referred to as "observed."

Examiner variability

Supervised examinations and testing with some measurement replication were done by the senior ophthalmologists from NEI at 24 of the 35 examination locations for approximately 2.5 percent of the 9,878 persons given the complete eye examination. This close supervision of the actual examination was done at the first two sessions at each of the 24 examination locations.

Additional training in the ophthalmology examination protocol had been given each ophthalmologist before the survey examinations were started. In addition, the senior ophthalmologists reviewed the methods used and the findings recorded by the 96 ophthalmologists employed during the survey. After completion of this part of the NHANES survey, there was a complete review of the findings and diagnoses of eye conditions under protocol established by Dr. Ganley and others at NEI.

The number of examinees per ophthalmologist examiner ranged from 3 to 50, with 30 percent examining fewer than 50 persons, 29 percent 50–99 persons, 31 percent 100–199 persons, and 8 percent 200 persons or more. Variation would be expected among examiners in the proportion of their examinees found to have significant eye pathology because of differences in age-sex distribution among the groups examined, area differences, hereditary differences, the extent and type of environmental exposure that may affect the eyes, and other factors. So the extent of examiner variability and the effect that it may have had on the findings from this ophthalmology examination may be assessed, the effect of age-sex differences in the groups examined by each ophthalmologist has been controlled through a direct adjustment method. In this method the age-sex specific rates for each examiner have been applied against the number of persons in that age-sex group for the total population and the age-sex adjusted rate recomputed.

Among persons examined, the age-sex adjusted proportions found to have significant eye pathology range from 6.6 to 83.5 percent per examiner, with one-fourth of the ophthalmologists finding 27.4 percent or fewer of the examinees to have such pathology, one-half finding between 27.4 and 48.0 percent and the remaining one-fourth finding 48.0 percent or more with significant eye pathology (table III).

A further assessment of examination location differences that may affect the prevalence of eye pathology as determined in this study shows that the number of examinees given the eye component ranged from 112 to 539 per stand. The age-sex adjusted prevalence rates for significant eye pathology ranged from 18.8 percent to 63.0 percent among the 35 examination locations. In one-fourth of the locations, 32.1 percent or fewer of the examinees were found to have significant eye pathology, one-half showed between 32.1 and 43.6 percent, and the remaining one-fourth 43.6 percent or more (table IV).

These tables show very large variations in eye pathology rates by examiner and examination location, reflecting both variation in the occurrence of such conditions in the population and examiner variability that cannot be separated in the data available.

Table III. Number of examinees and age-sex-adjusted proportions with eye pathology, by ophthalmologist examiner number: NHANES, 1971–72

Examiner number	Eye pathology rate per 1,000 persons	Number examinees	Examiner number	Eye pathology rate per 1,000 persons	Number of examinees
All examiners	381.1	9,879	36	293.9	221
			37	419.7	85
1	401.6	272	38	284.0	98
2	512.6	36	39	208.0	131
3	275.4	62	40	271.1	147
4	572.7	39	41	290.5	90
5	341.2	32	42	323.6	115
6	388.0	154	43	238.6	48
7	114.6	79	44	448.2	200
8	297.6	75	45	620.1	95
9	240.0	85	46	492.5	69
10	449.1	88	47	661.7	38
11	273.8	12	48	474.0	74
12	414.5	29	49	451.2	78
13	263.2	30	50	509.4	107
14	173.2	24	51	285.5	140
15	361.7	98	52	427.8	152
16	353.0	22	53	369.9	124
17	316.3	44	54	574.1	118
18	267.8	52	55	312.8	106
19	324.9	37	56	588.4	128
20	235.4	36	57	367.0	157
21	169.2	50	58	461.3	188
22	571.9	34	59	600.6	194
23	278.5	41	60	537.0	147
24	254.2	26	61	338.0	163
25	114.2	42	62	475.2	119
26	284.6	31	63	491.6	101
27	187.6	174	64	316.7	129
28	722.3	42	65	286.4	507
29	290.2	77	66	649.9	324
30	351.8	81	67	324.7	193
31	109.4	11	68	376.0	150
32	112.1	15	69	304.8	42
33	485.8	137	70	66.3	5
34	617.9	19	71	365.7	134
35	566.4	127	72	320.0	138

Table III. Number of examinees and age-sex-adjusted proportions with eye pathology, by ophthalmologist examiner number: NHANES, 1971–72—Con.

Examiner number	*Eye pathology rate per 1,000 persons*	*Number examinees*	*Examiner number*	*Eye pathology rate per 1,000 persons*	*Number of examinees*
73	415.7	76	85	548.5	279
74	345.9	103	86	233.0	23
75	222.6	35	87	550.1	66
76	380.1	407	88	325.0	38
77	452.0	98	89	802.8	43
78	509.7	67	90	252.2	59
79	301.2	78	91	300.8	35
80	265.8	134	92	346.8	52
81	835.2	96	93	204.9	3
82	320.2	112	94	455.7	63
83	630.0	78	95	477.7	160
84	217.1	80	96	326.2	431

Table IV. Number of examinees and age-sex-adjusted proportion of examinees with eye pathalogy, by examination location: NHANES, 1971–72

Examination location number	Eye pathology rate per 1,000	Number of examinees
All examination locations	381.1	9,879
1	413.6	270
2	387.8	179
3	263.0	165
4	301.5	218
5	390.8	303
6	280.9	395
7	351.2	243
8	187.6	174
9	386.1	316
10	315.3	241
11	490.3	112
12	293.9	221
13	319.5	187
14	306.3	216
15	267.1	368
16	447.6	199
17	533.1	352
18	515.4	264
19	414.9	415
20	476.5	476
21	354.4	249
22	472.5	539
23	395.6	230
24	435.7	429
25	342.2	363
26	649.9	324
27	315.7	259
28	380.7	218
29	424.0	245
30	254.2	247
31	384.9	406
32	404.2	272
33	346.8	275
34	548.5	279
35	474.7	230

Appendix II. The ophthalmology examination and recording forms

Examination prior to dilatation

Ocular history.—The ophthalmologist examiner asked each examinee whether the examinee had ever had problems (excluding refraction) or diseases of the for which he or she had seen a physician, and eye specialist, or an optometrist and, if so, what the problem was (figure I).

Pupils.—The presence of anisocoria was recorded, along with the measurement in millimeters of the diameter of the pupils in both eyes if their diameters differed by more than 1 mm.

The absence of direct light reflex was determined in a normally lighted room by the examiner directing the beam of a Finoff ocular transilluminator directly into the examinee's eyes from a distance of approximately 3 inches and observing pupillary contraction while the examinee was fixating at distance. The examiner determined the absence of consensual light reflex by observing the pupillary response in the unstimulated eye.

Lids.—The examination of the lids was done by gross examination, using a Finoff hand illuminator in a fully illuminated room, followed by slit lamp evaluation of the lid margins under low magnification.

Globe.—For suspected conditions of exophthalmos, the actual Hertel measurements and the base used were recorded for later review. For suspected conditions of microthalmus, the horizontal corneal diameter from external limbus to external limbus was measured for later review.

Conjunctiva.—The conjunctiva were examined by gross inspection under the low magnification of the slit lamp.

Cornea.—The cornea was screened under the low magnification of the slit lamp; abnormalities found were then examined under higher power.

Anterior chamber.—The anterior chamber was examined for flare with the small dot of light from the slit lamp directed toward the pupil at about a 60° angle.

Iris.—The iris was examined under the lower power of the Zeiss microscope. The examiner evaluated evidence of atrophy of the iris by directing the light beam through the pupil into the posterior chamber and looking for transmission of light through the iris tissue. Gonioscopy was used to confirm conditions of peripheral anterior synechiae when suspected.

Tonometry.—Applanation tonometry was performed on all individuals ages 20–74 years. When it was necessary to hold the lids open for tonometry because of lid-squeezing reflex or when the upper lid rested on the tonometer with any degree of pressure during the measurement, the test was recorded as unsatisfactory because either may artificially elevate intraocular pressure to give a falsely high reading.

The Goldman applanation tonometer used for this procedure was mounted on a Zeiss slit lamp. Intraocular pressure measurements were made soon after the installation of 0.1 percent fluorescin in the eyes. Three readings, obtained under magnification of 8–10X, were taken in each eye consecutively starting with the right. The tonometer was repositioned for each reading after the measuring scale had been turned to 10 mm Hg.

The slit illuminating aperture was opened fully and positioned at about a 60° angle to the slit lamp with the prism in contact with the cornea. The position was corrected so that the two semicircles were of equal size and in the middle of the field of view. The measuring drum in the tonometer then was turned until the inner borders of the two fluorescin rings just touched each other (the midpoint of each pulsation of the eye); the pressure from the drum was recorded to the nearest mm Hg.

Dilatation

Before dilatation the examinee was asked about symptoms compatible with attacks of acute narrow-angle glaucoma including transient blurring of vision associated with ocular pain or frontal headaches.

The examinee checked the depth of the anterior chamber before dilatation by directing the slit beam of the illuminator at about 60° toward the anterior chamber just inside the lumbus. If the separation was slitlike, or less than one-fourth the corneal width, gonioscopy was used to rule out the possibility of angle closure or symptoms suggestive of angle closure. The angle at the narrowest area in each eye was recorded for further review.

Dilatation was not done if the angle of closure was found to be 10° or narrower in any area. Dilatation for all other examinees was done with a solution of 1 percent mydriacyl unless the person was 50 years of age or younger, was hyperopic without corrective lenses and would be driving immediately after the examination. For this latter group a solution of 10 percent phenylephrine was used.

Twenty to 70 minutes after dilatation, the examinee was returned to the ophthalmologist for the remainder of the eye examination. The examiner then recorded whether the dilatation at that point was adequate for the fundus evaluation.

Eye examination after dilatation

Lens.—The crystalline lens was evaluated with the slit lamp and then with a direct ophthalmoscope (+10 lens). Only opacities observed by both instruments were recorded unless there was evidence of nuclear sclerosis (decreased lucency of the nucleus recorded as nuclear opacity) on the slit lamp evaluation.

Retina.—Goldman or Hruby lenses were used in the examination of the fundus only if pathology was suspected. The indirect ophthalmoscope was not used for routine examination of the examinee because dilatation was not uniformly adequate for evaluation of the periphal retina and because the examiners were not equally proficient in the use of the instrument.

Ophthalmic diagnosis

The ophthalmologists recorded their diagnostic findings as abnormal if any physiologic or pathologic changes were found during the course of the eye examination. Not classified as abnormal were findings limited to refractive error, phoria, arcus senilis, benign melanosis, concretions, pingueculum, inclusions, or follicules. If a refractive error was associated with other ocular pathology, such as myopia, Fuchs' spot, or peripheral retinal degeneration, the finding was classed as abnormal.

Diagnostic entities were recorded under this section rather than under the checklist of findings on which the diagnosis was based as shown in the detail of the eye examination. If the physiologic or pathologic changes found in the eye were not part of a more general diagnosis, they were listed in the diagnostic section. If the lens, cornea, extraocular muscles, etc., had become involved in the diabetic process, in addition to the diagnosis of diabetic retinopathy, those related conditions would also be listed separately as cataract secondary to diabetes mellitus, iris neovascularization secondary to diabetes mellitus, etc. Refractive error associated with other ocular pathology, such as myopia and Fuchs' spots or peripheral retinal degeneration would have been shown as the appropriate diagnostic entity of degenerative, pathologic, progressive, or malignant myopia. Etiology identification was included on the diagnoses wherever possible.

Amblyopia was diagnosed if vision could not be corrected to 20/30 or better and resulted from a strabismic or anisometropic condition (the difference in refractive error between the two eyes) but not if the loss of vision was due to other causes.

Up to 11 diagnoses were recorded for each examinee with abnormal eye pathology. The most serious conditions—those that needed treatment and those that caused decrease in visual acuity—were listed first.

For each diagnostic entity the examiner indicated whether the condition contributed to transient or permanent decrease in distance vision (any vision worse than 20/20 in the involved eye). The examiner also indicated for each diagnosis whether treatment was needed but not being received, treatment was needed and was being received, or treatment was not needed.

Conditions were considered as needing treatment if the examiner concluded during the examination that treatment should be provided. For example, an examinee with narrow angles would not be considered to require treatment, while one with occluded angles would. An adult with divergent strabismus would not be considered to require treatment even though cosmetic surgery might be beneficial. An examinee with cataracts and 20/40 vision would not be deemed in need of surgery, whereas one with cataracts and 20/200 vision would likely be evaluated as needing treatment.

Detailed ophthalmology examination recording form

HSM-425-13A (PAGE 1)
REV. 5/71

Form Approved
O.M.B. No. 68-R1184

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION
NATIONAL CENTER FOR HEALTH STATISTICS
HEALTH AND NUTRITION EXAMINATION SURVEY

OPHTHALMOLOGY – DETAILED EXAM

ASSURANCE OF CONFIDENTIALITY All information which would permit identification of the individual will be held strictly confidential, will be used only by persons engaged in and for the purposes of the survey, and will not be disclosed or released to others for any other purposes (22 FR 1687).

a. Deck No.	b. Sample No.	c. Sex	d. Age	e. Examiner No.	f. Name of examiner
162	_ _ _ _ _	1 ☐ Male 2 ☐ Female	_ _	_ _	

A. SIGNIFICANT OCULAR HISTORY (001) 1 ☐ Yes 2 ☐ No

1. Surgery – ☐ Strabismus ☐ Cataract (002) _ _ _ _ _
2. Other – ☐ Injury ☐ Infection (003) _ _ _ _ _
3. Other – *Specify*_____ (004) _ _ _ _ _

B. VISUAL ACUITY

1. Optotype used . . . . . 1. (005) 1 ☐ Snellen 2 ☐ III. E
2. Acuity
   - cc OD _____ 2. (006) *_ _
   - OS _____ (007) *_ _
   - sc OD _____ (008) *_ _
   - OS _____ (009) *_ _
3. If not 20/20, pinhole (Acuity) . . . . . 3.
   - OD _____ (010) *_ _
   - OS _____ (011) *_ _

*To be entered by coder

C. MOTILITY

1. Tropia . . . . . 1.
   - (012) 1 ☐ Eso 2 ☐ Exo 3 ☐ Neither
   - (013) 1 ☐ Hyper 2 ☐ Not hyper
   - (014) 1 ☐ Comitant 2 ☐ Incomitant
2. Phoria . . . . . 2.
   - (015) 1 ☐ Eso 2 ☐ Exo 3 ☐ Neither
   - (016) 1 ☐ Hyper 2 ☐ Not hyper
3. Nystagmus . . . . . 3.
   - (017) 1 ☐ Pendular 2 ☐ Jerk-horiz. 3 ☐ Jerk-vert. 4 ☐ Jerk-rotary 5 ☐ No nystagmus

Figure I. Detailed ophthalmology examination coding sheet, National Health and Nutrition Examination Survey, 1971–72

D. PUPILS

		OD	OS	OU
1. Anisocoria – location	1.	(018) 1 ☐	2 ☐	3 ☐
a. –(mm)	a.	_____	_____	_____
2. Absent light reflex				
a. Direct	2a.	(019) 1 ☐	2 ☐	3 ☐
b. Consensual	b.	(020) 1 ☐	2 ☐	3 ☐
3. Other – *Specify* _____				
_____	3.	(021) 1 ☐	2 ☐	3 ☐
4. No abnormality	4.	(022) 1 ☐	2 ☐	3 ☐

E. TONOMETRY – *Three readings*

Time of test _____ a.m. / p.m.

☐ Unsatisfactory test *(Code 99 in space 023)*

Applanation

OD		OS	
(023)	___	(024)	___
(025)	___	(026)	___
(027)	___	(028)	___

Anterior segment check prior to dilatation.

F. DILATATION

(1 gtt. 10% Phenylephrine OU)

(029)
1 ☐ Not dilated:
- ☐ Suspicious anterior chamber
- ☐ History of angle closure
- ☐ Unable to instill gtts.

2 ☐ Mydriasis inadequate for fundus copy

3 ☐ Dilatation adequate

H. MAXILLARY SINUS TRANSILLUMINATION

1. Right	1.	(033) 1 ☐ Normal	2 ☐ Dull	3 ☐ Opaque
2. Left	2.	(034) 1 ☐ Normal	2 ☐ Dull	3 ☐ Opaque

NOTES

Figure I. Detailed ophthalmology examination coding sheet, National Health and Nutrition Examination Survey, 1971–72—Con.

I. REFRACTION	Eye	Sphere		Cylinder		Axis	VA	PH
1. Present glasses	OD	035 1 ☐ + 2 ☐ −	036 ___.___ D	037 1 ☐ + 2 ☐ −	038 ___.___ D	039 ___ °		
	OS	040 1 ☐ + 2 ☐ −	041 ___.___ D	042 1 ☐ + 2 ☐ −	043 ___.___ D	044 ___ °		
2. If acuity less than 20/40, retinoscopy	OD	045 1 ☐ + 2 ☐ −	046 ___.___ D	047 1 ☐ + 2 ☐ −	048 ___.___ D	049 ___ °	050 ___ c*___	051 ___ c*___
	OS	052 1 ☐ + 2 ☐ −	053 ___.___ D	054 1 ☐ + 2 ☐ −	055 ___.___ D	056 ___ °	057 ___ c*___	058 ___ c*___

*To be entered by coder

J. LIDS		OD	OS	OU
1. Blepharitis	1.	(059) 1 ☐	2 ☐	3 ☐
a. Angular	a.	(060) 1 ☐	2 ☐	3 ☐
2. Chalazion	2.	(061) 1 ☐	2 ☐	3 ☐
3. Concretions	3.	(062) 1 ☐	2 ☐	3 ☐
4. Ectropion	4.	(063) 1 ☐	2 ☐	3 ☐
5. Entropion	5.	(064) 1 ☐	2 ☐	3 ☐
6. Hordeolum	6.	(065) 1 ☐	2 ☐	3 ☐
7. Ptosis	7.	(066) 1 ☐	2 ☐	3 ☐
8. Other – *Specify* _____ _____				
_____	8.	(067) 1 ☐	2 ☐	3 ☐
9. No abnormality	9.	(068) 1 ☐	2 ☐	3 ☐

K. GLOBE		OD	OS	OU
1. Enucleation	1.	(069) 1 ☐	2 ☐	3 ☐
2. Exophthalmos	2.	(070) 1 ☐	2 ☐	3 ☐
a. Measurement	a.	_____	_____	_____
b. Base	b.	_____	_____	_____
3. Microphthalmos	3.	(071) 1 ☐	2 ☐	3 ☐
a. Measurement (mm)	a.	_____	_____	_____
4. Other – *Specify* _____				
_____	4.	(072) 1 ☐	2 ☐	3 ☐
5. No abnormality	5.	(073) 1 ☐	2 ☐	3 ☐

Figure I. Detailed ophthalmology examination coding sheet, National Health and Nutrition Examination Survey, 1971–72—Con.

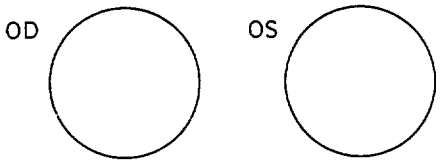
L. CONJUNCTIVA		OD	OS	OU
1. Bitot's spot	1.	(074) 1 ☐	2 ☐	3 ☐
2. Conjunctivitis				
a. Allergic	2a.	(075) 1 ☐	2 ☐	3 ☐
b. Follicular	b.	(076) 1 ☐	2 ☐	3 ☐
c. Infectious	c.	(077) 1 ☐	2 ☐	3 ☐
(1) Bacterial – *Specify* _____	(1)	(078) 1 ☐	2 ☐	3 ☐
(2) Viral – *Specify* _____	(2)	(079) 1 ☐	2 ☐	3 ☐
3. Follicles (no inflammation)	3.	(080) 1 ☐	2 ☐	3 ☐
4. Inclusions	4.	(081) 1 ☐	2 ☐	3 ☐
5. Pingueculum	5.	(082) 1 ☐	2 ☐	3 ☐
6. Xerosis	6.	(083) 1 ☐	2 ☐	3 ☐
7. Other – *Specify* _____	7.	(084) 1 ☐	2 ☐	3 ☐
8. No abnormality	8.	(085) 1 ☐	2 ☐	3 ☐

M. SCLERA		OD	OS	OU
1. Ectasia	1.	(086) 1 ☐	2 ☐	3 ☐
2. Episcleritis	2.	(087) 1 ☐	2 ☐	3 ☐
3. Scleritis	3.	(088) 1 ☐	2 ☐	3 ☐
4. Other – *Specify* _____	4.	(089) 1 ☐	2 ☐	3 ☐
5. No abnormality	5.	(090) 1 ☐	2 ☐	3 ☐

NOTES

Figure I. Detailed ophthalmology examination coding sheet, National Health and Nutrition Examination Survey, 1971–72—Con.

N. CORNEA		OD	OS	OU
1. Arcus senilis	1.	(091) 1 ☐	2 ☐	3 ☐
2. Band keratopathy	2.	(092) 1 ☐	2 ☐	3 ☐
3. Degeneration – *Specify* _____	3.	(093) 1 ☐	2 ☐	3 ☐
4. Dystrophy – *Specify* _____	4.	(094) 1 ☐	2 ☐	3 ☐
5. Edema				
a. Epithelial	5a.	(095) 1 ☐	2 ☐	3 ☐
b. Stromal	b.	(096) 1 ☐	2 ☐	3 ☐
6. Endothelial KP's	6.	(097) 1 ☐	2 ☐	3 ☐
7. Guttata	7.	(098) 1 ☐	2 ☐	3 ☐
8. Keratitis – *Specify* _____	8.	(099) 1 ☐	2 ☐	3 ☐
9. Keratomalacia	9.	(100) 1 ☐	2 ☐	3 ☐
10. Krukenberg spindle	10.	(101) 1 ☐	2 ☐	3 ☐
11. Opacity – *Specify* _____	11.	(102) 1 ☐	2 ☐	3 ☐
a. Superficial stromal	a.	(103) 1 ☐	2 ☐	3 ☐
12. Pterygium	12.	(104) 1 ☐	2 ☐	3 ☐
13. Vessels – *Specify* _____	13.	(105) 1 ☐	2 ☐	3 ☐
14. Other – *Specify* _____	14.	(106) 1 ☐	2 ☐	3 ☐
15. No abnormality	15.	(107) 1 ☐	2 ☐	3 ☐
16. Diagram location of abnormalities	16.	(108) 1 ☐ Location shown		



O. ANTERIOR CHAMBER		OD	OS	OU
1. Cells	1.	(109) 1 ☐	2 ☐	3 ☐
2. Flare	2.	(110) 1 ☐	2 ☐	3 ☐
3. Other – *Specify* _____	3.	(111) 1 ☐	2 ☐	3 ☐
4. No abnormality	4.	(112) 1 ☐	2 ☐	3 ☐

Figure I. Detailed ophthalmology examination coding sheet, National Health and Nutrition Examination Survey, 1971–72—Con.

P. IRIS			OD	OS	OU
1. Synechiae					
a. Anterior	1a.	(113)	1 ☐	2 ☐	3 ☐
b. Posterior	b.	(114)	1 ☐	2 ☐	3 ☐
2. Atrophy	2.	(115)	1 ☐	2 ☐	3 ☐
3. Coloboma	3.	(116)	1 ☐	2 ☐	3 ☐
4. Iritis	4.	(117)	1 ☐	2 ☐	3 ☐
5. Neovascularization	5.	(118)	1 ☐	2 ☐	3 ☐
6. Other – *Specify* _____					
_____	6.	(119)	1 ☐	2 ☐	3 ☐
7. No abnormality	7.	(120)	1 ☐	2 ☐	3 ☐

Q. LENS			OD	OS	OU
1. Aphakia	1.	(121)	1 ☐	2 ☐	3 ☐
2. Cataract					
a. Immature	2a.	(122)	1 ☐	2 ☐	3 ☐
b. Intumescent	b.	(123)	1 ☐	2 ☐	3 ☐
c. Mature	c.	(124)	1 ☐	2 ☐	3 ☐
d. Hypermature	d.	(125)	1 ☐	2 ☐	3 ☐
e. Morgagnian	e.	(126)	1 ☐	2 ☐	3 ☐
3. Opacity					
a. Anterior polar	3a.	(127)	1 ☐	2 ☐	3 ☐
b. Cortical	b.	(128)	1 ☐	2 ☐	3 ☐
c. Nuclear	c.	(129)	1 ☐	2 ☐	3 ☐
d. Post subcapsular	d.	(130)	1 ☐	2 ☐	3 ☐
4. Pigment on surface	4.	(131)	1 ☐	2 ☐	3 ☐
5. Other – *Specify* _____					
_____	5.	(132)	1 ☐	2 ☐	3 ☐
6. No abnormality	6.	(133)	1 ☐	2 ☐	3 ☐

R. VITREOUS			OD	OS	OU
1. Detachment	1.	(134)	1 ☐	2 ☐	3 ☐
2. Hemorrhage	2.	(135)	1 ☐	2 ☐	3 ☐
3. Opacity – *Specify* _____					
_____	3.	(136)	1 ☐	2 ☐	3 ☐
4. Other – *Specify* _____					
_____	4.	(137)	1 ☐	2 ☐	3 ☐
5. No abnormality	5.	(138)	1 ☐	2 ☐	3 ☐

Figure I. Detailed ophthalmology examination coding sheet, National Health and Nutrition Examination Survey, 1971–72—Con.

S. RETINA		OD	OS	OU
1. Disc				
a. Drusen	1a.	(139) 1 ☐	2 ☐	3 ☐
b. Glaucomatous cup	b.	(140) 1 ☐	2 ☐	3 ☐
c. Neovascularization	c.	(141) 1 ☐	2 ☐	3 ☐
d. Optic atrophy				
(1) Primary	d(1)	(142) 1 ☐	2 ☐	3 ☐
(2) Secondary	(2)	(143) 1 ☐	2 ☐	3 ☐
e. Papilledema	e.	(144) 1 ☐	2 ☐	3 ☐
f. Papillitis	f.	(145) 1 ☐	2 ☐	3 ☐
g. Other – *Specify*_____				
_____	g.	(146) 1 ☐	2 ☐	3 ☐
2. Macula				
a. Degeneration				
(1) Senile	2a(1)	(147) 1 ☐	2 ☐	3 ☐
(2) Disciform	(2)	(148) 1 ☐	2 ☐	3 ☐
(3) Circinate	(3)	(149) 1 ☐	2 ☐	3 ☐
b. Diabetic involvement	b.	(150) 1 ☐	2 ☐	3 ☐
c. Edema	c.	(151) 1 ☐	2 ☐	3 ☐
d. Hypertensive involve	d.	(152) 1 ☐	2 ☐	3 ☐
e. Pigment epith. detach	e.	(153) 1 ☐	2 ☐	3 ☐
f. Other – *Specify*_____				
_____	f.	(154) 1 ☐	2 ☐	3 ☐
3. Vessels				
a. Arteries				
(1) Branch occlusion	3a(1)	(155) 1 ☐	2 ☐	3 ☐
(2) Central occlusion	(2)	(156) 1 ☐	2 ☐	3 ☐
(3) Gen. narrow (1–4)	(3)	(157) 1 ☐	2 ☐	3 ☐
(4) Sclerosis (1–4)	(4)	(158) 1 ☐	2 ☐	3 ☐
b. Veins				
(1) Branch occlusion	b(1)	(159) 1 ☐	2 ☐	3 ☐
(2) Central occlusion	(2)	(160) 1 ☐	2 ☐	3 ☐
(3) Dilatation	(3)	(161) 1 ☐	2 ☐	3 ☐
(4) Sausaging	(4)	(162) 1 ☐	2 ☐	3 ☐
(5) Sheathing	(5)	(163) 1 ☐	2 ☐	3 ☐
(6) Tortuosity	(6)	(164) 1 ☐	2 ☐	3 ☐
c. Capillaries				
(1) Microaneurysms	c(1)	(165) 1 ☐	2 ☐	3 ☐
(2) Neovascularization	(2)	(166) 1 ☐	2 ☐	3 ☐
d. Other – *Specify*_____				
_____	d.	(167) 1 ☐	2 ☐	3 ☐

Figure I. Detailed ophthalmology examination coding sheet, National Health and Nutrition Examination Survey, 1971–72—Con.

S. RETINA – Continued

		OD	OS	OU
4. Exudates				
a. Cotton wool	4a.	(168) 1 ☐	2 ☐	3 ☐
b. Hard	b.	(169) 1 ☐	2 ☐	3 ☐
c. Waxy	c.	(170) 1 ☐	2 ☐	3 ☐
d. Other – *Specify*_____				
_____	d.	(171) 1 ☐	2 ☐	3 ☐
5. Hemorrhages				
a. Choroidal	5a.	(172) 1 ☐	2 ☐	3 ☐
b. Preretinal	b.	(173) 1 ☐	2 ☐	3 ☐
c. Retinal				
(1) Deep	c(1)	(174) 1 ☐	2 ☐	3 ☐
(2) Superficial	(2)	(175) 1 ☐	2 ☐	3 ☐
d. Other – *Specify*_____				
_____	d.	(176) 1 ☐	2 ☐	3 ☐
6. Pigment changes				
a. Choroidal	6a.	(177) 1 ☐	2 ☐	3 ☐
b. Epithelial				
(1) Atrophy	b(1)	(178) 1 ☐	2 ☐	3 ☐
(2) Hyperplasia	(2)	(179) 1 ☐	2 ☐	3 ☐
c. Other – *Specify*_____				
_____	c.	(180) 1 ☐	2 ☐	3 ☐
7. Angioid streaks	7.	(181) 1 ☐	2 ☐	3 ☐
8. Detachment	8.	(182) 1 ☐	2 ☐	3 ☐
9. Drusen	9.	(183) 1 ☐	2 ☐	3 ☐
10. Inflammation				
a. Chorioretinitis – *Specify*_____				
_____	10a.	(184) 1 ☐	2 ☐	3 ☐
(1) Active	(1)	(185) 1 ☐	2 ☐	3 ☐
(2) Inactive	(2)	(186) 1 ☐	2 ☐	3 ☐
11. Retrolental fibroplasia	11.	(187) 1 ☐	2 ☐	3 ☐
12. Other – *Specify*_____				
_____	12.	(188) 1 ☐	2 ☐	3 ☐
13. No abnormality	13.	(189) 1 ☐	2 ☐	3 ☐
14. Not visualized	14.	(190) 1 ☐	2 ☐	3 ☐

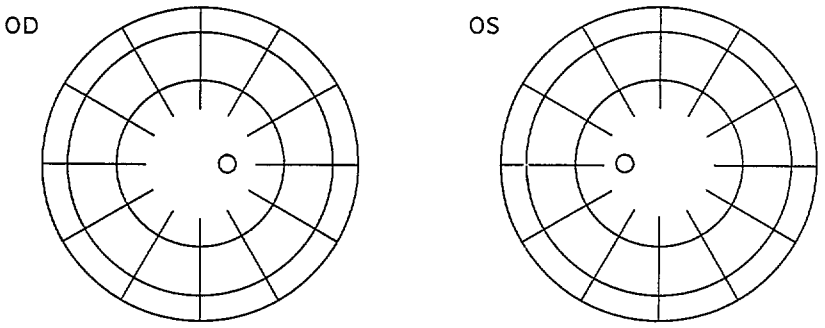
Continue with item 15, Diagram location of retinal abnormalities, on page 9.

Figure I. Detailed ophthalmology examination coding sheet, National Health and Nutrition Examination Survey, 1971–72—Con.

S. RETINA – Continued

15. Diagram location of retinal abnormalities

(191) 1 ☐ Location shown



T. OPHTHALMIC DIAGNOSIS

(192) 1 ☐ Incomplete examination
2 ☐ No abnormality
3 ☐ Abnormality

	Code	*Mark column applicable, leave blank if unknown*							
		Condition decreases vision	Treatment			Eye affected			
				Needed	Under care	Not needed		OD	OS	OU
1. Amblyopia	193 1 ☐ Present	194 1 ☐ Yes 2 ☐ No	195	1 ☐	2 ☐	3 ☐	196	1 ☐	2 ☐	3 ☐
2. _____	197 _ _ _ _ _ _	198 1 ☐ Yes 2 ☐ No	199	1 ☐	2 ☐	3 ☐	200	1 ☐	2 ☐	3 ☐
3. _____	201 _ _ _ _ _ _	202 1 ☐ Yes 2 ☐ No	203	1 ☐	2 ☐	3 ☐	204	1 ☐	2 ☐	3 ☐
4. _____	205 _ _ _ _ _ _	206 1 ☐ Yes 2 ☐ No	207	1 ☐	2 ☐	3 ☐	208	1 ☐	2 ☐	3 ☐
5. _____	209 _ _ _ _ _ _	210 1 ☐ Yes 2 ☐ No	211	1 ☐	2 ☐	3 ☐	212	1 ☐	2 ☐	3 ☐
6. _____	213 _ _ _ _ _ _	214 1 ☐ Yes 2 ☐ No	215	1 ☐	2 ☐	3 ☐	216	1 ☐	2 ☐	3 ☐

NOTES

Figure I. Detailed ophthalmology examination coding sheet, National Health and Nutrition Examination Survey, 1971–72—Con.

Appendix III. Diagnosed eye conditions by type, site, and etiology

These prevalence data from the complete 6-digit NEI Ophthalmic Disease Code adapted for NHANES I are included solely to give some better idea of the extent to which the individual eye conditions were found and their severity as evidenced by vision decrease and need for medical care within broader groupings shown in the findings and detailed tables of the report. They include conditions identified in at least 10 persons and all conditions causing vision decrease, needing (but not under) medical care and those under medical care.

Ophthalmic disease code		*Number of examinees with eye conditions*	*Total minor and other*	*Causing vision decrease*	*Needing medical care*	*Under medical care*
		Rates per 1,000 population				
	Amblyopia (no code)	257	25.0	19.1	2.7	6.1
	61. REFRACTIVE ERROR					
61 61 00	Changes, myopic (central) (macular); Conus, disc, myopic (atrophic) (choroidal) (chorioretinal) (peripapillary); Myopia NOS; Myopia, simple; Myopic changes (atrophic) (peripapillary) (temporal); Myopic conus (atrophic (peripapillary) (temporal); Myopic crescent (atrophic) (peripapillary) (temporal); Myopic cup; Myopic disc (atrophic) (peripapillary) (temporal); Myopic pigment atrophy, (choroid) (epithelium); Myopic thinning, pigment epithelium; Pigment crest (myopic)	42	4.6	0.2	-	0.3
	62. ORBIT					
62 60 00	Exophthalmos NOS	17	1.4	-	0.3	0.0
62 60 58	Exophthalmos, endocrine; Exophthalmos, dysthyroid	2	0.1	-	0.1	-
62 62 00	Enophthalmos (senile)	6	0.9	-	-	0.2
	63. EYELIDS					
63 00 00	Blinking, infrequent; Disease, eyelid NOS; Hyperelevation, eyelid; Keloid, eyelid (scar); Mass, eyelid (soft) (subcutaneous); Nodule, eyelid; Papule, eyelid; Pigment, eyelid (area) (lesion); Scar, eyelid NOS; Swelling, eyelid NOS	23	2.5	-	0.3	0.0

Ophthalmic disease code		Number of examinees with eye conditions	Total minor and other	Causing vision decrease	Needing medical care	Under medical care
		Rates per 1,000 population				
63 19 00	Anomaly, congenital, eyelid, type specified NEC; Distichiasis; Epicanthus, in Mongolism (fold); Epicanthus, absence of (fold); Fold, epicanthal, in Mongolism; Notch, eyelid, congenital	2	0.1	-	0.0	-
63 20 00	Blepharitis NOS (acute) (chronic) (subacute); Granulated eyelid	204	22.2	0.1	4.2	0.7
63 20 19	Blepharitis, bacterial, organism specified NEC (acute) (chronic) (subacute); Blepharitis, staphylococcal (acute) (chronic) (subacute)	2	0.0	-	0.0	-
63 20 30	Blepharitis, infective, organism not specified (acute) (chronic) (subacute)	1	0.3	-	0.3	-
63 20 57	Blepharitis, angular (acute) (chronic) (subacute)	16	1.5	-	0.2	-
63 21 00	Blepharitis, seborrheic (acute) (chronic) (marginal) (simple) (squamous) (subacute)	20	2.0	-	0.6	0.0
63 21 19	Blepharitis, seborrheic, staphylococcal (acute) (chronic) (squamous) (subacute)	1	0.0	-	0.0	-
63 29 00	Blepharitis, sebaceous (acute) (chronic) (subacute); Blepharitis, other specified type NEC	2	0.1	-	0.1	-
63 29 68	Acne rosacea blepharitis; Blepharitis, acne rosacea	1	0.0	-	0.0	-
63 30 00	Hordeolum; Stye	12	1.2	-	0.3	0.1
63 31 00	Chalazion	38	3.8	-	0.7	0.5
63 33 00	Meibomianitis	3	0.1	-	0.0	-
63 50 00	Growth, eyelid; Tumor, eyelid NOS	4	0.5	-	0.5	-
63 53 00	Angioma, eyelid (benign); Fibroma, eyelid (cutaneous); Hemangioma, eyelid (benign) (strawberry); Mole, eyelid (benign) (epidermal) (pedunculated) (pigmented); Nevus, eyelid (benign) (compound) (dermal) (intradermal) (margin) (pigmented) (strawberry); Papilloma, eyelid (epidermal) (pigmented) (squamous); Syringoma, eyelid (benign); Tumor, eyelid, benign	151	14.2	0.0	0.5	0.5
63 56 00	Carcinoma, eyelid (basal cell) (squamous cell); Tumor, eyelid, malignant	8	0.6	-	0.3	0.0
63 60 00	Blepharochalasis (senile); Dermochalasis; Dermatochalasis; Elastosis, eyelid	97	5.9	-	0.1	0.0
63 61 00	Entropion NOS	5	0.3	0.1	-	-
63 62 00	Ectropion (senile)	20	1.0	-	0.2	0.1
63 64 00	Xanthelasma (eyelid)	25	1.9	-	0.1	-
63 65 00	Trichiasis NOS	12	1.1	-	0.6	0.0
63 67 00	Cyst, eyelid NOS (epidermal) (epithelial) (inclusion) (sebaceous) (Zeiss gland); Milia, Milium, eyelid	51	3.8	-	0.0	0.0

Ophthalmic disease code		Number of examinees with eye conditions	Total minor and other	Causing vision decrease	Needing medical care	Under medical care
		Rates per 1,000 population				
63 99 00	Absent eyelashes (area) (complete) (partial) (self-induced); Angioma, spider, eyelid; Cilia, aberrant; Cafe au lait spot (area), eyelid; Disease, eyelid, type specified NEC; Epicanthus (fold); Fold, epicanthal; Horn, cutaneous, eyelid; Hypopigmentation, eyelids; Keratosis, eyelid (sebaceous) (seborrheic) (senile); Lagophthalmos (eyelid); Molluscum, eyelid (contagiosum) (pseudocarcinomatosum) (sebaceum); Notch, eyelid; Nevus, eyelid, spider; Poliosis, eyelashes; Retraction, eyelid; Skin tag, eyelid; Verruca, eyelid (plana) (vulgaris); Wart, eyelid	73	5.5	-	0.1	0.2
63 99 70	Parkinsonism, eyelid manifestation of	1	0.0	-	0.0	-
	64. LACRIMAL APPARATUS					
64 00 00	Disease, lacrimal apparatus NOS (nasolacrimal); Epiphora; Tearing (excessive)	1	0.0	-	0.0	-
	65. CONJUNCTIVA					
65 00 00	Disease, conjunctiva NOS; Dilation, Dilatation, conjunctiva, vessel; Dilation, Dilatation, conjunctiva, capillary (with venous stasis); Gray conjunctiva; Hyperemia, conjunctiva; Hyperplasia, conjunctiva; Hemosiderin, conjunctiva (pigmentation); Hypertrophy, conjunctiva, papillary; Injection, conjunctiva (due to upper respiratory infection); Mascara, follicles, conjunctiva (embedded) (particles); Micropools, conjunctiva; Microaneurysm, conjunctiva; Pale, Pallor, conjunctiva; Papillae, conjunctiva; Tortuosity, conjunctival vessels; Vascularity, increased, conjunctiva; Vessels, conjunctiva (blood); Vasodilation, conjunctiva (red eyes); Vascularization, conjunctiva	46	5.0	-	-	-
65 00 40	Bleb, conjunctiva, traumatic (filtering); Trauma, conjunctiva NEC or NOS	1	0.4	-	-	0.2
65 00 44	Adrenochrome granules, conjunctiva; Injection, conjunctiva, pharmacologic	2	0.3	-	-	0.1
65 20 00	Conjunctivitis NOS (acute) (angular) (chronic) (follicular) (purulent) (subacute); Inflammation, conjunctiva NOS (acute) (chronic) (subacute)--See also Conjunctivitis	61	5.4	-	0.7	0.2
65 20 10	Conjunctivitis, bacterial, organism not specified (follicular) (infection) (infective) (acute) (chronic) (purulent) (subacute); Infection, conjunctiva, bacterial, organism not specified (acute) (chronic) (purulent) (subacute); Pink eye	8	0.8	-	0.6	0.0

Ophthalmic disease code		Number of examinees with eye conditions	Total minor and other	Causing vision decrease	Needing medical care	Under medical care
		Rates per 1,000 population				
65 20 19	Conjunctivitis, staphlococcal (acute) (chronic) (purulent) (subacute); Conjunctivitis, bacterial, organism specified NEC (acute) (chronic) (purulent) (subacute); infection, conjunctiva, bacterial, organism specified NEC (acute) (chronic) (purulent) (subacute)	5	0.3	-	0.3	-
65 20 20	Conjunctivitis, rickettsial, organism not specified (acute) (chronic) (infection) (infective) (subacute); Conjunctivitis, viral, type not specified (acute) (chronic) (follicular) (infection) (infective) (subacute); Infection, conjunctiva, rickettsial, organism not specified (acute) (chronic) (subacute); Infection, conjunctiva, viral, organism not specified (acute) (chronic) (subacute)	8	0.4	-	0.0	-
65 20 30	Conjunctivitis, infective, organism not specified (follicular) (acute) (chronic) (purulent) (subacute); Infection, conjunctiva, organism not specified (acute) (chronic) (purulent) (subacute)	9	0.5	-	0.1	0.3
65 20 52	Allergy, conjunctiva NOS; Allergy, conjunctiva, other than that due to medicinal drops or ointment (acute) (chronic) (follicular) (subacute) (vernal); Catarrh, limbal vernal; Conjunctivitis, due to hay fever; Conjunctivitis, allergic, other than that due to medicinal drops or ointment (acute) (chronic) (follicular) (subacute) (vernal); Injection, conjunctiva, allergic; Injection, conjunctiva, due to hay fever	70	5.1	-	0.9	1.1
65 53 00	Hemangioma, conjunctiva (benign); Lipoma, conjunctiva; Nevus, conjunctiva (benign) (caruncie) (cystic) (junctional) (with melanosis) (nonpigmented) (pigmented); Tumor, conjunctiva, Benign	25	1.7	-	0.2	0.2
65 65 00	Hemorrhage, subconjunctival	10	1.0	-	-	-
65 72 00	Pterygium (conjunctiva)	7	0.3	-	0.1	-
65 80 00	Cyst, conjunctiva (epithelial) (fluid filled) (inclusion) (lymphatic) (lymphoid) (mucous)	47	4.5	-	-	-
65 80 98	Cyst, postoperative	1	0.0	-	-	0.0
65 81 00	Scar, conjunctiva	3	0.4	-	0.0	-
	66. EYEBALL					
66 00 00	Asymmetry, one higher than other (facial); Eye higher than other eye; "Other" checked, not described, globe	2	0.3	-	0.0	-
66 01 98	Anophthalmos, surgical; Absent eye, postoperative; Enucleation; Evisceration (eye)	10	1.1	0.4	-	0.1
66 44 98	Anophthalmos, surgical, following injury; Absent eye, postoperative, following injury; Evisceration (eye) following trauma; Enucleation following trauma	7	0.7	0.7	-	-
66 62 00	Phthisis (bulbi) NOS	4	1.0	0.1	0.0	-
	67. CORNEA					
67 00 00	Bullous area, cornea, endothelial; Disease, cornea NOS;					

Ophthalmic disease code		Number of examinees with eye conditions	Total minor and other	Causing vision decrease	Needing medical care	Under medical care
		Rates per 1,000 population				
67 00 00	Descemet's membrane, thickened; Erosion, cornea (epithelial) (superficial); Fold, Descemet's membrane, cornea (linear); Irregular surface, cornea; Membrane, retrocorneal; Melanosis, cornea; Pigment, cornea (area) (deposit) (Descemet's) (dust) (endothelial) (epithelial) (granules) (limbus) (posterior) (scattered). If recorded under Opacity, code as Opacity; Stain, Staining, cornea (punctate) (superficial); Wrinkle, Descemet's membrane	140	12.5	0.5	0.2	0.3
67 00 01	Defect, cornea, due to trichiasis (epithelial)	1	0.0	-	0.0	-
67 00 08	"Other" checked, not described, cornea	13	1.3	-	-	-
67 19 00	Anomaly, congenital, cornea, type specified NEC; Embryotoxon, posterior, cornea (prominent Schwalbe's line); Megalocornea; Macrocornea; Myelinated nerve fibers, cornea; Schwalbe's line, prominent	17	1.1	0.0	-	-
67 20 00	Keratitis (acute) (chronic) (inactive) (interstitial) (punctate) (stromal) (subacute) (superficial)	29	1.8	0.3	0.2	0.2
67 20 19	Infection, cornea, bacterial, organism specified NEC (acute) (chronic) (subacute); Keratitis, due to leprosy (interstitial); Keratitis, bacterial, organism specified NEC (acute) (chronic) (punctate) (subacute)	1	0.0	0.0	0.0	0.1
67 30 00	Ulcer, cornea NOS	1	0.1	0.1	-	0.1
67 40 45	Abrasion, cornea, due to contact lens (epithelia); Edema, cornea, due to contact lens (epithelial); Keratitis, punctate, due to contact lens	3	0.5	0.2	-	0.3
67 42 40	Foreign body, cornea NOS (intracorneal) (metallic) (stain, staining); Stain, Staining, cornea, due to foreign body	5	0.4	0.1	0.1	0.0
67 42 49	Foreign body, cornea, retained (intracorneal) (metallic)	11	1.2	-	0.1	-
67 45 49	Blood staining, cornea NOS	1	0.0	-	-	0.0
67 50 00	Tumor, cornea NOS	1	0.0	-	0.0	-
67 60 00	Dystrophy, cornea NOS	2	0.1	-	0.0	-
67 61 00	Keratopathy, band NOS	13	1.9	0.2	-	-
67 63 00	Dystrophy, Fuch's (cornea) (endothelial) (epithelial) (senile)	3	0.1	0.1	-	-
67 65 00	Dystrophy, cornea, stromal, (posterior); Dystrophy, cornea, macular	3	0.2	0.0	-	-
67 66 00	Dystrophy, cornea, marginal	2	0.3	-	-	0.2
67 68 00	Cornea guttata (endothelial)	214	14.0	0.4	-	0.4
67 71 00	Degeneration, cornea, marginal (senile) Degeneration, cornea, peripheral (senile) Degeneration, cornea, limbal (lipoidal)	26	2.5	-	-	0.2
67 72 00	Pterygium, cornea	214	15.4	0.6	-	1.3
67 72 98	Opacity, cornea, surgical, due to removal of pterygium; Postoperative state, pterygium, cornea	6	0.6	0.0	-	-

Ophthalmic disease code		Number of examinees with eye conditions	Total minor and other	Causing vision decrease	Needing medical care	Under medical care
		Rates per 1,000 population				
67 75 00	Dry eye syndrome (dellen); Degeneration, cornea, due to drying (dellen); Degeneration, cornea, due to deficient tears (dellen); Keratitis sicca NOS (punctate)	7	0.3	-	-	0.1
67 80 00	Krukenberg spindle	51	4.6	-	-	-
67 81 00	Pannus; Vessels, cornea (blood) (deep) (limbal arcade) (superficial); Vascularization, cornea	22	1.8	0.0	-	0.2
67 81 40	Pannus, traumatic	1	0.1	-	-	0.1
67 87 40	Opacity, cornea, due to foreign body (endothelial) (epithelial) (pigment) (stromal) (superficial); Opacity, cornea, metallic (like); Rust lesion, pigmentation, ring, scar, or stain, cornea (stroma) (superficial)	24	1.5	-	0.1	-
67 88 43	Opacity, cornea, due to burn, acid (chemical) (endothelial) (epithelial) (pigment) (stromal) (superficial)	1	0.1	0.1	-	-
67 89 00	Opacity, cornea NOS (disciform) (endothelial) (epithelial) (limbus) (linear) (microcysts, epithelial) (pigment) (stromal) (superficial); Opaque cornea	357	31.7	1.2	0.5	0.7
67 89 01	Opacity, cornea, due to keratitis (exposure) (marginal) (stromal) Opacity, cornea, due to old or healed ulcer	5	0.4	0.2	-	-
67 89 12	Opacity, cornea, due to syphillis (ghost vessels)	1	0.0	0.0	-	-
67 89 40	Opacity, cornea, due to trauma NEC or NOS (endothelial) (epithelial) (lacerating) (limbus) (pigment) (stromal) (superficial)	15	1.0	0.2	-	0.3
67 89 45	Opacity, cornea, due to contact lens (epithelial) (punctate)	1	0.1	0.1	0.1	-
67 99 00	Bulla, cornea (epithelial); Disease, cornea, type specified NEC; Ectasia, cornea; Edema, cornea, (epithelial) (stromal); Girdle, limbal (cornea) (white); Girdle of Vogt (cornea) (limbus); Hodson-Stahli line (pigmentation); KP's (endothelial) (pigment -ed); Keratitis, bullous; Keratopathy, bullous; Opacity, limbal girdle (cornea) (white); Precipitates, keratic (pigment -ed); Precipitates, endothelial (pigment -ed); Wait-Beetham lines	165	12.4	0.1	0.1	0.1
67 99 43	Edema, cornea, due to burn, acid (chemical)	1	0.1	0.1	-	-
67 99 45	Edema, cornea, due to vitreous touch following surgery (epithelial)	1	0.0	0.0	-	-
68 25 00	Episcleritis (acute) (chronic) (subacute)	7	1.2	-	0.1	-
68 42 40	Foreign body, sclera NOS (metallic)	1	0.0	-	0.0	-
68 61 00	Ectasia, scleral NOS (acquired); Sclerectasia NOS (acquired); Staphyloma, sclera NOS (acquired)	9	0.8	0.0	-	0.0
68 62 00	Blue spots, sclera (coloration); Melanosis, sclera (benign) (oculi); Melanotic lesion, sclera; Pigmentation, sclera	10	0.4	-	-	0.0

Ophthalmic disease code		Number of examinees with eye conditions	Total minor and other	Causing vision decrease	Needing medical care	Under medical care
		Rates per 1,000 population				
68 99 00	Disease, sclera, type specified NEC; Icterus (conjunctiva) (sclera); Jaundice (conjunctiva) (sclera) Plaque, sclera, calcified (lateral rectus insertion); Plaque, sclera, (hygiene) (senile) Thinning, sclera (localized); Translucent areas, sclera; Yellow (tint), conjunctiva or sclera	11	0.6	-	0.1	-
	69. ANTERIOR CHAMBER AND INTRAOCULAR PRESSURE					
69 00 40	Recession, angle, anterior chamber (traumatic); Trauma, anterior chamber NEC or NOS	3	0.1	0.1	0.1	-
69 11 00	Glaucoma, congenital NOS	1	0.0	0.0	-	0.0
69 61 00	Flat anterior chamber NOS (with cornea/iris apposition or touch); Narrow anterior chamber NOS; Shallow anterior NOS (with cornea/iris apposition or touch)	35	2.6	-	0.9	0.1
69 61 01	Shallow anterior chamber, due to cataract	2	0.1	-	0.1	-
69 70 00	Glaucoma NOS	62	4.2	2.0	2.0	1.1
69 70 98	Surgery, glaucoma (post op)	3	0.1	0.0	-	0.0
69 72 00	Glaucoma, open angle (chronic) (primary); Glaucoma, wide angle (chronic) (primary); Glaucoma, simple or simplex (chronic) (primary)	12	0.8	0.5	0.2	0.6
69 72 98	Glaucoma, simple (surgery)	2	0.2	-	-	0.0
69 73 00	Glaucoma, narrow angle (primary); Glaucoma, angle closure (primary); Glaucoma, closed angle (primary)	9	0.4	-	0.0	0.4
69 73 98	Glaucoma, narrow or closed angle (surgery)	1	0.0	-	-	0.0
69 74 00	Glaucoma, closed angle, secondary; Glaucoma, wide angle, secondary; Glaucoma, narrow angle, secondary; Glaucoma, secondary NEC; Glaucoma, open angle, secondary; Glaucoma, secondary NOS	2	0.2	0.1	0.1	-
69 74 40	Glaucoma, angle recess; Glaucoma, traumatic (secondary)	3	0.0	0.0	-	0.0
69 74 45	Glaucoma, aphakic (secondary). Excludes: Glaucoma, malignant, 69 79 45	1	0.0	0.0	-	0.0
69 74 98	Glaucoma, secondary (surgery)	1	0.0	-	-	0.0
69 78 00	Glaucoma, rubeotic; Glaucoma, hemorrhagic	1	0.0	-	-	0.0
69 81 00	Glaucoma, absolute	3	0.1	-	-	0.1
69 82 00	Glaucoma, juvenile	1	0.0	-	-	0.0
69 88 00	Glaucoma suspect, narrow angle; Glaucoma suspect, angle closure; Narrow angle, grade 0, I, or II, or occludable; Shallow angle, grade 0, I, or II	14	1.0	-	-	0.1
69 89 00	Elevation, intraocular tension--Code only in history; Glaucoma suspect NOS; Increase, intraocular tension--Code only in history Tension, intraocular, elevated or increased--Code only in history	33	1.3	0.1	-	0.1

Ophthalmic disease code		Number of examinees with eye conditions	Total minor and other	Causing vision decrease	Needing medical care	Under medical care
		Rates per 1,000 population				
69 99 00	Cells, anterior chamber (pigment); Disease, anterior chamber, type specified NEC; Flare, anterior chamber	28	2.3	-	-	0.0
	70. UVEAL TRACT INFLAMMATION					
70 00 00	Inflammation, uveal NOS	5	0.2	0.2	-	-
70 03 00	Inflammation, uveal, granulomatous	2	0.2	0.2	-	-
70 51 00	Inflammation, uveal, anterior, active	4	0.3	0.1	0.1	0.0
70 51 40	Inflammation, uveal, anterior, traumatic, active	1	0.1	-	0.1	-
70 54 00	Inflammation, uveal, anterior, active, granulomatous	1	0.0	0.0	0.0	-
70 55 00	Inflammation, uveal, anterior, inactive, granulomatous	1	0.0	-	0.0	-
70 60 00	Inflammation, uveal, posterior	5	0.8	0.2	0.1	0.1
70 60 30	Inflammation, posterior, infection	1	0.2	0.2	-	-
70 60 32	Inflammation, uveal, posterior, due to histoplasmosis	2	0.1	0.0	0.0	-
70 60 40	Inflammation, posterior, active, granulomatous	1	0.1	0.1	-	0.1
70 61 00	Inflammation, uveal, posterior, active	1	0.0	0.0	0.0	-
70 62 00	Inflammation, uveal, posterior, inactive	34	3.3	0.5	0.0	0.4
70 62 12	Inflammation, uveal, posterior, due to syphilis, inactive	1	0.0	0.0	-	-
70 62 32	Inflammation, uveal, posterior, due to histoplasmosis, inactive	11	1.4	0.0	-	-
70 65 31	Inflammation, uveal, posterior, due to toxoplasmosis, inactive (granulomatous); Scar, chorioretinal, due to toxoplasmosis	9	0.3	0.0	-	-
	71. IRIS AND PUPIL					
71 12 00	Pupillary membrane, persistent (congenital); Pupillary membrane remnant (congenital); Remnant, pupillary membrane (congenital); Remnant, iris, embryologic	92	8.4	-	-	-
71 19 00	Anomaly, congenital, iris and pupil, type specified NEC; Brushfield spots; Marcus-Gunn pupil; Tunica vasculosa lentis, iris	12	1.3	0.0	-	-
71 45 40	Incarceration, iris, traumatic; Prolapse, iris, traumatic	2	0.4	0.3	-	0.3
71 45 45	Incarceration, iris, following operation. Exclude: Incarceration done as treatment for glaucoma; Iris, adherent to or drawn to wound, following operation; Prolapse, iris, following surgery. Used instead of NOS if person has aphakia, history of cataract surgery and NO history of trauma	5	0.4	-	-	0.3
71 53 00	Ephelis, iris; Freckle, iris; Melanoma, iris, benign; Nevus, iris (benign); Tumor, iris, benign. Excludes: Neurofibroma	47	4.7	-	0.1	0.1
71 60 00	Heterochromia (iridis)	11	1.6	-	-	0.1
71 61 00	Atrophy, iris NOS (marginal) (partial) (segmental) (sphincter) (stromal)	48	3.1	0.1	-	0.5

Ophthalmic disease code		Number of examinees with eye conditions	Total minor and other	Causing vision decrease	Needing medical care	Under medical care
		Rates per 1,000 population				
71 68 40	Coloboma, iris, traumatic	1	0.1	0.1	-	-
71 72 00	PAS	24	1.4	0.1	-	0.4
71 73 00	Synechia, posterior	32	1.8	0.1	0.3	0.0
71 80 00	Anisocoria NOS (surgical); Dilation, dilatation, pupil, unilateral	116	9.8	-	-	0.3
71 99 00	Cyst, iris; Corectopia; Disease, pupil, type specified NEC; Disease, iris, type specified NEC; Ectropion uveae (with pigment layer protrusion into pupil); Entropion uveae; Iridoschisis; Nodule, iris; Pupillary membrane	19	1.5	0.1	0.1	0.2
	73. CHOROID					
73 53 00	Nevus, choroid, (benign); Tumor, choroid, benign	22	2.4	-	-	0.1
73 63 00	Drusen, choroid; Drusen, retina; Drusen, macula; Hyaloid excrescence, macula	355	29.6	1.0	-	1.2
73 64 00	Sclerosis, choroidal (central areolar) (peripapillary)	22	0.9	0.2	-	0.0
73 99 00	Disease, choroid, type specified NEC; Pigment, pigmentary changes, choroidal (irregularity) (peripapillary)	22	1.4	-	-	-
	74. CRYSTALLINE LENS					
74 00 00	Aberration, lenticular; Disease, lens (crystalline) NOS	1	0.0	0.0	-	-
74 11 00	Cataract, congenital (anterior) (cortical) (hypermature) (immature) (intumescent) (mature) (nuclear) (polar) (posterior) (subcapsular)	3	0.4	0.4	0.1	-
74 13 98	Cataract, congenital, incompletely or partly absorbed following surgery	1	0.1	0.1	-	-
74 18 00	Mittendorf dot or spot (congenital) (lens); Opacity, lens, congenital (anterior) (coronary) (cortical) (crystalline) (embryonal nucleus) (fetal nucleus); (nuclear) (polar) (post. or posterior) (punctate) (scattered) (sclerosis) (subcapsular) (suture); Opacity, lens, Y suture (anterior); Opacity, lens, sutural	26	2.5	-	-	-
74 47 40	Cataract, traumatic NOS (anterior) (cortical) (foreign body) (hypermature) (immature) (intumescent) (mature) (nuclear) (polar) (posterior) (subcapsular)	8	0.4	0.4	0.2	0.0
74 47 45	Cataract, secondary or remains following surgery	2	0.2	0.2	0.1	-
74 47 98	Aphakia, traumatic	2	0.0	0.0	-	-
74 60 00	Cataract NOS (anterior) (cortical) (hypermature) (immature) (intumescent) (mature) (nuclear) (polar) (posterior) (snowflake) (stellate) (subcapsular)	552	28.0	25.9	3.8	4.9
74 60 45	Cataract, associated with systemic disease NOS (anterior) (cortical) (hypermature) (immature) (intumescent) (mature) (nuclear) (polar) (posterior) (subcapsular)	6	0.4	0.1	0.1	0.1
74 60 56	Cataract, diabetic (snowflake)	1	0.1	0.1	-	-

Ophthalmic disease code		Number of examinees with eye conditions	Total minor and other	Causing vision decrease	Needing medical care	Under medical care
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74 60 68	Cataract, senile (anterior) (cortical) (hypermature) (immature) (intumescent) (mature) (nuclear) (polar) (posterior) (subcapsular)	18	0.7	0.6	0.1	0.1
74 60 82	Cataract, due to myotonic dystrophy	1	0.0	0.0	0.0	-
74 60 98	Aphakia NOS	69	4.3	1.4	0.1	1.8
74 63 00	Cataract, secondary	1	0.1	0.1	-	-
74 64 01	Cataracta complicata (anterior) (cortical) (hypermature) (immature) (intumescent) (mature) (nuclear) (polar) (posterior) (subcapsular); Cataract, secondary to other eye disease (anterior) (cortical) (hypermature) (immature) (intumescent) (mature) (nuclear) (polar) (posterior) (subcapsular); Cataract, complicated	1	0.1	0.1	-	-
74 70 00	Dislocation, lens (crystalline) NOS (anterior) (posterior)	4	0.3	0.3	-	0.1
74 89 00	Opacity, lens (adult nucleus) (anterior) (cortical) (crystalline) (embryonal nucleus) (fetal nucleus) (nuclear) (polar) (post. or posterior) (punctate) (scattered) (sclerosis) (snowflake) (subcapsular); Spoking, lens (anterior); Sclerosis, nuclear	833	56.4	0.1	0.1	1.0
74 99 00	Disease, lens (crystalline), type specified NEC; Pigment, lens surface (capsule) (epithelium) (dust) (granules) (iris) (spicules)	206	22.1	0.1	0.2	0.1
74 99 40	Pigment, lens surface, traumatic (capsule) (granules) (iris)	1	0.1	0.1	-	-
	75. VITREOUS					
75 00 00	Disease, vitreous NOS; Granular vitreous; Liquefaction, Liquid vitreous; Pigment, vitreous (granules); Syneresis (vitreous)	20	1.2	-	-	-
75 44 45	Prolapse, vitreous, following surgery. Used instead of NOS if patient has aphakia, history of cataract surgery, and NO history of trauma; Vitreous in anterior chamber or pupil, due to surgery (band) (degenerated). Used instead of NOS if person has aphakia, history of cataract surgery, and NO history of trauma; Vitreous adherent to or against cornea, due to surgery (band). Used instead of NOS if person has aphakia, history of cataract surgery, and NO history of trauma	20	1.0	0.0	-	0.0
75 60 00	Hyalitis, asteroid; Opacity, asteroid, vitreous	25	0.7	0.1	-	-
75 62 00	Detachment, vitreous (base) (posterior)	99	4.5	0.1	-	0.1
75 63 00	Blood, vitreous (old); Hemorrhade, vitreous	4	0.4	0.1	-	0.1
75 64 00	Floater (vitreous); Muscae volitantes; Opacity, vitreous (glass-like) (hemorrhade, due to) (myopic) (retrolental) (vitreous degeneration, due to)	118	8.2	0.2	0.0	0.2
	76. RETINA					
76 00 00	Arterial sclerosis, retina (grade 1, 2, 3, or 4) (vessel); Arteriosclerotic vascular disease, retina; Arteriosclerotic retinopathy (grade 1, 2, 3, or 4); Arteriosclerotic changes, retina (grade 1, 2, 3, or 4) (vessel); Arteriosclerosis, retina (grade 1, 2, 3, or 4) (vessel); Arteriolosclerotic retinopathy (grade 1, 2, 3, or 4); Arteriolosclerotic changes, retina (grade 1, 2, 3, or 4) (vessel);					

Ophthalmic disease code		Number of examinees with eye conditions	Total minor and other	Causing vision decrease	Needing medical care	Under medical care
		Rates per 1,000 population				
76 00 00	Arteriolosclerosis, retina (grade 1, 2, 3, or 4) (vessel); Arteriolar sclerosis, retina (grade 1, 2, 3, or 4) vessel); Cholesterol plaque, retinal vessels; Changes, retinal vessels (grade 1, 2, 3, or 4); Changes, paramacular; Dilation, Dilatation, retinal veins; Dilation, Dilatation, retinal capillary; Disease, retina NOS; Edema, retina; Exudates, retina (cotton wool) (drusen-like) (hard) (waxy); Generalized narrowing, retinal arteries; Hemorrhage, retina (blot) (deep) (flame-shaped) (preretinal) (superficial); Lesion, paramacular; Microaneurysms, retina NOS (macula); Narrowing, arterial, arteriolar, retina (general); Neovascularization, retina NOS; Paramacular changes, lesion; Retina, disease NOS; Retinopathy, arteriosclerotic (grade 1, 2, 3, or 4); Retinopathy, arteriolosclerotic (grade 1, 2, 3, or 4); Sclerosis, retinal vessels; Sausaging, veins, retina; Sclerosis, retinal arteries; Tortuosity, retinal vessels (arteries) (veins); Vitreoretinal interface change; Venous engorgement, retina	1,117	77.8	0.4	1.6	4.7
76 00 08	"Other" checked, not described, exudates, retina; "Other" checked, not described, vessels, retina; "Other" checked, not described, retina; "Other" checked, not described, macula; "Other" checked, not described, hemorrhage, retina	70	6.9	-	-	-
76 12 00	Medullated nerve fibers; Myelinated nerve fibers	16	1.4	-	-	-
76 35 56	Diabetic involvement, macula; Retinopathy, diabetic	37	1.9	0.5	0.2	0.6
76 35 64	Arteriolar sclerosis, hypertensive; Changes, hypertensive (retina); Involvement, hypertensive, macula; Nicking, arteriovenous, retina, hypertensive; Retinopathy, hypertensive	76	3.1	0.4	0.8	0.8
76 45 40	Hole, macula, traumatic (retina)	3	0.1	0.1	-	-
76 60 00	Atrophy, retina (peripapillary)	11	0.8	0.1	-	-
76 65 00	Degeneration, retina, peripheral, lattice	4	0.4	-	0.4	0.0
76 67 00	Degeneration, retina, peripheral, other specified (senile)	3	0.1	0.0	-	-
76 68 00	Degeneration, retina, myopic; Myopia, degenerative; Myopia, pathologic; Myopia, malignant; Myopia, progressive	7	0.5	0.1	0.1	0.0
76 69 00	Degeneration, retina NOS (peripapillary)	4	0.3	0.0	-	0.0
76 70 00	Cyst, macula; Degeneration, macular (retina) (circinate) (disciform) (pigmentary); Hole, macula NOS (retina)	28	2.6	2.5	0.1	0.3
76 70 40	Degeneration, macular (retina) traumatic (pigmentary)	2	0.0	0.0	-	0.0
76 70 82	Degeneration, macular, hereditary (retina)	1	0.0	0.0	-	-

	Ophthalmic disease code	Number of examinees with eye conditions	Total minor and other	Causing vision decrease	Needing medical care	Under medical care
		Rates per 1,000 population				
76 72 00	Degeneration, macular (retina) senile (choroidal) (circinate) (disciform) (pigmentary)	182	10.5	7.3	0.8	1.2
76 74 00	Hemorrhage, macula NOS	1	0.0	0.0	0.0	-
76 75 00	Retinitis pigmentosa NOS	7	0.2	0.0	0.1	0.0
76 79 00	Hole, retina	1	0.2	-	0.2	-
76 80 00	Occlusion, retinal vessel NOS	1	0.0	0.0	0.0	-
76 82 00	Occlusion, retinal artery, central	6	0.4	0.3	-	0.0
76 82 40	Occlusion, retinal artery, central, traumatic	1	0.0	0.0	-	-
76 83 00	Occlusion, retinal artery, branch	4	0.0	-	0.0	-
76 85 00	Occlusion, retinal vein, central	3	0.0	0.0	0.0	-
76 86 00	Occlusion, retinal vein, branch	5	0.6	0.3	-	0.1
76 90 00	Detachment, retina NOS	11	0.8	0.6	0.1	0.3
76 90 98	Detachment, retina NOS (Post. Op.)	8	0.5	0.2	-	0.4
76 94 00	Atrophy, pigment epithelial (retina); Freckle, retina; Hyperplasia, pigment epithelial (retina); Hypopigmentation, retina; Pigment, Pigmentation, adjacent to disc (areas); Pigment, Pigmentary changes, retina (atrophy) (clumping) (depigmentation) (epithelial) (focal) (freckle) (hyperplasia) (hypopigmentation) (lesion) (mottling) (peripapillary) (spot); Salt and pepper fundus	88	7.7	0.1	0.2	0.1
76 95 00	Atrophy, pigment epithelial, macula; Depigmentation, macular; Granularity, macula, mottled; Hypopigmentation, macula; Pigment, Pigmentary changes, macula (accumulation) (atrophy) (clumping) (clumps) (depigmentation) (derangement) (dispersion) (disturbance) (epithelial) (fine) (hyperpigmentation) (irregularity) (mottling) (scattered) (stippling); Stippling, macular (pigment) (pigmentary)	48	3.7	0.4	0.1	0.6
76 95 40	Atrophy, pigment epithelial, macula, traumatic; Pigment, Pigmentary changes, macula, traumatic (accumulation) (atrophy) (clumping) (clumps) (derangement) (disturbance) (fine) (irregularity) (mottling) (scattered) (stippling)	2	0.1	0.1	-	0.0
76 96 00	Inflammatory lesion, macular, old; Scar, macula	5	0.8	0.7	-	-
76 97 00	Scar, chorioretinal or choroid (inactive) (pigment-ary, -ed); Scar, retina (inactive) (peripapillary) (pigment-ary, -ed)	12	0.9	0.1	-	0.2
76 99 00	Beaten silver appearance, macula; Disease, macula NEC or NOS; Disease, retina, type specified NEC; Edema, macular NOS; Hollenhorst plaque, retina; Refractile body or lesion, macula	9	0.3	0.2	0.2	-
	77. OPTIC NERVE					
77 00 00	Blurred disc margins; Cup, Cupping, disc or nerve head (asymmetric) (one eye more than other) (saucerization);					

Ophthalmic disease code		Number of examinees with eye conditions	Total minor and other	Causing vision decrease	Needing medical care	Under medical care
		Rates per 1,000 population				
77 00 00	Depigmentation, disc margin; Deterioration, optic nerve; Disease, optic nerve NOS; Elevation, optic disc or nerve head; Fibrosis, edge of disc (optic); Irregular disc; Pseudopapilledema; Pigment, disc (granules) (inferior) (irregularities) (nasal) (spot) (superior) (temporal); Pallor, disc (temporal); Scar, disc	33	2.5	0.1	0.1	0.0
77 10 00	Anomaly, congenital, optic disc or nerve NOS	3	0.2	0.0	-	-
77 19 00	Anomaly, confenital, optic disc or nerve, vascular or vessel; Anomaly, congenital, optic disc or nerve, type specified NEC; Bergmeister's papilla; Coloboma, disc (congenital) (optic); Cup, Cupping, disc or nerve head, congenital; Elliptical disc, congenital; Glial membrane, in front of disc; Hyaloid vessel, disc (remnant); Hyalod artery, persistence of, disc; Loop, vascular, disc (congenital) (inferior temporal artery) (optic); Loop, venous, disc, congenital; Membrane, epipapillary; Oblique insertion, disc; Pit, disc (congenital) (optic); Papilla, Bergmeister's; Remnant, hyaloid, disc (fibrotic) (vessel) (system); Situs inversus, optis nerve; Vertically elongated shaped disc (congenital)	34	3.1	0.1	0.0	-
77 22 00	Neuritis, retrobulbar NOS	1	0.1	0.1	-	-
77 60 00	Papilledema	4	0.4	-	0.1	0.0
77 61 00	Atrophy, optic (nerve) NOS (temporal)	1	0.1	0.1	0.1	-
77 62 00	Atrophy, optic (nerve), primary NOS	13	1.0	0.7	0.1	0.0
77 62 40	Atrophy, optic (nerve), traumatic, primary	1	0.4	0.4	-	0.4
77 62 72	Atrophy, optic (nerve), associated with multiple sclerosis (primary); Atrophy, optic (nerve), associated with demyelinating disease (primary)	1	0.3	-	-	0.3
77 63 00	Atrophy, optic (nerve), secondary NOS (ischemic)	11	0.6	0.3	0.0	0.0
77 63 40	Atrophy, optic (nerve), traumatic, secondary	2	0.2	0.2	-	0.2
77 67 00	Colloid bodies, disc; Drusen, disc (colloid bodies) (hyalin bodies); Drusen, optic nerve (colloid bodies) (hyalin bodies); Hyalin bodies, disc	31	2.1	-	-	-
77 99 00	Cresent, disc NOS--Refer; Disease, optic nerve, type specified NEC; Neovascularization, disc (optic); Pigment clump, disc (nasal)	7	0.7	0.0	0.0	-
	78. NEUROMUSCULAR					
78 00 00	Decreased or diminished light reflex; Disease, neuromuscular NOS; Muscles, weak; Orthoptics; Sluggish light reflex	7	0.5	-	0.0	-

Ophthalmic disease code		Number of examinees with eye conditions	Total minor and other	Causing vision decrease	Needing medical care	Under medical care
		Rates per 1,000 population				
78 11 00	Nystagmus, congenital (horizontal) (jerk) (pendular) (rotary) (vertical)	1	0.0	0.0	-	-
78 12 00	Marcus-Gunn phenomenon with ptosis; Marcus-Gunn ptosis; Ptosis, due to cranial nerve paralysis, congenital; Ptosis in Marcus-Gunn phenomenon; Ptosis, congenital	10	0.9	-	-	-
78 14 00	Exotropia, congenital (comitant) (incomitant) (intermittent) (alternating) (with overaction or underaction of oblique)	3	0.6	0.1	-	-
78 19 00	Anomaly, congenital, neuromuscular, type specified NEC; Duanes's syndrome	1	0.1	-	-	0.1
78 60 00	Nyatagmus, NOS (fixational) (gaze) (horizontal) (jerk) (pendular) (rotary) (vertical)	32	3.8	1.2	0.2	0.6
78 61 98	Postoperative state, strabismus NOS	1	0.4	-	-	0.4
78 62 00	Esotropia (accommodative) (acquired) (alternating) (comitant) (hyperopic) (incomitant) (intermittent) (with overaction or underaction of oblique); Turning in of eyes	124	12.8	3.0	1.4	3.2
78 62 98	Postoperative state, esotropia	1	0.1	0.1	-	-
78 64 00	Exotropia (acquired) (alternating) (comitant) (fever, due to) (incomitant) (intermittent) (with overaction or underaction of oblique); Turning out of eyes	269	21.1	2.4	1.2	2.3
78 64 45	Exotropia, secondary to surgery	2	0.2	-	0.1	-
78 66 00	Hypertropia (alternating) (comitant) (incomitant) (intermittent) (in left or right lateral gaze) (vertical)	60	5.4	1.0	0.1	1.1
78 66 58	Hypertropia, due to thyroid disease (in left or right lateral gaze) (vertical)	1	0.1	-	-	0.1
78 66 74	Hypertropia, due to cranial nerve paralysis, due to aneurysm	1	0.2	-	-	0.2
78 68 00	Bell's palsy, causing ptosis; Ptosis, due to Bell's palsy (acquired); Ptosis, senile; Ptosis, due to cranial nerve paralysis; Ptosis, acquired; Ptosis, due to cerebrovascular accident (stroke)	12	1.0	-	-	0.0
78 68 45	Ptosis, secondary to surgery	1	0.0	-	-	0.0
78 68 74	Ptosis, due to cranial nerve paralysis, due to aneurysm	1	0.2	-	-	0.2
78 69 00	Ptosis NOS	49	3.9	0.2	0.3	0.5
78 82 00	Horner's syndrome; Syndrome, Horner's	3	0.2	-	0.0	-
78 90 00	Bell's palsy; Paralysis, Paresis, cranial nerve (abducens) (facial) (oculomotor) (trochlear) (third) (fourth) (sixth) (seventh)	5	0.4	-	-	0.1
78 99 00	Absent light reflex (consensual) (direct); Disease, neuromuscular, type specified NEC	52	4.2	0.4	0.0	0.5
78 99 98	Postoperative state, tic douloureux; Postoperative state, trigeminal neuralgia	1	0.2	-	-	0.2
	99. SITE NOT SPECIFIED					
99 00 00	Amaurosis; Amblyopia NOS; Blindness NOS;					

Ophthalmic disease code		Number of examinees with eye conditions	Total minor and other	Causing vision decrease	Needing medical care	Under medical care
		Rates per 1,000 population				
	Cyst, site and type not specified (excretory) (obstructed); Circulation, impaired, poor, site not specified; Discharge from eyes. Coded only if causative condition is unknown; Diplopia. Coded only if causative condition is unknown; Dry eye; Disease, eye, site and type not specified; Film, eye (AM) (in) (morning) (on) (over); Foreign body sensation; Itching, eye; Irritation; Light, sensitivity to; NLP (no light perception). Coded only if cause of vision loss is unknown; Photophobia; Pain, eye, site not specified; Redness, eye (with tearing); Skin over eye; Swelling, eye; Veil, eye (transient); Vision blurred, cloudy, decreased, impaired, nil or poor (associated with heart attack or pregnancy). Coded only if cause of imparied vision is unknown; Weak eye	13	1.0	0.6	0.1	0.1
99 00 70	Amblyopia, due to fever (from infection); Dyslexia; Pseudotumor cerebri; Scotoma, due to migraine headache (scintillating); Water tumor, brain	1	0.4	-	-	0.4
99 70 00	Defect, field (visual); Hemianopia, Hemianopsia	1	0.0	0.0	-	-
99 70 76	Defect, field, due to meningioma, sphenoid ridge (visual)	1	0.3	0.3	-	0.2
99 99 00	Disease, eye, site not specified, type specified NEC; Drusen, site not specified	1	0.0	0.0	-	-
99 99 74	Ischemic episodes, transient, affecting vision	1	0.0	0.0	-	0.2

Appendix IV. Eye pathology classifications

To assure uniform application of diagnostic criteria throughout the study, diagnoses were added during medical review at the National Eye Institute in which the detail of the eye pathology as recorded by the examining ophthalmologist was consistent with criteria for the more severe or readily identifiable eye conditions as given in Newell's report.[11] For such added diagnoses only, the anatomical site and the type of disease or injury—the first four digits of the NEI code—were used. No attempt was made to identify the etiology of such conditions or to make judgments as to whether the condition caused decrease in vision or needed medical treatment.

Of the 8,789 eye conditions diagnosed in the survey, 3,308—38 percent—were added during the NEI review. These additional diagnoses tended to be incomplete; etiology was identified for only 760, or fewer than 14 percent, of the 5,481 eye conditions diagnosed by the field ophthalmologists. Because of this, diagnostic data in the detailed tables and text of this report, including the conversion to the more widely used and understood *Eighth Revision, International Classification of Diseases, Adapted for Use in the United States* (ICDA-8) system, is limited to the first four digits of the NEI codes.

The following listing shows the 4-digit NEI codes that have been included in each of the 3-digit ICDA-8 codes for classification of these groups of eye conditions.

ICDA condition group	*ICDA code*	*NEI inclusion and code*
Malignant neoplasm	190	Carcinoma, tumor-eyelid (6356)
Benign neoplasm	224	Angioma, fibroma, hemangioma, mole, nevus, papilloma, syringoma benign, tumor-eyelid (6353)
Hemangioma, lymphanioma	227	Hemangioma, lipoma, nevus, tumor (benign), cyst, dermoid, dermolipoma-conjunctiva (6553) Tumor, dermoid-cornea (6753) Ephelis, freckle, melanoma (benign), nevus, tumor (benign) iris (7153) Neurofibroma-iris (7154) Nevus, tumor (benign)-choroid (7353) Tuberous sclerosis, tumor (benign) - retina (7653)
Unspecified neoplasm	238	Growth-eyelid (6350) Growth, limbus, tumor-eyelid (6750) Tumor-choroid (7350) Melanocytoma, tumor-optic nerve, disc (7753)
Congenital metabolic disorders:		
Amino acid	270	Albinism-retina (7613)
Lipid	272	Xanthelasma-eyelid (6364)
Anemias, other NOS	285	Pale, anemic, other manifestations-conjunctiva (6564)
Facial paralysis	350	Bell's palsy, paralysis of cranial nerve (7890)
Diseases of peripheral nerves	358	Horner's syndrome (7882)
Conjunctivitis, ophthalmic	360	Conjunctivitis, infection, pink eye, injection-conjunctiva (6520) Foreign body-conjunctiva (6542)
Blepharitis	361	Blepharitis, granulated, allergy - eyelid (6320) Blepharitis, seborrheic-eyelid (6321) Blepharitis, sebaceous; herpes zoster; acne rosacea-eyelid (6329)

ICDA condition group	*ICDA code*	*NEI inclusion and code*
Hordeolum	362	Hordeolum, stye (6330)
Keratitis	363	Keratitis, infection, allergy-cornea (6720) Ulcer due to herpes simplex or other infection-cornea (6730) Cogan's plaques-sclera (6863)
Iritis	364	Neovascularization, rubeosis-iris (7174)
Other inflammation of uveal tract	366	Inflammation NOS -uveal tract (7000) Inflammation-traumatic, granulomatous-uveal tract (7003) Inflammation-uveal tract, anterior (7050) Inflammation, active-uveal tract, anterior (7051) Inflammation, inactive-uveal tract, anterior (7052) Inflammation, active, granulomatous-uveal tract anterior (7054) Inflammation, inactive, granulomatous-uveal tract anterior (7055) Inflammation-uveal tract, posterior (7060) Inflammation, active-uveal tract, posterior (7061) Inflammation, inactive-uveal tract, posterior (7062) Inflammation, inactive or scar, due to toxoplasmosis (7065)
Inflammation of optic nerve, retina	367	Retinitis, sheathing of retinal vessels-optic nerve (7620) Papillitis-optic nerve (7721) Neuritis, retrobulbar (7722)
Inflammation of lacrimal glands, ducts	368	Obstruction, punctum, stenosis--lacrimal process (6460)
Other inflammatory diseases of eye	369	Scleritis (6820) Episcleritis (6825) Cells, flare, disease (6999) Hyalitis, opacity (7560)
Refractive errors	370	Myopic changes, atrophy, thinning (6161) Myopic degeneration, malignant myopia, degeneration of retina (7668)
Corneal opacity	371	Opacity due to foreign body, metallic, rust lesion-cornea (6787) Opacity due to burn-cornea (6788) Opacity due to infection, old healed ulcer, etc.-cornea (6789)
Pterygium	372	Pterygium-conjunctiva (6572) Pterygium, opacity due to removal of pterygium-cornea (6772)
Strabismus	373	Esophoria, congenital (7813) Exotropia, congenital (7814) Crossed eye, strabismus, squint (7861) Esotropia, (7862) Exotropia, acquired (7864) Hypertropia (7866)
Cataract	374	Cataract, congenital-lens (7411) Cataract, congenital, partly absorbed-lens (7413) Mittendorf spot, congenital or sutural opacity (7418) Cataract or aphakia, traumatic (7447) Cataract, metabolic, diabetic, senile (7460) Cataract, secondary (7463) Cataract, secondary to other eye disease (7464) Sclerosis, spoking, diabetic opacity (7489)
Glaucoma	375	Glaucoma, congenital (6911) Glaucoma, due to systemic disease or NOS (6970) Glaucoma: simple open or wide angle (6972) Glaucoma: narrow angle, closed angle-primary (6973) Glaucoma: secondary, drug-induced (6974) Glaucoma: rubeotic, hemorrhagic (6978) Glaucoma, absolute (6981) Glaucoma, juvenile (6982) Glaucoma, pigmentary (6983) Glaucoma, suspect-narrow angle (6987) Glaucoma, suspect-angle closure (6988) Glaucoma, suspect-elevated intraocular tension (6989)
Detached retina	376	Detachment, retina (7690)
Other diseases of retina, optic nerve	377	Degeneration, conjunctiva (6570) Microphthalmos (6612) Atrophy of iris, traumatic (7144)

ICDA condition group	*ICDA code*	*NEI inclusion and code*
Other diseases of retina, optic nerve	377	Drusen-choroid, retina, macula (7363) Medullated nerve fibers (7612) Vasculitis, retina (7623) Retinopathy (7635) Hole-macula, traumatic (7645) Atrophy-retina (7660) Degeneration, cystic-retina (7663) Degeneration, lattice-retina (7665) Degeneration, paving stone-retina (7666) Degeneration, senile or other peripheral (7667) Degeneration, retina NOS (7669) Cyst, degeneration, hole-macula (7670) Degeneration, senile-macula (7672) Hemorrhage-macula (7674) Atrophy-disc (7678) Hole-retina (7679) Occlusion retinal vessel NOS (7680) Occlusion, retinal artery, central (7682) Occlusion, retinal artery, branch (7683) Occlusion, retinal vein, central (7685) Occlusion, retinal vein, branch (7686) Atrophy, freckle, hyperplasia-retina (7694) Atrophy, depigmentation-macula (7695) Scar, macula (7696) Scar-choroid, retina (7697) Disease, edema-macula (7699) Disease, depigmentation, deterioration-optic nerve (7700) Papilledema (7760) Amblyopia (no code) Atrophy, traumatic or NOS-optic nerve (7761) Atrophy, primary-optic nerve (7762) Atrophy, secondary-optic nerve (7763) Colloid bodies, drusen-disc (7767) Conus, disc (7770) Crescent, neovascularization, pigment clump-disc (7799) Blindness NOS, cyst, impaired circulation, etc.-site not specified (9900) Drusen, disease, ischemic episodes affecting vision-site not specified (9999)
Other diseases of eye	378	Miscellaneous conditions of eyelid--keloid, nodule, papule, pigment, etc. (6300) Postoperative state, chalazion (6331) Meibomianitis (6333) Blepharochalasis, dermochalasis, elastosis-eyelids (6360) Entropion-NOS (6361) Ectotropion, senile, traumatic (6362) Symblepharon (6363) Trichiasis (6365) Cyst, milia-eyelid (6367) Cyst, disease-lacrimal process (6499) Disease, trauma, vascularization-conjunctiva (6500) Contact lens overwear-conjunctiva (6544) Hematoma, hemorrhage-subconjunctiva (6565) Hemorrhage-conjunctiva (6566) Cyst-conjunctiva (6580) Opacity due to foreign body, rust lesion-conjunctiva (6587) Scar-conjunctiva (6589) Bitot's spot, xerosis, disease NOS-conjunctiva (6599) Phthisis (6662) Melanosis, pigment, disease-cornea (6700) Dystrophy-cornea (6760) Keratopathy (6761) Dystrophy Fuch's-cornea (6763) Dystrophy, lattice degeneration-cornea (6765) Dystrophy marginal-cornea (6766) Dystrophy, posterior, endothelial (6767) Cornea guttata (6768) Dystrophy, nodular or granular-cornea (6769) Cornea tarinata, degeneration NOS (6770) Dystrophy, senile-cornea (6771) Keratitis sicca, drying-cornea (6775) Dry spot, tears deficient-cornea (6776) Degeneration and othelial-cornea (6777) Krukenberg spindle (6780) Pannus, vascularization-cornea (6781) Vascular lesions-cornea (6782) Edema, bullous keratitis (6799)

ICDA condition group	*ICDA code*	*NEI inclusion and code*
Other diseases of eye	378	Scar, disease, trauma NOS-sclera (6800) Congenital anomaly, thinning-sclera (6819) Scleromalacia in rheumatoid arthritis or NOS (6830) Foreign body-sclera (6842) Ectasia, staphyloma, etc., acquired or secondary to disease-sclera (6861) Melanosis, blue spots-sclera (6862) Icterus, jaundice, plaque, thinning-sclera (6899) Disease, trauma NOS - anterior chamber (6900) Schwalbe's line, congenital anomaly-anterior chamber (6919) Cyst, down growth - anterior chamber (6944) Shallow, flat, narrow - anterior chamber (6961) Bulge, dilation, disease, trauma-iris (7100) Papillary membrane, remnant-congenital (7113) Incarceration, prolapse-iris (7145) Tumor, pigmentation NOS - iris (7150) Heterochromia - iris (7160) Atrophy NOS - iris (7161) Synechia NOS (7171) Synechia, anterior; PAS (7172) Synechia, posterior; seclusion-pupil (7173) Anisocoria, dilation, traumatic mydriasis-pupil (7180) Iridiplegia (7185) Miosis, constriction-pupil (7188) Cyst, disease NOS - pupil: ectropion, entropion-uvea etc. (7199) Sclerosis-choroid (7364) Atrophy-choroid (7369) Hemorrhage-choroid (7370) Aberration, disease, surgery NOS - lens (7400) Dislocation-lens (7470) Pseudoexfoliation-lens (7477) Disease, surface pigment-lens (7499) Granular, pigment, disease NOS - vitreous (7500) Detachment-vitreous (7562) Hemorrhage-vitreous (7563) Floater, opacity-vitreous (7564) Disease, membrane-vitreous (7599)
Blindness	379	Absent light reflex, etc. (7899) Anophthalmos, surgical (6601, 6644)
Arteriosclerosis	440	Arterioscleratic changes-retina (7600)
Eczema, dermatitis	692	Rash, pustule, dermatitis-eyelid (6332) Eczema-eyelid (6335)
Hypertrophic, atrophic, diseases of skin	701	Angioma, cafe-au-lait spot, disease, etc. - eyelid (6399)
Congenital anomalities of eyes	744	Congenital anomaly-orbit (6219) Asymmetry, disease, herniation of fat-orbit (6299) Entropion, congenital (6311) Congenital anomaly-lid (6319) Asymmetry-eyeball (6600) Cyclitic membrane-eyeball (6621) Megalocornea, macrocornea (6719) Embryotoxon-iris (7114) Congenital anomaly-iris, pupil (7119) Coloboma (7168) Congenital anomaly-vitreous (7519) Congenital anomaly-retina (7619) Retinitis pigmentosa (7675) Congenital anomaly NOS-disc, optic nerve (7710) Congenital anomaly, vascular or other specified type-optic nerve (7719) Nystagmus, congenital (7811) Marcus-Gunn, other ptosis (7812) Duane's syndrome, other congenital anomaly (7819) Congenital amblyopia, blindness since birth (9910)
Symptoms—nervous system, sense organs	781	Exophthalmos-orbit (6260) Enophthalmos, senile-orbit (6262) Nystagmus-congenital (7811) Nystagmus-postoperative (7860) Visual field defect (9970)

ICDA condition group	*ICDA code*	*NEI inclusion and code*
Fracture, skull	802	Fracture, implant-orbit (6244)
Open wound—eye, orbit	870	Prolapse, traumatic-vitreous (7544) Vitreous attached to cataract incision or wound (7545)
Contusion—eye orbit	921	Abrasion, contusion, erosion-eyelid (6340) Trauma, excessive tearing, disease - Lacrimal (6400) Abrasion, edema, keratitis - cornea (6740) Bloodstaining - cornea (6745) Disease, trauma-choroid (7300)
Foreign body—eye	930	Foreign body-eyelid (6342) Foreign body-cornea (6742) Foreign body-iris (7142)
	997	Stripping, Descemet's membrane—cornea (postsurgery) (6746)

Appendix V. Demographic and socioeconomic terms

Age.—The age recorded for each examinee was the age at last birthday at the time of examination. The age criterion for inclusion in the sample used in this survey was defined as age at time of census interview. In this sample there were a few examinees who were 74 years of age at the time of interview but 75 years of age at examination. In the adjustment and weighting procedures used to produce national estimates, these persons were included in the 74–years group.

Race.—Race was recorded as "white," "black," or "other." "Other" included Japanese, Chinese, American Indian, Korean, Eskimo, and all races other than white and black. Mexicans were recorded as white unless definitely known to be American Indian or of other nonwhite race. Blacks and persons of mixed black and other parentage were recorded as black. When persons of mixed racial background were uncertain about their race, the father's race was recorded.

Geographic region.—The 48 contiguous States and the District of Columbia (excluding Alaska and Hawaii) were stratified into 4 broad geographic regions of about equal population. With a few exceptions, the compositions of the regions were as follows:

Region	*States included*
Northeast	Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania
Midwest	Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Missouri
South	Delaware, Maryland, Virginia, West Virginia, Kentucky, Arkansas, Tennessee, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, District of Columbia
West	Washington, Oregon, Idaho, Montana, Wyoming, Colorado, Utah, Nevada, California, Arizona, New Mexico, Texas, Oklahoma, Kansas, Nebraska, South Dakota, North Dakota

In a few instances the actual boundaries of the regions do not follow State lines. Some strata in the Midwest and South include PSU's actually located in the West. Similarly, some strata in the West contain PSU's located in the Midwest and South.

Urban-rural.—The classification of urban-rural areas is that used in the 1960 census. According to the 1960 definition, those areas considered urban are: (1) places of 2,500 inhabitants or more incorporated as cities, boroughs, villages, and towns (except towns in New England, New York, and Wisconsin); (2) the densely settled urban fringe, whether incorporated or unincorporated, of urbanized areas; (3) towns in New England and townships in New Jersey and Pennsylvania that contain no incorporated municipalities as subdivisions and have either 2,500 inhabitants or more, or a population of 2,500 to 25,000 and a density of 1,500 persons per square mile; (4) counties in States other than the New England States, New Jersey, and Pennsylvania that have no incorporated municipalities within their boundaries and have a density of 1,500 persons or more per square mile; and (5) unincorporated places of 2,500 inhabitants or more that are not included in any urban fringe. The remaining population is classified as rural.

By means of the first digit of the identification code on the household questionnaire, the urban and rural population is divided into the following categories according to population: (1) urban, 3,000,000 or more; (2) urban, 1,000,000–2,999,999; (3) urban, 250,000–999,999; (4) urban, under 250,000; (5) urban not in urbanized areas, 25,000 or more; (6) urban not in urbanized area, 10,000–24,999; (7) urban not in urbanized area, 2,500–9,999; and (8) rural.

Family income.—The income recorded is the total income received during the 12 months prior to the interview by the head of the household and all other household members related to the head. This income is the gross cash income (excluding pay in kind) except in the case of a family with its own farm or business. In that instance net income is recorded. Also included is the income of a member of the Armed Forces living at home with his family (even though he is not consid-

ered a household member). If he is not living at home, allotments and other money received by the family from him are included in the family income figure.

Education.—The only grades counted are those that have been attended in a "regular" school where persons are given formal education—either graded public or private schools, day or night, full-time or part-time attendance. A regular school is one that advances a person toward an elementary certificate or high school diploma or a college, university, or professional school degree. Education received in vocational, trade, or business schools outside the regular school system is not counted in determining the highest grade of school completed. If a person attended school in a foreign country, at an upgraded school, under a tutor, or under other special circumstances, the nearest equivalent of his highest grade attended is assigned.

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