

VITAL and HEALTH STATISTICS

DATA FROM THE NATIONAL HEALTH SURVEY

Series 11-Number 206



**Refraction Status and Motility Defects
of Persons 4-74 Years
United States, 1971-1972**

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
Public Health Service



Library of Congress Cataloging in Publication Data

Roberts, Jean

Refraction status and motility defects of persons 4-74 years, United States, 1971-1972.

(Vital and health statistics: Series 11, Data from the National Health Survey; no. 206)
(DHEW publication; no. (PHS) 78-1654)

Supt. of Docs. no.: HE 6209:11/206

1. Eye—Refractive errors—United States—Statistics. 2. Eye—Movement disorders—United States—Statistics. 3. Health surveys—United States. I. Rowland, Michael, joint author. II. Title. III. Series: United States. National Center for Health Statistics. Vital and health statistics: Series 11, Data from the National Health Survey; no. 206. IV. Series: United States. Dept. of Health, Education, and Welfare. DHEW publication; no. (PHS) 78-1654.

RA407.3.A347 no. 206

[RE925]

312'.0973s

78-606048

ISBN 0-8406-0131-X

[312'3'0477550973]

Refraction Status and Motility Defects of Persons 4-74 Years

United States, 1971-1972

National prevalence estimates of refraction status, refraction potential, and motility defects among the U.S. civilian noninstitutionalized population 4-74 years of age, including motility defects among children 1-3 years of age, with their demographic and socioeconomic distribution, based on the ophthalmology and medical history findings from the Health and Nutrition Examination Survey of 1971-1972.

DHEW Publication No. (PHS) 78-1654

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
National Center for Health Statistics
Hyattsville, Md. August 1978

NATIONAL CENTER FOR HEALTH STATISTICS

DOROTHY P. RICE, *Director*

ROBERT A. ISRAEL, *Deputy Director*

JACOB J. FELDMAN, Ph.D., *Associate Director for Analysis*

GAIL F. FISHER, Ph.D., *Associate Director for the Cooperative Health Statistics System*

ELIJAH L. WHITE, *Associate Director for Data Systems*

JAMES T. BAIRD, JR., Ph.D., *Associate Director for International Statistics*

ROBERT C. HUBER, *Associate Director for Management*

MONROE G. SIRKEN, Ph.D., *Associate Director for Mathematical Statistics*

PETER L. HURLEY, *Associate Director for Operations*

JAMES M. ROBEY, Ph.D., *Associate Director for Program Development*

PAUL E. LEAVERTON, Ph.D., *Associate Director for Research*

ALICE HAYWOOD, *Information Officer*

DIVISION OF HEALTH EXAMINATION STATISTICS

MICHAEL A. W. HATTWICK, M.D., *Director*

JEAN ROBERTS, *Chief, Medical Statistics Branch*

ROBERT S. MURPHY, *Chief, Survey Planning and Development Branch*

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.

Vital and Health Statistics-Series 11-No. 206

DHEW Publication No. (PHS) 78-1654

Library of Congress Catalog Card Number 78-606048

CONTENTS

Introduction	1
Ophthalmology Examination.....	3
Motility Testing.....	3
Pinhole Test.....	4
Refraction	4
Medical History	5
Quality Control	5
Findings.....	6
Motility	6
Refraction Status.....	7
Refraction Potential	9
Maximum Visual Acuity	11
Population Size of Place of Residence	19
Ancestry	20
Motility-Maximum Acuity	21
Medical History	21
Comparison With Previous Studies.....	24
Summary	28
References	30
List of Detailed Tables.....	31
Appendixes	
I. Statistical Notes	104
II. Demographic and Socioeconomic Terms.....	117
III. Eye Condition Definitions.....	119
IV. Recording and History Forms.....	121

LIST OF FIGURES

1. Prevalence rates of tropia and phoria among population age 4-74 years by age and sex: United States, 1971-1972	6
2. Percent of population age 4-74 years with minus spherical equivalence (for myopia) or plus spherical equivalence (for hyperopia) in their present glasses or contact lenses by age: United States, 1971-1972.....	8
3. Percent of population age 4-74 years with minus spherical power (for myopia) or plus spherical power (for hyperopia) in their present glasses or contact lenses by age: United States, 1971-1972...	9
4. Percent of population at selected ages in the range 4-74 years by strength of spherical equivalence in their present glasses or contact lenses by age: United States, 1971-1972.....	10
5. Percent of population age 4-74 years reaching specified visual acuity levels for maximum vision in the better eye: United States, 1971-1972.....	12
6. Percent of population age 4-74 years reaching specified maximum visual acuity levels in the better eye by sex: United States, 1971-1972.....	13

7. Percent of population with maximum distance vision of 20/50 or worse in the better eye by age and sex: United States, 1971-1972	13
8. Percent of white and Black population with maximum visual acuity of at least 20/20 in the better eye by age: United States, 1971-1972	14
9. Percent of population age 4-74 years with at least 20/20 maximum distance vision in the better eye by age and family income: United States, 1971-1972	16
10. Percent of white and Black population age 4-74 years with 20/50 or worse maximum distance vision in the better eye by age and family income: United States, 1971-1972	17
11. Percent change in proportion of population reaching 20/20 level in better eye on maximum over usual acuity by age, race, and region: United States, 1971-1972	19
12. Percent change in population reaching no better than 20/50 level in the better eye on maximum over usual acuity by age, race, and region: United States, 1971-1972	20
13. Percent of population age 6-74 years with maximum or usual better eye monocular visual acuity of at least 20/20 or no better than 20/50 according to whether or not they wear glasses or have trouble seeing with them: United States, 1971-1972	23
14. Percent of U.S. children age 6-11 years in 1971-1972 and 1963-1965 and U.S. youths age 12-17 years in 1971-1972 and 1966-1970 with tropia or phoria as determined by examination or test.....	24
15. Percent of U.S. population wearing glasses or contact lenses by age in 1971-1972 compared with percent in 1960-1970	27
16. Percent of adults age 18-74 years ever wearing glasses who have trouble seeing with them: United States, 1971-1972 and 1960-1962.....	27

TEXT TABLE

A. Percent distribution of best corrected visual acuity in the better eye as determined for U.S. adults in 1971-1972 ¹ and in the Framingham Eye Study in 1973-1975 ²	26
---	----

SYMBOLS	
Data not available-----	---
Category not applicable-----	...
Quantity zero-----	-
Quantity more than 0 but less than 0.05-----	0.0
Figure does not meet standards of reliability or precision-----	*

REFRACTION STATUS AND MOTILITY DEFECTS OF PERSONS 4-74 YEARS

Jean Roberts and Michael Rowland, Division of Health Examination Statistics

INTRODUCTION

This report contains information on the refraction status, the refraction potential or maximum corrected visual acuity, and motility defects among persons 4-74 years of age based on findings from the eye examinations of a national probability sample of the U.S. civilian noninstitutionalized population during the first Health and Nutrition Examination Survey in 1971-1972. The findings are analyzed with respect to age, sex, race, ancestry, region, population size of place of residence, annual family income, and responses to medical history questions on eye problems and use of glasses.

The Health Examination Survey, in which these data were obtained, is one of the major programs of the National Center for Health Statistics authorized under the National Health Survey Act of 1956 by the 84th Congress as a continuing Public Health Service activity to determine the health status of the population.

The data systems used to carry out the intent of the National Health Survey¹ include, in addition to the Health Examination Survey, the Health Interview Survey, which collects health information from samples of people by household interviews and focuses primarily on the impact of illness and disability within various population groups; the Health Manpower and Facilities surveys, which obtain data on hospitals, nursing homes, and other resident institutions; and the Health Resources Utilization surveys, which obtain information on persons using health facilities and health manpower and the extent of that use.

Of these programs the Health Examination Survey is the one designed to collect the kind of needed health statistics information obtainable most efficiently through direct examinations of probability samples of the population. From direct examinations, tests, and measurements, data are obtained in this program 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 psychological measurements from which normative data and appropriate cutoff points for what is abnormal can be determined. Also collected are medical history, demographic, and socio-economic data on the sample population under study with which the examination findings may be interrelated.

Since 1960 the Health Examination Survey has been conducted as a series of separate, consecutive programs called "cycles," each of which is limited to some specific segments of the U.S. population and to specific aspects of health. During the first cycle in 1960-1962, the prevalence of certain chronic diseases, including eye pathology, and the distributions of various physical and physiological measures, including visual acuity, were determined among a defined adult population.^{2,3} For that survey, a national probability sample of 7,710 persons 18-79 years of age, of whom 6,672 (86.5 percent) were examined, was selected to represent the 111 million in that age segment of the civilian noninstitutionalized U.S. population at that time.

The target populations for the second and

third cycles in 1963-1965 and 1966-1970 were, respectively, the Nation's noninstitutionalized children 6-11 years of age and youths 12-17 years of age.^{4,5} In both of these programs, the examination was focused primarily on health factors related to growth and development. For the second program, a probability sample of 7,417 was selected to represent the nearly 24 million noninstitutionalized children in the U.S. population, of whom 7,119 (96 percent) were examined. For the third program, a probability sample of 7,514 was selected to represent the 22.7 million noninstitutionalized youths in the U.S. population at midsurvey. Of these, 6,768, or 90 percent of the sample were examined.

The Health and Nutrition Examination Survey (HANES) program, from which the findings in this report were derived, was designed to measure the nutritional status of the U.S. population age 1-74 years and to obtain some limited information on the general health status of the entire age group as well as more detailed information on the health status and medical care needs of persons age 25-74 years in the civilian noninstitutionalized population. A description of the specific content and plan of operation, including sample design, has been published.⁶

As in the previous Health Examination Survey programs, the U.S. Bureau of the Census cooperated in the sample design and in the initial visits for interviewing at the eligible households in the primary sampling units (PSU's) selected in various parts of the country. Members of the field teams of the mobile examination center did further household interviewing and explaining of the examination portion of the program. The selected 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 various 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 study 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 and so that national estimates could be obtained from those parts of the examination which were included only in this 35-stand subsample.

During the planning for the HANES program, Dr. Carl Kupfer, Director, National Eye Institute (NEI), indicated the interest of that Institute in obtaining more definitive information than was currently 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 future emphasis in their programs. Consistent with the overall objectives of the survey, an evaluation of treatment needs also was incorporated into the examination.

Two ophthalmologists from NEI, Drs. James P. Ganley and Arthur F. Garcia, developed the examination form and standardized protocol for the ophthalmic examination and were responsible for recruiting and training the examining ophthalmologists as well as for verifying the resultant diagnoses and for other aspects of quality control in this area.

The NEI decided to discontinue the ophthalmology examination after the completion of examining at 35 locations because of problems encountered in recruiting ophthalmologists to conduct the examinations and the lack of sufficient staff within the Institute to carry out the program adequately. While the size of the sample was not as large as originally planned, these unique national eye examination findings do provide the basis for analysis needed to meet most of the original purposes of this part of the examination.

For the 35 locations at which the ophthalmological examination was given during the period between April 1971 and October 1972, a national probability sample of 14,147 persons was selected to represent the 192.7 million in the target population age 1-74 years. Despite intensive efforts, only 10,126 of the sample persons came in for examination. This represents

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.)

Surveys conducted by the National Center for Health Statistics, including all previous programs of the Health Examination Survey, have achieved higher levels of response than have been reached for the 35-stand subsample in this first Health and Nutrition Examination Survey. The 72.8-percent response rate fails to meet fully the requirements of the original probability design. However, after a policy of remunerating participants was initiated—adopted after the completion of examining at 20 locations—there was a significant increase in participation.⁷ Because of the lower-than-usual response rate, the national estimates of the more severely visually disabled in this report will probably understate slightly the actual prevalence of this disability in the civilian noninstitutionalized population 25-74 years of age. The prevalence estimates in this report have been based on the findings for those examined.

National estimates in this report are based on weighted observations; that is, the data obtained for each examined person were inflated to the level of the total population. The estimates have been calculated as though the examined persons in each of the age, sex, and income classes are a random subsample of the sample persons in the same class (appendix I). Although there is evidence from the earlier examination surveys and medical history data from the Health and Nutrition Examination Survey that these are not unreasonable approximations, it is clear that some estimates are subject to considerable risk of bias when more than one-quarter of the sample persons in a particular age-sex-income class were not examined.

Even though examinees 1-74 years of age were examined and tested by the survey ophthalmologists, visual acuity determinations were made only for those age 4-74 years. Hence, findings on refraction status and potential in this report are based on the examination of the 9,263 persons age 4-74 years at the time of examination. The extent of and the methods used in the estimation of missing data for the

various examination components used in this report are shown in appendix I.

Definitions of demographic and socioeconomic terms used in this report are in appendix II and disease or condition definitions in appendix III.

OPHTHALMOLOGY EXAMINATION

At each of the 35 selected locations throughout the country, arrangements were made for 10 different sample persons to come or be brought into the specially designed mobile center for each of the morning, afternoon, and evening examination sessions. These included 10 examinees from the nutrition sample (1-74 years) including 2 who were also selected for the detailed sample (25-74 years). The ophthalmology examination, one of the first procedures scheduled in each session, was similar for persons in the nutrition sample and for those in the detailed sample except for the refraction component in which determination was made of maximum or best corrected acuity. The standardized eye examination for those over 3 years of age included the taking of an ocular history regarding previously known eye disorders or previous eye surgery; a 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 of type of motility defects; measurement of prescription in present glasses; dilation, and within 20 to 70 minutes thereafter, retinoscopy for detailed examinees with acuity less than 20/40 and spherical trial lens test for nutrition examinees with acuity less than 20/40; applanation tonometry on examinees 20 years and older; and examination of the pupils, lids, globes, conjunctiva, sclera, corneas, anterior chambers, irides, and lenses. The pupils were dilated in most instances for the spherical refraction and retinoscopy and for the examination of the vitreous and retina.

Motility Testing

The eye muscle part of the examination consisted of a careful inspection and clinical testing for evidence of nystagmus and manifest

(tropia) strabismus or latent (phoria) eye muscle imbalance.

Examinees were tested in the six cardinal directions of gaze. Then the alternate-cover test and cover-uncover test were done at near (14 inches) and distance (20 feet) with an accommodative fixation target (e.g., fixation symbol for near and 20/40 letter for distance). The motility examination was done with vision corrected if glasses were available and through bifocals or reading glasses, if available.

For each eye, the examiner checked the examinee in the cardinal directions by having him follow a near fixation target while looking for limitations of gaze. The cover-uncover test (for tropia) was performed by having the examinee observe a stationary accommodative test object while the examiner covered one eye of the examinee and looked for movement of the fellow eye; the alternate cover test (for phoria) was performed by alternately covering one eye of the examinee and then the other while looking for movement of the eye just uncovered. By these techniques, phorias and tropias were detected and differentiated.

When a tropia was detected, the type of the condition was recorded as eso or exo, hyper or not hyper, and comitant or not comitant. Similarly, the presence of a phoria was indicated with a designation of whether eso or exo and hyper or not hyper (appendix IV).

The presence of true nystagmus (excluding voluntary or end-position nystagmus) was recorded by type—pendular, jerk-horizontal, jerk-vertical, or jerk-rotary (appendix III).

Pinhole Test

When the best distance vision in the initial visual acuity tests before dilation and refraction was less than 20/20 in the eye under test, the examiner, leaving in place the examinee's own glasses or contact lenses if worn in the initial tests, placed a pinhole in front of the eye under test and recorded the distance acuity reached with this device also.

Refraction

The prescription for the present distance correction was determined for those examinees

who brought their glasses or contact lenses to the examination. For all examinees whose best visual acuity in either eye was 20/50 or worse, corrected or uncorrected, spherical refraction (nutrition examinees) and retinoscopy (detailed examinees) were done to determine the maximum visual acuity possible for them as well as the characteristics of the lens required.

Prescription in present glasses.—A Powerite II Lensometer was used by the examiner in measuring the spherical and cylindrical power and the axis deviation for the distance correction in the refractive lenses worn by the examinee. Untinted lenses were measured through the green filter and dark lenses were measured with the filter removed. A special attachment was used for making measurements on contact lenses.

The measurements were carefully made starting with the power scale set on zero and the target lines put in sharp focus. The lens was then clamped in the holder. The power wheel was rotated until the target lines were again in approximate focus and the lens had been centered for measuring. The power wheel was then rotated until the sphere power lines came into sharp focus. The power of the spherical correction in the lens from the power scale was recorded with the appropriate sign to the nearest hundredth of a diopter. The power wheel was again rotated until the cylindrical power lines came into sharp focus and the appropriate power was recorded to the nearest hundredth of a diopter. The degree of axis deviation between the spherical and cylindrical lenses also shown at that time on the power wheel was recorded to the nearest degree.

Spherical refraction.—For the nutrition examinees whose best distance vision in either eye was 20/50 or worse, corrected or uncorrected (not including pinhole vision), refraction was limited to that possible with graded spherical trial lenses. Within 20 to 70 minutes after dilation, with the examinee seated in position by the Reliance Instrument Stand, the examiner tried to improve the distance visual acuity in the eye with poor vision, leaving glasses or contact lenses on for those who wore them, by inserting in the refractor suspension positioned in front of the examinee simple spherical lenses in .50-

diopter increments (e.g., -1.00, -1.50 or +2.50, +3.00, etc.) from the trial lens set. When the maximum distance visual acuity was reached for the eye being tested, the examiner recorded the sign and strength of the added spherical correction and the final acuity level obtained (appendix IV).

Retinoscopy.—For detailed examinees whose best distance vision in either eye was 20/50 or worse, corrected or uncorrected (not including pinhole vision), within 20 to 70 minutes after dilation, the examiner determined the refractive error in the eye with the poor vision (with glasses or contact lenses if worn), using a Copeland streak retinoscope but without doing a manifest refinement, and measured and recorded the visual acuity. The strength of the added spherical and cylindrical lenses, their axis deviation, and the maximum acuity level reached were recorded.

Visual acuity testing during the spherical refraction and retinoscopy was done using methods previously described.⁸

Medical History

During their visit to the sample household to make the appointments for the examination, the HANES field representative administered a medical history to the parents for children age 6-11 years and to the sample person for those 12-74 years of age. The history for the child included 11 questions directly related to the use of glasses and vision difficulties or other eye conditions; the history for those 12-74 years old included 8 such questions (appendix IV).

Quality Control

Drs. Ganley and Garcia, senior ophthalmologists from NEI, were responsible for recruiting the 91 survey ophthalmologists and for training them in the standard examination procedures used at the first 35 examination locations of the Health and Nutrition Examination Survey.

In addition, these senior ophthalmologists from NEI developed a protocol for supervised testing, which they carried out at 24 of the 35 locations, to insure the accuracy of the ophthalmology examination data, to provide an esti-

mate of their replicability or reliability, and to aid in maintaining uniformity in the examination procedures.

To accomplish these objectives, the examinations of all sample persons in the first 2 sessions at each of 24 of the 35 stands were observed and partially replicated by the senior ophthalmologists of NEI who then evaluated the methods and findings of the examiners and made the necessary recommendations where needed. The NEI observer conducted the first part of these examinations simultaneously with the examiner and recorded his findings on a separate replicate form made out for each patient. Motility tests and lensometer measurements of the distance correction in the examinee's present glasses were each replicated in this manner.

The examiner was observed for technique, facility with the instruments, and adherence to the protocol. Written comments were made on the observer's record including specific problems or questions that arose during the examination. Recommendations to the examiner, if needed, were made at the end of each session.

At the end of each session, after the examiner's findings had been transferred to the "replicate" examination form, the examiner's evaluation of each examinee was compared with that of the observer.

In all, 230 (2.5 percent) of the 9,263 ophthalmology examinations were repeated by the senior ophthalmologists in this way. Motility examination results showed a high level of agreement between examiner and observer findings (appendix I, table IV). Of the 230 examinations replicated, exact agreement was obtained on the presence or absence of a given condition on more than 97 percent of the examinations for all conditions except esophoria or exophoria for which the agreement was 82 percent. However, the results indicate some difficulty in condition identification (i.e., direction of deviation). Of those examinees identified by examiner or observer as having a specific eye muscle problem, examiner-observer agreement ranged from 33 percent for hypertropia to 100 percent for hyperphoria.

In replication of the lensometer measurements of the correction in the examinees' present glasses, complete agreement was reached

on the power of the spherical correction for 65 percent of the lenses, on the power of the cylinder correction for 78 percent, and on the axis deviation for 34 percent. Differences between original and replicate measurement of 0.50 prism diopter or more were shown for 19 percent of the spherical correction measurements and 2 percent of the cylindrical correction. On the axis deviation measurements, the error was no more than 10 degrees (10°) for 68 percent but differed by 45° to 89° for 12 percent, and by 90° to 178° for 15 percent (appendix I, tables V and VI).

The average difference between examiner and observer indicates essentially no consistent bias in these measurements. On spherical corrections, the average difference on all replicate measurements was -0.05 diopter for the spherical correction measurements, -0.06 diopter for the cylindrical, and -6.0° for the axis deviation.

FINDINGS

Motility

An estimated 38 million, or 19.5 percent, of the civilian noninstitutionalized population 1-74 years of age in the United States have a manifest or latent eye muscle imbalance condition. Less than 1 percent (0.7 percent) have more than one such condition in their two eyes. (See appendix III for definitions⁹ of the various types of eye pathology or defects included in this report.) These estimates are based on findings from the Health and Nutrition Examination Survey of 1971-1972 among a national probability sample of that age in the U.S. population.

Tropia.—More than 7.1 million or 3.7 percent of persons 1-74 years of age in the United States have a disturbance of coordination of the extraocular muscles of the two eyes, which is retained in all six cardinal positions of gaze whether one eye is covered or not (table 1). Of those persons with such manifest eye muscle imbalance (also frequently referred to as manifest strabismus), 2.3 million (1.2 percent of the population 1-74 years of age) have an inward deviation of one or both eyes (esotropia); 4.0 million (2.1 percent), an outward deviation (exotropia); and 1.2 million (0.6 percent), an upward deviation (hypertropia). For the major-

ity of these 4.0 million persons (2.1 percent of the population age 1-74 years), there was no apparent muscle weakness causing the tropia (comitant type). Only 0.6 million persons (0.3 percent of the population) had an impairment of one or more of the eye muscles or their nervous connections which caused the tropia (incomitant type); for the remaining 2.5 million persons (1.3 percent of the population) with tropia, the cause could not be definitely identified. After more complete examination of the eye, the ophthalmologist identified less than 0.1 percent as having a tropia condition not detected in his original motility testing and considered 98 percent of the tropia to be significant ocular pathology.

Among older persons age 55-75 years, the prevalence of tropia (6.1 percent) is substantially greater than it is for very young children 1-3 years (1.9 percent) or children and younger adults 4-54 years (3.3 percent).

Females 1-54 years of age are more likely than males of the same age to have a tropia, in contrast with the negligible sex difference in the prevalence rates of manifest motility disorders among adults 55-74 years (figure 1).

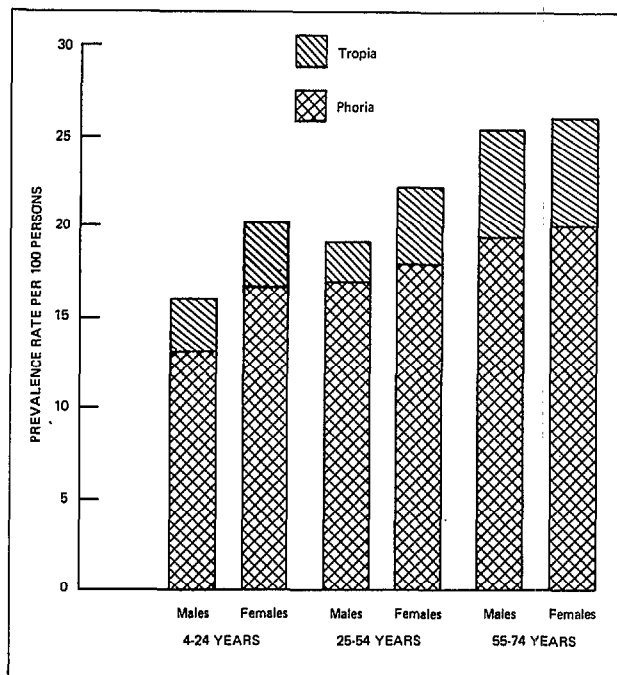


Figure 1. Prevalence rates of tropia and phoria among population age 4-74 years by age and sex: United States, 1971-1972

There is no significant racial difference in the prevalence of tropia: The rates are negligibly higher among the white than among the Black population ages 1-54 years and lower at 55-74 years, but all differences are small enough to be due to sampling variability alone. Nor does the tropia prevalence rate show any consistent association with income level across the age range in this study (table 2).

Phoria.—An estimated 30.8 million (16.0 percent) of the U.S. civilian noninstitutionalized population 1-74 years of age have a latent tendency for one eye to deviate so as to look at a different image than the other eye focuses on when fusion or binocular viewing is interrupted (table 3). For approximately 4.0 million (2.1 percent of the population), the latent tendency is for an inward deviation (esophoria); for 26.6 million (13.8 percent), the deviation is outward (exophoria); and for 0.8 million (0.4 percent), there is a latent tendency for an upward deviation of one eye (hyperphoria) usually in conjunction with one of the other types of phoria.

The prevalence of phoria increases with age from 3.3 percent among preschool-age children age 1-3 years to 14.8 percent among children and young adults age 4-24 years, then increases more slowly to 19.7 percent at ages 55-74 years.

Females age 4-24 years are slightly more likely than are males to have a phoria condition (16.4 percent compared with 13.3 percent for males), but the difference in the rates is not large enough to be statistically significant at the 5-percent probability level. Across the remainder of the age range, the sex difference in these rates is negligible.

The racial differences in the prevalence of phoria are small enough to be reasonably attributable to sampling variability alone, although the observed rates among the white population age 1-54 years are lower and at age 55-74 years higher than the corresponding rates among the Black population, the reverse of the pattern shown for tropia.

Nystagmus.—Nearly 1.0 million (0.5 percent) of the U.S. population (civilian noninstitutionalized) 1-74 years of age have an involuntary more or less rhythmic, back-and-forth movement of the eyes (table 4). The condition is more likely to be of the jerk type than of the

pendular type. On the more detailed examination of the eye, the ophthalmologists considered only 62 percent of these conditions to be significant ocular pathology.

There appears to be some consistent increase in the prevalence of nystagmus with age—from 0.3 percent at age 1-3 years to 0.9 percent at age 55-74 years—but the sample size used for the survey is too small to provide sufficiently reliable estimates to assume that this apparent trend represents more than sampling variability.

Refraction Status

More than one-half (52.4 percent), or an estimated 92 million, of the civilian noninstitutionalized population 6-74 years of age in this country wear corrective lenses (glasses or contact lenses) all or part of the time, according to the medical history findings from the Health and Nutrition Examination Survey. Information regarding the present refraction status of the U.S. population in this report is limited to that obtained regarding distance vision on the 40.7 percent of this 6-74-year-old group who brought their own glasses or contact lenses to the examination and to the 4.3 percent of the 4- and 5-year-olds who were wearing glasses at the time of the examination (2.4 percent of the 4-5-year-old examinees, presumably those wearing glasses for distance vision). The proportion for whom distance refraction status could be determined (36.7 percent of all examinees age 6-74 years) was greater among females (39.6 percent) than among males (33.1 percent); the sex differential was somewhat smaller but in the same direction as that existing among all those reported on medical history as still wearing corrective lenses. Approximately 29.5 percent of those 6-74 years of age who wear corrective lenses, or an estimated 27.1 million persons, failed to reach the 20/20 level with either eye when wearing their own corrective lenses.

The prescription in their present correction was measured with a lensometer for those who brought their glasses or contact lenses to the examination with them. The distribution of these measurements of the spherical and cylindrical power of the lenses and the degree of axis deviation of the cylinder are shown in tables 5-12. The spherical equivalence of the lens

system in these glasses or contact lenses, as estimated from the algebraic sum of the spherical power and one-half the power of the cylindrical correction, is shown in table 13; the unadjusted power—the algebraic sum of the spherical and cylindrical corrections—as shown in table 14, will give an overestimate of the effective strength of the correction.

Among the population 4-74 years of age who were wearing glasses (or contact lenses) at the time of the examination, the correction was about as likely to be for myopia (near-sightedness) as for hyperopia (farsightedness). On the basis of the spherical power alone, 47.6 percent had a negative spherical correction (for myopia), 46.7 percent had a positive spherical correction (for hyperopia), and 5.8 percent had no spherical correction in their lenses (table 5). When the spherical equivalence of the lens system is considered, 48.1 percent showed a correction for myopia, 48.3 percent showed a correction for hyperopia, and 3.4 percent showed no measurable correction (table 13).

There is a significant trend with age in the type of corrective lenses used on the basis of either the spherical equivalence of the lens system or the spherical power alone (figures 2 and 3). When the spherical equivalence is considered, the proportion with a correction for myopia increases with age among children from 30.2 percent at 4-5 years to the maximum of 87.2 percent at 12-17 years, then consistently decreases to a minimum of 15.7 percent at 65-74 years. The trend with respect to the prevalence of hyperopia is the reverse of that for myopia. Among children, the proportion with correction for hyperopia decreases with age from 66.0 percent at 4-5 years to the minimum of 10.7 percent at 12-17 years, then increases consistently to the maximum of 81.4 percent among the oldest age group, 65-74 years. The trend with age in the type of correction in people's glasses (or contact lenses) based on the measurement of the spherical power alone is very similar to that shown for the more complete measure of the spherical equivalence of the lens.

The strength of the negative spherical correction may be seen to be at a maximum at 12-24 years then decreases with age; the strength of the positive spherical correction increases with

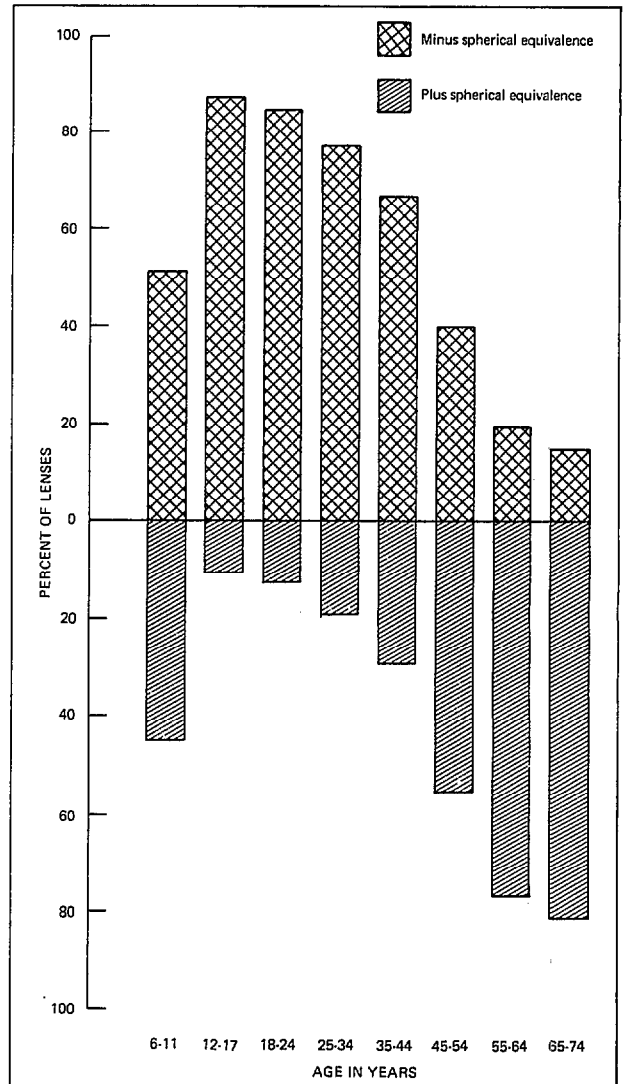


Figure 2. Percent of population age 4-74 years with minus spherical equivalence (for myopia) or plus spherical equivalence (for hyperopia) in their present glasses or contact lenses by age: United States, 1971-1972

age from the minimum at 12-17 years to a maximum at 65-74 years (tables 13, 14, and figure 4).

There is no statistically significant difference between the right and left eye lens or between those used by males and females with respect to the distribution of the power of the lens or lens system (table 11).

With respect to the cylindrical power in the lens system and to the axis deviation of the cylinder, there is no consistent age trend (tables 6 and 12).

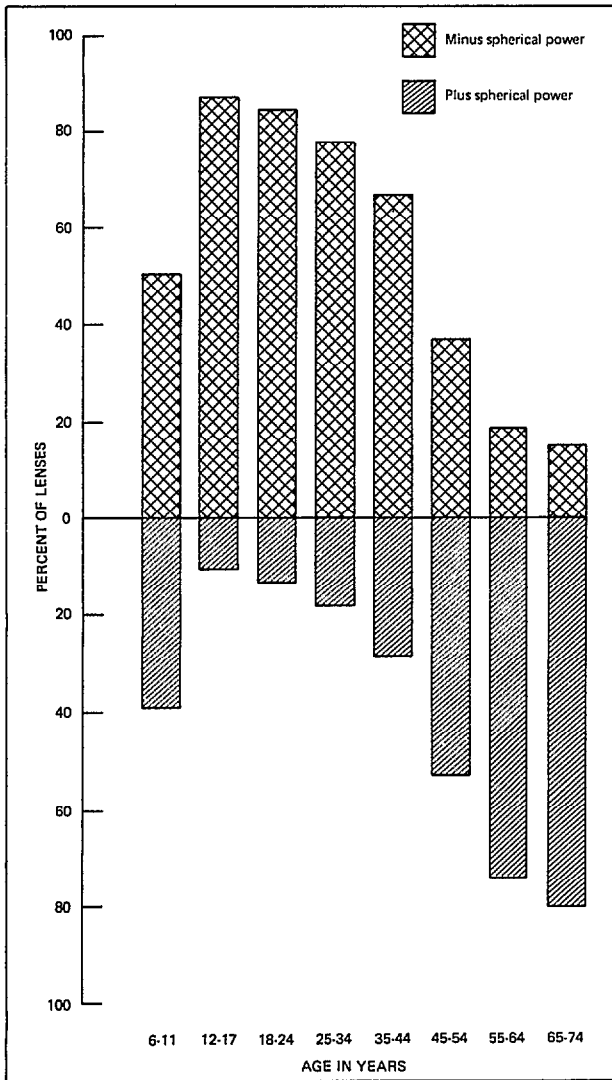


Figure 3. Percent of population age 4-74 years with minus spherical power (for myopia) or plus spherical power (for hyperopia) in their present glasses or contact lenses by age: United States, 1971-1972

Refraction Potential

Pinhole test.—Of the estimated 63.2 million persons (or 34.7 percent of the population) 4-74 years of age whose usual visual acuity with their own glasses or contact lenses if worn was less than 20/20 in one or both eyes (when tested before dilation), 16.0 percent were able to reach the 20/20 level on retest after a pinhole was placed over their usual correction (table 15). The proportion of persons' eyes in which acuity could be improved to 20/20 with just the use of

the pinhole was at a maximum of 23.1 percent for those testing at the 20/25 level, then declined steadily with decreasing visual acuity on the regular test to 0.5 percent among those whose acuity in the initial test had been 20/80. Among the small number testing (initially) at the poorer acuity levels of 20/100, 20/200, and 20/400, the percents that improved to 20/20 with the pinhole were, respectively, 1.7, 6.4, and 2.2.

The proportion of persons' eyes in which acuity could be improved at all with the pinhole alone increased consistently from the 23.1 percent initially testing at the 20/25 level to 87.5 percent among those initially testing at the 20/70 level and reached a maximum of 91.4 percent among those testing initially at 20/100. The proportion whose visual acuity through the pinhole was poorer than in the initial test was less than 2 percent.

This pattern of association between usual visual acuity and pinhole visual acuity is similar for the three age groups—4-24, 25-44, and 45-74 years—although the middle age group is somewhat more likely and the oldest age group somewhat less likely to show improvement to the 20/20 level than the youngest age group is; the respective percentages are 24.0 (25-44 years), 11.1 (45-74 years), and 18.5 (4-24 years) (tables 16-18).

Refraction.—Within 20 to 70 minutes after dilation, refraction potential was determined or estimated for each examinee whose usual visual acuity in either eye was 20/50 or less with his own glasses or contact lenses, if worn, otherwise uncorrected. Among the examinees in the nutrition sample who were not included in the detailed sample—about 81 percent of all examinees, all of those 4-24 years of age and about four-fifths of adults age 25-74 years—refraction potential was estimated by the extent to which acuity could be improved with just the addition of spherical lenses. For examinees in the detailed sample—one-fifth of the adults age 25-74 years or about 19 percent of the sample—actual refraction potential was determined using retinoscopy.

Among the 6.6 percent of the population age 4-74 years whose usual visual acuity in the right eye was 20/50 or worse, an estimated 22.3 percent reached the 20/20 level at distance with

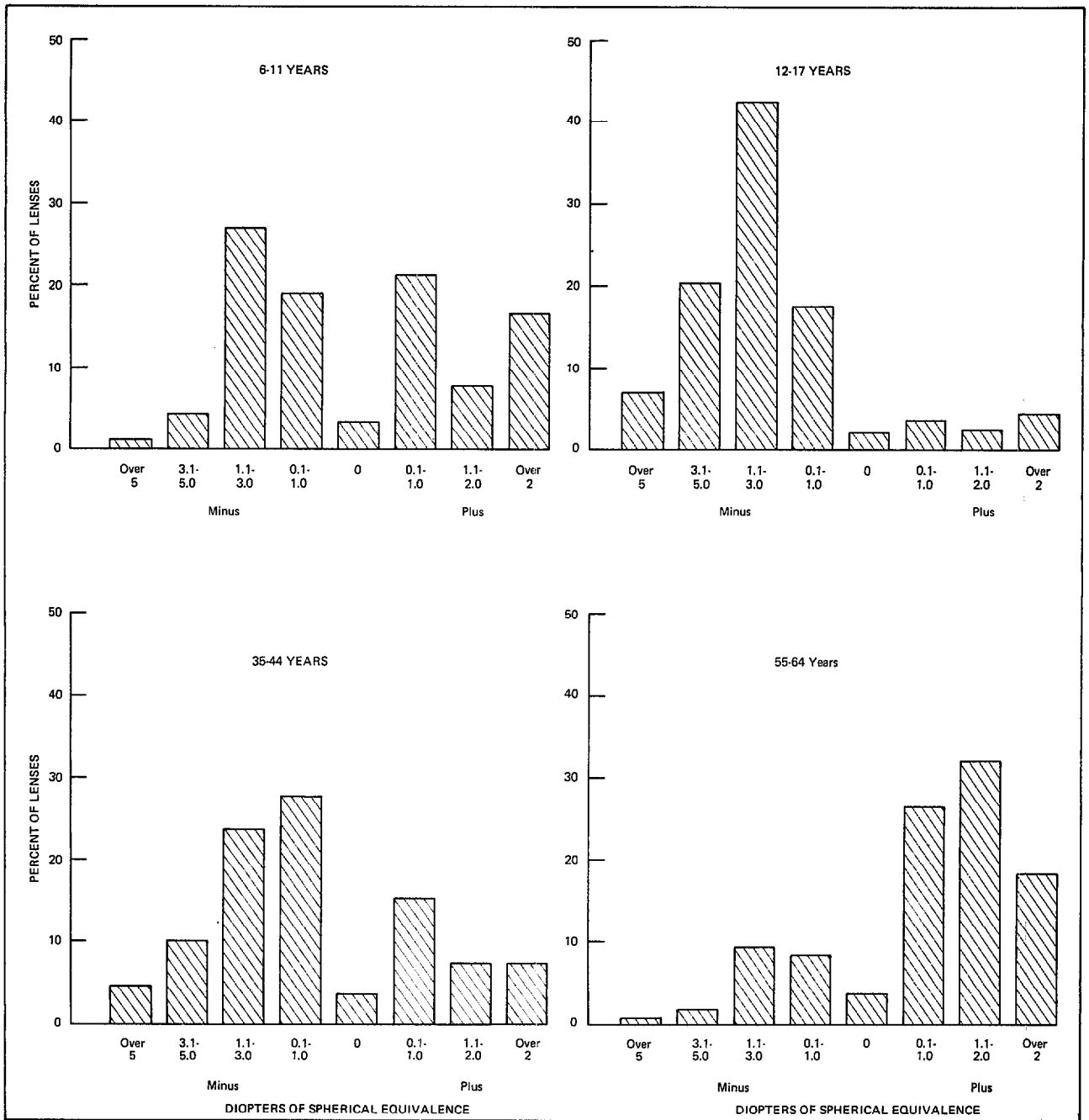


Figure 4. Percent of population at selected ages in the range 4-74 years by strength of spherical equivalence in their present glasses or contact lenses by age: United States, 1971-1972

additional spherical correction or refraction (table 19). Similarly, of the 6.0 percent whose usual visual acuity in the left eye was 20/50 or worse, 20.7 percent showed a refraction potential of 20/20. Hence 21.5 percent of those with this usual degree of defective visual acuity

actually have a refraction potential of 20/20 or better. An additional 22.6 percent are correctable to the 20/25 level (table 20).

The proportion of males with refraction potential of at least 20/20 (26 percent) is greater than the proportion of females (18 percent),

although the proportion of the population whose usual monocular acuity does not exceed 20/50 is similar for both sexes.

Refraction potential of at least 20/20 decreases substantially with age among those in the population age 4-74 years with this degree of defective visual acuity (20/50 or less, usual), from 32.8 percent among children and young adults 4-24 years to 11.8 percent among older adults age 55-74 years. In contrast, refraction potential of 20/40 through 20/25, but less than 20/20, shows a slight increase with age from 52 percent in the 4-24-year-old group to 57 percent in the oldest age group.

The 6.2 percent of the population age 4-74 years with usual monocular acuity no better than 20/50 include about 0.8 percent testing 20/200 or less in the eyes.⁸ The proportion in the population with one or both eyes "legally blind" (as used here, not correctable to 20/200) on the basis of central visual acuity (but not including those with sufficient visual field limitation also to be so considered) is approximately 0.2 percent, as determined with the refraction retinoscopy done in this national survey (table 20).

On spherical refraction or retinoscopy, 50.7 percent of those persons with one or both eyes testing less than 20/50 with usual correction, if any, reached their maximum refraction potential with the addition of some degree of negative spherical power, 46.9 percent with added positive spherical power, and 2.4 percent with no change. Maximum refraction potential was reached for 63.1 percent of these persons within a range of ± 1.5 diopters of additional spherical power. Among persons 4-54 years of age, relatively more are correctable to 20/20 with the addition of negative than positive spherical lens power; among older persons age 55-74 years, the maximum refraction potential is more likely to be reached with the addition of some positive than with some negative spherical lens power, a finding consistent with the apparent increase in myopia among younger persons and hyperopia among older persons evident from the correction in their present glasses or contact lenses. These associations are generally similar for the right and left eyes (tables 20 and 21).

The additional spherical lens power needed for these persons (usual visual acuity of 20/50 or

less) to reach their maximum refraction potential is generally similar for both eyes (table 22). For those with at least one eye correctable to 20/20, 13.4 percent out of a possible 14.7 percent required the same additional spherical lens power for each eye, and all possible (14.6 percent) required added spherical power for the two eyes that differs by no more than 1.5 diopters. Among persons whose monocular visual acuity could not be corrected to 20/20, 79.7 percent required the same additional spherical lens power to realize the maximum refraction potential of their right and left eyes, and for 93.7 percent the power required differs by no more than 1.5 diopters.

A comparison of the spherical equivalence of the glasses or contact lenses worn by these persons with the spherical equivalence of the lens system determined on retinoscopy to be required for maximum visual acuity is shown in tables 23 and 24. More than two-thirds (68.6 percent) of the population age 25-74 years have the same type (negative, positive, or zero) of correction; and, of these, more than two-thirds are of approximately the same power in their present glasses as that determined with retinoscopy. An estimated 13.3 percent with a negative spherical lens equivalency (correction for myopia) in their present glasses really need a positive spherical lens equivalency (correction for hyperopia) for their best visual acuity (as determined in retinoscopy); 9.7 percent with a positive equivalency should have a negative spherical equivalency.

Maximum Visual Acuity

Age and sex.—Nearly three-fourths (74.0 percent) of the civilian noninstitutionalized population 4-74 years of age in the United States have a maximum distance visual acuity or refraction potential of at least 20/20 in their better eye as determined in this survey (figure 5 and tables 25 and 26). These estimates are based on findings of usual and best corrected visual acuity from the Health and Nutrition Examination Survey of 1971-1972 among a national probability sample of examinees of whom about one-third (37 percent) were originally tested wearing their glasses or contact lenses and the remaining 63 percent without correction.⁸

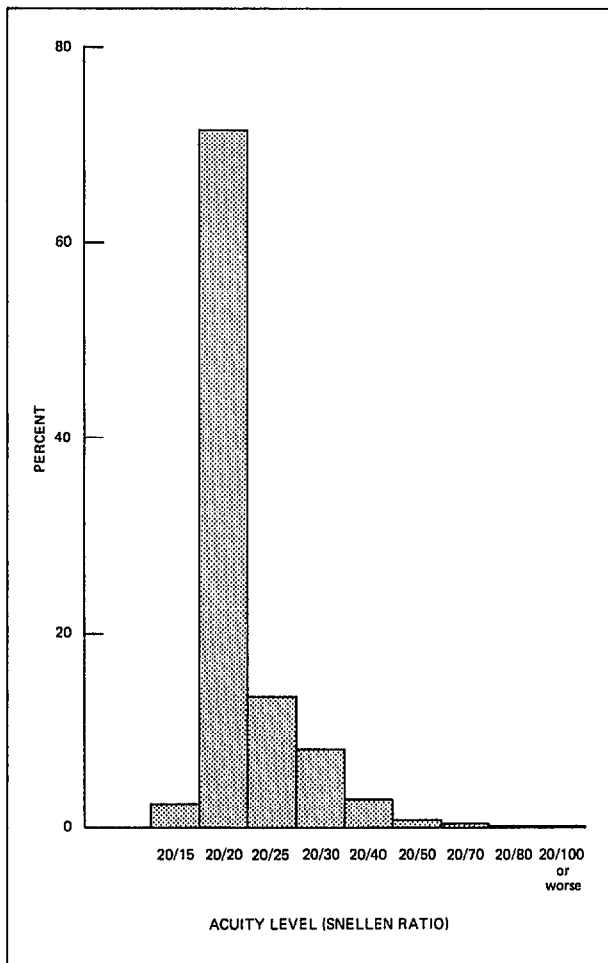


Figure 5. Percent of population age 4-74 years reaching specified visual acuity levels for maximum vision in the better eye: United States, 1971-1972

For only the 3.3 percent whose usual better eye acuity is 20/50 or less, the best corrected acuity was determined through retinoscopy or estimated in spherical refraction. With retinoscopy or spherical refraction, of course, a substantial number of the 23.9 percent whose usual better eye acuity is from 20/25 through 20/40 could be expected to be improved to the 20/20 level. Consequently this 74.1 percent will be an underestimate of the proportion in the population age 4-74 years whose refraction potential or maximum visual acuity in the better eye is at least 20/20 with best correction.

The prevalence of a refraction potential no greater than 20/50 in monocular distance acuity of the better eye (with best correction) among the U.S. population age 4-74 years is 1.6

percent, and 0.2 percent are unable to reach the 20/70 level, even with best correction.

Males age 4-74 years tend to have somewhat greater refraction potential than females do. The proportion of males with potential better eye acuity (with best correction) of at least 20/20, as estimated here, is 76.2 percent compared with 71.5 percent among females age 4-74 years; the proportion with refraction potential no better than 20/50 is 1.3 for males and 1.9 percent for females (figures 6 and 7). Less than 0.2 percent of males (compared with 0.5 percent of females) have a refraction potential no greater than 20/80 in their better eye.

Across this 4-74-year age range, the proportion in the population with refraction potential in the better eye (with best correction) of at least 20/20 increases steadily from 31.2 percent at age 4-5 years to a maximum of 89.1 percent among young adults age 18-24 years, levels off, then declines abruptly after age 45 years to 32.9 percent in age 65-74 years. This age trend in refraction potential of at least 20/20 is similar for males and females. However, the proportion of males with this degree of potential exceeds that of females, except at age 25-34 years and 65-74 years, where the differences are small enough to be due to sampling variability alone.

The prevalence of a refraction potential of 20/50 or less in the better eye (with best correction) reaches a maximum of 8.5 percent in the oldest age group, for both sexes age 65-74 years, 7.4 percent for men and 9.4 percent for women.

The extent to which the usual visual acuity of the U.S. population could be improved is clearly indicated in the reduced proportion of the population whose refraction potential is 20/50 or worse (from 3.3 percent to 1.6 percent) and is indicated to a lesser extent in the increased proportion with refraction potential of 20/20 or better (from 72.8 percent to 74.0 percent)⁸ (table 26). If the refraction potential of those with usual visual acuity between 20/40 and 20/25 had been determined in this study, the increase in the proportion with refraction potential of at least 20/20 would be substantially greater. The improvement over their usual visual acuity is most pronounced at age 65-74 years where the proportion with defective acuity of 20/50 or worse is decreased by 5.6 percentage points when the refraction potential is deter-

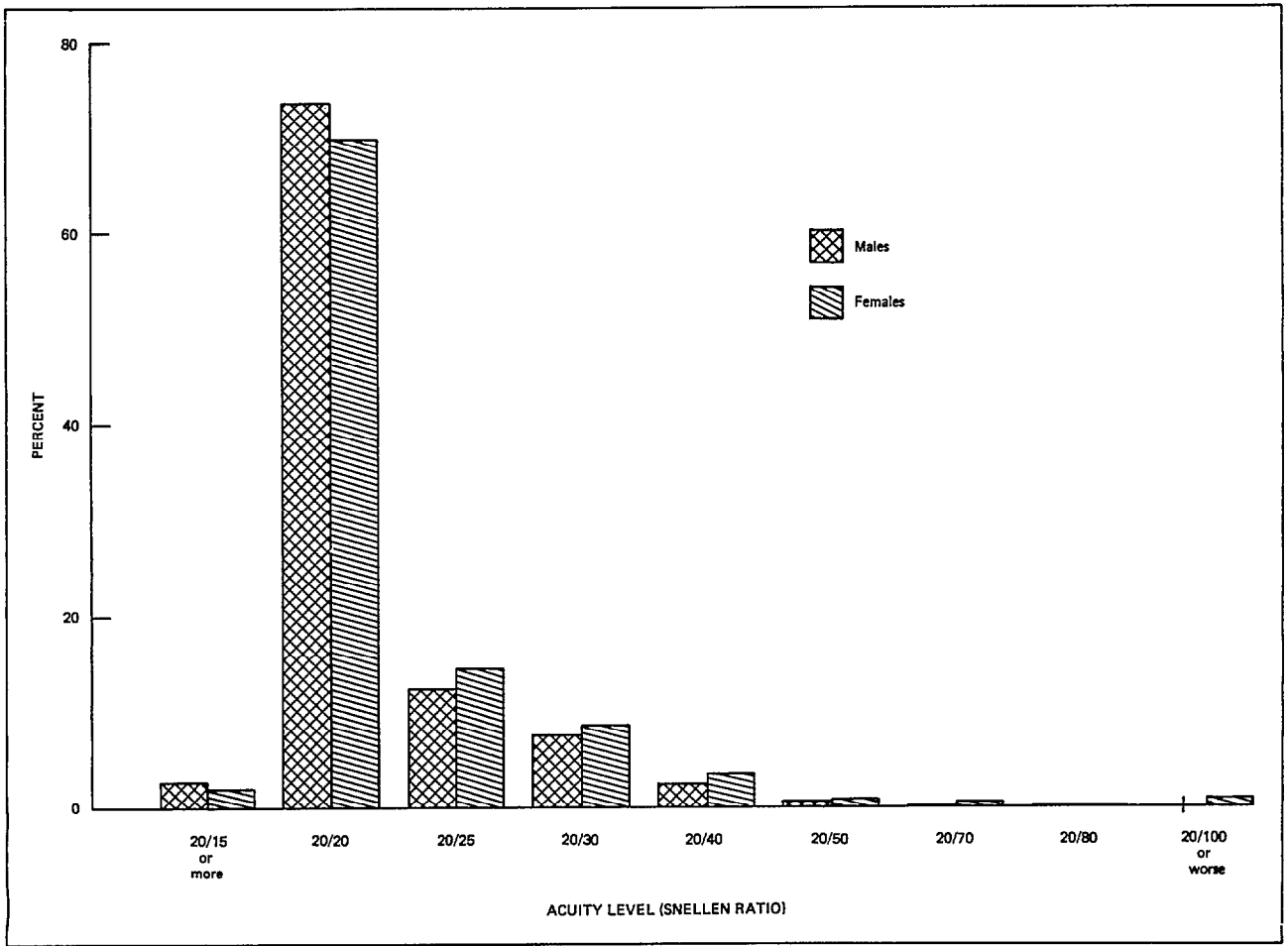


Figure 6. Percent of population age 4-74 years reaching specified maximum visual acuity levels in the better eye by sex: United States, 1971-1972

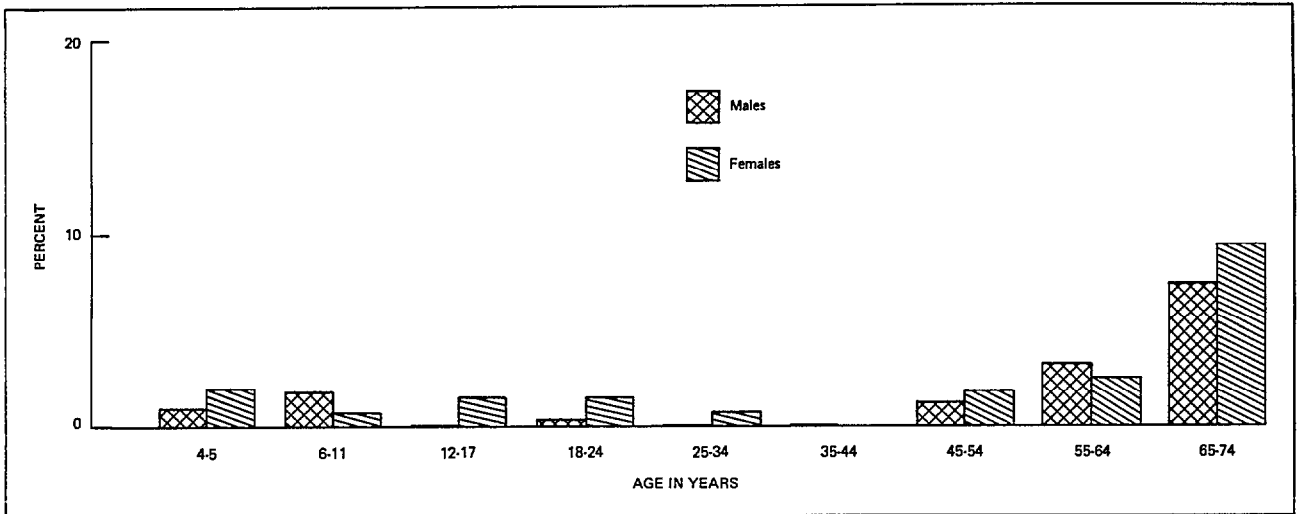


Figure 7. Percent of population with maximum distance vision of 20/50 or worse in the better eye by age and sex: United States, 1971-1972

mined. The least improvement is found at age 4-5 years and 35-44 years where the decrease in the proportion with defective visual acuity (20/50 or worse) is 0.5 and 0.6 percentage point, respectively. The difference between the proportions with maximum potential and usual visual acuity of 20/20 or better at age 4-74 years ranges from 0.0 to 1.9 percentage points with no age trend noted.

The pattern of improvement in refraction potential over usual visual acuity noted above for the total population is present for both males and females. No difference in the magnitude of increased visual acuity between the sexes is evident.

Race.—Black persons age 4-74 years tend to have poorer maximum visual acuity or refraction potential, as estimated in this study, than white persons in the United States have (figure 8). Two-thirds (66.7 percent) of the Black population have a refraction potential in the better eye of at least 20/20 compared with 74.7 percent of the white population; 2.3 percent of Blacks compared with 1.5 percent of white persons could not read above the 20/50 level. The number of persons of other races in the U.S. population, and hence in the sample, was too small to provide estimates of their visual acuity sufficiently reliable for publication.

Across the age range in the study, the

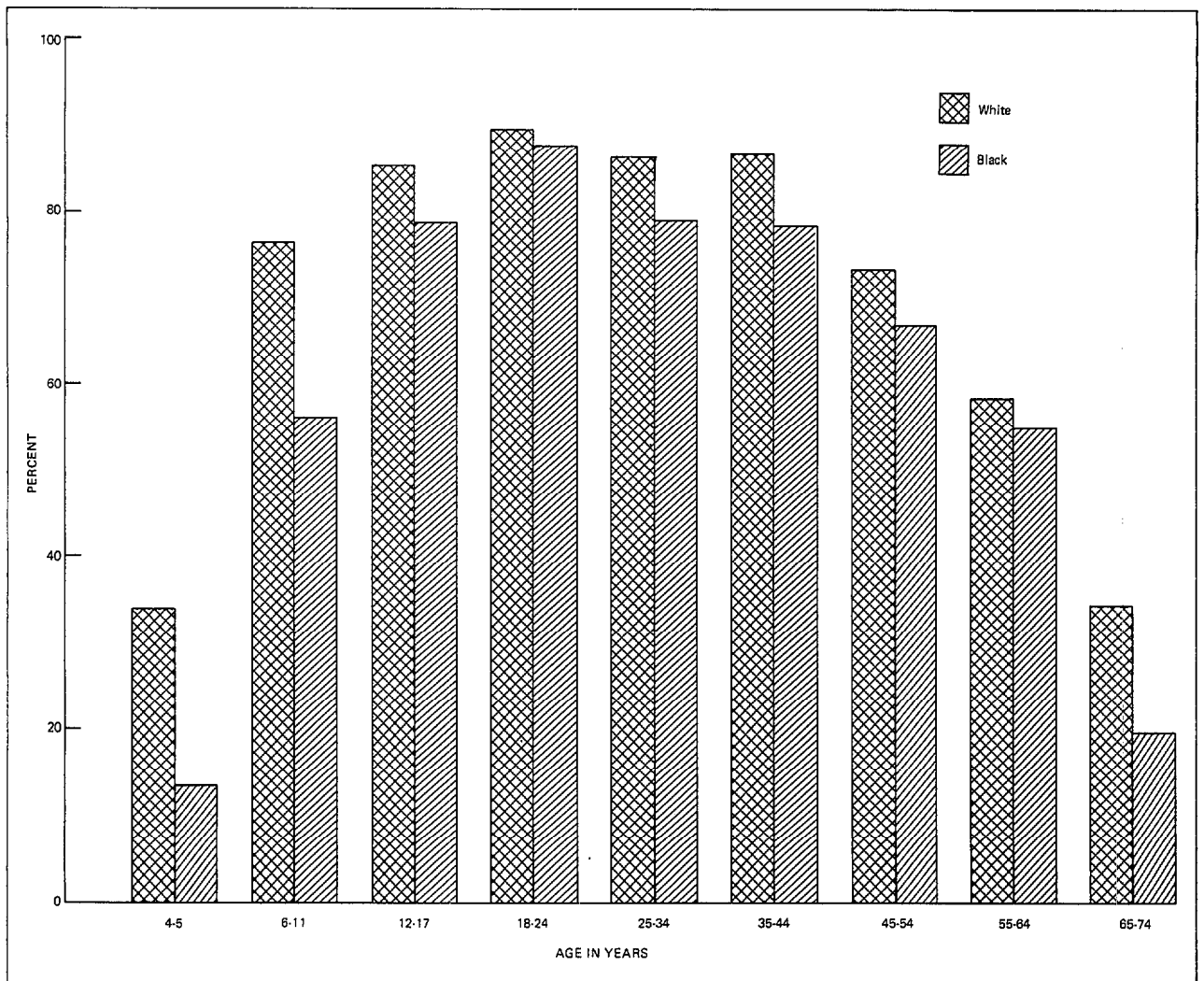


Figure 8. Percent of white and Black population with maximum visual acuity of at least 20/20 in the better eye by age: United States, 1971-1972

proportion with refraction potential of at least 20/20 in their better eye is less and the proportion unable to exceed the 20/50 level is greater, in general, among Black than among white persons. The greatest racial difference in refraction potential is evident among the youngest and oldest age groups—under 12 years and 65-74 years.

Among the preschool group age 4-5 years, only 13.3 percent of Black children compared with 33.9 percent of white children have a refraction potential of at least 20/20 in their better eye; at age 6-11 years, 56.0 percent of Black children compared with 76.3 percent of white children, and at age 65-74 years, 19.8 percent of Black adults compared with 34.2 percent of white adults, reach that level with best correction. The racial differences in these rates in the three age groups are large enough to be statistically significant (at the 5-percent level). The racial differences in the proportion with potential of at least 20/20 acuity in the better eye for ages 12-64 years are also present but less pronounced.

Defective visual acuity with refraction potential no greater than 20/50 in the better eye is more than 3 times more prevalent among Black than among white preschool-age children (3.9 percent compared with 1.1 percent) and more than twice as great among Black adults as among white adults age 65-74 years (17.4 percent compared with 7.6 percent). In the most severely defective groups with refraction potential no greater than 20/400, which would include many of the "legally" blind, there are proportionately 4 times as many Black adults as white adults age 65-74 years. At age 18-64 years, there is less difference between the two racial groups in the prevalence of this degree of defective acuity, although the rates are generally higher among Blacks.

This pattern of poorer refraction potential among Blacks than among white persons is more consistent among females than among males and in both sexes is most pronounced among the youngest group (4-5 years) and the oldest (65-74 years).

At age 65-74 years, both white and Black women show a slightly higher proportion with refraction potential of at least 20/20 in the better eye than their respective male counter-

parts; the proportion with refraction potential no greater than 20/50 is also slightly higher for white and Black women than for white and Black men, respectively.

The improvement in visual acuity possible with best correction, over usual correction, is slightly greater for the Black than for the white population. The proportion with refraction potential (in the better eye) no greater than 20/50 is 2.8 percent less than the percent showing this degree of defect with their usual correction among Black persons compared with the reduction of 1.6 percent among white persons 4-74 years of age. Across the age range in this study, the extent to which defective visual acuity in the population could be reduced with best correction is greater among Blacks than among white persons, except at age 6-11 years. The greatest racial difference in this improvement is evident among the youngest and the oldest age groups. At age 4-5 years, there is a 3.2-percent decrease among Blacks in the proportion with this degree of defect compared with 0.1 percent among whites; at age 65-74 years, the decreases possible are 10.2 percent among Black adults and 5.2 percent among white.

This pattern of racial differences in the extent of possible reduction of defective visual acuity is generally found among both males and females.

Income.—There is a consistent relationship between the level of family income and the refraction potential of persons 4-74 years of age in the United States. The proportion with better monocular acuity of at least 20/20 with best correction increases with the size of the annual family income from 61.1 percent among those in families with annual incomes less than \$5,000 to 71.7 percent in the middle income brackets to 80.4 percent among those with annual incomes of \$10,000 or more; the proportion with defective visual acuity of 20/50 or less decreases from 4.4 percent in the lowest income bracket to 1.4 percent for those with annual family incomes of \$5,000-\$9,999 and to 0.6 percent among those in the highest income bracket (table 27 and figure 9).

The relationship between refraction potential and family income generally is similar among both males and females. Among U.S. males, the

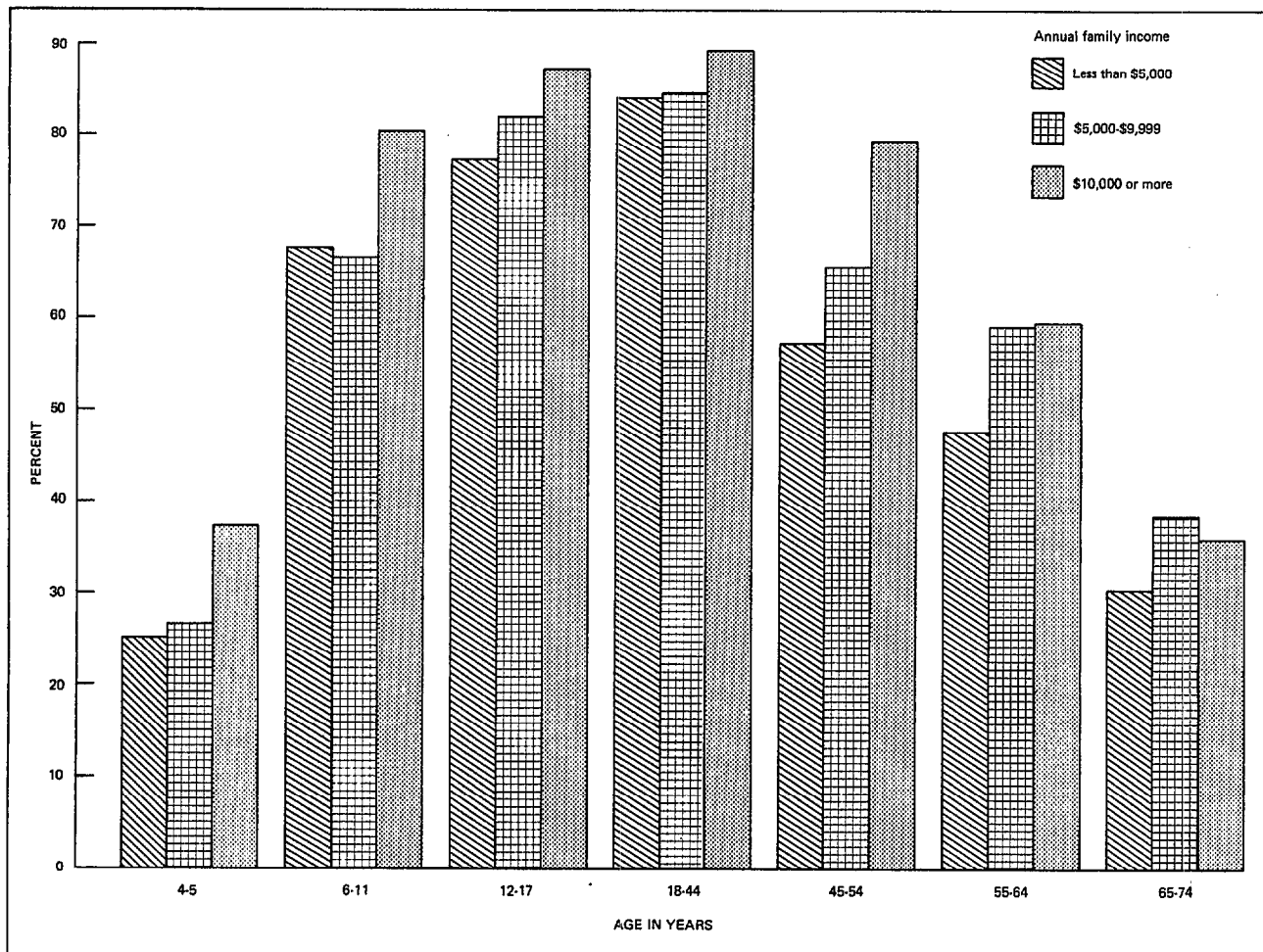


Figure 9. Percent of population age 4-74 years with at least 20/20 maximum distance vision in the better eye by age and family income: United States, 1971-1972

increase in the proportion with refraction potential of at least 20/20 in the better eye from the lowest to the highest income-level group is from 65.3 to 82.2 percent; the proportion with defective visual acuity whose potential does not exceed 20/50 decreases from 4.9 to 0.3 percent. Similarly, among females, the proportion with refraction potential of at least 20/20 increases from 58.1 to 78.5 percent; the proportion of those with defective visual acuity decreases from 4.1 to 0.9 percent from the lowest to the highest income-level group.

This pattern of association of refraction potential with income is generally consistent over the age range in this study but tends to be somewhat stronger among children and youths age 4-17 years and adults in the middle age

groups (45-64 years). Among males and females, the proportion with refraction potential of at least 20/20 in the better eye is generally highest in the highest income-level group, and the proportion with refraction potential no greater than 20/50 is significantly higher among persons with annual family incomes less than \$5,000 than among the others.

Among the white population, the association of refraction potential and family income shows a consistency similar to that for the total population. Among the Black population, this association is somewhat less consistent (figure 10).

The extent of improvement possible with best correction in the proportion with defective visual acuity of 20/50 or less in the better eye

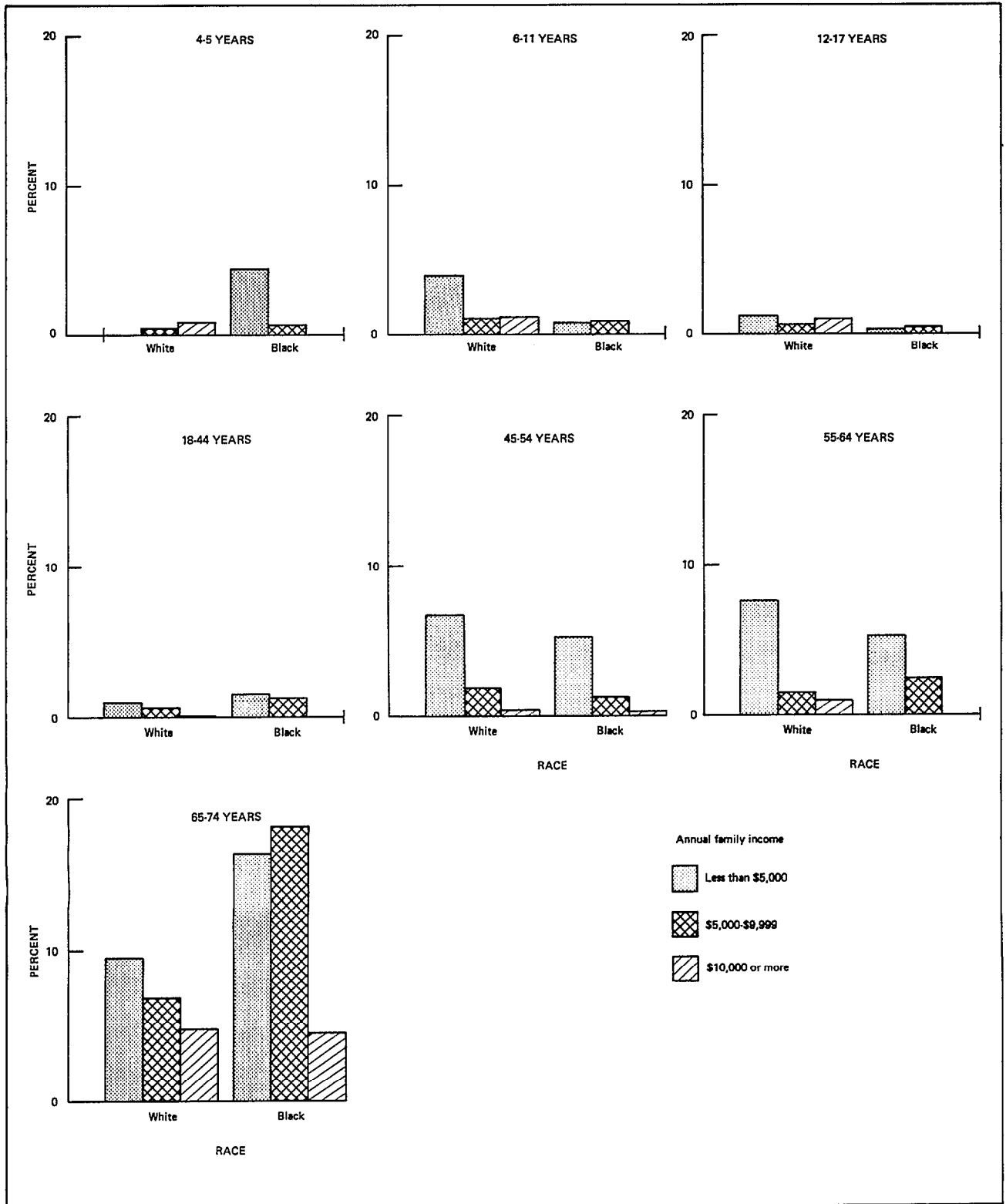


Figure 10. Percent of white and Black population age 4-74 years with 20/50 or worse maximum distance vision in the better eye by age and family income: United States, 1971-1972

ranges from 1.1 percentage points in the highest income-level group to 3.2 percentage points in the lowest income group in the total population (table 28). This relationship between income and the extent of improvement in visual acuity with best correction generally continues across age and sex, although it is less consistent in the two largest racial groups.

Geographic region.—Children and youths 6-17 years of age in the South generally have greater refraction potential than do those in the other three regions of the country. The proportion whose acuity in the better eye would be at least 20/20 with best correction (if any is needed) is greater at age 6-17 years in the South than elsewhere, and the proportion not correctable above 20/50 is somewhat less (table 29). This regional pattern in the distribution of refraction potential is consistent among boys but not among girls at age 6-11 years nor is it consistent among either boys or girls of age 12-17 years.

Among children 4-5 years of age and adults 18-74 years of age, the regional differences in the distribution of refraction potential in the better eye are less consistent than those for school-age children or youths. However, the proportion of adults with refraction potential no greater than 20/50 is consistently lower among those in the Midwest than elsewhere across the 45-74-year range of all adults; this trend is consistent among women and, generally, among men.

In three of the four regions, the proportion of persons with refraction potential at least 20/20 in the better eye is at a maximum of 85-87 percent among younger adults age 18-44 years; in the South this maximum is reached earlier among youths age 12-17 years where the rate is comparable with that in the 18-44-year age range. From these maximal values, the proportion with refraction potential of at least 20/20 decreases consistently with age until by age 65-74 years, the proportion with that degree of visual potential in the better eye is reduced to between 29 and 37 percent in the four regions. This age-related trend in refraction potential is generally consistent among males and females in each of the four geographic regions.

The proportion with defective visual acuity, refraction potential no better than 20/50 in the

better eye, is at a minimum of less than 1-2 percent among children, youths, and adults (4-54 years of age) and at a maximum among the oldest age group (65-74 years) with rates ranging from 6 to 11 percent in the four geographic regions of the United States.

Among preschool-age children 4-5 years of age, the proportion with refraction potential of at least 20/20 in the better eye is greatest in the South—42.7 percent—compared with rates ranging from 15.7 percent in the West to 36.5 percent in the Midwest. The wide variability in these rates is probably partly due to differences in targets used for testing and the degree of cooperation obtained in the examination. At the other end of the acuity scale, there was little evidence of any regional differences in the prevalence of defective visual acuity. The proportion of preschool-age children with refraction potential no better than 20/50 ranged from approximately 1 percent in the West and South to about 2 percent in the Midwest and Northeast.

The regional pattern in the distribution of refraction potential among white persons in this country generally is similar to that described above for persons of all races combined but is somewhat less consistent for the Black population. Among the Black preschool-age children, the prevalence of refraction potential of at least 20/20 is about the same—13.5 to 15.5 per 100—in all regions except the Northeast where the rate is lower (3.8 per 100). The higher prevalences of refraction potential of at least 20/20 (better eye) among Black children 6-11 years of age are in the West (75.0 per 100) and South (64.8 per 100) and the lower rates are in the Northeast (48.7 per 100) and in the Midwest (33.3 per 100); in contrast, the higher rates for refraction potential of at least 20/20 among Negro youths 12-17 years of age are in the Midwest (82.7 per 100) and South (83.6 per 100), and the lowest rate is in the West (68.7 per 100).

At age 18-74 years there is little consistency in regional differences in the proportion of white or Black population with refraction potential of at least 20/20 (better eye). The proportion with refraction potential no greater than 20/50 is consistently slightly lower in the West and Midwest for Black adults 45-74 years of age;

the proportion with defective visual acuity is generally lower in the Midwest for white adults age 45-74 years.

Regional differences in the extent of improvement possible in visual acuity of the population, with best correction over usual correction, show little consistency (table 30 and figures 11 and 12). Among 4-5-year-olds, only those in the South (all Black) appear to improve. The decrease possible in the proportion of 6-17-year-olds testing no better than 20/50 ranges from 0 to 3 percentage points among the four regions, and no consistent regional differences are evident.

Among adults 18-74 years of age, the possible decrease in the proportion with visual acuity 20/50 or worse is greatest in the South

and West. This regional pattern is generally consistent for white and Black persons, although differences among the regions are somewhat more pronounced for Black than for white persons. Within each geographic region, the decrease possible in the proportion with visual acuity no better than 20/50 is greater among Black than among white persons. This possible improvement in visual acuity described for all persons 18-74 years of both sexes combined is somewhat less consistent when the population is further subdivided by race and sex.

Population Size of Place of Residence

There is no consistent pattern of differences in the distribution of refraction potential (better eye) by population size of place of residence for

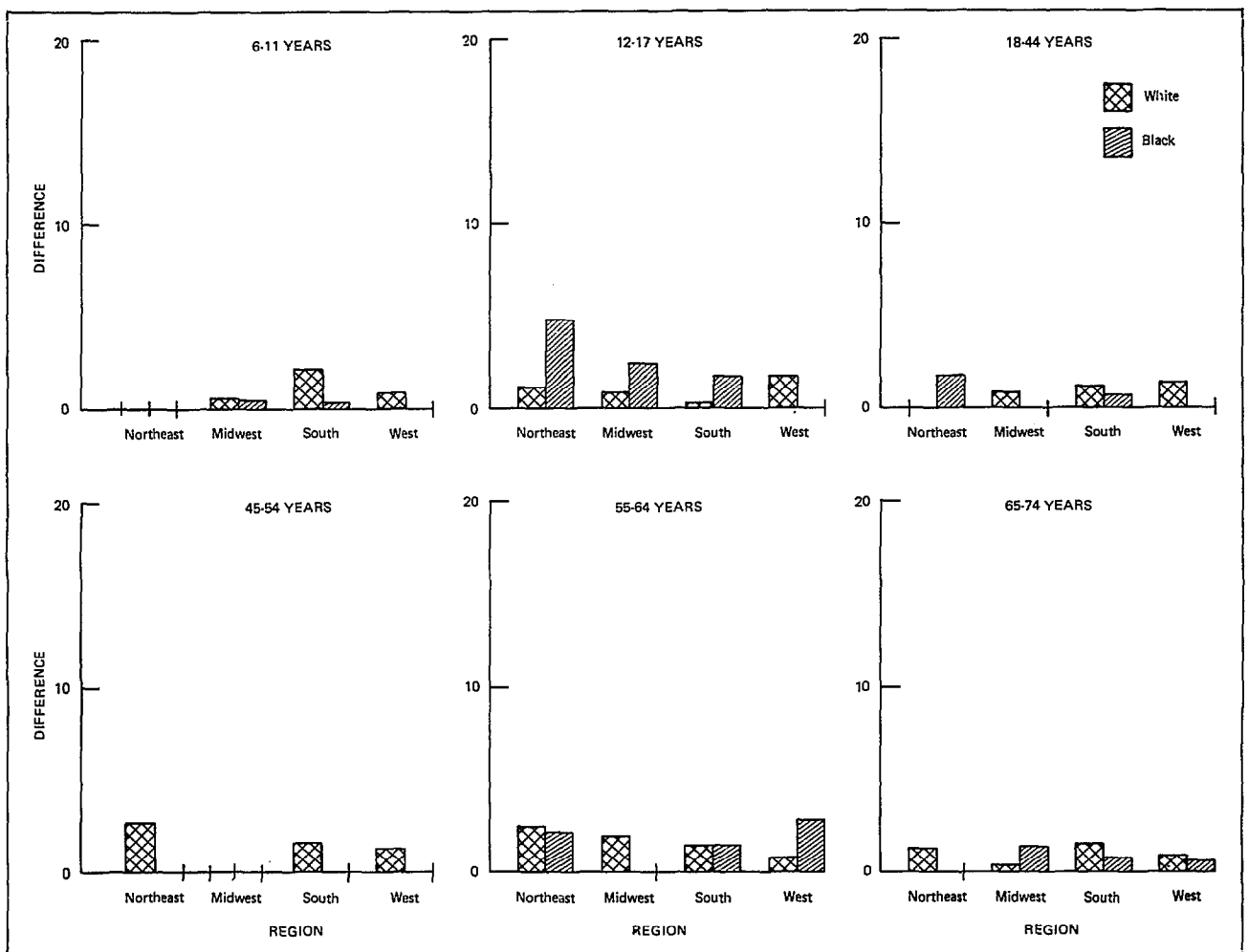


Figure 11. Percent change in proportion of population reaching 20/20 level in the better eye on maximum over usual acuity by age, race, and region: United States, 1971-1972

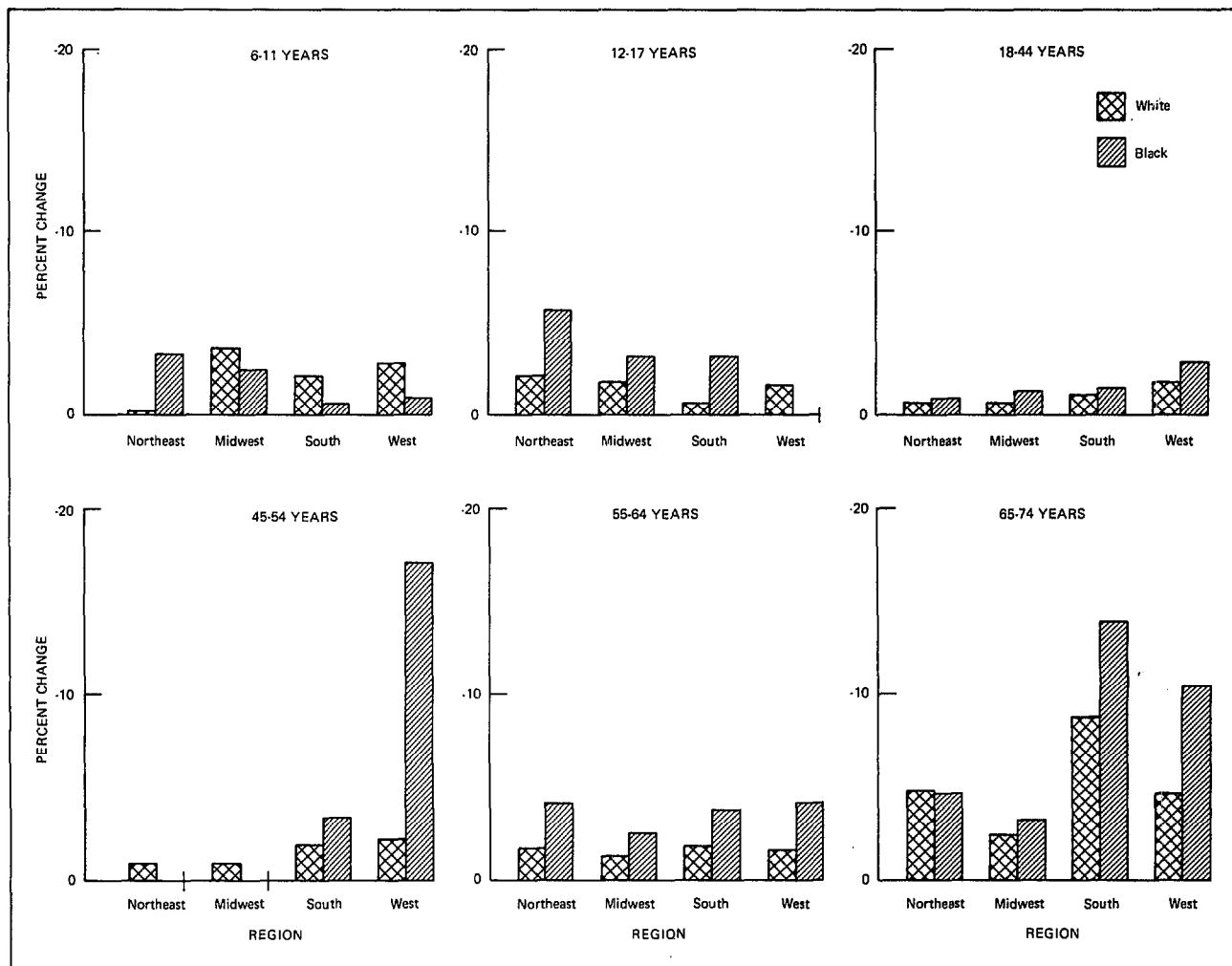


Figure 12. Percent change in proportion of population reaching no better than 20/50 level in the better eye on maximum over usual acuity levels by age, race, and region: United States, 1971-1972

the U.S. population 4-74 years of age. Among persons living in urbanized areas, 73.4 percent have refraction potential of at least 20/20, compared with 74.3 percent in urban communities outside of urbanized areas and 74.1 percent in rural areas. The proportion with refraction potential no greater than 20/50 is slightly higher among those in urbanized areas—1.9 percent—than among those in other urban or rural areas (1.5 and 1.3 percent, respectively). The differences in rates are not large enough to be statistically significant nor is there a consistent pattern of differences by population size of place of residence across age, race, or sex (table 31).

The extent of improvement in visual acuity possible with best correction over usual correction (if any) is similar in each of the population size groupings.

Ancestry

Information on the main ancestry or national origin was obtained in the Household Questionnaire for each examinee whose race was not classified as Black by the census interviewer. From this, estimates of refraction potential for three of the larger minority groups including Spanish and Mexican American, Chinese and Japanese, and American Indians living off reservations have been obtained. Recent immigrants

from Puerto Rico are included with those of Spanish ancestry. The sample size is not large enough to provide estimates sufficiently reliable to assess ethnic differences in acuity. The population size and the refraction potential for these minority groups by their racial classification are shown in table 32.

Of the three ethnic subgroups, the Orientals (Chinese and Japanese) have the lowest proportion with possible visual acuity at least 20/20 and also the lowest proportion with refraction potential no better than 20/50 in the better eye—similar to the findings with respect to their usual better monocular acuity.⁸ The extent of improvement in visual acuity with best correction appears to be slightly better among the Oriental group than among the other ethnic groups. However, because of the small number of persons reporting themselves (or for children whose parents reported them) to have such ancestry in relation to the size of the sample, the precision of the national estimates of both usual visual acuity and refraction potential is below the level usually published in this series, and relatively large differences in prevalence rates probably reflect sampling variability alone, rather than any actual ancestry or ethnic differences in visual acuity.

Motility-Maximum Acuity

An estimated 62.0 percent of the population 4-74 years of age with manifest strabismus (tropia) have refraction potential of at least 20/20 in their better eye compared with 72.8 percent of those with phoria and 74.5 percent of those with no evidence of either tropia or phoria (table 33). The prevalence of defective visual acuity (refraction potential no greater than 20/50 in the better eye) in the 4-74-year age range is 3.7 percent among those with manifest strabismus, 1.0 percent among those with phoria, and 1.6 percent among those with neither type of eye muscle imbalance.

Children and adults 4-54 years of age with manifest strabismus have less refraction potential than those with phoria or those with neither type of motility problem have. In the oldest age groups (55-74 years), this pattern is reversed, although the differences in the proportions with

good (20/20 or better) or poor (20/50 or worse) potential among those with or without motility defects are not large enough to be significant.

The contrast between the refraction potential of those with and without manifest strabismus is greater among females than among males. The proportion with refraction potential of at least 20/20 among those with manifest strabismus is 17.1 percent less than among those without this type of eye muscle imbalance for females compared with only 4.5 percent less for males. The corresponding differences in the proportion with refraction potential no greater than 20/50 is 3.1 percent for females and 0.4 percent for males.

The association between the level of refraction potential and the presence or absence of strabismus described above for the total population and for males and females separately generally is consistent over the age range for the white and Black populations.

Medical History

Wearing glasses.—An estimated 103.4 million (58.9 percent) persons 6-74 years of age in the civilian noninstitutionalized population of the United States have ever worn glasses or contact lenses (table 34). Of those 12-74 years of age (65.9 percent of whom have ever worn corrective lenses), 0.6 percent have worn only contact lenses, 62.5 percent have ever worn only glasses, and 2.8 percent have ever worn both contact lenses and glasses. Of those 6-74 years of age who have ever worn corrective lenses, 88.9 percent, or 92.0 million, still wear them. In all, 52.4 percent of the U.S. population 6-74 years of age presently wear such lenses all or part of the time. These estimates are based on the answers given by the child's parents in the *Medical History Questionnaire, Ages 6-11 Years* and by the examinee in the *Medical History Questionnaire, Ages 12-74 Years* as administered in the Health and Nutrition Examination Survey of 1971-1974. No such questions were asked in the medical histories for children under 6 years of age.

The national estimates on trouble seeing and the use of eyeglasses from the medical history as shown in tables 34 and 34A are based on find-

ings from the Health and Nutrition Examination Survey of 1971-1974 rather than limited to the 1971-1972 period for which the eye examination findings from that survey are also available. The national probability sample for the 1971-1974 period is about twice the size of the national probability sample for the 1971-1972 period and hence provides more reliable national estimates, although the findings from this part of the two samples are generally similar. (The comparability of the estimates from the two samples is examined in appendix I.)

The proportion of persons indicating they have ever worn glasses or contact lenses increases with age from 14.0 percent among children 6-11 years of age to 96.7 percent among the oldest adults ages 65-74 years. Contact lenses are more likely to have ever been used by younger adults 18-24 years of age (8.0 percent) and least likely to have ever been used by the oldest adults in the study (0.5 percent at age 65-74 years). The proportion of the population presently wearing glasses or contact lenses increases from 11.9 percent at age 6-11 years to 94.6 percent at 65-74 years of age.

Relatively more females than males age 6-74 years have ever worn or are still wearing corrective lenses (the respective percentages are 52.5 percent of males compared with 64.9 percent of females who have ever worn corrective lenses and 46.7 percent for males compared with 57.8 percent of females still wearing glasses or contact lenses all or part of the time).

Among children and young adults age 6-24 years, the proportion of females ever having worn corrective lenses increases with age more rapidly than for males. From 6-11 years through 18-24 years the proportion ever having worn such aids increases 46.2 percent for females (from 15.8 percent to 62.0 percent) compared with 31.0 percent for males (from 12.3 percent to 43.3 percent). From 25 years on, the increase with age in the use of such aids rises slightly more rapidly among men than among women until by age 45 there is a negligible difference between the two sexes in the proportion who have ever worn them. The maximum increase in the use of corrective lenses occurs between 35 and 54 years of age for both sexes.

In the survey, medical history information

was obtained on the extent and type of use made of corrective lenses. Among those who have ever worn glasses or contact lenses, more than half (52.6 percent) wore them all of the time; 90.3 percent, for reading or other close work; and 62.3 percent, for distance vision.

Those who ever wore glasses (or contact lenses) were asked at what age they had started. For children 6-11 years of age, the average age when they first wore them was 7.1 years. Among persons 12-74 years of age, 46.1 percent began wearing glasses by the age of 19 and 59.4 percent by the age of 29.

Black persons 6-74 years of age are less likely than white persons in the same age range in this country to presently wear or to have ever worn corrective lenses. The proportion presently wearing them is 35.4 percent among Blacks and 54.4 percent among white persons; 42.8 percent of Black persons indicate they have worn corrective lenses at some time compared with 60.9 percent of white persons.

Among both racial groups, relatively more females than males wear or have ever worn corrective lenses; the proportion ever wearing them is 50.8 percent among Black females compared with 33.5 percent among Black males and 66.9 percent among white females compared with 54.6 percent among white males. The racial pattern is similar among those presently wearing such aids.

Information on the extent and type of use made of these corrective lenses indicates that a greater proportion of the white population (61.4 percent of males and 64.5 percent of females) wear corrective lenses for distance vision than do the Black population (51.6 percent of males and 53.5 percent of females).

Trouble seeing.—An estimated 55.9 percent of the population age 6-74 years has ever had trouble seeing; 11.1 percent indicated having had trouble seeing even when wearing glasses or contact lenses. Of those who at one time had trouble seeing, 94.0 percent visited a doctor about this problem, but only 3.5 percent ever missed school or work because of trouble seeing.

More females than males (60.9 percent compared with 50.5 percent) have had trouble seeing, and more females have had trouble seeing even when wearing glasses or contact lenses

(12.3 percent compared with 9.4 percent of males). Fewer Black males and females (36.1 percent and 50.0 percent) have had trouble seeing than have had white males and females (52.1 percent and 62.5 percent).

Relation to visual acuity.—Persons who do not wear corrective lenses (47.9 percent of the population 6-74 years of age) have slightly better usual monocular acuity than those who wear glasses or contact lenses but have no trouble seeing with them (45.7 percent of the population), but both groups have significantly better vision than those who indicate they do have trouble with their vision even while wearing glasses or contact lenses (6.4 percent of the population) (figure 13). The respective proportions with usual acuity of at least 20/20 in the better eye are 77.0 percent, 73.0 percent, and 54.7 percent; 3.5 percent, 2.4 percent, and 8.5 percent, respectively, have usual acuity no better than 20/50 (tables 35, 37, 39, and 41). The refraction potential, as determined in this survey, is somewhat better than the usual acuity for each of the three groups (tables 36, 38, 40, and 42). Approximately 1 percent more would be able to see at the 20/20 level with best correction (an underestimate, as previously indicated in the section, "Maximum Visual Acuity"); the proportion not correctable above the 20/50 level is reduced, respectively, by 2.1 percent (no glasses), 0.6 percent (no trouble with glasses), and 3.9 percent (trouble with glasses).

Relation to motility.—Those persons 6-74 years of age found on examination to have manifest strabismus or some degree of phoria were more likely to indicate in history they had ever had trouble seeing (61.7 percent) than those who had no eye muscle imbalance defect (53.4 percent). This pattern is generally present across age, sex, and race (table 43).

Children and youths with a vision problem on history and eye muscle imbalance were more likely to visit a doctor about their vision problem than were those of the same age with a vision problem but no evidence of eye muscle imbalance. Over the age of 17 years, this relationship is not generally present.

Region.—Persons 6-74 years of age in the Northeast and Midwest, where the proportion with defective "usual visual acuity" is lower,⁸

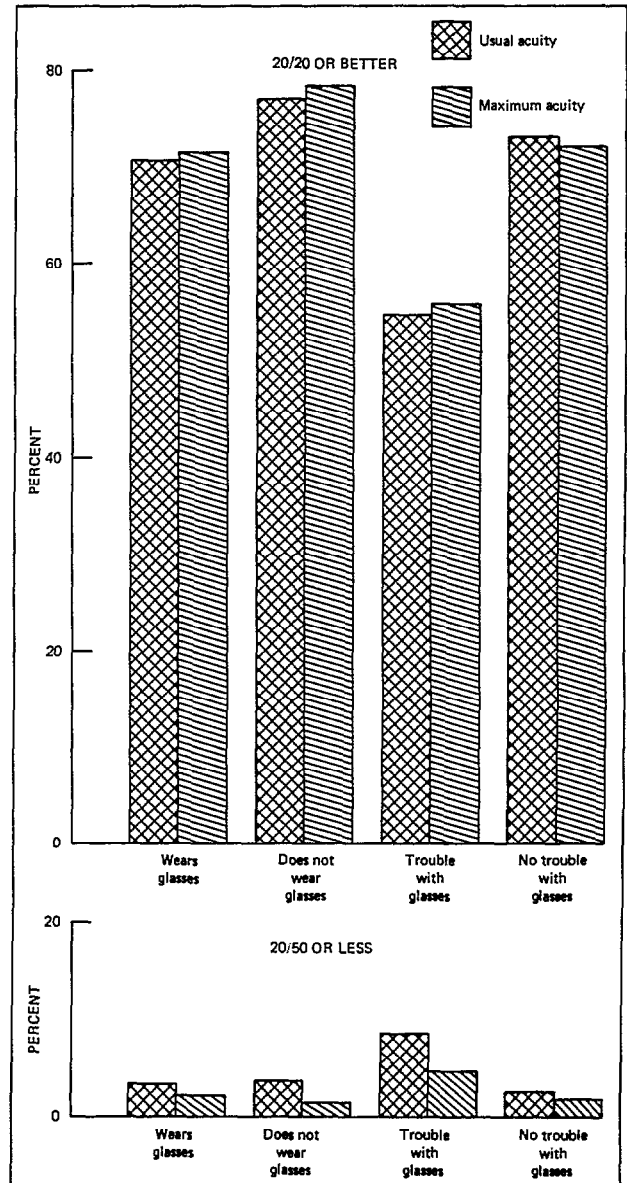


Figure 13. Percent of population age 6-74 years with maximum or usual better eye monocular visual acuity of at least 20/20 or no better than 20/50 according to whether or not they wear glasses or have trouble seeing with them: United States, 1971-1972

are also more likely to have ever had trouble with their vision, to have visited a doctor about the trouble, and to have ever worn glasses or contact lenses than are persons of this age in the South and West (table 44). This regional pattern is found generally among men and women and among white and Black persons across the age range.

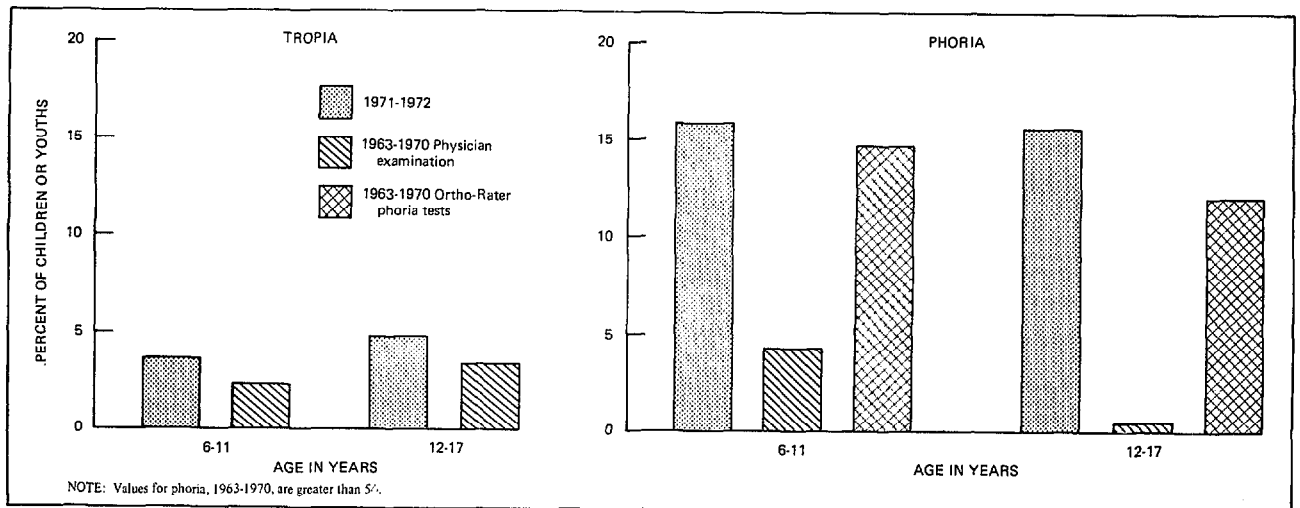


Figure 14. Percent of U.S. children age 6-11 years in 1971-1972 and 1963-1965 and U.S. youths age 12-17 years in 1971-1972 and 1966-1970 with tropia or phoria as determined by examination or test

Comparison With Previous Studies

Motility.—National prevalence estimates of manifest strabismus (tropia) and some degree of phoria based on findings from the Health Examination Surveys of 1963-1965 among children 6-11 years of age and of 1966-1970 among youths 12-17 years of age have been published.¹⁰⁻¹² As described, the identification of manifest and latent strabismus was made by the examining physician and a determination of the degree of phoria as part of the vision testing with standard commercial instruments (Master Ortho-Rater) done by the examining dentists^{a,11} in each of the two previous surveys.

The prevalence rates of manifest and latent strabismus among U.S. children and youths as determined from the ophthalmology examination in the 1971-1972 survey are higher than the corresponding rates from the physician's examination and the Ortho-Rater tests in 1963-1965 among children and in 1966-1970 among youths (figure 14). From the present HANES study, the prevalence of tropia was estimated as 3.7 per 100 among U.S. children age 6-11 years and 4.8 per 100 among U.S. youths age 12-17

^aThe dental examiners were selected to do this part of the examination because of operational considerations (space limitations in the mobile examination centers) and because it was felt their professional background would add to the quality of the way in which the test was administered.

years compared with rates of 2.4 per 100 among U.S. children from the 1963-1965 study and 3.4 per 100 among U.S. youths from the 1966-1970 study. The prevalence of phoria from the 1971-1972 HANES study is 15.9 per 100 U.S. children and 15.6 per 100 U.S. youths compared with the respective rates of 4.3 (physician's examination) and 14.6 (Ortho-Rater test) per 100 children in 1963-1965 and 0.5 (physician's examination) and 12.0 (Ortho-Rater test) per 100 youths in 1966-1970. In both of the earlier surveys, the physician recorded the presence of only the most significant lateral phoria deviations; the Ortho-Rater tests permitted identification of all those with deviations of 5 prism diopters or more, the critical level frequently used in screening programs as the basis for referral for care or further study.

The increase in these rates between the present and previous national Health Examination Surveys probably reflects primarily the differences in methodology or criteria between the respective points in time for children or youths rather than any real increase in prevalence of the conditions among either of these two age groups. Despite differences in survey methods, the prevalence of tropia increased with age and that of phoria decreased in both the present and earlier national studies. Motility status of adults was not determined in the initial Health Examination Survey of 1960-1962.

Information on the prevalence of (manifest)

strabismus has been published from two large-scale community studies—the Orinda Study among more than 4,000 elementary school children of California in 1954-1956¹³ and the Tecumseh Community Health Study in 1959-1960 among more than 8,600 persons age 6 years and over (88 percent of the total population in that area).¹⁴

In the Orinda Study from the screening by teachers and nurses among California children in grades 1-6, 4.8 percent were referred for further study because of inward or outward deviation of the eyes indicating possible manifest strabismus. This is somewhat greater than the rates for definite tropia of 3.7 per 100 from the 1971-1972 National Health and Nutrition Examination Survey and 2.4 per 100 from the 1963-1965 National Health Examination Survey among U.S. children 6-11 years of age which might be expected since the determinations of tropia in both national surveys were made from more thorough eye examinations.

Among persons 6 years of age and over in the Tecumseh community, 1.8 per 100 had definite (manifest) strabismus and 1.3 per 100 suspect (manifest) strabismus, somewhat lower than the U.S. estimates from the present national study of 3.7 per 100 among the U.S. population 1-74 years of age.

Best corrected acuity.—Measurements of best corrected acuity in the better eye were obtained in 1973-1975 among the still-living members of the Framingham (Massachusetts) study population, who had been under investigation for coronary disease risk factors since 1948 and who were in 1973-1975 age 52-85 years.¹⁵ Visual acuity was measured using methods generally similar to those in the national survey. The screening examiner in the Framingham Eye Study used an AO Projectoscope and wall screen in a room with shades drawn and all lights off, except for a small light to the side and behind the examinee. The chair (head rest) for the examinee was 10 feet from the wall screen with projected letters set to a 20-foot equivalent. If distance glasses were worn, acuity was tested with them. Acuity was generally recorded as the smallest complete line of letters read correctly, in contrast to the one letter misallowed at the recorded acuity level in the national study. If acuity for an eye was found to be 20/25 or

worse, the eye was retested using a pinhole. If visual acuity was 20/30 or worse (including the pinhole attempt at improvement) the examiner completed a manifest refraction using either the prescription for existing glasses or retinoscopy as a base, in contrast to the national survey in which retinoscopy or refraction was done only on those whose usual acuity was 20/50 or less.

The visual acuity level findings among persons 52-74 years of age from the Framingham study and the national estimates for the U.S. civilian noninstitutionalized population 45-74 years of age based on the HANES findings are summarized in table A.

As would be expected, the proportion reaching the acuity levels of 20/25 or better is significantly greater among the Framingham group, both men and women, than those from the national study. The differences are greater at age 65-74 years than among those younger, probably because the national estimates included persons 45-51 years of age whose acuity could be expected to be somewhat better than those age 52-64 years. Less difference between the Framingham and national study findings are evident if comparison is made for the proportion testing 20/40 or better in both studies to partially compensate for the difference in cutoff point used for refraction and retinoscopy in the two studies. However, even with this, the Framingham group does appear to have somewhat better acuity than that shown in the estimates for the U.S. adult population from the present national study. Whether this is merely a reflection of regional differences in acuity within the U.S. population or some differences in testing methods is not readily evident.

Refractive status.—The spherical and cylindrical power and axis deviation in the refractive lenses worn by the examinee were measured in the 1966-1970 Health Examination Survey among the national probability sample representative of the civilian noninstitutionalized population of youths age 12-17 years at the midsurvey point in time.¹¹

National estimates of the percent distribution of the spherical power, cylindrical power, axis deviation, power of the lens, and approximate actual spherical equivalence of the lens system in the glasses or contact lenses of youths from the earlier national survey are shown in

Table A. Percent distribution of best corrected visual acuity in the better eye as determined for U.S. adults in 1971-1972¹ and in the Framingham Eye Study in 1973-1975²

Acuity level and sex	1973-1975 Framingham ² 52-64 years	1971-1972 United States 45-64 years	1973-1975 Framingham ² 65-74 years	1971-1972 United States 65-74 years
	Percent distribution			
All levels.....	100.0	100.0	100.0	100.0
<u>Both sexes</u>				
20/10-20/25.....	98.4	85.6	91.9	62.1
20/30-20/40.....	0.9	12.3	5.6	29.4
20/50-20/70.....	0.5	1.9	1.4	6.7
20/80-20/100.....	0.1	0.1	0.1	0.7
20/200 or worse.....	0.1	0.1	1.0	1.1
<u>Men</u>				
20/10-20/25.....	98.0	85.9	95.3	61.3
20/30-20/40.....	0.9	11.9	3.1	31.3
20/50-20/70.....	0.9	2.2	0.6	6.2
20/80-20/100.....	-	0.0	0.3	0.5
20/200 or worse.....	0.2	0.0	0.6	0.7
<u>Women</u>				
20/10-20/25.....	98.6	84.9	89.5	62.5
20/30-20/40.....	1.0	13.0	7.3	28.1
20/50-20/70.....	0.3	1.7	1.9	7.2
20/80-20/100.....	0.1	0.3	-	0.7
20/200 or worse.....	-	0.1	1.3	1.5
Number				
Both sexes.....	1,293	1,423	786	1,658
Men.....	573	691	318	815
Women.....	720	732	468	843

¹National estimates for the U.S. civilian noninstitutionalized adults 45-74 years of age based on findings from the ophthalmology examination in the Health and Nutrition Examination Survey of 1971-1972.

²Followup study in which the still-living members of the Framingham, Mass., study population, who have been under investigation for coronary risk factors since 1948, were given an eye examination (see reference 15).

tables 45-47 along with comparable data for this age group from the present study.

The differences between the national estimates of the distribution of spherical power and axis deviation in the glasses or contact lenses worn at the time of the two national studies are well within the limits of sampling variability. However, the sizable differences between the two studies in the distribution of cylindrical power, in particular those with no cylindrical correction in their lenses, result in national estimates of the proportion with lens power or spherical equivalence of more than 5 diopters

for myopia in the lenses used, among youths wearing glasses or contact lenses, that is substantially less in the present than the previous national survey. The proportion with that degree of correction (spherical equivalence) is 20 percent in the 1966-1970 national survey compared with 7 percent in the 1971-1972 national surveys. Since measurement of uncorrected acuity for those wearing glasses was not done in the present study, it is not possible to determine how much, if any, of this may be due to differences in the distribution of uncorrected visual acuity or the degree to which acuity is

corrected with lenses at the two points in time. It is likely that most if not all of this decrease in the proportion with strong correction represents differences in lensometer measurements of cylindrical power between the two studies rather than any real change with time.

Wearing glasses.—Information on ever wearing glasses or contact lenses was obtained in the medical history in the Health Examination Surveys of 1960-1962 among adults, 1963-1965 among children, and 1966-1970 among youths in a manner similar to that in the present national survey. Findings from these previous surveys indicate that the proportion of adults wearing corrective lenses was greater in 1971-1972 than in 1960-1962; the differences were greatest among younger adults 18-34 years of age and least among the older population, those 55 years and over (figure 15). Proportionately more youths at the time of the 1966-1970 Health Examination Survey indicated they wore corrective lenses than in the present Health and Nutrition Examination Survey, while the differences in the practice among children between 1963-1965 and 1971-1972 are negligible.

In answer to questions in the medical history regarding trouble seeing even with glasses or contact lenses, proportionately fewer young adults age 18-24 years in the present study indicated they had such trouble than in 1960-1962; from age 35 years on, slightly more have

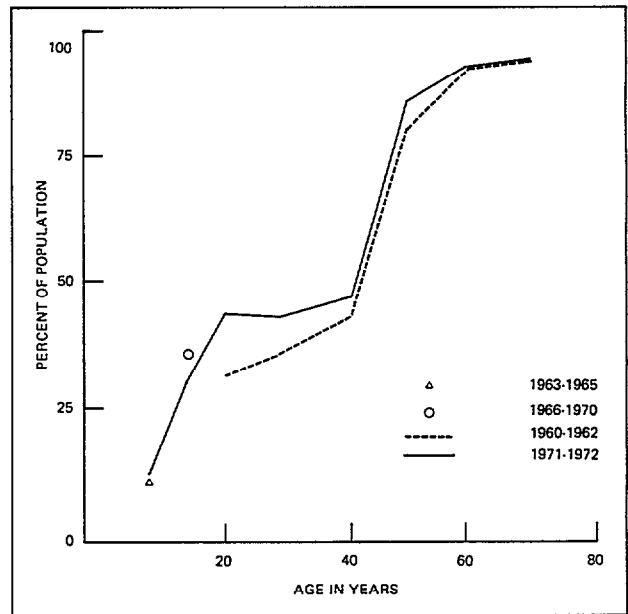


Figure 15. Percent of U.S. population wearing glasses or contact lenses by age in 1971-1972 compared with percent in 1960-1970

such trouble now than previously (figure 16). Questions were asked in the Health Examination Survey among youths in 1966-1970 regarding the need for glasses but not regarding trouble seeing with those they had, and hence the findings from the earlier study are not comparable to these findings from the present study.

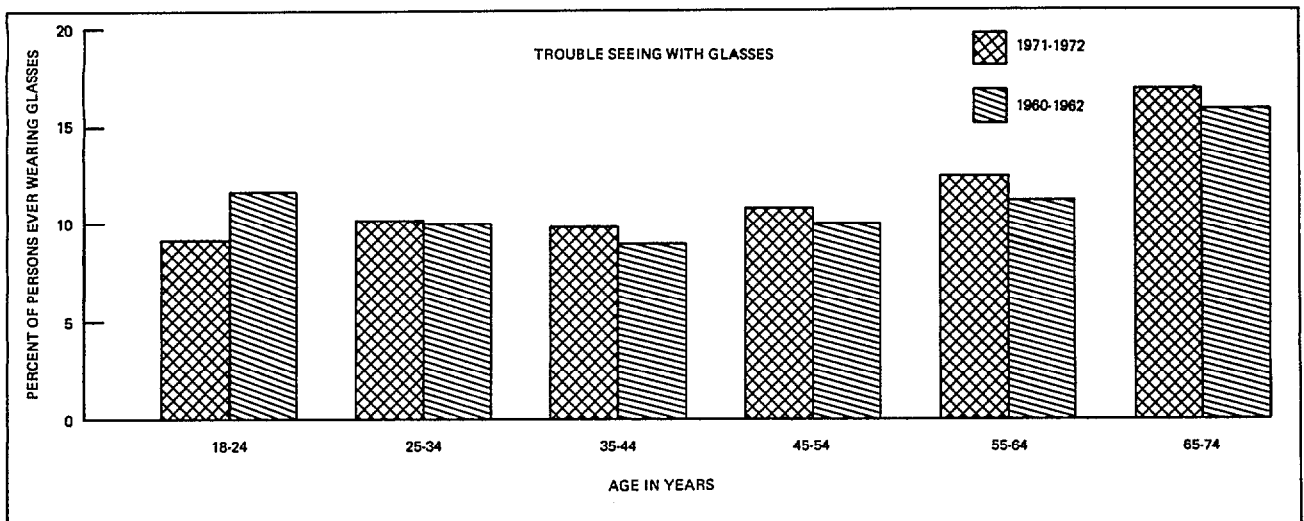


Figure 16. Percent of adults age 18-74 years ever wearing glasses who have trouble seeing with them: United States, 1971-1972 and 1960-1962

SUMMARY

This report contains national estimates on refraction status, refraction potential or maximum corrected visual acuity, and motility defects among the civilian noninstitutionalized population age 4-74 years in the United States with some limited motility data for children 1-3 years of age. These estimates, based on findings from the ophthalmologic examination in the Health and Nutrition Examination Survey of 1971-1972, are analyzed with respect to age, sex, race, ancestry, region, population size of place of residence, annual family income, and responses to medical history questions on eye problems and use of glasses.

For the first 35 examination locations of the Health and Nutrition Examination Survey in 1971-1972, a national probability sample of 14,147 persons ages 1 through 74 years was carefully and scientifically selected to represent the 192.7 million in the civilian noninstitutionalized population of that age in the United States at midsurvey time. The 10,126 persons who came in for examination represent 72.8 percent of the sample persons selected when adjustments are made for the differential sampling rates used in the age-, sex-, and income-defined population subgroups. Persons age 1-74 years were examined for motility defects; visual acuity, refraction status, and refraction potential measurements were obtained on the 9,263 examinees age 4-74 years; and comparable medical history on eye problems and use of glasses was obtained for those age 6-74 years.

Principal findings from this study include:

- More than 7.1 million, or 3.7 percent, of the civilian noninstitutionalized population age 1-74 years in the United States have manifest strabismus or tropia, a disturbance of coordination of the extraocular muscles of the eyes retained on monocular and binocular viewing.
- An estimated 30.8 million, 16.0 percent, of the U.S. civilian noninstitutionalized population 1-74 years of age have latent strabismus or phoria, a tendency for one eye to deviate so as to look at a different

image than the other eye looks at when binocular viewing is interrupted.

- In all, an estimated 38 million, or 19.5 percent, of the U.S. population age 1-74 years have manifest or latent eye muscle imbalance.
- More than one-half (52.4 percent), or an estimated 92 million, of the U.S. population age 6-74 years wear corrective lenses (glasses or contact lenses) all or part of the time, according to medical history findings from the Health and Nutrition Examination Survey.
- Among the population age 4-74 years, the correction in their present glasses is about as likely to be for myopia (nearsightedness) as for hyperopia (farsightedness). These lens measurements were made for all examinees who brought their corrective lenses to the examination—78.2 percent of those 6-74 years of age who indicated on history that they wore glasses or contact lenses and 2.4 percent of the 4- and 5-year-old examinees also wearing them at the time of the examination.
- The proportion with a present correction for myopia increases with age among children from 30.2 percent at age 4-5 years to a maximum of 87.2 percent at 12-17 years of age, then consistently decreases to a minimum of 15.7 percent at age 65-74 years.
- From pinhole tests (without using dilation) to estimate refraction potential, of the estimated 63.2 million persons, or 34.7 percent of the U.S. population 4-74 years of age, whose usual visual acuity with their own glasses or contact lenses if worn (or without, if not) is less than 20/20 in either eye, 16.0 percent are able to reach the 20/20 level on retest with the use of the pinhole.
- Using retinoscopy (following dilatation) among the 6.2 percent with usual monocular acuity 20/50 or worse, 21.5 percent show refraction potential of

20/20, and an additional 22.6 percent are correctable to the 20/25 level.

- Refraction potential of at least 20/20 decreases substantially with age among those whose usual visual acuity is 20/50 or worse, from 32.8 percent among children and young adults age 4-24 years to 11.8 percent among older adults.
- Refraction potential with best correction (in the better eye) of at least 20/20 among those with usual visual acuity 20/50 or worse increases with age from 31.2 percent among children age 4-5 years to a maximum of 89.1 percent among young adults age 18-24 years, levels off, then declines abruptly after age 45 years to 32.9 percent in age 65-74 years.
- This trend with age in refraction potential of at least 20/20 is similar among males and females. However, the proportion of males with this degree of potential exceeds that for females except at age 25-34 years and 65-74 years.
- Black persons age 4-74 years tend to have less refraction potential, as measured in this study, as well as somewhat poorer usual visual acuity than do white persons.

- Refraction potential is found to increase with annual family income, an association stronger among the white than among the Black population.
- An estimated 58.9 percent of persons 6-74 years of age have ever worn glasses or contact lenses, and 52.4 percent still wear them all or part of the time as reported on medical history. The proportion of the population presently wearing corrective lenses increases from 11.9 percent at ages 6-11 years to 94.6 percent at age 65-74 years.
- An estimated 55.9 percent of the population age 6-74 years have ever had trouble seeing; 11.1 percent report having had trouble seeing even with their glasses or lenses.
- Of those who at one time had trouble seeing, 94.0 percent visited a doctor about the problem, but only 3.5 percent ever missed school or work because of trouble seeing.

Comparisons with previous findings among U.S. adults, children, and youths from the Health Examination Surveys of 1960-1970 are included, as well as comparisons with published findings from several of the more geographically limited studies.



REFERENCES

- ¹National Center for Health Statistics: Origin, program, and operation of the U.S. National Health Survey. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 1-No. 1. Public Health Service. Washington. U.S. Government Printing Office, Aug. 1963.
- ²National Center for Health Statistics: Plan and initial program of the Health Examination Survey. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 1-No. 4. Public Health Service. Washington. U.S. Government Printing Office, July 1965.
- ³National Center for Health Statistics: Cycle I of the Health Examination Survey: Sample and response, United States, 1960-1962. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 11-No. 1. Public Health Service. Washington. U.S. Government Printing Office, Apr. 1964.
- ⁴National Center for Health Statistics: Plan, operation, and response results of a program of children's examinations. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 1-No. 5. Public Health Service. Washington. U.S. Government Printing Office, Oct. 1967.
- ⁵National Center for Health Statistics: Plan and operation of a Health Examination Survey of U.S. youths 12-17 years of age. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 1-No. 8. Public Health Service. Washington. U.S. Government Printing Office, Sept. 1969.
- ⁶National Center for Health Statistics: Plan and operation of the Health and Nutrition Examination Survey, United States, 1971-1973. *Vital and Health Statistics*. Series 1-Nos. 10a and 10b. DHEW Pub. No. (HSM) 73-1310. Health Services and Mental Health Administration. Washington. U.S. Government Printing Office, Feb. 1973.
- ⁷National Center for Health Statistics: A study of the effect of remuneration upon response in the Health and Nutrition Examination Survey, United States. *Vital and Health Statistics*. Series 2-No. 67. DHEW Pub. No. (HRA) 76-1341. Health Resources Administration. Washington. U.S. Government Printing Office, Oct. 1975.
- ⁸National Center for Health Statistics: Monocular visual acuity of persons 4-74 years, United States, 1971-1972. *Vital and Health Statistics*. Series 11-No. 201. DHEW Pub. No. (HRA) 77-1646. Health Resources Administration. Washington. U.S. Government Printing Office, Mar. 1977.
- ⁹Newell, F. W.: *Ophthalmology, Principles and Concepts*. 2d ed. St. Louis. The C.V. Mosby Company, 1969.
- ¹⁰National Center for Health Statistics: Eye examination findings among children, United States. *Vital and Health Statistics*. Series 11-No. 115. DHEW Pub. No. (HSM) 72-1057. Health Services and Mental Health Administration. Washington. U.S. Government Printing Office, June 1972.
- ¹¹National Center for Health Statistics: Refraction status of youths 12-17 years, United States. *Vital and Health Statistics*. Series 11-No. 148. DHEW Pub. No. (HRA) 75-1630. Health Resources Administration. Washington. U.S. Government Printing Office. Dec. 1974.
- ¹²National Center for Health Statistics: Eye examination findings among youths aged 12-17 years, United States. *Vital and Health Statistics*. Series 11-No. 155. DHEW Pub. No. (HRA) 76-1637. Health Resources Administration. Washington. U.S. Government Printing Office. Nov. 1975.
- ¹³Blum, H. L., Peter, H. B., and Bettman, J. W.: *Vision Screening for Elementary Schools. The Orinda Study*. Berkeley. University of California Press, 1968.
- ¹⁴Francis, T., Jr., and Epstein, F. H.: Studies of a total community, Tecumseh, Michigan, in International Conference on Comparability in Epidemiological Studies. *Milbank Mem. Fund Q.* 43(2):333-42, Apr. 1965.
- ¹⁵Kahn, H. A., Leibowitz, H. M., Ganley, J. M., Kini, M. M., Colton, T., Nickerson, R. S., and Dawber, T. R.: The Framingham Eye Study. I. Outline and major prevalence findings. *Am. J. Epid.* 106(1):17-32, 1977.

LIST OF DETAILED TABLES

1. Prevalence rates and standard errors of tropia at age 1-74 years, by age, sex, and race: United States, 1971-1972	34
2. Prevalence rates and standard errors of tropia at age 1-74 years, by annual family income, age, and sex: United States, 1971-1972.....	36
3. Prevalence rates and standard errors of phoria at age 1-74 years, by age, sex, and race: United States, 1971-1972.....	37
4. Prevalence rates and standard errors of nystagmus at age 1-74 years, by age, sex, and race: United States, 1971-1972	39
5. Percent distribution of lenses in the glasses or contact lenses of the population age 4-74 years, by the spherical power of the lens for each eye and by age, with selected standard errors: United States, 1971-1972	41
6. Percent distribution of lenses in the glasses or contact lenses of the population age 4-74 years, by the cylindrical power of the lens for each eye and by age, with selected standard errors: United States, 1971-1972	41
7. Percent of lenses in the glasses or contact lenses of the population age 4-74 years, by the spherical and cylindrical power of the lens: United States, 1971-1972.....	42
8. Percent of lenses in the glasses or contact lenses of the population age 4-24 years, by the spherical and cylindrical power of the lens: United States, 1971-1972.....	42
9. Percent of lenses in the glasses or contact lenses of the population age 25-54 years, by the spherical and cylindrical power of the lens: United States, 1971-1972	43
10. Percent of lenses in the glasses or contact lenses of the population age 55-74 years, by the spherical and cylindrical power of the lens: United States, 1971-1972.....	43
11. Percent of lenses in the glasses or contact lenses of the population age 4-74 years, by sex and the power of the sphere or cylinder and by age and sex for negative and positive corrections: United States, 1971-1972	44
12. Percent distribution of lenses in the glasses or contact lenses of the population age 4-74 years, by the axis deviation of the lens for each eye and by age, with selected standard errors: United States, 1971-1972	45
13. Percent distribution of lenses in the glasses or contact lenses of the population age 4-74 years, by the spherical equivalence of the lens for each eye and by age, with selected standard errors: United States, 1971-1972	45
14. Percent distribution of lenses in the glasses or contact lenses of the population age 4-74 years, by the power of the lens for each eye and by age, with selected standard errors: United States, 1971-1972.....	46
15. Percent distribution of population age 4-74 years, by monocular visual acuity on the pinhole test for those with less than 20/20 usual visual acuity at each level of usual visual acuity: United States, 1971-1972	46
16. Percent distribution of population age 4-24 years, by monocular visual acuity on the pinhole test for those with less than 20/20 usual visual acuity at each level of usual visual acuity: United States, 1971-1972	47
17. Percent distribution of population age 25-44 years, by monocular visual acuity on the pinhole test for those with less than 20/20 usual visual acuity at each level of usual visual acuity: United States, 1971-1972	47
18. Percent distribution of population age 45-74 years, by monocular visual acuity on the pinhole test for those with less than 20/20 usual visual acuity at each level of usual visual acuity: United States, 1971-1972	48
19. Percent of population age 4-74 years with usual distance vision below 20/40 reaching the 20/20 level in spherical refraction or retinoscopy, by the strength of the lens required for each eye and by age and sex, with standard errors for totals: United States, 1971-1972.....	49

20. Percent distribution of population age 4-74 years with usual distance vision less than 20/40, by maximum monocular visual acuity in spherical refraction or retinoscopy for those at each level of usual visual acuity and by age: United States, 1971-1972.....	50
21. Percent of population age 4-74 years with usual distance vision less than 20/40, by strength of added lens used and maximum visual acuity in spherical refraction or retinoscopy for each eye: United States, 1971-1972.....	50
22. Number and percent of population age 4-74 years with usual distance vision less than 20/40 whose acuity was increased to 20/20 in at least one eye and whose acuity was not increased to 20/20 in either eye, by strength of added lens used in spherical refraction or retinoscopy for maximum visual acuity in each eye: United States, 1971-1972.....	51
23. Percent of lenses used in retinoscopy by type of spherical equivalence in added lens for maximum visual acuity among population age 25-74 years and type in present glasses or contact lenses: United States, 1971-1972.....	51
24. Percent of lenses used in retinoscopy by spherical equivalence in added lens for maximum visual acuity among population age 25-74 years and in present glasses or contact lenses: United States, 1971-1972.....	52
25. Percent distribution and number of population age 4-74 years by maximum visual acuity levels reached in the better eye with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder shown, by age, sex, and race, with standard errors: United States, 1971-1972.....	53
26. Percent of population age 4-74 years reaching specified maximum visual acuity levels in the better eye ¹ and difference between this maximum and usual visual acuity, by age, sex, and race: United States, 1971-1972	57
27. Percent of population age 4-74 years reaching specified maximum visual acuity levels in the better eye, ¹ by annual family income, age, race, and sex, with standard errors: United States, 1971-1972	58
28. Difference between maximum and usual visual acuity levels in the better eye ¹ among population age 4-74 years, by annual family income, age, race, and sex: United States, 1971-1972	64
29. Percent of population age 4-74 years reaching specified maximum visual acuity levels in the better eye, ¹ by region, age, race, and sex, with standard errors: United States, 1971-1972.....	66
30. Difference between maximum ¹ and usual visual acuity levels in the better eye among population age 4-74 years, by region, age, race, and sex: United States, 1971-1972.....	70
31. Percent of population age 4-74 years reaching specified visual acuity levels for maximum distance vision in the better eye, ¹ by size of place of residence, age, race, and sex, with standard errors: United States, 1971-1972.....	73
32. Percent and number of population age 4-74 years reaching at least 20/20 and percent reaching no better than 20/50 maximum visual acuity in the better eye, ¹ by ancestry and race: United States, 1971-1972.....	75
33. Percent of population age 4-74 years with maximum visual acuity of 20/20 or better and 20/50 or less ¹ with manifest strabismus, phoria, or no eye muscle imbalance, by age, sex, and race with standard errors: United States, 1971-1972.....	76
34. Prevalence rates for selected medical history items pertaining to the eye, and percent distribution by age lenses first worn, among population 6-74 years, by age, race, and sex: United States, 1971-1974	79
34A. Standard errors for prevalence rates for selected medical history items pertaining to the eye, and percent distribution by age lenses first worn, among population 6-74 years, by age, race, and sex: United States, 1971-1974	84
35. Percent of total population age 6-74 years who still wear glasses and percent distribution of their usual visual acuity levels in the better eye, by age and sex: United States, 1971-1972.....	89
36. Percent of total population age 6-74 years who still wear glasses and percent distribution of their maximum visual acuity levels in the better eye, ¹ by age and sex: United States, 1971-1972	90
37. Percent of total population age 6-74 years who wear glasses and have no trouble seeing with them and percent distribution of their usual visual acuity levels in the better eye, by age and sex: United States, 1971-1972	91
38. Percent of total population age 6-74 years who wear glasses and have no trouble seeing with them and percent distribution of their maximum visual acuity levels in the better eye, ¹ by age and sex: United States, 1971-1972.....	92

¹Visual acuity levels reached with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder.

39. Percent of total population age 6-74 years who do not wear glasses and percent distribution of their usual visual acuity levels in the better eye, by age and sex: United States, 1971-1972	93
40. Percent of total population age 6-74 years who do not wear glasses and percent distribution of their maximum visual acuity levels in the better eye, ¹ by age and sex: United States, 1971-1972	94
41. Percent of total population age 6-74 years who have trouble with vision even when wearing glasses and percent distribution of their usual visual acuity levels in the better eye, by age and sex: United States, 1971-1972	95
42. Percent of total population age 6-74 years who have trouble with vision even when wearing glasses and percent distribution of their maximum visual acuity levels in the better eye, ¹ by age and sex: United States, 1971-1972.....	96
43. Prevalence rates for selected medical history items among population age 6-74 years with and without eye muscle imbalance, by age, sex, and race, with standard errors: United States, 1971-1972	97
44. Prevalence rates for medical history findings pertaining to the eye among population age 6-74 years, by age, sex, race, and geographic region, with standard errors: United States, 1971-1972	99
45. Percent distribution of lenses in the glasses or contact lenses of youths age 12-17 years, by the spherical or cylindrical power of the lens: United States, 1966-1970 and 1971-1972.....	101
46. Percent distribution of lenses in the glasses or contact lenses of youths age 12-17 years, by the degree of axis deviation of the cylinder in the lens: United States, 1966-1970 and 1971-1972	101
47. Percent distribution of lenses in the glasses and contact lenses of youths age 12-17 years, by the power and equivalence of the lens: United States, 1966-1970 and 1971-1972	102

Table 1. Prevalence rates and standard errors of tropia at age 1-74 years, by age, sex, and race: United States, 1971-1972

Age, sex, and race ¹	Tropia											
	Total		Eso		Exo		Hyper		Comitant		Incomitant	
	Rate	Standard error	Rate	Standard error	Rate	Standard error	Rate	Standard error	Rate	Standard error	Rate	Standard error
Rate per 100 persons and standard error												
Both sexes												
All races, 1-74 years.....	3.7	0.41	1.2	0.24	2.1	0.24	0.6	0.11	2.1	0.29	0.3	0.08
White.....	3.7	0.43	1.3	0.26	2.0	0.26	0.5	0.09	2.1	0.29	*0.3	0.10
Black.....	3.3	0.47	*0.6	0.23	2.7	0.36	*0.3	0.17	*1.8	0.56	*0.3	0.28
All races, 1-3 years.....	1.9	1.29	*1.3	1.10	*0.3	0.21	0.1	0.05	*1.3	1.09	*0.3	0.26
White.....	1.9	1.38	*1.4	1.16	*0.2	0.21	-	-	*1.3	1.12	*0.3	0.33
Black.....	1.7	1.02	*1.1	0.89	*0.6	0.32	0.3	0.32	*1.4	1.00	*0.3	0.19
All races, 4-24 years.....	3.3	0.58	*1.7	0.44	1.4	0.23	*0.3	0.12	2.1	0.51	*0.3	0.13
White.....	3.4	0.66	*1.9	0.51	1.3	0.25	*0.3	0.14	*2.2	0.57	*0.2	0.12
Black.....	2.9	0.32	*0.8	0.36	2.1	0.41	*0.1	0.07	*1.2	0.47	*0.6	0.58
All races, 25-54 years.....	3.3	0.38	*0.8	0.23	2.3	0.30	*0.4	0.16	1.6	0.32	*0.2	0.13
White.....	3.3	0.39	*0.9	0.25	2.2	0.30	*0.4	0.15	1.5	0.32	*0.2	0.14
Black.....	3.1	0.63	*0.1	0.11	2.9	0.62	*0.7	0.46	*1.8	0.79	*0.0	0.04
All races, 55-74 years.....	6.1	1.00	*1.1	0.48	4.1	0.83	*1.6	0.45	3.7	0.79	*0.8	0.36
White.....	5.8	0.97	*1.1	0.53	3.7	0.80	1.4	0.29	3.4	0.81	*0.9	0.39
Black.....	6.9	1.68	*0.7	0.44	*6.2	1.69	*0.4	0.16	*4.0	1.30	*0.0	0.04
Male												
All races, 1-74 years.....	3.0	0.50	*0.9	0.25	1.9	0.32	*0.4	0.13	1.7	0.34	*0.3	0.11
White.....	3.0	0.57	*0.9	0.29	1.7	0.36	*0.3	0.13	1.7	0.38	*0.3	0.13
Black.....	3.6	0.38	*0.2	0.12	3.4	0.36	*0.5	0.32	*1.9	0.62	*0.0	0.03
All races, 1-3 years.....	1.3	1.19	*1.2	1.18	*0.1	0.11	0.1	0.10	*0.8	0.82	*0.0	0.05
White.....	1.5	1.48	*1.4	1.46	*0.1	0.13	-	-	*1.0	1.01	-	-
Black.....	0.6	0.59	*0.3	0.29	*0.3	0.29	0.6	0.59	*0.3	0.29	*0.3	0.29
All races, 4-24 years.....	2.9	0.67	*1.4	0.51	1.3	0.30	*0.0	0.03	*1.9	0.56	*0.2	0.16
White.....	*2.9	0.74	*1.6	0.60	*	*	*0.0	0.04	*2.0	0.64	*0.3	0.18
Black.....	2.7	1.13	*0.1	0.08	*	*	-	-	*1.4	0.80	-	-
All races, 25-54 years.....	2.1	0.51	*0.3	0.18	1.7	0.36	*0.4	0.23	*0.9	0.43	-	-
White.....	*1.9	0.55	*0.3	0.20	*	*	*0.3	0.20	*0.8	0.42	-	-
Black.....	3.8	0.74	*0.2	0.18	3.6	0.69	*1.4	1.08	*2.2	1.28	-	-
All races, 55-74 years.....	6.1	1.48	*0.7	0.40	*	*	*1.2	0.58	*3.5	1.19	*1.3	0.59
White.....	*5.9	1.57	*0.7	0.42	*	*	*1.3	0.64	*3.4	1.30	*1.4	0.64
Black.....	*9.0	2.33	*0.8	0.81	*	*	*0.2	0.09	*4.6	2.05	*0.1	0.08

¹Totals include races other than white and Black.

Table 1. Prevalence rates and standard errors of tropia at age 1-74 years, by age, sex, and race: United States, 1971-1972—Con.

Age, sex, and race ¹	Tropia											
	Total		Eso		Exo		Hyper		Comitant		Incomitant	
	Rate	Stand-ard error	Rate	Stand-ard error	Rate	Stand-ard error	Rate	Stand-ard error	Rate	Stand-ard error	Rate	Stand-ard error
Female	Rate per 100 persons and standard error											
All races, 1-74 years.....	4.3	0.45	1.6	0.32	2.4	0.21	*0.7	0.15	2.5	0.38	*0.4	0.11
White	4.4	0.48	1.7	0.34	2.3	0.26	*0.7	0.16	2.5	0.41	*0.4	0.15
Black	*3.1	0.95	*0.9	0.43	*2.1	0.67	*0.2	0.08	*1.6	0.72	*0.6	0.51
All races, 1-3 years.....	2.4	1.48	*1.5	1.05	*0.5	0.37	-	-	*1.8	1.39	*0.6	0.52
White	2.3	1.42	*1.3	0.92	*0.4	0.38	-	-	*1.6	1.26	*0.6	0.66
Black	3.0	2.22	*2.2	1.98	*0.9	0.66	-	-	*2.8	2.24	*0.2	0.24
All races, 4-24 years.....	3.7	0.66	2.1	0.45	*1.6	0.34	*0.6	0.25	2.3	0.56	*0.4	0.20
White	3.8	0.73	2.2	0.52	*1.6	0.35	*0.7	0.28	*2.5	0.64	*0.2	0.14
Black	*3.0	1.37	*1.5	0.72	*1.5	1.10	*0.2	0.14	*1.1	0.49	*1.1	1.09
All races, 25-54 years.....	4.3	0.56	*1.3	0.42	2.9	0.43	*0.5	0.20	2.1	0.38	*0.4	0.25
White	4.6	0.59	*1.4	0.48	2.9	0.43	*0.5	0.23	2.2	0.44	*0.4	0.28
Black	*2.5	1.00	*0.1	0.13	*2.3	1.00	*0.1	0.09	*1.5	0.95	*0.1	0.06
All races, 55-74 years.....	6.0	1.19	*1.4	0.86	3.7	0.77	*1.9	0.49	*3.8	1.09	*0.4	0.33
White	5.6	1.25	*1.5	0.95	*3.1	0.69	1.5	0.32	*3.3	1.26	*0.4	0.37
Black	*5.4	2.09	*0.7	0.56	*4.7	1.98	*0.5	0.28	*3.6	1.92	-	-

¹Totals include races other than white and Black.

Table 2. Prevalence rates and standard errors of tropia at age 1-74 years, by annual family income, age, and sex: United States, 1971-1972

Age and sex	Total	Under \$5,000	\$5,000-\$9,999	\$10,000 and over	Un-known	Total	Under \$5,000	\$5,000-\$9,999	\$10,000 and over	Un-known
<u>Both sexes</u>	Rate per 100 persons					Standard error				
All ages, 1-74 years	4.6	4.5	5.2	4.1	5.3	0.63	0.88	0.86	0.67	1.40
1-3 years	2.6	2.6	1.7	3.7	-	1.48	1.45	1.11	2.33	-
4-24 years	4.0	3.0	5.0	3.6	4.1	0.67	0.85	1.06	0.79	2.43
25-54 years	4.4	6.5	5.5	3.2	6.6	0.73	2.29	1.37	0.56	2.16
55-74 years	6.9	5.1	6.2	10.2	5.5	1.11	0.96	1.67	2.33	2.36
<u>Male</u>										
All ages, 1-74 years	3.9	4.8	4.4	3.3	3.9	0.65	1.03	1.09	0.77	1.90
1-3 years	2.0	1.0	1.2	3.5	-	1.40	0.66	1.21	2.48	-
4-24 years	3.7	3.4	4.6	3.1	3.3	0.85	1.25	1.52	0.94	3.76
25-54 years	3.0	5.9	3.6	2.3	3.0	0.67	3.51	1.03	0.70	2.89
55-74 years	7.4	7.3	6.8	8.2	6.8	1.48	1.49	2.67	2.53	3.68
<u>Female</u>										
All ages, 1-74 years	5.2	4.2	5.9	5.0	6.5	0.71	1.06	0.96	0.79	1.98
1-3 years	3.3	4.1	2.3	3.9	-	1.68	2.65	1.21	2.34	-
4-24 years	4.4	2.6	5.4	4.1	4.8	0.66	0.94	1.02	0.89	3.27
25-54 years	5.7	6.8	7.2	4.2	9.7	1.02	2.55	2.05	0.90	3.78
55-74 years	6.6	3.9	5.6	12.6	4.6	1.31	0.90	2.23	3.92	2.97

Table 3. Prevalence rates and standard errors of phoria at age 1-74 years, by age, sex, and race: United States, 1971-1972

Age, sex, and race ¹	Phoria								
	Total		Eso		Exo		Hyper		
	Rate	Stand-ard error	Rate	Stand-ard error	Rate	Stand-ard error	Rate	Stand-ard error	
<u>Both sexes</u>		Rate per 100 persons and standard error							
All races, 1-74 years.....	16.0	1.84	2.1	0.33	13.8	1.74	*0.4	0.11	
White	15.9	1.85	2.2	0.34	13.5	1.76	*0.4	0.12	
Black	17.0	2.58	*1.2	0.61	15.6	2.44	*0.4	0.21	
All races, 1-3 years.....	3.3	0.91	0.2	0.17	3.0	0.85	-	-	
White	2.8	0.89	0.2	0.20	2.6	0.79	-	-	
Black	5.1	2.25	0.2	0.16	4.9	2.27	-	-	
All races, 4-24 years.....	14.8	1.36	2.4	0.29	12.3	1.25	*0.3	0.12	
White	14.5	1.28	2.5	0.30	12.0	1.22	*0.2	0.12	
Black	16.9	3.10	*1.9	1.09	14.7	2.66	*0.7	0.39	
All races, 25-54 years.....	17.4	2.54	*2.2	0.60	15.0	2.38	*0.5	0.18	
White	17.0	2.54	*2.4	0.66	14.4	2.34	*0.6	0.20	
Black	20.4	3.65	*0.7	0.38	19.7	3.64	*0.2	0.19	
All races, 55-74 years.....	19.7	2.83	*1.7	0.48	17.7	2.82	*0.7	0.33	
White	20.1	2.98	*1.9	0.53	18.0	2.98	*0.7	0.36	
Black	*14.4	3.97	*0.1	0.11	14.2	3.96	*0.1	0.11	
<u>Male</u>									
All races, 1-74 years.....	15.0	2.07	1.5	0.36	13.3	1.97	*0.4	0.16	
White	15.0	2.01	*1.7	0.40	13.1	1.92	*0.4	0.19	
Black	15.7	3.43	*0.4	0.12	15.3	3.41	*0.2	0.14	
All races, 1-3 years.....	3.1	1.20	0.1	0.05	3.1	1.20	-	-	
White	2.5	1.11	-	-	2.5	1.11	-	-	
Black	5.0	3.13	0.3	0.30	4.7	3.12	-	-	
All races, 4-24 years.....	13.3	1.53	*1.6	0.42	11.6	1.48	*0.2	0.13	
White	13.3	1.49	*1.8	0.49	11.5	1.48	*0.2	0.15	
Black	*14.2	4.15	*0.7	0.22	*13.6	4.04	*0.1	0.09	
All races, 25-54 years.....	17.0	3.20	*1.8	0.60	15.0	3.12	*0.5	0.32	
White	16.3	3.21	*1.9	0.66	14.2	3.08	*0.5	0.36	
Black	22.1	5.03	*0.2	0.13	21.9	5.10	*0.4	0.44	
All races, 55-74 years.....	19.3	3.65	*1.3	0.68	17.4	3.20	*0.8	0.58	
White	20.1	3.80	*1.4	0.74	18.0	3.33	*0.9	0.64	
Black	*11.6	3.69	*0.1	0.07	*11.6	3.70	-	-	

¹Totals include races other than white and Black.

Table 3. Prevalence rates and standard errors of phoria at age 1-74 years, by age, sex, and race: United States, 1971-1972—Con.

Age, sex, and race ¹	Phoria							
	Total		Eso		Exo		Hyper	
	Rate	Stand-ard error	Rate	Stand-ard error	Rate	Stand-ard error	Rate	Stand-ard error
Female	Rate per 100 persons and standard error							
All races, 1-74 years.....	16.9	1.80	2.6	0.50	14.1	1.62	*0.5	0.17
White	16.7	1.84	2.8	0.50	13.8	1.69	*0.4	0.17
Black	18.1	2.63	*1.9	1.14	15.9	2.30	*0.6	0.35
All races, 1-3 years.....	3.4	1.16	0.4	0.33	3.0	1.01	-	-
White	3.1	1.10	0.5	0.40	2.6	0.90	-	-
Black	5.2	3.48	-	-	5.2	3.48	-	-
All races, 4-24 years.....	16.4	1.51	3.2	0.47	13.0	1.37	*0.3	0.16
White	15.8	1.40	3.3	0.49	12.5	1.43	*0.2	0.13
Black	19.4	4.37	*3.0	2.06	15.7	3.66	*1.2	0.74
All races, 25-54 years.....	17.8	2.24	*2.6	0.78	15.0	1.96	*0.6	0.34
White	17.6	2.33	*2.8	0.84	14.6	2.04	*0.7	0.38
Black	19.1	3.87	*1.2	0.65	17.9	3.77	-	-
All races, 55-74 years.....	20.0	3.14	*2.0	1.08	17.9	3.02	*0.5	0.37
White	20.2	3.28	*2.2	1.19	18.0	3.18	*0.6	0.41
Black	*16.5	4.36	*0.2	0.18	*16.3	4.33	*0.2	0.18

¹Totals include races other than white and Black.

Table 4. Prevalence rates and standard errors of nystagmus at age 1-74 years, by age, sex, and race: United States, 1971-1972

Age, sex, and race ¹	Nystagmus									
	Total		Pendular		Jerk-horizantal		Jerk-vertical		Jerk-rotary	
	Rate	Stand-ard error	Rate	Stand-ard error	Rate	Stand-ard error	Rate	Stand-ard error	Rate	Stand-ard error
Both sexes										
Rate per 100 persons and standard error										
All races, 1-74 years	0.5	0.09	*0.0	0.03	0.3	0.06	*0.1	0.04	*0.2	0.05
White	0.5	0.10	*0.0	0.03	0.2	0.07	*0.1	0.05	*0.2	0.06
Black.....	*0.6	0.18	*0.1	0.14	0.3	0.07	*0.0	0.00	*0.1	0.05
All races, 1-3 years	0.3	0.34	-	-	-	-	-	-	0.3	0.34
White	0.4	0.41	-	-	-	-	-	-	0.4	0.41
Black.....	-	-	-	-	-	-	-	-	-	-
All races, 4-24 years	*0.4	0.14	*0.0	0.05	*0.2	0.09	-	-	*0.2	0.11
White	*0.4	0.16	*0.1	0.06	*0.1	0.09	-	-	*0.2	0.12
Black.....	*0.4	0.36	-	-	*0.4	0.35	-	-	*0.1	0.07
All races, 25-54 years	*0.5	0.16	*0.1	0.05	*0.3	0.13	*0.1	0.09	*0.1	0.04
White	*0.5	0.18	*0.0	0.03	*0.3	0.15	*0.1	0.10	*0.1	0.05
Black.....	*0.5	0.43	*0.4	0.43	*0.1	0.07	-	-	*0.1	0.06
All races, 55-74 years	*0.9	0.30	-	-	*0.5	0.18	*0.1	0.11	*0.2	0.13
White	*0.8	0.41	-	-	*0.5	0.28	*0.1	0.13	*0.2	0.13
Black.....	*1.6	1.31	-	-	*1.2	1.25	*0.0	0.04	*0.3	0.29
Male										
All races, 1-74 years	*0.4	0.15	0.0	0.04	*0.3	0.12	*0.0	0.00	*0.1	0.07
White	*0.3	0.16	0.0	0.02	*0.2	0.14	-	-	*0.1	0.08
Black.....	*1.1	0.38	0.3	0.30	0.7	0.11	*0.0	0.01	*0.1	0.09
All races, 1-3 years	0.1	0.08	-	-	-	-	-	-	0.1	0.08
White	0.1	0.10	-	-	-	-	-	-	0.1	0.10
Black.....	-	-	-	-	-	-	-	-	-	-
All races, 4-24 years	*0.4	0.21	-	-	*0.2	0.14	-	-	*0.2	0.15
White	*0.3	0.22	-	-	*0.1	0.12	-	-	*0.2	0.18
Black.....	*0.9	0.74	-	-	*0.7	0.74	-	-	*0.1	0.10
All races, 25-54 years	*0.5	0.28	*0.1	0.10	*0.3	0.25	-	-	-	-
White	*0.4	0.28	*0.1	0.05	*0.4	0.28	-	-	-	-
Black.....	*0.9	0.99	*0.9	0.99	-	-	-	-	-	-
All races, 55-74 years	*0.6	0.30	-	-	*0.4	0.26	*0.0	0.01	*0.2	0.09
White	*0.3	0.17	-	-	*0.2	0.11	-	-	*0.1	0.08
Black.....	*3.6	2.85	-	-	*2.9	2.74	*0.1	0.08	*0.7	0.68

¹Totals include races other than white and Black.

Table 4. Prevalence rates and standard errors of nystagmus at age 1-74 years, by age, sex, and race: United States, 1971-1972—Con.

Age, sex, and race ¹	Nystagmus									
	Total		Pendular		Jerk-horizantal		Jerk-vertical		Jerk-rotary	
	Rate	Stand-ard error	Rate	Stand-ard error	Rate	Stand-ard error	Rate	Stand-ard error	Rate	Stand-ard error
Female	Rate per 100 persons and standard error									
All races, 1-74 years	*0.6	0.14	*0.0	0.04	*0.3	0.11	*0.1	0.08	*0.2	0.07
White	*0.6	0.16	*0.0	0.05	*0.3	0.12	*0.1	0.09	*0.2	0.08
Black.....	*0.1	0.07	-	-	*0.1	0.05	-	-	*0.1	0.04
All races, 1-3 years	0.6	0.62	-	-	-	-	-	-	0.6	0.62
White	0.7	0.73	-	-	-	-	-	-	0.7	0.73
Black.....	-	-	-	-	-	-	-	-	-	-
All races, 4-24 years	*0.4	0.18	*0.1	0.10	*0.1	0.11	-	-	*0.1	0.10
White	*0.4	0.22	*0.1	0.12	*0.1	0.13	-	-	*0.2	0.12
Black.....	*0.1	0.05	-	-	*0.0	0.03	-	-	*0.0	0.05
All races, 25-54 years	*0.5	0.21	-	-	*0.2	0.13	*0.2	0.17	*0.1	0.08
White	*0.5	0.24	-	-	*0.2	0.15	*0.2	0.19	*0.1	0.09
Black.....	*0.2	0.17	-	-	*0.1	0.13	-	-	*0.1	0.10
All races, 55-74 years	*1.2	0.64	-	-	*0.6	0.44	*0.2	0.21	*0.3	0.21
White	*1.3	0.71	-	-	*0.7	0.48	*0.2	0.23	*0.3	0.24
Black.....	-	-	-	-	-	-	-	-	-	-

¹Totals include races other than white and Black.

Table 5. Percent distribution of lenses in the glasses or contact lenses of the population age 4-74 years, by the spherical power of the lens for each eye and by age, with selected standard errors: United States, 1971-1972

Spherical power of lens (in diopters)	Age in years										Right eye	Left eye	Right eye	Left eye	
	4-74	4-5	6-11	12-17	18-24	25-34	35-44	45-54	55-64	65-74					
	Percent distribution of lenses measured												Standard error		
Total	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
<u>Minus</u>															
5.1 D or more.....	3.4	*14.6	1.0	6.4	8.3	6.0	3.8	2.7	0.6	1.2	3.5	3.2	0.57	0.51	
4.1-5.0 D.....	2.7	*-	2.1	6.2	7.2	3.0	4.1	1.8	0.6	1.0	2.6	2.8	0.40	0.33	
3.1-4.0 D.....	6.0	*-	2.9	14.6	14.8	10.8	5.8	3.4	2.0	1.6	6.1	5.8	0.71	0.69	
2.1-3.0 D.....	7.5	*-	10.0	16.0	17.1	11.0	10.4	3.2	3.8	2.0	7.5	7.5	0.73	0.52	
1.6-2.0 D.....	5.0	*1.0	8.1	11.2	6.9	7.8	5.6	5.0	1.8	1.4	4.9	5.1	0.46	0.64	
1.1-1.5 D.....	7.6	*1.0	8.8	15.8	10.6	13.8	9.8	7.0	2.2	2.1	7.4	7.7	0.82	0.72	
0.6-1.0 D.....	8.2	*1.0	7.8	10.5	12.6	16.0	14.4	7.0	3.0	2.6	8.5	8.0	0.68	0.78	
0.1-0.5 D.....	7.2	*20.8	9.4	6.4	6.8	9.6	12.6	7.4	5.6	3.0	6.7	7.7	0.76	0.65	
0.0 D.....	5.8	*2.8	10.9	2.7	2.6	3.5	5.2	9.2	6.6	5.2	6.0	5.7	0.59	0.55	
<u>Plus</u>															
0.1-0.5 D.....	8.4	*16.0	5.4	3.0	3.6	5.2	7.5	14.0	10.2	8.6	8.5	8.4	0.63	0.62	
0.6-1.0 D.....	10.6	*11.5	11.1	0.8	2.4	5.0	6.1	14.7	17.3	14.6	11.1	10.1	0.81	1.03	
1.1-2.0 D.....	14.0	*22.4	7.9	2.2	1.8	2.6	6.8	13.5	28.1	25.9	13.5	14.4	0.99	0.99	
2.1-3.0 D.....	7.4	*7.0	2.8	0.6	1.6	1.6	4.8	5.9	11.6	17.9	7.7	7.0	0.77	0.52	
3.1-4.0 D.....	3.0	*-	7.8	2.6	0.9	1.1	2.2	2.6	3.4	5.6	2.8	3.3	0.61	0.56	
4.1-5.0 D.....	1.2	*-	1.2	-	1.6	1.8	0.6	0.8	0.8	2.4	1.3	1.1	0.32	0.31	
5.1 D or more.....	2.0	*1.9	2.8	1.0	1.2	1.2	0.3	1.8	2.4	4.9	1.9	2.2	0.27	0.33	

Table 6. Percent distribution of lenses in the glasses or contact lenses of the population age 4-74 years, by the cylindrical power of the lens for each eye and by age, with selected standard errors: United States, 1971-1972

Cylindrical power of lens (in diopters)	Age in years										Right eye	Left eye	Right eye	Left eye	
	4-74	4-5	6-11	12-17	18-24	25-34	35-44	45-54	55-64	65-74					
	Percent distribution of lenses measured												Standard error		
Total	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
<u>Minus</u>															
5.1 D or more.....	0.2	*1.0	-	-	-	-	0.1	0.0	0.4	0.2	0.2	0.1	0.14	0.07	
4.1-5.0 D.....	0.2	*-	-	0.3	1.1	0.4	0.1	-	0.2	0.2	0.3	0.2	0.17	0.11	
3.1-4.0 D.....	0.3	*-	1.0	-	1.4	0.4	0.4	-	0.2	0.0	0.3	0.3	0.14	0.15	
2.1-3.0 D.....	1.4	*-	0.2	0.8	1.2	1.3	2.7	1.4	1.6	0.8	1.7	1.1	0.39	0.29	
1.6-2.0 D.....	1.0	*-	0.9	0.4	1.0	1.2	1.6	1.0	0.6	1.4	0.9	1.2	0.22	0.22	
1.1-1.5 D.....	2.8	*-	1.8	3.6	2.2	2.5	1.2	3.8	1.9	3.9	2.8	2.7	0.41	0.44	
0.6-1.0 D.....	7.3	*7.8	4.0	6.6	4.4	6.8	8.4	7.6	7.2	9.6	7.7	6.9	1.26	0.99	
0.1-0.5 D.....	13.4	*-	12.6	16.7	12.0	16.2	14.2	11.4	13.6	12.6	13.9	13.0	1.92	1.56	
0.0 D.....	37.4	*29.8	45.7	43.2	44.0	34.4	34.6	40.7	36.3	30.0	36.9	37.8	1.56	1.96	
<u>Plus</u>															
0.1-0.5 D.....	16.4	*20.5	10.0	13.8	15.2	20.5	15.6	15.8	17.6	17.4	15.9	17.0	2.13	2.48	
0.6-1.0 D.....	10.9	*7.8	12.1	9.2	10.1	8.0	12.5	11.0	11.0	12.8	11.2	10.6	1.54	1.34	
1.1-2.0 D.....	6.0	*15.0	8.2	4.0	3.8	4.6	5.2	4.8	7.6	8.4	5.8	6.1	0.68	0.73	
2.1-3.0 D.....	1.6	*17.1	1.0	1.2	3.0	2.4	2.7	1.2	1.0	1.2	1.5	1.8	0.35	0.30	
3.1-4.0 D.....	0.6	*-	0.2	-	0.4	0.9	0.5	0.4	0.3	1.3	0.6	0.5	0.22	0.13	
4.1-5.0 D.....	0.3	*-	2.3	-	0.2	0.0	0.1	0.7	-	0.2	0.3	0.3	0.19	0.12	
5.1 D or more.....	0.2	*1.0	-	0.2	0.0	0.4	0.1	0.2	0.5	0.0	0.0	0.4	0.02	0.24	

Table 7. Percent of lenses in the glasses or contact lenses of the population age 4-74 years, by the spherical and cylindrical power of the lens: United States, 1971-1972

Spherical power of lens (in diopters)	All lenses	Cylindrical power (in diopters)												
		Minus									Plus			
		5.1 D or more	4.1-5.0 D	3.1-4.0 D	2.1-3.0 D	1.6-2.0 D	1.1-1.5 D	0.6-1.0 D	0.1-0.5 D	0.0 D	0.1-0.5 D	0.6-1.0 D	1.1-2.0 D	2.1 D or more
All lenses.....	100.0	0.1	0.3	0.3	1.4	1.0	2.8	7.3	13.4	37.4	16.5	10.9	5.9	2.7
Percent of lenses measured														
<u>Minus</u>														
5.1 D or more	3.3	0.0	0.0	0.1	0.1	0.0	0.1	0.3	0.2	0.7	0.5	0.6	0.4	0.3
4.1-5.0 D.....	2.7	-	0.0	-	0.0	-	0.1	0.2	0.2	0.8	0.4	0.5	0.2	0.3
3.1-4.0 D.....	5.9	-	-	0.0	0.1	0.0	0.1	0.3	0.8	2.2	0.8	0.8	0.6	0.2
2.1-3.0 D.....	7.5	-	-	-	0.1	0.1	0.1	0.5	0.9	2.7	1.1	1.1	0.5	0.4
1.6-2.0 D.....	5.0	-	-	0.0	0.1	0.1	0.2	0.1	0.6	1.8	0.9	0.5	0.4	0.3
1.1-1.5 D.....	7.5	0.0	-	0.0	0.1	0.0	0.2	0.3	0.8	3.3	1.3	0.8	0.5	0.2
0.6-1.0 D.....	8.2	-	0.1	-	0.0	0.1	0.1	0.5	1.1	3.7	1.3	0.7	0.5	0.1
0.1-0.5 D.....	7.2	-	-	0.0	0.1	0.1	0.2	0.4	1.3	2.2	1.6	0.7	0.3	0.3
0.0 D.....	5.8	-	-	-	0.1	0.1	0.2	0.5	0.8	2.4	0.7	0.5	0.4	0.1
<u>Plus</u>														
0.1-0.5 D.....	8.4	-	-	0.1	0.1	0.1	0.2	0.4	1.1	3.3	1.3	1.1	0.6	0.1
0.6-1.0 D.....	10.6	-	-	0.0	0.1	0.1	0.2	0.8	1.4	4.1	2.5	1.0	0.3	0.1
1.1-2.0 D.....	14.2	0.1	0.0	-	0.2	0.1	0.3	1.1	2.6	5.6	2.4	1.3	0.4	0.1
2.1 D or more	13.7	0.0	0.2	0.1	0.3	0.2	0.8	1.9	1.6	4.6	1.7	1.3	0.8	0.2

Table 8. Percent of lenses in the glasses or contact lenses of the population age 4-24 years, by the spherical and cylindrical power of the lens: United States, 1971-1972

Spherical power of lens (in diopters)	All lenses	Cylindrical power (in diopters)												
		Minus									Plus			
		5.1 D or more	4.1-5.0 D	3.1-4.0 D	2.1-3.0 D	1.6-2.0 D	1.1-1.5 D	0.6-1.0 D	0.1-0.5 D	0.0 D	0.1-0.5 D	0.6-1.0 D	1.1-2.0 D	2.1 D or more
All lenses.....	100.0	0.0	0.5	0.7	0.8	0.8	2.7	5.3	13.9	43.9	13.8	10.0	4.7	2.9
Percent of lenses measured														
<u>Minus</u>														
5.1 D or more	6.3	-	-	0.4	0.1	0.0	0.1	0.6	0.2	1.7	1.1	1.0	0.5	0.6
4.1-5.0 D.....	5.8	-	-	-	0.1	-	0.3	0.5	0.4	2.0	0.7	1.3	0.4	0.1
3.1-4.0 D.....	12.5	-	-	-	0.3	-	0.2	0.5	1.8	5.7	1.6	1.9	0.3	0.2
2.1-3.0 D.....	15.3	-	-	-	0.1	-	0.1	0.5	2.9	6.0	2.5	1.6	1.1	0.5
1.6-2.0 D.....	8.7	-	-	-	-	-	0.6	0.4	1.0	4.4	1.7	0.3	0.3	0.0
1.1-1.5 D.....	12.3	0.0	-	-	0.0	-	0.4	0.8	1.0	6.1	2.0	1.2	0.3	0.5
0.6-1.0 D.....	10.8	-	0.1	-	-	0.1	0.2	0.1	1.0	6.7	1.6	0.4	0.4	0.2
0.1-0.5 D.....	7.2	-	-	0.0	0.0	-	0.0	0.2	1.3	3.4	1.1	0.4	0.5	0.3
0.0 D.....	4.1	-	-	-	-	-	0.0	0.4	1.3	1.5	0.3	0.4	-	0.2
<u>Plus</u>														
0.1-0.5 D.....	3.9	-	-	0.2	-	0.0	-	0.2	1.0	1.8	0.2	0.4	-	0.1
0.6-1.0 D.....	3.5	-	-	-	-	0.2	-	0.1	0.7	1.5	0.4	0.4	0.1	0.1
1.1-2.0 D.....	3.0	-	-	-	0.0	0.2	0.2	0.3	0.6	1.3	0.0	0.1	0.3	0.0
2.1 D or more	6.6	-	0.4	0.1	0.2	0.3	0.6	0.7	0.7	1.8	0.6	0.6	0.5	0.1

Table 9. Percent of lenses in the glasses or contact lenses of the population age 25-54 years, by the spherical and cylindrical power of the lens: United States, 1971-1972

Spherical power of lens (in diopters)	All lenses	Cylindrical power (in diopters)												
		Minus									Plus			
		5.1 D or more	4.1-5.0 D	3.1-4.0 D	2.1-3.0 D	1.6-2.0 D	1.1-1.5 D	0.6-1.0 D	0.1-0.5 D	0.0 D	0.1-0.5 D	0.6-1.0 D	1.1-2.0 D	2.1 D or more
All lenses.....	100.0	0.0	0.1	0.2	1.7	1.2	2.8	7.6	13.2	37.4	17.0	10.8	4.9	3.1
<u>Minus</u>														
5.1 D or more	3.9	-	0.0	-	0.1	0.1	0.1	0.3	0.4	0.8	0.5	0.6	0.7	0.3
4.1-5.0 D.....	2.8	-	0.0	-	-	-	0.1	0.1	0.2	0.7	0.6	0.5	0.3	0.3
3.1-4.0 D.....	6.0	-	-	0.0	0.2	0.0	0.2	0.4	0.9	1.8	1.0	0.5	0.7	0.3
2.1-3.0 D.....	7.2	-	-	-	0.2	0.2	0.1	0.7	0.6	2.1	1.1	1.1	0.5	0.6
1.6-2.0 D.....	5.9	-	-	-	0.1	0.2	0.1	0.1	0.8	2.0	1.2	0.7	0.4	0.3
1.1-1.5 D.....	9.5	-	-	0.1	0.1	0.0	0.2	0.3	1.2	3.9	1.8	1.1	0.5	0.3
0.6-1.0 D.....	11.4	-	0.1	-	0.0	0.2	0.1	1.1	1.6	4.9	2.0	1.0	0.4	0.0
0.1-0.5 D.....	9.4	-	-	-	0.1	0.1	0.2	0.6	2.0	2.5	2.2	1.1	0.2	0.4
0.0 D.....	6.6	-	-	-	0.0	0.1	0.4	0.7	0.8	2.8	0.7	0.5	0.5	0.1
<u>Plus</u>														
0.1-0.5 D.....	9.9	-	-	-	0.2	0.2	0.1	0.5	1.1	4.5	1.6	1.3	0.3	0.1
0.6-1.0 D.....	9.6	-	-	-	0.2	-	0.3	1.1	0.8	4.8	1.6	0.7	0.0	0.1
1.1-2.0 D.....	8.9	0.0	-	-	0.3	-	0.3	0.6	2.2	3.6	1.3	0.5	0.1	0.0
2.1 D or more	8.9	0.0	-	0.1	0.2	0.1	0.6	1.1	0.6	3.0	1.4	1.2	0.3	0.3

Table 10. Percent of lenses in the glasses or contact lenses of the population age 55-74 years, by the spherical and cylindrical power of the lens: United States, 1971-1972

Spherical power of lens (in diopters)	All lenses	Cylindrical power (in diopters)												
		Minus									Plus			
		5.1 D or more	4.1-5.0 D	3.1-4.0 D	2.1-3.0 D	1.6-2.0 D	1.1-1.5 D	0.6-1.0 D	0.1-0.5 D	0.0 D	0.1-0.5 D	0.6-1.0 D	1.1-2.0 D	2.1 D or more
All lenses.....	100.0	0.3	0.2	0.1	1.3	0.9	2.8	8.2	13.2	33.5	17.5	11.8	8.0	2.2
<u>Minus</u>														
5.1 D or more	0.8	0.0	-	-	0.0	-	0.0	0.0	0.1	0.3	0.0	0.3	0.0	0.1
4.1-5.0 D.....	0.7	-	-	-	-	-	-	0.1	0.1	0.0	0.0	0.1	0.1	0.3
3.1-4.0 D.....	1.7	-	-	-	0.0	-	-	0.1	0.2	0.2	0.2	0.5	0.5	0.0
2.1-3.0 D.....	3.2	-	-	-	-	-	0.1	0.4	0.1	1.2	0.3	0.8	0.1	0.2
1.6-2.0 D.....	1.5	-	-	0.0	0.1	0.0	0.0	0.1	0.0	0.2	0.1	0.2	0.3	0.5
1.1-1.5 D.....	2.2	-	-	-	0.2	-	-	0.1	0.2	0.5	0.4	0.2	0.6	0.0
0.6-1.0 D.....	2.8	-	-	-	0.1	0.0	0.1	0.1	0.6	0.4	0.4	0.5	0.5	0.1
0.1-0.5 D.....	4.4	-	-	-	-	0.1	0.3	0.4	0.6	1.0	1.0	0.4	0.4	0.2
0.0 D.....	5.8	-	-	-	0.2	0.2	0.2	0.3	0.4	2.6	0.9	0.5	0.5	0.0
<u>Plus</u>														
0.1-0.5 D.....	9.5	-	-	0.1	0.0	0.0	0.4	0.3	1.0	3.0	1.6	1.6	1.4	0.1
0.6-1.0 D.....	16.1	-	-	0.0	0.0	0.1	0.2	0.7	2.4	5.0	4.9	1.7	0.9	0.2
1.1-2.0 D.....	27.4	0.2	0.0	-	0.1	0.1	0.4	2.3	4.2	10.7	5.0	3.1	1.1	0.2
2.1 D or more	23.9	0.1	0.2	0.0	0.6	0.4	1.1	3.3	3.3	8.4	2.7	1.9	1.6	0.3

Table 11. Percent of lenses in the glasses or contact lenses of the population age 4-74 years, by sex and the power of the sphere or cylinder and by age and sex for negative and positive corrections: United States, 1971-72

Power of lens ¹ (in diopters) and age	Sphere				Cylinder				Sphere				Cylinder			
	Right eye		Left eye		Right eye		Left eye		Right eye		Left eye		Right eye		Left eye	
	Males	Fe- males	Males	Fe- males	Males	Fe- males	Males	Fe- males	Males	Fe- males	Males	Fe- males	Males	Fe- males	Males	Fe- males
POWER	Percent of lenses measured								Standard error							
Minus																
5.1 D or more.....	3.5	3.6	2.9	3.3	-	0.3	0.2	0.0	0.87	0.65	0.87	0.57	-	0.23	0.17	0.03
4.1-5.0 D.....	2.6	2.7	2.9	2.7	0.6	0.1	0.2	0.1	0.43	0.58	0.62	0.54	0.36	0.13	0.24	0.09
3.1-4.0 D.....	7.2	5.3	6.6	5.2	0.6	0.2	0.6	0.0	0.96	0.80	1.13	0.63	0.31	0.11	0.36	0.04
2.1-3.0 D.....	7.6	7.5	8.0	7.1	1.4	1.8	0.7	1.3	1.17	0.89	0.90	0.73	0.57	0.61	0.33	0.53
1.6-2.0 D.....	4.4	5.3	4.6	5.4	0.6	1.0	1.0	1.3	0.66	0.75	0.80	0.90	0.17	0.34	0.29	0.30
1.1-1.5 D.....	8.7	6.5	9.2	6.6	2.9	2.8	2.6	2.7	1.30	0.95	1.19	0.74	0.65	0.49	0.70	0.44
0.6-1.0 D.....	9.5	7.8	9.0	7.3	6.8	8.3	7.4	6.6	1.02	0.77	0.99	0.96	1.49	1.43	1.15	1.19
0.1-0.5 D.....	6.4	6.8	7.3	8.0	15.3	13.0	12.8	13.1	1.40	0.84	1.10	0.92	2.15	1.98	1.75	1.72
0.0 D.....	6.0	6.0	6.4	5.1	37.2	36.7	37.7	38.1	0.81	0.79	0.98	0.80	2.30	1.82	2.61	2.03
Plus																
0.1-0.5 D.....	8.7	8.3	7.7	8.9	14.5	16.9	17.4	16.6	0.61	0.82	1.34	0.89	2.22	2.33	3.24	2.39
0.6-1.0 D.....	11.9	10.5	9.8	10.4	12.9	10.0	10.9	10.5	1.27	0.88	1.35	1.09	2.43	1.22	1.80	1.45
1.1-2.0 D.....	13.2	13.9	14.6	14.6	4.8	6.4	5.5	6.5	1.36	1.10	1.54	0.97	0.97	1.00	1.03	1.08
2.1-3.0 D.....	5.5	9.2	5.0	8.4	1.4	1.5	1.9	1.8	0.65	1.03	0.90	0.82	0.35	0.43	0.40	0.33
3.1-4.0 D.....	2.2	3.2	2.7	3.7	0.4	0.7	0.3	0.6	0.74	0.82	0.72	0.71	0.25	0.32	0.18	0.22
4.1-5.0 D.....	1.3	1.3	1.2	1.0	0.5	0.2	0.4	0.1	0.48	0.37	0.47	0.33	0.26	0.16	0.26	0.10
5.1 D or more.....	1.5	2.1	2.0	2.4	0.0	0.0	0.3	0.5	0.50	0.37	0.58	0.42	0.02	0.03	0.31	0.31
CORRECTION																
4-5 years																
Minus.....	*45.2	*11.0	*56.8	*5.6	*-	*49.4	*-	*-	28.33	44.95	23.56	30.04	-	32.87	-	-
Plus.....	*54.8	*83.5	*40.6	*88.9	*56.8	*45.1	*56.8	*94.5	28.33	42.01	21.18	27.18	23.56	37.01	23.56	4.74
6-11 years																
Minus.....	51.3	48.5	50.2	51.1	*14.3	*24.1	*16.5	*23.5	11.40	7.29	11.28	7.80	6.67	7.64	7.31	7.30
Plus.....	*39.0	35.0	43.2	43.0	*22.9	*37.2	*28.7	*41.1	9.95	7.73	10.19	7.84	8.19	11.51	9.78	11.44
12-24 years																
Minus.....	86.4	85.3	88.1	84.4	30.2	22.0	30.6	23.1	3.27	2.69	3.03	3.49	6.12	2.97	4.80	3.40
Plus.....	*11.9	13.3	*10.4	13.6	27.6	33.5	31.1	30.3	3.29	2.71	3.18	2.87	4.39	5.51	5.71	4.61
25-44 years																
Minus.....	71.6	71.5	72.1	72.7	33.9	30.2	24.0	27.1	4.65	2.75	5.20	2.28	6.88	4.09	3.35	4.29
Plus.....	25.8	23.7	23.4	23.2	31.0	39.1	35.8	39.8	5.11	2.69	5.53	1.97	7.13	4.52	7.22	5.38
45-64 years																
Minus.....	32.2	25.7	33.1	24.9	25.8	28.3	24.0	23.8	3.64	2.52	3.62	2.41	3.66	3.86	3.49	3.39
Plus.....	58.9	67.0	58.2	68.0	38.0	32.2	39.6	35.7	3.75	2.45	3.87	2.60	4.28	3.76	4.55	3.60
65-74 years																
Minus.....	14.4	14.5	15.9	14.9	28.7	28.3	29.6	29.0	2.80	2.38	2.54	1.77	4.58	4.43	4.69	4.79
Plus.....	79.0	80.9	78.1	81.2	41.3	42.9	39.0	41.1	3.46	2.53	3.37	1.82	5.36	5.19	6.02	5.13

¹Algebraic sum of spherical and cylindrical power of lens.

Table 12. Percent distribution of lenses in the glasses or contact lenses of the population age 4-74 years, by the axis deviation of the lens for each eye and by age, with selected standard errors: United States, 1971-1972

Axis deviation in lens (in degrees)	Age in years										Right eye	Left eye	Right eye	Left eye
	4-74	4-5	6-11	12-17	18-24	25-34	35-44	45-54	55-64	65-74				
Total tested	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...	...
None ¹	37.4	29.7	45.7	43.0	44.2	34.3	34.2	40.2	36.5	30.2	36.8	37.8	1.50	1.98
1°-45°.....	9.6	7.0	4.8	6.0	7.6	8.0	13.4	10.8	8.8	12.1	11.0	8.3	0.75	0.82
46°-90°.....	21.9	42.7	23.0	20.9	20.0	28.6	19.6	19.4	21.9	23.0	19.4	24.4	0.91	1.36
91°-135°.....	12.0	18.6	9.1	13.3	11.4	12.4	12.2	10.4	13.4	12.2	13.9	10.2	1.06	1.18
136°-180°.....	19.1	2.0	17.4	16.8	16.8	16.7	20.6	19.2	19.4	22.5	18.9	19.3	1.13	1.24

¹The category "None" includes population with plano cylinder.

Table 13. Percent distribution of lenses in the glasses or contact lenses of the population age 4-74 years, by the spherical equivalence of the lens for each eye and by age, with selected standard errors: United States, 1971-1972

Spherical equivalency ¹ of lens (in diopters)	Age in years										Right eye	Left eye	Right eye	Left eye
	4-74	4-5	6-11	12-17	18-24	25-34	35-44	45-54	55-64	65-74				
Total tested	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...	...
Minus														
10.1 D or more.....	0.2	*-	0.2	0.8	0.8	0.4	-	-	-	0.1	0.2	0.1	0.14	0.09
7.6-10.0 D.....	0.4	*0.8	0.2	1.1	2.1	0.8	0.4	-	-	0.1	0.5	0.4	0.19	0.16
5.1-7.5 D.....	2.7	*14.8	0.6	5.1	5.0	5.0	4.2	2.4	0.6	0.8	2.7	2.7	0.46	0.46
4.1-5.0 D.....	2.7	*-	1.3	5.2	8.0	4.0	3.8	1.8	0.4	0.6	2.8	2.6	0.30	0.20
3.1-4.0 D.....	5.8	*-	2.9	15.0	14.7	10.0	6.2	3.6	1.4	1.2	5.9	5.7	0.44	0.51
2.1-3.0 D.....	7.4	*-	8.7	18.2	14.9	11.8	7.0	3.5	4.4	2.6	7.3	7.5	0.66	0.52
1.6-2.0 D.....	4.7	*-	9.2	11.1	9.0	6.6	5.3	3.8	1.2	1.4	4.6	4.8	0.52	0.55
1.1-1.5 D.....	7.9	*-	9.0	13.0	10.6	15.3	11.5	7.2	3.6	1.8	8.3	7.5	0.88	0.77
0.6-1.0 D.....	8.8	*-	8.6	11.2	12.0	14.7	16.5	8.5	3.1	2.7	9.0	8.5	0.68	0.53
0.1-0.5 D.....	7.6	*14.6	10.4	6.4	7.7	9.0	11.7	9.2	5.1	4.4	7.7	7.5	0.57	0.58
0.0 D.....	3.4	*3.8	3.4	2.2	2.4	2.9	3.7	5.1	3.6	2.8	3.1	3.8	0.49	0.37
Plus														
0.1-0.5 D.....	7.7	*10.7	10.3	2.4	3.2	5.0	7.9	12.8	8.9	6.6	7.8	7.6	0.57	0.58
0.6-1.0 D.....	11.0	*16.2	10.8	1.4	1.4	5.6	7.4	15.5	17.5	13.6	10.8	11.0	0.90	1.04
1.1-1.5 D.....	8.8	*12.4	4.2	1.0	2.7	1.2	3.7	10.2	16.4	15.2	8.7	8.8	1.02	0.52
1.6-2.0 D.....	6.9	*7.8	3.6	1.4	0.4	1.2	3.5	5.0	15.6	12.8	6.8	7.0	0.66	0.64
2.1-3.0 D.....	7.6	*14.1	6.0	1.1	1.8	2.2	4.2	6.6	10.8	19.3	7.6	7.7	0.68	0.49
3.1-4.0 D.....	3.0	*-	6.6	2.1	0.9	1.0	1.9	2.0	3.8	6.4	3.0	3.0	0.51	0.49
4.1-5.0 D.....	1.2	*1.0	1.4	0.3	1.0	0.7	0.8	1.0	1.0	3.0	1.1	1.4	0.25	0.33
5.1 D or more.....	2.2	*3.8	2.6	1.0	1.4	2.6	0.3	1.8	2.6	4.6	2.1	2.4	0.31	0.41

¹Algebraic sum of spherical and one-half of cylindrical power in lens.

Table 14. Percent distribution of lenses in the glasses or contact lenses of the population age 4-74 years, by the power of the lens for each eye and by age, with selected standard errors: United States, 1971-1972

Power ¹ of lens (in diopters)	Age in years										Right eye	Left eye	Right eye	Left eye
	4-74	4-5	6-11	12-17	18-24	25-34	35-44	45-54	55-64	65-74				
	Percent distribution of lenses measured												Standard error	
Total tested	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...	...
Minus														
10.1 D or more.....	0.2	*1.0	0.4	0.8	0.6	0.3	0.2	0.0	-	0.1	0.3	0.1	0.14	0.09
7.6-10.0 D.....	0.6	*0.8	-	1.1	2.8	1.0	0.5	-	-	0.1	0.6	0.5	0.21	0.18
5.1-7.5 D.....	2.6	*13.9	0.3	5.2	4.7	4.8	4.4	1.6	0.7	0.8	2.9	2.2	0.46	0.44
4.1-5.0 D.....	2.6	*	0.8	6.0	5.8	4.6	2.8	2.5	0.6	0.6	2.6	2.7	0.31	0.32
3.1-4.0 D.....	5.5	*	3.8	13.9	14.5	8.7	6.4	3.6	1.2	1.0	5.3	5.7	0.62	0.66
2.1-3.0 D.....	7.0	*	7.7	17.8	15.7	11.2	6.0	3.2	4.7	1.5	7.3	6.8	0.67	0.59
1.6-2.0 D.....	4.9	*	4.4	11.3	6.8	7.6	6.0	4.9	1.4	2.1	4.7	5.1	0.57	0.47
1.1-1.5 D.....	7.4	*	11.0	11.5	9.9	15.9	9.8	6.1	3.0	2.0	7.5	7.2	0.84	0.76
0.6-1.0 D.....	8.6	*	9.6	12.1	13.9	13.2	14.7	8.1	3.1	3.0	9.0	8.1	0.75	0.74
0.1-0.5 D.....	6.8	*6.8	13.2	5.4	8.3	8.4	10.2	8.4	3.4	3.9	7.0	6.7	0.50	0.58
0.0 D.....	5.4	*9.6	4.2	3.2	3.6	3.6	7.2	8.8	5.0	4.3	5.1	5.7	0.59	0.49
Plus														
0.1-0.5 D.....	8.0	*10.7	5.9	3.4	4.6	4.4	9.4	11.3	10.4	7.1	8.0	7.9	0.55	0.61
0.6-1.0 D.....	10.0	*21.4	13.0	0.9	1.3	6.2	8.0	13.2	14.6	12.8	9.9	10.0	0.84	0.95
1.1-1.5 D.....	8.8	*	5.4	1.8	2.8	1.7	4.4	9.9	16.5	14.8	9.0	8.8	0.98	0.78
1.6-2.0 D.....	6.9	*4.6	2.5	1.0	0.2	0.4	2.8	7.2	14.2	13.5	5.7	8.1	0.49	0.86
2.1-3.0 D.....	7.6	*19.4	6.5	2.2	1.1	2.8	4.0	5.0	13.2	17.2	8.3	7.0	0.94	0.68
3.1-5.0 D.....	4.6	*7.0	8.5	1.1	2.4	1.6	2.6	4.4	5.2	10.2	4.4	4.8	0.58	0.62
5.1 D or more.....	2.5	*4.8	2.8	1.3	1.0	3.6	0.6	1.8	2.8	5.0	2.4	2.6	0.31	0.39

¹Algebraic sum of spherical and cylindrical power of lens.

Table 15. Percent distribution of population age 4-74 years, by monocular visual acuity on the pinhole test for those with less than 20/20 usual visual acuity at each level of usual visual acuity: United States, 1971-1972

Usual visual acuity	Total	Pinhole acuity											Less than 20/400
		20/20	20/25	20/30	20/40	20/50	20/60	20/70	20/80	20/100	20/200	20/400	
20/25 or less	100.0	16.0	48.5	20.2	7.6	3.2	1.4	0.6	0.4	0.2	0.4	0.7	0.8
20/25.....	100.0	23.1	73.6	2.1	0.6	0.1	0.3	0.0	-	-	0.0	-	0.2
20/30.....	100.0	16.0	31.7	50.5	1.1	0.1	0.1	0.0	-	-	0.0	-	0.3
20/40.....	100.0	9.3	37.8	23.4	27.9	0.4	0.2	0.4	-	-	-	0.2	0.4
20/50.....	100.0	7.7	31.7	21.0	17.2	22.4	-	-	0.0	-	-	-	-
20/60.....	100.0	7.5	23.3	21.8	14.0	14.0	16.6	1.9	0.5	0.2	-	-	0.2
20/70.....	100.0	4.4	21.9	15.4	21.1	7.5	17.2	11.9	0.3	0.3	-	-	-
20/80.....	100.0	0.5	18.6	10.2	16.9	19.6	11.8	3.2	19.2	-	-	-	-
20/100.....	100.0	1.7	26.9	16.3	14.5	15.8	2.4	6.4	7.4	8.6	-	-	-
20/200.....	100.0	6.4	19.9	22.1	10.6	11.2	2.6	1.8	4.0	3.4	16.4	1.6	-
20/400.....	100.0	2.2	0.6	2.4	10.3	16.3	4.4	1.8	0.2	4.7	5.0	51.1	1.0
Less than 20/400.....	100.0	-	2.2	-	0.6	3.4	2.6	-	0.9	0.2	3.4	12.8	73.9

Table 16. Percent distribution of population age 4-24 years, by monocular visual acuity on the pinhole test for those with less than 20/20 usual visual acuity at each level of usual visual acuity: United States, 1971-1972

Usual visual acuity	Total	Pinhole acuity											
		20/20	20/25	20/30	20/40	20/50	20/60	20/70	20/80	20/100	20/200	20/400	Less than 20/400
		Percent distribution											
20/25 or less	100.0	18.5	44.5	24.0	6.1	2.7	1.6	0.5	0.8	0.2	0.2	0.4	0.5
20/25	100.0	27.6	70.5	0.4	0.0	0.0	1.1	0.0	-	-	0.0	-	0.4
20/30	100.0	17.2	23.0	58.6	0.6	-	0.1	0.0	-	-	-	0.3	0.2
20/40	100.0	14.2	33.4	23.6	28.8	-	-	-	-	-	-	-	-
20/50	100.0	8.4	41.7	18.4	11.7	19.8	-	-	-	-	-	-	-
20/60	100.0	2.5	41.2	21.0	7.0	14.1	14.2	-	-	-	-	-	-
20/70	100.0	-	25.8	25.0	7.2	-	22.4	19.6	-	-	-	-	-
20/80	100.0	1.0	26.0	1.6	5.2	24.8	6.4	-	35.0	-	-	-	-
20/100	100.0	-	31.7	20.8	14.0	9.1	1.6	5.2	6.6	11.0	-	-	-
20/200	100.0	9.5	23.6	27.7	12.8	12.8	3.0	2.6	4.8	0.4	2.8	-	-
20/400	100.0	-	-	2.4	38.2	-	2.6	5.8	-	1.2	1.6	48.2	-
Less than 20/400	100.0	-	-	-	-	-	-	-	-	-	-	22.4	77.6

Table 17. Percent distribution of population age 25-44 years, by monocular visual acuity on the pinhole test for those with less than 20/20 usual visual acuity at each level of usual visual acuity: United States, 1971-1972

Usual visual acuity	Total	Pinhole acuity											
		20/20	20/25	20/30	20/40	20/50	20/60	20/70	20/80	20/100	20/200	20/400	Less than 20/400
		Percent distribution											
20/25 or less	100.0	24.0	48.8	17.5	4.5	1.6	1.0	0.8	0.0	-	0.6	0.8	0.4
20/25	100.0	34.0	62.9	2.9	0.2	0.0	-	-	-	-	-	-	-
20/30	100.0	17.2	35.8	46.3	0.7	-	-	-	-	-	-	-	-
20/40	100.0	12.6	38.7	27.5	20.8	0.4	-	-	-	-	-	-	-
20/50	100.0	11.0	28.9	22.7	16.0	21.0	-	-	0.4	-	-	-	-
20/60	100.0	4.8	22.1	15.3	23.9	1.3	23.9	8.7	-	-	-	-	-
20/70	100.0	-	50.2	18.4	-	2.8	15.0	13.6	-	-	-	-	-
20/80	100.0	-	18.0	57.6	14.0	-	-	10.4	-	-	-	-	-
20/100	100.0	-	5.4	21.0	20.5	32.1	4.2	16.8	-	-	-	-	-
20/200	100.0	16.0	7.8	10.8	19.7	-	-	-	-	-	45.7	-	-
20/400	100.0	-	-	16.8	12.4	15.8	-	-	0.5	-	2.6	51.9	-
Less than 20/400	100.0	-	-	-	-	-	-	-	-	-	3.5	-	96.5

Table 18. Percent distribution of population age 45-74 years, by monocular visual acuity on the pinhole test for those with less than 20/20 usual visual acuity at each level of usual visual acuity: United States, 1971-1972

Usual visual acuity	Total	Pinhole acuity											Less than 20/400
		20/20	20/25	20/30	20/40	20/50	20/60	20/70	20/80	20/100	20/200	20/400	
Percent distribution													
20/25 or less	100.0	11.1	50.7	18.7	9.7	4.2	1.4	0.6	0.4	0.4	0.6	1.0	1.2
20/25	100.0	14.4	81.5	2.8	1.0	0.2	-	-	-	-	0.0	-	0.1
20/30	100.0	14.5	36.9	45.9	1.6	0.2	0.2	0.0	-	-	0.1	0.1	0.5
20/40	100.0	6.1	40.0	22.4	29.4	0.5	0.2	0.6	-	-	-	0.2	0.6
20/50	100.0	6.6	27.4	21.7	19.9	24.4	-	-	-	-	-	-	-
20/60	100.0	10.8	15.1	24.4	14.5	17.4	15.4	0.9	0.9	0.4	-	-	0.2
20/70	100.0	6.8	14.0	13.0	31.6	10.8	12.6	10.1	0.6	0.5	-	-	-
20/80	100.0	0.3	10.2	12.0	23.6	19.6	19.0	1.7	13.6	-	-	-	-
20/100	100.0	4.8	30.0	8.4	14.0	17.4	2.6	2.0	12.0	8.8	-	-	-
20/200	100.0	0.6	18.2	18.2	6.1	11.8	3.0	1.3	3.7	8.2	24.9	4.0	-
20/400	100.0	3.3	0.8	2.6	6.4	17.8	5.6	1.6	-	6.8	6.3	47.2	1.6
Less than 20/400	100.0	-	2.4	-	0.6	4.8	3.5	-	1.0	0.2	3.8	15.1	68.6

Table 19. Percent of population age 4-74 years with usual distance vision below 20/40 reaching the 20/20 level in spherical refraction or retinoscopy, by the strength of the lens required for each eye and by age and sex, with standard errors for totals: United States, 1971-1972

Eye tested, age, and sex	Percent of population with usual distance vision less than 20/40	Percent reaching 20/20 in spherical refraction or retinoscopy	Maximum strength of added lens used						
			-3.1 D or less	-1.6 D to -3.0 D	-0.1 D to -1.5 D	0.0 D	0.1 D to 1.5 D	1.6 D to 3.0 D	3.1 D or more
<u>Right eye</u>			Percent reaching 20/20 with added lens						
Both sexes, 4-74 years	6.6	22.3	2.4	44.1	32.5	5.5	17.4	10.5	2.5
4-24 years	4.5	37.3	*9.7	40.8	47.8	*.	20.6	*.	*.
25-54 years	4.2	27.5	*.	71.1	26.2	*.	18.9	*23.4	*6.5
55-74 years	17.2	8.8	*.	6.0	4.2	*9.4	15.6	7.7	-
Males, 4-74 years	6.6	26.9	*.	55.6	38.2	*.	22.4	5.7	*.
Females, 4-74 years	6.5	18.3	*7.2	32.5	28.1	*8.0	12.1	12.0	4.6
			Standard error						
Both sexes, 4-74 years	0.48	3.42	2.58	11.67	5.24	5.64	5.20	6.69	2.78
Males, 4-74 years	0.63	7.10	-	11.96	13.68	-	9.25	5.32	-
Females, 4-74 years	0.58	3.37	8.95	16.50	5.53	8.20	6.95	8.77	5.47
			Percent of tests with added lens						
Both sexes, 4-74 years	--	100.0	4.6	15.1	25.9	4.1	30.4	12.5	7.4
<u>Left eye</u>			Percent reaching 20/20 with added lens						
Both sexes, 4-74 years	6.0	20.7	5.9	29.0	26.5	*27.5	13.3	15.1	16.7
4-24 years	4.4	27.8	*13.9	21.9	40.6	*.	1.2	*.	*.
25-54 years	4.1	19.1	*5.9	*38.1	16.9	*.	5.2	*40.2	*18.9
55-74 years	14.0	14.7	*.	40.9	0.6	*35.6	19.9	5.3	*8.2
Males, 4-74 years	5.3	25.8	*5.3	33.3	36.9	*.	16.6	20.2	*.
Females, 4-74 years	6.6	16.9	*6.5	24.1	19.9	*45.4	11.4	7.2	*25.5
			Standard error						
Both sexes, 4-74 years	0.34	2.41	9.94	9.52	4.69	24.10	4.30	8.39	14.99
Males, 4-74 years	0.44	4.19	13.87	14.33	12.37	-	8.64	16.01	-
Females, 4-74 years	0.45	3.27	21.53	8.75	5.76	38.36	4.65	5.52	24.93
			Percent of tests with added lens						
Both sexes, 4-74 years	--	100.0	4.1	16.6	35.0	1.0	29.9	9.6	3.8

Table 20. Percent distribution of population age 4-74 years with usual distance vision less than 20/40, by maximum monocular visual acuity in spherical refraction or retinoscopy for those at each level of usual visual acuity and by age: United States, 1971-1972

Age and usual visual acuity	Total	Acuity in spherical refraction or retinoscopy (eyes tested)											
		20/20 or better	20/25	20/30	20/40	20/50	20/60	20/70	20/80	20/100	20/200	20/400	Less than 20/400
<u>All ages, 4-74 years</u>		Percent distribution											
20/50 or less	100.0	21.5	22.6	15.6	16.4	7.8	5.6	3.6	0.6	1.2	2.2	2.0	0.9
20/50	100.0	25.0	27.7	17.9	21.8	7.0	0.1	0.3	-	-	0.2	-	-
20/60	100.0	17.6	24.2	16.2	8.6	14.0	19.4	-	-	-	-	-	-
20/70	100.0	24.4	21.2	17.8	15.5	10.2	8.4	2.4	-	-	-	-	0.1
20/80	100.0	6.7	28.8	9.0	30.7	5.3	9.1	10.2	0.2	-	-	-	-
20/100	100.0	18.8	15.8	14.0	17.0	7.6	4.2	14.4	5.0	3.2	-	-	-
20/200	100.0	28.4	17.9	12.9	6.8	1.3	6.8	9.3	0.6	6.7	7.2	2.1	-
20/400	100.0	14.9	3.6	15.2	17.6	10.0	1.1	4.8	1.4	1.1	8.4	21.9	-
Less than 20/400	100.0	1.9	1.8	2.0	4.4	0.8	0.7	-	3.0	3.3	30.8	22.8	28.5
<u>4-24 years</u>													
20/50 or less	100.0	32.8	19.6	21.1	11.2	4.9	2.7	3.3	1.0	1.0	0.8	1.4	0.2
<u>25-54 years</u>													
20/50 or less	100.0	23.3	27.3	10.3	15.4	6.4	6.6	1.2	0.4	0.9	4.0	4.2	-
<u>55-74 years</u>													
20/50 or less	100.0	11.8	21.3	14.3	21.3	11.2	7.3	6.2	0.5	1.5	2.2	1.4	2.0

Table 21. Percent of population age 4-74 years with usual distance vision less than 20/40, by strength of added lens used and maximum visual acuity reached in spherical refraction or retinoscopy for each eye: United States, 1971-1972

Added lens power (in diopters)	Total population with usual distance vision less than 20/40	Acuity in spherical refraction or retinoscopy											
		20/20 or better	20/25	20/30	20/40	20/50	20/60	20/70	20/80	20/100	20/200	20/400	Less than 20/400
<u>Right eye</u>		Percent											
Total	100.0	22.2	24.8	12.8	15.4	8.2	5.4	4.0	1.1	1.3	1.3	2.6	0.9
-3.1 D or less	4.6	0.1	0.8	0.0	2.0	0.5	0.3	0.0	-	0.2	-	0.0	0.7
-1.6 D to -3.0 D	15.1	6.7	2.9	2.4	0.5	1.7	0.1	0.2	0.4	0.1	0.1	-	0.0
-0.1 D to -1.5 D	26.0	8.4	6.9	4.2	3.4	1.3	1.1	0.2	0.1	-	0.4	-	0.0
0.0 D	3.8	0.2	0.1	0.7	0.5	0.9	0.0	0.7	-	0.1	0.0	0.6	-
0.1 D to 1.5 D	30.5	5.3	8.3	3.6	6.0	2.9	1.7	0.5	-	0.7	-	1.5	0.0
1.6 D to 3.0 D	12.6	1.3	3.6	1.6	1.6	0.4	0.6	2.4	0.2	0.1	0.6	-	0.2
3.1 D or more	7.4	0.2	2.2	0.3	1.4	0.5	1.6	0.0	0.4	0.1	0.2	0.5	-
<u>Left eye</u>													
Total	100.0	20.7	20.3	18.5	17.4	7.8	5.9	3.2	0.1	1.1	3.0	1.4	0.6
-3.1 D or less	4.1	0.2	1.0	0.1	0.1	0.3	1.9	0.4	0.0	-	0.0	0.1	-
-1.6 D to -3.0 D	16.6	4.8	6.0	2.9	1.2	0.5	0.1	0.9	-	-	0.2	-	0.0
-0.1 D to -1.5 D	35.0	9.4	6.4	8.7	4.4	2.9	1.1	1.0	-	0.1	0.7	0.2	0.1
0.0 D	1.0	0.3	-	0.2	0.2	0.1	-	-	-	0.2	-	-	-
0.1 D to 1.5 D	29.9	4.0	5.8	4.4	8.7	2.7	2.8	0.6	0.1	-	0.0	0.6	0.2
1.6 D to 3.0 D	9.6	1.4	0.9	2.0	2.1	1.1	-	0.3	0.0	0.8	0.6	0.1	0.3
3.1 D or more	3.8	0.6	0.2	0.2	0.7	0.2	0.0	0.0	-	-	1.5	0.4	-

Table 22. Number and percent of population age 4-74 years with usual distance vision less than 20/40 whose acuity was increased to 20/20 in at least one eye and whose acuity was not increased to 20/20 in either eye, by strength of added lens used in spherical refraction or retinoscopy for maximum visual acuity in each eye: United States, 1971-1972

Left eye: added lens strength (in diopters)	Number in thousands	Percent of population	Right eye: added lens strength (in diopters)								
			Total	-3.1 D or less	-1.6 D to -3.0 D	-0.1 D to -1.5 D	0.0 D	0.1 D to 1.5 D	1.6 D to 3.0 D	3.1 D or more	Not tested ¹
<u>Acuity increased to at least 20/20 in one eye with added lens</u>			Percent								
Total	6,634	3.7	100.0	3.7	9.9	14.7	2.4	19.4	9.4	5.8	34.7
-3.1 D or less	---	---	2.6	0.1	-	-	-	-	-	-	2.5
-1.6 D to -3.0 D	---	---	7.8	-	4.3	0.3	-	-	-	-	3.2
-0.1 D to -1.5 D	---	---	19.1	-	0.6	5.2	-	-	-	-	13.3
0.0 D	---	---	0.2	-	-	-	0.2	-	-	-	0.0
0.1 D to 1.5 D	---	---	13.1	-	-	-	-	2.8	-	-	10.3
1.6 D to 3.0 D	---	---	5.0	-	-	-	-	-	0.6	-	4.4
3.1 D or more	---	---	1.6	-	-	-	-	-	0.4	0.2	1.0
Not tested ¹	---	---	50.6	3.6	5.0	9.2	2.2	16.6	8.4	5.6	-
<u>Less than 20/20 acuity in better eye with added lens</u>			Percent								
Total	2,455	1.4	100.0	2.8	15.2	31.6	4.7	31.6	9.4	4.7	...
-3.1 D or less	---	---	2.5	2.3	0.2	-	-	-	-	-	...
-1.6 D to -3.0 D	---	---	17.7	-	11.7	5.9	-	-	0.1	-	...
-0.1 D to -1.5 D	---	---	30.1	0.5	1.5	24.1	1.8	2.2	-	-	...
0.0 D	---	---	1.5	-	-	-	1.4	0.1	-	-	...
0.1 D to 1.5 D	---	---	34.6	-	0.5	1.6	1.5	28.6	2.3	0.1	...
1.6 D to 3.0 D	---	---	9.0	-	1.3	-	-	0.7	7.0	-	...
3.1 D or more	---	---	4.6	-	-	-	-	-	-	4.6	...

¹The acuity in this eye was 20/20 or better and the trial lens test was not performed.

Table 23. Percent of lenses used in retinoscopy by type of spherical equivalence in added lens for maximum visual acuity among population age 25-74 years and type in present glasses or contact lenses: United States, 1971-1972

Type of spherical equivalence in present glasses	Total	Type of spherical equivalence in lens used on retinoscopy		
		Minus	Zero	Plus
Total	100.0	33.0	2.2	64.8
Minus	36.3	22.3	0.7	13.3
Zero	8.4	1.0	1.1	6.3
Plus	55.3	9.7	0.4	45.2

Table 24. Percent of lenses used in retinoscopy by spherical equivalence in added lens for maximum visual acuity among population age 25-74 years and in present glasses or contact lenses: United States, 1971-1972

Spherical equivalence in present glasses (in diopters)	Total	Spherical equivalence on refraction (in diopters)						
		-3.1 D or less	-1.6 D to -3.0 D	-0.1 D to -1.5 D	0.0 D	0.1 D to 1.5 D	1.6 D to 3.0 D	3.1 D or more
		Percent						
Total.....	100.0	7.1	12.8	13.1	2.2	30.4	18.5	15.9
-3.1 D or less.....	4.9	4.7	-	0.2	-	-	-	-
-1.6 D to -3.0 D.....	6.1	1.9	2.1	0.2	0.7	-	1.2	-
-0.1 D to -1.5 D.....	25.3	0.5	6.9	5.8	-	9.4	2.7	-
0.0 D.....	8.4	-	0.7	0.3	1.1	6.1	-	0.2
0.1 D to 1.5 D.....	25.2	-	0.8	6.6	-	11.8	6.0	-
1.6 D to 3.0 D.....	16.4	-	2.3	-	0.4	3.1	8.0	2.6
3.1 D or more.....	13.7	-	-	-	-	-	0.6	13.1

Table 25. Percent distribution and number of population age 4-74 years by maximum visual acuity levels reached in the better eye with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder shown, by age, sex, and race, with standard errors: United States, 1971-1972

Age, sex, and race ¹	Total	20/10	20/15	20/20	20/25	20/30	20/40	20/50	20/80	20/70	20/80	20/100	20/200	20/400	Less than 20/400
ALL RACES															
Both sexes															
Percent distribution of population															
All ages, 4-74 years....	100.0	0.0	2.4	71.7	13.3	8.0	3.0	0.8	0.4	0.2	0.1	0.0	0.0	0.0	0.1
4-5 years.....	100.0	-	0.8	30.4	7.7	55.9	3.8	0.0	0.6	0.2	0.6	-	-	0.0	-
6-11 years.....	100.0	-	1.0	72.3	12.4	10.0	2.9	0.7	0.4	0.3	-	0.0	-	-	-
12-17 years.....	100.0	-	3.3	80.8	9.6	3.3	2.3	0.5	0.1	0.1	-	0.0	0.0	-	-
18-24 years.....	100.0	-	4.2	84.9	6.0	3.3	0.8	0.2	0.2	0.2	0.1	-	0.1	0.0	-
25-34 years.....	100.0	0.1	3.9	80.8	10.7	3.1	0.9	0.5	0.0	0.0	-	0.0	-	-	-
35-44 years.....	100.0	-	2.7	83.2	10.3	2.8	0.9	0.1	-	-	-	-	-	0.0	-
45-54 years.....	100.0	-	1.1	71.5	15.1	7.5	3.3	0.6	0.7	0.1	0.1	0.0	0.0	-	0.0
55-64 years.....	100.0	-	1.4	56.5	25.1	9.0	5.2	1.1	1.3	-	0.1	0.1	0.1	-	0.2
65-74 years.....	100.0	-	0.8	32.2	29.1	16.3	13.1	4.5	1.4	0.8	0.6	0.1	0.2	0.5	0.4
Male															
All ages, 4-74 years.....	100.0	-	2.8	73.6	12.2	7.5	2.6	0.6	0.5	0.1	0.1	0.0	0.0	0.0	0.0
4-5 years.....	100.0	-	1.0	35.1	7.5	52.1	3.2	0.1	-	-	0.9	-	-	0.1	-
6-11 years.....	100.0	-	1.2	74.4	11.7	8.3	2.4	1.0	0.7	0.3	-	-	-	-	-
12-17 years.....	100.0	-	4.5	83.4	8.2	2.1	1.7	-	-	-	-	0.0	0.1	-	-
18-24 years.....	100.0	-	5.0	84.8	4.9	4.1	0.8	-	0.4	-	-	-	-	-	-
25-34 years.....	100.0	-	4.3	80.2	12.2	2.6	0.6	0.1	-	-	-	-	-	-	-
35-44 years.....	100.0	-	3.2	86.0	8.5	1.6	0.6	0.1	-	-	-	-	-	-	-
45-54 years.....	100.0	-	1.3	75.2	10.5	8.4	3.4	0.6	0.6	0.0	-	-	-	-	-
55-64 years.....	100.0	-	1.1	57.4	26.3	8.0	4.0	1.4	1.7	-	-	-	-	-	0.1
65-74 years.....	100.0	-	0.6	31.8	28.9	17.4	13.9	3.8	2.1	0.3	0.5	0.0	-	0.5	0.2
Female															
All ages, 4-74 years.....	100.0	0.0	2.0	69.8	14.4	8.5	3.4	0.9	0.3	0.2	0.1	0.1	0.1	0.1	0.1
4-5 years.....	100.0	-	0.5	25.5	7.9	59.9	4.3	-	1.2	0.4	0.3	-	-	-	-
6-11 years.....	100.0	-	0.9	70.1	13.1	11.7	3.4	0.4	0.1	0.3	-	0.0	-	-	-
12-17 years.....	100.0	-	2.2	78.1	11.0	4.4	2.9	1.1	0.1	0.2	-	-	-	-	-
18-24 years.....	100.0	-	3.4	84.6	7.2	2.6	0.7	0.5	-	0.4	0.3	-	0.2	0.1	-
25-34 years.....	100.0	0.1	3.5	81.5	9.3	3.6	1.2	0.8	0.0	0.0	-	0.0	-	-	-
35-44 years.....	100.0	-	2.2	80.8	12.0	3.9	1.1	0.0	-	-	-	-	-	0.0	-
45-54 years.....	100.0	-	1.0	67.9	19.4	6.6	3.3	0.6	0.8	0.1	0.2	0.1	0.0	-	0.0
55-64 years.....	100.0	-	1.7	56.7	24.1	9.8	6.3	0.9	1.0	-	0.1	0.2	0.2	-	0.2
65-74 years.....	100.0	-	1.0	32.3	29.2	15.5	12.6	5.1	0.8	1.3	0.6	0.1	0.4	0.6	0.6
Both sexes															
Standard error															
All ages, 4-74 years....	...	0.01	0.51	0.97	0.82	0.47	0.29	0.12	0.11	0.03	0.04	0.01	0.02	0.01	0.02
4-5 years.....	...	-	0.46	3.13	1.65	2.79	1.11	0.03	0.42	0.21	0.37	-	-	0.04	-
6-11 years.....	...	-	0.28	1.82	1.40	0.75	0.52	0.48	0.21	0.04	-	0.02	-	-	-
12-17 years.....	...	-	0.98	1.51	1.24	0.81	0.72	0.28	0.07	0.12	-	0.02	0.04	-	-
18-24 years.....	...	-	1.30	1.46	1.07	0.83	0.30	0.15	0.19	0.14	0.12	-	0.13	0.04	-
25-34 years.....	...	0.07	1.18	1.26	1.00	0.74	0.34	0.21	0.01	0.01	-	0.02	-	-	-
35-44 years.....	...	-	0.73	2.02	1.49	0.79	0.36	0.06	-	-	-	-	-	0.01	-
45-54 years.....	...	-	0.65	2.73	1.93	1.33	0.83	0.29	0.36	0.06	0.06	0.03	0.03	-	0.02
55-64 years.....	...	-	0.69	2.73	2.31	1.48	1.25	0.53	0.77	-	0.06	0.07	-	-	0.06
65-74 years.....	...	-	0.30	1.75	1.46	1.45	1.27	0.96	0.40	0.30	0.30	0.02	0.12	0.17	0.23
Male															
All ages, 4-74 years.....	...	-	0.67	1.13	0.93	0.55	0.32	0.09	0.19	0.03	0.04	0.01	0.01	0.01	0.01
4-5 years.....	...	-	0.71	4.87	1.86	4.37	1.39	0.06	-	-	0.65	-	-	0.08	-
6-11 years.....	...	-	0.38	2.66	1.87	1.26	0.66	0.90	0.40	0.23	-	-	-	-	-
12-17 years.....	...	-	1.49	2.21	1.29	0.89	0.53	-	-	-	-	0.05	0.06	-	-
18-24 years.....	...	-	1.79	2.23	1.31	1.34	0.52	-	0.41	-	-	-	-	-	-
25-34 years.....	...	-	1.78	1.52	1.96	0.91	0.45	0.11	-	-	-	-	-	-	-
35-44 years.....	...	-	0.97	2.01	1.74	0.80	0.47	0.09	-	-	-	-	-	-	-
45-54 years.....	...	-	0.81	3.18	2.43	1.96	1.18	0.58	0.44	0.06	-	-	-	-	-
55-64 years.....	...	-	1.02	3.69	3.49	2.38	1.17	0.90	1.19	-	-	-	-	-	0.06
65-74 years.....	...	-	0.44	2.20	2.02	1.78	1.47	1.12	0.52	0.17	0.48	0.01	-	0.22	0.15

See footnotes at end of table.

Table 25. Percent distribution and number of population age 4-74 years by maximum visual acuity levels reached in the better eye with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder shown, by age, sex, and race, with standard errors: United States, 1971-1972—Con.

Age, sex, and race ¹	Total	20/10	20/15	20/20	20/25	20/30	20/40	20/50	20/60	20/70	20/80	20/100	20/200	20/400	Less than 20/400
ALL RACES—Con.															
Standard error															
Female															
All ages, 4-74 years .....	...	0.02	0.39	1.23	0.72	0.74	0.42	0.19	0.09	0.07	0.06	0.03	0.04	0.02	0.04
4-5 years .....	...	-	0.49	4.60	2.01	4.44	1.39	-	0.86	0.43	0.31	-	-	-	-
6-11 years .....	...	-	0.43	1.95	1.62	1.80	0.91	0.32	0.07	0.29	-	0.03	-	-	-
12-17 years .....	...	-	0.79	2.77	2.07	1.06	1.25	0.56	0.13	0.23	-	-	-	-	-
18-24 years .....	...	-	1.10	1.70	1.28	0.82	0.34	0.29	-	0.26	0.22	-	0.26	0.08	-
25-34 years .....	...	0.14	1.08	1.68	0.69	1.04	0.50	0.39	0.02	0.02	-	0.04	-	-	-
35-44 years .....	...	-	0.65	2.67	1.92	1.26	0.53	0.04	-	-	-	-	-	0.02	-
45-54 years .....	...	-	0.51	3.15	2.31	1.72	1.21	0.28	0.57	0.10	0.12	0.06	0.05	-	0.04
55-64 years .....	...	-	0.85	3.27	3.30	1.88	1.88	0.63	0.68	-	0.12	0.13	-	-	0.22
65-74 years .....	...	-	0.24	2.00	2.22	1.79	1.53	1.06	0.42	0.52	0.37	0.04	0.22	0.26	0.38
Both sexes															
Number in thousands ²															
All ages, 4-74 years	182,240	26	4,360	130,498	24,227	14,670	5,517	1,398	793	284	182	52	65	76	94
4-5 years	6,775	-	54	2,060	522	3,787	257	2	41	14	41	-	-	3	-
6-11 years	23,652	-	237	17,100	2,933	2,365	686	166	96	71	-	4	-	-	-
12-17 years	24,599	-	812	19,851	2,361	812	566	123	25	25	-	5	10	9	-
18-24 years	24,236	-	1,018	20,552	1,454	800	194	48	48	48	24	-	24	9	-
25-34 years	26,035	26	1,015	21,036	2,786	807	234	130	2	3	-	5	-	-	-
35-44 years	22,354	-	604	18,621	2,302	626	201	22	-	-	-	-	-	2	-
45-54 years	23,307	-	256	16,641	3,519	1,748	769	140	163	23	23	7	6	-	6
55-64 years	18,830	-	264	10,639	4,726	1,695	979	207	245	-	19	19	-	-	38
65-74 years	12,453	-	100	3,998	3,624	2,030	1,631	560	174	100	75	12	25	62	50
Male															
All ages, 4-74 years	88,162	-	2,473	64,832	10,759	6,615	2,328	544	461	57	58	6	12	30	20
4-5 years	3,452	-	35	1,215	259	1,798	110	3	-	-	31	-	-	3	-
6-11 years	12,045	-	145	8,974	1,409	1,000	289	120	84	36	-	-	-	-	-
12-17 years	12,488	-	562	10,415	1,024	262	212	-	-	-	5	12	-	-	-
18-24 years	11,467	-	573	9,736	562	470	92	-	46	-	-	-	-	-	-
25-34 years	12,550	-	540	10,052	1,531	326	75	13	-	-	-	-	-	-	-
35-44 years	10,740	-	344	9,247	913	172	64	11	-	-	-	-	-	-	-
45-54 years	11,165	-	145	8,396	1,172	938	380	67	67	5	-	-	-	-	-
55-64 years	8,845	-	97	5,077	2,326	708	354	124	150	-	-	-	-	-	9
65-74 years	5,409	-	32	1,720	1,563	941	752	206	114	16	27	1	-	27	11
Female															
All ages, 4-74 years	94,078	13	1,910	65,661	13,501	8,019	3,186	878	319	230	124	48	60	50	68
4-5 years	3,323	-	17	847	263	1,987	143	-	40	13	10	-	-	-	-
6-11 years	11,607	-	104	8,136	1,520	1,358	395	46	12	35	-	4	-	-	-
12-17 years	12,111	-	266	9,446	1,332	533	351	133	12	24	-	-	-	-	-
18-24 years	12,768	-	434	10,815	919	332	89	64	-	51	38	-	26	13	-
25-34 years	13,485	13	472	10,964	1,254	485	162	108	2	3	-	5	-	-	-
35-44 years	11,614	-	256	9,372	1,394	453	128	5	-	-	-	-	-	2	-
45-54 years	12,142	-	121	8,245	2,356	801	401	73	97	12	24	12	6	-	6
55-64 years	9,984	-	170	5,561	2,406	978	629	90	100	-	10	20	-	-	20
65-74 years	7,044	-	70	2,275	2,057	1,092	888	359	56	92	42	7	28	35	42
WHITE															
Percent distribution of population															
All ages, 4-74 years	100.0	0.0	2.3	72.3	13.1	7.9	2.9	0.8	0.4	0.2	0.1	0.0	0.0	0.0	0.0
4-5 years	100.0	-	0.9	33.0	8.0	53.9	3.2	-	0.4	0.2	0.4	-	-	0.0	-
6-11 years	100.0	-	0.9	75.5	10.7	9.3	2.2	0.7	0.4	0.3	-	-	-	-	-
12-17 years	100.0	-	3.4	31.8	8.5	3.1	2.4	0.6	0.1	0.1	-	-	0.0	-	-
18-24 years	100.0	-	4.0	85.5	6.1	3.3	0.5	0.1	0.2	0.2	0.0	-	-	0.0	-
25-34 years	100.0	0.1	3.8	81.7	9.9	3.0	1.0	0.5	-	-	-	0.0	-	-	-
35-44 years	100.0	-	2.5	84.4	9.8	2.6	0.7	0.0	-	-	-	-	-	-	-
45-54 years	100.0	-	1.3	72.0	15.3	7.3	2.7	0.5	0.8	0.1	0.0	0.0	-	-	-
55-64 years	100.0	-	1.4	56.8	25.7	8.3	5.3	1.2	1.2	-	-	-	-	-	0.1
65-74 years	100.0	-	0.9	33.4	30.0	15.5	12.7	4.2	1.1	0.7	0.6	-	0.2	0.5	0.2

See footnotes at end of table.

Table 25. Percent distribution and number of population age 4-74 years by maximum visual acuity levels reached in the better eye with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder shown, by age, sex, and race, with standard errors: United States, 1971-1972-Con.

Age, sex, and race ¹	Total	20/10	20/15	20/20	20/25	20/30	20/40	20/50	20/60	20/70	20/80	20/100	20/200	20/400	Less than 20/400
WHITE-Con.															
Percent distribution of population															
Male															
All ages, 4-74 years	100.0	-	2.7	74.3	12.0	7.3	2.4	0.6	0.5	0.1	0.1	-	0.0	0.0	0.0
4-5 years	100.0	-	1.2	36.7	7.8	51.4	2.4	-	-	-	0.4	-	-	0.1	-
6-11 years	100.0	-	0.8	76.0	10.9	7.8	2.5	1.0	0.7	0.3	-	-	-	-	-
12-17 years	100.0	-	4.8	84.3	7.4	1.8	1.6	-	-	-	-	-	0.1	-	-
18-24 years	100.0	-	4.6	85.2	4.9	4.2	0.7	-	0.4	-	-	-	-	-	-
25-34 years	100.0	-	4.7	81.8	10.6	2.2	0.7	0.0	-	-	-	-	-	-	-
35-44 years	100.0	-	2.9	86.7	8.3	1.5	0.5	0.1	-	-	-	-	-	-	-
45-54 years	100.0	-	1.5	77.0	10.4	8.0	1.9	0.6	0.6	-	-	-	-	-	-
55-64 years	100.0	-	1.1	57.3	27.2	7.0	4.2	1.4	1.8	-	-	-	-	-	-
65-74 years	100.0	-	0.6	33.0	30.3	16.6	13.0	3.5	1.6	0.2	0.6	-	-	0.5	0.1
Female															
All ages, 4-74 years	100.0	0.0	1.9	70.5	14.2	8.4	3.3	0.9	0.3	0.2	0.1	0.0	0.1	0.1	0.0
4-5 years	100.0	-	0.6	28.8	8.2	56.6	4.1	-	0.9	0.5	0.3	-	-	-	-
6-11 years	100.0	-	1.0	74.9	10.5	10.8	2.0	0.4	0.1	0.3	-	-	-	-	-
12-17 years	100.0	-	1.9	79.0	9.7	4.5	3.2	1.2	0.2	0.3	-	-	-	-	-
18-24 years	100.0	-	3.4	85.6	7.2	2.4	0.3	0.2	-	0.4	0.1	-	0.3	0.1	-
25-34 years	100.0	0.1	3.0	81.7	9.3	3.7	1.3	0.9	-	-	-	0.0	-	-	-
35-44 years	100.0	-	2.1	81.7	11.4	3.8	1.0	-	-	-	-	-	-	-	-
45-54 years	100.0	-	1.1	67.2	19.9	6.7	3.5	0.4	0.9	0.1	0.1	0.1	-	-	-
55-64 years	100.0	-	1.6	56.4	24.4	9.6	6.2	1.0	0.6	-	-	-	-	-	0.2
65-74 years	100.0	-	1.1	33.4	29.8	14.7	12.5	4.7	0.8	1.1	0.6	-	0.4	0.6	0.3
BLACK															
Percent distribution of population															
Both sexes															
All ages, 4-74 years	100.0	0.0	2.6	64.2	15.4	10.9	4.7	0.9	0.4	0.1	0.4	0.2	0.0	0.0	0.2
4-5 years	100.0	-	-	13.3	6.2	69.5	7.1	0.2	1.7	-	2.0	-	-	-	-
6-11 years	100.0	-	1.9	54.2	22.5	14.1	6.7	0.2	0.3	-	-	0.1	-	-	-
12-17 years	100.0	-	2.2	76.6	15.6	3.2	2.0	0.2	-	-	-	0.2	-	-	-
18-24 years	100.0	-	5.1	82.3	6.0	2.5	2.2	1.1	-	-	0.8	-	-	-	-
25-34 years	100.0	0.1	4.6	74.3	15.8	4.0	0.4	0.6	0.1	0.1	-	-	-	-	-
35-44 years	100.0	-	4.7	73.8	14.7	4.3	2.2	0.2	-	-	-	-	-	0.1	-
45-54 years	100.0	-	-	66.9	13.7	8.5	8.4	1.3	0.1	0.2	0.5	-	0.2	-	0.2
55-64 years	100.0	-	1.7	53.4	21.6	14.2	5.4	0.4	0.4	-	0.9	1.5	-	-	0.5
65-74 years	100.0	-	0.2	19.6	19.8	25.0	18.0	7.6	4.0	1.8	0.5	0.5	0.2	0.3	2.5
Male															
All ages, 4-74 years	100.0	-	3.0	67.1	13.3	9.9	4.9	0.7	0.6	0.1	0.2	0.1	-	0.0	0.1
4-5 years	100.0	-	-	19.8	5.8	59.5	9.7	0.5	-	-	4.7	-	-	-	-
6-11 years	100.0	-	3.1	65.3	16.9	11.5	2.1	0.5	0.6	-	-	-	-	-	-
12-17 years	100.0	-	2.8	81.2	11.3	2.0	2.4	-	-	-	-	0.3	-	-	-
18-24 years	100.0	-	7.8	85.0	4.4	1.2	1.6	-	-	-	-	-	-	-	-
25-34 years	100.0	-	1.4	70.4	21.8	5.6	-	0.8	-	-	-	-	-	-	-
35-44 years	100.0	-	8.3	74.8	11.4	3.2	2.3	-	-	-	-	-	-	-	-
45-54 years	100.0	-	-	60.5	11.9	11.0	15.4	0.0	0.2	0.4	-	-	-	-	-
55-64 years	100.0	-	0.3	63.4	17.1	14.4	1.8	1.0	0.9	-	-	-	-	-	1.1
65-74 years	100.0	-	-	17.3	15.3	26.9	24.0	6.2	7.7	0.5	-	-	-	0.8	1.3
Female															
All ages, 4-74 years	100.0	0.0	2.3	61.5	17.1	11.8	4.6	1.2	0.2	0.2	0.5	0.3	0.1	0.0	0.2
4-5 years	100.0	-	-	8.8	6.4	76.5	5.3	-	2.8	-	0.2	-	-	-	-
6-11 years	100.0	-	0.6	43.5	27.9	16.6	11.2	-	-	-	-	0.2	-	-	-
12-17 years	100.0	-	1.6	72.4	19.7	4.3	1.6	0.4	-	-	-	-	-	-	-
18-24 years	100.0	-	2.8	79.9	7.3	3.7	2.7	2.1	-	-	1.5	-	-	-	-
25-34 years	100.0	0.2	7.7	77.8	10.2	2.6	0.8	0.4	0.1	0.2	-	-	-	-	-
35-44 years	100.0	-	3.0	73.3	16.2	4.9	2.1	0.4	-	-	-	-	-	0.1	-
45-54 years	100.0	-	-	72.9	15.5	6.0	1.6	2.0	-	-	1.0	-	0.5	-	0.5
55-64 years	100.0	-	2.8	45.7	25.1	14.0	8.2	-	-	-	1.6	2.6	-	-	-
65-74 years	100.0	-	0.4	21.3	23.0	23.8	13.5	8.7	1.2	2.8	0.8	0.8	0.4	-	3.3

See footnotes at end of table.

Table 25. Percent distribution and number of population age 4-74 years by maximum visual acuity levels reached in the better eye with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder shown, by age, sex, and race, with standard errors: United States, 1971-1972—Con.

Age, sex, and race ¹	Total	20/10	20/15	20/20	20/25	20/30	20/40	20/50	20/60	20/70	20/80	20/100	20/200	20/400	Less than 20/400
WHITE															
Standard error															
Both sexes															
All ages, 4-74 years.....	---	0.01	0.50	1.01	0.70	0.49	0.30	0.13	0.12	0.04	0.03	0.01	0.03	0.02	0.02
4-5 years.....	---	-	0.53	3.37	1.94	3.10	1.14	-	0.42	0.24	0.27	-	-	0.05	-
6-11 years.....	---	-	0.29	1.95	1.61	0.76	0.49	0.57	0.27	0.05	-	-	-	-	-
12-17 years.....	---	-	1.03	1.88	1.26	0.76	0.81	0.32	0.08	0.14	-	-	0.05	-	-
18-24 years.....	---	-	1.25	1.41	1.14	0.95	0.30	0.09	0.22	0.16	0.04	-	0.16	0.04	-
25-34 years.....	---	0.08	1.13	1.43	1.19	0.80	0.39	0.24	-	-	-	0.02	-	-	-
35-44 years.....	---	-	0.74	1.95	1.48	0.84	0.36	0.05	-	-	-	-	-	-	-
45-54 years.....	---	-	0.62	3.17	2.13	1.62	0.78	0.37	0.40	0.06	0.04	0.04	-	-	-
55-64 years.....	---	-	0.74	2.75	2.51	1.52	1.30	0.58	0.76	-	-	-	-	-	0.13
65-74 years.....	---	-	0.31	1.85	1.67	1.56	1.39	0.96	0.36	0.32	0.33	-	0.14	0.19	0.16
Male															
All ages, 4-74 years.....	---	-	0.71	1.20	0.95	0.57	0.32	0.11	0.23	0.03	0.04	-	0.01	0.02	0.01
4-5 years.....	---	-	0.81	5.26	2.06	5.25	1.23	-	-	-	0.04	-	-	0.09	-
6-11 years.....	---	-	0.19	2.97	2.08	1.48	0.91	1.06	0.52	0.27	-	-	-	-	-
12-17 years.....	---	-	1.61	2.28	1.32	0.71	0.55	-	-	-	-	-	0.10	-	-
18-24 years.....	---	-	1.57	2.28	1.51	1.55	0.59	-	0.48	-	-	-	-	-	-
25-34 years.....	---	-	2.04	1.91	2.19	1.02	0.52	0.05	-	-	-	-	-	-	-
35-44 years.....	---	-	0.90	2.10	1.90	0.86	0.49	0.10	-	-	-	-	-	-	-
45-54 years.....	---	-	0.91	3.44	2.46	2.29	0.92	0.64	0.49	-	-	-	-	-	-
55-64 years.....	---	-	1.10	3.82	3.79	2.16	1.25	0.97	1.28	-	-	-	-	-	-
65-74 years.....	---	-	0.48	2.23	2.28	1.76	1.57	1.24	0.42	0.19	0.53	-	-	0.26	0.14
Female															
All ages, 4-74 years.....	---	0.02	0.34	1.25	0.73	0.80	0.42	0.21	0.09	0.08	0.04	0.02	0.05	0.02	0.03
4-5 years.....	---	-	0.59	5.39	2.56	5.03	1.64	-	0.90	0.51	0.36	-	-	-	-
6-11 years.....	---	-	0.51	2.15	2.01	2.03	0.54	0.38	0.08	0.34	-	-	-	-	-
12-17 years.....	---	-	0.74	3.25	2.02	1.28	1.43	0.65	0.16	0.27	-	-	-	-	-
18-24 years.....	---	-	1.25	1.64	1.36	0.91	0.21	0.18	-	0.31	0.07	-	0.31	0.09	-
25-34 years.....	---	0.15	0.94	1.61	0.83	1.14	0.56	0.45	-	-	-	0.05	-	-	-
35-44 years.....	---	-	0.83	2.91	1.92	1.40	0.51	-	-	-	-	-	-	-	-
45-54 years.....	---	-	0.58	3.90	2.76	2.09	1.35	0.41	0.64	0.12	0.07	0.07	-	-	-
55-64 years.....	---	-	0.89	3.30	3.37	2.14	1.90	0.70	0.49	-	-	-	-	-	0.24
65-74 years.....	---	-	0.23	2.23	2.50	2.03	1.69	1.10	0.56	0.55	0.39	-	0.24	0.29	0.25
BLACK															
Standard error															
Both sexes															
All ages, 4-74 years.....	---	0.01	0.82	1.60	1.15	0.46	0.53	0.20	0.11	0.08	0.24	0.08	0.03	0.01	0.12
4-5 years.....	---	-	-	3.90	2.63	4.48	2.83	0.21	1.39	-	1.98	-	-	-	-
6-11 years.....	---	-	0.92	5.08	3.96	1.91	2.15	0.16	0.23	-	-	0.11	-	-	-
12-17 years.....	---	-	0.93	4.17	3.49	1.47	1.12	0.21	-	-	-	0.17	-	-	-
18-24 years.....	---	-	2.65	3.70	2.11	0.91	1.30	0.98	-	-	0.95	-	-	-	-
25-34 years.....	---	0.08	2.72	3.88	2.87	1.64	0.22	0.41	0.08	0.12	-	-	-	-	-
35-44 years.....	---	-	2.38	5.40	3.43	1.61	0.96	0.24	-	-	-	-	-	0.10	-
45-54 years.....	---	-	-	5.34	2.34	1.81	3.54	0.65	0.09	0.21	0.49	-	0.23	-	-
55-64 years.....	---	-	1.49	7.94	6.80	4.59	2.09	0.32	0.44	-	0.78	0.91	-	-	0.48
65-74 years.....	---	-	0.24	3.94	3.57	2.40	2.22	1.85	1.15	1.22	0.50	0.26	0.19	0.19	2.04
Male															
All ages, 4-74 years.....	---	-	1.29	2.92	2.52	0.81	1.20	0.21	0.22	0.07	0.21	0.06	-	0.02	0.09
4-5 years.....	---	-	-	7.84	3.78	8.14	4.70	0.52	-	-	4.80	-	-	-	-
6-11 years.....	---	-	2.19	5.99	4.59	2.94	1.84	0.34	0.50	-	-	-	-	-	-
12-17 years.....	---	-	1.26	5.28	4.97	1.22	1.90	-	-	-	-	0.35	-	-	-
18-24 years.....	---	-	5.28	8.30	2.94	1.03	1.37	-	-	-	-	-	-	-	-
25-34 years.....	---	-	1.01	5.70	5.66	3.31	-	0.86	-	-	-	-	-	-	-
35-44 years.....	---	-	7.27	9.93	5.26	2.12	1.59	-	-	-	-	-	-	-	-
45-54 years.....	---	-	-	7.30	4.23	2.56	6.65	0.62	0.20	0.43	-	-	-	-	-
55-64 years.....	---	-	0.36	9.25	7.38	9.36	1.55	0.69	1.03	-	-	-	-	-	1.14
65-74 years.....	---	-	-	3.79	2.66	5.39	4.60	2.18	3.26	0.37	-	-	-	0.45	0.73

See footnotes at end of table.

Table 25. Percent distribution and number of population age 4-74 years by maximum visual acuity levels reached in the better eye with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder shown, by age, sex, and race, with standard errors: United States, 1971-1972—Con.

Age, sex, and race ¹	Total	20/10	20/15	20/20	20/25	20/30	20/40	20/50	20/60	20/70	20/80	20/100	20/200	20/400	Less than 20/400
BLACK—Con.															
Standard error															
Female															
All ages, 4-74 years.....	--	0.02	0.81	2.08	1.71	0.71	1.00	0.35	0.13	0.12	0.41	0.13	0.06	0.02	0.21
4-5 years.....	--	-	-	4.43	3.64	6.22	2.91	-	2.28	-	0.22	-	-	-	-
6-11 years.....	--	-	0.48	6.37	4.44	3.89	4.74	-	-	-	-	0.24	-	-	-
12-17 years.....	--	-	0.78	5.29	5.29	2.43	0.89	0.41	-	-	-	-	-	-	-
18-24 years.....	--	-	1.35	3.63	2.29	1.36	1.94	1.69	-	-	1.66	-	-	-	-
25-34 years.....	--	0.17	4.29	5.18	3.04	0.76	0.43	0.24	0.15	0.23	-	-	-	-	-
35-44 years.....	--	-	1.86	5.41	4.74	1.92	1.21	0.36	-	-	-	-	-	0.15	-
45-54 years.....	--	-	-	5.85	4.25	1.98	1.13	1.24	-	-	0.95	-	0.45	-	0.33
55-64 years.....	--	-	2.80	10.45	8.64	4.82	5.58	-	-	-	1.41	1.59	-	-	-
65-74 years.....	--	-	0.42	5.14	5.35	3.29	3.39	3.04	1.07	1.94	0.88	0.46	0.33	-	3.55

¹Totals include races other than white and Black.

²Because of rounding within the individual cells, the population estimates for the totals will not in all instances equal the sum of all the respective values shown.

Table 26. Percent of population age 4-74 years reaching specified maximum visual acuity levels in the better eye¹ and difference between this maximum and usual visual acuity, by age, sex, and race: United States, 1971-1972

Age and sex	Maximum visual acuity						Difference between maximum and usual visual acuity					
	20/20 or better			20/50 or less			20/20 or better			20/50 or less		
	All races ²	White	Black	All races ²	White	Black	All races ²	White	Black	All races ²	White	Black
Both sexes												
Percent of population												
All ages, 4-74 years.....	74.0	74.7	66.7	1.6	1.5	2.3	1.2	1.2	0.9	-1.7	-1.6	-2.8
4-5 years.....	31.2	33.9	13.3	1.4	1.1	3.9	0.0	-	0.1	-0.5	-0.1	-3.2
6-11 years.....	73.4	76.3	56.0	1.4	1.5	0.7	0.9	0.9	0.3	-2.1	-2.2	-1.5
12-17 years.....	84.0	85.1	78.8	0.8	0.9	0.3	1.2	1.1	2.0	-1.9	-1.5	-3.1
18-44 years.....	86.4	87.1	81.9	0.5	0.4	1.1	0.7	0.8	0.9	-1.0	-1.0	-1.5
45-54 years.....	72.5	73.2	66.9	1.5	1.4	2.5	1.3	1.6	-	-1.7	-1.5	-3.7
55-64 years.....	57.9	58.2	55.0	2.8	2.5	3.7	1.9	1.6	1.7	-1.9	-1.5	-3.9
65-74 years.....	32.9	34.2	19.8	8.5	7.6	17.4	0.9	1.0	0.7	-5.6	-5.2	-10.2
Male												
All ages, 4-74 years.....	76.2	77.0	70.1	1.3	1.3	1.8	1.0	1.2	0.9	-1.6	-1.6	-2.8
4-5 years.....	36.2	37.9	19.8	1.0	0.5	5.2	0.0	-	-	-0.1	-	-
6-11 years.....	75.6	76.7	68.3	1.9	2.1	1.2	0.6	0.8	0.5	-2.0	-2.1	-1.2
12-17 years.....	87.8	89.0	83.9	0.1	0.1	0.3	1.2	1.0	2.8	-2.2	-1.6	-3.2
18-44 years.....	87.8	88.5	82.2	0.2	0.2	0.3	1.1	1.1	0.1	-1.0	-1.1	-0.5
45-54 years.....	76.5	78.4	60.5	1.2	1.3	1.2	1.4	1.5	-	-1.9	-1.1	-7.4
55-64 years.....	58.5	58.4	63.6	3.2	3.2	3.1	1.6	1.5	0.5	-2.0	-1.9	-2.9
65-74 years.....	32.3	33.6	17.2	7.4	6.5	16.6	0.8	0.8	0.2	-6.1	-5.3	-13.8
Female												
All ages, 4-74 years.....	71.5	72.5	63.9	1.9	1.7	2.7	1.0	1.0	0.7	-1.7	-1.6	-2.6
4-5 years.....	26.0	29.4	8.8	2.0	1.7	3.0	0.0	-	-	-0.8	-	-5.4
6-11 years.....	71.0	75.9	44.1	0.8	0.9	0.2	0.9	1.1	0.2	-2.3	-2.4	-1.9
12-17 years.....	80.1	81.0	74.0	1.5	1.7	0.4	0.9	1.1	1.4	-1.6	-1.5	-2.8
18-44 years.....	85.2	85.7	81.6	0.8	0.7	1.6	0.6	0.3	0.5	-1.0	-0.8	-2.1
45-54 years.....	68.9	68.4	73.0	1.8	1.6	3.9	1.4	1.6	-	-1.6	-1.8	-0.1
55-64 years.....	57.4	58.0	48.4	2.5	1.8	4.2	2.1	1.9	2.6	-1.6	-1.3	-4.3
65-74 years.....	33.4	34.6	21.7	9.4	8.5	18.2	1.1	1.1	0.9	-5.2	-5.0	-7.3

¹Visual acuity levels reached with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder.

²Totals include races other than white and Black.

Table 27. Percent of population age 4-74 years reaching specified maximum visual acuity levels in the better eye,¹ by annual family income, age, race, and sex, with standard errors: United States, 1971-1972—Con.

Age, race, ² and sex	20/20 or better			20/25-20/40			20/50 or less		
	Under \$5,000	\$5,000-\$9,999	\$10,000 and over	Under \$5,000	\$5,000-\$9,999	\$10,000 and over	Under \$5,000	\$5,000-\$9,999	\$10,000 and over
<u>Female—Con.</u>	Percent								
All races, 65-74 years	31.0	41.6	32.2	58.4	51.3	61.3	10.5	7.1	6.5
White	33.0	41.5	32.7	56.8	52.5	60.9	10.3	6.0	6.4
Black.....	18.4	44.4	*. .	69.0	29.3	*86.3	12.6	26.3	*13.7

See footnotes at end of table.

Table 27. Percent of population age 4-74 years reaching specified maximum visual acuity levels in the better eye,¹ by annual family income, age, race, and sex, with standard errors: United States, 1971-1972—Con.

Age, race, ² and sex	20/20 or better			20/25-20/40			20/50 or less		
	Under \$5,000	\$5,000-\$9,999	\$10,000 and over	Under \$5,000	\$5,000-\$9,999	\$10,000 and over	Under \$5,000	\$5,000-\$9,999	\$10,000 and over
Both sexes									
Standard error									
Total 4-74 years	2.02	1.30	1.63	1.57	1.32	1.70	0.74	0.32	0.20
All races, 4-5 years	7.42	4.62	3.90	8.00	4.64	3.69	1.83	0.47	0.66
White	11.96	4.98	3.78	11.96	4.97	3.58	-	0.53	0.69
Black.....	7.60	3.14	3.97	9.06	3.31	3.97	4.44	0.62	-
All races, 6-11 years	4.52	3.62	2.57	3.48	3.70	2.46	2.54	0.54	0.64
White	5.99	3.96	2.81	4.76	3.97	2.67	3.92	0.62	0.67
Black.....	5.32	7.47	14.17	5.03	7.67	14.17	0.48	0.68	-
All races, 12-17 years	5.64	3.00	1.42	5.31	2.95	1.62	0.64	0.53	0.51
White	8.47	3.50	1.54	7.80	3.41	1.74	1.00	0.64	0.54
Black.....	3.97	8.95	7.01	4.37	9.00	7.01	0.53	0.53	-
All races, 18-44 years	2.23	1.40	1.64	2.05	1.26	1.64	0.39	0.28	0.06
White	2.61	1.61	1.58	2.53	1.46	1.58	0.44	0.30	0.06
Black.....	3.69	2.83	7.47	3.63	2.58	7.47	0.99	0.93	-
All races, 45-54 years	5.52	4.26	3.60	4.47	4.55	3.70	3.05	1.15	0.38
White	9.24	4.59	3.73	7.41	4.90	3.83	4.17	1.30	0.40
Black.....	8.35	10.76	7.55	8.88	11.02	7.58	2.07	0.99	0.39
All races, 55-64 years	7.20	3.78	4.64	6.38	3.83	4.91	2.49	1.17	1.01
White	7.35	4.03	4.32	6.79	4.03	4.64	3.31	1.13	1.05
Black.....	10.01	14.68	20.79	11.66	15.10	20.79	2.81	2.49	-
All races, 65-74 years	2.01	2.91	4.75	1.75	3.79	5.14	2.06	1.60	1.35
White	2.10	3.13	5.11	1.78	4.14	5.45	2.08	2.08	1.41
Black.....	5.33	10.68	5.51	3.87	12.96	5.97	3.74	12.80	4.13
Male									
Total, 4-74 years	2.36	1.77	1.94	2.31	1.63	2.02	1.00	0.45	0.29
All races, 4-5 years	7.71	7.98	5.67	9.55	8.00	5.68	3.59	0.89	0.19
White	13.02	8.88	5.83	13.02	8.90	5.85	-	0.96	0.20
Black.....	11.68	6.48	*15.81	13.49	6.75	*15.81	8.56	1.68	*.
All races, 6-11 years	6.75	5.06	4.11	5.57	4.79	3.82	4.25	1.05	0.87
White	8.80	5.19	4.24	7.10	4.83	3.93	6.28	1.21	0.92
Black.....	6.86	14.62	12.68	6.63	14.66	12.68	0.97	1.55	-
All races, 12-17 years	4.67	3.03	1.40	4.68	3.03	1.40	0.67	-	-
White	6.30	3.23	1.34	6.03	3.23	1.34	1.16	-	-
Black.....	6.18	7.66	2.58	6.81	7.66	2.58	1.00	-	-

See footnotes at end of table.

Table 27. Percent of population age 4-74 years reaching specified maximum visual acuity levels in the better eye,¹ by annual family income, age, race, and sex, with standard errors: United States, 1971-1972—Con.

Age, race, ² and sex	20/20 or better			20/25-20/40			20/50 or less		
	Under \$5,000	\$5,000-\$9,999	\$10,000 and over	Under \$5,000	\$5,000-\$9,999	\$10,000 and over	Under \$5,000	\$5,000-\$9,999	\$10,000 and over
Male—Con.									
	Standard error								
All races, 18-44 years	3.31	2.60	2.32	3.27	2.40	2.32	0.13	0.36	-
White	3.44	2.83	2.26	3.40	2.61	2.26	0.19	0.42	-
Black.....	8.04	5.74	12.41	8.04	5.30	12.41	-	0.87	-
All races, 45-54 years	9.26	3.95	4.67	7.75	4.34	4.67	7.71	1.72	0.03
White	15.51	5.12	4.41	9.39	5.52	4.41	12.69	2.14	-
Black.....	11.83	14.76	26.16	11.66	14.76	26.40	3.22	1.01	1.18
All races, 55-64 years	9.48	5.49	4.91	8.18	5.33	4.77	6.86	1.09	1.84
White	8.15	5.59	5.00	7.54	5.50	4.85	8.02	1.16	1.90
Black.....	24.68	19.58	*20.24	22.40	19.73	*20.24	2.68	5.39	*-
All races, 65-74 years	3.18	3.64	4.87	2.72	5.01	5.63	2.14	3.47	1.85
White	3.22	3.79	5.19	2.95	5.28	5.96	1.91	3.60	1.94
Black.....	4.94	5.22	*7.09	3.68	7.18	*7.09	6.65	5.05	*-
Female									
Total, 4-74 years	2.83	1.39	1.81	2.50	1.50	1.84	0.81	0.46	0.28
All races, 4-5 years	9.71	6.12	7.37	9.69	6.12	7.09	0.23	-	1.34
White	13.42	7.62	7.57	13.42	7.62	7.27	-	-	1.46
Black.....	9.90	2.32	*-	9.97	2.32	*-	0.60	-	*-
All races, 6-11 years	5.78	4.07	3.04	5.78	4.10	2.99	-	0.32	0.95
White	6.12	4.39	3.39	6.12	4.43	3.33	-	0.38	1.00
Black.....	7.10	8.24	*19.08	7.10	8.19	*19.08	-	0.59	*-
All races, 12-17 years	7.48	4.29	3.23	6.79	4.22	3.58	0.94	0.97	1.08
White	11.01	6.31	3.42	9.93	6.20	3.81	1.40	1.24	1.11
Black.....	4.16	12.49	16.18	4.16	12.58	16.18	-	0.87	-
All races, 18-44 years	2.87	1.73	1.70	2.58	1.74	1.71	0.63	0.42	0.11
White	3.58	1.70	1.72	3.40	1.68	1.73	0.69	0.44	0.12
Black.....	3.39	3.45	7.73	3.33	3.93	7.73	1.61	1.37	-
All races, 45-54 years	8.20	6.33	4.76	7.22	6.94	4.88	2.41	1.56	0.81
White	11.24	7.01	5.48	9.25	7.78	5.62	3.49	1.65	0.89
Black.....	11.15	17.84	10.35	8.25	18.53	10.35	4.86	1.92	-
All races, 55-64 years	8.34	5.26	9.32	7.44	5.59	9.32	1.79	2.14	-
White	8.70	5.15	9.08	7.55	6.12	9.08	2.30	2.01	-
Black.....	14.42	16.00	*34.13	17.04	16.00	*34.71	3.71	-	*-

See footnotes at end of table.

Table 27. Percent of population age 4-74 years reaching specified maximum visual acuity levels in the better eye,¹ by annual family income, age, race, and sex, with standard errors: United States, 1971-1972—Con.

Age, race, ² and sex	20/20 or better			20/25-20/40			20/50 or less		
	Under \$5,000	\$5,000-\$9,999	\$10,000 and over	Under \$5,000	\$5,000-\$9,999	\$10,000 and over	Under \$5,000	\$5,000-\$9,999	\$10,000 and over
<u>Female—Con.</u>	Standard error								
All races, 65-74 years	2.13	4.38	6.14	2.60	4.74	6.89	2.43	1.49	2.52
White	2.59	4.60	6.34	3.10	4.99	7.07	2.58	1.51	2.64
Black.....	6.49	16.91	*.	6.42	9.38	*35.15	2.93	18.98	*12.03

¹Visual acuity levels reached with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder.

²Totals include races other than white and Black.

Table 28. Difference between maximum and usual visual acuity levels in the better eye¹ among population age 4-74 years, by annual family income, age, race, and sex: United States, 1971-1972

Age, race, ² and sex	20/20 or better			20/50 or less		
	Under \$5,000	\$5,000-\$9,999	\$10,000 and over	Under \$5,000	\$5,000-\$9,999	\$10,000 and over
Both sexes						
Difference in percent						
Total, 4-74 years	1.0	1.2	0.9	-3.2	-1.9	-1.1
All races, 4-5 years	-	-	-	-1.4	-	-
White	-	-	-	-	-	-
Black	-	-	-	-3.9	-	-
All races, 6-11 years	0.7	1.1	0.7	-2.8	-1.6	-2.4
White	1.2	1.2	0.7	-3.2	-1.8	-2.4
Black	0.2	0.7	-	-2.3	-0.8	-2.0
All races, 12-17 years	1.8	1.5	0.8	-3.6	-1.3	-1.4
White	1.9	1.7	0.6	-4.4	-1.3	-0.9
Black	1.7	1.0	6.8	-2.5	-1.5	-6.7
All races, 18-44 years	0.7	0.6	1.0	-1.7	-1.2	-0.7
White	0.9	0.4	1.1	-1.4	-1.1	-0.8
Black	-	1.4	-	-2.4	-1.4	-0.2
All races, 45-54 years	0.8	1.7	1.4	-4.9	-2.6	-0.6
White	1.2	1.9	1.5	-2.5	-3.0	-0.6
Black	-	-	-	-10.9	-	-
All races, 55-64 years	1.9	2.9	-	-1.3	-4.3	-0.2
White	2.0	3.0	-	-0.5	-4.5	-
Black	1.7	2.8	-	-4.9	-2.6	-3.4
All races, 65-74 years	1.0	1.1	0.5	-6.2	-4.6	-4.1
White	0.9	1.2	0.5	-5.5	-4.3	-3.9
Black	0.9	-	-	-11.0	-10.8	-10.4
Male						
Total, 4-74 years	0.9	1.1	1.1	-4.0	-1.8	-1.0
All races, 4-5 years	-	-	-	-	-	-
White	-	-	-	-	-	-
Black	-	-	-	-	-	-
All races, 6-11 years	1.3	0.5	0.7	-2.8	-1.5	-1.9
White	2.0	0.3	0.7	-3.4	-1.5	-2.0
Black	-	1.7	-	-1.9	-1.1	-
All races, 12-17 years	2.9	1.0	0.8	-4.0	-1.1	-1.4
White	4.3	0.9	0.4	-5.9	-1.1	-0.4
Black	1.4	1.9	8.4	-1.4	-1.0	-8.4
All races, 18-44 years	0.1	0.7	1.6	-1.5	-1.1	-1.0
White	-	0.6	1.8	-1.1	-1.2	-1.1
Black	-	1.5	-	-2.3	-	-

See footnotes at end of table.

Table 28. Difference between maximum and usual visual acuity levels in the better eye¹ among population age 4-74 years, by annual family income, age, race, and sex: United States, 1971-1972—Con.

Age, race, ² and sex	20/20 or better			20/50 or less		
	Under \$5,000	\$5,000-\$9,999	\$10,000 and over	Under \$5,000	\$5,000-\$9,999	\$10,000 and over
Male—Con.						
Difference in percent						
All races, 45-54 years	1.4	3.5	0.6	-14.2	-2.1	-0.2
White	2.4	4.2	0.6	-8.5	-2.6	-0.1
Black.....	-	-	-	-21.7	-	-
All races, 55-64 years	0.8	1.7	-	-2.3	-4.4	-0.2
White	0.7	1.9	-	-1.6	-4.8	-0.1
Black.....	1.6	-	-	-6.5	-	-4.2
All races, 65-74 years	0.8	0.5	0.8	-7.2	-6.9	-3.5
White	0.8	0.5	0.9	-6.1	-6.1	-3.2
Black.....	0.5	-	-	-14.0	-23.7	-8.8
Female						
Total, 4-74 years	1.1	1.2	0.7	-2.6	-1.9	-1.1
All races, 4-5 years	-	-	-	-2.7	-	-
White	-	-	-	-	-	-
Black.....	-	-	-	-8.0	-	-
All races, 6-11 years	0.1	1.7	0.7	-2.8	-1.7	-2.8
White	-	1.9	0.7	-2.9	-2.0	-2.8
Black.....	0.4	-	-	-2.8	-0.6	-3.6
All races, 12-17 years	0.8	2.0	0.8	-3.3	-1.5	-1.5
White	-	2.4	0.7	-3.2	-1.5	-1.4
Black.....	2.1	0.5	1.7	-3.6	-1.7	-3.9
All races, 18-44 years	1.0	0.5	0.4	-1.8	-1.3	-0.5
White	1.6	0.3	0.5	-1.7	-1.1	-0.5
Black.....	-	1.4	-	-2.5	-2.6	-0.3
All races, 45-54 years	0.6	0.3	2.5	-0.6	-3.1	-1.2
White	0.8	0.3	2.7	-0.5	-3.3	-1.2
Black.....	-	-	-	-	-	-
All races, 55-64 years	2.3	4.2	-	-0.8	-4.3	-
White	2.5	4.1	-	-	-4.3	-
Black.....	1.7	5.8	-	-4.3	-5.2	-
All races, 65-74 years	1.0	1.6	0.2	-5.7	-2.7	-4.6
White	1.1	1.7	0.2	-5.2	-2.7	-4.4
Black.....	1.2	-	-	-8.8	-2.3	-13.6

¹Visual acuity levels reached with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder.

²Totals include races other than white and Black.

Table 29. Percent of population age 4-74 years reaching specified maximum visual acuity levels in the better eye,¹ by region, age, race, and sex, with standard errors: United States, 1971-1972

Age, race, ² and sex	20/20 or better				20/25-20/40				20/50 or less			
	North-east	Mid-west	South	West	North-east	Mid-west	South	West	North-east	Mid-west	South	West
Percent of population												
Both sexes												
Total, 4-74 years	73.8	74.6	73.6	72.9	24.4	24.1	24.8	25.3	1.8	1.3	1.6	1.8
All races, 4-5 years.....	27.5	36.5	42.7	15.7	70.1	61.8	56.3	83.6	2.5	1.7	1.0	0.8
White.....	29.5	38.4	51.3	15.9	68.1	60.6	48.7	83.3	2.3	1.0	-	0.8
Black.....	3.8	13.5	15.5	14.3	92.5	78.5	80.5	85.7	3.7	8.0	4.0	-
All races, 6-11 years.....	73.1	70.2	79.7	70.6	25.5	28.2	20.2	27.2	1.5	1.6	0.1	2.2
White.....	75.9	75.8	85.5	69.7	22.7	22.4	14.5	27.9	1.5	1.8	-	2.4
Black.....	48.7	33.3	64.8	75.0	50.1	66.2	34.7	24.0	1.2	0.5	0.5	1.0
All races, 12-17 years.....	85.7	82.2	87.2	82.0	13.6	16.1	12.5	17.6	0.7	1.6	0.3	0.5
White.....	87.0	82.2	88.4	84.1	12.1	16.0	11.4	15.5	0.8	1.8	0.2	0.5
Black.....	75.9	82.7	83.6	68.7	24.1	17.3	15.9	30.6	-	-	0.5	0.8
All races, 18-44 years.....	87.1	87.2	86.8	84.6	12.4	12.3	13.0	14.7	0.5	0.5	0.2	0.7
White.....	88.0	88.0	87.1	85.0	11.5	11.4	12.9	14.3	0.4	0.5	0.0	*0.6
Black.....	76.2	78.0	86.0	79.8	22.1	21.5	13.2	18.4	1.7	0.5	0.8	*1.9
All races, 45-54 years.....	78.3	74.4	66.0	70.2	19.7	24.5	32.5	28.2	2.0	1.0	1.4	1.6
White.....	77.8	75.0	66.4	71.7	20.2	24.1	32.6	26.6	2.0	0.9	1.0	1.7
Black.....	85.4	70.3	64.4	47.3	11.4	27.6	32.3	52.7	3.1	2.1	3.4	-
All races, 55-64 years.....	50.4	63.1	55.3	63.7	46.9	36.9	40.7	31.8	2.6	-	4.0	4.5
White.....	50.2	62.9	55.2	65.0	47.1	37.1	42.0	30.4	2.6	-	2.9	4.6
Black.....	47.9	65.2	60.1	41.4	47.7	34.8	34.8	55.7	4.3	-	5.1	2.9
All races, 65-74 years.....	32.2	33.2	29.5	37.4	59.5	60.4	60.0	54.2	8.3	6.4	10.5	8.3
White.....	33.4	33.0	31.9	38.7	59.0	60.6	60.3	52.7	7.7	6.4	7.8	8.6
Black.....	11.7	37.2	15.8	23.3	67.9	56.3	59.1	70.9	20.4	6.6	25.0	5.7
Male												
Total, 4-74 years	74.4	77.6	74.9	77.7	24.1	21.5	23.8	20.5	1.5	0.9	1.2	1.8
All races, 4-5 years.....	31.1	35.7	50.2	20.5	68.9	63.8	48.3	77.9	-	0.5	1.6	1.6
White.....	32.3	34.8	57.4	20.6	67.7	64.9	42.6	77.6	-	0.3	-	1.8
Black.....	6.5	30.8	19.0	19.5	93.5	65.8	72.5	80.5	-	3.3	8.4	-
All races, 6-11 years.....	69.9	70.8	85.0	76.3	27.8	27.9	14.9	19.7	2.3	1.3	0.1	4.0
White.....	72.3	75.9	85.3	74.7	25.4	22.7	14.7	21.0	2.4	1.3	-	4.3
Black.....	47.3	30.8	84.1	85.9	50.4	67.9	15.5	12.3	2.3	1.3	0.4	1.8
All races, 12-17 years.....	83.3	87.1	88.4	91.9	16.7	12.9	11.3	8.0	-	-	0.3	0.2
White.....	84.7	88.1	88.3	94.2	15.3	11.9	11.3	5.8	-	-	0.4	-
Black.....	75.3	78.9	88.7	92.0	24.7	21.1	11.3	6.1	-	-	-	1.9
All races, 18-44 years.....	87.2	91.1	86.0	86.6	12.8	8.4	14.0	13.2	-	0.5	-	0.3
White.....	87.8	92.9	85.5	87.2	12.2	6.6	14.5	12.6	-	0.5	-	0.1
Black.....	78.5	72.6	87.7	79.5	21.5	27.4	12.3	17.9	-	-	-	2.6

See footnotes at end of table.

Table 29. Percent of population age 4-74 years reaching specified maximum visual acuity levels in the better eye,¹ by region, age, race, and sex, with standard errors: United States, 1971-1972—Con.

Age, race, ² and sex	20/20 or better				20/25-20/40				20/50 or less			
	North-east	Mid-west	South	West	North-east	Mid-west	South	West	North-east	Mid-west	South	West
Males—Con.												
Percent of population												
All races, 45-54 years.....	83.5	77.9	68.6	74.8	14.2	20.6	30.9	24.6	2.3	1.5	0.4	0.6
White.....	83.7	79.5	71.4	77.0	13.9	18.9	28.6	22.3	2.4	1.6	-	0.6
Black.....	79.3	64.9	59.3	43.8	20.7	34.5	38.7	56.2	-	0.6	2.0	-
All races, 55-64 years.....	51.8	59.0	54.4	70.6	43.2	41.0	42.2	24.5	5.0	-	3.4	4.9
White.....	50.9	58.3	54.0	71.7	43.7	41.7	42.3	23.6	5.4	-	3.6	4.8
Black.....	75.3	80.9	57.0	43.8	21.5	19.1	41.0	46.7	3.2	-	2.0	9.5
All races, 65-74 years.....	25.0	38.5	27.3	40.7	69.2	55.9	62.8	51.0	5.8	5.5	9.9	8.3
White.....	26.0	39.0	29.2	42.0	68.1	55.5	64.6	49.6	5.9	5.5	6.1	8.5
Black.....	6.9	28.7	15.4	23.0	87.7	64.5	57.3	72.1	5.4	6.8	27.3	4.9
Female												
Total, 4-74 years.....	73.3	71.7	72.4	68.5	24.7	26.7	25.6	29.6	2.0	1.6	2.0	1.9
All races, 4-5 years.....	24.6	37.3	31.3	11.6	71.0	59.6	68.7	88.4	4.4	3.0	-	-
White.....	27.1	42.5	40.3	11.8	68.5	55.7	59.7	88.2	4.3	1.9	-	-
Black.....	2.8	4.9	12.3	10.7	92.1	84.8	87.7	89.3	5.0	10.3	-	-
All races, 6-11 years.....	77.0	69.8	73.4	64.3	22.6	28.4	26.5	35.4	0.4	1.8	0.2	0.3
White.....	80.3	75.6	85.7	64.5	19.3	22.2	14.3	35.2	0.4	2.1	-	0.3
Black.....	50.2	34.8	44.2	59.9	49.8	65.2	55.3	40.1	-	-	0.5	-
All races, 12-17 years.....	88.7	77.3	85.9	73.4	9.7	19.4	13.9	25.8	1.6	3.3	0.3	0.8
White.....	89.8	76.3	88.4	75.4	8.3	20.0	11.6	23.7	1.8	3.7	-	0.9
Black.....	77.0	86.4	79.5	52.3	23.0	13.6	19.6	47.7	-	-	0.9	-
All races, 18-44 years.....	86.9	83.3	87.5	82.9	12.0	16.1	12.1	16.0	1.1	0.6	0.4	1.1
White.....	88.3	83.3	88.4	83.1	10.8	16.2	11.5	15.9	0.9	0.5	0.1	1.1
Black.....	75.0	83.7	84.5	79.9	22.4	15.3	14.0	18.6	2.6	1.0	1.5	1.4
All races, 45-54 years.....	74.3	70.3	63.8	66.0	23.9	29.2	33.9	31.4	1.8	0.5	2.3	2.6
White.....	73.3	69.4	62.4	66.8	25.1	30.6	35.8	30.5	1.6	-	1.8	2.7
Black.....	88.6	75.1	70.1	51.8	6.7	21.4	24.9	48.2	4.7	3.5	4.9	-
All races, 55-64 years.....	49.4	67.7	56.1	58.5	49.7	32.3	39.3	37.3	0.9	-	4.6	4.2
White.....	49.8	68.5	56.2	59.8	49.6	31.5	41.6	35.7	0.6	-	2.1	4.5
Black.....	9.7	58.2	62.7	40.3	84.4	41.8	29.7	59.7	5.9	-	7.6	-
All races, 65-74 years.....	38.0	29.5	31.1	34.7	51.6	63.5	58.0	56.9	10.4	7.0	11.0	8.4
White.....	39.4	28.7	33.6	36.0	51.5	64.3	57.5	55.4	9.1	7.0	8.8	8.7
Black.....	15.3	42.1	16.2	23.5	53.5	51.5	60.6	70.1	31.2	6.4	23.2	6.4
Both sexes												
Standard error												
Total, 4-74 years.....	3.11	1.79	2.18	1.74	2.96	2.23	2.12	1.60	0.32	0.59	0.25	0.44
All races, 4-5 years.....	5.90	8.89	2.78	1.85	6.18	9.16	2.22	2.35	1.97	0.97	1.00	0.82
White.....	5.52	9.02	3.94	1.83	5.85	8.64	3.94	2.38	2.11	0.91	-	0.92
Black.....	7.38	6.02	7.07	3.23	5.84	15.88	8.43	3.23	2.29	16.58	4.30	-

See footnotes at end of table.

Table 29. Percent of population age 4-74 years reaching specified maximum visual acuity levels in the better eye,¹ by region, age, race, and sex, with standard errors: United States, 1971-1972—Con.

Age, race, ² and sex	20/20 or better				20/25-20/40				20/50 or less			
	North-east	Mid-west	South	West	North-east	Mid-west	South	West	North-east	Mid-west	South	West
Both sexes—Con.												
	Standard error											
All races, 6-11 years.....	4.12	4.20	2.39	3.37	3.66	4.12	2.32	3.42	0.58	1.18	0.09	2.21
White.....	4.38	4.33	3.76	3.81	3.71	3.97	3.76	3.72	0.79	1.37	-	2.42
Black.....	6.87	14.69	6.80	7.25	7.32	14.53	6.78	7.60	1.18	0.36	0.33	1.31
All races, 12-17 years.....	5.82	2.92	2.41	3.14	5.17	3.87	2.33	2.92	0.83	1.16	0.31	0.30
White.....	6.32	3.56	2.01	3.86	5.45	4.53	1.92	3.61	0.97	1.28	0.25	0.33
Black.....	14.83	6.92	3.70	12.92	14.83	6.92	3.74	13.44	-	-	0.49	0.75
All races, 18-44 years.....	3.78	1.28	1.89	1.03	3.55	1.34	1.94	0.92	0.29	0.33	0.16	0.15
White.....	3.85	1.40	2.29	0.95	3.62	1.41	2.31	0.79	0.28	0.36	0.05	0.17
Black.....	10.07	4.49	3.16	8.58	9.90	4.42	3.16	7.72	1.82	0.27	0.69	1.60
All races, 45-54 years.....	1.74	5.72	6.28	5.32	1.88	6.05	6.35	5.65	0.99	0.81	0.60	0.96
White.....	2.04	6.01	8.81	5.78	2.15	6.30	8.66	5.99	1.20	0.90	0.94	1.01
Black.....	10.02	4.17	9.38	21.10	6.97	5.82	8.39	21.10	3.32	1.91	1.56	-
All races, 55-64 years.....	6.22	3.26	6.44	2.99	6.90	3.26	5.99	3.62	1.25	-	2.33	1.94
White.....	4.93	3.11	7.01	3.83	5.74	3.11	6.30	4.66	1.54	-	2.88	2.02
Black.....	19.00	11.04	10.54	20.56	17.35	11.04	12.80	20.36	2.65	-	3.19	2.42
All races, 65-74 years.....	4.55	3.95	1.30	3.33	3.05	5.77	2.41	4.81	2.03	2.85	2.88	3.94
White.....	4.66	4.20	0.84	3.11	2.76	6.11	2.65	4.98	2.42	3.02	2.38	4.32
Black.....	4.11	11.04	7.25	8.75	14.81	8.36	5.17	8.78	12.87	3.19	6.49	1.40
Male												
Total, 4-74 years.....	3.44	2.38	1.92	2.00	3.69	2.60	1.85	1.86	0.61	0.60	0.25	0.46
All races, 4-5 years.....	8.71	9.87	10.60	4.61	8.71	9.94	9.17	5.26	-	0.33	1.60	1.73
White.....	8.82	10.10	12.73	5.09	8.82	10.04	12.73	5.87	-	0.31	-	1.96
Black.....	9.47	*23.31	12.07	7.27	9.47	*21.32	14.04	7.27	-	*8.24	9.08	-
All races, 6-11 years.....	5.49	4.37	3.10	5.94	4.62	3.88	3.07	6.16	1.23	1.25	0.13	3.76
White.....	6.74	4.91	4.82	6.54	5.58	4.44	4.82	6.61	1.65	1.47	-	4.20
Black.....	16.16	10.06	4.08	2.19	16.37	9.89	4.23	3.04	2.20	1.02	0.54	2.22
All races, 12-17 years.....	6.53	1.05	2.01	2.30	6.53	1.05	2.18	2.21	-	-	0.34	0.14
White.....	6.21	2.25	2.50	1.36	6.21	2.25	2.71	1.36	-	-	0.45	-
Black.....	18.03	12.36	1.30	5.24	18.03	12.36	1.30	5.48	-	-	-	1.61
All races, 18-44 years.....	5.28	1.25	2.22	1.07	5.28	0.89	2.22	1.04	-	0.47	-	0.08
White.....	5.71	1.64	3.17	0.95	5.71	1.22	3.17	0.88	-	0.52	-	0.14
Black.....	20.53	9.11	6.31	21.47	20.53	9.11	6.31	16.75	-	-	-	4.72
All races, 45-54 years.....	3.92	6.76	7.94	4.17	5.59	7.70	8.15	4.23	2.47	1.39	0.31	0.65
White.....	4.38	6.28	11.77	3.80	5.78	7.32	11.77	3.60	2.62	1.54	-	0.67
Black.....	41.05	13.22	9.90	30.05	41.05	14.49	9.54	30.05	-	5.13	2.05	-
All races, 55-64 years.....	3.68	6.02	7.40	7.40	6.17	6.02	6.36	4.44	4.11	-	3.24	4.17
White.....	3.35	6.28	7.46	6.69	4.46	6.28	6.68	4.20	4.71	-	3.65	4.07
Black.....	18.52	34.69	13.88	30.85	18.27	16.59	12.32	24.15	2.16	-	2.38	7.10

See footnotes at end of table.

Table 29. Percent of population age 4-74 years reaching specified maximum visual acuity levels in the better eye,¹ by region, age, race, and sex, with standard errors: United States, 1971-1972—Con.

Age, race, ² and sex	20/20 or better				20/25-20/40				20/50 or less			
	North-east	Mid-west	South	West	North-east	Mid-west	South	West	North-east	Mid-west	South	West
Male—Con.												
Standard error												
All races, 65-74 years.....	3.89	3.38	3.70	4.55	2.88	5.88	3.94	4.73	2.36	3.56	3.38	3.00
White.....	4.03	3.72	2.98	4.95	3.09	5.92	3.46	5.42	2.62	3.61	2.69	3.38
Black.....	8.83	11.49	5.80	8.20	9.15	11.92	6.93	8.49	4.27	4.65	9.67	5.03
Female												
Total, 4-74 years.....	3.14	2.18	2.81	2.59	2.71	2.48	2.90	2.66	0.57	0.73	0.41	0.61
All races, 4-5 years.....	10.16	12.42	10.49	3.73	9.75	13.39	10.49	3.73	3.23	2.49	-	-
White.....	11.10	12.64	16.44	4.45	10.47	12.63	16.44	4.45	3.56	2.16	-	-
Black.....	6.32	9.17	9.02	2.68	4.53	24.80	9.02	2.68	3.05	21.61	-	-
All races, 6-11 years.....	5.33	5.06	1.92	2.47	5.54	5.08	1.91	2.31	0.40	1.34	0.14	0.31
White.....	5.15	4.62	5.51	2.17	5.37	4.15	5.51	1.96	0.45	1.51	-	0.33
Black.....	7.49	19.42	10.04	19.16	7.49	19.42	9.91	19.16	-	-	0.57	-
All races, 12-17 years.....	6.42	5.48	5.11	5.59	4.76	7.25	4.96	5.22	1.95	2.06	0.29	0.54
White.....	7.42	6.23	4.82	6.23	5.39	8.06	4.82	5.85	2.24	2.22	-	0.59
Black.....	11.62	4.82	7.38	14.54	11.62	4.82	7.41	14.54	-	-	0.89	-
All races, 18-44 years.....	3.33	2.48	2.11	1.61	2.95	2.48	2.28	1.40	0.58	0.54	0.30	0.29
White.....	3.14	2.66	2.01	1.75	2.69	2.63	2.04	1.53	0.58	0.58	0.09	0.30
Black.....	7.19	2.38	3.48	7.26	6.88	2.26	4.31	7.59	2.72	0.55	1.23	2.36
All races, 45-54 years.....	3.66	6.92	5.54	8.44	4.09	6.99	5.70	9.05	1.34	0.37	1.08	1.52
White.....	4.25	8.50	7.34	9.08	4.63	8.50	7.33	9.67	1.40	-	1.74	1.60
Black.....	7.25	9.97	12.14	16.29	4.81	11.56	10.09	16.29	4.73	2.62	3.31	-
All races, 55-64 years.....	9.08	7.17	6.50	5.10	8.33	7.17	6.70	5.81	1.03	-	2.10	2.27
White.....	8.67	7.62	7.94	5.99	8.02	7.62	7.53	7.21	0.82	-	2.45	2.52
Black.....	4.42	24.13	12.66	23.68	2.26	24.13	17.74	27.47	4.77	-	5.82	-
All races, 65-74 years.....	5.65	5.55	0.87	2.50	4.51	6.63	3.75	5.50	2.36	2.86	3.04	4.82
White.....	5.88	5.58	2.32	2.05	4.13	6.86	4.77	5.82	2.56	3.10	2.76	5.24
Black.....	6.90	19.99	9.93	12.73	18.21	17.77	9.38	15.45	16.05	5.95	6.46	5.77

¹Visual acuity levels reached with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder.

²Totals include races other than white and Black.

Table 30. Difference between maximum¹ and usual visual acuity levels in the better eye among population age 4-74 years, by region, age, race, and sex: United States, 1971-1972

Age, race, ² and sex	20/20 or better				20/50 or less			
	North-east	Mid-west	South	West	North-east	Mid-west	South	West
<u>Both sexes</u>								
Difference in percent								
Total, 4-74 years	1.0	0.7	1.1	1.2	-1.2	-1.4	-2.1	-2.3
All races, 4-5 years.....	-	-	-	-	-	-	-1.6	-
White.....	-	-	-	-	-	-	-	-
Black.....	-	-	-	-	-	-	-5.4	-
All races, 6-11 years.....	-	0.6	1.7	1.0	-0.5	-3.4	-1.8	-2.8
White.....	-	0.7	2.2	1.1	-0.2	-3.6	-2.2	-2.9
Black.....	-	0.5	0.4	-	-3.4	-2.5	-0.6	-1.0
All races, 12-17 years.....	1.6	0.9	0.7	1.6	-2.6	-2.0	-1.2	-2.0
White.....	1.2	0.8	0.3	1.8	-2.2	-1.9	-0.6	-1.6
Black.....	4.8	2.4	1.8	-	-5.8	-3.1	-3.2	-
All races, 18-44 years.....	-	0.5	0.9	0.5	-0.6	-0.5	-1.2	-1.6
White.....	-	0.8	1.2	1.3	-0.6	-0.6	1.1	-1.7
Black.....	1.7	-	0.7	-	-0.9	-1.3	-1.5	-2.8
All races, 45-54 years.....	1.9	-	0.9	2.5	-0.9	-1.0	-2.5	-3.3
White.....	2.8	-	1.7	1.4	-0.9	-0.9	-1.9	-2.2
Black.....	-	-	-	-	-	-	-3.4	-17.1
All races, 55-64 years.....	3.8	2.1	3.6	2.7	-2.1	-1.4	-2.7	-2.3
White.....	2.5	2.0	1.6	0.8	-1.7	-1.3	-1.8	-1.6
Black.....	2.1	-	1.6	2.9	-4.1	-2.5	-3.8	-4.1
All races, 65-74 years.....	-	-	1.5	0.9	-4.7	-1.8	-9.0	-5.3
White.....	1.3	0.4	1.5	0.8	-4.7	-2.4	-8.7	-4.6
Black.....	-	1.4	0.7	0.6	-4.6	-3.1	-13.9	-10.4
<u>Male</u>								
All races, 4-5 years.....	-	-	-	-	-	-	-	-
White.....	-	-	-	-	-	-	-	-
Black.....	-	-	-	-	-	-	-	-
All races, 6-11 years.....	-	-	1.4	1.5	-0.6	-4.0	-1.1	-2.5
White.....	-	-	1.5	1.7	-0.3	-3.9	-1.5	-2.9
Black.....	-	0.7	0.9	-	-2.3	-4.9	-	-
All races, 12-17 years.....	1.7	1.2	0.5	1.5	-3.5	-1.2	-0.9	-2.9
White.....	0.8	1.4	-	1.6	-2.5	-1.4	-0.6	-1.9
Black.....	7.6	-	2.3	-	-9.1	-	-2.3	-

See footnotes at end of table.

Table 30. Difference between maximum¹ and usual visual acuity levels in the better eye among population age 4-74 years, by region, age, race, and sex: United States, 1971-1972—Con.

Age, race, ² and sex	20/20 or better				20/50 or less			
	North-east	Mid-west	South	West	North-east	Mid-west	South	West
Male—Con.								
Difference in percent								
All races, 18-44 years.....	-	0.7	1.3	0.8	-0.7	-0.8	-0.5	-2.4
White.....	-	1.3	1.7	2.0	-0.7	-0.7	-0.6	-2.4
Black.....	4.3	-	-	-	-0.7	-1.7	-	-2.1
All races, 45-54 years.....	-	0.7	-	4.0	-0.5	-0.2	-4.4	-3.5
White.....	2.4	-	0.9	2.8	-0.3	-0.1	-3.5	-1.4
Black.....	-	-	-	-	-	-	-6.4	-30.3
All races, 55-64 years.....	2.7	3.8	-	1.4	-4.5	-2.3	-1.9	-1.0
White.....	3.5	2.3	0.3	-	-3.9	-2.3	-0.8	-0.5
Black.....	1.8	-	-	-	-	-	-6.4	-
All races, 65-74 years.....	0.9	-	0.3	1.1	-7.4	-2.1	-10.1	-6.5
White.....	1.8	-	-	1.7	-6.1	-1.5	-8.6	-4.7
Black.....	-	-	0.7	-	-8.4	-	-16.1	-19.7
Female								
All races, 4-5 years.....	-	-	-	-	-	-	-4.0	-
White.....	-	-	-	-	-	-	-	-
Black.....	-	-	-	-	-	-	-12.7	-
All races, 6-11 years.....	-	1.0	2.2	0.3	-0.5	-3.1	-2.5	-3.0
White.....	-	1.1	3.1	0.4	-	-3.4	-3.1	-3.1
Black.....	-	0.5	-	-	-4.6	-1.2	-1.2	-2.2
All races, 12-17 years.....	1.6	0.6	0.8	1.6	-1.5	-2.7	-1.5	-1.1
White.....	1.7	0.2	0.5	1.8	-1.8	-2.3	-0.6	-1.3
Black.....	-	4.7	1.4	-	-	-6.1	-4.0	-
All races, 18-44 years.....	-	0.4	0.6	0.3	-0.4	-0.2	-1.8	-0.9
White.....	0.2	0.6	0.8	0.8	-0.4	-0.5	-1.5	-1.1
Black.....	0.4	-	1.1	-	-0.9	-0.9	-2.7	-3.4
All races, 45-54 years.....	4.0	-	3.7	1.2	-1.2	-1.8	-0.8	-2.9
White.....	3.3	0.1	2.4	-	-1.5	-1.9	-0.6	-2.8
Black.....	-	-	-	-	-	-	-	-
All races, 55-64 years.....	4.6	-	7.1	3.9	-0.5	-0.3	-3.5	-3.3
White.....	1.9	1.8	2.8	1.3	-0.1	-	-2.8	-2.3
Black.....	2.7	-	2.8	4.2	-9.7	-3.6	-1.8	-5.9

See footnotes at end of table.

Table 30. Difference between maximum¹ and usual visual acuity levels in the better eye among population age 4-74 years, by region, age, race, and sex: United States, 1971-1972—Con.

Age, race, ² and sex	20/20 or better				20/50 or less			
	North-east	Mid-west	South	West	North-east	Mid-west	South	West
Female—Con.								
Difference in percent								
All races, 65-74 years.....	-	-	2.3	0.8	-2.4	-1.6	-8.2	-4.3
White.....	0.9	0.6	2.4	-	-3.6	-3.0	-8.8	-4.4
Black.....	-	2.2	0.8	1.1	-1.9	-5.0	-11.9	-3.4

¹Visual acuity levels reached with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder.

²Totals include races other than white and Black.

Table 31. Percent of population age 4-74 years reaching specified visual acuity levels for maximum distance vision in the better eye,¹ by size of place of residence, age, race, and sex, with standard errors: United States, 1971-1972

Age, race, ² and sex	20/20 or better			20/50 or less			20/20 or better			20/50 or less		
	Urban	Non-urbanized	Rural	Urban	Non-urbanized	Rural	Urban	Non-urbanized	Rural	Urban	Non-urbanized	Rural
Both sexes	Percent of population						Standard error					
Total, 4-74 years	73.4	74.3	74.1	1.9	1.5	1.3	1.73	1.58	1.09	0.28	0.45	0.28
All races, 4-5 years.....	35.4	28.5	26.8	2.1	3.5	-	4.11	13.17	4.49	0.98	2.40	-
White.....	39.4	30.1	28.7	1.9	1.7	-	4.29	16.46	4.90	1.13	1.70	-
Black.....	14.0	21.3	6.1	3.4	11.5	-	4.05	15.14	3.66	2.42	12.52	-
All races, 6-11 years.....	72.2	74.2	74.8	1.2	1.0	1.7	2.33	4.62	2.77	0.56	1.11	1.60
White.....	76.8	75.9	75.7	1.3	1.0	1.9	2.30	5.19	3.31	0.72	1.37	1.80
Black.....	51.5	61.8	65.4	0.9	0.9	-	6.41	13.80	7.28	0.44	0.95	-
All races, 12-17 years.....	83.4	86.1	84.2	0.7	0.5	1.0	2.44	2.92	2.30	0.38	0.53	0.63
White.....	84.6	88.1	84.7	0.8	0.5	1.0	2.39	3.30	2.69	0.45	0.59	0.68
Black.....	78.5	79.0	79.5	0.3	-	0.7	5.88	12.62	11.34	0.26	-	0.71
All races, 18-44 years.....	85.8	87.1	87.3	0.7	0.9	0.1	1.56	1.45	1.35	0.18	0.36	0.06
White.....	86.7	88.0	87.3	0.6	0.9	0.0	1.80	1.72	1.21	0.20	0.38	0.04
Black.....	80.8	77.6	86.3	1.3	1.7	0.3	2.89	11.37	4.85	0.70	1.78	0.31
All races, 45-54 years.....	72.6	73.0	72.3	1.9	1.6	0.9	3.91	5.04	4.87	0.63	1.41	0.52
White.....	72.6	72.7	74.3	1.9	1.7	0.6	4.31	7.06	5.09	0.76	1.56	0.69
Black.....	72.1	75.6	48.5	2.6	-	3.9	4.33	22.18	11.38	1.14	-	1.97
All races, 55-64 years.....	55.9	59.8	60.0	2.5	0.6	4.2	3.11	5.72	5.18	0.75	0.45	1.79
White.....	56.4	59.6	60.3	2.3	0.3	3.6	3.02	6.19	5.76	0.98	0.40	1.85
Black.....	54.7	64.8	52.7	3.9	6.8	2.0	11.14	23.78	12.15	2.13	5.23	2.25
All races, 65-74 years.....	33.3	35.2	31.2	10.9	6.9	5.3	2.74	3.97	3.19	1.95	2.86	1.97
White.....	34.4	37.0	32.5	9.8	6.4	4.6	2.92	4.39	2.88	1.89	3.11	1.75
Black.....	23.9	14.5	12.9	19.9	12.9	13.9	5.04	12.92	6.16	6.17	8.86	6.34
Male	Percent of population						Standard error					
Total, 4-74 years	77.1	74.9	75.2	1.3	1.5	1.3	1.74	3.57	1.49	0.39	0.63	0.39
All races, 4-5 years.....	44.9	28.6	28.5	0.3	6.7	-	5.01	12.39	8.55	0.21	4.23	-
White.....	47.2	27.4	30.2	0.2	3.4	-	5.51	15.22	9.56	0.19	3.33	-
Black.....	20.5	33.2	8.6	1.1	19.9	-	9.19	25.79	5.86	1.12	19.42	-
All races, 6-11 years.....	75.3	77.5	75.4	1.6	1.7	2.6	3.84	5.90	4.04	0.74	1.72	2.85
White.....	77.6	78.1	74.9	1.6	1.7	2.9	4.01	6.92	4.66	1.00	2.07	3.26
Black.....	64.8	69.5	76.7	1.4	1.9	-	8.62	16.26	5.92	0.85	2.30	-
All races, 12-17 years.....	86.8	87.6	89.4	0.1	-	0.2	2.25	5.44	2.19	0.08	-	0.24
White.....	88.6	91.0	89.0	-	-	0.2	1.97	5.16	2.64	-	-	0.28
Black.....	81.5	*79.9	91.6	0.5	*-	-	7.40	*35.49	4.87	0.50	*-	-
All races, 18-44 years.....	88.1	87.3	87.5	0.3	0.4	-	2.13	3.07	1.99	0.21	0.29	-
White.....	89.5	87.9	87.2	0.3	0.1	-	2.63	3.89	2.07	0.24	0.14	-
Black.....	78.5	*81.4	89.3	-	*3.6	-	4.88	28.95	4.66	-	5.25	-
All races, 45-54 years.....	76.7	73.4	77.6	2.3	-	0.3	4.05	10.17	5.70	1.24	-	0.27
White.....	77.8	74.0	81.4	2.5	-	-	3.76	14.92	5.10	1.39	-	-
Black.....	68.3	*69.7	38.4	0.3	*-	3.5	10.79	*27.01	11.80	0.45	*-	5.08

See footnotes at end of table.

Table 31. Percent of population age 4-74 years reaching specified visual acuity levels for maximum distance vision in the better eye,¹ by size of place of residence, age, race, and sex, with standard errors: United States, 1971-1972—Con.

Age, race, ² and sex	20/20 or better			20/50 or less			20/20 or better			20/50 or less		
	Urban	Non-urban-ized	Rural	Urban	Non-urban-ized	Rural	Urban	Non-urban-ized	Rural	Urban	Non-urban-ized	Rural
Male—Con.												
Percent of population						Standard error						
All races, 55-64 years.....	61.2	57.1	55.4	1.8	0.5	6.0	3.32	8.84	8.37	1.56	0.77	3.39
White.....	60.7	56.7	56.3	1.9	-	6.2	3.81	9.30	8.68	1.71	-	3.61
Black.....	74.5	*65.3	42.5	1.6	*14.3	3.0	10.96	*38.18	19.08	1.22	*13.96	3.55
All races, 65-74 years.....	32.3	33.1	32.1	8.4	14.4	3.5	3.44	3.47	4.10	2.37	5.87	1.36
White.....	33.5	35.4	33.2	7.4	13.6	2.8	3.44	5.29	3.98	2.21	6.74	1.09
Black.....	19.8	17.2	11.8	16.9	20.0	13.5	6.90	17.39	6.29	9.01	11.83	7.72
Female												
Total, 4-74 years.....	70.0	73.7	73.0	2.4	1.4	1.3	1.90	1.80	1.56	0.39	0.56	0.35
All races, 4-5 years.....	26.2	28.4	25.0	3.9	-	-	5.13	17.72	8.51	1.97	-	-
White.....	30.7	32.9	27.0	3.7	-	-	6.82	20.75	9.25	2.36	-	-
Black.....	11.0	5.2	3.3	4.4	-	-	6.29	5.20	3.37	3.36	-	-
All races, 6-11 years.....	69.3	69.7	74.2	0.9	-	0.8	2.13	8.99	3.20	0.58	-	0.99
White.....	76.0	72.7	76.6	1.0	-	0.9	2.57	10.95	4.11	0.72	-	1.11
Black.....	39.2	54.6	53.0	0.3	-	-	7.01	20.80	9.61	0.40	-	-
All races, 12-17 years.....	79.3	84.9	79.4	1.4	0.9	1.7	4.15	4.95	4.00	0.83	0.96	1.17
White.....	79.8	85.7	80.6	1.8	1.0	1.8	4.40	5.66	4.40	1.00	1.10	1.28
Black.....	75.1	78.5	70.4	-	-	1.3	6.82	12.00	18.18	-	-	1.35
All races, 18-44 years.....	83.7	86.8	87.1	1.0	1.4	0.1	1.82	2.97	1.33	0.34	0.63	0.11
White.....	83.9	88.1	87.4	0.8	1.5	0.1	1.92	3.33	1.36	0.37	0.71	0.07
Black.....	82.1	74.2	82.7	2.1	-	0.6	2.80	6.97	8.11	1.12	-	0.62
All races, 45-54 years.....	69.1	72.4	67.2	1.7	3.5	1.4	4.82	6.38	6.10	0.76	3.12	0.97
White.....	68.2	71.2	67.7	1.3	3.7	1.2	6.06	6.84	6.73	0.88	3.30	1.36
Black.....	74.9	94.0	60.5	4.1	-	4.4	5.50	25.62	17.21	1.76	-	4.57
All races, 55-64 years.....	51.8	62.6	64.6	3.0	0.7	2.4	4.26	12.52	4.77	1.10	0.98	1.72
White.....	52.9	62.5	64.3	2.7	0.7	1.0	4.45	12.96	5.43	1.40	1.07	1.19
Black.....	43.4	64.2	73.5	5.2	-	-	13.98	33.13	18.52	3.33	-	-
All races, 65-74 years.....	34.0	36.4	30.5	12.7	2.5	6.8	3.06	5.55	3.22	1.87	1.50	3.70
White.....	35.0	37.9	32.0	11.6	2.5	6.2	3.50	5.63	3.39	1.94	1.62	3.77
Black.....	26.6	10.4	13.6	22.0	2.6	14.2	5.07	14.34	15.89	6.00	3.40	6.07

¹Visual acuity levels reached with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder.

²Totals include races other than white and Black.

Table 32. Percent and number of population age 4-74 years reaching at least 20/20 and percent reaching no better than 20/50 maximum visual acuity in the better eye,¹ by ancestry and race, with standard errors: United States, 1971-1972

Maximum monocular acuity in better eye and ancestry	All races	White	Black	Other	All races	White	Black	Other
	Percent of population				Standard error			
<u>20/20 or better</u>								
Spanish, Mexican ²	66.0	65.9	-	*78.6	2.93	2.94	-	*19.01
Chinese, Japanese	*51.0	*43.2	-	*54.1	*15.57	*37.20	-	*13.91
American Indian ³	71.5	70.3	-	*83.0	5.21	5.55	-	*18.50
All other	74.3	75.4	66.7	96.5	1.09	1.16	1.55	2.25
<u>20/50 or poorer</u>								
Spanish, Mexican ²	*3.4	*3.4	-	-	*1.54	1.55	-	-
Chinese, Japanese	*0.2	-	-	*0.3	*0.52	-	-	*0.90
American Indian ³	*4.2	*2.8	-	*17.0	*2.86	*2.61	-	18.50
All other	1.5	1.4	2.3	*0.3	0.19	0.22	0.50	*0.37
Number in thousands								
Total, in population	177,382	154,938	21,119	1,325	...	...	...	...
Spanish, Mexican ²	10,150	10,050	-	100	...	...	...	...
Chinese, Japanese	768	220	-	548	...	...	...	...
American Indian ³	2,848	2,580	-	268	...	...	...	...
All other	163,616	142,088	21,119	409	...	...	...	...

¹Visual acuity levels reached with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder.

²Includes Puerto Rican immigrants.

³Living off reservations.

Table 33. Percent of population age 4-74 years with maximum visual acuity of 20/20 or better and 20/50 or less¹ with manifest strabismus, phoria, or no eye muscle imbalance, by age, sex, and race with standard errors: United States, 1971-1972

Age, sex, and race ²	Total with eye muscle imbalance		Manifest strabismus		Phoria		No eye muscle imbalance	
	20/20 or better	20/50 or less	20/20 or better	20/50 or less	20/20 or better	20/50 or less	20/20 or better	20/50 or less
Both sexes								
Percent of population								
All races, 4-74 years.....	70.6	1.5	62.0	3.7	72.8	1.0	74.5	1.6
White.....	70.9	1.1	61.7	3.7	73.4	0.6	75.6	1.6
Black.....	68.0	2.9	58.4	4.8	68.4	2.6	66.4	2.1
All races, 4-11 years.....	67.1	1.0	51.1	2.5	71.2	0.6	63.1	1.5
White.....	69.5	0.5	49.5	2.8	74.3	-	65.8	1.6
Black.....	47.3	4.5	43.4	-	49.2	4.8	46.9	0.9
All races, 12-24 years.....	84.5	1.0	70.8	4.8	87.2	0.4	86.8	0.8
White.....	85.3	0.9	69.2	5.8	88.8	0.1	87.5	0.7
Black.....	81.3	1.5	77.9	-	80.2	1.8	83.2	0.9
All races, 25-54 years.....	75.8	0.9	64.5	2.9	78.0	0.5	82.7	0.7
White.....	75.8	1.0	64.9	3.0	78.3	0.6	83.5	0.6
Black.....	74.3	0.5	60.6	2.1	75.1	0.3	75.0	1.4
All races, 55-74 years.....	47.3	3.3	57.4	4.4	46.0	2.9	47.7	5.7
White.....	48.2	2.0	58.2	3.3	47.6	1.5	48.4	5.4
Black.....	30.1	13.0	30.1	17.2	27.8	12.5	41.4	9.2
Male								
All races, 4-74 years.....	74.5	0.8	72.0	1.9	75.4	0.6	76.5	1.5
White.....	74.6	0.4	71.3	1.4	75.8	0.2	77.4	1.5
Black.....	73.2	3.5	72.9	5.0	72.3	3.4	69.3	1.4
All races, 4-11 years.....	69.7	1.0	55.3	-	73.7	1.2	65.9	1.9
White.....	70.5	-	51.3	-	75.0	-	66.8	2.1
Black.....	63.2	8.9	58.0	-	64.7	9.3	58.9	0.8
All races, 12-24 years.....	92.7	0.3	79.4	1.6	95.7	-	88.1	0.2
White.....	92.4	0.3	74.9	2.0	96.0	-	88.8	0.2
Black.....	95.3	-	97.2	-	95.3	-	86.3	0.2
All races, 25-54 years.....	80.8	0.4	86.5	0.6	80.3	0.3	84.1	0.5
White.....	81.8	0.4	88.4	0.8	81.7	0.3	85.6	0.5
Black.....	72.6	0.3	77.7	-	69.4	0.3	69.3	0.9
All races, 55-74 years.....	46.7	2.0	63.6	4.2	44.6	1.3	48.6	5.7
White.....	47.6	1.0	66.5	2.3	45.6	0.5	49.1	5.6
Black.....	34.5	17.4	41.1	18.5	24.3	19.4	44.9	7.2

See footnotes at end of table.

Table 33. Percent of population age 4-74 years with maximum visual acuity of 20/20 or better and 20/50 or less¹ with manifest strabismus, phoria, or no eye muscle imbalance, by age, sex, and race with standard errors: United States, 1971-1972--Con.

Age, sex, and race ²	Total with eye muscle imbalance		Manifest strabismus		Phoria		No eye muscle imbalance	
	20/20 or better	20/50 or less	20/20 or better	20/50 or less	20/20 or better	20/50 or less	20/20 or better	20/50 or less
Female								
Percent of population								
All races, 4-74 years.....	67.6	2.0	55.5	4.9	70.5	1.3	72.6	1.8
White.....	68.0	1.7	55.7	5.1	71.4	0.9	73.8	1.7
Black.....	63.9	2.4	43.2	4.7	65.6	2.1	63.9	2.7
All races, 4-11 years.....	64.4	1.0	47.0	5.0	68.6	-	60.1	1.0
White.....	68.4	1.1	48.0	5.3	73.6	-	64.8	1.0
Black.....	30.5	-	29.4	-	32.5	-	36.3	1.0
All races, 12-24 years.....	79.0	1.5	65.0	6.9	81.3	0.7	85.4	1.3
White.....	80.2	1.3	65.5	8.2	83.6	0.2	86.1	1.3
Black.....	73.6	2.4	62.3	-	72.2	2.7	80.0	1.7
All races, 25-54 years.....	71.8	1.4	54.7	3.9	76.1	0.7	81.3	0.8
White.....	71.1	1.5	55.7	3.9	75.4	0.8	81.5	0.7
Black.....	76.0	0.8	39.8	4.6	80.2	0.3	79.3	1.9
All races, 55-74 years.....	47.7	4.3	52.2	4.6	47.1	4.1	46.9	5.7
White.....	48.7	2.9	50.8	4.1	49.1	2.4	47.8	5.2
Black.....	26.9	9.8	15.8	15.5	29.7	8.8	38.6	10.8
Both sexes								
Standard error								
All races, 4-74 years.....	1.96	0.43	3.55	1.23	1.86	0.38	1.09	0.24
White.....	2.15	0.40	3.93	1.42	2.09	0.23	1.17	0.26
Black.....	3.40	0.98	8.52	1.44	3.48	1.18	1.65	0.49
All races, 4-11 years.....	4.01	0.61	11.40	1.59	4.17	0.60	2.07	0.59
White.....	3.79	0.39	13.71	1.75	4.03	-	2.24	0.70
Black.....	10.64	4.93	26.80	-	11.00	5.33	4.55	0.42
All races, 12-24 years.....	2.10	0.55	7.40	2.66	2.10	0.34	1.16	0.21
White.....	2.21	0.59	9.55	3.17	2.05	0.12	1.37	0.22
Black.....	6.79	1.51	15.38	-	7.41	1.74	2.51	0.62
All races, 25-54 years.....	2.50	0.47	6.39	2.06	2.39	0.39	1.22	0.20
White.....	2.92	0.53	7.31	2.29	2.64	0.44	1.27	0.23
Black.....	6.60	0.38	12.29	1.55	7.54	0.22	3.12	0.43
All races, 55-74 years.....	4.97	1.24	5.31	1.62	5.85	1.47	1.65	0.77
White.....	4.80	0.80	6.24	2.09	5.80	0.81	1.65	0.89
Black.....	9.21	3.13	17.82	4.69	9.61	5.06	5.22	2.26

See footnotes at end of table.

Table 33. Percent of population age 4-74 years with maximum visual acuity of 20/20 or better and 20/50 or less¹ with manifest strabismus, phoria, or no eye muscle imbalance, by age, sex, and race with standard errors: United States, 1971-1972—Con.

Age, sex, and race ²	Total with eye muscle imbalance		Manifest strabismus		Phoria		No eye muscle imbalance	
	20/20 or better	20/50 or less	20/20 or better	20/50 or less	20/20 or better	20/50 or less	20/20 or better	20/50 or less
<u>Male</u>		Standard error						
All races, 4-74 years.....	2.38	0.25	4.50	0.55	2.36	0.32	1.36	0.27
White.....	2.51	0.22	5.06	0.61	2.49	0.18	1.44	0.32
Black.....	5.38	1.92	9.12	2.93	5.93	2.48	3.18	0.47
All races, 4-11 years.....	5.88	1.02	14.20	-	5.23	1.29	2.33	0.95
White.....	6.16	-	17.56	-	5.79	-	2.78	1.14
Black.....	17.57	10.67	31.89	-	18.16	11.35	5.19	0.50
All races, 12-24 years.....	3.01	0.30	12.01	2.05	1.24	-	1.35	0.21
White.....	3.61	0.36	15.06	2.52	1.41	-	1.48	0.25
Black.....	3.09	-	23.00	-	3.28	-	4.30	0.25
All races, 25-54 years.....	2.38	0.28	6.37	0.89	2.49	0.31	1.57	0.28
White.....	3.21	0.32	6.95	1.27	3.25	0.35	1.45	0.31
Black.....	13.63	0.28	16.47	-	15.70	0.33	5.99	0.61
All races, 55-74 years.....	5.28	0.61	9.93	1.28	5.99	0.73	2.68	0.99
White.....	5.27	0.48	10.53	1.25	6.10	0.38	2.94	1.10
Black.....	12.06	6.75	24.13	9.35	9.48	10.43	7.58	2.54
<u>Female</u>								
All races, 4-74 years.....	2.41	0.63	4.91	1.87	2.17	0.48	1.23	0.33
White.....	2.68	0.62	5.26	2.07	2.50	0.37	1.27	0.35
Black.....	4.61	1.15	12.59	3.75	4.94	1.35	1.69	0.72
All races, 4-11 years.....	5.38	0.68	19.58	3.33	6.21	-	2.88	0.47
White.....	5.31	0.78	21.12	3.60	6.01	-	3.15	0.54
Black.....	8.06	-	32.37	-	8.53	-	5.44	0.69
All races, 12-24 years.....	2.75	0.90	7.93	4.68	3.29	0.57	1.81	0.51
White.....	2.37	0.95	9.85	5.41	2.93	0.20	1.85	0.55
Black.....	10.23	2.33	28.93	-	11.07	2.88	3.04	1.20
All races, 25-54 years.....	3.42	0.78	8.54	2.97	3.43	0.59	1.20	0.31
White.....	3.87	0.88	9.40	3.19	3.89	0.68	1.48	0.36
Black.....	3.97	0.52	14.56	4.39	4.13	0.30	3.20	0.58
All races, 55-74 years.....	7.06	1.80	8.53	2.69	8.47	2.07	2.24	1.07
White.....	6.71	1.34	11.26	3.11	8.58	1.45	2.25	1.16
Black.....	11.16	4.98	9.50	11.37	12.70	5.49	6.66	2.86

¹Visual acuity levels reached with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder.

²Totals include races other than white and Black.

Table 34. Prevalence rates for selected medical history items pertaining to the eye, and percent distribution by age lenses first worn, among population 6-74 years, by age, race, and sex: United States, 1971-1974

Race, sex, and selected medical history items	All ages, 6-74 years	Age in years							
		6-11 ¹	12-17	18-24	25-34	35-44	45-54	55-64	65-74
All races, both sexes		Rate per 100 population							
Ever have trouble seeing	55.9	16.4	41.3	50.2	50.7	54.8	82.7	85.8	86.7
Does (did) have trouble seeing even when wearing glasses or contact lenses	11.1	11.6	6.3	9.2	10.1	9.9	10.8	12.5	16.9
Visited doctor about trouble seeing	94.0	² 92.0	88.4	93.4	93.0	91.5	94.8	97.7	97.6
Ever miss school or work because of trouble with eyes	3.5	3.1	3.4	3.8	3.8	3.5	3.6	3.9	2.9
Ever wear glasses or contact lenses	58.9	14.0	36.8	53.0	54.2	58.8	89.3	94.9	96.7
Yes, glasses	³ 62.5	--	35.2	45.0	48.1	56.1	87.8	93.8	96.2
Yes, contact lenses	³ 0.6	--	0.4	1.1	1.1	0.4	0.5	0.1	0.1
Yes, contact lenses and glasses	³ 2.8	--	1.1	6.9	5.0	2.3	1.1	1.0	0.4
Still wear them.....	88.9	84.7	82.1	82.9	77.6	79.2	96.8	98.5	97.8
When worn:									
All the time	52.6	58.7	57.8	56.3	49.7	44.2	40.2	57.5	69.7
For reading or close work.....	90.3	91.6	86.9	83.4	82.9	85.5	93.9	96.5	98.1
For distance vision.....	62.3	66.9	71.2	71.5	65.4	56.6	47.0	62.9	72.8
At other times	57.8	62.3	64.4	64.0	57.8	51.5	44.3	59.7	72.0
		Percent distribution							
Age first worn: ⁴									
0-4 years.....	³ 1.2	--	3.8	1.7	2.2	1.3	0.7	0.1	0.2
5-9 years.....	³ 11.0	--	35.5	20.0	15.5	10.0	3.8	3.1	3.1
10-19 years.....	³ 33.9	--	60.7	70.1	55.6	37.9	16.8	10.9	10.5
20-29 years.....	³ 13.3	--	...	8.2	23.7	20.2	12.2	13.7	10.2
30-39 years.....	³ 10.5	--	...	...	3.0	20.5	15.4	13.9	13.4
40-49 years.....	³ 20.8	--	...	...	...	10.1	46.0	35.0	29.8
50 years or older.....	³ 9.3	--	...	...	...	...	5.1	23.3	32.8
		Rate per 100 population							
Ever have trouble seeing.....	50.5	15.1	34.3	43.1	45.4	48.1	80.4	82.2	83.7
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	9.4	9.2	5.3	9.0	9.0	7.6	9.7	10.0	13.7
Visited doctor about trouble seeing	93.5	² 93.3	90.5	91.9	91.1	92.0	94.5	96.6	95.9
Ever miss school or work because of trouble with eyes	3.7	3.2	3.2	3.5	4.6	4.4	3.5	3.6	3.0
Ever wear glasses or contact lenses.....	52.5	12.3	30.9	43.3	46.4	50.8	85.6	92.2	94.1
Yes, glasses	³ 57.2	--	30.3	39.9	43.0	48.7	84.1	91.4	93.6
Yes, contact lenses.....	³ 0.4	--	...	0.6	0.7	0.3	0.5	0.2	0.1
Yes, contact lenses and glasses.....	³ 1.6	--	0.7	2.8	2.7	1.8	1.0	0.7	0.4
Still wear them.....	88.9	81.0	79.7	84.4	75.9	81.2	96.0	98.5	96.8
When worn:									
All the time	51.9	52.7	60.3	63.8	54.6	49.5	37.8	50.2	61.8
For reading or close work.....	90.6	89.3	90.2	85.5	85.5	83.2	93.1	95.0	97.3
For distance vision.....	60.8	64.7	69.7	76.4	66.4	61.0	45.4	57.4	65.7
At other times	57.2	56.5	66.1	72.5	62.5	58.9	41.7	52.3	65.0
		Percent distribution							
Age first worn: ⁵									
0-4 years.....	³ 0.9	--	2.7	1.2	1.5	1.7	0.6	-	0.2
5-9 years.....	³ 10.6	--	36.8	20.7	16.2	10.3	2.5	3.0	2.2
10-19 years.....	³ 28.7	--	60.5	68.5	51.5	28.1	12.6	6.4	6.6
20-29 years.....	³ 12.7	--	...	9.7	25.8	21.0	11.9	10.1	6.8
30-39 years.....	³ 10.8	--	...	...	5.0	25.5	14.0	12.1	12.1
40-49 years.....	³ 24.0	--	...	...	...	13.4	51.3	38.5	30.0
50 years or older.....	³ 12.3	--	...	...	...	...	7.1	30.0	42.2

See footnotes at end of table.

Table 34. Prevalence rates for selected medical history items pertaining to the eye, and percent distribution by age lenses first worn, among population 6-74 years, by age, race, and sex: United States, 1971-1974—Con.

Race, sex, and selected medical history items	All ages, 6-74 years	Age in years							
		6-11 ¹	12-17	18-24	25-34	35-44	45-54	55-64	65-74
Female									
Rate per 100 population									
Ever have trouble seeing.....	60.9	17.7	48.6	56.9	55.6	60.8	84.8	89.1	89.0
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	12.3	13.5	7.0	9.4	10.8	11.6	11.8	14.6	19.2
Visited doctor about trouble seeing	94.4	² 90.9	86.9	94.4	94.4	91.1	95.0	98.6	98.8
Ever miss school or work because of trouble with eyes	3.4	3.1	3.5	4.1	3.0	2.7	3.7	4.2	2.9
Ever wear glasses or contact lenses.....	64.9	15.8	42.8	62.0	61.3	66.2	92.7	97.2	98.6
Yes, glasses	³ 67.4	—	40.4	49.8	52.7	62.9	91.2	96.0	98.1
Yes, contact lenses.....	³ 0.8	—	0.8	1.5	1.5	0.5	0.5	—	0.0
Yes, contact lenses and glasses.....	³ 3.9	—	1.6	10.6	7.0	2.8	1.1	1.2	0.5
Still wear them.....	89.0	87.5	83.9	81.9	78.8	77.7	97.4	98.5	98.5
When worn:									
All the time	53.2	63.5	55.8	51.5	46.2	40.6	42.2	63.7	75.3
For reading or close work.....	90.2	93.4	84.4	82.1	81.1	87.1	94.6	97.7	98.6
For distance vision.....	63.4	68.7	72.3	68.3	64.8	53.5	48.4	67.6	77.9
All other times.....	58.2	66.9	63.0	58.6	54.5	46.3	46.6	65.9	76.9
Percent distribution									
Age first worn: ⁶									
0-4 years.....	³ 1.4	—	4.6	2.1	2.7	1.1	0.8	0.1	0.3
5-9 years.....	³ 11.2	—	34.5	19.6	15.1	9.8	4.9	3.2	3.7
10-19 years.....	³ 37.8	—	60.9	71.1	58.4	44.7	20.2	14.8	13.3
20-29 years.....	³ 13.8	—	...	7.2	22.2	19.7	12.4	16.8	12.7
30-39 years.....	³ 10.3	—	...	...	1.6	16.9	16.6	15.4	14.3
40-49 years.....	³ 18.4	—	...	...	...	7.7	41.6	32.0	29.7
50 years or older.....	³ 6.9	—	...	...	...	...	3.5	17.6	26.0
White, both sexes									
Rate per 100 population									
Ever have trouble seeing.....	55.5	16.3	42.8	52.0	52.1	55.3	84.2	86.6	87.5
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	10.9	9.5	6.5	9.5	9.9	9.6	10.7	12.3	16.7
Visited doctor about trouble seeing	94.7	² 94.3	88.7	94.6	93.6	91.9	95.5	98.4	98.0
Ever miss school or work because of trouble with eyes	3.5	3.4	3.1	3.7	3.9	3.6	3.5	3.6	2.9
Ever wear glasses or contact lenses.....	60.9	14.5	38.0	55.4	56.0	59.2	91.5	96.2	97.6
Yes, glasses	³ 64.1	—	36.3	46.3	49.3	56.1	89.9	95.1	97.1
Yes, contact lenses.....	³ 0.6	—	0.4	1.3	1.3	0.4	0.5	0.1	0.0
Yes, contact lenses and glasses.....	³ 3.1	—	1.3	7.8	5.4	2.6	1.2	1.1	0.5
Still wear them.....	89.4	83.6	83.6	84.1	77.3	79.9	96.7	99.0	98.1
When worn:									
All the time	53.2	61.5	58.2	57.3	50.1	44.6	40.6	58.1	70.3
For reading or close work.....	90.3	90.6	85.9	83.2	83.3	84.9	93.9	97.0	98.2
For distance vision.....	63.2	69.9	72.6	73.0	66.0	57.7	47.6	63.4	73.4
At other times.....	58.3	65.1	65.3	65.0	57.9	52.0	44.5	60.0	72.4
Percent distribution									
Age first worn: ⁴									
0-4 years.....	³ 1.2	—	3.7	1.6	2.3	1.5	0.7	0.1	0.2
5-9 years.....	³ 11.1	—	36.3	20.5	15.7	10.5	4.0	3.1	3.1
10-19 years.....	³ 34.2	—	60.0	70.4	57.0	38.9	16.8	11.7	10.9
20-29 years.....	³ 13.1	—	...	7.5	22.3	19.9	12.4	13.6	10.5
30-39 years.....	³ 10.2	—	...	...	2.7	19.1	14.8	14.1	13.6
40-49 years.....	³ 21.2	—	...	...	...	10.2	46.5	35.1	30.2
50 years or older.....	³ 8.9	—	...	...	...	...	4.8	22.4	31.5

See footnotes at end of table.

Table 34. Prevalence rates for selected medical history items pertaining to the eye, and percent distribution by age lenses first worn, among population 6-74 years, by age, race, and sex: United States, 1971-1974—Con.

Race, sex, and selected medical history items	All ages, 6-74 years	Age in years							
		6-11 ¹	12-17	18-24	25-34	35-44	45-54	55-64	65-74
White male		Rate per 100 population							
Ever have trouble seeing.....	52.1	15.5	35.1	44.8	45.7	48.9	83.2	83.3	84.6
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	9.3	8.4	5.8	9.7	8.1	7.3	10.0	9.4	13.6
Visited doctor about trouble seeing.....	94.3	95.7	² 91.3	93.6	91.4	92.0	95.2	97.8	96.3
Ever miss school or work because of trouble with eyes.....	3.7	3.5	2.9	3.5	4.9	4.5	3.7	3.3	2.8
Ever wear glasses or contact lenses.....	54.6	12.5	31.4	46.5	47.1	52.0	88.9	93.9	95.3
Yes, glasses.....	³ 59.0	—	30.6	42.5	43.5	49.6	87.2	92.9	94.9
Yes, contact lenses.....	³ 0.4	—	—	0.7	0.8	0.3	0.5	0.2	0.0
Yes, contact lenses and glasses.....	³ 1.7	—	0.8	3.3	2.8	2.0	1.1	0.8	0.4
Still wear them.....	88.9	78.7	80.8	84.0	74.9	81.3	95.8	98.8	97.2
When worn:									
All the time.....	52.3	54.8	61.5	63.5	54.7	49.3	38.3	51.3	62.5
For reading or close work.....	90.6	87.5	88.8	85.6	86.3	82.5	93.0	95.9	97.6
For distance vision.....	61.4	66.5	72.1	76.2	67.0	61.6	46.3	57.7	66.4
At other times.....	57.5	59.0	68.0	72.3	61.8	59.1	42.2	53.0	65.5
		Percent distribution							
Age first worn: ⁷									
0-4 years.....	³ 1.0	—	3.1	1.2	1.7	1.8	0.6	—	0.2
5-9 years.....	³ 10.8	—	39.2	21.4	16.5	10.6	2.5	2.9	2.3
10-19 years.....	³ 28.6	—	57.7	68.3	52.6	28.6	13.0	6.8	7.0
20-29 years.....	³ 12.6	—	—	9.0	24.8	20.6	12.1	10.4	7.0
30-39 years.....	³ 10.8	—	—	—	4.4	24.7	14.3	12.1	12.2
40-49 years.....	³ 24.3	—	—	—	—	13.8	50.8	38.7	30.5
50 years or older.....	³ 12.0	—	—	—	—	—	6.7	29.0	40.8
White female		Rate per 100 population							
Ever have trouble seeing.....	62.5	17.1	50.9	58.8	57.9	61.5	85.0	89.6	89.6
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	12.1	10.4	7.1	9.4	11.1	11.3	11.3	14.7	18.9
Visited doctor about trouble seeing.....	95.0	² 93.0	86.8	95.3	95.2	91.9	95.8	98.9	99.3
Ever miss school or work because of trouble with eyes.....	3.3	3.2	3.4	3.9	3.0	2.7	3.4	3.7	2.9
Ever wear glasses or contact lenses.....	66.9	16.4	45.0	63.9	64.2	66.1	93.9	98.4	99.3
Yes, glasses.....	³ 68.8	—	42.3	49.9	54.6	62.4	92.3	97.0	98.7
Yes, contact lenses.....	³ 0.9	—	0.9	1.8	1.7	0.5	0.5	—	0.0
Yes, contact lenses and glasses.....	³ 4.3	—	1.9	12.2	7.8	3.2	1.2	1.3	0.5
Still wear them.....	89.8	87.4	85.7	84.2	78.8	78.8	97.5	99.2	98.7
When worn:									
All the time.....	53.9	66.7	55.7	53.0	47.0	41.2	42.5	64.2	75.8
For reading or close work.....	90.1	92.9	83.7	81.6	81.3	86.6	94.8	98.0	98.6
For distance vision.....	64.5	72.6	72.9	70.7	65.3	54.9	48.8	68.5	78.5
At other times.....	58.8	69.8	63.4	60.1	55.2	46.9	46.6	66.1	77.4
		Percent distribution							
Age first worn: ⁶									
0-4 years.....	³ 1.4	—	4.2	1.9	2.7	1.3	0.8	0.2	0.2
5-9 years.....	³ 11.4	—	34.1	19.8	15.1	10.5	5.3	3.3	3.7
10-19 years.....	³ 38.5	—	61.7	71.9	59.9	46.7	20.0	16.0	13.7
20-29 years.....	³ 13.5	—	—	6.4	20.7	19.3	12.7	16.3	13.0
30-39 years.....	³ 9.8	—	—	—	1.5	14.8	15.2	15.8	14.6
40-49 years.....	³ 18.8	—	—	—	—	7.4	42.8	31.9	30.0
50 years or older.....	³ 6.6	—	—	—	—	—	3.2	16.6	24.8

See footnotes at end of table.

Table 34. Prevalence rates for selected medical history items pertaining to the eye, and percent distribution by age lenses first worn, among population 6-74 years, by age, race, and sex: United States, 1971-1974—Con.

Race, sex, and selected medical history items	All ages, 6-74 years	Age in years							
		6-11 ¹	12-17	18-24	25-34	35-44	45-54	55-64	65-74
Black, both sexes		Rate per 100 population							
Ever have trouble seeing.....	41.4	16.2	32.8	38.1	41.0	46.8	68.2	76.3	78.9
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	13.0	26.9	4.3	7.5	8.1	14.5	13.1	17.4	18.8
Visited doctor about trouble seeing	86.7	² 78.0	85.6	81.2	86.9	87.7	86.2	89.1	93.2
Ever miss school or work because of trouble with eyes	3.8	2.0	5.0	4.7	2.3	2.8	4.9	6.4	3.7
Ever wear glasses or contact lenses	42.8	11.6	28.3	34.6	38.4	54.2	68.3	80.2	88.1
Yes, glasses	³ 49.2	---	28.3	33.8	37.6	54.2	68.3	80.2	87.7
Yes, contact lenses.....	³ 0.1	---	-	0.1	0.1	-	-	-	0.4
Yes, contact lenses and glasses.....	³ 0.2	---	-	0.7	0.7	-	-	-	-
Still wear them.....	82.8	91.5	66.8	68.3	78.2	69.5	97.3	92.6	94.3
When worn:									
All the time	46.8	43.3	52.6	48.4	45.0	38.3	35.2	52.3	63.5
For reading or close work.....	91.2	98.4	95.1	88.8	77.0	91.9	92.5	93.8	96.5
For distance vision.....	52.8	50.2	57.7	56.9	59.3	43.5	39.7	54.7	66.4
At other times	52.9	47.0	54.4	53.9	57.8	44.5	41.0	58.7	67.4
		Percent distribution							
Age first worn: ⁸									
0-4 years	³ 1.0	---	4.3	3.3	0.4	-	0.3	-	0.2
5-9 years.....	³ 9.4	---	28.4	16.4	15.3	6.3	1.6	3.1	3.1
10-19 years.....	³ 29.9	---	67.3	65.3	41.3	29.8	16.5	2.3	6.3
20-29 years.....	³ 16.4	---	...	14.9	41.2	23.1	9.8	16.3	6.4
30-39 years.....	³ 13.2	---	...	...	1.9	33.3	24.4	11.9	11.5
40-49 years.....	³ 16.3	---	...	...	...	7.6	38.1	29.0	25.6
50 years or older.....	³ 13.8	---	...	...	...	...	9.3	37.4	46.9
Black male		Rate per 100 population							
Ever have trouble seeing.....	36.1	10.9	29.6	27.7	44.7	31.7	53.8	65.7	73.4
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	10.5	16.0	2.5	1.7	9.2	15.0	5.7	21.7	13.4
Visited doctor about trouble seeing	83.6	² 75.5	83.7	68.2	87.6	97.5	83.3	77.8	91.9
Ever miss school or work because of trouble with eyes	3.6	1.7	5.6	4.1	1.4	3.9	2.6	7.0	4.8
Ever wear glasses or contact lenses	33.5	10.3	25.5	14.3	37.9	32.6	54.8	71.7	81.9
Yes, glasses	³ 38.8	---	25.5	14.3	37.7	32.6	54.8	71.7	81.0
Yes, contact lenses.....	³ 0.1	---	-	-	0.2	-	-	-	0.9
Yes, contact lenses and glasses.....	³ -	---	-	-	-	-	-	-	-
Still wear them.....	85.9	95.1	66.8	81.7	79.4	73.2	98.4	94.6	92.3
When worn:									
All the time	46.0	46.2	49.5	77.4	55.0	41.9	27.9	39.9	53.4
For reading or close work.....	91.1	100.0	99.3	94.1	74.9	90.8	93.8	92.1	93.3
For distance vision.....	51.6	61.5	50.0	89.3	63.2	44.3	30.7	46.4	58.0
At other times	53.0	47.7	50.4	77.4	72.5	48.6	32.3	48.7	60.0
		Percent distribution							
Age first worn: ⁹									
0-4 years	³ -	---	-	-	-	-	-	-	-
5-9 years.....	³ 8.9	---	16.8	18.6	16.5	9.3	2.3	4.4	1.2
10-19 years.....	³ 26.6	---	83.2	55.3	42.1	18.8	6.5	-	1.4
20-29 years.....	³ 15.1	---	...	26.1	40.6	28.0	10.7	3.8	4.2
30-39 years.....	³ 9.4	---	...	...	0.8	33.1	10.9	13.8	11.4
40-49 years.....	³ 20.8	---	...	...	...	10.9	56.5	27.9	24.4
50 years or older.....	³ 19.1	---	...	...	...	...	13.0	50.1	57.5

See footnotes at end of table.

Table 34. Prevalence rates for selected medical history items pertaining to the eye, and percent distribution by age lenses first worn, among population 6-74 years, by age, race, and sex: United States, 1971-1974—Con.

Race, sex, and selected medical history items	All ages, 6-74 years	Age in years							
		6-11 ¹	12-17	18-24	25-34	35-44	45-54	55-64	65-74
Black female		Rate per 100 population							
Ever have trouble seeing.....	50.0	21.3	36.0	46.4	37.6	55.9	82.1	83.7	83.0
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	14.5	35.6	6.1	8.8	7.1	14.3	17.9	15.0	22.4
Visited doctor about trouble seeing	88.6	² 79.7	87.3	87.4	86.2	84.3	88.0	95.2	94.1
Ever miss school or work because of trouble with eyes	4.0	2.3	4.4	5.1	3.0	2.1	7.2	6.0	2.9
Ever wear glasses or contact lenses	50.8	12.8	31.1	50.6	38.8	67.4	81.3	86.1	92.7
Yes, glasses	³ 57.8	—	31.1	49.2	37.5	67.4	81.3	86.1	92.7
Yes, contact lenses.....	³ 0.0	—	-	0.2	-	-	-	-	-
Yes, contact lenses and glasses.....	³ 0.4	—	-	1.2	1.3	-	-	-	-
Still wear them.....	81.0	88.6	66.8	65.3	77.2	68.4	96.6	91.5	95.7
When worn:									
All the time	47.2	40.9	55.7	41.7	36.3	37.2	40.1	59.1	70.1
For reading or close work.....	91.2	97.1	91.0	87.6	78.9	92.2	91.6	94.7	98.7
For distance vision.....	53.5	40.9	65.2	49.3	56.0	43.3	45.5	59.1	71.9
At other times	52.9	46.5	58.3	48.6	44.7	43.2	46.9	64.2	72.2
		Percent distribution							
Age first worn: ⁶									
0-4 years.....	³ 1.6	—	8.4	4.1	0.7	-	0.5	-	0.3
5-9 years.....	³ 9.7	—	39.3	15.9	14.2	5.4	1.1	2.4	4.4
10-19 years.....	³ 31.8	—	52.3	67.6	40.5	33.0	23.1	3.6	9.7
20-29 years.....	³ 17.1	—	...	12.4	41.7	21.6	9.3	23.6	7.8
30-39 years.....	³ 15.3	—	...	...	2.9	33.3	33.1	10.9	11.6
40-49 years.....	³ 13.8	—	...	...	...	6.7	26.0	29.6	26.5
50 years or older.....	³ 10.8	—	...	...	...	...	6.8	30.0	39.8

¹Questions were answered by parent.

²Visited doctor about vision problem other than trouble seeing at night or in dark.

³Does not include 6-11 years.

⁴Average age is 7.1 years.

⁵Average age is 7.4 years.

⁶Average age is 6.9 years.

⁷Average age is 7.3 years.

⁸Average age is 7.2 years.

⁹Average age is 7.5 years.

Table 34A. Standard errors for prevalence rates for selected medical history items pertaining to the eye, and percent distribution by age lenses first worn, among population 6-74 years, by age, race, and sex: United States, 1971-1974

Race, sex, and selected medical history item	All ages, 6-74 years	Age in years							
		6-11 ¹	12-17	18-24	25-34	35-44	45-54	55-64	65-74
All races, both sexes		Standard error of rate							
Ever have trouble seeing.....	0.67	1.00	1.49	1.47	1.49	1.19	1.03	1.56	1.00
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	0.49	2.46	1.22	1.18	1.18	1.08	0.95	1.12	0.84
Visited doctor about trouble seeing	0.38	² 2.36	1.16	0.92	1.02	1.00	0.70	0.51	0.33
Ever miss school or work because of trouble with eyes	0.26	0.48	0.53	0.50	0.52	0.56	0.70	0.67	0.43
Ever wear glasses or contact lenses	0.45	0.82	1.44	1.13	1.39	1.26	0.74	0.75	0.33
Yes, glasses	³ 0.47	---	1.46	1.18	1.34	1.23	0.83	0.89	0.36
Yes, contact lenses.....	³ 0.10	---	0.15	0.29	0.27	0.14	0.27	0.08	0.04
Yes, contact lenses and glasses.....	³ 0.24	---	0.37	0.58	0.73	0.41	0.31	0.39	0.17
Still wear them.....	0.46	2.99	1.67	1.57	1.54	1.39	0.52	0.39	0.30
When worn:									
All the time	0.92	4.44	2.27	1.98	1.61	1.86	1.57	1.95	1.41
For reading or close work.....	0.41	1.85	1.46	1.47	1.42	1.37	0.77	0.98	0.35
For distance vision.....	0.82	4.65	1.83	1.71	1.51	1.77	1.52	1.74	1.26
At other times	0.87	4.16	2.40	1.84	1.63	1.87	1.66	1.99	1.40
		Standard error of percent							
Age first worn: ⁴									
0-4 years.....	³ 0.14	---	0.91	0.47	0.41	0.43	0.23	0.08	0.15
5-9 years.....	³ 0.43	---	2.11	1.39	1.19	1.26	0.69	0.59	0.61
10-19 years.....	³ 0.58	---	1.99	1.93	1.69	1.84	0.93	1.25	0.79
20-29 years.....	³ 0.46	---	...	1.28	1.51	1.50	0.96	1.38	0.65
30-39 years.....	³ 0.45	---	...	...	0.71	1.70	1.30	1.16	0.69
40-49 years.....	³ 0.53	---	...	...	...	1.15	1.67	1.68	1.11
50 years or older.....	³ 0.33	---	...	...	...	...	0.73	1.21	1.22
Male		Standard error of rate							
Ever have trouble seeing.....	0.94	1.28	1.77	2.38	2.80	2.61	1.42	1.98	1.47
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	0.70	3.02	2.10	2.31	1.93	1.96	1.31	1.63	0.81
Visited doctor about trouble seeing	0.47	² 4.05	1.84	1.86	2.26	1.63	0.96	0.93	0.69
Ever miss school or work because of trouble with eyes	0.42	0.73	0.60	0.76	1.13	0.91	1.01	1.01	0.55
Ever wear glasses or contact lenses	0.64	1.16	1.86	2.19	2.21	2.33	1.45	1.58	0.63
Yes, glasses	³ 0.64	---	1.75	2.28	2.21	2.25	1.35	1.74	0.67
Yes, contact lenses.....	³ 0.12	---	...	0.44	0.32	0.21	0.33	0.16	0.10
Yes, contact lenses and glasses.....	³ 0.20	---	0.35	0.73	0.66	0.72	0.44	0.64	0.17
Still wear them.....	0.62	5.31	2.54	2.04	2.71	1.94	1.00	0.51	0.53
When worn:									
All the time	1.05	4.93	3.47	3.58	3.06	3.55	2.24	2.74	1.69
For reading or close work.....	0.59	3.22	2.20	2.50	2.62	2.44	1.18	1.86	0.53
For distance vision.....	1.02	5.92	3.75	3.06	2.79	3.03	2.23	2.63	1.78
At other times	0.94	4.82	3.07	3.35	3.03	3.55	2.19	2.86	1.72
		Standard error of percent							
Age first worn: ⁵									
0-4 years.....	³ 0.20	---	1.14	0.62	0.49	0.88	0.36	-	0.13
5-9 years.....	³ 0.62	---	3.94	2.39	2.22	2.28	0.77	0.89	0.55
10-19 years.....	³ 0.88	---	3.74	3.23	3.50	3.66	1.54	1.16	0.95
20-29 years.....	³ 0.65	---	...	2.50	2.77	2.86	1.44	1.55	0.91
30-39 years.....	³ 0.84	---	...	...	1.69	3.08	1.54	1.72	0.97
40-49 years.....	³ 0.95	---	...	...	...	2.30	2.37	2.71	1.29
50 years or older.....	³ 0.56	---	...	...	...	...	1.35	1.78	1.83

See footnotes at end of table.

Table 34A. Standard errors for prevalence rates for selected medical history items pertaining to the eye, and percent distribution by age lenses first worn, among population 6-74 years, by age, race, and sex: United States, 1971-1974—Con.

Race, sex, and selected medical history item	All ages, 6-74 years	Age in years							
		6-11 ¹	12-17	18-24	25-34	35-44	45-54	55-64	65-74
Female									
Standard error of rate									
Ever have trouble seeing.....	0.75	1.62	2.25	1.62	1.37	1.32	1.68	1.94	1.05
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	0.59	3.66	1.66	1.12	1.36	1.21	1.47	1.89	1.32
Visited doctor about trouble seeing	0.46	² 3.69	1.61	0.71	0.96	1.03	0.98	0.54	0.27
Ever miss school or work because of trouble with eyes	0.24	0.72	0.73	0.68	0.41	0.54	0.78	0.97	0.66
Ever wear glasses or contact lenses.....	0.66	1.28	2.12	1.25	1.58	1.38	1.14	0.83	0.26
Yes, glasses	³ 0.75	—	2.23	1.27	1.67	1.58	1.26	0.99	0.36
Yes, contact lenses.....	³ 0.13	—	0.31	0.40	0.38	0.20	0.31	—	0.01
Yes, contact lenses and glasses.....	³ 0.37	—	0.66	0.94	1.00	0.60	0.45	0.53	0.26
Still wear them.....	0.65	3.22	1.99	2.12	1.63	1.75	0.49	0.54	0.32
When worn:									
All the time	1.23	5.78	3.31	2.13	1.80	2.07	2.31	2.64	1.88
For reading or close work.....	0.58	2.79	2.33	1.50	1.48	1.57	1.06	0.72	0.38
For distance vision.....	1.03	5.19	2.74	1.86	1.76	2.21	2.12	2.40	1.77
At other times	1.14	5.71	3.11	2.01	1.69	2.02	2.35	2.47	1.75
Standard error of percent									
Age first worn: ⁶									
0-4 years.....	³ 0.17	—	1.17	0.61	0.59	0.38	0.23	0.15	0.23
5-9 years.....	³ 0.58	—	2.95	1.76	1.40	1.19	1.13	0.79	0.86
10-19 years.....	³ 0.77	—	3.05	1.95	1.68	1.67	1.75	1.84	1.08
20-29 years.....	³ 0.60	—	...	0.95	1.72	1.49	1.27	2.04	0.88
30-39 years.....	³ 0.47	—	...	...	0.39	1.61	1.71	1.75	0.94
40-49 years.....	³ 0.61	—	...	...	...	1.16	2.06	2.35	1.56
50 years or older.....	³ 0.37	—	...	...	...	...	0.65	1.83	1.31
White, both sexes									
Standard error of rate									
Ever have trouble seeing.....	0.72	1.06	1.57	1.56	1.53	1.33	1.18	1.68	1.09
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	0.51	2.53	1.28	1.34	1.20	1.16	0.97	1.25	0.90
Visited doctor about trouble seeing	0.42	² 2.32	1.36	1.02	1.08	1.06	0.83	0.49	0.34
Ever miss school or work because of trouble with eyes	0.29	0.54	0.60	0.61	0.61	0.60	0.79	0.62	0.44
Ever wear glasses or contact lenses.....	0.49	1.02	1.55	1.29	1.45	1.50	0.73	0.85	0.34
Yes, glasses	³ 0.50	—	1.58	1.38	1.38	1.48	0.85	0.95	0.37
Yes, contact lenses.....	³ 0.11	—	0.18	0.34	0.31	0.16	0.30	0.08	0.02
Yes, contact lenses and glasses.....	³ 0.26	—	0.42	0.70	0.80	0.46	0.34	0.43	0.18
Still wear them.....	0.43	3.35	1.67	1.45	1.71	1.33	0.56	0.28	0.29
When worn:									
All the time	1.03	4.48	2.52	2.09	1.79	1.96	1.65	2.11	1.52
For reading or close work.....	0.42	2.21	1.59	1.50	1.42	1.53	0.70	0.98	0.37
For distance vision.....	0.92	4.86	1.83	1.83	1.62	1.87	1.66	1.91	1.34
At other times	0.97	4.14	2.56	1.93	1.87	1.95	1.75	2.12	1.51
Standard error of percent									
Age first worn: ⁷									
0-4 years.....	³ 0.15	—	1.03	0.46	0.44	0.48	0.24	0.09	0.16
5-9 years.....	³ 0.46	—	2.27	1.37	1.22	1.43	0.74	0.65	0.67
10-19 years.....	³ 0.64	—	2.29	1.83	1.65	1.93	1.00	1.36	0.88
20-29 years.....	³ 0.47	—	...	1.24	1.51	1.57	0.99	1.49	0.76
30-39 years.....	³ 0.45	—	...	...	0.66	1.76	1.26	1.22	0.77
40-49 years.....	³ 0.61	—	...	...	...	1.35	1.80	1.75	1.14
50 years or older.....	³ 0.33	—	...	...	...	...	0.80	1.25	1.15

See footnotes at end of table.

Table 34A. Standard errors for prevalence rates for selected medical history items pertaining to the eye, and percent distribution by age lenses first worn, among population 6-74 years, by age, race, and sex: United States, 1971-1974—Con.

Race, sex, and selected medical history item	All ages, 6-74 years	Age in years							
		6-11 ¹	12-17	18-24	25-34	35-44	45-54	55-64	65-74
White male		Standard error of rate							
Ever have trouble seeing.....	1.02	1.42	1.95	2.65	2.87	2.75	1.68	2.01	1.56
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	0.69	3.32	2.42	2.52	1.78	2.05	1.38	1.76	0.86
Visited doctor about trouble seeing.....	0.50	² 3.58	1.90	1.87	2.48	1.69	1.06	0.80	0.76
Ever miss school or work because of trouble with eyes.....	0.46	0.84	0.66	0.90	1.26	0.95	1.09	1.04	0.61
Ever wear glasses or contact lenses.....	0.69	1.28	2.08	2.54	2.29	2.58	1.36	1.72	0.65
Yes, glasses.....	³ 0.69	—	1.96	2.63	2.21	2.50	1.33	1.81	0.67
Yes, contact lenses.....	³ 0.13	—	—	0.50	0.38	0.23	0.37	0.18	0.05
Yes, contact lenses and glasses.....	³ 0.21	—	0.41	0.86	0.66	0.79	0.49	0.70	0.18
Still wear them.....	0.63	6.05	2.68	2.23	3.05	1.95	1.06	0.52	0.47
When worn:									
All the time.....	1.18	5.41	3.62	3.65	3.26	3.64	2.53	2.86	1.87
For reading or close work.....	0.59	3.69	2.57	2.53	2.64	2.78	1.26	1.86	0.54
For distance vision.....	1.18	6.40	3.94	3.21	3.02	3.36	2.55	2.65	1.94
At other times.....	1.11	5.71	3.08	3.52	3.40	3.64	2.37	2.98	1.92
		Standard error of percent							
Age first worn: ⁸									
0-4 years.....	³ 0.22	—	1.31	0.66	0.54	0.95	0.38	—	0.14
5-9 years.....	³ 0.64	—	4.17	2.38	2.31	2.46	0.84	0.90	0.59
10-19 years.....	³ 0.93	—	3.97	3.21	3.27	3.80	1.63	1.24	1.03
20-29 years.....	³ 0.63	—	...	2.41	2.78	2.91	1.58	1.70	1.00
30-39 years.....	³ 0.84	—	...	...	1.55	3.19	1.64	1.75	1.03
40-49 years.....	³ 1.00	—	...	...	...	2.55	2.54	2.64	1.32
50 years or older.....	³ 0.56	—	...	...	...	...	1.36	1.88	1.79
White female		Standard error of rate							
Ever have trouble seeing.....	0.78	1.65	2.31	1.79	1.52	1.41	1.74	2.08	1.14
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	0.64	3.69	1.76	1.29	1.40	1.32	1.48	2.02	1.40
Visited doctor about trouble seeing.....	0.51	² 3.58	1.85	0.81	0.87	1.19	1.13	0.56	0.26
Ever miss school or work because of trouble with eyes.....	0.26	0.83	0.85	0.72	0.43	0.60	0.86	0.85	0.72
Ever wear glasses or contact lenses.....	0.66	1.52	2.13	1.43	1.72	1.58	1.00	0.54	0.27
Yes, glasses.....	³ 0.74	—	2.29	1.56	1.85	1.83	1.18	0.80	0.39
Yes, contact lenses.....	³ 0.15	—	0.36	0.48	0.43	0.23	0.34	—	0.02
Yes, contact lenses and glasses.....	³ 0.41	—	0.76	1.10	1.10	0.69	0.50	0.59	0.29
Still wear them.....	0.57	3.45	1.91	1.99	1.72	1.70	0.52	0.34	0.33
When worn:									
All the time.....	1.34	5.82	3.75	2.22	1.93	2.39	2.41	2.94	2.11
For reading or close work.....	0.59	3.21	2.56	1.61	1.50	1.66	1.01	0.67	0.42
For distance vision.....	1.09	5.25	2.76	2.03	1.85	2.33	2.15	2.71	2.00
At other times.....	1.24	5.63	3.38	2.00	1.86	2.34	2.55	2.72	1.93
		Standard error of percent							
Age first worn: ⁶									
0-4 years.....	³ 0.17	—	1.19	0.59	0.63	0.44	0.24	0.16	0.25
5-9 years.....	³ 0.62	—	3.14	1.90	1.48	1.30	1.22	0.87	0.95
10-19 years.....	³ 0.84	—	3.45	1.90	1.73	1.71	1.81	1.98	1.20
20-29 years.....	³ 0.63	—	...	1.00	1.70	1.56	1.37	2.21	1.06
30-39 years.....	³ 0.51	—	...	...	0.39	1.53	1.67	1.88	1.06
40-49 years.....	³ 0.64	—	...	...	...	1.18	2.04	2.37	1.61
50 years or older.....	³ 0.35	—	...	...	...	...	0.79	1.71	1.27

See footnotes at end of table.

Table 34A. Standard errors for prevalence rates for selected medical history items pertaining to the eye, and percent distribution by age lenses first worn, among population 6-74 years, by age, race, and sex: United States, 1971-1974—Con.

Race, sex, and selected medical history item	All ages, 6-74 years	Age in years							
		6-11 ¹	12-17	18-24	25-34	35-44	45-54	55-64	65-74
Black, both sexes		Standard error of rate							
Ever have trouble seeing.....	1.40	2.41	3.08	4.36	3.39	3.63	3.91	3.59	2.05
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	1.58	8.39	1.85	2.68	2.94	3.56	3.89	4.24	1.90
Visited doctor about trouble seeing.....	1.27	² 11.78	4.08	3.14	3.56	2.61	3.47	3.86	1.44
Ever miss school or work because of trouble with eyes.....	0.67	0.79	1.40	1.44	0.82	1.34	1.82	2.90	1.23
Ever wear glasses or contact lenses.....	1.40	1.83	3.58	3.60	3.84	3.62	3.80	5.13	1.79
Yes, glasses.....	³ 1.40	---	3.58	3.57	3.68	3.62	3.80	5.13	1.85
Yes, contact lenses.....	³ 0.04	---	-	0.09	0.10	-	-	-	0.42
Yes, contact lenses and glasses.....	³ 0.10	---	-	0.40	0.51	-	-	-	-
Still wear them.....	1.79	2.88	7.86	5.57	5.44	5.55	1.15	3.43	1.44
When worn:									
All the time.....	2.12	9.62	8.20	6.41	5.28	5.02	4.08	6.56	3.23
For reading or close work.....	1.30	1.29	1.60	3.07	5.54	2.02	3.99	3.76	0.88
For distance vision.....	2.17	10.07	7.97	5.85	6.32	5.59	4.43	5.96	3.15
At other times.....	2.24	9.07	8.02	6.63	5.29	5.50	5.50	6.35	2.83
		Standard error of percent							
Age first worn: ⁹									
0-4 years.....	³ 0.46	---	3.34	2.18	0.34	-	0.31	-	0.20
5-9 years.....	³ 1.30	---	5.15	4.42	4.62	2.65	1.16	1.79	0.88
10-19 years.....	³ 1.46	---	4.90	5.52	7.09	4.83	5.36	0.74	1.57
20-29 years.....	³ 1.54	---	...	3.46	5.48	4.79	2.28	4.19	2.09
30-39 years.....	³ 1.68	---	...	...	1.20	5.27	5.31	4.60	2.31
40-49 years.....	³ 1.66	---	...	...	...	2.51	4.91	5.26	2.84
50 years or older.....	³ 1.08	---	...	...	...	...	1.56	6.42	4.50
Black male		Standard error of rate							
Ever have trouble seeing.....	1.85	2.57	3.90	5.71	6.58	5.80	7.03	7.73	3.01
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	2.53	10.89	2.37	1.72	6.45	9.92	2.61	8.41	3.11
Visited doctor about trouble seeing.....	2.25	² 20.64	5.44	11.11	7.06	1.82	5.63	10.40	2.14
Ever miss school or work because of trouble with eyes.....	1.05	0.83	2.35	1.98	1.04	3.15	1.36	4.37	2.20
Ever wear glasses or contact lenses.....	1.94	3.12	4.47	4.06	6.62	6.10	6.24	7.98	3.56
Yes, glasses.....	³ 1.96	---	4.47	4.06	6.63	6.10	6.24	7.98	3.68
Yes, contact lenses.....	³ 0.08	---	-	-	0.22	-	-	-	0.98
Yes, contact lenses and glasses.....	³ ...	---	-	-	-	-	-	-	-
Still wear them.....	2.87	2.95	8.68	12.37	11.80	11.85	0.92	2.09	2.65
When worn:									
All the time.....	4.35	18.98	11.52	13.00	9.66	13.71	7.95	12.75	4.28
For reading or close work.....	2.54	-	0.71	5.68	10.82	5.15	3.63	6.09	2.20
For distance vision.....	4.27	19.06	11.42	8.92	13.43	13.46	8.16	10.55	4.33
At other times.....	4.08	19.10	11.46	13.00	6.62	14.19	7.85	13.70	3.63
		Standard error of percent							
Age first worn: ¹⁰									
0-4 years.....	³ ...	---	-	-	-	-	-	-	-
5-9 years.....	³ 2.64	---	6.17	12.56	10.74	8.03	2.10	4.54	1.26
10-19 years.....	³ 3.41	---	6.17	17.31	13.49	9.90	3.81	-	0.61
20-29 years.....	³ 2.93	---	...	14.42	11.15	11.07	5.00	1.99	1.59
30-39 years.....	³ 2.53	---	...	...	0.92	13.58	4.19	8.32	3.77
40-49 years.....	³ 2.23	---	...	...	...	9.36	8.09	6.71	3.45
50 years or older.....	³ 2.36	---	...	...	...	...	7.33	10.25	4.27

See footnotes at end of table.

Table 34A. Standard errors for prevalence rates for selected medical history items pertaining to the eye, and percent distribution by age lenses first worn, among population 6-74 years, by age, race, and sex: United States, 1971-1974—Con.

Race, sex, and selected medical history item	All ages, 6-74 years	Age in years							
		6-11 ¹	12-17	18-24	25-34	35-44	45-54	55-64	65-74
Black female		Standard error of rate							
Ever have trouble seeing.....	2.07	4.35	4.31	5.05	2.75	4.18	4.46	4.39	2.81
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	1.45	13.94	2.86	3.23	2.52	3.33	5.51	5.65	2.53
Visited doctor about trouble seeing.....	1.37	² 14.92	5.17	2.98	3.45	3.54	4.76	2.16	1.97
Ever miss school or work because of trouble with eyes.....	0.78	1.31	1.66	1.87	1.27	0.82	3.35	3.94	1.34
Ever wear glasses or contact lenses.....	1.83	2.58	5.03	4.03	3.70	3.62	5.88	6.23	1.57
Yes, glasses.....	³ 1.82	---	5.03	4.13	3.46	3.62	5.88	6.23	1.57
Yes, contact lenses.....	³ 0.03	---	-	0.16	-	-	-	-	-
Yes, contact lenses and glasses.....	³ 0.18	---	-	0.70	0.93	-	-	-	-
Still wear them.....	2.44	4.95	11.54	7.24	5.01	5.12	1.87	5.17	1.51
When worn:									
All the time.....	2.46	13.61	9.82	7.28	4.90	5.13	7.36	6.23	3.67
For reading or close work.....	1.61	2.45	3.35	3.68	5.81	2.55	6.25	4.42	0.39
For distance vision.....	2.47	13.61	9.02	6.61	6.78	5.55	7.59	6.08	3.68
At other times.....	2.40	11.94	9.52	8.11	6.45	5.60	8.41	5.69	3.67
		Standard error of percent							
Age first worn: ¹¹									
0-4 years.....	³ 0.72	---	6.87	2.63	0.60	-	0.52	-	0.33
5-9 years.....	³ 1.43	---	8.24	4.32	2.90	2.14	1.30	1.29	1.09
10-19 years.....	³ 2.40	---	8.86	5.15	6.02	6.00	8.10	1.09	2.45
20-29 years.....	³ 1.78	---	...	2.77	6.62	5.45	3.44	5.97	2.97
30-39 years.....	³ 2.09	---	...	...	1.85	5.73	9.39	4.61	2.36
40-49 years.....	³ 1.93	---	...	...	...	2.16	5.51	6.82	3.93
50 years or older.....	³ 1.46	---	...	...	...	...	4.76	7.14	5.20

¹Questions were answered by parent.

²Visited doctor about vision problem other than trouble seeing at night or in dark.

³Does not include 6-11 years.

⁴Standard error of average age is 0.21.

⁵Standard error of average age is 0.32.

⁶Standard error of average age is 0.24.

⁷Standard error of average age is 0.22.

⁸Standard error of average age is 0.37.

⁹Standard error of average age is 0.25.

¹⁰Standard error of average age is 0.42.

¹¹Standard error of average age is 0.50.

Table 35. Percent of total population age 6-74 years who still wear glasses and percent distribution of their usual visual acuity levels in the better eye, by age and sex: United States, 1971-1972

Age and sex	Percent of total population ¹	Total	Usual visual acuity		
			20/20 or better	20/25-20/40	20/50 or less
Both sexes					
Percent distribution					
All ages, 6-74 years.....	52.1	100.0	70.6	26.2	3.2
6-11 years.....	11.8	100.0	54.2	40.7	5.1
12-17 years.....	30.1	100.0	83.5	15.5	1.0
18-44 years.....	43.9	100.0	86.4	12.1	1.5
45-54 years.....	86.2	100.0	73.5	24.7	1.8
55-64 years.....	93.1	100.0	62.1	35.3	2.6
65-74 years.....	94.1	100.0	36.2	53.0	10.8
Male					
All ages, 6-74 years.....	46.4	100.0	73.8	23.4	3.0
6-11 years.....	9.9	100.0	56.2	38.6	5.2
12-17 years.....	24.5	100.0	89.9	10.0	0.1
18-44 years.....	37.4	100.0	87.3	11.7	1.0
45-54 years.....	81.9	100.0	77.9	19.9	2.2
55-64 years.....	90.4	100.0	65.6	31.2	3.2
65-74 years.....	90.5	100.0	37.1	52.4	10.5
Female					
All ages, 6-74 years.....	57.5	100.0	68.4	28.2	3.4
6-11 years.....	13.7	100.0	52.8	42.1	5.1
12-17 years.....	35.8	100.0	78.6	19.7	1.7
18-44 years.....	49.8	100.0	85.8	12.3	1.9
45-54 years.....	90.2	100.0	70.5	28.1	1.4
55-64 years.....	95.4	100.0	59.5	38.3	2.2
65-74 years.....	96.8	100.0	35.6	53.3	11.1

¹From Medical History questionnaire.

Table 36. Percent of total population age 6-74 years who still wear glasses and percent distribution of their maximum visual acuity levels in the better eye,¹ by age and sex: United States, 1971-1972

Age and sex	Percent of total population ²	Total	Maximum visual acuity		
			20/20 or better	20/25-20/40	20/50 or less
<u>Both sexes</u>					
Percent distribution					
All ages, 6-74 years.....	52.1	100.0	71.4	26.6	2.0
6-11 years.....	11.8	100.0	55.6	42.0	2.4
12-17 years.....	30.1	100.0	83.7	15.7	0.6
18-44 years.....	43.9	100.0	86.8	12.5	0.7
45-54 years.....	86.2	100.0	75.0	24.0	1.0
55-64 years.....	93.1	100.0	63.4	34.9	1.7
65-74 years.....	94.1	100.0	36.9	55.6	7.5
<u>Male</u>					
All ages, 6-74 years.....	46.4	100.0	74.4	23.6	2.0
6-11 years.....	9.9	100.0	59.7	38.5	1.8
12-17 years.....	24.5	100.0	89.8	10.2	-
18-44 years.....	37.4	100.0	87.9	11.7	0.4
45-54 years.....	81.9	100.0	79.0	19.7	1.3
55-64 years.....	90.4	100.0	66.8	30.2	3.0
65-74 years.....	90.5	100.0	37.9	55.4	6.7
<u>Female</u>					
All ages, 6-74 years.....	57.5	100.0	69.1	28.8	2.1
6-11 years.....	13.7	100.0	52.8	44.4	2.8
12-17 years.....	35.8	100.0	78.9	20.0	1.1
18-44 years.....	49.8	100.0	86.0	13.1	0.9
45-54 years.....	90.2	100.0	72.0	27.1	0.9
55-64 years.....	95.4	100.0	60.8	38.4	0.8
65-74 years.....	96.8	100.0	36.2	55.8	8.0

¹Visual acuity levels reached with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder.

²From Medical History questionnaire.

Table 37. Percent of total population age 6-74 years who wear glasses and have no trouble seeing with them and percent distribution of their usual visual acuity levels in the better eye, by age and sex: United States, 1971-1972

Age and sex	Percent of total population ¹	Total	Usual visual acuity		
			20/20 or better	20/25-20/40	20/50 or less
Both sexes					
All ages, 6-74 years.....	45.7	100.0	73.0	24.6	2.4
6-11 years.....	10.2	100.0	55.4	38.3	6.3
12-17 years.....	27.9	100.0	85.8	13.1	1.1
18-44 years.....	38.5	100.0	87.4	11.0	1.6
45-54 years.....	76.6	100.0	75.9	22.9	1.2
55-64 years.....	81.4	100.0	65.1	34.1	0.8
65-74 years.....	77.9	100.0	39.8	52.0	8.2
Male					
All ages, 6-74 years.....	41.5	100.0	76.1	22.0	1.9
6-11 years.....	8.8	100.0	53.4	40.7	5.9
12-17 years.....	22.9	100.0	90.9	9.0	0.1
18-44 years.....	33.5	100.0	87.8	11.0	1.2
45-54 years.....	73.7	100.0	82.6	16.5	0.9
55-64 years.....	81.3	100.0	69.7	30.1	0.2
65-74 years.....	77.8	100.0	40.6	51.1	8.3
Female					
All ages, 6-74 years.....	49.6	100.0	70.8	26.5	2.7
6-11 years.....	11.6	100.0	57.0	36.4	6.6
12-17 years.....	32.9	100.0	82.0	16.2	1.8
18-44 years.....	43.1	100.0	87.0	11.1	1.9
45-54 years.....	79.3	100.0	70.8	27.9	1.3
55-64 years.....	81.3	100.0	61.7	37.1	1.2
65-74 years.....	78.0	100.0	39.4	52.4	8.2

¹From Medical History questionnaire—percent of total population wearing glasses and having no trouble seeing with them.

Table 38. Percent of total population age 6-74 years who wear glasses and have no trouble seeing with them and percent distribution of their maximum visual acuity levels in the better eye,¹ by age and sex: United States, 1971-1972

Age and sex	Percent of total population ²	Total	Maximum visual acuity		
			20/20 or better	20/25-20/40	20/50 or less
<u>Both sexes</u>					
All ages, 6-74 years.....	45.7	100.0	72.0	26.2	1.8
6-11 years.....	10.2	100.0	51.1	42.1	6.8
12-17 years.....	27.9	100.0	81.2	18.3	0.5
18-44 years.....	38.5	100.0	84.5	14.5	1.0
45-54 years.....	76.6	100.0	75.2	23.7	1.1
55-64 years.....	81.4	100.0	61.7	37.3	1.0
65-74 years.....	77.9	100.0	36.7	56.9	6.4
<u>Male</u>					
All ages, 6-74 years.....	41.5	100.0	74.2	24.3	1.5
6-11 years.....	8.8	100.0	48.5	39.5	12.0
12-17 years.....	22.9	100.0	85.2	14.8	-
18-44 years.....	33.5	100.0	85.2	14.4	0.4
45-54 years.....	73.7	100.0	81.9	17.3	0.8
55-64 years.....	81.3	100.0	65.5	34.3	0.2
65-74 years.....	77.8	100.0	36.3	57.7	6.0
<u>Female</u>					
All ages, 6-74 years.....	49.6	100.0	70.3	27.7	2.0
6-11 years.....	11.6	100.0	53.4	44.4	2.2
12-17 years.....	32.9	100.0	77.5	21.5	1.0
18-44 years.....	43.1	100.0	83.9	14.7	1.4
45-54 years.....	79.3	100.0	69.7	28.9	1.4
55-64 years.....	81.3	100.0	58.4	40.0	1.6
65-74 years.....	78.0	100.0	36.9	56.5	6.6

¹Visual acuity levels reached with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder.

²From Medical History questionnaire—percent of total population wearing glasses and having no trouble seeing with them.

Table 39. Percent of total population age 6-74 years who do not wear glasses and percent distribution of their usual visual acuity levels in the better eye, by age and sex: United States, 1971-1972

Age and sex	Percent of total population ¹	Total	Usual visual acuity		
			20/20 or better	20/25-20/40	20/50 or less
Both sexes					
Percent distribution					
All ages, 6-74 years.....	47.9	100.0	77.0	19.5	3.5
6-11 years.....	88.2	100.0	74.7	22.0	3.3
12-17 years.....	69.9	100.0	82.6	14.1	3.3
18-44 years.....	56.1	100.0	85.2	13.3	1.5
45-54 years.....	13.8	100.0	68.0	26.9	5.1
55-64 years.....	6.9	100.0	41.1	49.6	9.3
65-74 years.....	5.9	100.0	16.3	57.5	26.2
Male					
All ages, 6-74 years.....	53.6	100.0	78.4	18.3	3.3
6-11 years.....	90.1	100.0	76.7	19.6	3.7
12-17 years.....	75.5	100.0	85.7	11.4	2.9
18-44 years.....	62.6	100.0	86.4	12.3	1.3
45-54 years.....	18.1	100.0	72.5	23.6	3.9
55-64 years.....	9.6	100.0	40.4	50.7	8.9
65-74 years.....	9.5	100.0	18.6	60.8	20.6
Female					
All ages, 6-74 years.....	42.5	100.0	75.4	20.8	3.8
6-11 years.....	86.3	100.0	72.7	24.5	2.8
12-17 years.....	64.2	100.0	79.1	17.1	3.8
18-44 years.....	50.2	100.0	84.0	14.3	1.7
45-54 years.....	9.8	100.0	62.6	30.8	6.6
55-64 years.....	4.6	100.0	42.1	48.0	9.9
65-74 years.....	3.2	100.0	12.6	51.8	35.6

¹From Medical History questionnaire.

Table 40. Percent of total population age 6-74 years who do not wear glasses and percent distribution of their maximum visual acuity levels in the better eye,¹ by age and sex: United States, 1971-1972

Age and sex	Percent of total population who do not wear glasses ²	Total	Maximum visual acuity		
			20/20 or better	20/25-20/40	20/50 or less
Both sexes					
Percent distribution					
All ages, 6-74 years.....	47.9	100.0	78.2	20.4	1.4
6-11 years.....	88.2	100.0	75.5	23.3	1.2
12-17 years.....	69.9	100.0	84.2	15.0	0.8
18-44 years.....	56.1	100.0	86.3	13.3	0.4
45-54 years.....	13.8	100.0	69.4	28.4	2.2
55-64 years.....	6.9	100.0	44.0	50.6	5.4
65-74 years.....	5.9	100.0	18.3	69.5	12.2
Male					
All ages, 6-74 years.....	53.6	100.0	79.7	19.3	1.0
6-11 years.....	90.1	100.0	77.1	20.9	2.0
12-17 years.....	75.5	100.0	87.2	12.6	0.2
18-44 years.....	62.6	100.0	87.7	12.2	0.1
45-54 years.....	18.1	100.0	74.0	24.8	1.2
55-64 years.....	9.6	100.0	42.5	54.1	3.4
65-74 years.....	9.5	100.0	19.8	71.3	8.9
Female					
All ages, 6-74 years.....	42.5	100.0	76.6	21.7	1.7
6-11 years.....	86.3	100.0	73.7	25.8	0.5
12-17 years.....	64.2	100.0	80.7	17.7	1.6
18-44 years.....	50.2	100.0	84.8	14.5	0.7
45-54 years.....	9.8	100.0	63.7	32.9	3.4
55-64 years.....	4.6	100.0	45.9	46.1	8.0
65-74 years.....	3.2	100.0	15.7	66.8	17.5

¹Visual acuity levels reached with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder.

²From Medical History questionnaire.

Table 41. Percent of total population age 6-74 years who have trouble with vision even when wearing glasses and percent distribution of their usual visual acuity levels in the better eye, by age and sex: United States, 1971-1972

Age and sex	Percent of total population ¹	Total	Usual visual acuity		
			20/20 or better	20/25-20/40	20/50 or less
<u>Both sexes</u>					
All ages, 6-74 years.....	6.4	100.0	54.7	36.8	8.5
6-11 years.....	1.6	100.0	52.5	38.9	8.6
12-17 years.....	2.2	100.0	54.6	39.8	5.6
18-44 years.....	5.4	100.0	75.5	22.5	2.0
45-54 years.....	9.6	100.0	60.6	33.2	6.2
55-64 years.....	11.7	100.0	44.7	45.0	10.3
65-74 years.....	16.2	100.0	18.7	58.2	23.1
<u>Male</u>					
All ages, 6-74 years.....	4.9	100.0	51.7	39.8	8.5
6-11 years.....	1.1	100.0	47.9	29.7	22.4
12-17 years.....	1.6	100.0	65.4	29.7	4.9
18-44 years.....	3.9	100.0	76.1	23.6	0.3
45-54 years.....	8.2	100.0	48.3	41.9	9.8
55-64 years.....	9.1	100.0	38.4	51.0	10.6
65-74 years.....	12.7	100.0	16.4	62.6	21.0
<u>Female</u>					
All ages, 6-74 years.....	7.9	100.0	56.3	35.1	8.6
6-11 years.....	2.1	100.0	54.3	42.2	3.5
12-17 years.....	2.9	100.0	49.7	44.4	5.9
18-44 years.....	6.7	100.0	75.1	21.9	3.0
45-54 years.....	10.9	100.0	69.4	27.0	3.6
55-64 years.....	14.1	100.0	48.7	41.2	10.1
65-74 years.....	18.8	100.0	19.8	56.1	24.1

¹From Medical History questionnaire.

Table 42. Percent of total population age 6-74 years who have trouble with vision even when wearing glasses and percent distribution of their maximum visual acuity levels in the better eye,¹ by age and sex: United States, 1971-1972

Age and sex	Percent of total population ²	Total	Maximum visual acuity		
			20/20 or better	20/25-20/40	20/50 or less
Both sexes					
Percent distribution					
All ages, 6-74 years.....	6.4	100.0	55.7	39.7	4.6
6-11 years.....	1.6	100.0	52.5	44.9	2.6
12-17 years.....	2.2	100.0	55.7	41.3	3.0
18-44 years.....	5.4	100.0	75.6	24.1	0.3
45-54 years.....	9.6	100.0	62.1	34.7	3.2
55-64 years.....	11.7	100.0	47.7	47.6	4.7
65-74 years.....	16.2	100.0	19.3	65.3	15.4
Male					
All ages, 6-74 years.....	4.9	100.0	51.9	44.0	4.1
6-11 years.....	1.1	100.0	47.8	52.2	-
12-17 years.....	1.6	100.0	65.3	34.7	-
18-44 years.....	3.9	100.0	76.1	23.6	0.3
45-54 years.....	8.2	100.0	49.0	45.1	5.9
55-64 years.....	9.1	100.0	38.4	57.8	3.8
65-74 years.....	12.7	100.0	16.4	71.3	12.3
Female					
All ages, 6-74 years.....	7.9	100.0	58.0	37.1	4.9
6-11 years.....	2.1	100.0	54.3	42.2	3.5
12-17 years.....	2.9	100.0	51.2	44.4	4.4
18-44 years.....	6.7	100.0	75.4	24.3	0.3
45-54 years.....	10.9	100.0	71.6	27.1	1.3
55-64 years.....	14.1	100.0	53.6	41.2	5.2
65-74 years.....	18.8	100.0	20.7	62.3	17.0

¹Visual acuity levels reached with usual correction for those testing 20/40 or better and with additional correction on spherical refraction or retinoscopy for the remainder.

²From Medical History questionnaire.

Table 43. Prevalence rates for selected medical history items among population age 6-74 years with and without eye muscle imbalance, by age, sex, and race, with standard errors: United States, 1971-1972

Age, sex, and race ¹	No eye muscle imbalance			Eye muscle imbalance			No eye muscle imbalance			Eye muscle imbalance		
	Ever have trouble seeing	Does (did) have trouble seeing even when wearing glasses or contacts	Visited doctor about trouble seeing	Ever have trouble seeing	Does (did) have trouble seeing even when wearing glasses or contacts	Visited doctor about trouble seeing	Ever have trouble seeing	Does (did) have trouble seeing even when wearing glasses or contacts	Visited doctor about trouble seeing	Ever have trouble seeing	Does (did) have trouble seeing even when wearing glasses or contacts	Visited doctor about trouble seeing
Both sexes	Rate per 100 population						Standard error					
Total, 6-74 years	53.4	12.3	93.1	61.7	12.9	94.3	1.36	0.85	0.74	1.90	1.83	1.34
All races, 6-11 years.....	16.7	11.0	87.3	21.1	12.6	100.0	1.57	3.63	5.71	4.57	6.22	-
White.....	16.6	10.2	90.8	22.2	12.7	100.0	1.68	4.66	5.14	5.07	7.48	-
Black.....	16.6	17.2	73.6	12.4	11.9	100.0	3.56	14.71	20.30	4.57	12.25	22.36
All races, 12-17 years.....	37.7	6.7	83.3	51.0	14.9	89.6	1.85	1.32	1.89	4.04	5.51	3.45
White.....	39.2	6.8	83.2	51.8	17.6	88.5	1.97	1.47	2.12	4.46	6.59	4.13
Black.....	30.0	7.2	83.1	47.4	-	95.4	4.99	3.67	4.48	7.13	-	4.00
All races, 18-44 years.....	50.1	10.8	91.8	54.0	11.4	91.9	1.61	1.11	1.28	2.38	2.15	2.92
White.....	51.5	10.9	92.3	55.4	11.3	94.3	1.94	1.03	1.47	2.75	2.18	2.21
Black.....	38.7	7.3	85.8	44.0	11.0	70.8	4.52	2.25	1.63	4.81	5.60	13.01
All races, 45-54 years.....	82.0	13.8	95.4	85.6	8.3	93.9	2.32	1.61	1.30	2.31	3.52	2.58
White.....	83.2	14.0	96.0	88.3	7.7	95.0	2.49	1.97	1.17	3.05	3.77	2.59
Black.....	71.8	11.6	90.5	65.2	15.7	82.7	3.19	4.79	4.52	14.49	9.65	9.78
All races, 55-64 years.....	81.5	12.9	97.7	89.9	16.2	97.9	3.14	1.84	0.74	2.47	4.30	1.41
White.....	81.9	12.8	98.4	89.6	16.6	98.1	3.45	1.91	0.80	2.71	4.61	1.52
Black.....	76.7	14.6	90.3	89.6	18.1	94.4	4.38	5.94	6.26	5.57	9.82	3.72
All races, 65-74 years.....	85.9	18.2	97.1	86.7	18.7	98.8	1.34	1.72	0.67	2.60	3.09	0.61
White.....	87.0	18.1	97.7	87.7	18.1	99.0	1.47	1.88	0.70	2.89	3.42	0.62
Black.....	75.3	19.0	90.9	77.4	24.8	95.6	2.70	3.19	3.22	6.96	8.01	2.48
Male	Rate per 100 population						Standard error					
Total, 6-74 years	48.3	11.3	92.9	56.7	8.6	94.3	1.90	1.14	0.90	2.50	2.51	2.45
All races, 6-11 years.....	15.0	3.5	88.5	22.3	15.5	100.0	2.18	2.48	8.11	5.17	11.11	-
White.....	14.9	3.6	92.8	23.8	17.3	100.0	2.43	2.87	7.21	5.97	12.39	-
Black.....	13.4	3.1	72.5	9.7	-	100.0	5.00	2.95	31.25	5.79	-	70.71
All races, 12-17 years.....	32.9	5.0	89.3	48.1	10.4	90.4	3.23	2.23	3.11	7.12	7.75	7.54
White.....	33.2	5.0	89.9	48.4	11.8	90.8	3.34	2.67	3.28	7.72	8.41	8.62
Black.....	32.4	6.0	83.8	46.6	-	88.5	5.06	3.80	5.57	13.93	-	19.57
All races, 18-44 years.....	44.0	10.8	91.8	48.0	7.1	91.4	2.80	2.48	1.80	3.16	4.19	4.62
White.....	44.7	10.6	92.2	49.0	6.2	95.3	3.15	2.23	2.09	3.52	3.73	3.54
Black.....	36.0	5.0	85.9	35.3	32.2	48.2	8.02	2.64	4.02	11.71	29.59	23.03
All races, 45-64 years.....	79.7	13.4	94.4	83.7	3.6	94.0	3.74	1.85	1.74	5.38	2.23	4.12
White.....	81.4	14.0	94.8	90.1	4.0	94.6	4.05	2.03	1.67	5.00	2.55	4.58
Black.....	63.9	4.4	88.9	53.7	-	89.4	7.25	1.92	8.13	24.34	-	9.11
All races, 55-64 years.....	76.7	11.8	95.5	84.3	12.4	98.4	4.24	2.43	1.60	5.56	6.55	0.61
White.....	77.6	11.1	96.7	84.0	12.7	99.0	4.48	2.63	1.59	5.94	6.89	0.33
Black.....	63.1	23.7	78.1	89.9	5.5	86.8	9.18	10.96	15.43	6.66	8.40	8.77
All races, 65-74 years.....	81.7	15.3	94.4	83.7	10.1	97.5	2.14	2.10	1.64	3.28	2.49	1.27
White.....	82.6	15.0	95.0	84.8	9.8	97.8	2.38	2.23	1.82	3.59	2.45	1.33
Black.....	71.6	17.1	87.4	73.3	15.4	93.9	4.04	4.87	5.21	10.64	10.13	5.05

¹Totals include races other than white and Black.

Table 43. Prevalence rates for selected medical history items among population age 6-74 years with and without eye muscle imbalance, by age, sex, and race, with standard errors: United States, 1971-1972—Con.

Age, sex, and race ¹	No eye muscle imbalance			Eye muscle imbalance			No eye muscle imbalance			Eye muscle imbalance		
	Ever have trouble seeing	Does (did) have trouble seeing even when wearing glasses or contacts	Visited doctor about trouble seeing	Ever have trouble seeing	Does (did) have trouble seeing even when wearing glasses or contacts	Visited doctor about trouble seeing	Ever have trouble seeing	Does (did) have trouble seeing even when wearing glasses or contacts	Visited doctor about trouble seeing	Ever have trouble seeing	Does (did) have trouble seeing even when wearing glasses or contacts	Visited doctor about trouble seeing
Female	Rate per 100 population						Standard error					
Total, 6-74 years	58.3	13.1	93.2	65.7	15.7	94.3	1.38	0.94	0.94	2.09	1.83	1.43
All races, 6-11 years.....	18.5	16.0	86.4	19.9	9.9	100.0	1.94	5.14	8.32	6.75	7.05	-
White.....	18.3	14.5	89.2	20.6	8.4	100.0	1.90	7.48	8.48	7.50	7.98	-
Black.....	19.7	28.6	74.4	15.0	25.7	100.0	6.94	24.30	25.26	6.81	19.15	22.36
All races, 12-17 years.....	43.3	8.4	78.0	52.7	17.2	89.2	3.29	2.95	3.68	5.21	6.55	3.78
White.....	46.3	8.3	77.6	53.9	20.9	87.4	3.53	3.06	4.26	6.18	8.03	4.59
Black.....	27.1	9.1	82.2	47.7	-	98.6	6.56	5.51	5.97	12.07	-	1.64
All races, 18-44 years.....	55.8	10.8	91.8	59.4	14.3	92.3	1.86	1.14	1.32	3.62	1.60	2.87
White.....	57.8	11.0	92.5	61.3	14.9	93.6	2.20	1.23	1.46	4.05	1.90	2.37
Black.....	40.7	8.2	85.8	50.3	6.0	82.1	2.86	2.89	1.92	2.98	3.42	11.21
All races, 45-54 years	84.5	14.2	96.3	86.7	10.9	93.9	2.47	2.61	1.71	4.58	4.99	3.00
White.....	85.1	13.9	97.1	87.4	9.6	95.3	2.40	3.35	1.66	5.04	5.11	3.04
Black.....	78.9	16.2	91.6	79.1	30.3	77.1	6.86	8.33	3.80	9.30	21.97	22.13
All races, 55-64 years.....	85.8	13.8	99.5	94.5	19.2	97.6	3.97	2.79	0.33	2.89	4.41	2.55
White.....	85.7	14.3	99.7	94.5	19.9	97.3	4.34	2.96	0.30	3.35	4.89	2.71
Black.....	87.4	8.7	97.4	89.4	26.3	100.0	2.77	5.19	2.08	10.61	21.45	-
All races, 65-74 years.....	89.2	20.3	99.0	88.9	24.6	99.6	1.61	2.08	0.35	3.05	3.84	0.23
White.....	90.3	20.4	99.5	89.8	24.0	99.9	1.67	2.29	0.12	3.44	4.36	0.15
Black.....	78.2	20.2	93.4	80.4	30.8	96.7	3.68	3.75	4.33	7.53	13.09	2.21

¹Totals include races other than white and Black.

Table 44. Prevalence rates for medical history findings pertaining to the eye among population age 6-74 years, by age, sex, race, and geographic region, with standard errors: United States, 1971-1972

Selected medical history findings, geographic region, and sex	Age in years								6-74 years		
	6-11	12-17	18-24	25-34	35-44	45-54	55-64	65-74	All races ¹	White	Black
Both sexes											
Rate per 100 population											
Ever have trouble seeing:											
Northeast	20.0	44.4	56.2	50.3	54.5	79.9	85.0	87.4	57.3	57.7	52.8
Midwest.....	18.2	46.8	53.8	53.6	53.6	83.9	81.7	85.6	56.7	57.9	44.2
South	12.9	35.8	43.4	45.5	60.1	85.3	88.5	90.4	55.5	59.4	40.4
West	13.8	37.0	48.8	52.6	51.8	81.8	88.1	83.3	54.0	55.2	40.4
Visited doctor about trouble seeing:											
Northeast	96.0	89.9	97.0	95.8	91.0	95.8	96.9	97.3	95.0	95.4	91.1
Midwest.....	89.8	87.7	95.2	95.5	90.9	96.9	99.3	98.3	94.9	95.0	94.4
South	85.8	85.8	91.4	89.7	91.7	89.6	96.4	97.1	92.0	94.2	79.6
West	94.8	89.6	90.0	90.4	92.5	96.3	98.3	98.0	93.9	94.2	87.8
Ever wear glasses or contact lenses:											
Northeast	18.9	40.0	59.4	53.5	59.4	91.5	96.0	97.9	61.6	62.3	54.6
Midwest.....	16.1	42.0	59.6	57.6	60.0	90.2	95.8	97.7	60.9	62.3	47.4
South	8.9	32.1	43.0	47.5	59.7	85.3	92.3	95.7	55.6	60.5	36.7
West	11.3	32.0	51.5	57.0	56.4	89.8	95.4	95.6	57.2	58.6	39.3
Male											
Ever have trouble seeing:											
Northeast	23.9	41.6	50.6	46.2	47.2	76.8	80.7	86.4	53.1	53.6	45.2
Midwest.....	16.3	36.9	43.5	46.6	41.6	81.6	79.2	80.3	50.1	51.5	34.7
South	6.6	31.8	34.0	39.6	58.6	84.7	84.5	90.3	49.7	54.0	33.4
West	12.8	26.0	44.7	48.5	47.5	78.7	84.5	77.6	49.0	49.9	34.8
Visited doctor about trouble seeing:											
Northeast	100.0	92.6	96.1	92.6	92.8	94.8	94.8	94.4	94.3	94.6	89.0
Midwest.....	94.5	90.2	94.5	96.3	92.1	97.1	98.8	97.8	95.6	95.8	96.8
South	74.1	86.9	86.4	90.2	92.3	88.1	94.5	95.4	90.7	93.2	75.8
West	88.7	91.2	89.3	84.6	90.8	96.7	98.2	96.5	92.8	93.4	79.4
Ever wear glasses or contact lenses:											
Northeast	17.2	38.2	50.3	42.6	50.4	85.2	92.6	96.4	54.4	55.4	41.9
Midwest.....	16.5	33.4	50.7	51.0	50.6	88.0	93.6	95.9	55.5	56.9	40.1
South	7.5	28.2	28.9	42.3	54.5	79.6	89.5	92.2	48.6	54.0	28.0
West	7.3	23.0	43.7	48.5	48.6	88.2	93.4	92.4	51.0	52.0	29.9
Female											
Ever have trouble seeing:											
Northeast	16.2	47.8	61.8	54.4	61.5	82.5	88.4	88.1	61.3	61.8	59.2
Midwest.....	19.9	57.3	64.9	60.2	64.3	86.3	84.3	89.3	63.2	64.4	52.2
South	20.1	39.8	51.5	50.7	61.4	85.8	92.1	90.5	60.7	64.3	46.7
West	14.7	47.1	52.1	56.0	56.0	84.6	91.3	87.9	58.5	60.0	44.7
Visited doctor about trouble seeing:											
Northeast	91.8	87.2	97.7	98.6	89.6	96.6	98.4	99.5	95.6	96.0	92.4
Midwest.....	85.7	86.0	95.7	95.0	90.1	96.7	99.8	98.6	94.3	94.4	92.8
South	91.7	84.8	94.2	89.3	91.3	90.7	98.0	98.4	93.0	95.0	82.1
West	100.0	88.8	90.5	94.6	93.9	96.0	98.4	99.0	94.7	94.8	93.3
Ever wear glasses or contact lenses:											
Northeast	20.7	42.1	68.6	64.1	68.1	96.7	98.6	99.1	68.5	68.9	65.1
Midwest.....	15.8	51.1	69.1	63.9	68.4	92.7	98.1	99.0	66.3	67.8	53.6
South	10.5	36.2	55.2	52.2	64.0	89.8	94.9	98.2	61.8	66.3	44.5
West	15.1	40.3	58.0	64.3	64.0	91.3	97.1	98.2	62.9	64.6	46.8

¹Totals include races other than white and Black.

Table 44. Prevalence rates for medical history findings pertaining to the eye among population age 6-74 years, by age, sex, race, and geographic region, with standard errors: United States, 1971-1972—Con.

Selected medical history findings, geographic region, and sex	Age in years								6-74 years		
	6-11	12-17	18-24	25-34	35-44	45-54	55-64	65-74	All races ¹	White	Black
Both sexes											
Standard error											
Ever have trouble seeing:											
Northeast	2.15	3.00	3.60	3.29	2.40	1.36	3.13	1.53	1.04	1.11	3.97
Midwest.....	1.87	2.91	3.04	2.93	2.08	2.60	4.01	3.41	1.84	1.95	3.51
South	2.30	3.53	2.75	3.31	2.76	2.18	2.10	1.22	1.31	1.32	1.72
West	1.61	2.64	2.62	1.98	1.78	1.62	2.63	1.04	1.08	1.09	3.70
Visited doctor about trouble seeing:											
Northeast	3.62	2.20	1.06	1.43	2.25	1.14	1.33	0.82	0.41	0.51	2.60
Midwest.....	4.76	2.29	1.07	1.26	1.83	1.46	0.58	0.47	0.68	0.75	1.60
South	7.33	1.05	2.02	2.17	2.43	1.54	1.01	0.56	0.73	0.96	2.05
West	4.70	2.95	3.15	3.03	1.55	1.68	1.06	0.77	1.16	1.18	3.02
Ever wear glasses or contact lenses:											
Northeast	2.16	3.09	2.20	2.23	2.74	1.40	0.86	0.72	0.99	1.09	4.13
Midwest.....	1.04	2.95	2.07	2.54	2.34	1.72	1.48	0.68	0.89	1.05	3.29
South	1.51	2.64	2.86	2.42	2.29	1.97	2.05	0.48	1.26	1.25	1.59
West	1.39	2.76	2.81	2.72	2.39	1.74	1.98	1.00	1.52	1.47	3.14
Male											
Ever have trouble seeing:											
Northeast	2.63	4.11	6.45	4.65	5.35	2.78	3.81	1.85	1.22	1.38	3.84
Midwest.....	3.04	3.14	4.01	4.92	2.75	3.54	4.77	4.58	2.21	2.38	6.09
South	1.13	3.56	4.15	7.85	6.73	1.76	3.04	1.41	2.60	2.75	2.85
West	2.12	2.54	4.29	4.62	5.85	2.27	3.18	2.68	1.06	1.36	5.71
Visited doctor about trouble seeing:											
Northeast	-	2.95	2.18	3.32	3.30	2.23	2.91	1.83	0.61	0.66	6.07
Midwest.....	8.59	4.05	2.38	1.88	3.85	1.27	1.14	0.86	0.53	0.58	0.90
South	17.51	2.50	5.26	4.73	3.30	2.95	1.64	1.03	0.96	1.06	3.50
West	10.28	4.72	5.30	7.01	3.21	2.16	1.68	1.60	1.63	1.62	5.75
Ever wear glasses or contact lenses:											
Northeast	3.10	3.82	5.14	2.91	5.11	2.88	1.78	1.32	1.27	1.45	6.25
Midwest.....	1.82	3.83	3.67	4.47	2.82	3.10	2.85	1.25	0.90	1.14	4.60
South	1.40	3.84	5.02	5.64	4.38	3.85	4.15	0.91	2.05	2.17	2.56
West	2.60	2.83	4.09	3.66	5.74	3.02	3.47	1.97	1.87	1.89	5.64
Female											
Ever have trouble seeing:											
Northeast	4.11	5.17	3.47	3.54	2.75	2.62	4.02	1.99	1.44	1.61	5.76
Midwest.....	2.39	2.85	3.06	2.61	2.66	3.06	5.22	3.06	1.82	1.84	4.31
South	3.74	6.18	3.53	1.82	2.51	4.03	3.22	1.18	1.60	1.51	2.96
West	3.70	4.28	3.08	2.77	2.79	3.71	2.71	2.04	1.60	1.48	3.78
Visited doctor about trouble seeing:											
Northeast	7.22	3.79	1.15	0.51	2.24	1.59	1.32	0.23	0.72	0.70	1.78
Midwest.....	8.39	1.89	1.16	1.37	2.11	1.88	0.26	0.79	0.95	1.04	2.51
South	6.60	2.70	1.09	2.42	2.34	2.16	1.03	0.54	0.88	1.21	2.62
West	-	4.54	2.40	2.58	1.51	2.11	1.24	0.53	1.16	1.24	2.94
Ever wear glasses or contact lenses:											
Northeast	3.07	4.29	2.16	3.59	3.28	1.14	1.18	0.58	1.47	1.43	4.27
Midwest.....	1.57	3.14	2.88	3.31	2.74	2.16	1.32	0.71	1.45	1.54	3.94
South	2.33	4.67	3.02	2.37	3.07	2.59	2.99	0.37	1.63	1.48	2.22
West	3.18	4.62	3.25	2.84	2.09	3.27	1.28	0.49	1.61	1.59	5.14

¹Totals include races other than white and Black.

Table 45. Percent distribution of lenses in the glasses or contact lenses of youths age 12-17 years, by the spherical or cylindrical power of the lens: United States, 1966-1970 and 1971-1972

Spherical or cylindrical power of lens (in diopters)	Sphere		Cylinder	
	1966-1970	1971-1972	1966-1970	1971-1972
Percent distribution of lenses tested				
Total tested	100.0	100.0	100.0	100.0
<u>Minus</u>				
5.1 D or more	6.4	6.4	6.6	-
4.1-5.0 D	5.8	6.2	6.0	0.3
3.1-4.0 D	9.4	14.6	10.4	-
2.1-3.0 D	16.7	16.0	15.6	0.8
1.6-2.0 D	11.2	11.2	10.6	0.4
1.1-1.5 D	11.7	15.8	11.8	3.6
0.6-1.0 D	10.6	10.5	11.6	6.6
0.1-0.5 D	8.4	6.4	10.4	16.7
0.0 D	4.0	2.7	3.2	43.2
<u>Plus</u>				
0.1-0.5 D	6.3	3.0	5.8	13.8
0.6-1.0 D	3.0	0.8	2.8	9.2
1.1-2.0 D	2.8	2.2	2.2	4.0
2.1 D or more	3.7	4.2	3.0	1.4

Table 46. Percent distribution of lenses in the glasses or contact lenses of youths age 12-17 years, by the degree of axis deviation of the cylinder in the lens: United States, 1966-1970 and 1971-1972

Axis deviation (in degrees)	1966-1970	1971-1972
Percent distribution of lenses tested		
Total tested	100.0	100.0
None	43.0	43.0
1°-45°	19.4	6.0
46°-90°	4.8	20.9
91°-135°	6.2	13.3
136°-180°	26.6	16.8

Table 47. Percent distribution of lenses in the glasses and contact lenses of youths age 12-17 years, by the power and equivalence of the lens: United States, 1966-1970 and 1971-1972

Power or equivalence (in diopters)	Power		Equivalence	
	1966-1970	1971-1972	1966-1970	1971-1972
Total tested	100.0	100.0	100.0	100.0
<u>Minus</u>				
7.6 D or more	15.0	1.9	7.0	1.9
5.1-7.5 D	15.1	5.2	13.0	5.1
4.1-5.0 D	8.3	6.0	9.0	5.2
3.1-4.0 D	11.3	13.9	10.4	15.0
2.1-3.0 D	12.0	17.8	15.5	18.2
1.6-2.0 D	6.4	11.3	7.8	11.1
1.1-1.5 D	4.6	11.5	8.6	13.0
0.6-1.0 D	6.3	12.1	7.4	11.2
0.1-0.5 D	3.5	5.4	4.0	6.4
0.0 D	2.1	3.2	1.2	2.2
<u>Plus</u>				
0.1-0.5 D	2.9	3.4	3.8	2.4
0.6-1.0 D	3.7	0.9	4.2	1.4
1.1-2.0 D	3.4	2.8	2.1	2.4
2.1 D or more	5.4	4.6	6.0	4.5

APPENDIXES

CONTENTS

I.	Statistical Notes.....	104
	The Survey Design.....	104
	Nonresponse.....	105
	Missing Data.....	107
	Small Numbers.....	108
	Sampling and Measurement Error.....	108
	Reliability of Measurements.....	109
	Bias and Precision of Estimates From Medical History Responses.....	111
II.	Demographic and Socioeconomic Terms	117
III.	Eye Condition Definitions.....	119
IV.	Recording and History Forms.....	121
	Visual Acuity	121
	Motility.....	121
	Refraction-Nutrition Exam	122
	Refraction-Detailed Exam.....	122
	Selected Items From Medical History Questionnaire, Ages 6-11.....	123
	Selected Items From Medical History Questionnaire, Ages 12-74.....	124

LIST OF APPENDIX TABLES

I.	Percent distribution of nonresponse adjustment factors: Health and Nutrition Examination Survey (HANES I), stands 1-35, 1971-1972	107
II.	Number of examinees, number and percent of examinees not tested, and extent of visual acuity tests imputed, by age: Health and Nutrition Examination Survey (HANES I), 1971-1972	107
III.	Number of examinees, number wearing glasses or contact lenses, and number of prescriptions not determined, by age: Health and Nutrition Examination Survey (HANES I), 1971-1972.....	108
IV.	Examiner-observer agreement in motility condition identification on 230 replicate examinations: Health and Nutrition Examination Survey (HANES I), 1971-1972.....	109
V.	Frequency and percent distribution of absolute differences between examiner and observer determinations of spherical and cylindrical power in lens for each eye: Health and Nutrition Examination Survey (HANES I), 1971-1972.....	110
VI.	Frequency and percent distribution of absolute differences between examiner and observer determinations of axis of deviation in lens for each eye: Health and Nutrition Examination Survey (HANES I), 1971-1972.....	111
VII.	Precision of selected medical history estimates for the 65-stand sample and the 35-stand subsample, by sex: United States, 1971-1972 and 1971-1974.....	112
VIII.	Prevalence rates for selected medical history items pertaining to the eye, and percent distribution by age lenses first worn, among population 6-74 years, by age and sex: United States, 1971-1972	113
VIIIA.	Standard errors for prevalence rates for selected medical history items pertaining to the eye, and percent distribution by age lenses first worn, among population 6-74 years, by age and sex: United States, 1971-1972	115

APPENDIX I

STATISTICAL NOTES

The Survey Design

The sampling plan for the first 65 stands of the Health and Nutrition Examination Survey (HANES) followed a stratified, multistage probability design in which a sample of the civilian noninstitutionalized population, 1-74 years of age, of the coterminous United States, was selected. 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 reservation lands of American Indians. Successive elements dealt with in the process of sampling were the primary sampling unit (PSU), census enumeration district (ED), segment (a cluster of households), household, eligible persons, and, finally, the sample person.

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 is either a standard metropolitan statistical area (SMSA), a single county, or two or three contiguous counties. The PSU's were grouped into 357 strata for use in the Health Interview Survey and subsequently collapsed into 40 superstrata for use in Cycles II and III of the Health Examination Survey and the Health and Nutrition Examination Survey.

Of the 40 superstrata, 15 contained a single large metropolitan area of more than 2 million population. These 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 a 3-year survey period.

In order to produce national estimates of the nutritional status of the U.S. population at an earlier date, a probability subsample of 35 stands 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 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 HANES. 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 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 HANES 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.

To select the persons in sample segments to be examined in the Health and Nutrition Examination Survey, all household members age 1-74 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 were then 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:

<i>Age in years</i>	<i>Rate</i>
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 the "Plan and Operation of a 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

NOTE: A list of references follows the text.

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 or not an individual participates is determined by many factors, some of which are uncontrollable and, therefore, may be reasonably treated as an outcome of a random event with a particular probability of occurrence. If these probabilities of participation were known and greater than zero for all persons, then the examined persons would constitute a probability sample from which unbiased estimates of the target population could be derived. In this situation, the effect of nonparticipation would only be to reduce the sample size, thereby increasing the sampling errors of examination findings. However, in practice, a potential for bias due to nonresponse exists, since the exact probabilities are never known. A further potential for bias exists if a sizable proportion of sample persons have a zero probability of participation, that is, they would never agree to participate in an examination survey of the same procedures and inducements, and if these persons differ from other sample persons with respect to characteristics under examination. It is for these reasons that intensive efforts are made in the 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 the "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 which would lead to the belief that they would never agree to participate in examination surveys and that they may differ from examined persons with respect to the characteristic 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 the following: "unable because of work, school, or household duties"; "suspicious" or "skeptical of the program"; "just not interested 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 nonexamined group for 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 percent of persons examined who reported ever being told by a doctor that they had arthritis was 20 percent; the percent for high blood pressure was 18 percent and for diabetes was 4 percent. The corresponding percents 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. Since the probabilities of participation are not known for sample persons in the Health and Nutrition Examination Survey, a procedure was adopted which multiplies the reciprocal of the probability of selection of sample persons by a factor that brings 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

Table I. Percent distribution of nonresponse adjustment factors: Health and Nutrition Examination Survey (HANES I), stands 1-35, 1971-1972

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

procedure can be effective in reducing the potential bias from nonresponse.

For the 35-stand sample of the 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 are distributed among examined persons as shown in table I.

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 obtain and record all items of information for examined persons. The extent of missing data and the rationale used for estimating these values in incomplete examinations of concern in this report are discussed below.

Visual acuity.—The extent of missing data for the visual acuity testing ranged from 3 to 5 percent for persons age 6-74 years, but among 4- and 5-year-olds more than one-fifth (22 percent) did not have visual acuity readings. The extent of missing data for those visual acuity tests is shown in table II.

Estimates were made for the missing visual acuity scores as follows. For each examined person with some (although incomplete) record of visual acuity, a visually examined respondent of the same age, sex, race, and income group with relevant findings similar to those available for the incompletely examined person was selected at random; and the remainder of his test results were assigned to the individual with those missing values.

In doing this imputation, persons whose examination showed an enucleated globe were classed as blind in that eye, and selection of missing data for persons with cataracts was made from among those with cataracts whose visual acuity had been determined. If visual acuity for one eye was available and other examination findings indicated no problems with the other

Table II. Number of examinees, number and percent of examinees not tested, and extent of visual acuity tests imputed, by age: Health and Nutrition Examination Survey (HANES I), 1971-1972

Examinee status and imputed activity tests	Age in years									
	4-74	4-5	6-11	12-17	18-24	25-34	35-44	45-54	55-64	65-74 ¹
All examinees	9,263	626	1,067	1,045	1,015	1,259	1,170	793	630	1,658
Number not tested.....	504	136	47	47	31	49	60	27	24	83
Percent	5.4	21.7	4.4	4.5	3.1	3.9	5.1	3.4	3.8	5.0
Uncorrected:										
Right eye.....	14	3	1	1	2	-	2	2	1	2
Left eye.....	11	-	1	2	1	1	2	1	1	2
Both eyes	354	133	45	40	24	41	32	12	5	22
Corrected:										
Right eye.....	15	-	-	-	-	-	-	3	2	10
Left eye.....	23	-	-	2	-	1	3	3	3	11
Both eyes	87	-	-	2	4	6	21	6	12	36

¹Includes 8 examinees who were 74 years of age at the time of interview, but became 75 years old by the time of examination.

eye, the vision data for that eye were imputed to the other eye. For those examined persons whose visual acuity had not been recorded in either eye, a visually examined respondent of the same age, sex, race, and income group was selected at random, and his test results were assigned to the individual with missing acuity data.

The assumption was made in this that the distribution of visual acuity values among those persons with missing data by age, sex, race, and other variables would be similar to values for those tested.

Refraction.—The extent of missing refraction data was greater than that for the visual acuity data. For 6-74-year-olds, the prescription was not obtained from 6 to 19 percent of the subjects who wore their glasses or contacts to the examination center (table III). Among 4- and 5-year-olds, 56 percent of the data were missing.

Because prevalence estimates were sought for right and left eye separately, data from the fellow eye were not used to fill in a partially missing record. Furthermore, due to the extent of missing data, the substitution of imputed values for missing data could lead to distortion of the national estimates.

Although no explicit method of imputation was used to replace missing refraction data, the assumption has been made here that the distribution of refraction values among those persons with missing data would be similar to the known values for those examined of the same age, sex, race, and other socioeconomic characteristics used in this report as analysis variables.

Small Numbers

In some tables, magnitudes are shown for cells for which the sample size is so small that the sampling error may be several times as great as the statistic itself. Obviously 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

In the present report, reference has been made to efforts to minimize bias and variability of 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

Table III. Number of examinees, number wearing glasses or contact lenses, and number of prescriptions not determined, by age: Health and Nutrition Examination Survey (HANES I), 1971-1972

Examinees and missing lens prescriptions	Age in years									
	4-74	4-5	6-11	12-17	18-24	25-34	35-44	45-54	55-64	65-74 ¹
All examinees	9,263	626	1,067	1,045	1,015	1,259	1,170	793	630	1,658
Number wearing glasses or contact lenses....	3,545	27	104	222	318	401	379	413	431	1,250
<u>Prescription not determined</u>										
Right eye:										
Number	361	15	16	32	60	56	51	31	27	73
Percent of total	3.9	2.4	1.5	3.1	5.9	4.4	4.4	3.9	4.3	4.4
Percent of examinees wearing glasses or contact lenses.....	10.2	55.6	15.4	14.4	18.9	14.0	13.5	7.5	6.3	5.8
Left eye:										
Number	327	15	16	33	60	47	47	18	25	66
Percent of total	3.5	2.4	1.5	3.2	5.9	3.7	4.0	2.3	4.0	4.0
Percent of examinees wearing glasses or contact lenses.....	9.2	55.6	15.4	14.9	18.9	11.7	12.4	4.4	5.8	5.3

¹Includes 8 examinees who were 74 years of age at the time of interview, but became 75 years old by the time of examination.

been the determination of how imprecise the survey results may be because they come from a sample rather than from the measurement of all elements in the universe.

The estimation of sampling errors for a study of the type of the 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 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 when the number of cases in a cell is small or, even 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. Again, readers are reminded that these estimated sampling errors do not reflect any residual bias that might still be present after the attempted correction for nonresponse. 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 2½ times as large.

Reliability of Measurements

Supervised testing with some partial replication was done by the senior ophthalmologists from NEI at 24 of the 35 examination locations for 230 examinees (2.5 percent of the 9,263 ophthalmology examinations given those 4-74 years of age) included both determination of motility status and prescription in present glasses from which it is possible to obtain an estimate of the reliability of these tests and measurements. This "replication" of the survey ophthalmologist's examination was done in the first two sessions of each of these 24 locations.

Motility.—Motility examination results show at least a 97-percent agreement on the presence or absence of a given motility defect for all conditions except esophoria and exophoria in which the agreement was 82 percent (table IV).

Table IV. Examiner-observer agreement in motility condition identification on 230 replicate examinations: Health and Nutrition Examination Survey (HANES I), 1971-1972

Abnormal motility condition	Examiner-observer agreed—total		Examiner-observer agreed				Examiner-observer disagreed on types of abnormalities		Percent disagreement within abnormal groups ¹
			Normal		Abnormal				
	Number of replicates	Percent of replicates	Number of replicates	Percent of replicates	Number of replicates	Percent of replicates	Number of replicates	Percent of replicates	
Tropia:									
Eso-exo	225	97.8	212	92.2	13	5.7	5	2.2	27.8
Hyper	228	99.1	227	98.7	1	0.4	2	0.9	66.7
Comitant-incomitant	224	97.4	216	97.4	8	3.5	6	2.6	42.9
Phoria:									
Eso-exo	189	82.2	167	72.6	22	9.6	41	17.8	65.1
Hyper	320	100.0	229	99.6	1	0.4	-	-	-
Nystagmus	229	99.6	228	99.1	1	0.4	1	0.4	50.0

¹By examiner and/or observer.

However, the results indicate some difficulty in condition identification. Of those examinees identified by examiner or observer as having a specific eye muscle problem, examiner-observer agreement ranges from 33 percent for hyperopia to 100 percent for hyperphoria.

Some further indication of the reliability of the identification of motility defects on the examination is available for all examinees from a comparison between this initial identification and the significant eye conditions diagnosed by the survey ophthalmologists. Less than 0.1 percent of the examinees were diagnosed as having a significant tropia that was not detected on the initial part of the examination, and 98 percent of those conditions of tropia initially detected were considered significant pathology after more complete examination.

Refraction status.—An assessment of the reliability of the lensometer measurements of the prescription in the present glasses or contact

lenses is possible also from the 230 replicate examinations.

Frequency and percent distributions of the absolute differences between the survey ophthalmologist examiner and NEI senior ophthalmologist observer for sphere, cylinder, and axis of deviation are presented in tables V and VI.

As a summary statistic of the distribution of differences between examiner and observer shown in tables V and VI, the percentage technical error of measurement v is computed as follows:

$$v = \frac{100}{\bar{X}} \sqrt{\frac{\sum_{i=1}^n d_i^2}{2n}}$$

where

n is the number of pairs of replicate measurements in the study,

Table V. Frequency and percent distribution of absolute differences between examiner and observer determinations of spherical and cylindrical power in lens for each eye: Health and Nutrition Examination Survey (HANES I), 1971-1972

Absolute difference (in diopters)	Sphere				Cylinder			
	Right eye		Left eye		Right eye		Left eye	
	Fre- quency	Percent distrib- ution	Fre- quency	Percent distrib- ution	Fre- quency	Percent distrib- ution	Fre- quency	Percent distrib- ution
Total	73	100.0	72	100.0	73	100.0	72	100.0
0.00 D	45	61.6	49	68.1	55	75.3	58	80.6
0.12 D	-	-	3	4.2	-	-	3	4.2
0.25 D	9	12.3	9	12.5	17	23.3	9	12.5
0.28 D	-	-	1	1.4	-	-	-	-
0.43 D	-	-	1	1.4	-	-	-	-
0.50 D	13	17.8	3	4.2	1	1.4	2	2.8
0.62 D	1	1.4	-	-	-	-	-	-
0.75 D	2	2.7	3	4.2	-	-	-	-
0.87 D	-	-	1	1.4	-	-	-	-
1.00 D	1	1.4	-	-	-	-	-	-
1.38 D	-	-	1	1.4	-	-	-	-
2.50 D	2	2.7	-	-	-	-	-	-
4.00 D	-	-	1	1.4	-	-	-	-

Lens	Sphere	Cylinder
	Average difference (in diopters)	
Both lenses	-0.05	-0.06
Right eye lens	-0.12	-0.03
Left eye lens	+0.02	-0.08

Table VI. Frequency and percent distribution of absolute differences between examiner and observer determinations of axis of deviation in lens for each eye: Health and Nutrition Examination Survey (HANES I), 1971-1972

Absolute difference (in degrees)	Axis			
	Right eye		Left eye	
	Fre- quency	Percent distri- bution	Fre- quency	Percent distri- bution
Total	52	100.0	48	100.0
0°	19	36.5	15	31.2
1°	2	3.8	2	4.2
2°	4	7.7	2	4.2
3°	2	3.8	4	8.3
4°	-	-	1	2.1
5°	4	7.7	6	12.5
7°	-	-	1	2.1
10°	5	9.6	1	2.1
15°	1	1.9	-	-
20°	-	-	1	2.1
30°	-	-	1	2.1
33°	-	-	1	2.1
35°	1	1.9	-	-
45°	1	1.9	-	-
60°	-	-	1	2.1
72°	1	1.9	-	-
85°	1	1.9	3	6.2
86°	1	1.9	-	-
87°	2	3.8	-	-
89°	1	1.9	1	2.1
90°	3	5.8	3	6.2
91°	-	-	1	2.1
92°	1	1.9	-	-
93°	1	1.9	1	2.1
95°	-	-	1	2.1
175°	1	1.9	1	2.1
177°	1	1.9	-	-
178°	-	-	1	2.1

Lens	Average difference (in degrees)
Both lenses	-6.0°
Right eye lens.....	+2.0°
Left eye lens.....	-13.9°

d_i^2 is the square of the difference between members of the i th pair of replicate measurements ($i = 1, \dots, n$), and

X is the arithmetic mean of the $2n$ measurements in the study.

The percentage technical error v can be interpreted as a "coefficient of variation" and is a dimensionless constant. It essentially describes the size of measurement error relative to the mean of a measurement. As one measure of the differences between examiner and observer, the values of v are as follows:

Right eye	v
Sphere	15.1
Cylinder	14.8
Axis.....	37.3
<i>Left eye</i>	
Sphere	17.8
Cylinder	17.0
Axis.....	33.3

These values of v indicate that refraction was replicated with some difficulty. Upon further examination, the average difference between examiner and observer given in tables V and VI indicates that no measurement bias exists.

Bias and Precision of Estimates From Medical History Responses

Comparable data from the medical history on the wearing of glasses or contact lenses and trouble seeing were available for those 6-74 years of age from the entire 65 stands of the national probability sample examined in 1971-1974. Field collection operations for this Health and Nutrition Examination Survey were started in April 1971 and completed in June 1974. Among the 24,513 selected in the national probability sample to represent the 131.4 million of that age in the civilian noninstitutionalized population, 17,854, or 72.8 percent, were examined and completed their medical histories. When adjustments are made for differential sampling ratios and nonresponse in the age-sex-income-defined population subgroups, this represents an effective response rate of 74.4 percent.

National estimates for the medical history items included in this report have been based on the entire 65-stand sample rather than limited to the 35-stand national probability sample for

which the ophthalmology examination findings were available, since the precision of the estimates from this larger sample will be greater.

Comparison of medical history responses from the 35 and 65 examination-location national probability samples permits an assessment of the extent of bias, if any, that may exist in the history and eye examination findings from the 35-stand sample for which the ophthalmology examination data are available and the extent of improvement in precision of the estimates gained by the use of the 65-location history data.

Bias.—Medical history estimates for the 35-stand subsample (table VIII) are consistent with the 65-stand sample (table 34). Furthermore, the consistency of ophthalmology with medical history findings for 35 stands implies that the selection procedures for choosing the 35-stand

subsample did not bias the ophthalmology estimates presented here.

Precision.—The components of variability that have been discussed include measurement error and sampling variability. In particular the loss in estimation precision incurred in using the probability subsample of 35 stands of the full 65-stand sample is of interest here.

The estimated coefficients of variation (i.e., the standard error of the mean divided by the mean, or $(100 S_{\bar{x}}/\bar{x})$) of the medical history estimates given in tables VIII and VIIIA for 35 stands and tables 34 and 34A for 65 stands are compared in table VII. The increase in precision for estimates based on the total population 6-74 years ranges from 0.02 to 0.78. The median of 0.40 indicates that a 40-percent increase in precision accompanied the twofold increase in sample size.

Table VII. Precision of selected medical history estimates for the 65-stand sample and the 35-stand subsample, by sex: United States, 1971-1972 and 1971-1974

Selected medical history items	Both sexes, 6-74 years		Males, 6-74 years		Females, 6-74 years	
	35 stands	65 stands	35 stands	65 stands	35 stands	65 stands
	Coefficient of variation (percent)					
Ever have trouble seeing.....	2.1	1.2	3.4	1.9	2.1	1.2
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	6.8	4.4	9.8	7.4	7.0	4.8
Visited doctor about trouble seeing	0.6	0.4	0.9	0.5	0.8	0.5
Ever miss school or work because of trouble with eyes.....	11.7	7.4	19.4	11.4	11.9	7.1
Ever wear glasses or contact lenses.....	1.0	0.8	2.2	1.2	1.5	1.0
Yes, glasses	1.1	0.8	2.1	1.1	1.7	1.1
Yes, contact lenses.....	30.0	16.7	58.0	30.0	30.0	16.2
Yes, contact lenses and glasses.....	40.0	8.6	80.0	12.5	40.0	9.5
Still wear them.....	0.7	0.5	1.0	0.7	1.2	0.7
When worn:						
All the time	3.3	1.8	3.7	2.0	4.3	2.3
For reading or close work.....	0.7	0.4	0.9	0.6	1.1	0.6
For distance vision.....	2.6	1.3	3.0	1.7	3.4	1.6
At other times	3.2	1.5	3.5	1.6	4.1	2.0
Age first worn:						
0-4 years.....	12.0	11.7	43.3	22.2	15.4	12.1
5-9 years.....	6.3	3.9	8.4	5.8	7.7	5.2
10-19 years.....	3.0	1.7	4.6	3.1	3.9	2.0
20-29 years.....	5.7	3.5	7.8	5.1	6.9	4.4
30-39 years.....	6.8	4.3	11.2	7.8	7.6	4.6
40-49 years.....	4.4	2.6	5.4	4.0	5.3	3.3
50 years or older.....	6.1	3.6	5.8	4.6	9.7	5.4

Table VIII. Prevalence rates for selected medical history items pertaining to the eye, and percent distribution by age lenses first worn, among population 6-74 years, by age and sex: United States, 1971-1972

Sex and selected medical items	All ages, 6-74 years	Age in years							
		6-11 ¹	12-17	18-24	25-34	35-44	45-54	55-64	65-74
Both sexes		Rate per 100 persons							
Ever have trouble seeing.....	55.0	17.6	40.3	49.1	48.4	54.9	82.8	83.6	86.0
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	12.4	11.4	8.6	9.8	13.0	9.5	12.6	13.8	18.1
Visited doctor about trouble seeing.....	93.3	² 91.2	84.8	91.8	91.6	91.9	95.0	97.8	97.5
Ever miss school or work because of trouble with eyes.....	3.6	3.0	3.9	3.5	4.6	3.0	3.6	4.0	3.0
Ever wear glasses or contact lenses.....	58.7	14.5	35.9	51.5	52.8	61.7	89.3	94.1	96.6
Yes, glasses.....	³ 62.5	---	34.2	44.2	47.0	58.9	87.4	93.0	96.1
Yes, contact lenses.....	³ 0.7	---	0.3	1.2	1.8	0.5	0.4	-	0.0
Yes, contact lenses and glasses.....	³ 0.2	---	-	-	0.8	0.2	0.1	-	0.2
Still wear them.....	87.6	79.8	80.6	79.5	74.7	77.0	96.6	99.0	97.9
When worn:									
All the time.....	52.7	60.2	60.7	53.3	47.4	44.5	40.8	60.5	68.8
For reading or close work.....	90.6	92.3	88.5	83.2	82.1	86.9	93.3	96.7	97.9
For distance vision.....	62.0	69.4	70.3	69.2	63.5	55.9	47.5	65.2	72.7
At other times.....	58.2	63.3	69.2	61.0	56.4	51.7	45.5	62.1	71.5
		Percent distribution							
Age first worn: ⁴									
0-4 years.....	³ 1.0	---	3.3	1.7	2.1	0.8	0.5	-	0.3
5-9 years.....	³ 10.9	---	36.2	19.1	16.1	10.2	3.9	3.4	3.6
10-19 years.....	³ 33.2	---	60.6	69.6	54.6	38.1	16.6	10.9	11.0
20-29 years.....	³ 13.1	---	...	9.6	22.9	18.8	11.7	13.9	8.5
30-39 years.....	³ 11.4	---	...	...	4.4	20.4	17.1	14.7	12.1
40-49 years.....	³ 21.1	---	...	...	...	11.7	45.1	34.1	30.6
50 years or older.....	³ 9.4	---	...	...	...	...	5.1	23.1	33.9
Male		Rate per 100 persons							
Ever have trouble seeing.....	49.8	16.3	35.3	42.3	42.2	49.1	80.4	78.7	82.1
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	10.7	7.2	5.9	9.9	13.4	7.2	11.6	11.9	14.2
Visited doctor about trouble seeing.....	93.2	² 92.4	89.5	88.7	90.5	94.9	94.3	96.3	95.1
Ever miss school or work because of trouble with eyes.....	4.1	2.7	3.7	3.7	7.2	3.3	4.0	4.5	3.2
Ever wear glasses or contact lenses.....	52.3	12.1	32.5	41.2	44.1	54.8	84.6	90.4	93.4
Yes, glasses.....	³ 57.0	---	31.8	37.8	39.9	52.3	83.0	89.5	92.8
Yes, contact lenses.....	³ 0.5	---	-	1.4	1.5	0.4	-	-	-
Yes, contact lenses and glasses.....	³ 0.2	---	-	-	1.3	-	0.1	-	0.1
Still wear them.....	88.2	72.3	81.9	83.5	73.1	80.6	95.3	99.1	96.7
When worn:									
All the time.....	51.9	54.8	60.9	59.8	53.2	49.0	39.3	53.3	60.9
For reading or close work.....	90.6	86.4	90.2	86.8	85.8	84.3	93.2	94.6	96.9
For distance vision.....	61.2	72.2	68.1	72.4	64.8	60.7	46.3	62.0	66.2
At other times.....	57.4	58.0	69.9	68.2	61.1	57.1	43.6	54.9	64.4
		Percent distribution							
Age first worn: ⁵									
0-4 years.....	³ 0.6	---	2.0	1.1	0.7	0.7	0.5	-	0.3
5-9 years.....	³ 10.5	---	34.1	21.5	16.7	9.5	2.6	4.0	2.2
10-19 years.....	³ 28.1	---	63.9	65.5	49.4	29.0	13.7	5.2	6.7
20-29 years.....	³ 12.5	---	...	11.8	24.8	19.1	11.1	11.6	5.5
30-39 years.....	³ 11.5	---	...	...	8.4	25.4	12.8	12.8	11.5
40-49 years.....	³ 24.3	---	...	...	...	16.4	52.0	36.0	29.8
50 years or older.....	³ 12.6	---	...	...	...	...	7.3	30.4	44.1

See footnotes at end of table.

Table VIII. Prevalence rates for selected medical history items pertaining to the eye, and percent distribution by age lenses first worn, among population 6-74 years, by age and sex: United States, 1971-1972—Con.

Sex and selected medical items	All ages, 6-74 years	Age in years							
		6-11 ¹	12-17	18-24	25-34	35-44	45-54	55-64	65-74
Female		Rate per 100 persons							
Ever have trouble seeing.....	59.9	18.8	45.4	55.4	53.8	60.4	84.9	87.8	89.0
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	13.6	14.6	10.9	9.7	12.7	11.3	13.4	15.3	20.9
Visited doctor about trouble seeing.....	93.4	² 90.3	81.0	94.1	92.3	89.6	95.6	98.9	99.2
Ever miss school or work because of trouble with eyes.....	3.2	3.3	4.2	3.4	2.3	2.7	3.3	3.6	2.8
Ever wear glasses or contact lenses.....	64.7	17.0	39.3	61.2	60.4	68.4	93.5	97.3	99.1
Yes, glasses.....	³ 67.6	---	36.7	50.2	53.1	65.2	91.4	96.1	98.5
Yes, contact lenses.....	³ 0.8	---	0.6	1.0	2.0	0.5	0.8	-	0.0
Yes, contact lenses and glasses.....	³ 0.2	---	-	-	0.5	0.4	-	-	0.2
Still wear them.....	87.2	85.3	79.5	77.0	75.7	74.2	97.7	99.0	98.8
When worn:									
All the time.....	53.3	64.1	60.6	49.3	43.5	41.2	42.0	66.4	74.3
For reading or close work.....	90.5	96.5	86.9	81.0	79.7	88.8	93.5	98.5	98.7
For distance vision.....	62.6	67.3	72.2	67.3	62.6	52.4	48.5	67.9	77.3
At other times.....	58.8	67.1	68.5	56.8	53.3	47.6	47.1	67.9	76.4
		Percent distribution							
Age first worn: ⁴									
0-4 years.....	³ 1.3	---	4.4	2.1	3.0	0.9	0.5	-	0.3
5-9 years.....	³ 11.2	---	37.9	17.6	15.7	10.8	5.0	2.8	4.6
10-19 years.....	³ 37.0	---	57.7	72.1	57.9	45.1	19.0	15.6	14.1
20-29 years.....	³ 13.5	---	...	8.2	21.6	18.6	12.2	15.8	10.6
30-39 years.....	³ 11.3	---	...	...	1.8	16.5	20.7	16.2	12.5
40-49 years.....	³ 18.7	---	...	...	...	8.2	39.4	32.6	31.2
50 years or older.....	³ 7.0	---	...	...	...	...	3.2	17.1	26.6

¹Questions were answered by parent.

²Visited doctor about vision problem other than trouble seeing at night or in dark.

³Does not include 6-11 years.

⁴Average age is 6.9 years.

⁵Average age is 7.0 years.

Table VIII.A. Standard errors for prevalence rates for selected medical history items pertaining to the eye, and percent distribution by age lenses first worn, among population 6-74 years, by age and sex: United States, 1971-1972

Sex and selected medical history items	All ages, 6-74 years	Age in years							
		6-11 ¹	12-17	18-24	25-34	35-44	45-54	55-64	65-74
Both sexes		Standard error of rate							
Ever have trouble seeing.....	1.17	1.39	1.49	2.10	2.49	2.03	1.86	2.41	1.25
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	0.85	3.06	1.84	1.69	1.70	1.39	1.77	1.75	1.40
Visited doctor about trouble seeing.....	0.60	² 3.85	1.28	1.75	1.64	1.25	1.17	0.67	0.58
Ever miss school or work because of trouble with eyes.....	0.42	0.66	0.76	0.57	1.18	0.58	1.13	1.00	0.73
Ever wear glasses or contact lenses.....	0.58	1.74	1.68	2.20	1.76	1.41	0.91	1.47	0.70
Yes, glasses.....	³ 0.69	--	1.86	1.73	2.24	1.40	1.04	1.58	0.66
Yes, contact lenses.....	³ 0.21	--	0.22	0.57	0.63	0.27	0.29	-	0.01
Yes, contact lenses and glasses.....	³ 0.08	--	-	-	0.55	0.16	0.03	-	0.13
Still wear them.....	0.64	4.30	2.74	2.52	2.79	1.69	0.69	0.42	0.50
When worn:									
All the time.....	1.76	5.50	3.16	4.01	2.86	2.17	2.89	2.97	1.77
For reading or close work.....	0.61	3.37	1.67	2.79	1.78	2.15	1.13	1.35	0.43
For distance vision.....	1.60	4.41	2.22	3.04	2.78	2.04	3.35	2.90	1.52
At other times.....	1.88	5.10	2.52	4.22	3.61	2.63	2.83	3.39	1.82
		Standard error of percent							
Age first worn: ⁴									
0-4 years.....	³ 0.12	--	1.17	0.43	0.55	0.36	0.31	-	0.13
5-9 years.....	³ 0.69	--	3.65	2.67	1.67	2.55	0.90	1.03	1.28
10-19 years.....	³ 1.01	--	3.62	2.17	2.26	2.56	2.10	1.83	1.36
20-29 years.....	³ 0.75	--	...	1.96	1.92	2.32	1.45	1.75	0.85
30-39 years.....	³ 0.78	--	...	...	1.52	1.99	2.35	2.12	0.94
40-49 years.....	³ 0.93	--	...	...	...	2.48	2.38	2.24	1.24
50 years or older.....	³ 0.57	--	...	...	...	...	1.57	2.03	1.97
Male		Standard error of rate							
Ever have trouble seeing.....	1.67	1.94	2.41	3.16	4.22	3.56	3.03	3.66	1.66
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	1.05	3.62	2.21	4.49	4.00	2.10	1.55	2.53	1.77
Visited doctor about trouble seeing.....	0.81	² 4.97	2.12	2.30	3.25	1.88	1.56	1.31	1.39
Ever miss school or work because of trouble with eyes.....	0.70	0.96	0.76	1.39	2.19	0.94	1.71	1.89	0.77
Ever wear glasses or contact lenses.....	1.15	2.23	2.37	2.82	2.99	2.75	2.37	3.07	1.49
Yes, glasses.....	³ 1.19	--	2.69	2.84	3.54	3.03	2.36	3.12	1.52
Yes, contact lenses.....	³ 0.29	--	-	1.10	0.80	0.46	-	-	-
Yes, contact lenses and glasses.....	³ 0.16	--	-	-	1.28	-	0.06	-	0.07
Still wear them.....	0.87	10.00	3.67	2.65	5.08	2.43	1.34	0.60	0.90
When worn:									
All the time.....	1.94	8.56	6.25	6.01	4.71	4.19	3.66	4.54	2.80
For reading or close work.....	0.84	6.49	2.67	3.92	3.69	4.39	1.56	2.47	0.57
For distance vision.....	1.81	6.56	5.72	4.60	5.08	4.63	4.21	4.29	2.51
At other times.....	2.01	7.40	4.80	6.45	5.91	4.35	3.51	5.20	3.01
		Standard error of percent							
Age first worn: ⁵									
0-4 years.....	³ 0.26	--	1.49	0.97	0.15	0.60	0.52	-	0.05
5-9 years.....	³ 0.88	--	5.54	4.50	4.07	3.23	1.03	1.43	0.79
10-19 years.....	³ 1.29	--	5.66	3.91	4.69	3.70	2.64	1.68	1.49
20-29 years.....	³ 0.97	--	...	4.55	3.71	3.41	1.98	2.25	1.26
30-39 years.....	³ 1.29	--	...	...	3.21	3.39	2.67	2.98	1.13
40-49 years.....	³ 1.32	--	...	...	...	4.07	3.09	3.84	1.66
50 years or older.....	³ 0.73	--	...	...	...	...	2.49	3.46	3.20

See footnotes at end of table.

Table VIII.A. Standard errors for prevalence rates for selected medical history items pertaining to the eye, and percent distribution by age lenses first worn, among population 6-74 years, by age and sex: United States, 1971-1972—Con.

Sex and selected medical history items	All ages, 6-74 years	Age in years								
		6-11 ¹	12-17	18-24	25-34	35-44	45-54	55-64	65-74	
<u>Female</u>		Standard error of rate								
Ever have trouble seeing.....	1.28	2.09	3.07	3.19	2.46	1.84	2.27	3.11	1.58	
Does (did) have trouble seeing even when wearing glasses or contact lenses.....	0.95	4.24	3.60	2.04	1.81	1.70	2.77	2.10	1.71	
Visited doctor about trouble seeing.....	0.74	² 5.50	2.93	1.66	1.83	1.23	1.82	0.79	0.28	
Ever miss school or work because of trouble with eyes.....	0.38	0.96	1.39	0.76	0.66	0.63	1.16	0.75	1.01	
Ever wear glasses or contact lenses.....	0.97	1.74	3.23	3.03	2.06	1.99	1.03	1.26	0.25	
Yes, glasses.....	³ 1.14	—	3.22	2.22	2.75	2.19	1.77	1.36	0.39	
Yes, contact lenses.....	³ 0.24	—	0.44	0.24	0.92	0.28	0.55	—	0.02	
Yes, contact lenses and glasses.....	³ 0.08	—	—	—	0.40	0.29	—	—	0.22	
Still wear them.....	1.09	4.25	3.31	3.56	3.43	2.23	1.14	0.66	0.43	
When worn:										
All the time.....	2.28	4.73	4.24	4.60	3.25	2.52	3.98	3.81	2.63	
For reading or close work.....	0.96	3.41	3.08	3.06	1.28	1.69	1.72	0.83	0.57	
For distance vision.....	2.11	4.58	3.11	4.46	3.41	2.59	4.03	3.68	2.59	
At other times.....	2.39	5.09	4.40	4.17	3.79	2.56	3.94	3.77	2.34	
		Standard error of percent								
Age first worn: ⁶										
0-4 years.....	³ 0.20	—	1.50	0.85	0.86	0.46	0.36	—	0.22	
5-9 years.....	³ 0.86	—	4.44	2.54	1.96	2.89	1.44	1.42	1.84	
10-19 years.....	³ 1.43	—	4.56	2.64	2.37	3.66	3.62	2.29	2.08	
20-29 years.....	³ 0.93	—	...	1.86	1.59	2.37	1.70	2.54	1.30	
30-39 years.....	³ 0.86	—	...	...	0.65	2.17	3.06	3.16	1.39
40-49 years.....	³ 0.99	—	...	...	...	1.77	3.01	3.74	1.70
50 years or older.....	³ 0.68	—	...	...	...	...	1.24	2.95	2.04

¹Questions were answered by parent.

²Visited doctor about vision problem other than trouble seeing at night or in dark.

³Does not include 6-11 years.

⁴Standard error of average age is 0.19.

⁵Standard error of average age is 0.36.

⁶Standard error of average age is 0.25.

— ○ ○ ○ —

APPENDIX II

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-year-old 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 included with 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 a person of mixed racial background was uncertain about his race, the race of his father was recorded.

Geographic region.—The 48 contiguous States and the District of Columbia (not Alaska and Hawaii) were stratified into 4 broad geographic regions of about equal population size. With a few exceptions, the compositions of the regions were as follows:

<i>Region</i>	<i>States included</i>
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 which 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 area, 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 considered 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.



APPENDIX III

EYE CONDITION DEFINITIONS

The following definitions adapted primarily from Dr. Frank W. Newell's *Ophthalmology, Principles and Concepts*⁹ were used by the ophthalmologist examiners as a guide for uniformity in recording the findings from the parts of the eye examination included in this report:

Tropia—(*heterotropia manifest strabismus, squint, wall-eyed, or cross-eyed*).—The condition in which an object in space is not imaged simultaneously on the (fovea centralis of the) retina of each eye, that is, in which fusion (retinal images from the two eyes perceived as a single object) is not achieved usually due to a disturbance of coordination of the extraocular muscles of the two eyes. Included are tropia conditions that are comitant or incomitant (noncomitant), intermittent, at near or distance, small or large angle, accommodative or non-accommodative, secondary to sensory impairment (e.g., cataract, chorioretinitis, optic atrophy, anisometropia), congenital or acquired.

Esotropia.—Tropia of any type in which the visual alignment of one or both eyes is deviated inward.

Exotropia.—Tropia of any type in which the visual alignment of one or both eyes is deviated outward.

Hypertropia.—Tropia of any type in which the visual alignment of one eye is elevated above that of the other. This condition frequently occurs in the presence of manifest esotropia or exotropia.

Comitant tropia.—Tropia in which there is no apparent weakness of the extraocular muscles of either eye and the amplitude of deviation between the visual axes of the two eyes is equal in all cardinal directions of gaze. A and V syndromes, in which the angle of deviation is

more marked on looking upward or downward, and oblique overactions were classed as comitant tropia unless clearly of an acquired nature.

Incomitant (or noncomitant) tropia.—Tropia in which one or more of the ocular muscles or their nervous connections are impaired so that there is limitation in normal movement of the eye(s), as in Duane's syndrome, primary or secondary myopathies, cerebral vascular accidents, Parinaud's syndrome, or blowout fracture. This is frequently an acquired condition, the residual of systemic disease or impairment.

Phoria (heterophoria).—That condition in which there is a latent tendency for misalignment of the visual axes of the two eyes (one eye deviating so as to look at a different image than the other eye) which is corrected by the fusional capacity of the eyes. The condition is apparent only when fusion (the retinal images from each eye perceived as a single object) is interrupted.

Esophoria.—Latent tendency for the eye(s) to deviate inward.

Exophoria.—Latent tendency for the eye(s) to deviate outward.

Hyperphoria.—Latent tendency for one eye to deviate upward.

Nystagmus.—An involuntary, more or less rhythmic, back-and-forth movement of the eyes, independent of the normal movements that are not affected. The involuntary oscillations of the eye are usually lateral, but may also be vertical, rotary, or mixed rotary and lateral or vertical.

Pendular nystagmus.—This type of rhythm of involuntary movement of the eyes is regular and approximately equal in both directions. Included here were the type found in ocular disease in which central vision either fails to develop or is lost before the age of 2 years,

spasmus nutans (the unilateral type occurring in children under 2 years of age and associated with head nodding), and miner's nystagmus (a fine rapid pendular nystagmus). Voluntary nystagmus was not included.

Jerk nystagmus.—In which the rhythm of movement of the eyes is irregular, slow in one direction, followed by a rapid corrective move-

ment in the opposite direction. Included here were latent nystagmus (elicited by covering one eye or making the brightness or clarity of retinal images unequal in the two eyes), end-point nystagmus (when associated with palsies of conjugate gaze and with disease, seen when the eyes are turned into an extreme position of gaze), and congenital nystagmus (jerk type).



APPENDIX IV
RECORDING AND HISTORY FORMS

Visual Acuity

B. VISUAL ACUITY		
1. Optotype used 1.	<input type="checkbox"/> (005) Snellen <input type="checkbox"/> (005) III. E	<input type="checkbox"/> (005) Landolt <input type="checkbox"/> (005) Picture
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		

Motility

C. MOTILITY		
1. Tropia 1.	<input type="checkbox"/> (012) Eso <input type="checkbox"/> (012) Exo <input type="checkbox"/> (012) Neither <input type="checkbox"/> (013) Hyper <input type="checkbox"/> (013) Not hyper <input type="checkbox"/> (014) Comitant <input type="checkbox"/> (014) Incomitant	
2. Phoria 2.	<input type="checkbox"/> (015) Eso <input type="checkbox"/> (015) Exo <input type="checkbox"/> (015) Neither <input type="checkbox"/> (016) Hyper <input type="checkbox"/> (016) Not hyper	
3. Nystagmus 3.	<input type="checkbox"/> (017) Pendular <input type="checkbox"/> (017) Jerk-rotary <input type="checkbox"/> (017) Jerk-horiz. <input type="checkbox"/> (017) No nystagmus <input type="checkbox"/> (017) Jerk-vert.	

Refraction—Nutrition Exam

I. REFRACTION		Eye	Sphere		Cylinder		Axis
1. Present glasses		OD	035	036	037	038	039
			1 <input type="checkbox"/> +		1 <input type="checkbox"/> +		_____°
		2 <input type="checkbox"/> -	_____ D	2 <input type="checkbox"/> -	_____ D	_____	
		OS	040	041	042	043	044
1 <input type="checkbox"/> +			1 <input type="checkbox"/> +		_____°		
2 <input type="checkbox"/> -	_____ D	2 <input type="checkbox"/> -	_____ D	_____			
2. If acuity less than 20/40, any improvement with spheres		OD	045	046	050		
			1 <input type="checkbox"/> +		_____		
		2 <input type="checkbox"/> -	_____ D	c* _____			
		OS	052	053	057		
1 <input type="checkbox"/> +			_____				
2 <input type="checkbox"/> -	_____ D	c* _____					
		<i>* To be entered by coder</i>					

Refraction—Detailed Exam

I. REFRACTION		Eye	Sphere		Cylinder		Axis	VA	PH
1. Present glasses		OD	035	036	037	038	039		
			1 <input type="checkbox"/> +		1 <input type="checkbox"/> +		_____°		
		2 <input type="checkbox"/> -	_____ D	2 <input type="checkbox"/> -	_____ D	_____			
		OS	040	041	042	043	044		
1 <input type="checkbox"/> +			1 <input type="checkbox"/> +		_____°				
2 <input type="checkbox"/> -	_____ D	2 <input type="checkbox"/> -	_____ D	_____					
2. If acuity less than 20/40, retinoscopy		OD	045	046	047	048	049	050	051
			1 <input type="checkbox"/> +		1 <input type="checkbox"/> +		_____°	_____	_____
		2 <input type="checkbox"/> -	_____ D	2 <input type="checkbox"/> -	_____ D	_____	c* _____	c* _____	
		OS	052	053	054	055	056	057	058
1 <input type="checkbox"/> +			1 <input type="checkbox"/> +		_____°	_____	_____		
2 <input type="checkbox"/> -	_____ D	2 <input type="checkbox"/> -	_____ D	_____	c* _____	c* _____			
		<i>* To be entered by coder</i>							

Selected Items From Medical History Questionnaire, Ages 6-11

<p>18. Does . . . have unusual trouble seeing at night or in the dark?</p>	<p>18. (053) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 9 <input type="checkbox"/> Don't know</p>															
<p>19a. Has . . . ever had any other trouble seeing?</p> <p>b. Was it because of either an eye injury, infection or other eye problem? (1) An eye injury (2) An eye infection or other eye problem . . .</p> <p>c. Did he see a doctor about it? (1) An eye injury (2) An eye infection or other eye problem . . .</p> <p>d. What did he say the trouble was? _____</p>	<p>19a. (054) 1 <input type="checkbox"/> Yes - Ask b 2 <input type="checkbox"/> No - SKIP to 20a</p> <p>b. (055) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p> <p>(056) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No - If "No" to both (1) and (2) SKIP to 20a</p> <p>c. (057) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p> <p>(058) 1 <input type="checkbox"/> Yes - Ask d 2 <input type="checkbox"/> No - If "No" to both (1) and (2) SKIP to 20a</p>															
<p>20a. Has . . . ever had an eye accident or eye injury that did not affect his vision?</p> <p>b. Did he see a doctor about it?</p>	<p>20a. (059) 1 <input type="checkbox"/> Yes - Ask b 2 <input type="checkbox"/> No - SKIP to 21a</p> <p>b. (060) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p>															
<p>21a. Has . . . ever worn glasses or contact lenses?</p> <p>b. Does he still wear them?</p> <p>c. When does (did) he wear them? All the time For reading or close work For distance vision At other times - Specify _____</p> <p>d. Does (did) he have trouble with his vision even when wearing glasses (or contact lenses)?</p> <p>e. How old was he when he first wore glasses (or contact lenses)?</p>	<p>21a. (061) 1 <input type="checkbox"/> Yes - Ask b 2 <input type="checkbox"/> No - SKIP to 22</p> <p>b. (062) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p> <table border="0"> <thead> <tr> <th></th> <th>Yes</th> <th>No</th> </tr> </thead> <tbody> <tr> <td>(063) 1 <input type="checkbox"/></td> <td></td> <td>2 <input type="checkbox"/></td> </tr> <tr> <td>(064) 1 <input type="checkbox"/></td> <td></td> <td>2 <input type="checkbox"/></td> </tr> <tr> <td>(065) 1 <input type="checkbox"/></td> <td></td> <td>2 <input type="checkbox"/></td> </tr> <tr> <td>(066) 1 <input type="checkbox"/></td> <td></td> <td>2 <input type="checkbox"/></td> </tr> </tbody> </table> <p>d. (067) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p> <p>e. (068) _____ Years</p>		Yes	No	(063) 1 <input type="checkbox"/>		2 <input type="checkbox"/>	(064) 1 <input type="checkbox"/>		2 <input type="checkbox"/>	(065) 1 <input type="checkbox"/>		2 <input type="checkbox"/>	(066) 1 <input type="checkbox"/>		2 <input type="checkbox"/>
	Yes	No														
(063) 1 <input type="checkbox"/>		2 <input type="checkbox"/>														
(064) 1 <input type="checkbox"/>		2 <input type="checkbox"/>														
(065) 1 <input type="checkbox"/>		2 <input type="checkbox"/>														
(066) 1 <input type="checkbox"/>		2 <input type="checkbox"/>														
<p>22. Has . . . ever had to miss school because of trouble seeing or other trouble with his eyes?</p>	<p>22. (069) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p>															

Selected Items From Medical History Questionnaire, Ages 12-74

<p>15a. Have you EVER had trouble seeing?</p> <p>b. Did you see a doctor about it?</p> <p>c. What did he say the trouble was?</p> <p>_____</p>	<p>15a.</p> <p>b.</p>	<p>(127) 1 <input type="checkbox"/> Yes – Ask b 2 <input type="checkbox"/> No – SKIP to 16a</p> <p>(128) 1 <input type="checkbox"/> Yes – Ask c 2 <input type="checkbox"/> No – SKIP to 16a</p>															
<p>16a. Have you ever worn glasses or contact lenses?</p> <p>b. Do you still wear them?</p>	<p>16a.</p> <p>b.</p>	<p>(129) 1 <input type="checkbox"/> Yes, glasses. } Ask b 2 <input type="checkbox"/> Yes, contact lenses } 3 <input type="checkbox"/> Yes, contacts and glasses . . . } 4 <input type="checkbox"/> No – SKIP to 17</p> <p>(130) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p>															
<p>16c. When do (did) you wear them?</p> <p>All the time</p> <p>For reading or close work</p> <p>For distance vision</p> <p>At other times – Specify _____</p> <p>d. Do (did) you have trouble with your vision even when wearing glasses or contact lenses?</p> <p>e. How old were you when you first wore glasses or contact lenses, whichever one was first in case you have worn both?</p>	<p>16c.</p> <p>d.</p> <p>e.</p>	<table border="0"> <tr> <td></td> <td>Yes</td> <td>No</td> </tr> <tr> <td>(131)</td> <td>1 <input type="checkbox"/></td> <td>2 <input type="checkbox"/></td> </tr> <tr> <td>(132)</td> <td>1 <input type="checkbox"/></td> <td>2 <input type="checkbox"/></td> </tr> <tr> <td>(133)</td> <td>1 <input type="checkbox"/></td> <td>2 <input type="checkbox"/></td> </tr> <tr> <td>(134)</td> <td>1 <input type="checkbox"/></td> <td>2 <input type="checkbox"/></td> </tr> </table> <p>(135) 1 <input type="checkbox"/> Yes, with glasses 2 <input type="checkbox"/> Yes, with contacts 3 <input type="checkbox"/> Yes, with both 4 <input type="checkbox"/> No</p> <p>(136) 1 <input type="checkbox"/> 0 – 4 years old 2 <input type="checkbox"/> 5 – 9 years old 3 <input type="checkbox"/> 10 – 19 years old 4 <input type="checkbox"/> 20 – 29 years old 5 <input type="checkbox"/> 30 – 39 years old 6 <input type="checkbox"/> 40 – 49 years old 7 <input type="checkbox"/> 50 years old or older</p>		Yes	No	(131)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	(132)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	(133)	1 <input type="checkbox"/>	2 <input type="checkbox"/>	(134)	1 <input type="checkbox"/>	2 <input type="checkbox"/>
	Yes	No															
(131)	1 <input type="checkbox"/>	2 <input type="checkbox"/>															
(132)	1 <input type="checkbox"/>	2 <input type="checkbox"/>															
(133)	1 <input type="checkbox"/>	2 <input type="checkbox"/>															
(134)	1 <input type="checkbox"/>	2 <input type="checkbox"/>															
<p>17. Have you ever had to miss work or school because of trouble seeing or other trouble with your eyes?</p>	<p>17.</p>	<p>(137) 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p>															

VITAL AND HEALTH STATISTICS Series

- Series 1. Programs and Collection Procedures.*—Reports which describe the general programs of the National Center for Health Statistics and its offices and divisions and data collection methods used and include definitions and other material necessary for understanding the data.
- Series 2. Data Evaluation and Methods Research.*—Studies of new statistical methodology including experimental tests of new survey methods, studies of vital statistics collection methods, new analytical techniques, objective evaluations of reliability of collected data, and contributions to statistical theory.
- Series 3. Analytical Studies.*—Reports presenting analytical or interpretive studies based on vital and health statistics, carrying the analysis further than the expository types of reports in the other series.
- Series 4. Documents and Committee Reports.*—Final reports of major committees concerned with vital and health statistics and documents such as recommended model vital registration laws and revised birth and death certificates.
- Series 10. Data From the Health Interview Survey.*—Statistics on illness, accidental injuries, disability, use of hospital, medical, dental, and other services, and other health-related topics, all based on data collected in a continuing national household interview survey.
- Series 11. Data From the Health Examination Survey and the Health and Nutrition Examination Survey.*—Data from direct examination, testing, and measurement of national samples of the civilian noninstitutionalized population provide the basis for two types of reports: (1) estimates of the medically defined prevalence of specific diseases in the United States and the distributions of the population with respect to physical, physiological, and psychological characteristics and (2) analysis of relationships among the various measurements without reference to an explicit finite universe of persons.
- Series 12. Data From the Institutionalized Population Surveys.*—Discontinued effective 1975. Future reports from these surveys will be in Series 13.
- Series 13. Data on Health Resources Utilization.*—Statistics on the utilization of health manpower and facilities providing long-term care, ambulatory care, hospital care, and family planning services.
- Series 14. Data on Health Resources: Manpower and Facilities.*—Statistics on the numbers, geographic distribution, and characteristics of health resources including physicians, dentists, nurses, other health occupations, hospitals, nursing homes, and outpatient facilities.
- Series 20. Data on Mortality.*—Various statistics on mortality other than as included in regular annual or monthly reports. Special analyses by cause of death, age, and other demographic variables; geographic and time series analyses; and statistics on characteristics of deaths not available from the vital records based on sample surveys of those records.
- Series 21. Data on Natality, Marriage, and Divorce.*—Various statistics on natality, marriage, and divorce other than as included in regular annual or monthly reports. Special analyses by demographic variables; geographic and time series analyses; studies of fertility; and statistics on characteristics of births not available from the vital records based on sample surveys of those records.
- Series 22. Data From the National Mortality and Natality Surveys.*—Discontinued effective 1975. Future reports from these sample surveys based on vital records will be included in Series 20 and 21, respectively.
- Series 23. Data From the National Survey of Family Growth.*—Statistics on fertility, family formation and dissolution, family planning, and related maternal and infant health topics derived from a biennial survey of a nationwide probability sample of ever-married women 15-44 years of age.

For a list of titles of reports published in these series, write to:

Scientific and Technical Information Branch
National Center for Health Statistics
Public Health Service
Hyattsville, Md. 20782

DHEW Publication No. (PHS) 78-1654

Series 11-No. 206

NCHS

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
National Center for Health Statistics
3700 East-West Highway
Hyattsville, Maryland 20782

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

For publications in the
Vital and Health Statistics
Series call 301-436-NCHS.

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF HEW

HEW-396

THIRD CLASS

BLK. RATE

