NHIS Summary Data Report

For the Vision & Eye Health Surveillance System

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VISION & EYE HEALTH SURVEILLANCE SYSTEM

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Dataset Description

Purpose

The main objective of the National Health Interview Survey (NHIS) is to monitor the health of the United States population through the collection and analysis of data on a broad range of health topics. Since 1960, the survey has been conducted by National Center for Health Statistics (NCHS). NHIS data are used widely by the Department of Health and Human Services (DHHS) and the public health research community to monitor trends in illness and disability and to track progress toward achieving national health objectives. NHIS was selected for inclusion in the Vision and Eye Health Surveillance System (VEHSS) due to its wide range of vision-related questions, including questions related to Healthy People goals, as well as its inclusion of all three risk factor variables of interest.

Sample Design

2006-2015 Sampling Plan

The National Health Interview Survey is a cross-sectional household interview survey of the noninstitutionalized US population. Each year, the sample contains approximately 35,000 households and 87,500 individuals. Sampling and interviewing occurs continuously throughout the year. The sampling plan follows a multistage area probability design that permits the representative sampling of households and noninstitutional group quarters (e.g., college dormitories). The sampling plan has been redesigned after every decennial census.

The first stage of the 2006-2015 sampling plan consists of selecting a sample of 428 primary sampling units (PSU's) drawn from approximately 1,900 geographically defined PSU's that cover the 50 States and the District of Columbia. Nearly all states have at least two PSUs selected for the sample, with most having notably more. For each PSU, there are two second-stage units—area segments which are defined geographically, and permit segments which cover housing units built after the 2000 census. The NHIS sampling frame consists of the area and permit frames, which consist of all of the area and permit segments, respectively. This sampling design includes the oversampling of black, Asian, and Hispanic people.

The total NHIS sample is subdivided into four separate panels, or sub-designs, such that each panel is a representative sample of the U.S. population. For 2006-2010, the households and noninstitutional group quarters selected for interview each week are a probability sample representative of the target population. Beginning in 2011, the minimum time length for a probability sample changed from a week to a month.

2016-2018 Sampling Plan

A new sample design was implemented with the 2016 NHIS. Sample areas were reselected to take into account changes in the distribution of the U.S. population since 2006, when the previous sample design was first implemented. Commercial address lists were used as the main source of addresses, rather than field listing; and the oversampling procedures for Black, Hispanic, and Asian persons that were a feature of the previous sample design were not implemented in 2016.

The first stage of the current sample design consists of a sample of 319 primary sampling units (PSUs) drawn from approximately 1,700 geographically defined PSUs, with some PSUs in each of the 50 states and the District of Columbia.

The NHIS sampling frame consists of three non-overlapping parts: the unit frame (a list of addresses purchased from a vendor); the area frame (geographic areas that do not have city-style addresses, and geographic areas where the unit frame was not considered to be a sufficient sampling resource); and the college dormitory frame (college residence hall spaces in the NHIS sample PSUs). As with the earlier sample designs, the total NHIS sample is subdivided into four separate panels such that each panel is representative of the U.S. civilian noninstitutionalized population (as is any combination of the four panels).

Data Collection Procedures

NHIS data are collected via an in-person household interview conducted by interviewers who are employed and trained by the U.S. Census Bureau. Since 1997, the NHIS questionnaire has been administered in the computer assisted personal interviewing (CAPI) mode. The questionnaire is administered with a laptop computer, with interviewers entering responses directly during the interview.

For the Household Composition section, one household member who is at least the age of legal majority for the state of residence is identified as the household respondent. The household respondent provides basic demographic and relationship information about all household members; these relationships determine the number of families that comprise the household. For the Family core component, all adult members of the household who are 18 years and older and at home during the time of the interview are invited to participate and respond for themselves, however a family respondent may respond for all children and adults in the family. If a child or adult is not home during the interview, a responsible adult family member who is 18 years or older and resides in the household can provide the answers. For the Sample Adult questionnaire, one civilian adult per family is randomly selected to be interviewed. Similarly, a child is randomly selected for the Sample Child questionnaire. Information for this questionnaire is provided by an adult knowledgeable about the child's health.[1]

[1] National Center for Health Statistics. National Health Interview Survey, 2017. Public-use data file and documentation. https://www.cdc.gov/nchs/nhis/data-questionnaires-documentation.htm. 2018.

Analysis Process and Suppression

We estimated the prevalence rate and sample size for each survey instrument selected for inclusion. We merged samples from the 2014 and 2015 rounds and then the 2016 and 2017 rounds for analysis in order to maximize the available sample sizes at more detailed levels of stratification. New weights were created by dividing the original weights by two[2].

For binary response questions included in the analysis, prevalence rate was defined as the number of persons who gave an affirmative response to the question divided by the total number of respondents who gave an affirmative or negative response and then multiplied by 100 for presentation in percentage format. For scaled responses, the data value is the proportion of respondents that selected one of the possible response option, and all responses should sum to 100%. We estimated upper and lower confidence intervals and the relative standard error of the prevalence estimate using the Clopper-Pearson method with the smaller of the effective sample size and the sample size. The respondent sample size was reported for each response.

All estimates were calculated using SAS proc survey freq. Suppression was determined using the National Center for Health Statistics Data Presentation Standards for Proportions released in August 2017[3].

Vision-related Variables

Across all the NHIS core and supplemental questionnaires, there were 16 vision-related questions during 2014-2015 period. For the 2016-2017 period, there were 46 vision-related questions. Many of these questions are duplicative of one another, as the same question may be asked of two different target populations—e.g., children and adults--in two different questionnaires. For the 2014-2015 analyses, we have prioritized the six questions that provide an understanding of the prevalence of visual impairment in children and adults. For the 2016-2017 analyses, with the increase in the number of questions, we have included questions from the child and adult sample files that asked about service utilization in addition to those that provide an understanding of the prevalence of visual impairment. Questions we have not included in these analyses focus on access to vision-related healthcare and aids and duration of vision problems.

Child Questionnaire

We analyzed eight questions from the child sample file, six of those questions are asked with the same or very similar wording in the adult sample questionnaire. Two of the questions were asked all four years while the other six were only asked in 2016-2017. Five questions were categorized under the ‘Service

[2] ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHIS/2017/srvydesc.pdf

[3] Parker JD, Talih M, Malec DJ, et al. National Center for Health Statistics Data Presentation Standards for Proportions. National Center for Health Statistics. Vital Health Stat 2(175). 2017.

Utilization' Topic and three under the 'Visual Function' Topic. Each 'Visual Function' Topic question fell into its own category –'Blind of Difficulty Seeing', 'Difficulty Seeing with Glasses,' and 'Vision Correction'.

Adult Sample Questionnaire

We analyzed 18 questions from the adult sample file, covering three Topics areas – 'Visual Function', 'Eye Health Conditions', and 'Service Utilization'. Six of the nine 'Visual Function' questions asked about difficulty performing a range of routine activities and fell into the 'Far-Distance Visual Function', 'Night Vision', 'Miscellaneous Life Impact', 'Near-Distance Visual Function', and 'Peripheral Visual Function' categories. The other three 'Visual Function' questions each fell into their own categories– 'Difficulty Seeing with Glasses', "Blind or Difficulty Seeing', and 'Vision Correction'. The four 'Eye Health Conditions' questions asked respondents whether a doctor ever told them they had diabetic retinopathy, cataracts, glaucoma, or macular degeneration. The five 'Service Utilization' question were related to eye exam with dilation, cataract surgery, use of eye protection when participating in potential eye-injury-causing activities, and interacting with an eye health provider. The functioning and disability questionnaire was administered to approximately half of the adult sub-sample, via random selection through 2017. In 2018 the functioning and disability questions are being asked to the entire adult sample. **Table 1** presents additional details about these questions, including the VEHSS Topic and Category, the NHIS variable name, the year(s) survey data are available, the survey question, and the response options. The table also includes the universe included in the question as there were several questions that had follow-up questions if the response was 'Yes' to the main question.

Table 1. Overview of included eye health variables in the NHIS

VEHSS Indicator Topic	VEHSS Indicator Category	NHIS Variable Name	Years Available[1]	Question	Universe	Response Options
Sample Child File						
Visual Function	Difficulty Seeing with Glasses	CVISION	1999-2018	Does [NAME] have any trouble seeing, even when wearing glasses or contact lenses?	Sample children <18	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
Visual Function	Blind or Difficulty Seeing	CBLIND	1999-2018	Is [NAME] blind or unable to see at all?	Sample children <18 who said Yes to CVISION	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
Service Utilization	Eye Exams	CVISTST	2016-2017	Has [NAME] EVER had [his/her] vision tested by a doctor or other health professional?	Sample children <6 who are not blind	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
Service Utilization	Eye Exams	CVISLT	2016-2017	When was [his/her] vision last tested?	Sample children <6 who said Yes to CVISTST	1 In the last 12 months 2 In the last 13-24 months 3 Over 24 months 7 Refused 8 Not ascertained 9 Don't know
Visual Function	Vision Correction	CVISGLAS	2016-2017	Does [NAME] wear eyeglasses or contact lenses?	Sample children 6-17 who are not blind	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
Service Utilization	Use of eye protection	CVISACT	2016-2017	Does [NAME] participate in sports, hobbies, or other activities that can cause eye injury? This includes activities such as baseball, basketball, soccer and mowing the lawn.	Sample children 6-17	1 Yes 2 No 7 Refused

VEHSS Indicator Topic	VEHSS Indicator Category	NHIS Variable Name	Years Available[1]	Question	Universe	Response Options
						8 Not ascertained
						9 Don't know
Service Utilization	Use of eye protection	CVISPROT	2016-2017	When doing these activities, on average, does [he/she] wear eye protection always, most of the time, some of the time, or none of the time?	Sample children 6-17 who said YES to CVISACT	1 Always
						2 Most of the time
						3 Some of the time
						4 None of the time
						7 Refused
						8 Not ascertained
						9 Don't know
Service Utilization	Eye Health Provider Interaction	CHCSYR11 CHCSYR2	2016-2018	DURING THE PAST 12 MONTHS, has anyone in the family seen or talked to any of the following health care providers about [NAME]'s health? An optometrist, ophthalmologist, or eye doctor (someone who prescribes eyeglasses)?	Sample children <18	1 Yes
						2 No
						7 Refused
						8 Not ascertained
						9 Don't know
Sample Adult File						
Visual Function	Difficulty Seeing with Glasses	AVISION	1999-2016	Do you have any trouble seeing, even when wearing glasses or contact lenses?	Sample Adult 18+	1 Yes
						2 No
						7 Refused
						8 Not ascertained
						9 Don't know
Visual Function	Blind of Difficulty Seeing	ABLIND	1999-2016	Are you blind or unable to see at all?	Sample adults 18+ who said Yes to AVISION	1 Yes
						2 No
						7 Refused
						8 Not ascertained
						9 Don't know
Eye Health Conditions	Self-Report Diabetic Retinopathy	VIM_DREV	2016-2017	Have you EVER been told by a doctor or other health professional that you had Diabetic retinopathy?	Sample Adult 18+	1 Yes
						2 No
						7 Refused
						8 Not ascertained

VEHSS Indicator Topic	VEHSS Indicator Category	NHIS Variable Name	Years Available[1]	Question	Universe	Response Options
						9 Don't know
Eye Health Conditions	Self-Report Cataract	VIM_CAEV	2016-2017	Have you EVER been told by a doctor or other health professional that you had Cataracts?	Sample Adult 18+	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
Service Utilization	Cataract Surgery	VIMCSURG	2016-2017	Have you ever had cataract surgery?	Sample Adult 18+ who said Yes to VIM_CAEV	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
Eye Health Conditions	Self-Report Glaucoma	VIM_GLEV	2016-2017	Have you EVER been told by a doctor or other health professional that you had glaucoma	Sample Adult 18+	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
Eye Health Conditions	Self-Report Age Related Macular Degeneration	VIM_MDEV	2016-2017	Have you EVER been told by a doctor or other health professional that you had Macular Degeneration?	Sample Adult 18+	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
Visual Function	Vision Correction	VIMGLASS	2016-2017	Do you currently wear eyeglasses or contact lenses?	Sample Adult 18+ who said No to ABLIND	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
Visual Function	Far-Distance Visual Function	AVDF_NWS	2016-2017	Even when wearing glasses or contacts lenses, because of your eyesight, / Fill 2: Because of your eyesight,] how difficult is it for you ...To read ordinary print in newspapers	Sample Adult 18+ who said No to ABLIND	0 Not at all difficult 1 Only a little difficult 2 Somewhat difficult 3 Very difficult 4 Can't do at all because of eyesight 6 Do not do this activity for other reasons 7 Refused 8 Not ascertained 9 Don't know

VEHSS Indicator Topic	VEHSS Indicator Category	NHIS Variable Name	Years Available[1]	Question	Universe	Response Options
Visual Function	Far-Distance Visual Function	AVDF_CLS	2016-2017	Even when wearing glasses or contacts lenses, because of your eyesight, / Fill 2: Because of your eyesight,] how difficult is it for you ...To do work or hobbies require you to see well up close such as cooking, sewing, fixing things around the house using hand tools	Sample Adult 18+ who said No to ABLIND	0 Not at all difficult 1 Only a little difficult 2 Somewhat difficult 3 Very difficult 4 Can't do at all because of eyesight 6 Do not do this activity for other reasons 7 Refused 8 Not ascertained 9 Don't know
Visual Function	Night Vision	AVDF_NIT	2016-2017	Even when wearing glasses or contacts lenses, because of your eyesight, / Fill 2: Because of your eyesight,] how difficult is it for you ...To go down steps, stairs, or curbs in dim light or at night	Sample Adult 18+ who said No to ABLIND	0 Not at all difficult 1 Only a little difficult 2 Somewhat difficult 3 Very difficult 4 Can't do at all because of eyesight 6 Do not do this activity for other reasons 7 Refused 8 Not ascertained 9 Don't know
Visual Function	Miscellaneous Life Impact	AVDF_CRD	2016-2017	Even when wearing glasses or contacts lenses, because of your eyesight, / Fill 2: Because of your eyesight,] how difficult is it for you ...To find something on a crowded shelf	Sample Adult 18+ who said No to ABLIND	0 Not at all difficult 1 Only a little difficult 2 Somewhat difficult 3 Very difficult 4 Can't do at all because of eyesight 6 Do not do this activity for other reasons 7 Refused 8 Not ascertained 9 Don't know
Visual Function	Near-Distance Visual Function	AVDF_DRV	2016-2017	Even when wearing glasses or contacts lenses, because of your eyesight, / Fill 2: Because of your eyesight,] how difficult is it for you ...To drive during daytime in familiar places	Sample Adult 18+ who said No to ABLIND	0 Not at all difficult 1 Only a little difficult 2 Somewhat difficult 3 Very difficult 4 Can't do at all because of eyesight 6 Do not do this activity for other reasons 7 Refused 8 Not ascertained

VEHSS Indicator Topic	VEHSS Indicator Category	NHIS Variable Name	Years Available[1]	Question	Universe	Response Options
						9 Don't know
Visual Function	Peripheral Visual Function	AVDF_PER	2016-2017	Even when wearing glasses or contacts lenses, because of your eyesight, / Fill 2: Because of your eyesight,] how difficult is it for you ...To notice objects off to the side while you are walking along	Sample Adult 18+ who said No to ABLIND	0 Not at all difficult 1 Only a little difficult 2 Somewhat difficult 3 Very difficult 4 Can't do at all because of eyesight 6 Do not do this activity for other reasons 7 Refused 8 Not ascertained 9 Don't know
Service Utilization	Eye Exams	AVISEXAM	2016-2017	When was the last time you had an eye exam in which the pupils were dilated? This would have made you temporarily sensitive to bright light.	Sample Adult 18+ who said No to ABLIND	1 Less than one month 2 1-12 months 3 13-24 months 4 More than 2 years 5 Never 7 Refused 8 Not ascertained 9 Don't know
Service Utilization	Use of eye protection	AVISACT	2016-2017	Outside of work, do you other participate in sports, hobbies, or activities that can cause eye injury? This includes activities such as baseball, basketball, mowing the lawn, wood working, or working with chemicals.	Sample Adult 18+	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don’t know
Service Utilization	Use of eye protection	AVISPROT	2016-2017	When doing these activities, on average, do you wear eye protection always, most of the time, some of the time, or none of the time?	Sample Adult 18+ who said Yes to A VISACT	1 Always 2 Most of the time 3 Some of the time 4 None of the time 7 Refused 8 Not ascertained 9 Don't know

VEHSS Indicator Topic	VEHSS Indicator Category	NHIS Variable Name	Years Available[1]	Question	Universe	Response Options
Service Utilization	Eye Health Provider Interaction	AHCSYR2	2016-2018	DURING THE PAST 12 MONTHS, have you seen or talked to any of the following health care providers about your own health? ...An optometrist, ophthalmologist or eye doctor (someone who prescribes eyeglasses).	Sample Adult 18+	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
Functioning and Disability File						
Visual Function	Difficulty Seeing with Glasses	VIS_SS2[2]	2011-2018	Do you have difficulty seeing, even when wearing glasses?	Sample adults 18+ who were asked the family disability questions (FDB) and were randomly selected to receive the Functioning and Disability (AFD) section	1 No difficulty 2 Some difficulty 3 A lot of difficulty 4 Cannot do at all/unable to do 7 Refused 8 Not ascertained 9 Don't know
Visual Function	Vision Correction	VIS_0[2]	2012-2018	Do you wear glasses?	Sample adults 18+ who were asked the family disability questions (FDB) and were randomly selected to receive the Functioning and Disability (AFD) section	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know

[1] VEHSS data currently only includes data up to 2017, 2018 may be analyzed at a later time

[2] Starting in 2018 these questions were folded into the Sample Adult Questionnaire

Table 2 presents the sample sizes for analysis by coded response option for the variables included in this report. The 2016-2017 functioning and disability questions were used for internal validation purposes.

Table 2. Frequency of coded response options for analyzed variables

Variable	2014-2015 Frequencies				2016-2017 Frequencies			
Sample Child File								
	Response		Sample Size		Response		Sample Size	
CVISION		Yes		31		Yes		30
CBLIND	Yes	No	655	621	Yes	No	661	631
		Missing		3		Missing		0
	No		24,988		No		19,270	
	Missing		28		Missing		21	
CVISTST					Yes	In the last 12 months		2,492
CVISLT						In the last 13-24 months	2,997	357
						Over 24 months		126
						Don't Know		22
						Missing		0
					No		3,367	
					Missing		103	
CVISGLAS					Yes		4,472	
					No		8,981	
					Missing		2	
CVISACT					Yes	Always		1,020
CVISPROT						Most of the time		418
						Some of the time		676
						None of the time	5,943	3,812
						Refused		1
						Don't Know		16
						Missing		0
					No		7,527	
					Missing		9	
CHCSYR11	Not analyzed				Yes		5,455	
CHCSYR2					No		14,386	
					Missing		111	
Sample Adult File								
AVISION		Yes		309		Yes		265
ABLIND	Yes	No	7,202	6,890	Yes	No	7,030	6,765
		Missing		3		Missing		0
	No		63,130		No		52,721	
	Missing		37		Missing		19	
VIM_DREV					Yes		613	
					No		59,067	
					Missing		90	
VIM_CAEV						Yes		6,467
VIMCSURG					Yes	No	10,767	53,231

Variable	2014-2015 Frequencies	2016-2017 Frequencies	
		Missing	4
		No	48,935
		Missing	68
VIM_GLEV		Yes	1,996
		No	57,687
		Missing	87
VIM_MDEV		Yes	1,480
		No	58,174
		Missing	116
VIMGLASS		Yes	40,379
		No	19,117
		Missing	274
AVDF_NWS		Not at all difficult	47,881
		Only a little difficult	6,474
		Somewhat difficult	3,161
		Very difficult	1,274
		Can't do at all because of eyesight	318
		Do not do this activity for other reasons	370
		Refused	8
		Not ascertained	0
		Don't know	19
		Missing	265
AVDF_CLS		Not at all difficult	50,819
		Only a little difficult	4,704
		Somewhat difficult	2,343
		Very difficult	829
		Can't do at all because of eyesight	222
		Do not do this activity for other reasons	551
		Refused	9
		Not ascertained	0
		Don't know	28
		Missing	265
AVDF_NIT		Not at all difficult	52,206
		Only a little difficult	3,062
		Somewhat difficult	1,987
		Very difficult	975
		Can't do at all because of eyesight	200
		Do not do this activity for other reasons	1,044
		Refused	12
		Not ascertained	0
		Don't know	19
		Missing	265
AVDF_CRD		Not at all difficult	55,612
		Only a little difficult	1,964

Variable	2014-2015 Frequencies	2016-2017 Frequencies			
		Somewhat difficult		1,080	
		Very difficult		409	
		Can't do at all because of eyesight		92	
		Do not do this activity for other reasons		310	
		Refused		12	
		Not ascertained		0	
		Don't know		26	
		Missing		265	
AVDF_DRV		Not at all difficult		53,527	
		Only a little difficult		1,161	
		Somewhat difficult		535	
		Very difficult		194	
		Can't do at all because of eyesight		282	
		Do not do this activity for other reasons		3,781	
		Refused		11	
		Not ascertained		0	
		Don't know		14	
		Missing		265	
AVDF_PER		Not at all difficult		55,824	
		Only a little difficult		1,619	
		Somewhat difficult		999	
		Very difficult		419	
		Can't do at all because of eyesight		156	
		Do not do this activity for other reasons		418	
		Refused		11	
		Not ascertained		0	
		Don't know		59	
		Missing		265	
AVISEXAM		Less than one month		3,445	
		1-12 months		23,577	
		13-24 months		9,520	
		More than 2 years		15,322	
		Never		7,149	
		Refused		20	
		Not ascertained		0	
		Don't know		737	
		Missing		0	
AVISACT **AVISPROT**		Yes	Always	14,842	4,779
			Most of the time		2,291
			Some of the time		2,850
			None of the time		4,918
			Refused		1

Variable	2014-2015 Frequencies		2016-2017 Frequencies			
				Not ascertained		0
				Don't know		3
			No		44,908	
			Missing		20	
AHCSYR2	Not Analyzed		Yes		26,544	
			No		32,549	
			Missing		677	
Functioning and Disability File						
VIS_SS2	No difficulty	27,894	No difficulty		24,289	
	Some difficulty	4,842	Some difficulty		4,060	
	A lot of difficulty	605	A lot of difficulty		414	
	Cannot do at all/unable to do	69	Cannot do at all/unable to do		49	
	Refused	73	Refused		26	
	Not ascertained	1,741	Not ascertained		954	
	Don't know	18	Don't know		11	
VIS_0	Yes	2,099	Yes		19,616	
	No	12,429	No		9,211	
	Missing	1,823	Missing		976	

Stratification Variables

All variables from the sample child file (CVISION, CBLIND, CVISTST, CVISLT, CVISGLAS, CVISACT, CVISPROT, and CHCSYR11/CHCSYR2) were stratified by age, sex, and race/ethnicity. The variables from the sample adult (AVISION, ABLIND, VIM_DREV, VIM_CAEV, VIMSURG, VIM_GLEV, VIM_MDEV, VIMGLASS, AVDF_NWS, AVDF_CLS, AVDF_NIT, AVDF_CRD, AVDF_DRV, AVDF_PER, AVISEXAM, AVISACT, AVISPROT, AHCSYR2) and 2014-2015 functioning and disability files (VIS_SS2, VIS_0) were stratified by age, sex, and race/ethnicity, diabetes status, hypertension status, and smoking status. Ages (variable: AGE_P) ranged from 0 to 17 years for participants in the sample child file, and from 18 to 85+ in the sample adult and functioning and disability files. Participant sex (variable: SEX) was coded as Male or Female. The Hispanic and race variables (variables: HISPAN_I and RACERPI2) were combined to create a single race/ethnicity variable, with anyone identifying as Hispanic being placed in a single category. The race categories were coded as follows: Non-Hispanic Asian, Non-Hispanic Black, Hispanic, Non-Hispanic North American Native, Non-Hispanic Other, and Non-Hispanic White. The 'Other' category consists of those whose race was not releasable due to issues of confidentiality, as well as those who identify with multiple racial categories. Diabetes status (variable: DIBEV) was recoded into 'Yes,' 'No,' and 'Borderline'; Hypertension status (HYPEV) as 'Yes' and 'No'; and Smoking status (SMKSTAT2) as 'Current,' 'Former,' and 'Never.' State identifiers are not released in NHIS public use files due to confidentiality concerns. Stratification variables and their frequencies are listed in **Table 3**.

Table 3. Stratification variable frequencies

Variables	Frequency				
	2014-2015			2016- 2017	
	Sample Child File	Sample Adult File	Functioning and Disability File	Sample Child File	Sample Adult File
AGE					
0-17 years	25671	-	-	19952	-
18-39 years	-	24069	12009	-	19226
40-64 years	-	29278	14649	-	24308
65-84 years	-	14774	7440	-	14190
85 years and older	-	2248	1144	-	2046
SEX					
Male	13137	31469	15778	10351	27087
Female	12534	38900	35242	9601	32683
RACE/ETHNICITY					
Non-Hispanic White	11928	43634	21844	10983	41720
Non-Hispanic Black	3475	9359	4660	2272	6397
Hispanic, any race	7342	11644	5843	4390	7050
Asian	11928	3907	1960	1080	2919
Non-Hispanic Other	1227	1309	671	1016	1176
North American Native	222	516	264	211	508
DIABETES					
Yes	-	7471	3717	-	6331
Borderline	-	1183	598	-	1679
No	-	61670	30904	-	51706
Missing	-	45	23	-	54
HYPERTENSION					
Yes	-	24141	12204	-	21054
No	-	46138	22995	-	38631
Missing	-	90	43	-	85
SMOKING					
Current Smoker	-	11793	5836	-	9355
Former Smoker	-	16060	8045	-	14754
Never Smoker	-	42185	21188	-	35438
Missing	-	331	173	-	223

Stratification Levels Included in the Full Analysis

The full analysis includes additional stratifications beyond those included in this data summary report, and will be made available on the VEHSS project website. We stratified data using all possible combinations of age, race/ethnicity, sex, and risk factor at the national level. All stratifications are displayed in **Table 4**.

Table 4. Stratification Factor Combinations Included in Full Results

Stratification Level	Stratification Factor
0-level	All participants
1-level	Age
	Race/Ethnicity
	Sex
	Diabetes
	Hypertension
	Smoking
2-level	Age* Race/Ethnicity
	Age*Sex
	Race/Ethnicity *Sex
	Age*Diabetes
	Age*Hypertension
	Age*Smoking
	Race/Ethnicity *Diabetes
	Race/Ethnicity *Hypertension
	Race/Ethnicity *Smoking
	Sex*Diabetes
	Sex*Hypertension
	Sex*Smoking
3-level	Age* Race/Ethnicity *Sex
	Age* Race/Ethnicity *Diabetes
	Age* Race/Ethnicity *Hypertension
	Age* Race/Ethnicity *Smoking
	Age*Sex*Diabetes
	Age*Sex*Hypertension
	Age*Sex*Smoking
	Race/Ethnicity *Sex*Diabetes
	Race/Ethnicity *Sex*Hypertension
	Race/Ethnicity *Sex*Smoking
4-level	Age* Race/Ethnicity *Sex*Diabetes
	Age* Race/Ethnicity *Sex*Hypertension
	Age* Race/Ethnicity *Sex*Smoking

Validation

Internal Validation

Sample Size

Compared to other surveys included in the VEHSS system, NHIS sample sizes for individual years (approximately 87,500) is smaller than ACS (more than 3 million), BRFSS (approximately 506,000), and NSCH (approximately 95,700). Furthermore, all vision-related questions of interest, as noted above, were asked of sub-samples of the original sample (adult: ~ 36,000/year; child: ~12,000/year), further reducing

sample size. We therefore opted to conduct analyses on combined data years in order to reduce rates of suppression.

All weighted estimates are representative of the noninstitutionalized US population. Due to confidentiality concerns, public use data are not released at the state level.

Validating Responses

For all the questions, as shown in Table 2, that involved skip logic, we confirmed through cross tabulations that the only participants who answered subsequent questions were those who appropriately responded to the leading questions.

There were a few questions with similar wording that appeared in other modules that we used to validate questions in the adult sample file. The table below presents the questions in the other modules, the NHIS variable name, the question, response options, and which question it was cross-tabulated with.

Table 5. NHIS Questions Used for Internal Validation

NHIS Module	NHIS Variable Name	Question	Universe	Response Options	NHIS Variable Name for Comparison
Adult Functioning and Disability	VIS_0	Do you wear glasses?	Sample adults 18+ who were asked the family disability questions (FDB) and were randomly selected to receive the Functioning and Disability (AFD) section	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know	VIMGLASS
Adult Functioning and Disability	VIS_SS2	Do you have difficulty seeing, even when wearing glasses? Would you say no difficulty, some difficulty, a lot of difficulty, or are you unable to do this?	Sample adults 18+ who were asked the family disability questions (FDB) and were randomly selected to receive the Functioning and Disability (AFD) section	1 No difficulty 2 Some difficulty 3 A lot of difficulty 4 Cannot do at all/unable to do 7 Refused 8 Not ascertained 9 Don't know	AVISION
Family Disability File	P2DFSEE	[Are you/Is NAME] blind or [do	All persons age 1 or older	1 Yes	AVISION

NHIS Module	NHIS Variable Name	Question	Universe	Response Options	NHIS Variable Name for Comparison
		you/does NAME] have serious difficulty seeing even when wearing glasses?		2 No	
				7 Refused	
				8 Not ascertained	
				9 Don't know	

To create the dataset for internal validation, we combined the 2016 and 2017 functioning and disability files and the 2016 and 2017 family disability files and merged them with the merged 2016-2017 adult sample file. Table 6 below shows the cross-tabulation of VIS_0 and VIMGLASS. There were 29,803 participants in the merged 2016-2017 functioning and disability file. All participants responded to the question asking if he/she wears glasses (VIS_0). The majority of participants who answered 'Yes' also answered 'Yes' to the question asking if he/she currently wears eye glasses or contact lenses (VIMGLASS). However, roughly 3% of participants who said 'Yes' to currently wearing glasses or contact lenses (VIMGLASS) said 'No' to wearing glasses (VIS_0). There may be a small handful of adults who exclusively wear contact lenses, leading them to say 'No' to VIS_0, however the intent of the question is to assess the need for vision correction. About 6% of participants who said 'No' to VIMGLASS responded 'Yes' to VIS_0. This perhaps could have been due to the difference in wording where participants may have taken the word "currently" literally and those who only wear glasses for certain activities may have answered 'No'. We looked to see if there were any differences by age, sex, and race/ethnicity. In the case where participants said 'Yes' to VIMGLASS and 'No' to VIS_0 there were more Whites and more 18-39 year olds compared to the race/ethnicity and age distribution of the sample adult population. Those who said 'No' to VIMGLASS and 'Yes' to VIS_0 were more likely to be Hispanic and between 40-84 years old than compared to the sample adult population. Without speaking to the respondents directly, there is no good explanation for these discrepancies.

Table 6. Internal Validation of VIMGLASS with VIS_0

VIMGLASS (Sample Adult File)	VIS_0 (Functioning and Disability Adult File)					
	Yes	No	Refused	Not Ascertained	Don't Know	Total
Yes	18,980	656	14	599	3	20,252
No	565	8,500	8	342	3	9,418
Refused	1	2	2	0	0	5
Don't Know	0	0	0	1	0	1
Missing	70	53	0	4	0	127
Total	19,616	9,211	24	946	6	29,803

Table 7 below presents the cross-tabulation of AVISION and VIS_SS2. All 29,803 adults in the functioning and disability file also provided valid responses for AVISION in the 2016-2017 sample adult file. Since AVISION and VIS_SS2 do not have the same response options we mapped those who said 'Yes' to having trouble or difficulty seeing even when wearing glasses or contact lenses (AVISION) to those who responded 'Some difficulty', 'A lot of difficulty', or 'Cannot do at all/unable to do' to whether they have difficulty seeing, even when wearing glasses (VIS_SS2). The majority of the people who said 'Yes' for AVISION also indicated some degree of difficulty for VIS_SS2, but 34% of participants who said 'Yes' for AVISION responded 'No difficulty' for VIS_SS2. This may have been due do the mention of contact lenses in the AVISION question while VIS_SS2 only mentions glasses. Perhaps there are some who have difficulty with contact lenses but not glasses. About 8% of participants who said 'No' to AVISION indicated 'Some difficulty', 'A lot of difficulty', or 'Cannot do at all/unable to do' for VIS_SS2. The discrepancy here may largely be due to the use of difficulty versus trouble. We also considered whether age, sex, and race/ethnicity may be related to these discrepancies. There were slightly more Blacks, 40-84 year olds, and females who said 'Yes' to AVISION and 'No difficulty' to VIS_SS2 and also slightly more 40-64, 65-84, and 85+ year olds who said 'No' to AVISION but indicated some level of difficulty to VIS_SS2. It is interesting to note that the level of difficulty response category with the most number of participants with conflicting responses is the 'Some difficulty' VIS_SS2 response option. The number of people who responded 'Some difficulty' are almost equally split across the 'Yes' and 'No' response options for AVISION. This may indicate that people perceive 'difficulty' and 'trouble' differently when describing seeing.

Table 7. Internal Validation of AVISION with VIS_SS2

AVISION (Sample Adult File)	VIS_SS2 (Functioning and Disability Adult File)							
	No difficulty	Some difficulty	A lot of difficulty	Cannot do at all/unable to do	Refused	Not Ascertained	Don't Know	Total
Yes	1,350	2,124	330	30	3	135	2	3,974
No	22,933	1,932	83	19	23	818	9	25,817
Refused	3	0	0	0	0	0	0	3
Don't Know	3	4	1	0	0	1	0	9
Total	24,289	4,060	414	49	26	954	11	29,803

There were 29,967 people in the merged 2016-2017 family disability file that were also in the merged 2016-2017 sample adult file. AVISION and P2DFSEE are very similar questions but have slightly different wording. AVISION asks "Do you have trouble seeing, even when wearing glasses or contact lenses?" and P2FDSEE asks "{Are you/Is NAME} blind or {do you/does NAME} have serious difficulty seeing even when wearing glasses? About 8% of the participants had conflicting answers, of those with conflicting answers, 85% of them said 'Yes' to AVISION and had a 'No' response to P2DFSEE and the

remaining 15% said 'No' to AVISION but had a 'Yes' response to P2DFSEE. There are obvious differences in the question wording and similar to the issue raised with VIS_SS2, participants may understand difficulty and trouble differently resulting in different responses. There is even more possibility that this plays a large factor here as these question are likely asked of different people. P2DFSEE is a family questionnaire and thus a family member can answer for others while AVISION is part of the sample adult file and is generally administered directly to the respondent.

Table 8. Internal Validation of AVISION with P2DFSEE

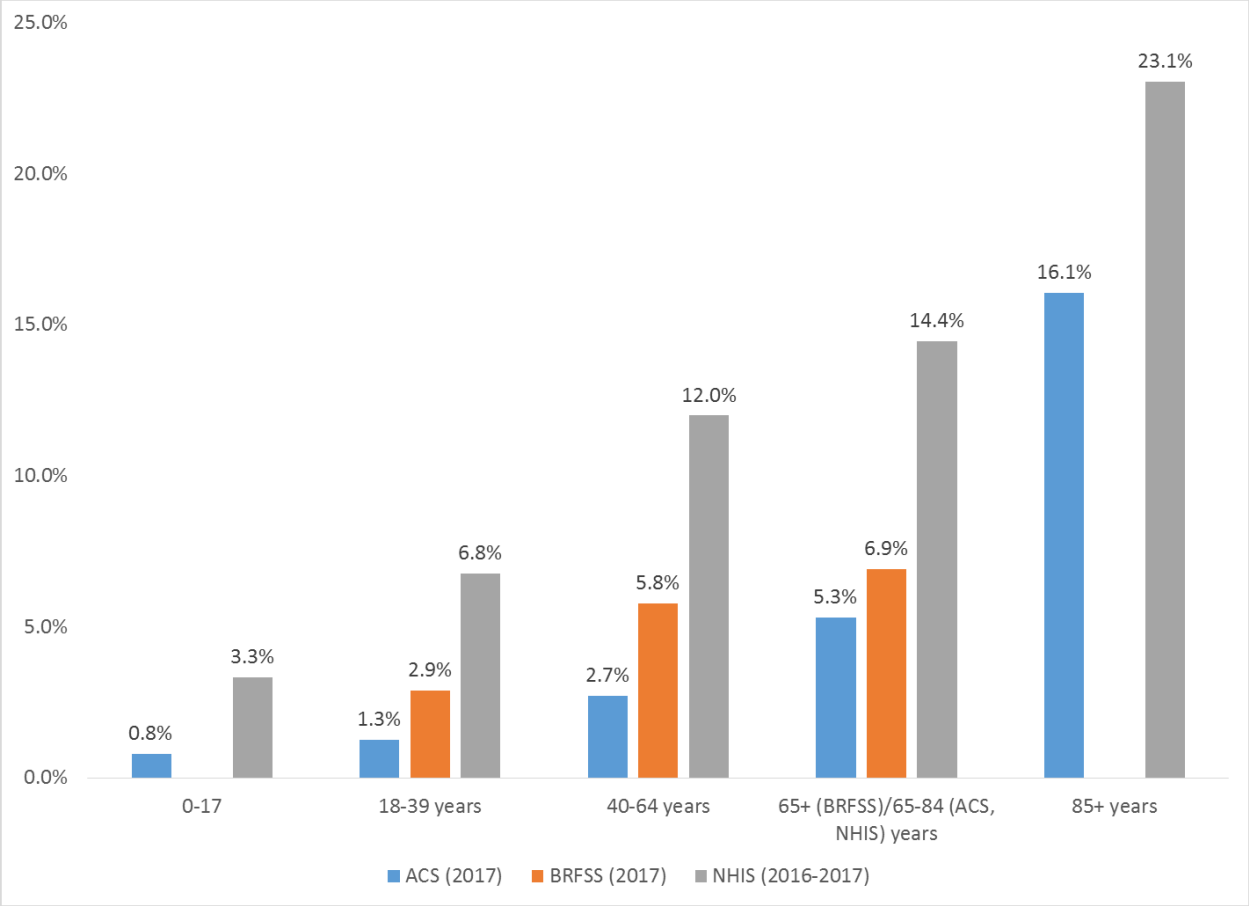
AVISION (Sample Adult File)	P2DFSEE (Family Disability File)				
	Yes	No	Refused	Don't Know	Total
Yes	1,076	1,978	0	2	3,056
No	344	26,553	3	4	26,904
Refused	0	0	1	0	1
Don't Know	1	5	0	0	6
Total	1,421	28,536	4	6	29,967

External Validation

The Behavioral Risk Factor Surveillance System (BRFSS), the American Community Survey (ACS), and the National Health and Nutrition Examination Survey (NHANES) have questions with similar or the same wording as those in the NHIS. Below we present the estimates from these surveys compared to the NHIS estimates.

Both the ACS and BRFSS ask "Are you blind or do you have serious difficulty seeing, even when wearing glasses?" and NHIS asks "Do you have any trouble seeing, even when wearing glasses or contact lenses?". Exhibit 1 presents the estimates from ACS, BRFSS, and NHIS by age category. As expected all estimates increase with age, survey estimates differ more at the younger age ranges (<65 years), where BRFSS estimates are double ACS, and NHIS are double BRFSS. Even though BRFSS top codes at 65, the BRFSS estimate is still almost half the NHIS estimate that only includes ages 65-84. The sample sizes between ACS and BRFSS differ by a magnitude (about 3 million versus 400,000) and then NHIS is another magnitude smaller than BRFSS (~30,000). The ACS and BRFSS have the same question wording and is probably why the estimates track closer together. It is possible that having "blind" appear at the beginning of the question leads people to respond 'No' more often than just asking about trouble seeing.

Exhibit 1. ACS, BRFSS, and NHIS estimates by age group, Difficulty Seeing with Glasses



Between 2005-2008, NHANES fielded a Vision module and asked five of the same visual function questions that were asked in the 2016 and 2017 NHIS. Additionally, NHANES also asked about macular degeneration, glaucoma, and cataracts. Diabetic retinopathy was asked in the Diabetes module. Questions were not always asked to the entire NHANES population so we compared estimates for available age ranges. The NHANES questions and the sample population included:

1. Has a doctor ever told {you/SP} that diabetes has affected {your/his/her} eyes or that {you/s/he} had retinopathy (>=12 years old)?
2. {Have you/Has SP} ever been told by an eye doctor that {you have/s/he has} age-related macular degeneration (>=40 years old)?
3. {Have you/Has SP} ever been told by an eye doctor that {you have/s/he has} glaucoma, sometimes called high pressure in {your/his/her} eyes (>=40 years old)?
4. {Have you/Has SP} ever had a cataract operation (>=20 years old)?
5. The next questions are about how much difficulty, if any, {you have/SP has} doing certain activities, such as reading ordinary newsprint or going down steps. If {you/s/he} usually wear{s} glasses or contact lenses to do these activities, please rate {you r/his/her} ability to do them while wearing {your/his/her} glasses or contacts.
    a. How much difficulty {do you/does SP} have reading ordinary print in newspapers (>=20 years old)?

b. How much difficulty {do you/does SP} have doing work or hobbies that require {you/him/her} to see well up close such as cooking, sewing, fixing things around the house, or using hand tools (>=20 years old)?
c. How much difficulty {do you/does SP} have noticing objects off to the side while {you are/s/he is} walking (>=20 years old)?
d. How much difficulty {do you/does SP} have finding something on a crowded shelf (>=20 years old)?
e. How much difficulty {do you/does SP} you have driving during the daytime in familiar places (>=20 years old)?
f. How much difficulty {do you/does SP} have . . .going down steps, stairs, or curbs in dim light or at night (>=20 years old)?

Exhibit 2. NHIS and NHANES Diabetic Retinopathy Prevalence Estimates by Age Group

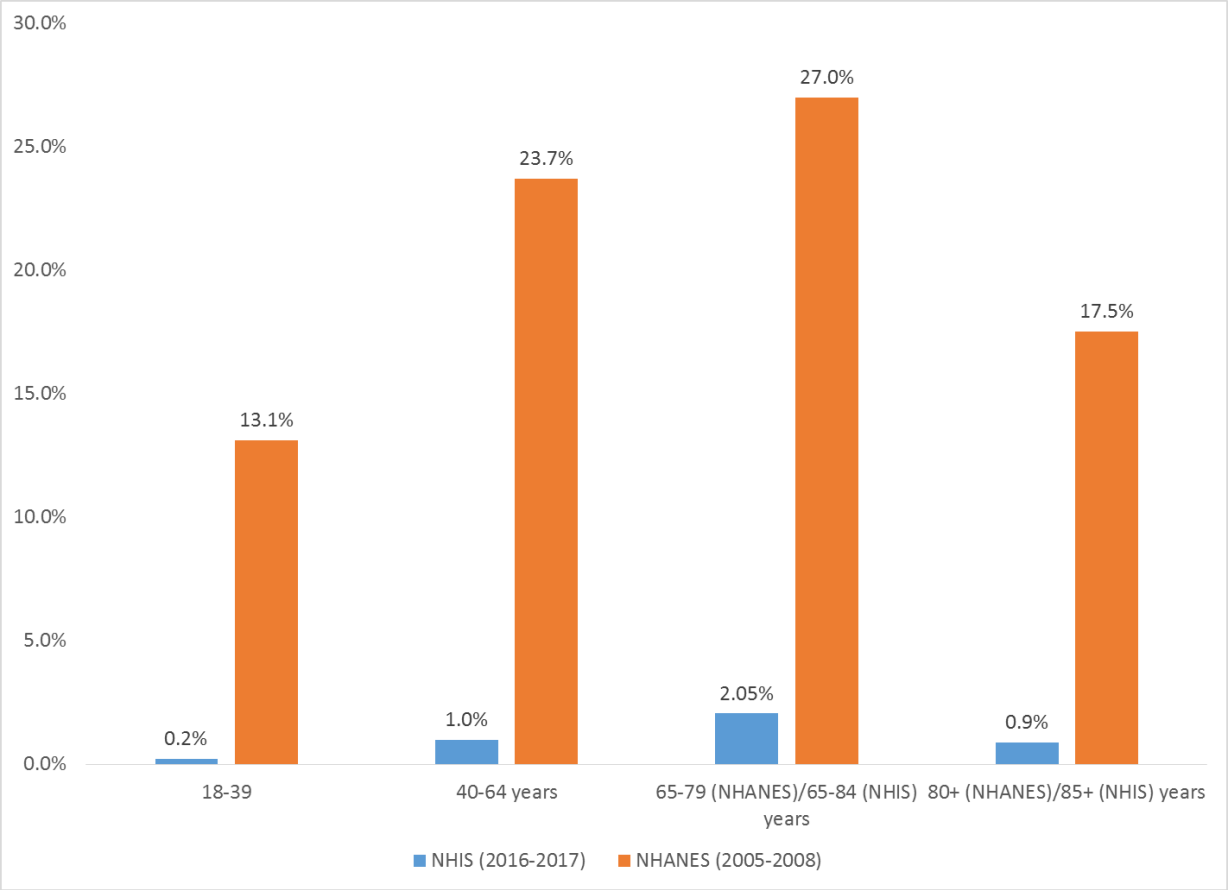


Exhibit 3. NHIS and NHANES Macular Degeneration Prevalence Estimates by Age Group

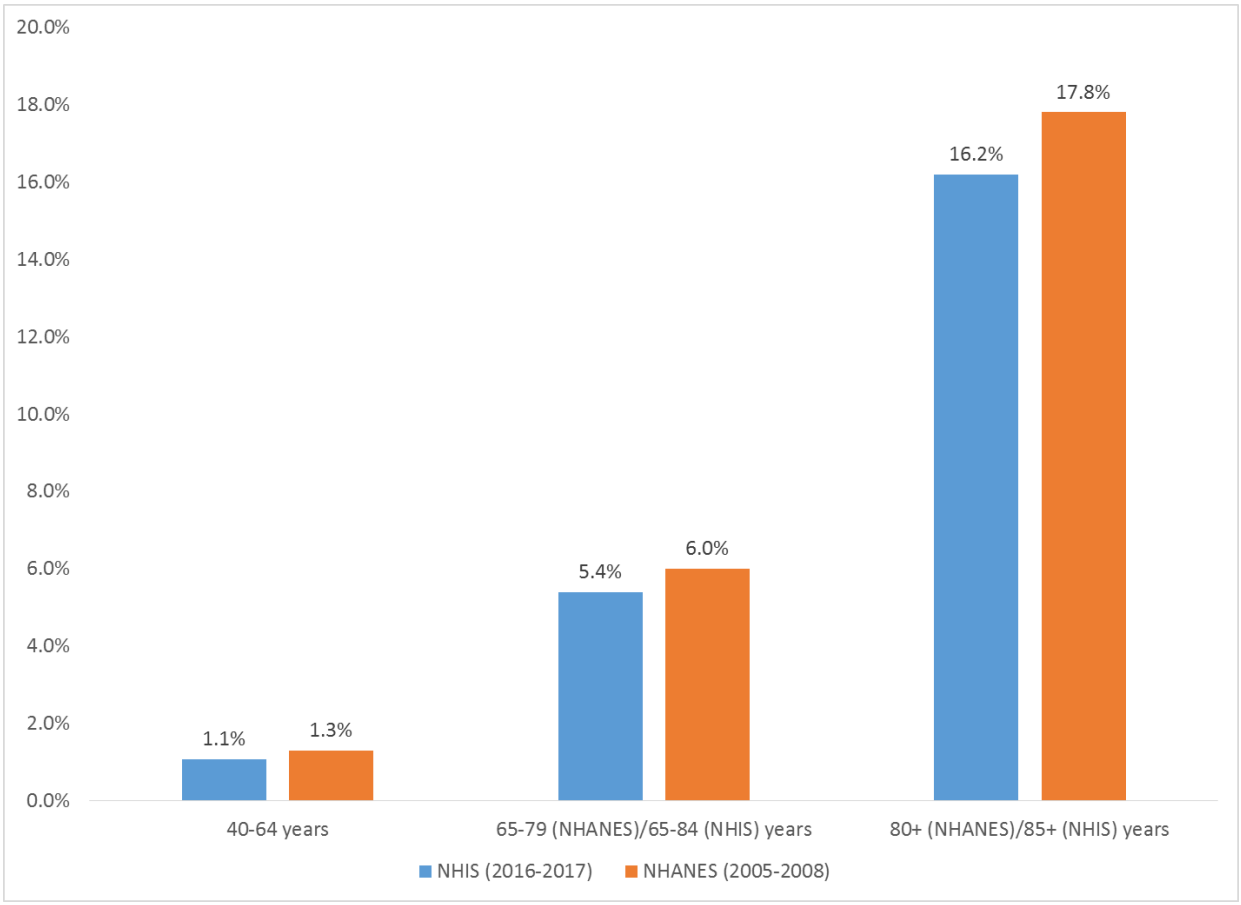


Exhibit 4. NHIS and NHANES Glaucoma Prevalence Estimates by Age Group

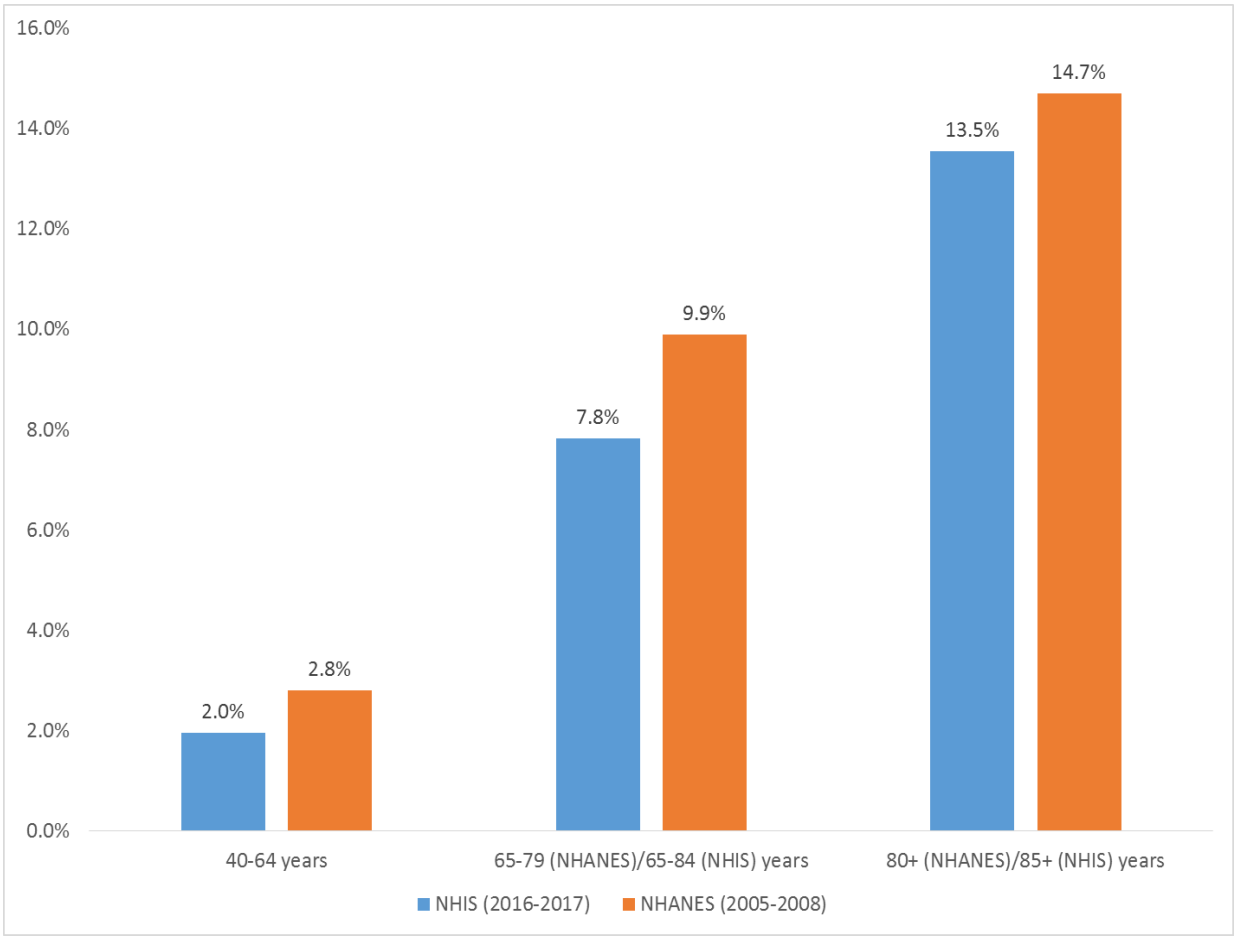
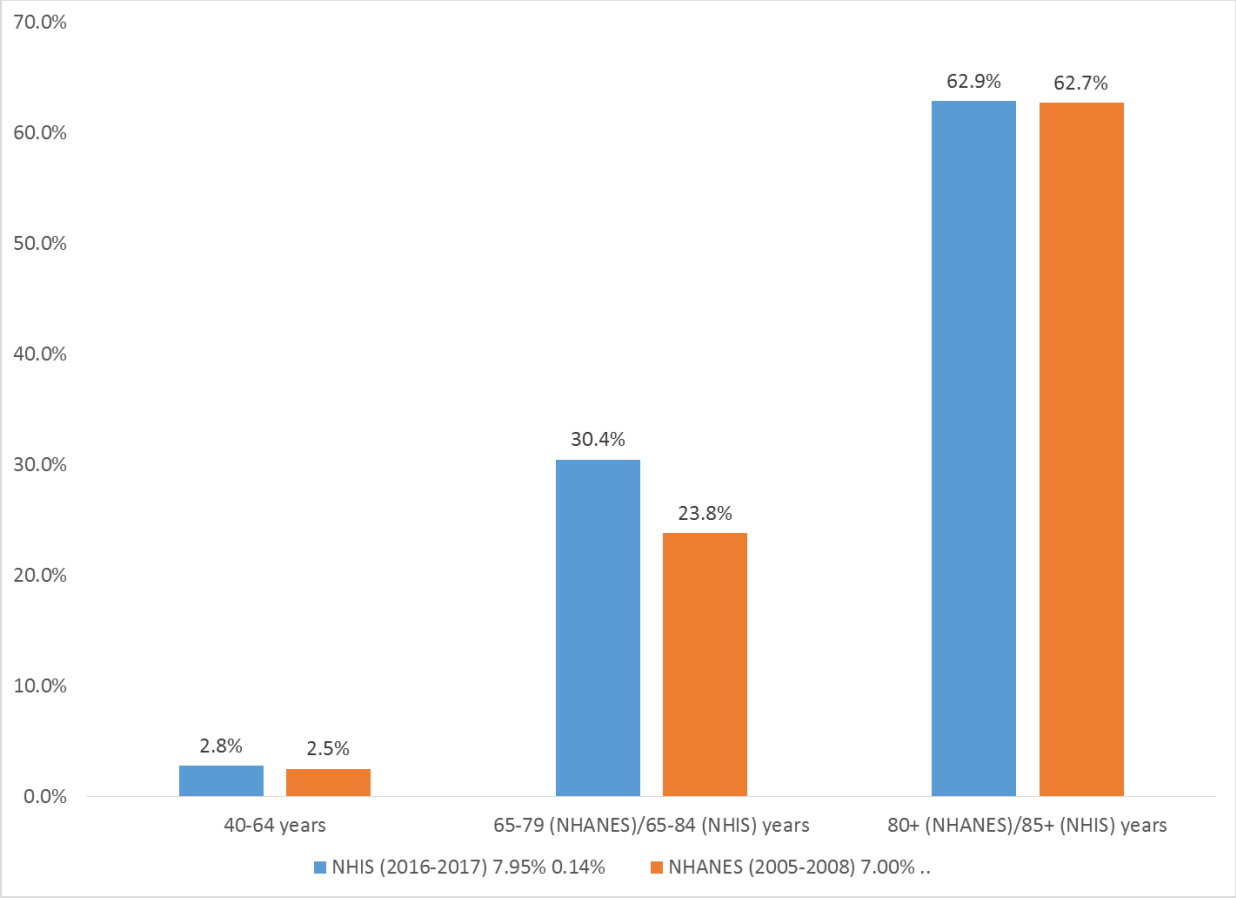


Exhibit 5. NHIS and NHANES Prevalence of Cataract Surgery Estimates by Age Group



NHIS and NHANES estimates of self-reported glaucoma and macular degeneration and ever having cataract surgery track pretty closely. In most cases NHANES estimates were slightly higher than NHANES. However, NHANES diabetic retinopathy estimates are much higher than NHIS estimates. This may be due to the question wording including diabetes affecting eyes which people may remember more than being diagnosed with diabetic retinopathy.

Exhibit 6. NHIS and NHANES Visual Function Estimates, Reading Newspapers

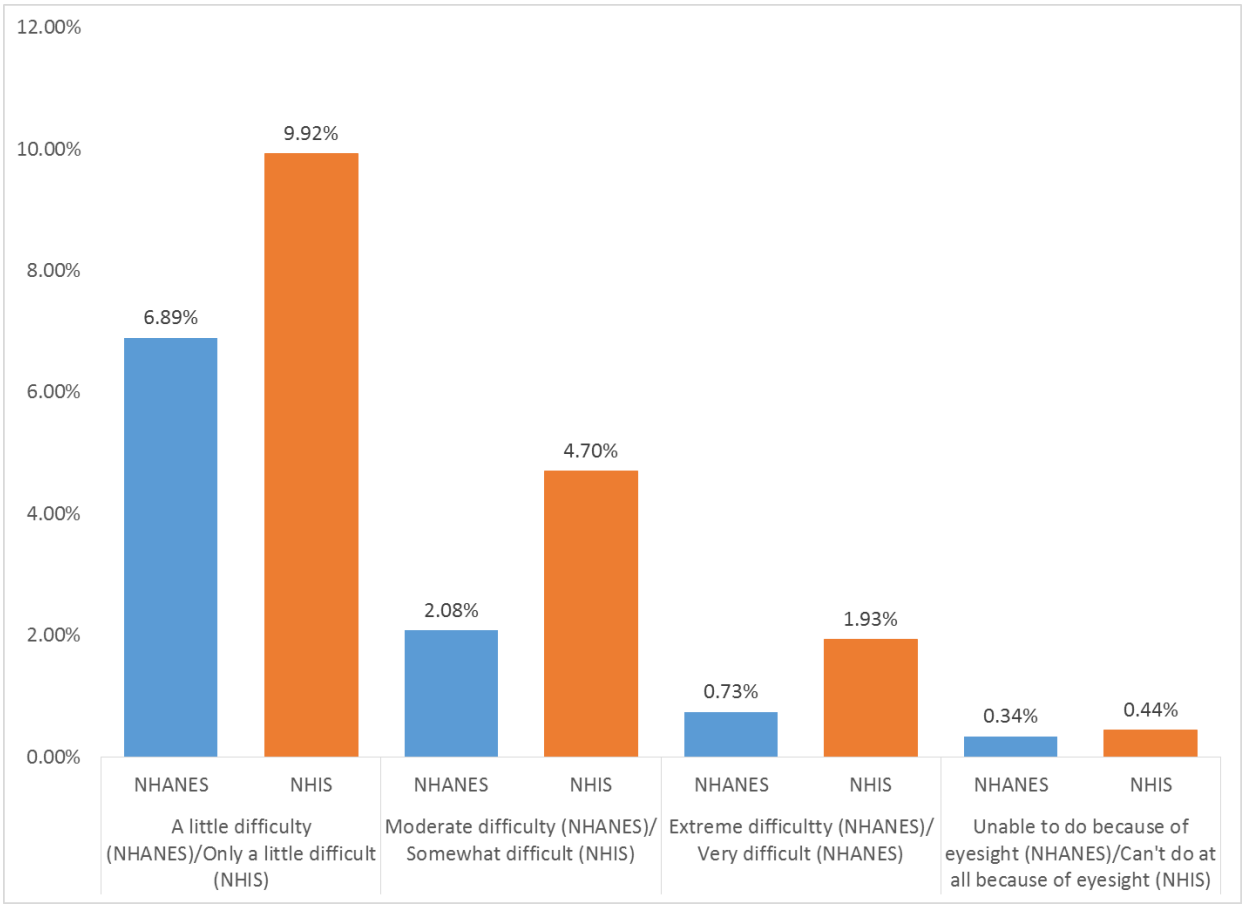


Exhibit 7. NHIS and NHANES Visual Function Estimates, See Well Up Close for Work/Hobbies

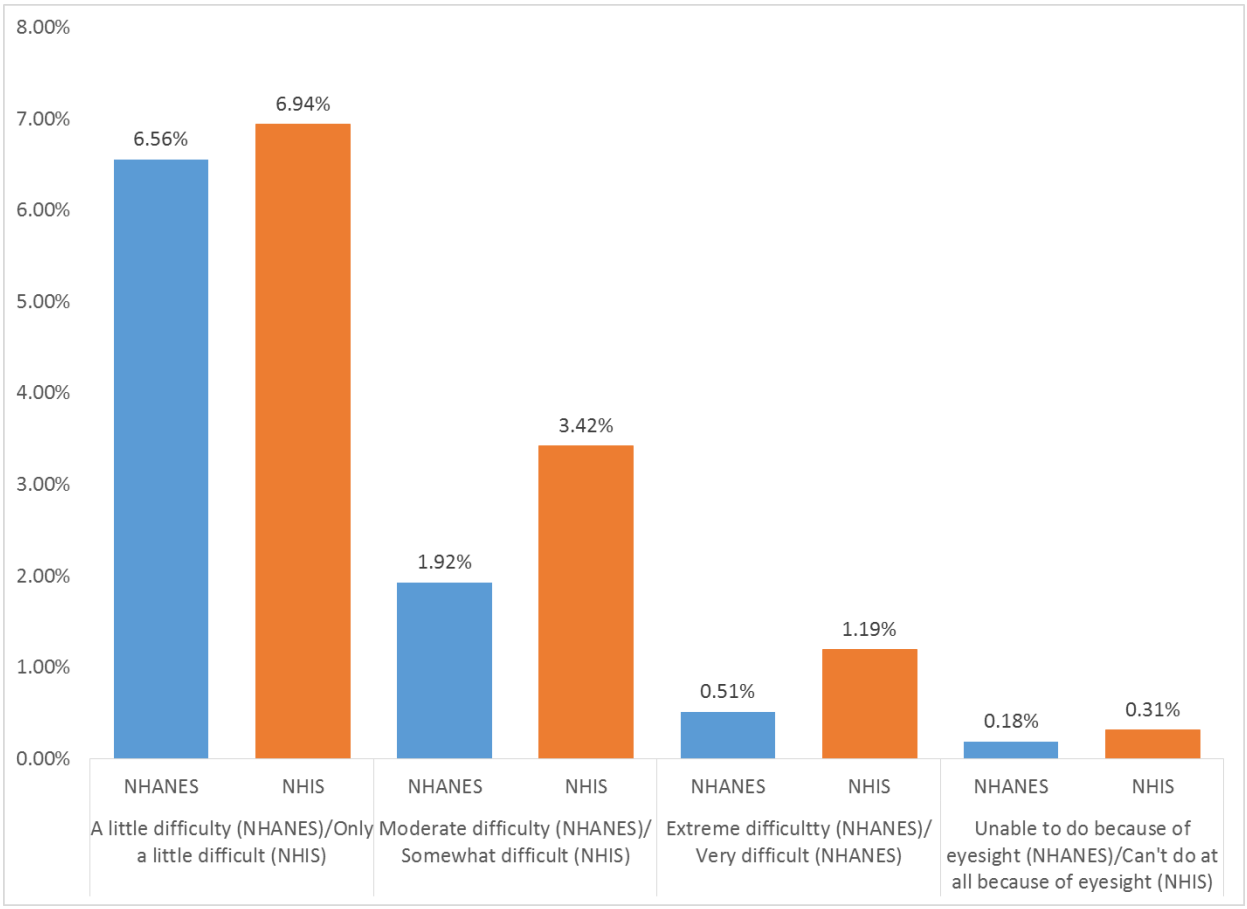


Exhibit 8. NHIS and NHANES Visual Function Estimates, Noticing Object to Side

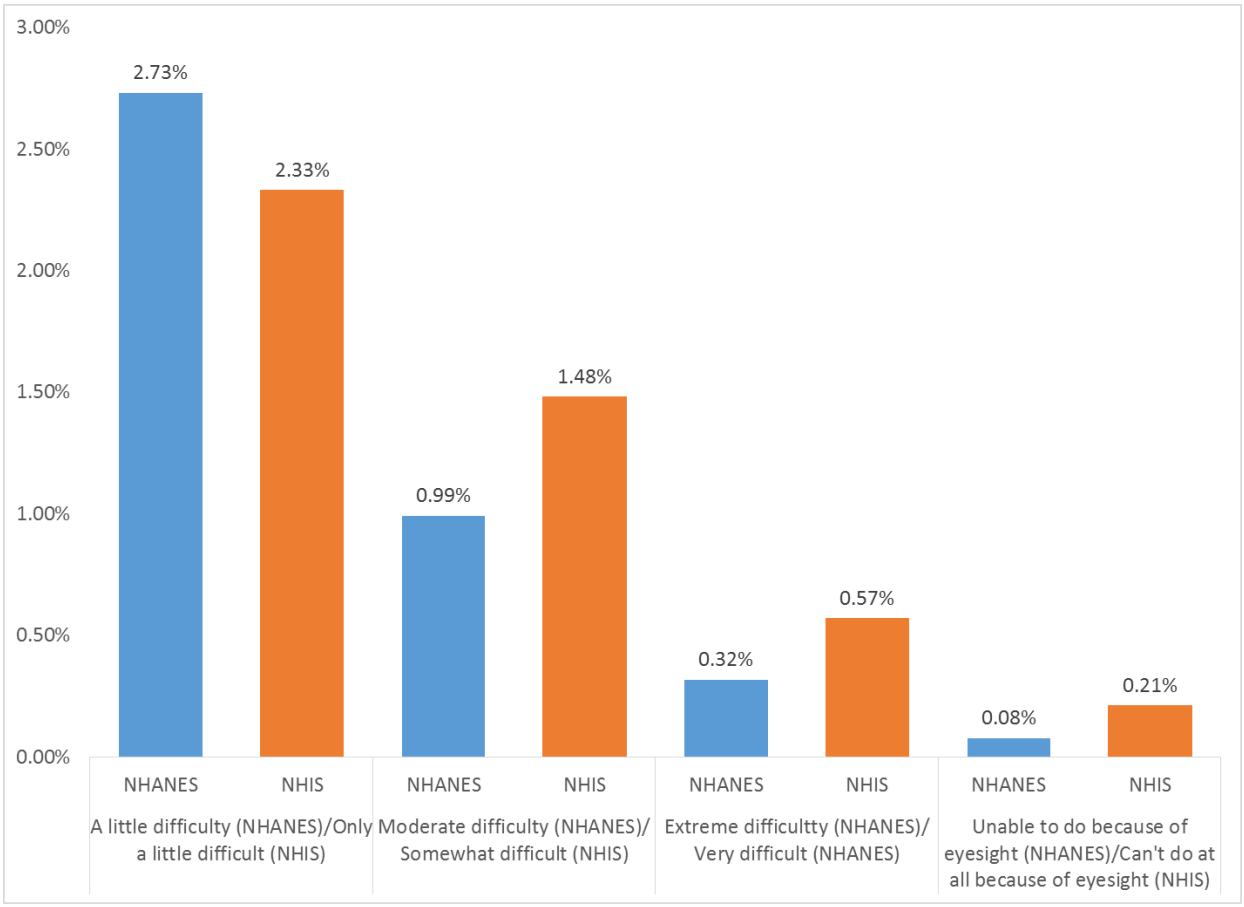


Exhibit 9. NHIS and NHANES Visual Function Estimates, Finding Things on Crowded Shelf

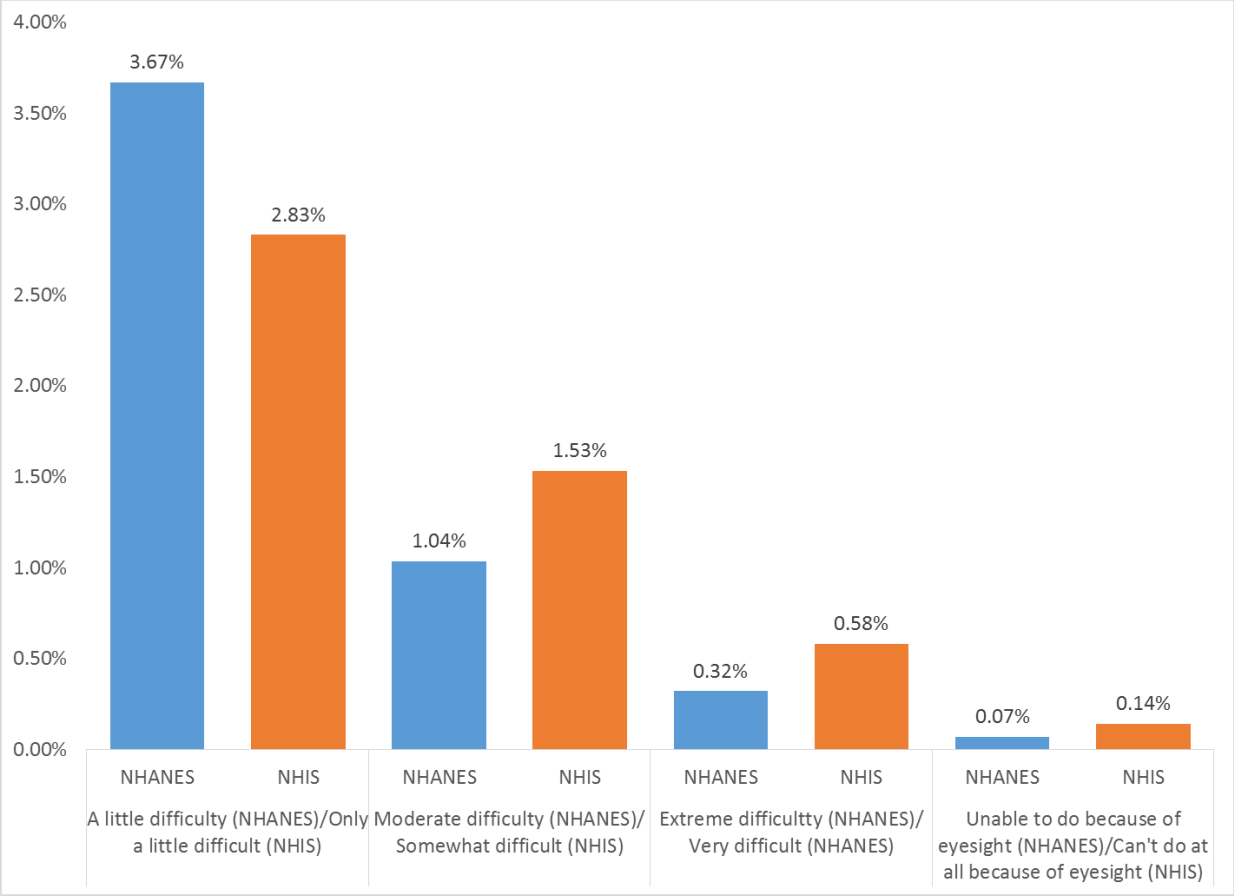


Exhibit 10. NHIS and NHANES Visual Function Estimates, Driving to Familiar Places

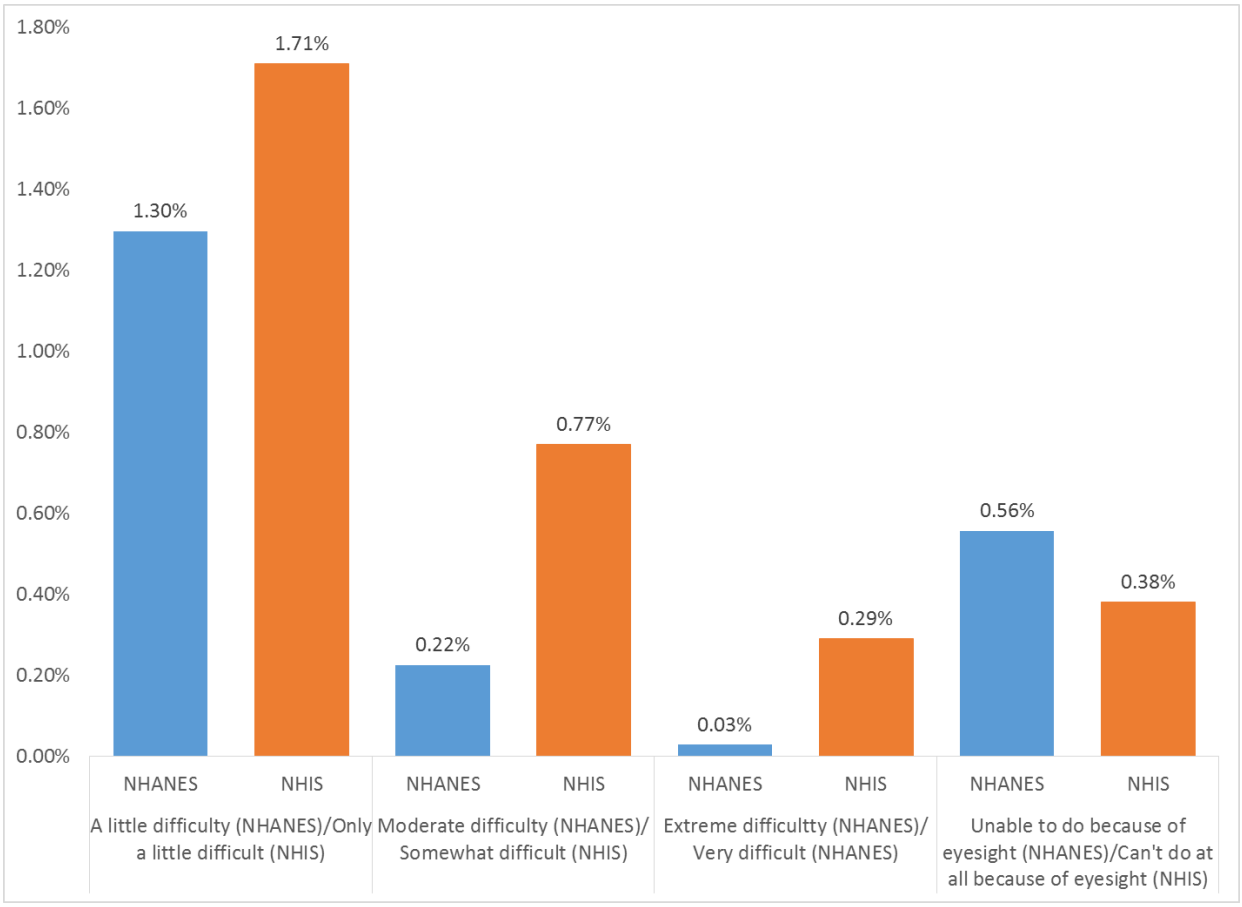
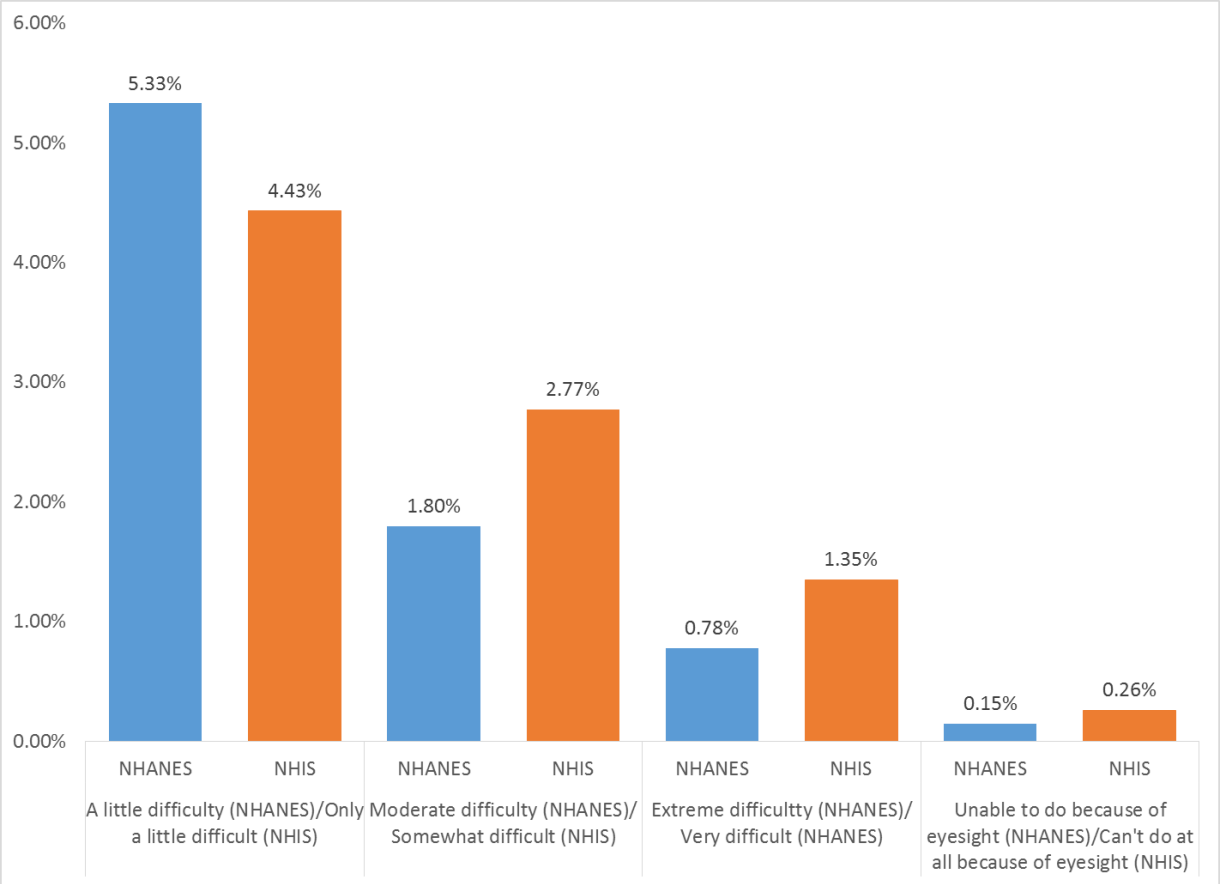


Exhibit 11. NHIS and NHANES Visual Function Estimates, Difficulty going down steps in dim light



Across the visual function questions, NHIS estimates were almost always higher than NHANES estimates (estimates roughly 50% or 100% higher). This could be due to the difference in survey years and the growing aging population. The instances where NHANES estimates were higher than NHIS estimates were for the A little difficulty (NHANES)/Only a little difficult (NHIS) response options for the questions on noticing objects off to the side; finding things on a crowded shelf; and going down steps in dim light/night; and the Unable to do because of eyesight (NHANES)/Can't do at all because of eyesight (NHIS) response options for the driving to familiar places in daytime question.

Limitations

The NHIS data analyzed are limited in a few ways. NHIS does not publicly release state-level data, and therefore only national level data will be included in VEHSS. All responses are self-reported, or household reported in the case of children. Many of the self-report measures represent indicators that cannot be directly translated into the prevalence of clinically defined visual impairment or blindness. Finally, many of the new vision questions included in the 2016 and 2017 NHIS are not present in the

2018 and 2019 surveys nor in surveys within a similar time frame, making it difficult to compare across surveys or across years.

Summary Outcome Measures

Table 9. National estimates of prevalence rates of children (ages 0-17 years) who have trouble seeing even when wearing glasses or contact lenses (CVISION), 2014-2015 and 2016-2017

Stratification factor	2014-2015 Prevalence Rate	2014-2015 Sample Size	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents	2.6 (2.3-2.9)	25643	3.3 (3.0 - 3.7)	19931
Race/Ethnicity				
Non-Hispanic White	2.4 (2.0-2.7)	11919	2.9 (2.5 - 3.4)	10973
Non-Hispanic Black	3.2 (2.4-4.2)	3468	4.7 (3.6 – 6.0)	2270
Hispanic, any race	2.9 (2.4-3.3)	7333	3.6 (3.0 - 4.3)	4383
Asian	1.9 (1.1-3.0)	1477	2.8 (1.6 - 4.4)	1080
Non-Hispanic Other	2.5 (1.4-4.1)	1225	2.6 (1.5 - 4.1)	1014
North American Native	**	221	†	211
Sex				
Male	2.6 (2.2-3.0)	13121	3.2 (2.7 - 3.6)	10343
Female	2.6 (2.3-3.0)	12522	3.5 (3.0 – 4.0)	9588

*suppressed due to a sample size <30; **suppressed due to a RSE >30%; ***suppressed due to a sample size<30 and a RSE >30%, †Value suppressed following NCHS guidelines

Table 10. National estimates of prevalence rates of children (ages 0-17 years) who are blind or unable to see at all (CBLIND), 2014-2015 and 2016-2017

Stratification factor	2014-2015 Prevalence Rate	2014-2015 Sample Size	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents	0.1 (.08 - 2.1)	25640	0.2 (0.1 - 0.3)	19931
Race/Ethnicity				
Non-Hispanic White	**	11918	0.2 (0.1 - 0.3)	10973
Non-Hispanic Black	**	3468	0.2 (0 - 0.6)	2270
Hispanic, any race	**	7331	0.1 (0 - 0.4)	4383
Asian	**	1477	0.2 (0 - 0.7)	1080
Non-Hispanic Other	0	1225	†	1014
North American Native	0	221	0.8 (0 - 4.2)	211
Sex				
Male	0.2 (0.08-0.3)	13119	0.1 (0 - 0.2)	10343
Female	0.1 (0.05-.19)	12521	0.2 (0.1 - 0.4)	9588

*suppressed due to a sample size <30; **suppressed due to a RSE >30%; ***suppressed due to a sample size<30 and a RSE >30%, †Value suppressed following NCHS guidelines

Table 11. National estimates of the prevalence of children who have ever had their vision tested by a doctor (CVISTST), 2016-2017

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents	48.5 (46.9-50.1)	6364
Race/Ethnicity		
Non-Hispanic White	49.0 (46.8-51.3)	3533
Non-Hispanic Black	52.2 (47.5-56.8)	716
Hispanic, any race	45.0 (41.5-48.6)	1339
Asian	46.5 (38.5-54.5)	343
Non-Hispanic Other	53.0 (46.1-59.8)	362
North American Native	†	†
Sex		
Male	48.6 (46.2-51.1)	3298
Female	49.3 (46.0-50.7)	3066

†Value suppressed following NCHS guidelines

Table 12. National estimates of the prevalence of when children had their vision tested by a doctor (CVISTLT), 2016-2017

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents		2997
In the last 12 months	83.2 (81.4-84.9)	2997
In the last 13-24 months	11.4 (10.0-12.9)	2997
Over 24 months	4.6 (3.6-5.8)	2997
Don't Know	0.7 (0.4-1.23)	2997
Race/Ethnicity		
Non-Hispanic White		
In the last 12 months	83.4 (81.0-85.6)	1662
In the last 13-24 months	12.5 (10.5-14.6)	1662
Over 24 months	3.6 (2.4-5.2)	1662
Don't Know	0.6 (0.3-1.0)	1662
Non-Hispanic Black		
In the last 12 months	83.3 (77.6-88.1)	367
In the last 13-24 months	9.7 (6.5-13.8)	367
Over 24 months	†	367
Don't Know	1.1 (0.1-4.2)	367
Hispanic, any race		
In the last 12 months	82.1 (77.7-86.0)	619
In the last 13-24 months	10.5 (7.6-13.9)	619
Over 24 months	6.3 (3.7-9.9)	619
Don't Know	1.2 (0.3-2.9)	619
Asian		
In the last 12 months	87.9 (79.4-93.8)	141
In the last 13-24 months	†	141
Over 24 months	†	141

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
Don't Know	†	141
Non-Hispanic Other		
In the last 12 months	83.4 (76.0-89.3)	179
In the last 13-24 months	13.3 (7.9-20.5)	179
Over 24 months	†	179
Don't Know	0.3 (0.0-2.7)	179
North American Native		
In the last 12 months	†	†
In the last 13-24 months	†	†
Over 24 months	†	†
Don't Know	†	†
Sex		
Male		
In the last 12 months	84.3 (81.9-86.5)	1549
In the last 13-24 months	11.2 (9.3-13.3)	1549
Over 24 months	4.1 (2.9-5.4)	1549
Don't Know	0.5 (0.2-1.0)	1549
Female		
In the last 12 months	82.1 (79.2-84.8)	1448
In the last 13-24 months	11.7 (9.7-13.9)	1448
Over 24 months	5.2 (3.5-7.5)	1448
Don't Know	1.0 (0.4-2.0)	1448

†Value suppressed following NCHS guidelines

Table 13. National estimates of the prevalence of children who wear eye glasses or contacts (CVISGLASS), 2016-2017

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents	32.3 (31.3-33.3)	13453
Race/Ethnicity		
Non-Hispanic White	30.5 (29.1-31.9)	7366
Non-Hispanic Black	33.1 (30.0-36.3)	1542
Hispanic, any race	33.2 (31.1-35.4)	3027
Asian	42.7 (37.7-47.8)	731
Non-Hispanic Other	31.6 (26.2-37.3)	650
North American Native	36.9 (23.7-51.7)	137
Sex		
Male	28.8 (27.5-30.0)	6988
Female	35.9 (34.3-37.4)	6465

†Value suppressed following NCHS guidelines

Table 14. National estimates of the prevalence of children (ages 6-17) who participate in sports, hobbies, or other activities that can cause eye injury (CVISACT), 2016-2017

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents	43.5 (42.4-44.6)	13470
Race/Ethnicity		
Non-Hispanic White	51.8 (50.2-53.4)	7377
Non-Hispanic Black	34.6 (31.8-37.5)	1545
Hispanic, any race	32.9 (30.7-35.2)	3028
Asian	35.0 (30.4-39.9)	733
Non-Hispanic Other	41.4 (36.6-46.4)	650
North American Native	42.0 (31.0-53.5)	137
Sex		
Male	53.4 (51.8-55.0)	6992
Female	33.2 (31.6-34.9)	6472

†Value suppressed following NCHS guidelines

Table 15. National estimates of the prevalence of children who participate in sports, hobbies or other activities that can cause eye injury who wear eye protection (CVISPROT), 2016-2017

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents		
Always	15.9 (14.8-17.1)	5943
Most of the time	6.6 (5.8-7.4)	5943
Some of the time	10.9 (9.9-12.0)	5943
None of the time	66.2 (64.7-67.8)	5943
Race/Ethnicity		
Non-Hispanic White		
Always	15.3 (13.6-17.0)	3773
Most of the time	7.5 (6.5-8.7)	3773
Some of the time	12.1 (10.7-13.5)	3773
None of the time	65.0 (62.8-67.1)	3773
Non-Hispanic Black		
Always	16.2 (12.7-20.2)	580
Most of the time	5.6 (3.5-8.5)	580
Some of the time	11.6 (8.5-15.2)	580
None of the time	66.0 (60.6-71.2)	580
Hispanic, any race		
Always	17.4 (14.3-20.7)	1008
Most of the time	5.2 (3.8-7.0)	1008
Some of the time	7.6 (5.5-10.1)	1008
None of the time	69.2 (65.6-72.7)	1008
Asian		
Always	17.7 (12.7-23.7)	255
Most of the time	†	255

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
Some of the time	8.2 (4.3-13.9)	255
None of the time	68.2 (60.8-75.0)	255
Non-Hispanic Other		
Always	15.7 (10.6-22.0)	268
Most of the time	2.2 (0.8-4.7)	268
Some of the time	9.0 (5.4-14.1)	268
None of the time	71.7 (64.3-78.3)	268
North American Native		
Always	†	59
Most of the time	†	59
Some of the time	†	59
None of the time	61.1 (45.4-75.2)	59
Sex		
Male		
Always	16.3 (14.8-18.0)	3744
Most of the time	6.5 (5.6-7.5)	3744
Some of the time	12.4 (11.0-13.9)	3744
None of the time	64.4 (62.4-66.3)	3744
Female		
Always	15.2 (13.2-17.3)	2199
Most of the time	6.7 (5.4-8.1)	2199
Some of the time	8.3 (6.9-9.9)	2199
None of the time	69.4 (66.7-72.0)	2199

†Value suppressed following NCHS guidelines

Table 16. National estimates of the prevalence of children who had a family member see or talk to an optometrist, ophthalmologist, or eye doctor within the past 12 months (CHCSYR11/CHCSYR2), 2016-2017

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents	26.9 (26.1-27.7)	19841
Race/Ethnicity		
Non-Hispanic White	28.6 (27.5-29.8)	10931
Non-Hispanic Black	24.7 (22.4-27.1)	2252
Hispanic, any race	24.2 (22.5-25.9)	4367
Asian	30.0 (26.2-34.0)	1076
Non-Hispanic Other	25.0 (21.1-29.2)	1008
North American Native	25.1 (17.9-33.4)	207
Sex		
Male	25.4 (24.4-26.5)	10286
Female	28.4 (27.2-29.6)	9555

†Value suppressed following NCHS guidelines

Table 17. National estimates of prevalence rates of adults who have trouble seeing even when wearing glasses or contact lenses (AVISION), 2014-2015 and 2016-2017

Stratification factor	2014-2015 Prevalence Rate	2014-2015 Sample Size	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents	9.2 (8.9-9.6)	70332	10.7 (10.3-11.0)	59751
Age				
18-39 years	5.2 (4.8-5.6)	24061	6.8 (6.3-7.3)	19222
40-64 years	10.6 (10.1-11.2)	29261	12.0 (11.4-12.6)	24298
65-84 years	13.0 (12.2-13.8)	14764	14.4 (13.7-15.2)	14187
85 years and older	23.5 (21.1-26.0)	2246	23.1 (20.7-25.5)	2044
Race/Ethnicity				
Non-Hispanic White	9.5 (9.1-9.9)	43606	10.7 (10.3-11.1)	41710
Non-Hispanic Black	10.7 (9.9-11.6)	9356	12.3 (11.3-13.4)	6393
Hispanic, any race	8.2 (7.6-8.8)	11639	10.2 (0.2-11.2)	7048
Asian	5.6 (4.7-6.6)	3906	6.7 (5.6-8.0)	2918
Non-Hispanic Other	10.6 (8.3-13.2)	1309	13.2 (10.7-16.0)	1175
North American Native	11.3 (7.4-16.2)	516	15.0 (11.7-18.8)	507
Sex				
Male	7.7 (7.3-8.1)	31453	8.7 (8.3-9.2)	27081
Female	10.7 (10.2-11.2)	38879	12.5 (11.9-13.0)	32670
Risk factor				
Diabetes	9.3 (8.9-9.6)	70294	10.7 (10.3-11.0)	59699
Yes	19.3 (18.1-20.6)	7469	20.5 (19.3-21.7)	6329
Borderline	15.2 (12.6-18.2)	1182	15.8 (13.4-18.3)	1679
No	8.1 (7.8-8.4)	61643	9.5 (0.1-9.8)	51691
Hypertension	9.3 (8.9-9.6)	70247	10.7 (10.3-11.0)	59668
Yes	14.2 (13.5-14.9)	24128	15.9 (15.2-16.6)	21046
No	7.0 (6.7-7.4)	46119	8.3 (7.9-8.8)	38622
Smoking	9.2 (8.9-9.6)	70017	10.7 (10.3-11.0)	59529
Current Smoker	12.9 (11.9-13.9)	11783	14.6 (13.7-15.6)	9353
Former Smoker	11.5 (10.8-12.2)	16058	12.6 (11.9-13.2)	14752
Never Smoker	7.5 (7.1-7.9)	42176	9.1 (8.6-9.5)	35424

*suppressed due to a sample size <30; **suppressed due to a RSE >30%; ***suppressed due to a sample size<30 and a RSE >30%, †Value suppressed following NCHS guidelines

Table 18. National estimates of prevalence rates of adults who are blind or unable to see at all (ABLIND), 2014-2015 and 2016-2017

Stratification factor	2014-2015 Prevalence Rate	2014-2015 Sample Size	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents	0.3 (0.3-0.4)	70329	0.4 (0.3-0.5)	59751
Age				
18-39 years	0.1 (0.1-0.2)	24060	0.2 (0.1-0.3)	19222
40-64 years	0.3 (0.3-0.4)	29261	0.4 (0.3-0.5)	24298
65-84 years	0.5 (0.4-0.7)	14763	0.6 (0.5-0.8)	14187
85 years and older	0.5 (1.9-4.1)	2245	1.4 (0.9-2.1)	2044
Race/Ethnicity				
Non-Hispanic White	0.4 (0.3-0.5)	43604	0.4 (0.3-0.5)	41710
Non-Hispanic Black	0.4 (0.3-0.6)	9356	0.7 (0.4-1.1)	6393
Hispanic, any race	0.2 (0.1-0.3)	11638	0.3 (0.2-0.5)	7048
Asian	**	3906	0.01 (0-0.1)	2918
Non-Hispanic Other	**	1309	0.4 (0.1-0.9)	1175
North American Native	*	516	0.5 (0.1-1.9)	507
Sex				
Male	0.4 (0.3-0.4)	31451	0.4 (0.3-0.5)	27081
Female	0.3 (0.3-0.4)	38878	0.4 (0.3-0.5)	32670
Risk factor				
Diabetes	0.3 (0.3-0.4)	70291	0.4 (0.3-0.5)	59699
Yes	0.9 (0.7-1.3)	7469	1.0 (0.7-1.4)	6329
Borderline	**	1182	0.4 (0.1-0.8)	1679
No	0.3 (0.2-0.3)	61640	0.3 (0.3-0.4)	51691
Hypertension	0.3 (0.3-0.4)	70244	0.4 (0.3-0.5)	59668
Yes	0.6 (0.5-07.)	24127	0.6 (0.4-0.7)	21046
No	0.2 (0.2-0.3)	46117	0.3 (0.2-0.4)	38622
Smoking	0.3 (0.3-0.4)	70014	0.4 (0.3-0.5)	59529
Current Smoker	0.4 (0.3-0.6)	11783	0.5 (0.4-0.8)	9353
Former Smoker	0.4 (0.3-0.6)	16058	0.4 (0.3-0.5)	14752
Never Smoker	0.3 (0.2-0.3)	42173	0.4 (0.3-0.4)	35424

*suppressed due to a sample size <30; **suppressed due to a RSE >30%; ***suppressed due to a sample size<30 and a RSE >30%

Table 19. National estimates of prevalence rates of adults who were told by a doctor that they have diabetic retinopathy (VIM_DREV), 2016-2017

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents	0.9 (0.8-1.0)	59680
Age		
18-39 years	0.2 (0.1-0.3)	19212
40-64 years	1.0 (0.8-1.2)	24284
65-84 years	2.1 (1.8-2.30	14143
85 years and older	0.9 (0.5-1.4)	2041
Race/Ethnicity		
Non-Hispanic White	0.8 (0.7-0.9)	41670
Non-Hispanic Black	1.2 (0.9-1.5)	6379
Hispanic, any race	1.0 (0.7-1.3)	7033
Asian	0.6 (0.3-1.0)	2916
Non-Hispanic Other	1.5 (0.7-2.8)	1175
North American Native	2.5 (1.0-5.2)	507
Sex		
Male	1.0 (0.8-1.1)	27037
Female	0.8 (0.7-0.9)	32643
Risk factor		
Diabetes		
Yes	8.4 (7.5-9.4)	6281
Borderline	0.5 (0.2-1.1)	1677
No	0.1 (0.1-0.1)	51678
Hypertension		
Yes	2.1 (1.9-2.4)	20998
No	0.3 (0.3-0.4)	38606
Smoking		
Current Smoker	0.9 (0.6-1.1)	9343
Former Smoker	1.4 (1.1-1.7)	14730
Never Smoker	0.7 (0.6-0.8)	35387

†Value suppressed following NCHS guidelines

Table 20. National estimates of prevalence rates of adults who were told by a doctor that they had cataracts (VIM_CAEV), 2016-2017

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents	13.5 (13.2-13.8)	59702
Age		
18-39 years	0.5 (0.4-0.6)	19214
40-64 years	7.6 (7.1-8.0)	24286
65-84 years	48.9 (47.8-50.0)	14161
85 years and older	70.5 (67.7-73.2)	2041
Race/Ethnicity		
Non-Hispanic White	16.5 (16.0-17.0)	41685
Non-Hispanic Black	9.8 (9.0-10.7)	6381
Hispanic, any race	6.5 (5.8-7.3)	7035
Asian	8.8 (7.5-10.2)	2918
Non-Hispanic Other	10.2 (8.3-12.4)	1176
North American Native	12.0 (9.1-15.4)	507
Sex		
Male	11.5 (11.0-12.0)	27061
Female	15.4 (14.9-16.0)	32641
Risk factor		
Diabetes		
Yes	33.8 (32.2-35.4)	6320
Borderline	22.2 (19.8-24.8)	1676
No	11.1 (10.7-11.5)	51661
Hypertension		
Yes	27.7 (26.8-28.5)	21016
No	7.2 (6.8-7.5)	38609
Smoking		
Current Smoker	9.7 (9.0-10.4)	9345
Former Smoker	23.6 (22.7-24.6)	14734
Never Smoker	10.8 (10.4-11.3)	35404

†Value suppressed following NCHS guidelines

Table 21. National estimates of prevalence rates of adults who ever had cataract surgery (VIM_SURG), 2016-2017

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents	8.0 (7.7-8.2)	59698
Age		
18-39 years	0.1 (0.1-0.2)	19214
40-64 years	2.8 (2.5-3.0)	24286
65-84 years	30.4 (29.4-31.5)	14158
85 years and older	62.9 (60.0-65.6)	2040
Race/Ethnicity		
Non-Hispanic White	9.9 (9.5-10.3)	41681
Non-Hispanic Black	5.1 (4.5-5.7)	6381
Hispanic, any race	3.6 (3.1-4.1)	7035
Asian	5.4 (4.4-6.5)	2918
Non-Hispanic Other	5.1 (3.8-6.7)	1176
North American Native	6.5 (4.1-9.7)	507
Sex		
Male	6.7 (6.4-7.1)	27060
Female	9.1 (8.7-9.5)	32638
Risk factor		
Diabetes		
Yes	20.0 (18.8-21.3)	6319
Borderline	12.9 (11.1-14.9)	1676
No	6.5 (6.2-6.8)	51658
Hypertension		
Yes	16.9 (16.2-17.5)	21015
No	4.0 (3.7-4.2)	38606
Smoking		
Current Smoker	4.7 (4.3-5.2)	9345
Former Smoker	14.7 (13.9-15.4)	14733
Never Smoker	6.3 (6.0-6.6)	35404

†Value suppressed following NCHS guidelines

Table 22. National estimates of prevalence rates of adults who were ever told by a doctor they had glaucoma (VIM_GLEV), 2016-2017

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents	2.6 (2.5-2.7)	59683
Age		
18-39 years	0.3 (0.2-0.4)	19218
40-64 years	2.0 (1.8-2.2)	24277
65-84 years	7.8 (7.3-8.4)	14157
85 years and older	13.5 (11.7-15.5)	2031
Race/Ethnicity		
Non-Hispanic White	2.6 (2.4-2.8)	41669
Non-Hispanic Black	3.8 (3.3-4.3)	6382
Hispanic, any race	2.0 (1.7-2.4)	7036
Asian	2.0 (1.4-2.8)	2915
Non-Hispanic Other	2.5 (1.5-3.9)	1175
North American Native	2.8 (1.3-5.3)	506
Sex		
Male	2.3 (2.0-2.5)	27058
Female	3.0 (2.7-3.2)	32625
Risk factor		
Diabetes		
Yes	6.8 (6.0-7.6)	6305
Borderline	4.9 (3.7-6.2)	1678
No	2.1 (1.9-2.2)	51656
Hypertension		
Yes	5.2 (4.9-5.6)	21002
No	1.4 (1.3-1.6)	38603
Smoking		
Current Smoker	2.3 (1.9-2.7)	9341
Former Smoker	3.9 (3.5-4.3)	14728
Never Smoker	2.3 (2.1-2.4)	35395

†Value suppressed following NCHS guidelines

Table 23. National estimates of prevalence rates of adults who were ever told by a doctor they had macular degeneration (VIM_MDEV), 2016-2017

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents	1.8 (1.7-1.9)	59654
Age		
18-39 years	0.1 (0.1-0.2)	19216
40-64 years	1.1 (0.9-1.3)	24270
65-84 years	5.4 (4.9-5.9)	14139
85 years and older	16.2 (14.4-18.1)	2029
Race/Ethnicity		
Non-Hispanic White	2.4 (2.2-2.5)	41649
Non-Hispanic Black	0.8 (0.5-1.0)	6377
Hispanic, any race	0.8 (0.5-1.0)	7034
Asian	0.7 (0.4-1.1)	2912
Non-Hispanic Other	1.9 (1.1-3.1)	1175
North American Native	2.6 (1.1-5.3)	507
Sex		
Male	1.5 (1.3-1.7)	27038
Female	2.1 (1.9-2.3)	32616
Risk factor		
Diabetes		
Yes	4.1 (3.5-4.8)	6297
Borderline	3.4 (2.4-4.6)	1672
No	1.5 (1.4-1.6)	51641
Hypertension		
Yes	3.8 (3.5-4.1)	20987
No	0.9 (0.8-1.0)	38590
Smoking		
Current Smoker	1.2 (1.0-1.5)	9342
Former Smoker	3.2 (2.9-3.6)	14714
Never Smoker	1.4 (1.3-1.6)	35378

†Value suppressed following NCHS guidelines

Table 24. National estimates of prevalence rates of adults who currently wear eyeglasses or contact lenses (VIM_GLASS), 2016-2017

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents	64.0 (63.4-64.5)	59496
Age		
18-39 years	46.2 (45.2-47.2)	19185
40-64 years	70.3 (69.4-71.2)	24209
65-84 years	84.9 (84.0-85.7)	14095
85 years and older	85.8 (83.7-87.6)	2007
Race/Ethnicity		
Non-Hispanic White	69.5 (68.8-70.1)	41547
Non-Hispanic Black	54.9 (53.1-56.6)	6343
Hispanic, any race	50.5 (48.8-52.2)	7019
Asian	61.0 (58.5-63.4)	2915
Non-Hispanic Other	58.2 (54.0-62.3)	1167
North American Native	62.1 (54.9-68.9)	505
Sex		
Male	57.8 (56.8-58.6)	26964
Female	69.8 (68.9-70.6)	32532
Risk factor		
Diabetes		
Yes	79.4 (78.0-80.8)	6262
Borderline	75.8 (72.6-78.7)	1670
No	62.0 (61.2-62.7)	51513
Hypertension		
Yes	76.6 (75.8-77.4)	20913
No	58.4 (57.6-59.2)	38500
Smoking		
Current Smoker	59.8 (58.4-61.1)	9301
Former Smoker	73.6 (72.6-74.6)	14684
Never Smoker	61.6 (60.8-62.4)	35292

†Value suppressed following NCHS guidelines

Table 25. National estimates of the prevalence of adult who have any difficulty reading ordinary print in newspapers even when wearing glasses or contact lenses (AVDF_NWS), 2016-2017

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents		
Not at all difficult	82.4 (92.0-82.3)	59505
Only a little difficult	9.9 (9.6-10.2)	59505
Somewhat difficult	4.7 (4.5-4.9)	59505
Very difficult	1.9 (1.8-2.1)	59505
Can't do at all because of eyesight	0.4 (0.4-0.5)	59505
Race/Ethnicity		
Non-Hispanic White		
Not at all difficult	82.0 (81.3-82.5)	41552
Only a little difficult	10.1 (9.7-10.6)	41552
Somewhat difficult	4.9 (4.6-5.2)	41552
Very difficult	1.9 (1.8-2.1)	41552
Can't do at all because of eyesight	0.5 (0.4-0.6)	41552
Non-Hispanic Black		
Not at all difficult	80.4 (78.9-81.8)	6344
Only a little difficult	10.5 (9.5-11.5)	6344
Somewhat difficult	5.5 (4.8-6.3)	6344
Very difficult	2.4 (2.0-2.9)	6344
Can't do at all because of eyesight	0.4 (0.3-0.7)	6344
Hispanic, any race		
Not at all difficult	84.4 (83.1-85.5)	7020
Only a little difficult	9.0 (8.2-9.9)	7020
Somewhat difficult	3.8 (3.2-4.3)	7020
Very difficult	1.7 (1.4-2.2)	7020
Can't do at all because of eyesight	0.4 (0.3-0.6)	7020
Asian		
Not at all difficult	86.4 (84.6-88.0)	2917
Only a little difficult	8.7 (7.3-10.2)	2917
Somewhat difficult	3.1 (2.2-4.1)	2917
Very difficult	1.1 (0.7-1.8)	2917
Can't do at all because of eyesight	0.1 (0.0-0.4)	2917
Non-Hispanic Other		
Not at all difficult	81.9 (78.6-84.8)	1167
Only a little difficult	9.8 (7.8-12.1)	1167
Somewhat difficult	5.8 (4.0-7.9)	1167
Very difficult	1.9 (0.8-3.6)	1167
Can't do at all because of eyesight		
North American Native		
Not at all difficult	75.0 (69.0-80.4)	505
Only a little difficult	12.4 (8.7-16.9)	505
Somewhat difficult	7.4 (5.0-10.3)	505
Very difficult	*	505
Can't do at all because of eyesight	0.2 (0-1.1)	505
Sex		

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
Male		
Not at all difficult	83.8 (83.2-84.4)	26966
Only a little difficult	9.3 (8.8-9.8)	26966
Somewhat difficult	4.2 (3.9-4.5)	26966
Very difficult	1.6 (1.4-1.8)	26966
Can't do at all because of eyesight	0.4 (0.3-0.6)	26966
Female		
Not at all difficult	81.0 (80.3-81.7)	32539
Only a little difficult	10.5 (10.0-11.0)	32539
Somewhat difficult	5.2 (4.8-5.5)	32539
Very difficult	2.2 (2.0-2.5)	32539
Can't do at all because of eyesight	0.5 (0.4-0.5)	32539

†Value suppressed following NCHS guidelines

Did not include estimates for following response options: Do not do this activity for other reasons, Refused, and Don't know

Table 26. National estimates of the prevalence of adult who have any difficulty doing work or hobbies even when wearing glasses or contact lenses (AVDF_CLS), 2016-2017

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents		
Not at all difficult	87.2 (86.9-87.5)	59505
Only a little difficult	6.9 (6.7-7.2)	59505
Somewhat difficult	3.4 (3.2-3.6)	59505
Very difficult	1.2 (1.1-1.3)	59505
Can't do at all because of eyesight	0.3 (0.3-0.4)	59505
Race/Ethnicity		
Non-Hispanic White		
Not at all difficult	86.0 (85.5-86.5)	41552
Only a little difficult	7.7 (7.3-8.0)	41552
Somewhat difficult	3.8 (3.5-4.0)	41552
Very difficult	1.3 (1.1-1.4)	41552
Can't do at all because of eyesight	0.4 (0.3-0.4)	41552
Non-Hispanic Black		
Not at all difficult	87.4 (86.3-88.5)	6344
Only a little difficult	6.4 (5.6-7.1)	6344
Somewhat difficult	3.5 (2.9-4.1)	6344
Very difficult	1.2 (0.9-1.5)	6344
Can't do at all because of eyesight	0.3 (0.2-0.5)	6344
Hispanic, any race		
Not at all difficult	90.6 (89.6-91.5)	7020
Only a little difficult	5.3 (4.6-6.0)	7020
Somewhat difficult	2.3 (1.9-2.8)	7020
Very difficult	1.0 (0.7-1.3)	7020
Can't do at all because of eyesight	0.2 (0.1-0.3)	7020
Asian		
Not at all difficult	91.3 (89.8-92.7)	2917
Only a little difficult	5.1 (4.1-6.3)	2917
Somewhat difficult	2.2 (1.5-3.1)	2917
Very difficult	0.7 (0.3-1.1)	2917
Can't do at all because of eyesight	0.1 (0.0-0.3)	2917
Non-Hispanic Other		
Not at all difficult	88.1 (85.4-90.4)	1167
Only a little difficult	5.5 (4.0-7.3)	1167
Somewhat difficult	3.0 (2.0-4.3)	1167
Very difficult	1.7 (0.9-2.8)	1167
Can't do at all because of eyesight	0.1 (0.0-0.5)	1167
North American Native		
Not at all difficult	80.7 (75.1-85.5)	505
Only a little difficult	7.3 (4.2-11.6)	505
Somewhat difficult	7.1 (4.5-10.4)	505
Very difficult	†	505
Can't do at all because of eyesight	0.5 (0.1-1.6)	505
Sex		
Male		

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
Not at all difficult	88.4 (87.8-88.9)	26966
Only a little difficult	6.3 (6.0-6.7)	26966
Somewhat difficult	3.1 (2.9-3.4)	26966
Very difficult	1.0 (0.9-1.2)	26966
Can't do at all because of eyesight	0.3 (0.2-0.4)	26966
Female		
Not at all difficult	86.1 (85.5-86.7)	32539
Only a little difficult	7.5 (7.1-7.9)	32539
Somewhat difficult	3.7 (3.4-4.0)	32539
Very difficult	1.3 (1.2-1.5)	32539
Can't do at all because of eyesight	0.4 (0.3-0.4)	32539

†Value suppressed following NCHS guidelines

Did not include estimates for following response options: Do not do this activity for other reasons, Refused, and Don't know

Table 27. National estimates of the prevalence of adult who have any difficulty going down steps, stairs, or curbs in dim light or at night even when wearing glasses or contact lenses (AVDF_NIT), 2016-2017

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents		
Not at all difficult	89.8 (89.5-90.1)	59505
Only a little difficult	4.4 (4.2-4.6)	59505
Somewhat difficult	2.8 (2.6-2.9)	59505
Very difficult	1.4 (1.2-1.5)	59505
Can't do at all because of eyesight	0.3 (0.2-0.3)	59505
Race/Ethnicity		
Non-Hispanic White		
Not at all difficult	89.2 (88.7-89.6)	41552
Only a little difficult	4.8 (4.5-5.1)	41552
Somewhat difficult	2.9 (2.8-3.1)	41552
Very difficult	1.4 (1.2-1.5)	41552
Can't do at all because of eyesight	0.3 (0.2-0.3)	41552
Non-Hispanic Black		
Not at all difficult	89.0 (87.9-90.0)	6344
Only a little difficult	4.6 (3.9-5.3)	6344
Somewhat difficult	3.0 (2.5-3.6)	6344
Very difficult	1.5 (1.2-1.9)	6344
Can't do at all because of eyesight	0.3 (0.1-0.4)	6344
Hispanic, any race		
Not at all difficult	92.1 (91.1-93.1)	7020
Only a little difficult	3.5 (2.9-4.2)	7020
Somewhat difficult	2.1 (1.7-2.6)	7020
Very difficult	1.2 (0.9-1.5)	7020
Can't do at all because of eyesight	0.3 (0.1-0.5)	7020
Asian		
Not at all difficult	94.0 (92.9-94.9)	2917
Only a little difficult	2.8 (2.3-3.5)	2917
Somewhat difficult	1.5 (1.0-2.1)	2917
Very difficult	0.8 (0.4-1.2)	2917
Can't do at all because of eyesight	0.2 (0.0-0.4)	2917
Non-Hispanic Other		
Not at all difficult	87.0 (84.4-89.3)	1167
Only a little difficult	4.6 (3.3-6.2)	1167
Somewhat difficult	4.1 (2.8-5.7)	1167
Very difficult	2.6 (1.4-4.4)	1167
Can't do at all because of eyesight	0.2 (0.0-0.7)	1167
North American Native		
Not at all difficult	85.7 (80.9-89.7)	505
Only a little difficult	†	505
Somewhat difficult	4.5 (2.2-7.9)	505
Very difficult	4.5 (2.2-7.8)	505
Can't do at all because of eyesight	0.4 (0.0-1.7)	505
Sex		

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
Male		
Not at all difficult	92.9 (92.4-93.3)	26966
Only a little difficult	3.2 (3.0-3.5)	26966
Somewhat difficult	2.1 (1.8-2.3)	26966
Very difficult	0.9 (0.7-1.0)	26966
Can't do at all because of eyesight	0.2 (0.1-0.3)	26966
Female		
Not at all difficult	87.0 (86.4-87.6)	32539
Only a little difficult	5.6 (5.2-5.9)	32539
Somewhat difficult	3.4 (3.2-3.7)	32539
Very difficult	1.8 (1.6-2.0)	32539
Can't do at all because of eyesight	0.3 (0.3-0.4)	32539

[†]Value suppressed following NCHS guidelines

Did not include estimates for following response options: Do not do this activity for other reasons, Refused, and Don't know

Table 28. National estimates of the prevalence of adult who have any difficulty finding something on a crowded shelf even when wearing glasses or contact lenses (AVDF_CRD), 2016-2017

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents		
Not at all difficult	94.4 (94.1-94.6)	59505
Only a little difficult	2.8 (2.7-3.0)	59505
Somewhat difficult	1.5 (1.4-1.7)	59505
Very difficult	0.6 (0.5-0.6)	59505
Can't do at all because of eyesight	0.1 (0.1-0.2)	59505
Race/Ethnicity		
Non-Hispanic White		
Not at all difficult	94.5 (94.2-94.8)	41552
Only a little difficult	2.8 (2.6-3.0)	41552
Somewhat difficult	1.5 (1.4-1.7)	41552
Very difficult	0.6 (0.5-0.6)	41552
Can't do at all because of eyesight	0.2 (0.1-0.2)	41552
Non-Hispanic Black		
Not at all difficult	92.8 (91.9-93.6)	6344
Only a little difficult	3.5 (3.0-4.1)	6344
Somewhat difficult	1.8 (1.5-2.3)	6344
Very difficult	0.9 (0.6-1.2)	6344
Can't do at all because of eyesight	0.2 (0.1-0.4)	6344
Hispanic, any race		
Not at all difficult	94.9 (94.1-95.6)	7020
Only a little difficult	2.7 (2.2-3.2)	7020
Somewhat difficult	1.4 (1.0-1.7)	7020
Very difficult	0.5 (0.3-0.9)	7020
Can't do at all because of eyesight	0.1 (0.0-0.2)	7020
Asian		
Not at all difficult	95.8 (94.9-96.7)	2917
Only a little difficult	2.0 (1.4-2.7)	2917
Somewhat difficult	1.2 (0.8-1.9)	2917
Very difficult	0.3 (0.1-0.7)	2917
Can't do at all because of eyesight	0.1 (0.0-0.3)	2917
Non-Hispanic Other		
Not at all difficult	92.9 (90.6-94.8)	1167
Only a little difficult	3.6 (2.4-5.3)	1167
Somewhat difficult	2.2 (1.1-4.0)	1167
Very difficult	0.6 (0.2-1.2)	1167
Can't do at all because of eyesight	0.1 (0.0-0.4)	1167
North American Native		
Not at all difficult	90.1 (86.1-93.1)	505
Only a little difficult	†	505
Somewhat difficult	2.5 (1.1-4.7)	505
Very difficult	1.4 (0.6-2.9)	505
Can't do at all because of eyesight	0.4 (0.0-1.3)	505
Sex		

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
Male		
Not at all difficult	95.1 (94.7-95.4)	26966
Only a little difficult	2.5 (2.3-2.7)	26966
Somewhat difficult	1.4 (1.2-1.5)	26966
Very difficult	0.5 (0.4-0.6)	26966
Can't do at all because of eyesight	0.1 (0.1-0.2)	26966
Female		
Not at all difficult	93.7 (93.3-94.1)	32539
Only a little difficult	3.1 (2.9-3.4)	32539
Somewhat difficult	1.7 (1.5-1.9)	32539
Very difficult	0.6 (0.5-0.7)	32539
Can't do at all because of eyesight	0.1 (0.1-0.2)	32539

†Value suppressed following NCHS guidelines

Did not include estimates for following response options: Do not do this activity for other reasons, Refused, and Don't know

Table 29. National estimates of the prevalence of adult who have any difficulty driving during daytime in familiar places even when wearing glasses or contact lenses (AVDF_DRV), 2016-2017

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents		
Not at all difficult	91.1 (90.8-91.4)	59505
Only a little difficult	1.7 (1.6-1.8)	59505
Somewhat difficult	0.8 (0.7-0.9)	59505
Very difficult	0.3 (0.2-0.3)	59505
Can't do at all because of eyesight	0.4 (0.3-0.4)	59505
Race/Ethnicity		
Non-Hispanic White		
Not at all difficult	92.4 (92.0-92.8)	41552
Only a little difficult	1.6 (1.5-1.8)	41552
Somewhat difficult	0.7 (0.6-0.8)	41552
Very difficult	0.3 (0.2-0.3)	41552
Can't do at all because of eyesight	0.4 (0.3-0.5)	41552
Non-Hispanic Black		
Not at all difficult	86.6 (85.3-87.8)	6344
Only a little difficult	2.3 (1.8-2.9)	6344
Somewhat difficult	0.9 (0.7-1.2)	6344
Very difficult	0.4 (0.3-0.6)	6344
Can't do at all because of eyesight	0.4 (0.3-0.7)	6344
Hispanic, any race		
Not at all difficult	90.4 (89.2-91.5)	7020
Only a little difficult	1.7 (1.4-2.1)	7020
Somewhat difficult	0.8 (0.5-1.0)	7020
Very difficult	0.4 (0.2-0.6)	7020
Can't do at all because of eyesight	0.2 (0.1-0.4)	7020
Asian		
Not at all difficult	87.9 (85.9-89.7)	2917
Only a little difficult	1.3 (0.9-1.8)	2917
Somewhat difficult	0.8 (0.4-1.3)	2917
Very difficult	0.2 (0.0-0.5)	2917
Can't do at all because of eyesight	0.2 (0.1-0.5)	2917
Non-Hispanic Other		
Not at all difficult	91.4 (89.0-93.3)	1167
Only a little difficult	1.9 (1.2-3.0)	1167
Somewhat difficult	0.8 (0.3-1.5)	1167
Very difficult	0.2 (0.0-0.7)	1167
Can't do at all because of eyesight	0.2 (0.0-0.6)	1167
North American Native		
Not at all difficult	87.0 (83.4-90.1)	505
Only a little difficult	1.3 (0.5-2.6)	505
Somewhat difficult	2.3 (1.0-4.4)	505
Very difficult	0.5 (0.1-1.6)	505
Can't do at all because of eyesight	0.4 (0.0-2.3)	505
Sex		

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
Male		
Not at all difficult	93.5 (93.1-94.0)	26966
Only a little difficult	1.4 (1.2-1.6)	26966
Somewhat difficult	0.7 (0.6-0.8)	26966
Very difficult	0.3 (0.2-0.4)	26966
Can't do at all because of eyesight	0.3 (0.2-0.3)	26966
Female		
Not at all difficult	88.9 (88.3-89.4)	32539
Only a little difficult	2.0 (1.8-2.2)	32539
Somewhat difficult	0.8 (0.7-1.0)	32539
Very difficult	0.3 (0.2-0.4)	32539
Can't do at all because of eyesight	0.5 (0.4-0.6)	32539

†Value suppressed following NCHS guidelines

Did not include estimates for following response options: Do not do this activity for other reasons, Refused, and Don't know

Table 30. National estimates of the prevalence of adult who have any difficulty noticing objects off to the side while you are walking along even when wearing glasses or contact lenses (AVDF_PER), 2016-2017

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
All respondents		
Not at all difficult	94.8 (94.5-95.0)	59505
Only a little difficult	2.3 (2.2-2.5)	59505
Somewhat difficult	1.5 (1.4-1.6)	59505
Very difficult	0.6 (0.5-0.6)	59505
Can't do at all because of eyesight	0.2 (0.2-0.3)	59505
Race/Ethnicity		
Non-Hispanic White		
Not at all difficult	94.9 (94.6-95.2)	41552
Only a little difficult	2.3 (2.1-2.5)	41552
Somewhat difficult	1.4 (1.3-1.6)	41552
Very difficult	0.5 (0.4-0.6)	41552
Can't do at all because of eyesight	0.2 (0.2-0.3)	41552
Non-Hispanic Black		
Not at all difficult	93.0 (92.2-93.7)	6344
Only a little difficult	3.1 (2.6-3.6)	6344
Somewhat difficult	1.8 (1.4-2.2)	6344
Very difficult	0.9 (0.6-1.1)	6344
Can't do at all because of eyesight	0.3 (0.1-0.5)	6344
Hispanic, any race		
Not at all difficult	95.4 (94.6-96.1)	7020
Only a little difficult	2.0 (1.6-2.4)	7020
Somewhat difficult	1.4 (1.1-1.8)	7020
Very difficult	0.6 (0.3-0.8)	7020
Can't do at all because of eyesight	0.2 (0.1-0.3)	7020
Asian		
Not at all difficult	96.0 (95.0-96.9)	2917
Only a little difficult	1.7 (1.2-2.3)	2917
Somewhat difficult	1.3 (0.8-1.9)	2917
Very difficult	0.5 (0.2-1.0)	2917
Can't do at all because of eyesight	0.1 (0.0-0.4)	2917
Non-Hispanic Other		
Not at all difficult	93.1 (90.0-94.8)	1167
Only a little difficult	3.8 (2.4-5.6)	1167
Somewhat difficult	1.8 (1.0-2.8)	1167
Very difficult	0.4 (0.1-0.9)	1167
Can't do at all because of eyesight	0.3 (0.1-0.9)	1167
North American Native		
Not at all difficult	91.2 (87.5-94.1)	505
Only a little difficult	3.0 (1.3-6.0)	505
Somewhat difficult	4.1 (2.5-6.1)	505
Very difficult	1.1 (0.4-2.4)	505
Can't do at all because of eyesight	0.3 (0.1-1.3)	505
Sex		

Stratification factor	2016-2017 Prevalence Rate	2016-2017 Sample Size
Male		
Not at all difficult	95.8 (95.4-96.1)	26966
Only a little difficult	1.9 (1.7-2.1)	26966
Somewhat difficult	1.2 (1.1-1.4)	26966
Very difficult	0.4 (0.3-0.5)	26966
Can't do at all because of eyesight	0.2 (0.1-0.3)	26966
Female		
Not at all difficult	93.8 (93.4-94.1)	32539
Only a little difficult	2.8 (2.5-3.0)	32539
Somewhat difficult	1.7 (1.5-1.9)	32539
Very difficult	0.7 (0.6-0.8)	32539
Can't do at all because of eyesight	0.2 (0.2-0.3)	32539

†Value suppressed following NCHS guidelines

Did not include estimates for following response options: Do not do this activity for other reasons, Refused, and Don't know

Table 31. National estimates of prevalence rates of people who wear glasses (VIS_0), 2014-2015

Stratification factor	2014-215 Prevalence Rate	2014-2015 Sample Size
All respondents	61.0 (60.2-61.8)	33419
Age		
18-39 years	42.6 (41.2-44.0)	11411
40-64 years	67.4 (66.3-68.6)	13852
65-84 years	83.5 (82.3-84.7)	7089
85 years and older	84.9 (80.9-88.4)	1067
Race/Ethnicity		
Non-Hispanic White	65.8 (64.8-66.8)	20751
Non-Hispanic Black	54.2 (52.2-56.3)	4339
Hispanic, any race	45.9 (44.0-47.9)	5578
Asian	61.8 (58.9-64.6)	1859
Non-Hispanic Other	59.7 (53.1-66.0)	644
North American Native	54.0 (42.5-65.1)	248
Sex		
Male	55.3 (54.1-56.5)	15020
Female	66.4 (65.4-67.4)	18399
Risk factor		
Diabetes	61.0 (60.2-61.8)	33401
Yes	79.2 (77.2-81.1)	3547
Borderline	74.2 (69.1-78.8)	574
No	58.8 (58.0-59.7)	29280
Hypertension		
Yes	74.2 (73.0-75.4)	11589
No	55.0 (53.9-56.0)	21794
Smoking	61.0 (60.2-61.8)	33355
Current Smoker	55.7 (53.7-57.7)	5554
Former Smoker	72.0 (70.6-73.4)	7682
Never Smoker	58.5 (57.4-59.5)	20119

*suppressed due to a sample size <30; **suppressed due to a RSE >30%; ***suppressed due to a sample size<30 and a RSE >30%