



# Results from 2016 National Survey of Children's Health (NSCH)

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## PURPOSE

The 2016 National Survey of Children's Health (NSCH) is a two-step cross sectional survey focused on physical and emotional health of children aged birth through 17 years of age in the United States. The survey collects data on many aspects of the child's well-being and health. Questions included aspects of the child's physical health, mental health, presence of a medical home, family interactions, parental health, school experiences, and safe neighborhoods along with demographic information (age, sex, insurance, primary language, socioeconomic indicators to name a few). 2016 was the first time the NSCH and the National Survey of Children with Special Health Care needs were combined with future iterations to be implemented on an annual basis. Subjects with special health care needs and children who were birth through 5 years of age were oversampled.

The survey included a new question on testing visual acuity (VA) requested by the National Center for Children's Vision and Eye Health (NCCVEH) to describe access to VA testing. The research looks at responses to VA testing and the location testing occurred. The analysis looks at factors that would direct the NCCVEH to improve public health interventions promoting vision health, development, and learning readiness.

## METHODS

The survey was funded by the Health and Human Services, HRSA and MCHB and administered by the US Census Bureau. The initial invitation to participate in the 2016 NSCH survey was mailed to a sample of 364,150 households from Census Master Address File. Interested respondents were provided with access to a website to be able to participate in the survey on-line or, if they prefer, on paper.

The 2016 data, released 2017, was analyzed with SPSS V21.0 in addition to the analysis of the data using the weighted data from the Data Resource Center for Child and Adolescent Health. 50,212 surveys were completed reflecting approximately 985 surveys per state. This analysis will reflect the association of VA testing with age, SES, and child health status. "Don't know" and missing responses were denoted as missing. The NSCH is publicly available data and Institutional Review Board approval was not required for this study.

## RESULTS

- 50,212 valid surveys representing all states and DC were included.
- One child per household was the chosen to be the subject for the survey questions.
- 51.2% of the children included in the analysis were male.
- The mean age of the children included in the analysis was 9.4 years ± 5.27

The original surveys (NSCH and NS-CSHCN) included two questions related to vision. The questions were worded to identify those children who were visually impaired or blind. The questions were also included in the 2016 NSCH survey. The results are:

Does the child have blindness or problem with seeing, even when wearing glasses?		
	Yes	No
% (C.I.)	1.6 (1.3-1.9)	98.4 (98.1-98.7)
N	606	49,358
Population Estimate	1,143,997	71,713,349
DATA BY AGE GROUP		
Birth-5 years of age (n=110)	0.7 (0.5-1.0)	99.3 (99.0-99.5)
6-11 years (n=198)	1.6 (1.2-2.1)	98.4 (97.9-98.8)
12-17 years (n=298)	2.4 (1.8-3.1)	97.6(96.9-98.2)

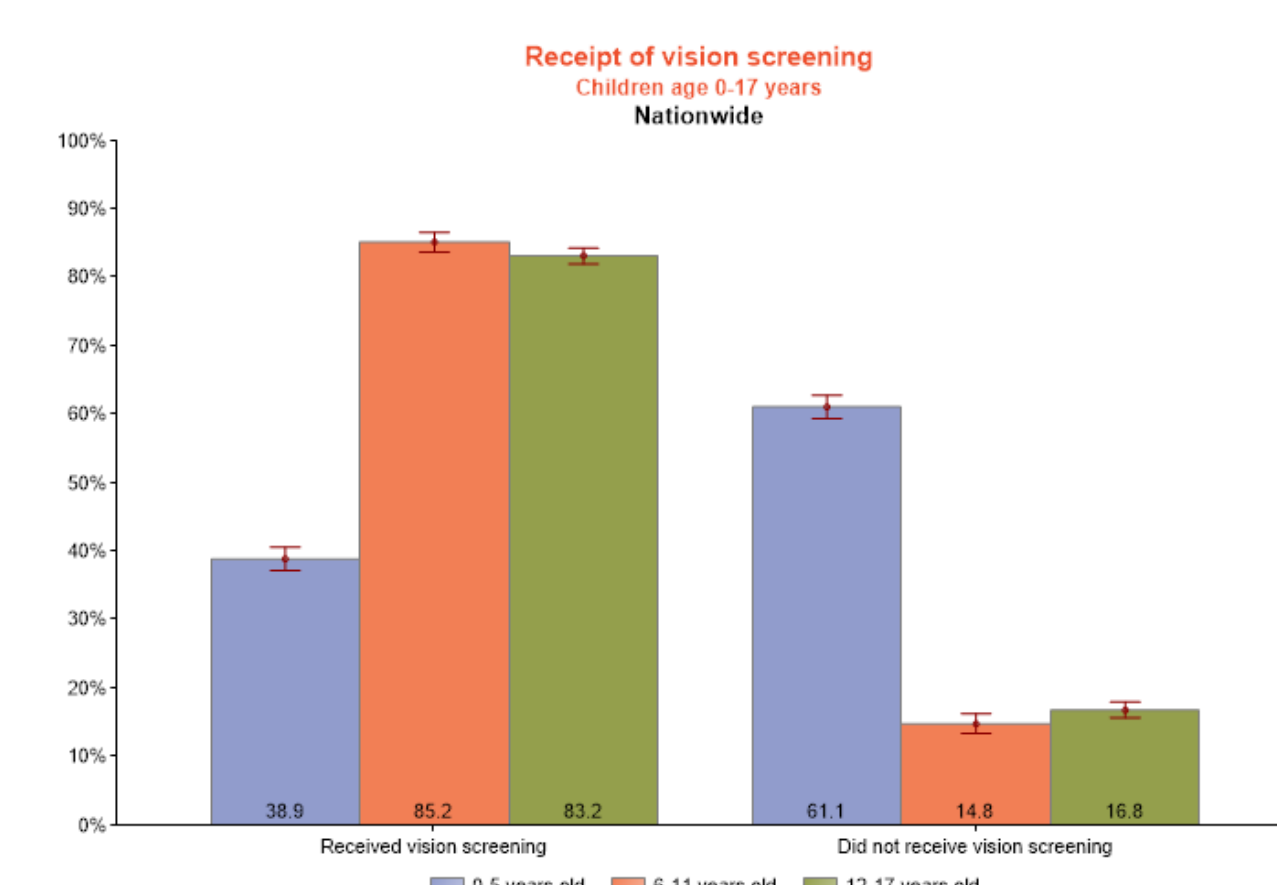
The challenge with this question is that it only focuses on the children with significant visual impairment and blindness.

The National Center for Children's Vision had the opportunity to suggest a new question for the 2016 NSCH with the intent to focus on all children. The goal of the question was to determine the extent of vision testing in children- not simply who has a severe visual deficit. The question that the NCCVEH developed was:

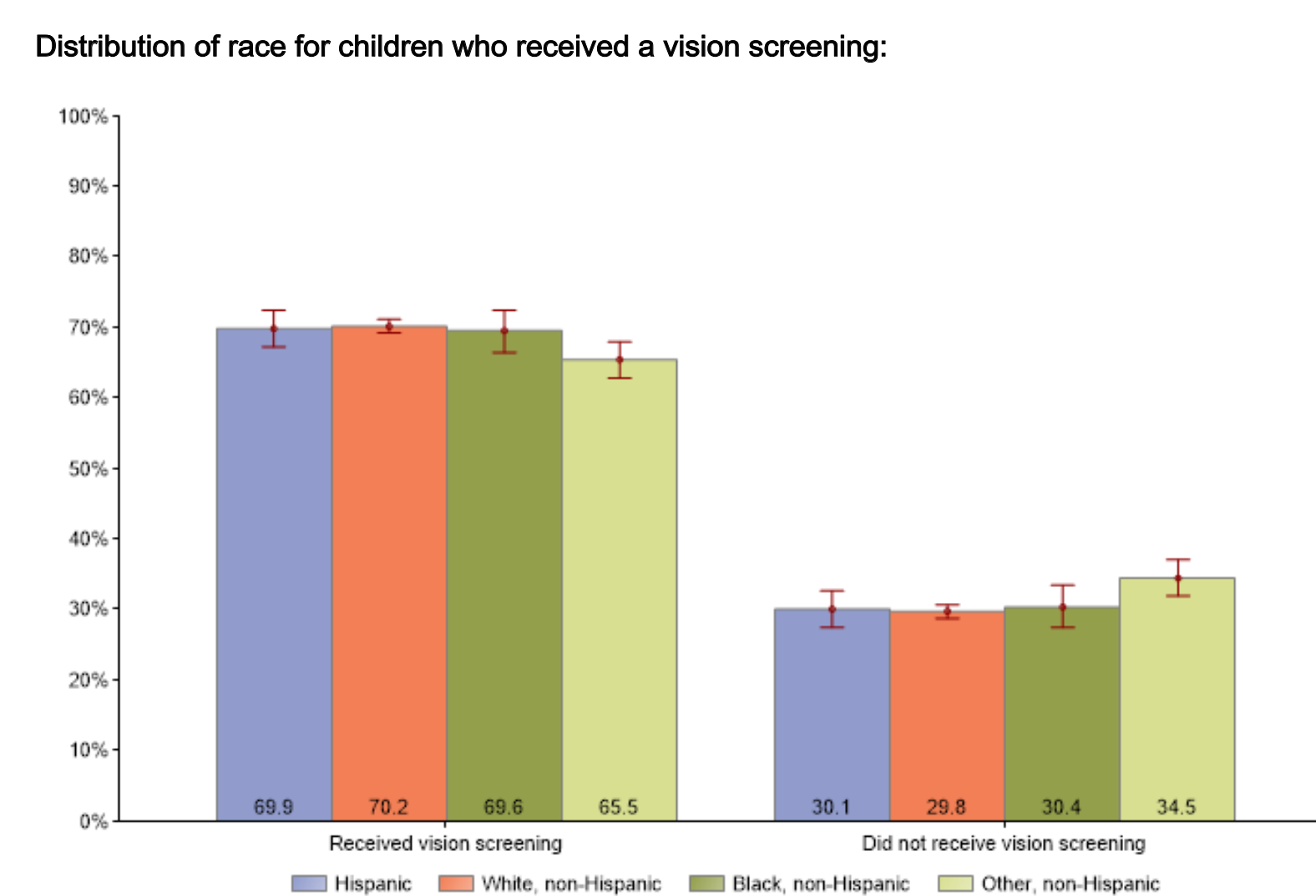
**Has the child had his or her vision tested with pictures, shapes or letters ever (for children from birth to age 5 years) or during the past 2 years (for children from 6 – 17 years of age)?**

The question was written in an effort to try to determine whether children had received a vision screening or an eye examination in the time specified. The question, as written, does not discriminate between a vision screening or an eye examination. An additional challenge with the data is the respondent may not be aware of the vision screening if it took place in the academic setting and they were unaware of the testing. Following are the results of the question:

Has the child had his or her vision tested with pictures, shapes, or letters ever (Birth-5 years of age) or during the past 2 years (6-17 years of age)?		
	Yes	No
n - 50,055	69.6 (68.6-70.5)	30.4 (29.5-31.4)
% (C.I.)		
N	36,272	13,783
Population Estimate	50,798,467	22,235,174
157 missing responses		
RESPONSES BY AGE GROUP		
Birth-5 years of age (n=14,443)	38.9% (37.2-40.6)	61.1% (59.4-62.8)
6-11 years (n=14973)	85.2% (83.7-86.6)	14.8% (13.4-16.3)
12-17 years (n=20,639)	83.2% (82-84.3)	16.8% (15.7-18.0)



All respondents birth – 17 years of age - sex			
		Yes	No
Male	% C.I.	68.5 (67.2 - 69.8)	31.5 (30.2 - 32.8)
	Sample Count	18,389	7,255
	Pop. Est.	25,527,784	11,728,907
Female	% C.I.	70.6 (69.3 - 72.0)	29.4 (28.0 - 30.7)
	Sample Count	17,883	6,528
	Pop. Est.	25,270,683	10,506,267



Comparison of age group and more detailed race responses are seen in the following tables (please note that data used for these tables is raw

Birth - 5 Years (%)		
RACE	Yes	No
White alone	40.4%	59.6%
Black or African American alone	46.3%	53.7%
American Indian or Alaska Native alone	51.0%	49.0%
Asian alone	42.5%	57.5%
Native Hawaiian and other Pacific Islander alone	33.3%	66.7%
Some other race	43.4%	56.6%
Two or more races	41.6%	58.4%

6-11 Years (%)		
RACE	Yes	No
White alone	88.1%	11.9%
Black or African American alone	84.5%	15.5%
American Indian or Alaska Native alone	83.6%	16.4%
Asian alone	82.2%	17.8%
Native Hawaiian and other Pacific Islander alone	84.8%	15.2%
Some other race	82.4%	17.6%
Two or more races	88.1%	11.9%

12- 17 Years (%)		
RACE	Yes	No
White alone	83.7%	16.3%
Black or African American alone	85.6%	14.4%
American Indian or Alaska Native alone	78.9%	21.1%
Asian alone	83.7%	16.3%
Native Hawaiian and other Pacific Islander alone	67.6%	32.4%
Some other race	79.1%	20.9%
Two or more races	84.1%	15.9%

data and not weighted data): The original new question led to follow up sub-questions if the respondent indicated that the child had their vision checked, they were ask:

**What kind of place or places did this child have his or her vision tested?**

- Eye doctor or eye specialist (ophthalmology, optometry) office
- Pediatrician or other general doctor's office
- Clinic or health center
- School
- Other, specify:

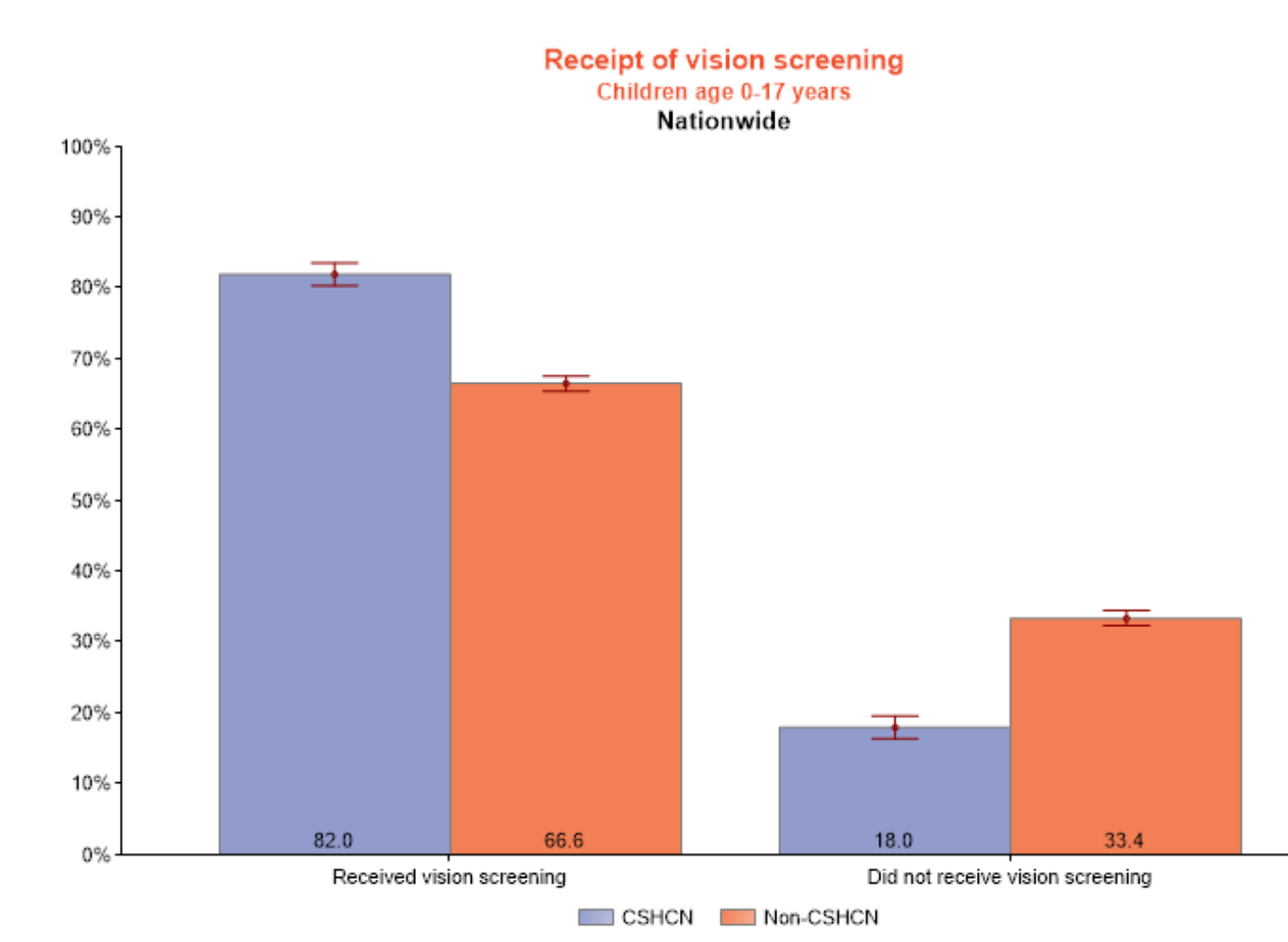
For the follow up of the primary questions, there were a significant number of respondents who indicated that the child did have their vision tested with pictures, shapes, or letters but did not indicate the location:

- Birth to 5 years of age: 8,574
- 6-11 years of age: 1,999
- 12-17 years of age: 3,521

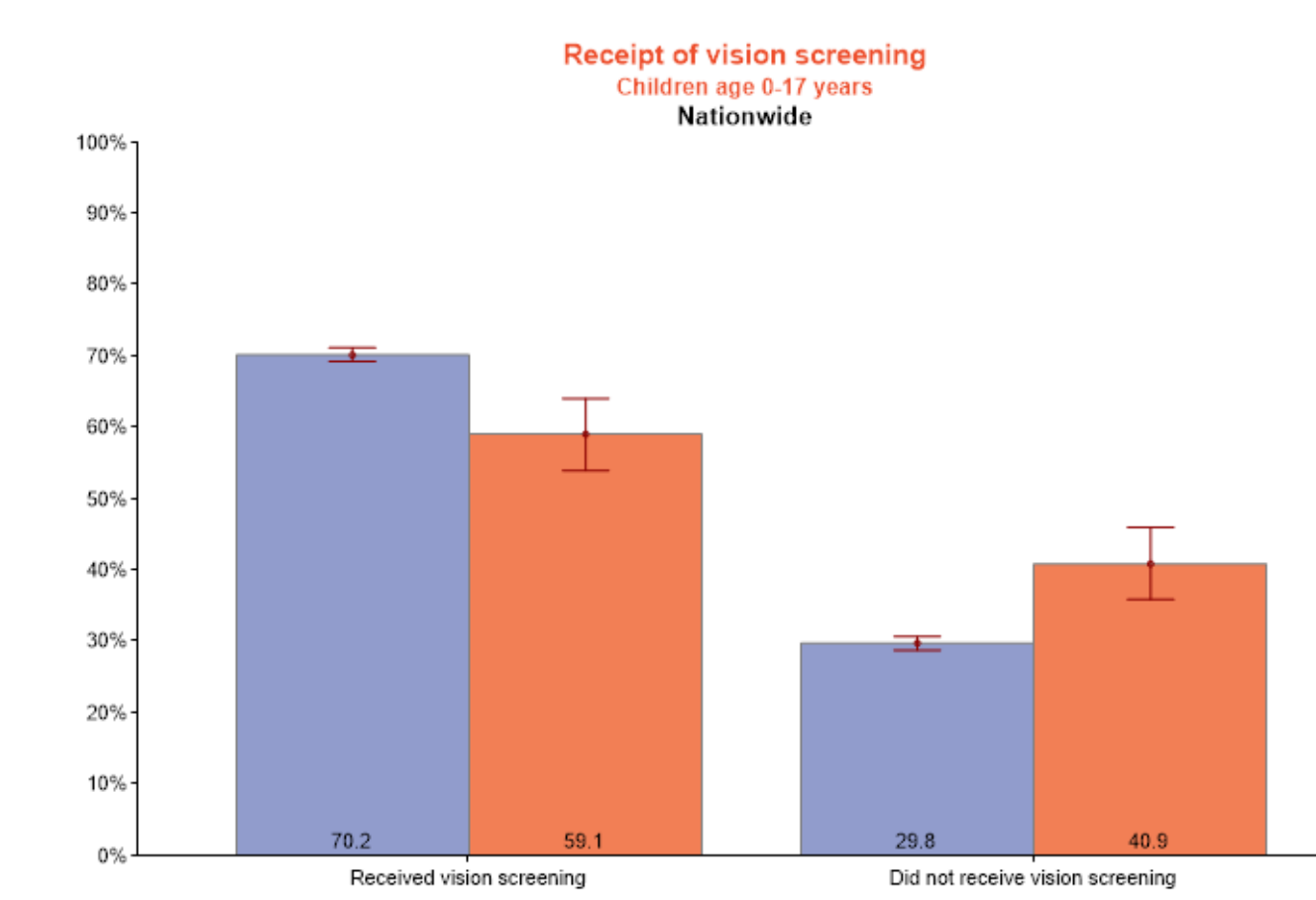
The review of the raw data reflected the following responses:

- For all age groups testing occurred in eye doctor or eye specialist-59.1%, pediatrician or other general doctor's office-39.6%, clinic or health center-3.3%, at school-23.1%.
- The likelihood of seeing an eye doctor increased with age (0-5yrs-32.5%, 6-11yrs-53.1%, 12-17yrs-72.9%).
- Children with neurodevelopmental problems (CP, ID, DS, DD, ADD/ADHD) and LD were found to have the VA checked in 79% or higher cases.

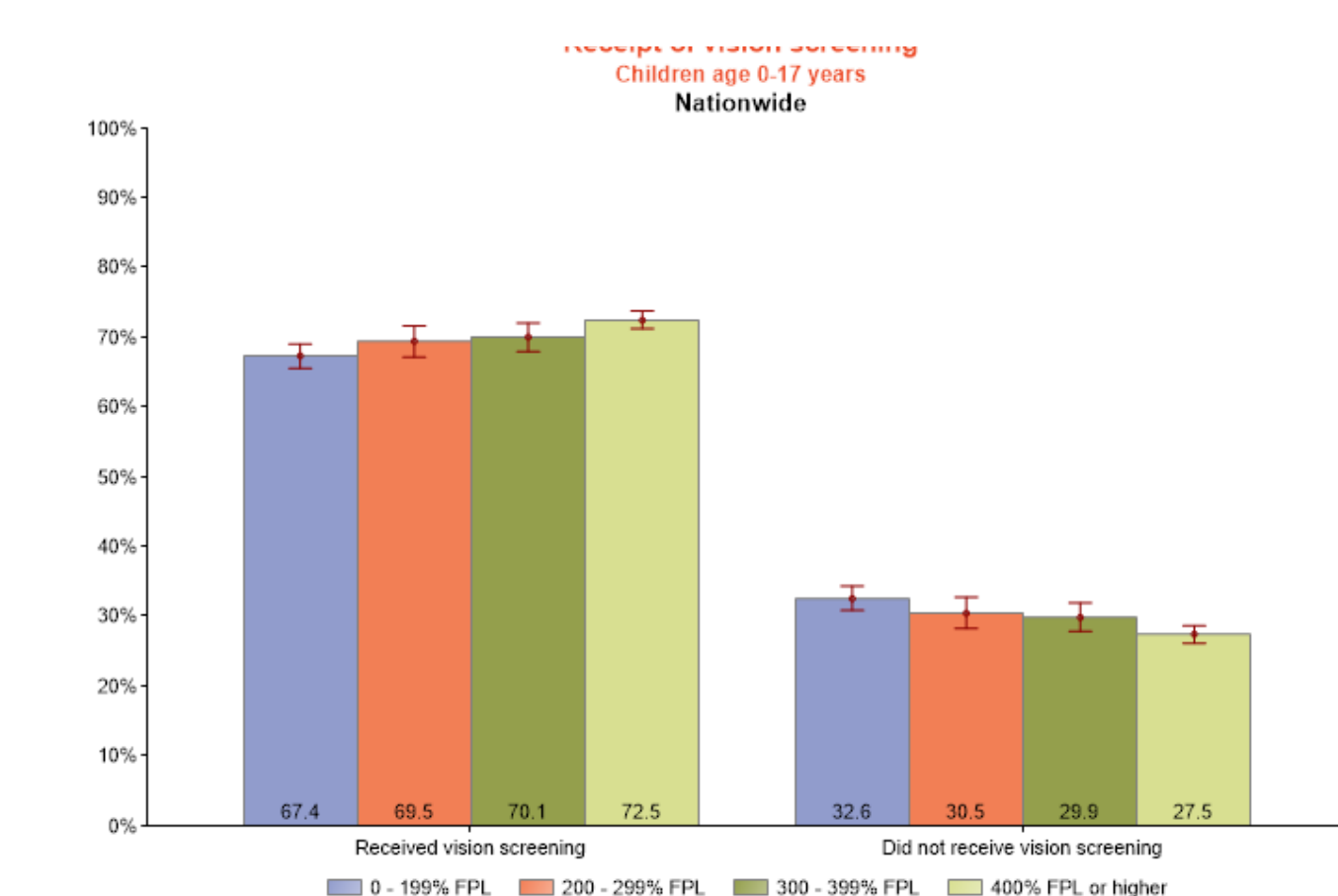
The following histogram reflects the difference of screening for children labeled as Children with Special Health Care Needs (CSHCN) as compared to those without being labelled as Children with Special Health Care Needs (non-CSHCN).



- Those children on food stamps, meal plans, or WIC had vision tested: 69.4%, 71.1% and 49.2%, respectively with age variations. The following reflects responses as it relates to insurance coverage.



- There was also the ability to compare the access to vision screening by federal poverty level (FPL). The following graph breaks it down to <200%, 200%-<300%, 300%-399%, 400% or greater.



## CONCLUSIONS

Analysis of data from the 2016 NSCH indicates wide disparities exist in rates of VA testing and utilization of eye care by age, systemic condition, and socio-economic factors. Several important results have been seen with the responses to the new vision question that was suggested by the National Center for Children's Vision and Eye Health.

- Parents are less likely to respond to questions when the child is birth to 5 years of age and may not be aware of the role that vision health plays in development during this critical period.
- Less than 70% of children in the United States are receiving appropriate vision screening or eye examinations.
- Slightly more females received vision screening/examinations than males.
- White, non-Hispanics are the most likely to receive vision screening/examinations followed by Hispanics, and Black children with minimal difference, Native Hawaiian and Pacific Islanders have a much lower rate.
- Children who are labeled as Children with Special Health Care Needs are significantly more likely to have received a vision screening or eye examination.
- Children with insurance are more likely to receive a vision screening/eye examination.
- Children are more likely to receive a vision screening/eye examination as income increases from below the FPL to over the FPL.

On-going data collection will be critical for targeted interventions, revisions to health policy, and improved access to services resulting in improved vision health for children in the U.S.

<http://childhealthdata.org>

## CONTACT INFORMATION

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