



Adding a Paper Questionnaire to a Teen Web Survey: Is it Worth the Effort? An NHIS-Teen Investigation

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Background



National Health Interview Survey (1)

- Principal source of information on the health of the civilian non-institutionalized U.S. population
- Annual survey conducted by the CDC's National Center for Health Statistics with a sample size of ~27,000 adults and ~8,000 children
- Interviews conducted in-person or over telephone



National Health Interview Survey (2)

- Parents report detailed health information for one randomly selected child between the ages of 0 – 17 years (“Sample Child”) as well as demographic information, health insurance and family characteristics
 - Parent-proxy report for all children



National Health Interview Survey-Teen (NHIS-Teen)

- **Study Period:** July 1st 2021 – December 31st 2023
- **Completed Interviews:** ~2,000
- **Sample:** Children between the ages of 12-17 whose parents or guardians completed the Sample Child Interview and provided consent
- **Mode:** Web **(with paper added in 2023)**
- **Length:** 95 questions, ~15 minutes to complete
- **Incentive:** \$5

NHIS-Teen

Major topic areas

- Physical activity
- Sleep
- Screen time
- Integrative health
- Health status
- Bullying
- Stressful life events
- Social and emotional supports
- Health care access and content of care
- Mental health care and unmet need

NHIS-Teen Goals

1

Determine the feasibility of teenager-report and online data collection



2

Produce nationally representative estimates of teenager health



3

Evaluate concordance between parent and teenager-report



Paper Questionnaire

- Starting in **2023**, a paper questionnaire accompanied the first non-responder letter
 - Sent between 1-2 weeks from the initial invitation
- Total completed interviews included:
 - **179** paper questionnaires
 - **570** web questionnaires

National Health Interview Survey – Teen

NHIS-Teen is a survey to learn more about the health of teens in the United States.



The U.S. Census Bureau is required by law to protect your information and is not permitted to publicly release your responses in a way that could identify you or your household. The Census Bureau is conducting this survey on behalf of the U.S. Department of Health and Human Services under the authority of Title 13, United States Code (U.S.C.), Section 8(b) and section 501(a)(2) of the Social Security Act (42 U.S.C. §701). Strict federal law protects your privacy and keeps your answers confidential under Section 308(d) of the Public Health Service Act (42 U.S.C. 242m(d)), the Privacy Act of 1974 (5 U.S.C. § 552a) and the Confidential Information Protection and Statistical Efficiency Act of 2018 (Title III, Public Law No: 115-436). In addition to the above cited laws, NCHS complies with the Federal Cybersecurity Enhancement Act of 2015 (6 U.S.C. §§ 151 and 151 note) which protects Federal information from cybersecurity risks by screening their networks. NCHS can only protect information once it is in the NCHS system.

You do not have to do this if you do not want to. You can skip any questions you don't want to answer. By taking part in NHIS-Teen you can make a difference by helping us learn about the health of teens in the United States.

NHIST-1Q
(10-25-2022)D14



Research Questions

Did teens who completed the paper questionnaire....

- 1) look demographically different**
- 2) have better or poorer health outcomes**
- 3) provide better or poorer data quality**
- 4) have different survey experiences and survey environments**

...than teens who completed the web questionnaire?

Research Question #1

Did Teens Who Completed the Paper Questionnaire Look Demographically Different?



Teen Demographic Characteristics

Characteristic	Groups	Paper	Odds Ratio (95% CI)	Web Participation
Age	12-14 years	25.8%	1.21 (0.86 - 1.69)	44.1%
	15-17 years	22.4%	Reference	43.0%
Sex	Male	27.3%	1.45 (1.04 - 2.04)	40.1%
	Female	20.5%	Reference	47.2%
Race and Hispanic Origin	Hispanic	21.8%	1.94 (0.89 - 4.22)	35.9%
	Asian, non-Hispanic	9.6%	Reference	56.0%
	Black, non-Hispanic	29.1%	2.50 (1.06 – 5.91)	33.6%
	White, non-Hispanic	25.6%	2.23 (1.06 – 4.66)	48.3%
Developmental Disability¹	Yes	30.6%	1.59 (1.09 - 2.32)	37.2%
	No	21.8%	Reference	45.3%

¹ Received a lifetime diagnosis of intellectual disability, ADHD, autism spectrum disorder, learning disability, or any other developmental delay

Family and Geographic Characteristics

Characteristic	Groups	Paper	Odds Ratio (95% CI)	Web Participation
Family income	<200% FPL	27.5%	1.30 (0.94 – 1.80)	34.6%
	≥200% FPL	22.7%	Reference	47.6%
Highest parental education	High school or less	29.2%	1.58 (1.12-2.23)	31.7%
	Some college or more	22.0%	Reference	47.9%
Number of residential parents	One or no parents	28.3%	1.30 (0.96 – 1.77)	37.1%
	Two parent	22.0%	Reference	47.1%
Urbanization	Nonmetropolitan	21.8%	0.95 (0.60 – 1.50)	39.6%
	Metropolitan	24.2%	Reference	44.1%
Region	Northeast	16.7%	0.71 (0.38 – 1.33)	46.5%
	Midwest	22.8%	1.05 (0.66 – 1.69)	47.3%
	South	29.4%	1.48 (0.98 -2.25)	40.5%
	West	21.9%	Reference	42.9%

Research Question #2

Did Teens Who Completed the Paper Questionnaire Have Better or Poorer Health Outcomes?

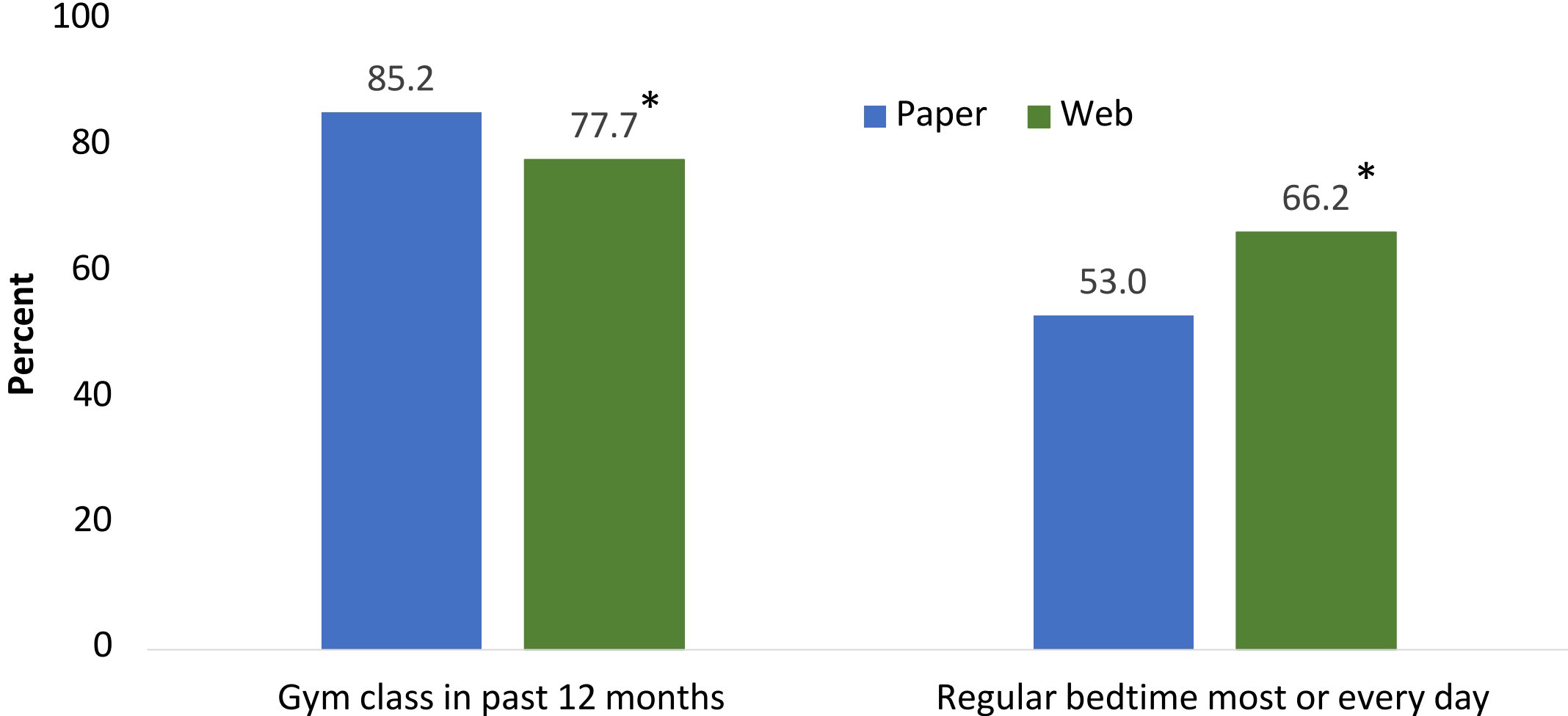


NHIS-Teen

81 questions across multiple topics

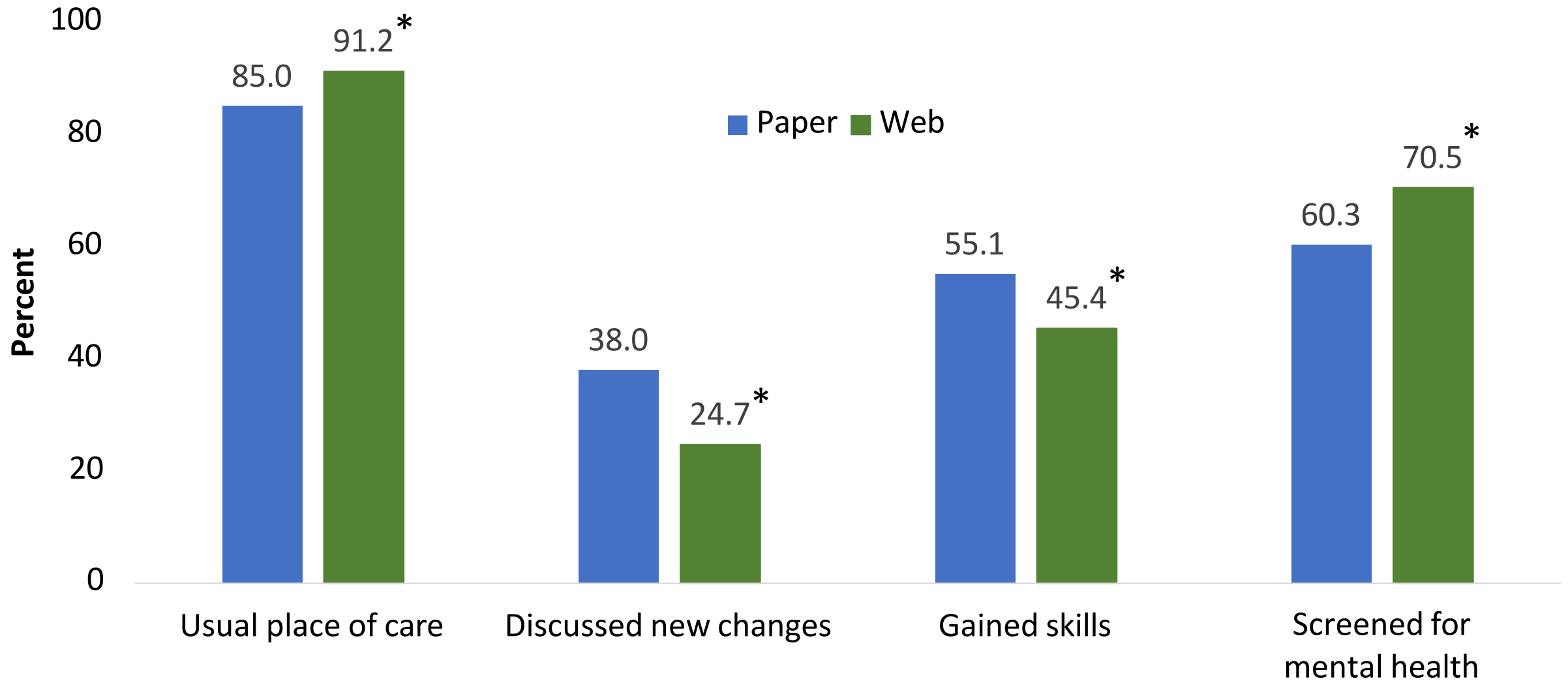
- Physical activity
- Sleep
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- Social and emotional supports
- Health care access and content of care
- Mental health care and unmet need

Physical Activity and Sleep



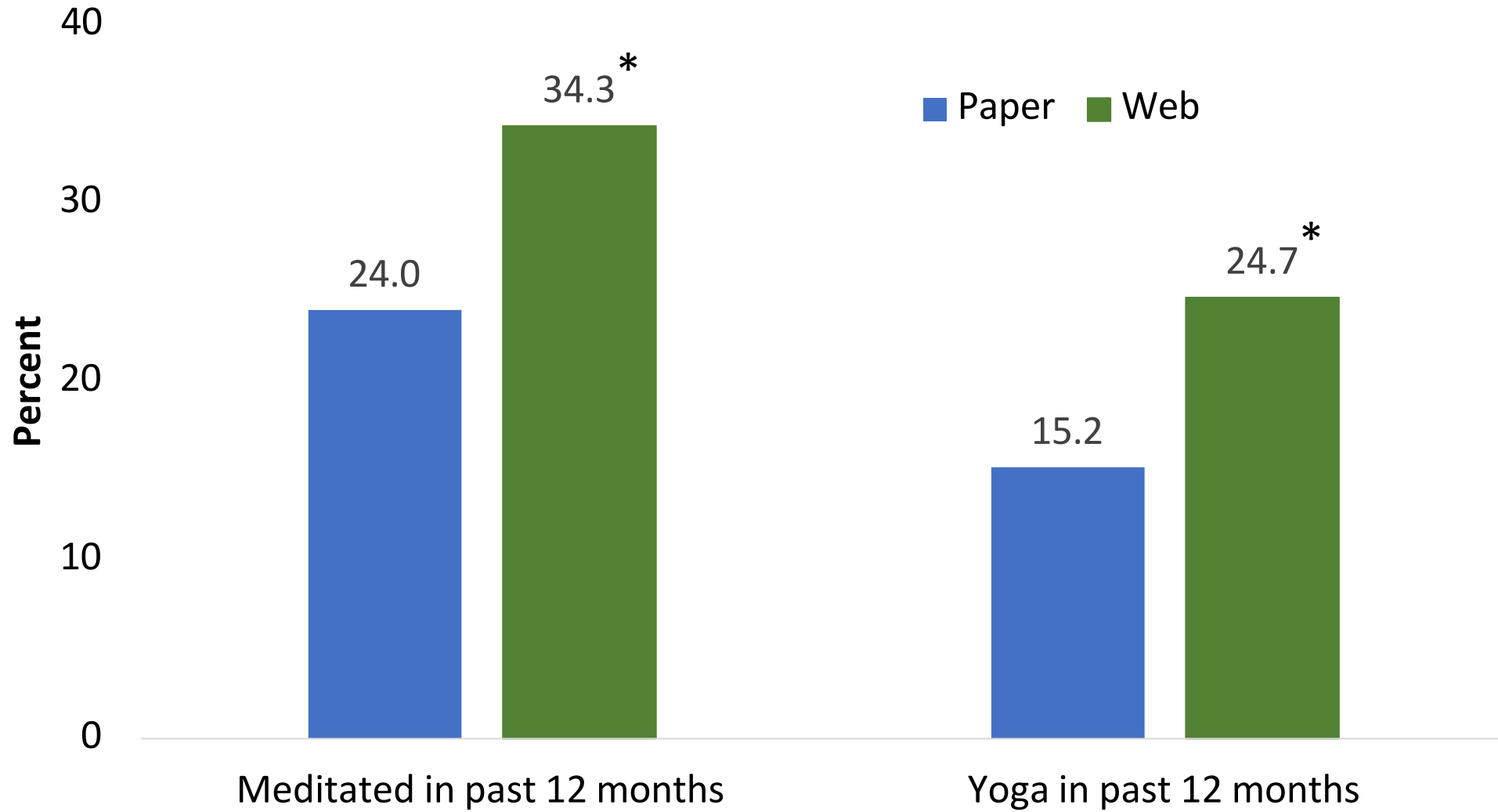
* Significantly different than teens who completed the paper questionnaire

Health Care Access and Content of Care



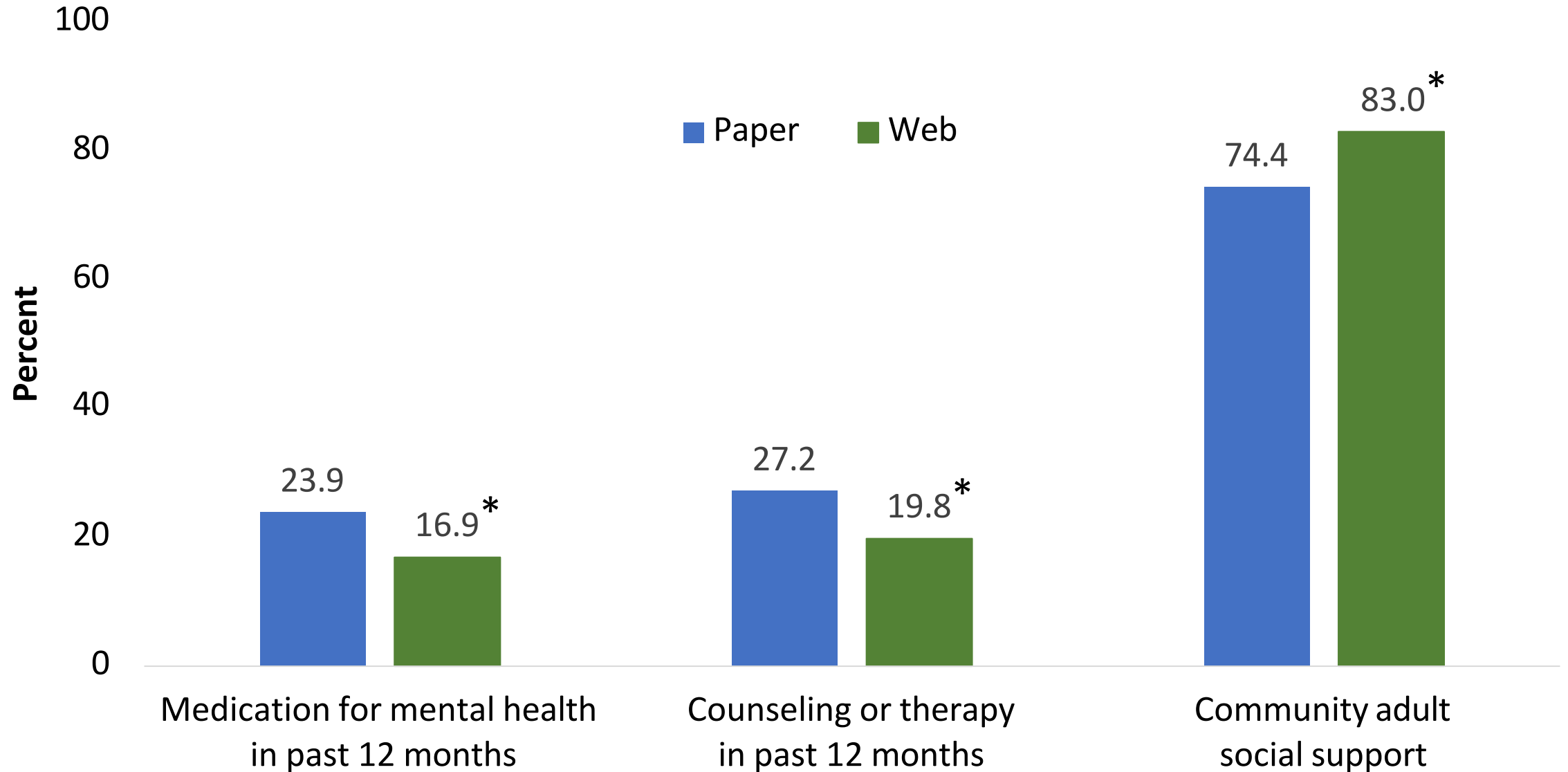
* Significantly different than teens who completed the paper questionnaire

Integrative Health



* Significantly different than teens who completed the paper questionnaire

Mental health care and social and emotional supports



* Significantly different than teens who completed the paper questionnaire

Research Question #3

Did Teens Who Completed the Paper Questionnaire Provide Better or Poorer Data Quality?



Item Missingness

Average item missingness

Paper: 2.5%

Web: 0.9%

Percent of questions skipped

Paper: 3.6% (3.18 on-path questions skipped)

Web: 0.8% (0.71 on-path questions skipped)

Research Question #4

Did Teens Who Completed the Paper Questionnaire Have Different Survey Experiences and Survey Environments?



Survey Experiences

- **Burden:** “How burdensome was this survey to you?”
 - Not at all, a little, **moderately, very, extremely**
- **Sensitivity:** “How sensitive were the questions in this survey to you?”
 - Not at all, a little, **moderately, very, extremely**
- **Difficulty:** “How easy or difficult was it for you to answer the questions in this survey?”
 - Very easy, somewhat easy, **somewhat difficult, very difficult**
- **Length:** “How would you describe the length of this survey?”
 - **Very long, somewhat long**, a little long, not at all long

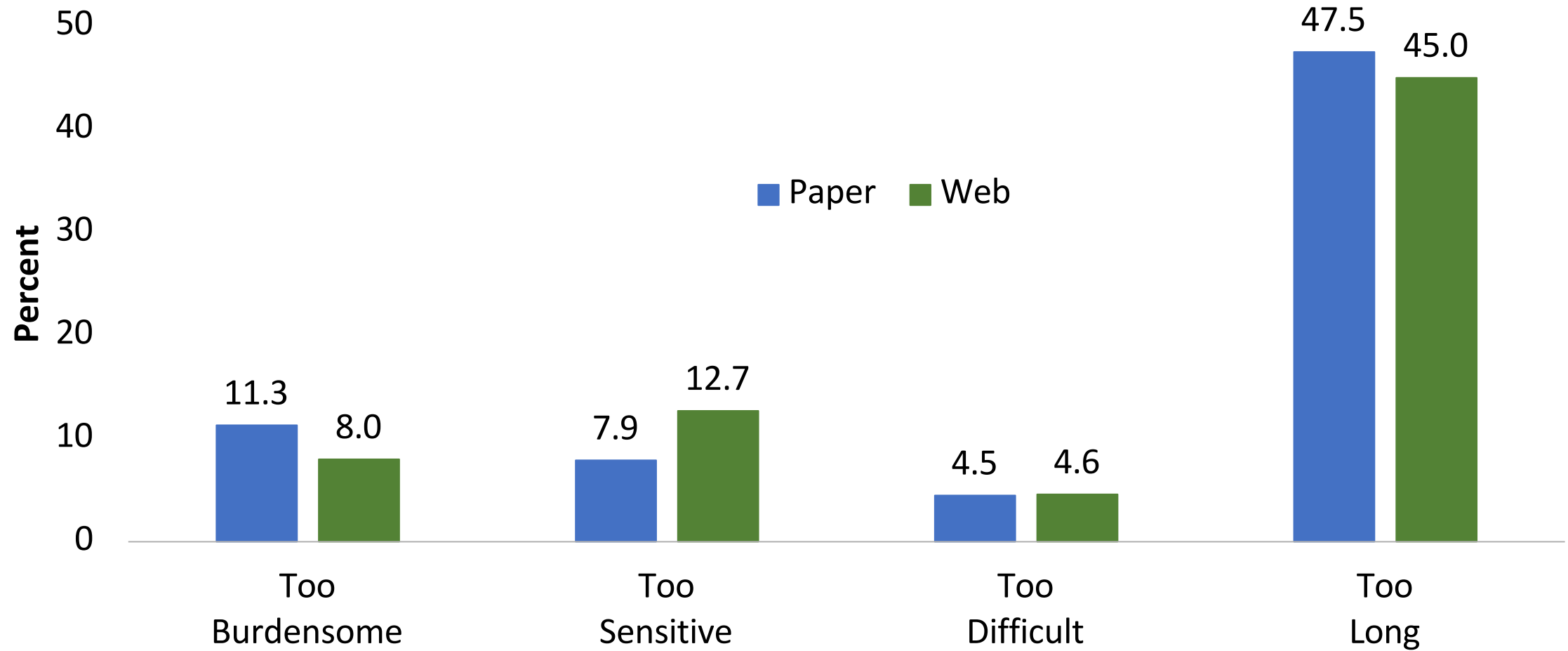
Too Burdensome

Too Sensitive

Too Difficult

Too Long

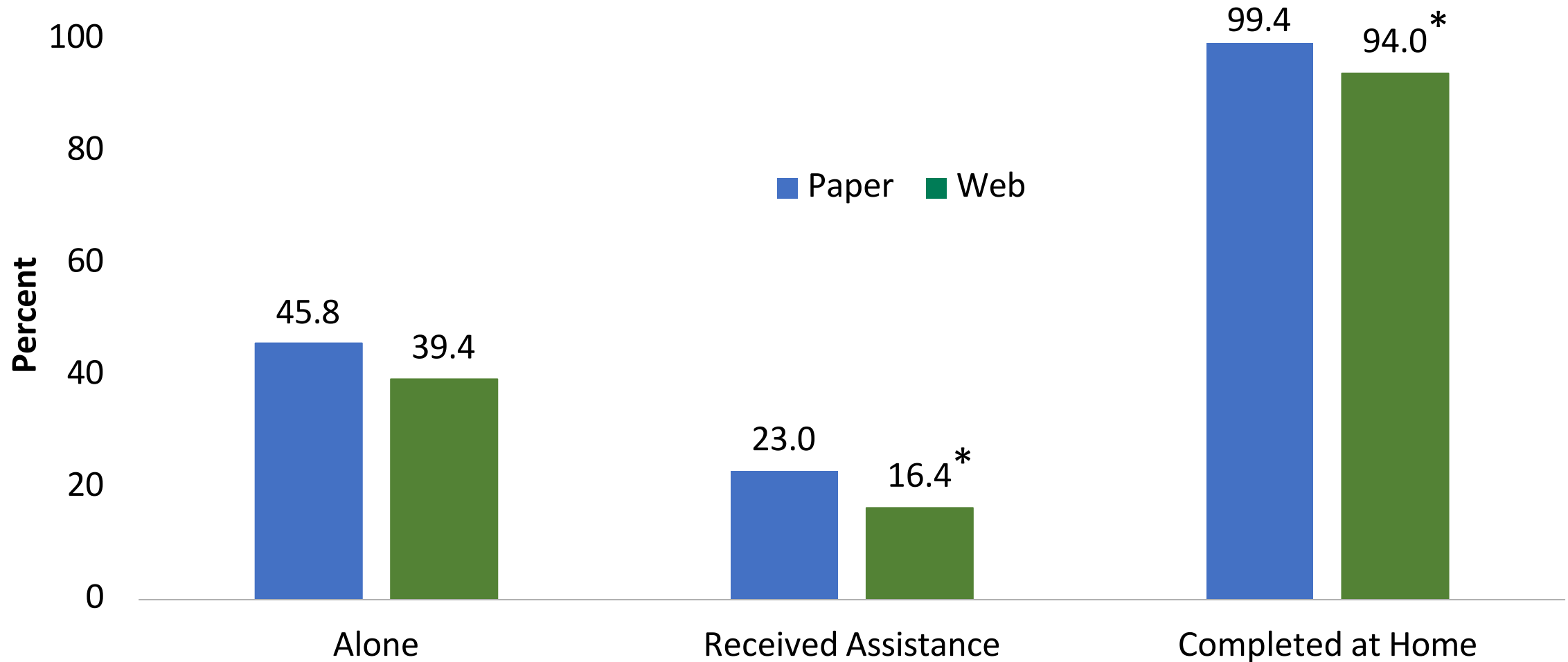
Survey Experiences (2)



Survey Environment

- **Alone:** “Was anyone else in the room when you completed the survey?”
 - Yes, no
- **Received assistance:** “Did anyone help you answer questions in this survey?”
 - No one, parent or guardian, other family member, friend, someone else
- **Home:** “Did you complete this survey while you were in your home?”
 - Yes, no

Survey Environment (2)



* Significantly different than teens who completed the paper questionnaire

Summary

Major Findings and Future Directions



Major Findings

Teens who completed NHIS-Teen by paper...

- Were more likely to be boys and have a developmental disability
- Were comparable on the majority of health outcomes
 - Differences didn't favor one mode over the other
- Were more likely to skip individual questions and skip more questions overall
- Had similar experiences completing the survey, but in different environments

Considerations

- The presence of a paper questionnaire may have led some teens to complete the survey online
- Partially completed questionnaires were not sent back
- Returning paper questionnaires may have been more burdensome

Big picture

- Incorporating the paper questionnaire reached lower propensity respondents, particularly those with a developmental disability
- Rurality was not predictive of survey mode, but parental education was
- More research is needed to evaluate how the inclusion of the paper questionnaire may have reduced estimate bias

Thank you!

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For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

