

Changes in Interview Length over a Data Collection Period: Interviewer Learning or Changing Respondent Characteristics? *

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*This presentation does not represent official opinions or statistics of the National Center for Health Statistics, the Centers for Disease Control and Prevention, or the U. S. Census Bureau.



Background/Context

- ❑ Research on interview length shows that it declines over a field period (Bohme and Stohr 2014; Loosveldt and Beullens 2013a; Loosveldt and Beullens 2013b; Kirchner and Olson, 2017; Olson and Peytchev 2007)
- ❑ Two competing hypotheses (Kirchner and Olson 2017):
 - H1: Interviewer experience
 - Interviewers learn from their interviews and change their behavior in subsequent interviews, altering the measurement situation (can be good or bad).
 - H2: Response propensity
 - Interviewers encounter different, more reluctant respondents as data collection progresses. Any changes in measurement are more attributable to respondents than interviewers.

Research Questions

- ❑ Do we observe declines in interview length over the course of monthly data collections in the National Health Interview Survey?
- ❑ If so, what explains these declines?
 - H1: Interviewer experience (driven by interviewers)
 - H2: Response propensity (driven by respondents)

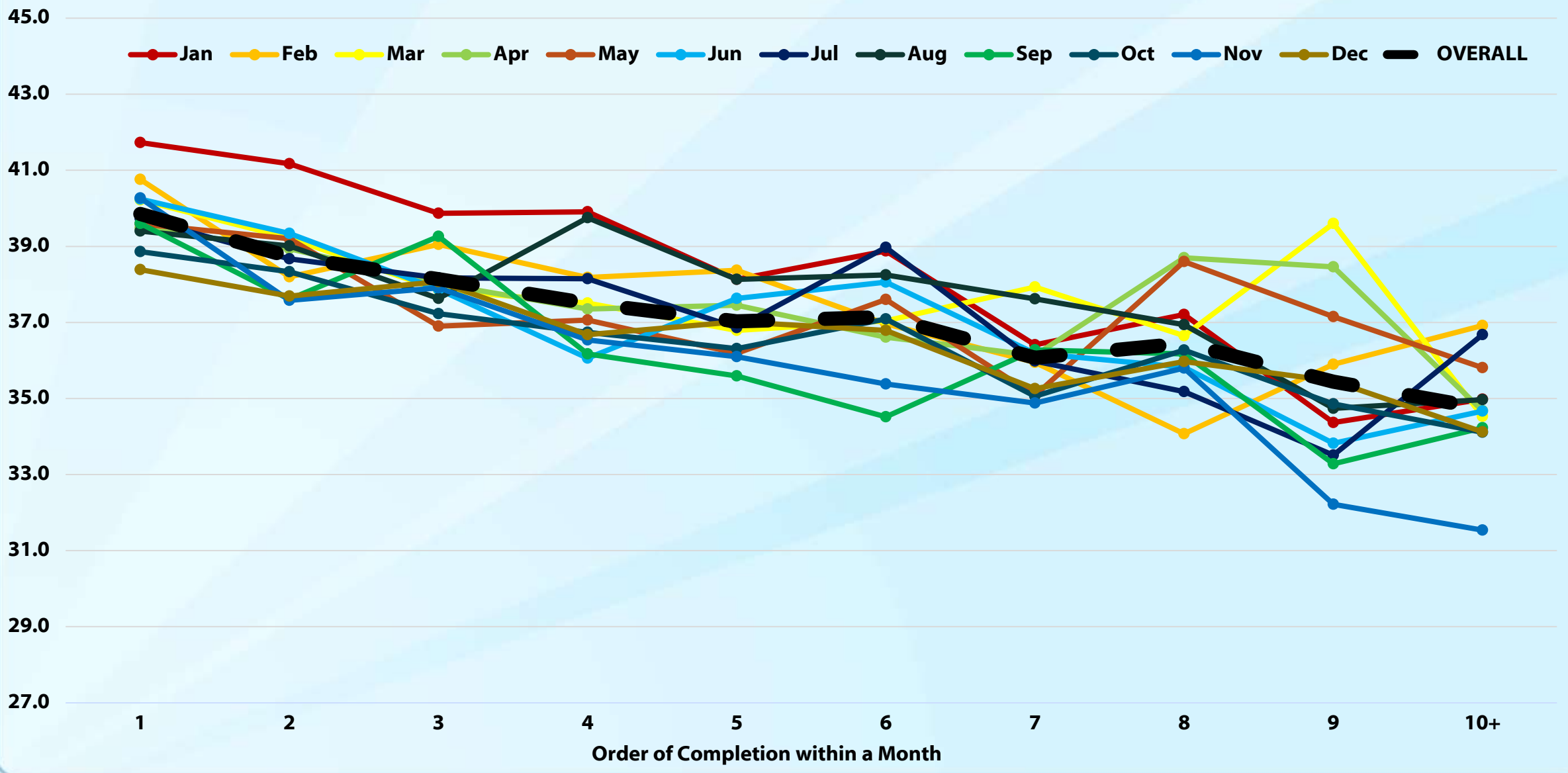
National Health Interview Survey (NHIS)

- ❑ Multi-purpose household health survey
- ❑ In-person, CAPI interview (telephone follow-up, if necessary)
- ❑ Three main interview modules:
 - Family
 - Sample child
 - ***Sample adult***
- ❑ Interviews conducted in ~35,000 households each year

Data/Methods

- ❑ Utilized 2016 NHIS data on adults who completed the sample adult interview (n=31,856)
- ❑ Modeling interview length
 - DV: length of complete sample adult interview in minutes
 - Outlier observations replaced with values at the 1st and 99th percentiles
 - Mean = 39.1 minutes
 - Covariates
 - Interviewer experience: overall and within study
 - Response propensity: respondent characteristics, contact and cooperation
 - Controls
 - Two-level, hierarchical linear models with random intercepts
 - Level-1 = respondents (n=31,856)
 - Level-2 = interviewers (n=1,109)

Length (in minutes) of Complete Sample Adult Interviews by Order of Completion and Month: NHIS, 2016



Covariates Included in Multilevel Model of Sample Adult Interview Length

H1: Interviewer Experience

| | | |
|--|--------------------------------|--|
| Log of order of interview within month | Interviewer experience on NHIS | |
|--|--------------------------------|--|

H2: Response Propensity

Respondent Characteristics:

| | | |
|---------------------------------------|-----------------------|------------------------|
| Age | Sex | |
| Race/ethnicity and lang. of interview | Education | Nativity |
| Employment status | Functional limitation | Reported health status |
| Family composition | Poverty status | |

Contact and Cooperation:

| | | |
|---------------------------|------------------|----------------------------|
| Count of item nonresponse | Soft refusal | |
| Privacy concerns | Time constraints | Case reassigned |
| Time of interview | Appointment | Number of contact attempts |

Controls

| | | |
|---------------------------------|--------------------------------------|------------------------------------|
| Month of interview | Mode of interview | Count of questions asked (GMC) |
| Multiple interviews on same day | Interviewer caseload for month (GMC) | Interviewer works multiple surveys |

GMC = grand mean centered

Summary of Unconditional and Final Models

□ Unconditional model

- Significant variability in the level-2 (interviewer) intercepts—sample adult interview length varies considerably across interviewers
- Interviewer intraclass correlation coefficient = .301

□ Full model

- 24.5% of interviewer variance explained by the model
- 41.5% of respondent (residual) variance explained by the model
- All but 1 of 26 covariates and controls had a significant association with interview length

Significant ($p < .05$) Fixed Effects from Full Model of Sample Adult Interview Length (1)

| Covariate | Estimate (95% CI) |
|--|----------------------|
| <i>Interviewer Experience</i> | |
| Log of order of interview within month | -0.76 (-0.98, -0.53) |
| Interviewer < 4 months of NHIS experience | 4.73 (3.94, 5.52) |
| Log of order of interview within month*Interviewer < 4 months of NHIS experience | -1.39 (-1.94, -0.83) |

CI = confidence interval

Significant ($p < .05$) Fixed Effects from Full Model of Sample Adult Interview Length (2)

| Covariate | Estimate (95% CI) |
|--|----------------------|
| <i>Response Propensity: Respondent Characteristics</i> | |
| Age (ref = 65+) | |
| 18-24 | -5.85 (-6.36, -5.34) |
| 25-44 | -4.41 (-4.80, -4.02) |
| 45-64 | -2.54 (-2.88, -2.21) |
| Male | 0.33 (0.09, 0.57) |
| Race/ethnicity and language of interview (ref = NH white) | |
| Hispanic, non-English | 4.55 (3.72, 5.38) |
| Hispanic, English | |
| NH black | |
| NH other | |

CI = confidence interval

Significant ($p < .05$) Fixed Effects from Full Model of Sample Adult Interview Length (3)

| Covariate | Estimate (95% CI) |
|---|-------------------|
| Education (ref = Bachelor's degree or higher) | |
| Less than high school diploma | |
| High school diploma/G.E.D. | |
| Some college/AA degree | 0.34 (0.03, 0.64) |
| Not working | 1.07 (0.77, 1.37) |
| Foreign Born | 1.24 (0.83, 1.66) |
| Reported Health Status (ref = very good/excellent) | |
| Poor/fair | 0.55 (0.13, 0.98) |
| Good | 0.65 (0.36, 0.93) |
| Functional Limitation | 1.76 (1.39, 2.12) |

CI = confidence interval

Significant ($p < .05$) Fixed Effects from Full Model of Sample Adult Interview Length (4)

| Covariate | Estimate (95% CI) |
|---|----------------------|
| Family Composition (ref = 1 adult, 0 kids) | |
| 2+ adults, 0 kids | -0.67 (-0.96, -0.39) |
| 2+ adults, 1 kids | -1.98 (-2.33, -1.63) |
| 1 adult, 1+ kids | -2.62 (-3.20, -2.03) |
| Poverty Status (ref = \geq 200% of FPL) | |
| Poor ($<$ 100% of FPL) | |
| Near poor (\geq 100% of FPL and $<$ 200% of FPL) | 0.52 (0.18, 0.86) |
| Missing | -0.85 (-1.27, -0.44) |

CI = confidence interval

Significant ($p < .05$) Fixed Effects from Full Model of Sample Adult Interview Length (5)

| Covariate | Estimate (95% CI) |
|---|----------------------|
| <i>Response Propensity: Contact and Cooperation</i> | |
| Item nonresponse (ref = 0 missing) | |
| 1 missing | 1.23 (0.91, 1.54) |
| 2-3 missing | 1.79 (1.41, 2.17) |
| 4+ missing | 1.57 (1.04, 2.10) |
| Soft refusal | -0.88 (-1.39, -0.37) |
| Time constraints | -0.59 (-0.90, -0.28) |
| Case reassigned | -1.08 (-1.46, -0.69) |
| Appointment set | 1.69 (1.39, 1.99) |

CI = confidence interval

Significant ($p < .05$) Fixed Effects from Full Model of Sample Adult Interview Length (6)

| Covariate | Estimate (95% CI) |
|---|-------------------|
| Time of Interview (ref = evening) | |
| Morning | |
| Afternoon | 0.29 (0.01, 0.56) |
| Number of Contact Attempts (ref = 1 attempt) | |
| 2 | 0.45 (0.07, 0.83) |
| 3-4 | 0.66 (0.26, 1.06) |
| 5-7 | 0.60 (0.12, 1.08) |
| 8+ | 1.43 (0.85, 2.01) |

CI = confidence interval

Summary/Conclusions

- ❑ Consistent with past research, sample adult interviews get shorter as data collection progresses
 - Results support both the interviewer experience and response propensity hypotheses
 - Interview length declined as within-study experience increased, net of several respondent sociodemographics, paradata measures, and controls
 - Respondent measures such as age, race/ethnicity and language of interview, functional limitation, and family composition had strong effects
- ❑ Difficult to know if shorter interviews over time reflect positive or negative (or both) interviewer behaviors
 - Due to interviewers shortcutting questions, asking them at a much faster rate, probing less?
 - Due to fewer deviations from the interview script?
 - Need to look at other indicators of quality by order and length of interview
- ❑ Implications for interviewer training

Citations

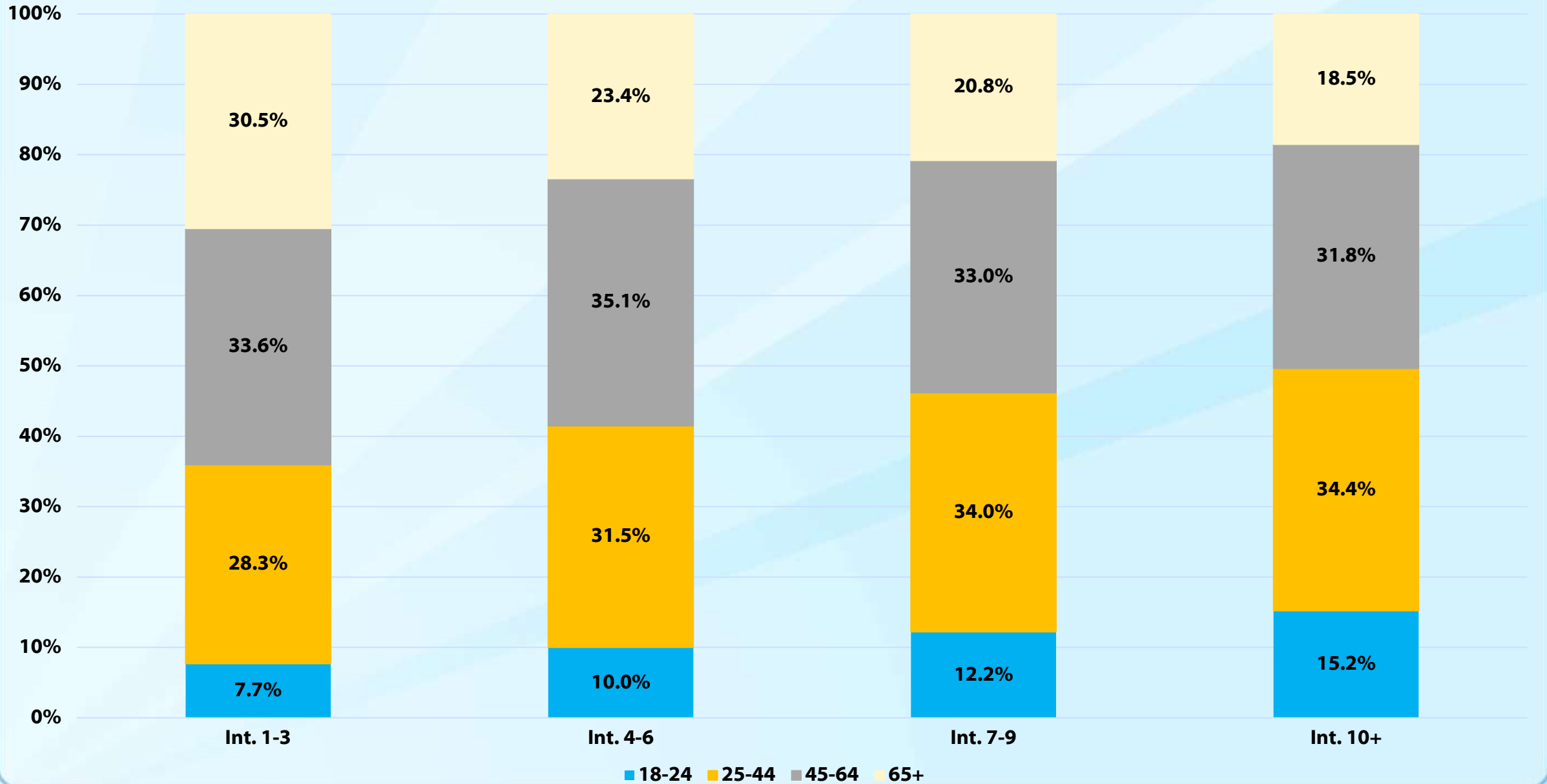
- ❑ Bohme, M. and Stohr, T. 2014. "Household Interview Duration Analysis in CAPI Survey Management." *Field Methods* 26(4): 390-405.
- ❑ Kirchner, A. and Olson, K. 2017. "Examining Changes of Interview Length Over the Course of the Field Period." *Journal of Survey Statistics and Methodology* 5: 84-108.
- ❑ Loosveldt, G. and Beullens, G. 2013a. "How Long Will it Take? An Analysis of Interview Length in the Fifth Round of the European Social Survey." *Survey Research Methods* 7(2): 69-78.
- ❑ Loosveldt, G. and Beullens, K. 2013b. "The Impact of Respondents and Interviewers on Interview Speed in Face-to-Face Interviews." *Social Science Research* 42: 1422-1430.
- ❑ Olson, K. and Peytchev, A. 2007. "Effect of Interviewer Experience on Interview Pace and Interviewer Attitudes." *Public Opinion Quarterly* 71(2): 273-286.

Thank you!

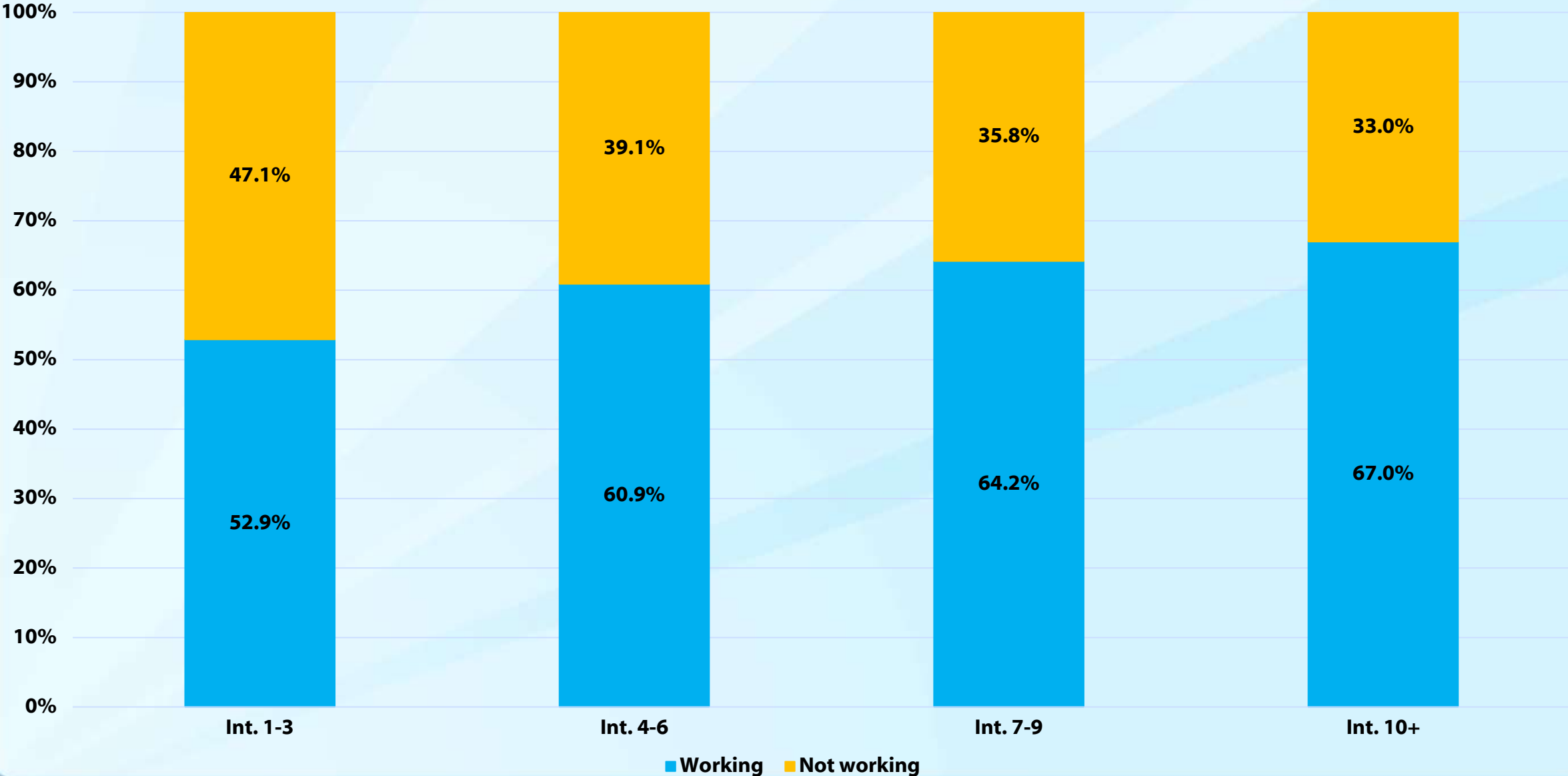
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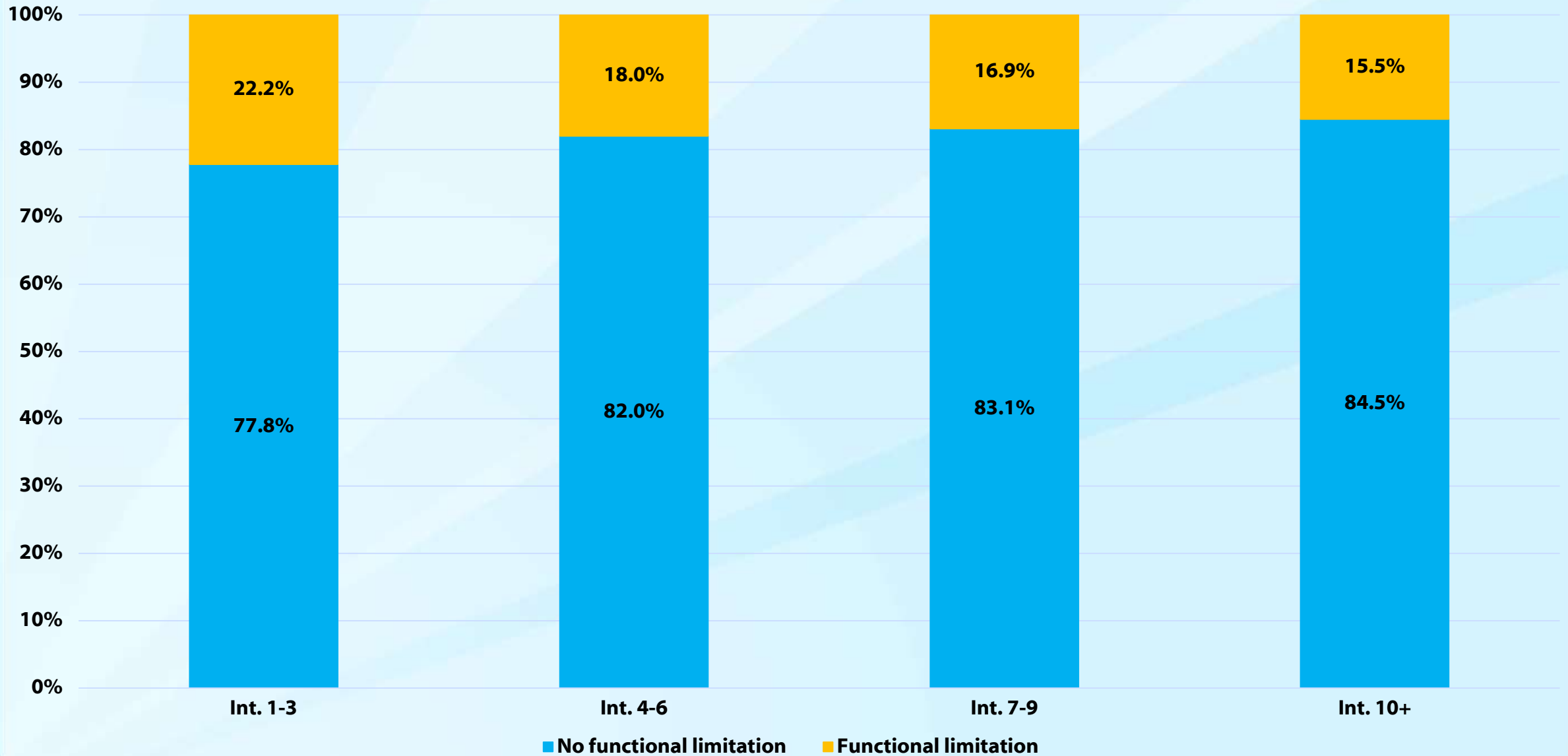
Sample Adult Age by Order of Interview Completion (within month): NHIS, 2016



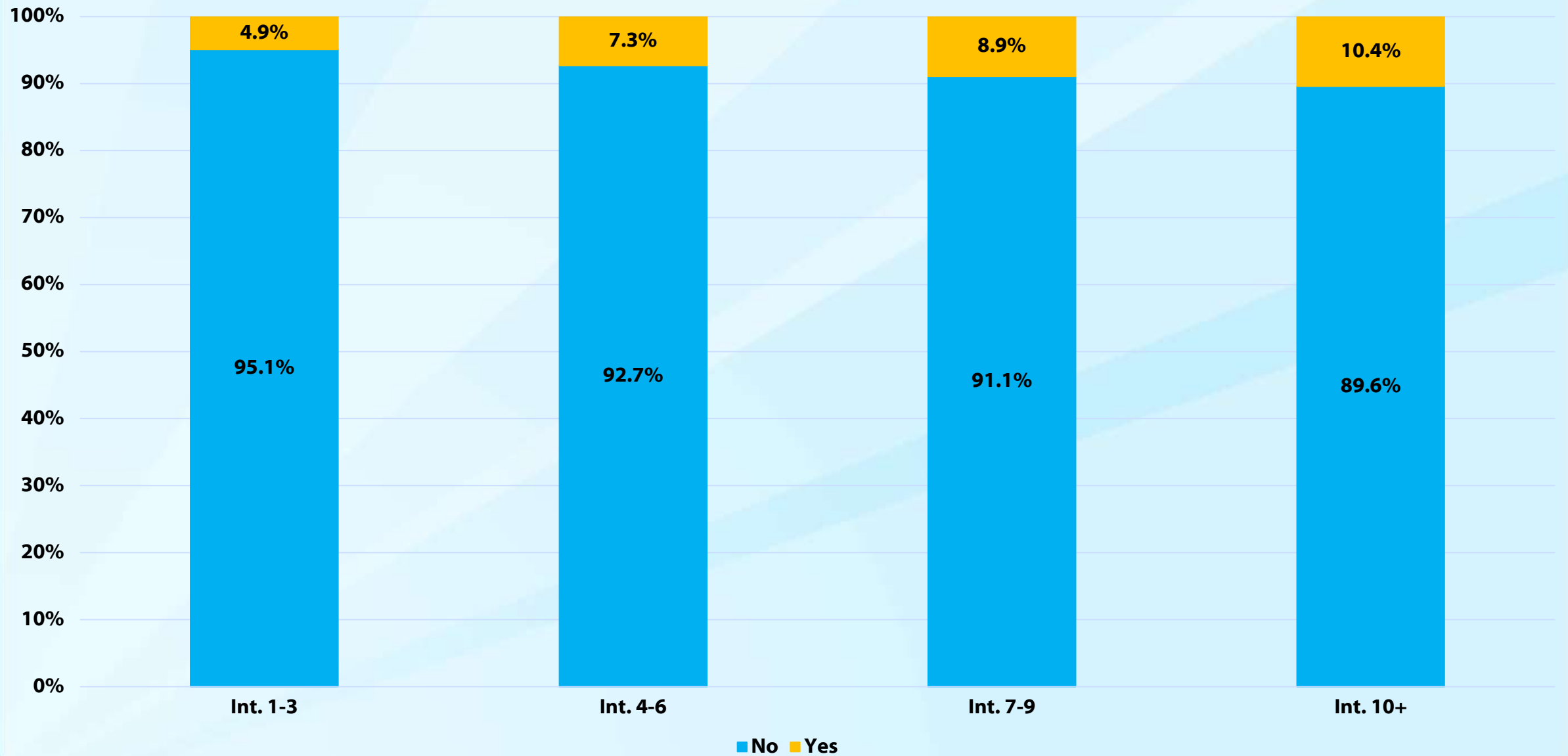
Sample Adult Employment Status by Order of Interview Completion (within month): NHIS, 2016



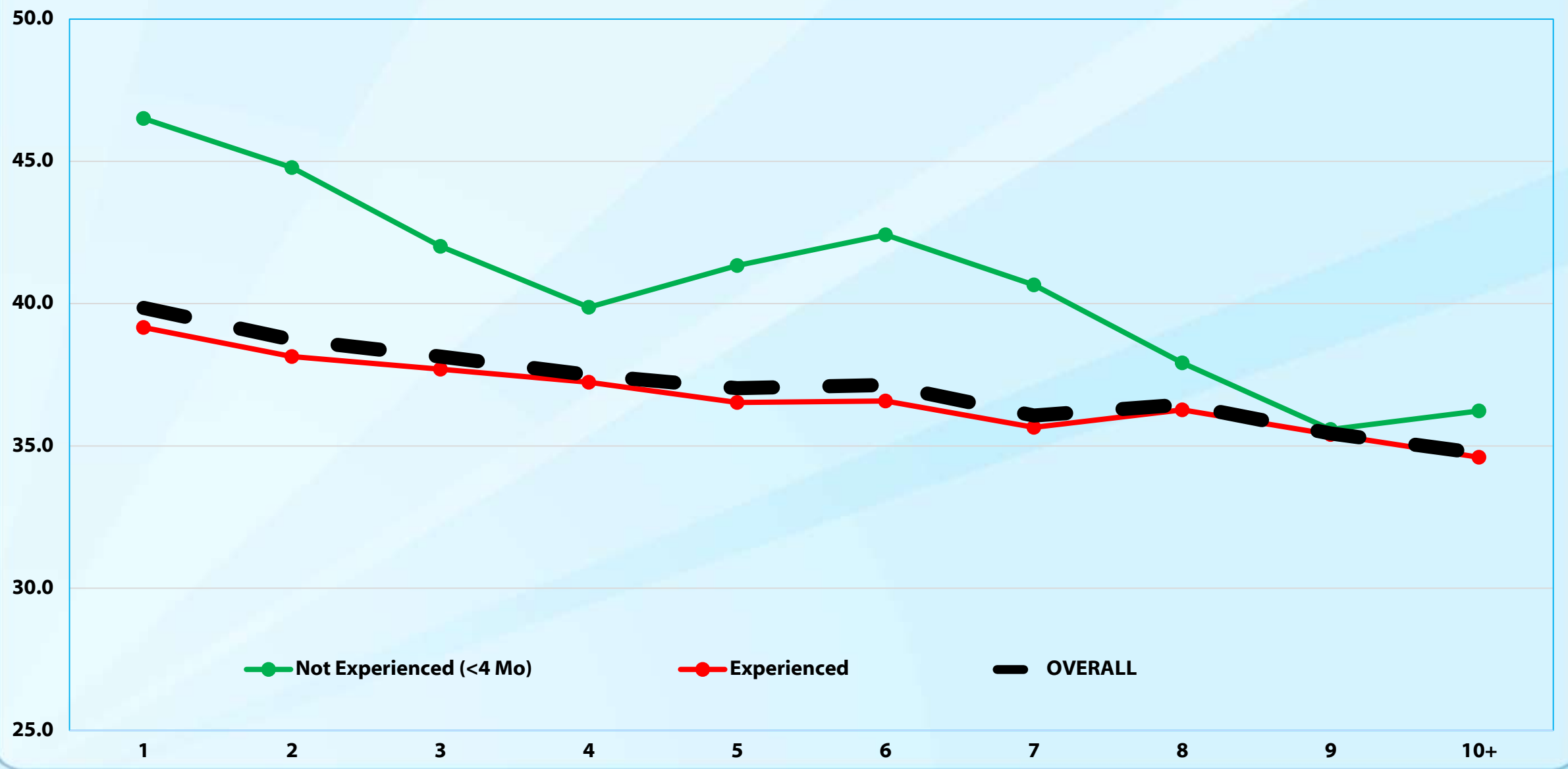
Whether or Not the Sample Adult Has a Functional Limitation by Order of Interview Completion (within month): NHIS, 2016



Whether or Not the Householder(s) Ever Refused to Participate by Order of Interview Completion (within month): NHIS, 2016



Length (in minutes) of Complete Sample Adult Interviews by Order of Completion and Experience Level (within month): NHIS, 2016



Significant ($p < .05$) Fixed Effects from Full Model of Sample Adult Interview Length (7)

| Covariate | Estimate (95% CI) |
|---|----------------------|
| <i>Control Variables</i> | |
| Month of Interview (ref = January) | |
| February | -0.80 (-1.39, -0.21) |
| March | -1.15 (-1.73, -0.56) |
| April | -1.17 (-1.76, -0.57) |
| May | -1.66 (-2.27, -1.06) |
| June | -1.76 (-2.36, -1.17) |
| July | -1.45 (-2.05, -0.85) |
| August | -1.50 (-2.10, -0.90) |
| September | -1.80 (-2.39, -1.20) |
| October | -1.96 (-2.57, -1.36) |
| November | -2.03 (-2.64, -1.43) |
| December | -2.53 (-3.15, -1.92) |

CI = confidence interval

Significant ($p < .05$) Fixed Effects from Full Model of Sample Adult Interview Length (8)

| Covariate | Estimate (95% CI) |
|--|----------------------|
| Question count (grand mean centered) | 0.19 (0.18, 0.19) |
| Interview conducted primarily by telephone | 2.84 (2.53, 3.15) |
| Multiple interviews completed on the same day | -0.75 (-1.09, -0.41) |
| Interviewer works multiple surveys (ref = NHIS only) | |
| 1 additional survey | -0.72 (-1.16, -0.27) |
| 2+ additional surveys | -1.14 (-1.72, -0.56) |
| Interviewer monthly caseload (grand mean centered) | -0.06 (-0.09, -0.03) |

CI = confidence interval

**Length (in minutes) of Complete Sample Adult Interviews by Order of Completion:
NHIS, 2016**

