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# How Changing Survey Mode Impacts Measures of Tobacco and E-cigarette Use

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**Summary**

The California Health Interview Survey (CHIS) has consistently strived to provide accurate health data regarding a variety of health behaviors including the use of tobacco products, electronic cigarettes (e-cigarettes), and associated smoking cessation behaviors. However, the growing difficulties with survey data collection prompted CHIS to implement a methodological redesign for data collection replacing its historical telephone mode with a mixed-mode web and telephone design using address-based sampling (Wells, 2020). The change in sampling and the introduction of web data collection introduce possible changes in question stimulus and sociodemographic representation that may have implications on estimates of tobacco-related behaviors. This report explores the impacts of these design changes on a number of smoking, e-cigarette, and tobacco use and cessation questions. For questions regarding current use, the change in methods results in significantly lower rates of current smokers as well as current use of non-cigarette tobacco and flavored tobacco products. In general, estimates related to ever use of an e-cigarette and smoking cessation behaviors do not seem to be affected by the methodological redesign.

**Introduction**

The decision to change a survey's mode of data collection can be difficult when the survey's data is used for trending over time. The tradeoff between possible break-in-series due to a redesign with declining cost-effectiveness of telephone surveys makes that decision more pressing for large, population-based surveys (Olson et al., 2019). The transition to a new survey mode or multi-mode design can have various impacts on key estimates and understanding the possible sources of error associated with the new (as well as the old) design are critical in that examination.

For population health surveys, being able to capture the population's health behaviors accurately is critical to making needed policy adjustments to protect general health and well-being. In particular, the rise and proliferation of e-cigarettes and flavored tobacco products has put these types of behaviors at the forefront of state and local laws and policies (e.g., U.S. Department of Health and Human Services, 2016; American Nonsmokers' Rights Foundation, 2020; Meng & Ponce, 2020). Health surveys unable to measure this information accurately due to data collection limitations can encumber formulation of appropriate public policies.

Under the total survey error (TSE) framework, used for this working paper, we largely focus on two major classes of error: measurement and representation (Biemer & Lyberg, 2003; Groves et al., 2009). Measurement has to do with the questions and responses themselves. Representation has to do with who participates and how they compare to the population of interest. The following sections explore the most relevant aspects of these two error sources relative to a transition in survey mode and conclude with what has been observed in previous studies related to survey mode and tobacco-related questions.

### Mode and measurement

In relation to survey mode and how constructs are measured, we often refer to this idea as a "mode effect." A mode effect by definition "refers to any influence on survey responses that is due to the mode of data collection" (Jans, 2008). Mode effect relates to survey measurement or the specific characteristics of a survey question as presented within that mode. Self-administered modes, like paper-and-pencil or web surveys, are primarily visual mediums while interviewer-administered, like computer-assisted telephone interviews (CATI) or face-to-face (FTF) modes, are primarily aural/verbal (though a FTF interview can allow for visual communication as well) (Krosnick & Alwin, 1987; Schwarz et al., 1991; Tourangeau et al., 2000). This means that the stimulus for each mode differs, thereby engaging different cognitive processes.

One such difference is related to response order effects (Krosnick & Alwin, 1987; Schwarz et al., 1991, 1992). Visual modes are generally susceptible to a *primacy effect*, or the tendency to favor the first response options presented. Aural stimulus in interviewer-administered modes generally have respondents relying on short-term or working memory which favors the last options presented, known as a *recency effect*. Response order effects are not seen in all kind of survey items, but is often observed for Likert scale items and questions including long lists of response options.

In addition, the presence of an interviewer in CATI or FTF can alter the behavior and responses of a respondent. Generally, this is seen in more socially desirable responding and satisficing. Self-administered modes are generally considered to allow for better self-reporting of sensitive or undesirable behaviors (Tourangeau et al., 2000; Tourangeau & Yan, 2007; Kreuter et al., 2008; Krumpal, 2013). While smoking behaviors have not historically been considered sensitive items for adults, there still may be small effects.

### Mode and representation

The potentially larger issue affecting smoking-related items is representation due to mode. Representation is related to three primary error sources: coverage, sampling, and nonresponse. Of these three error sources, nonresponse error is the largest source of concern for a survey mode switch. Nonresponse due to the mode of contact and/or the mode of completion is primarily related to the concept of survey cooperation. This might mistakenly be called a "mode effect", when in reality it is related to how the survey is administered. By using a different mode, you may obtain cooperation from a different type of respondent. For example, access to and availability of a computer with internet can limit who can participate in a household web survey even if they are generally willing to participate. Conversely, persons who utilize call blocker technology or heavily screen calls through use of Caller ID may be less likely to respond to a telephone survey. Therefore, a respondent's comfort in or preference for a particular mode may influence them to participate (or not participate) in a survey. While the new methods may be at risk for nonresponse error due to mode, it must also be recognized that the previous methods may also have suffered from errors related to survey mode.

### *Mode and smoking-related questions*

Understanding this context, we next review how these issues relate to mode impacts on smoking-related questions. Some of this work has focused on self-administered modes (i.e., paper-and-pencil and web), but most of this research has concluded that estimates from both types of self-administered surveys are relatively consistent with each other (e.g., Wright et al., 1998; McCabe et al., 2002; Link & Mokdad, 2005; McCabe et al., 2006).

The Behavioral Risk Factor Surveillance System (BRFSS) conducted a set of experiments in four states (Arkansas, Indiana, New York, and North Dakota) to see what switching to a mailed paper-and-pencil or web survey might have on a variety of estimates including smoking prevalence compared to CATI (Link & Mokdad, 2005). Based on the unadjusted prevalence estimates for current smokers, both mail and web surveys had significantly lower estimates of current smokers with 16.9% in the mail survey and 17.3% in the web survey compared to 22.8% in CATI. This study also found that part of the contributing differences was that the mail and web samples had more females, more non-Hispanic White, more age 35-64, and more college educated participants. Another study confirmed these findings for young adults (age 18-21), especially for non-Hispanic Whites (Messeri et al., 2019). A 2003 Health Information National Trends Survey (HINTS) study found similar results observing that smokers who used the internet were younger, had higher income, were more likely to be employed, and were more interested in quitting smoking (Stoddard & Augustson, 2006).

Other studies have found differing effects for smoking variables in self-administered surveys. Persoskie and Nelson (2013) found no evidence of differences in current smokers and their intentions and attempts to quit between mail and CATI in 2007 HINTS. Yeager et al. (2011) found that an internet probability-based survey seemed to significantly overestimate the prevalence of smokers, more in line with online non-probability panels. Burkill et al. (2016) found conflicting effects of mode on smoking cigarettes between men and women, with men more likely and woman less likely to report smoking cigarettes on the web than in a FTF survey.

Based on the limited research regarding survey mode and smoking-related variables, the preponderance of evidence suggests that some reductions in the prevalence of current smokers might be observed when switching from CATI to a web-dominant mixed-mode design. The findings from Stoddard and Augustson (2006) also suggest a shift in cessation behaviors and plans with the introduction of web data collection, though the demographic breakdown for internet accessibility has changed substantially over the years (e.g., Anderson, 2019).

### Methods

The main analysis in this report focuses on the overall trends for a selection of cigarette and tobacco-related items from the CHIS from 2014 through 2019. In terms of sample design, CHIS 2014 used an 80/20 dual-frame random-digit dial (RDD) design (80% landline, 20% cell phone). CHIS 2015 through 2018 maintained a relatively overall consistent design of a 50/50 dual-frame RDD design (50% landline, 50% cell phone). CHIS 2019, the focal point of this analysis,

introduced address-based sampling (ABS) as the sampling frame along with a mixed-mode data collection approach (web with a telephone follow-up). We include CHIS 2014 in this analysis despite its sample design differences, because CHIS 2014 was the first year e-cigarette questions were introduced to CHIS.

The trend analyses also include estimates from the 2018 Fall Pilot[1], a statewide experiment of the proposed ABS mixed-mode methodology (Wells et al., 2019). The Fall Pilot was simultaneously fielded with 2018 production CHIS and allows for a reasonable transition estimate from 2018 to 2019. Its inclusion provides needed context in understanding changes in the methodology relative to actual changes over time. However, some minor changes in sample design exist between the Fall Pilot and CHIS 2019. For details on design differences, please refer to CHIS 2019-2020 Redesign: Rationale, Empirical Evaluation, and Trends (Wells, 2020).

For this analysis, we examine a series of nine substantive variables and constructs selected from the adult survey that are related to the use of cigarettes, e-cigarettes, and other tobacco-related products as well as cessation intentions and behaviors. Below are the details of the examined variables. All of the variables, along with their eligible years and question versions, are also detailed in Table 1.

- Current smoker status – combination of smoked at least 100 or more cigarettes (AE15) and cigarette smoking frequency (AE15A).
- Ever used e-cigarettes – use of e-cigarette or other electronic vaping product in lifetime (AC81C); includes previous versions: AC81 from CHIS 2014-2016 and AC81B from CHIS 2017.
- Current e-cigarette users – combination of ever used e-cigarettes (AC81C) and e-cigarette use in the past 30 days (AC82C); includes previous versions: AC81 and AC82 from CHIS 2014-2016 and AC81B and AC82B from CHIS 2017.
- E-cigarette monthly use – days of e-cigarette use in the past 30 days (AC82C); includes previous versions: AC82 from CHIS 2014-2016 and AC82B from CHIS 2017.
- Current use of flavored tobacco products – use of flavored tobacco products in the past 30 days as a combination of flavored e-cigarettes (AC134), chewing tobacco (AC136), cigarillos (AC138), cigars (AC140), hookahs (AC142), and menthol-flavored cigarettes (AC58C); only available for CHIS 2018-2019.
- Current use of non-cigarette products – use of non-cigarette products in the past 30 days as a combination of chewing tobacco (AC135), cigarillos (AC137), cigars (AC139), hookahs (AC141), and e-cigarettes (AC82C); only available for CHIS 2018-2019.

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[1] While CHIS production data is estimated with replicate weights, replicate weights were not produced for the 2018 Fall Pilot. Variance estimates, including confidence intervals, reported for the 2018 Fall Pilot are estimated using Taylor Series linearization. Despite this difference, the expectation is that replicate weights will produce similar, but still unbiased estimates of the variance compared to linearized weights without needing to specify the sample design.

**Table 1.** Variables of interest

| Description | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|
| Current smoker status | X | X | X | X | X | X |
| Ever used e-cigarettes (age 18-65) | X[A] | X[A] | X[A] | X[B] | X[C] | X[C] |
| Current e-cigarette users (age 18-65) | X[A] | X[A] | X[A] | X[B] | X[C] | X[C] |
| Adult (age 18-65) e-cigarette monthly use | X[A] | X[A] | X[A] | X[B] | X[C] | X[C] |
| Adult (age 18-25) e-cigarette monthly use | X[A] | X[A] | X[A] | X[B] | X[C] | X[C] |
| Current use (past 30 days) flavored tobacco products | | | | | X | X |
| Current use (past 30 days) non-cigarette products | | | | | X | X |
| Secondhand smoke exposure | | | | | X | X |
| Thinking about quitting in the next 6 months | X | X | X | X | X | X |
| Stopped smoking for 1 or more days in the past year | X | X | X | X | X | X |

Note. [A] denotes the original version of the question presented in CHIS 2014. [B] denotes the second version, or "B" version, introduced in CHIS 2017. [C] denotes the current version, or "C" version, of the question implemented in CHIS 2018.

- Secondhand smoke exposure – exposed to secondhand tobacco smoke or e-cigarette vapor in the last two weeks (AC144); only available for CHIS 2018-2019.
- Thinking about quitting in the next 6 months (AC50)
- Stopped smoking for 1 or more days in the past year (AC49)

We include all years of the e-cigarette questions despite changes in wording over the examined time period. We also limit the e-cigarette questions to those age 18-65 given this was the original universe in CHIS 2014-2016.

In addition to statewide adult estimates, we also refer to specific adult subgroups to measure how differences in sample composition may be influencing trends over time. These subgroups include race as defined by the Office and Management and Budget (OMB) and poverty status. The subgroup plot and tables are included in Appendix A and B, respectively, and are broken up as detailed below:

- Race/ethnicity (5 groups): Hispanic, non-Hispanic white, non-Hispanic Asian, non-Hispanic African American, non-Hispanic other (American Indian/Alaska Natives, Native Hawaiians/Pacific Islanders, and those who identify as more than one race)
- Poverty (4 groups): 0-99% federal poverty level (FPL), 100-199% FPL, 200-299% FPL, 300% FPL and over

Statistically unstable estimates, as defined by a coefficient of variation greater than 30%, are denoted with an asterisk in the corresponding tables and figures, while insufficient sample sizes are denoted with a dash. No formal statistical tests between years are reported at this time, though overlapping confidence intervals are examined.

A wider examination of mode impacts on a broader set of CHIS variables are included in CHIS 2019-2020 Redesign: Rationale, Empirical Evaluation, and Trends (Wells, 2020).

**Results**

As we seek to measure the impact of the new design on smoking and other tobacco-related variables, we first examine how the design affected overall response rates. The CHIS 2019 adult response rate rebounded to 10.8% compared to 3.4% in CHIS 2017-2018 and 9.1% in 2015-2016. CHIS 2019 was able to exceed the target of 20,000 adult interviews per year using only 255,000 sample addresses compared to over 1 million sample telephone numbers in CHIS 2018.

We begin our analysis by looking at unweighted percentages. We first summarize sample compositional differences discussed in Wells (2020).

In relation to age, CHIS 2019 saw reductions in those age 65 and older, though there is still large overrepresentation relative to the population. Underrepresentation of those less than 40 years old also persists, despite those age 18-39 being the most likely to have internet access. Regarding gender, more females responded under the new design than males. Underrepresentation of Hispanics and non-Hispanic African Americans continues to grow under the new design. The new 2019 design also saw increases in the college-educated participants.

Next, we focus on the unweighted distributions of current smoking status (see Table 2). Across both males and females, we see a large drop in current smokers for 2019 and a corresponding increase in never smokers compared to previous years. The same is observed across age groups, with those age 26-44 having more than half the current smoker rate compared to every previous year observed (6.5% vs. 15.5%).

Hispanic and non-Hispanic other (which includes American Indians, Pacific Islanders, and those who identify as more than one race) see unweighted prevalence of current smokers drop by about half from previous years to 2019. Hispanics, who had an average of 10% current smokers from 2014 to 2018, only observed 5.2% current smokers in 2019. Those classified as non-Hispanic other went from an average of 22% down to 10% current smokers. For each of these decreases, the corresponding increase is mostly with never smokers. Similar patterns are also observed by poverty status, with increased declines among the poorer population.

In general, we see that the 2019 design obtained a differential sample of Californians by age and race. This shift in demographic characteristics seems to be associated with smoking status obtaining far fewer smokers than with the RDD design.

The following sections examine the weighted estimates across the various domains.

**Table 2.** Unweighted percentages of current smoker status conditional on socio-demographic characteristics

| | | | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|
| Gender | Male | Current smoker | 11.6 | 14.8 | 14.0 | 13.2 | 13.6 | 6.7 |
| | | Former smoker | 37.4 | 32.7 | 31.1 | 31.3 | 30.7 | 32.6 |
| | | Never smoker | 51.0 | 52.5 | 55.0 | 55.6 | 55.7 | 60.8 |
| | Female | Current smoker | 8.0 | 10.3 | 8.9 | 8.8 | 9.4 | 5.8 |
| | | Former smoker | 27.0 | 24.7 | 23.4 | 25.7 | 25.6 | 23.4 |
| | | Never smoker | 65.0 | 65.0 | 67.7 | 65.5 | 65.0 | 70.7 |
| Age | 18-25 | Current smoker | 11.2 | 12.9 | 10.7 | 9.3 | 8.6 | 4.9 |
| | | Former smoker | 7.1 | 6.6 | 6.9 | 5.3 | 6.6 | 3.6 |
| | | Never smoker | 81.7 | 80.5 | 82.4 | 85.4 | 84.8 | 91.6 |
| | 26-44 | Current smoker | 13.7 | 16.2 | 14.7 | 15.4 | 17.6 | 6.5 |
| | | Former smoker | 18.3 | 17.1 | 17.3 | 19.1 | 20.6 | 16.1 |
| | | Never smoker | 68.0 | 66.8 | 68.1 | 65.5 | 61.8 | 77.4 |
| | 45-65 | Current smoker | 11.6 | 15.5 | 14.5 | 12.7 | 13.8 | 7.4 |
| | | Former smoker | 28.7 | 26.6 | 28.7 | 26.7 | 26.3 | 24.1 |
| | | Never smoker | 59.7 | 57.9 | 59.8 | 60.6 | 59.8 | 68.5 |
| | 66+ | Current smoker | 5.4 | 6.0 | 5.8 | 6.6 | 6.3 | 4.9 |
| | | Former smoker | 41.7 | 42.3 | 38.8 | 40.4 | 39.1 | 40.7 |
| | | Never smoker | 52.9 | 51.7 | 55.4 | 53.1 | 54.6 | 54.4 |
| Race/ ethnicity | Hispanic | Current smoker | 8.3 | 11.2 | 9.6 | 10.1 | 10.5 | 5.2 |
| | | Former smoker | 21.3 | 18.4 | 18.1 | 17.5 | 18.5 | 17.0 |
| | | Never smoker | 70.4 | 70.5 | 72.3 | 72.5 | 71.0 | 77.8 |
| | Non-Hispanic African American | Current smoker | 11.8 | 20.3 | 18.8 | 11.8 | 14.8 | 9.9 |
| | | Former smoker | 26.7 | 23.4 | 22.6 | 25.4 | 25.2 | 24.6 |
| | | Never smoker | 61.5 | 56.4 | 58.6 | 62.8 | 60.0 | 65.5 |
| | Non-Hispanic Asian | Current smoker | 5.8 | 7.1 | 5.2 | 6.5 | 7.3 | 4.4 |
| | | Former smoker | 19.6 | 16.0 | 16.3 | 13.8 | 14.0 | 16.2 |
| | | Never smoker | 74.6 | 77.0 | 78.5 | 79.7 | 78.7 | 79.4 |
| | Non-Hispanic Other | Current smoker | 22.8 | 22.5 | 20.9 | 21.1 | 22.6 | 10.0 |
| | | Former smoker | 31.4 | 31.3 | 27.4 | 27.2 | 29.3 | 26.6 |
| | | Never smoker | 45.8 | 46.1 | 51.7 | 51.7 | 48.2 | 63.4 |
| | Non-Hispanic White | Current smoker | 9.6 | 11.9 | 12.0 | 10.7 | 11.0 | 6.4 |
| | | Former smoker | 36.4 | 33.8 | 33.8 | 33.6 | 33.8 | 32.7 |
| | | Never smoker | 54.0 | 57.3 | 54.1 | 55.7 | 55.2 | 60.9 |
| Poverty status | 0-99% FPL | Current smoker | 15.0 | 20.8 | 18.7 | 18.7 | 19.6 | 13.5 |
| | | Former smoker | 24.0 | 20.9 | 18.7 | 20.8 | 23.2 | 23.2 |
| | | Never smoker | 61.0 | 58.3 | 62.6 | 60.5 | 57.2 | 63.3 |
| | 100-199% FPL | Current smoker | 13.1 | 16.0 | 15.4 | 14.8 | 15.5 | 10.7 |
| | | Former smoker | 29.6 | 27.3 | 24.2 | 27.6 | 26.2 | 27.5 |
| | | Never smoker | 57.2 | 56.7 | 60.4 | 57.5 | 58.3 | 61.9 |
| | 200-299% FPL | Current smoker | 11.2 | 12.7 | 12.8 | 12.6 | 12.6 | 7.0 |
| | | Former smoker | 32.8 | 30.2 | 28.7 | 29.1 | 29.1 | 30.4 |
| | | Never smoker | 56.0 | 57.2 | 58.5 | 58.3 | 58.3 | 62.6 |
| | 300% FPL or above | Current smoker | 6.2 | 8.2 | 6.9 | 7.3 | 7.6 | 4.2 |
| | | Former smoker | 33.2 | 30.1 | 29.8 | 29.8 | 29.4 | 27.5 |
| | | Never smoker | 60.6 | 61.6 | 63.3 | 62.9 | 62.9 | 68.3 |

Note. "Non-Hispanic Other" for race/ethnicity includes American Indians, Native Hawaiians, Pacific Islanders, and those who identify as more than one race. FPL = federal poverty level.

### Smoking status

Current smoking status has been very consistent from 2014 through 2018. Following the methodology switch, we see significant deviations across all four categories for smoking status: current smoker, every day; current smoker, some days; former smoker; and never smoker (see Figure 1 and Table 3). Never smokers increased from 66.9% in 2018 up to 73.6% in 2019. Corresponding to that increase, all other categories had a significant drop from previous years. These percentages are consistent with the Fall Pilot results enforcing the idea that these estimate differences relate to changes in mode and methods.

When looking at racial/ethnic subgroups, we see that this pattern (increase in never smokers and decrease in other categories) is mostly consistent across all groups, with the exception of non-Hispanic African Americans, which remains constant (see Appendix A). In particular, Hispanics and non-Hispanic others see some of the largest relative increases in never smokers.

By poverty status, the shift in 2019 of never smokers is most prominent in those under the federal poverty level (though the trend seems to be more in line with previous years when excluding 2018) (see Appendix B).

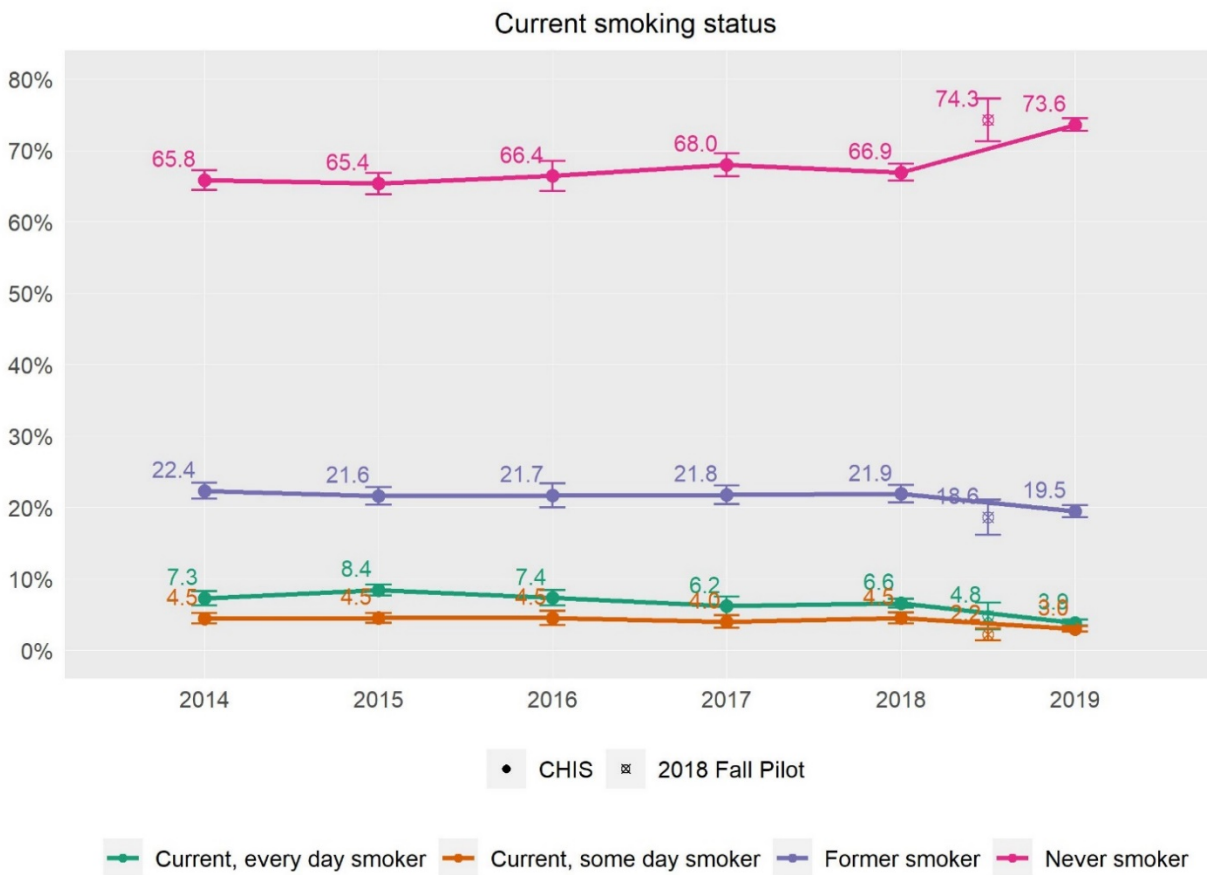**Figure 1.** Current smoking status, CHIS 2014-2019 and 2018 Fall Pilot

**Table 3.** Current smoking status, CHIS 2014-2019 and 2018 Fall Pilot (weighted)

| Current smoking status | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|
| Current, every day smoker | 7.3 | 8.4 | 7.4 | 6.2 | 6.6 | 3.9 | 4.8 |
| | (6.3, 8.3) | (7.6, 9.2) | (6.3, 8.4) | (4.9, 7.5) | (6.0, 7.2) | (3.4, 4.3) | (2.9, 6.7) |
| Current, some day smoker | 4.5 | 4.5 | 4.5 | 4.0 | 4.5 | 3.0 | 2.2 |
| | (3.7, 5.2) | (3.8, 5.3) | (3.5, 5.5) | (3.1, 4.9) | (3.8, 5.3) | (2.6, 3.4) | (1.4, 3.1) |
| Former smoker | 22.4 | 21.6 | 21.7 | 21.8 | 21.9 | 19.5 | 18.6 |
| | (21.3, 23.4) | (20.4, 22.9) | (20.0, 23.4) | (20.5, 23.1) | (20.7, 23.1) | (18.7, 20.3) | (16.2, 21.1) |
| Never smoker | 65.8 | 65.4 | 66.4 | 68.0 | 66.9 | 73.6 | 74.3 |
| | (64.4, 67.2) | (63.9, 66.9) | (64.3, 68.6) | (66.4, 69.6) | (65.8, 68.1) | (72.7, 74.5) | (71.3, 77.3) |

As a secondary verification of smoking status findings, we compare recent CHIS estimates to those from the California Behavioral Risk Factor Surveillance System (CA-BRFSS). CHIS has been consistent with CA-BRFSS in relation to current smoker status while using the same RDD methods. In CA-BRFSS, we only observe a one-percentage point decrease for the combined current smoking estimates from 2018 to 2019 (see Table 4). Therefore, while there may be some evidence of continued reduction in current smokers statewide, the large decrease in CHIS suggests a strong effect from the change in modes.

**Table 4.** Current smoking status of adults (age 18+) comparing CHIS 2018-2019 and CA-BRFSS 2018-2019 (weighted)

| | CHIS | | CA-BRFSS | |
|---|---|---|---|---|
| Current smoking status | 2018 (RDD/CATI) | 2019 (ABS/Web+CATI) | 2018 (RDD/CATI) | 2019 (RDD/CATI) |
| Current, every day smoker | 6.6 | 3.9 | 6.3 | 5.8 |
| Current, some day smoker | 4.5 | 3.0 | 5.0 | 4.3 |
| Former smoker | 21.9 | 19.5 | 22.1 | 23.0 |
| Never smoker | 66.9 | 73.6 | 66.7 | 67.0 |

Source: UCLA Center for Health Policy Research, California Health Interview Survey 2018-2019; Centers for Disease Control and Prevention, California Behavioral Risk Factor Surveillance System 2018-2019.

## Electronic cigarettes

The percentage of those age 18-65 that have ever used an e-cigarette continues to remain constant despite changes in question wording from 2014 to 2019 (refer to Table 1). While the 2018 Fall Pilot suggested a significant shift downwards in this trend for 2019 (15.4%), the 2019 estimated rate (20.2%) is virtually equal to 2018 (20.4%). For both the racial/ethnic and poverty subgroups, no large deviations from previous years are observed. These results suggest no major impact related to mode of data collection.

**Figure 2.** Ever smoked e-cigarettes (age 18-65), CHIS 2014-2019 and 2018 Fall Pilot
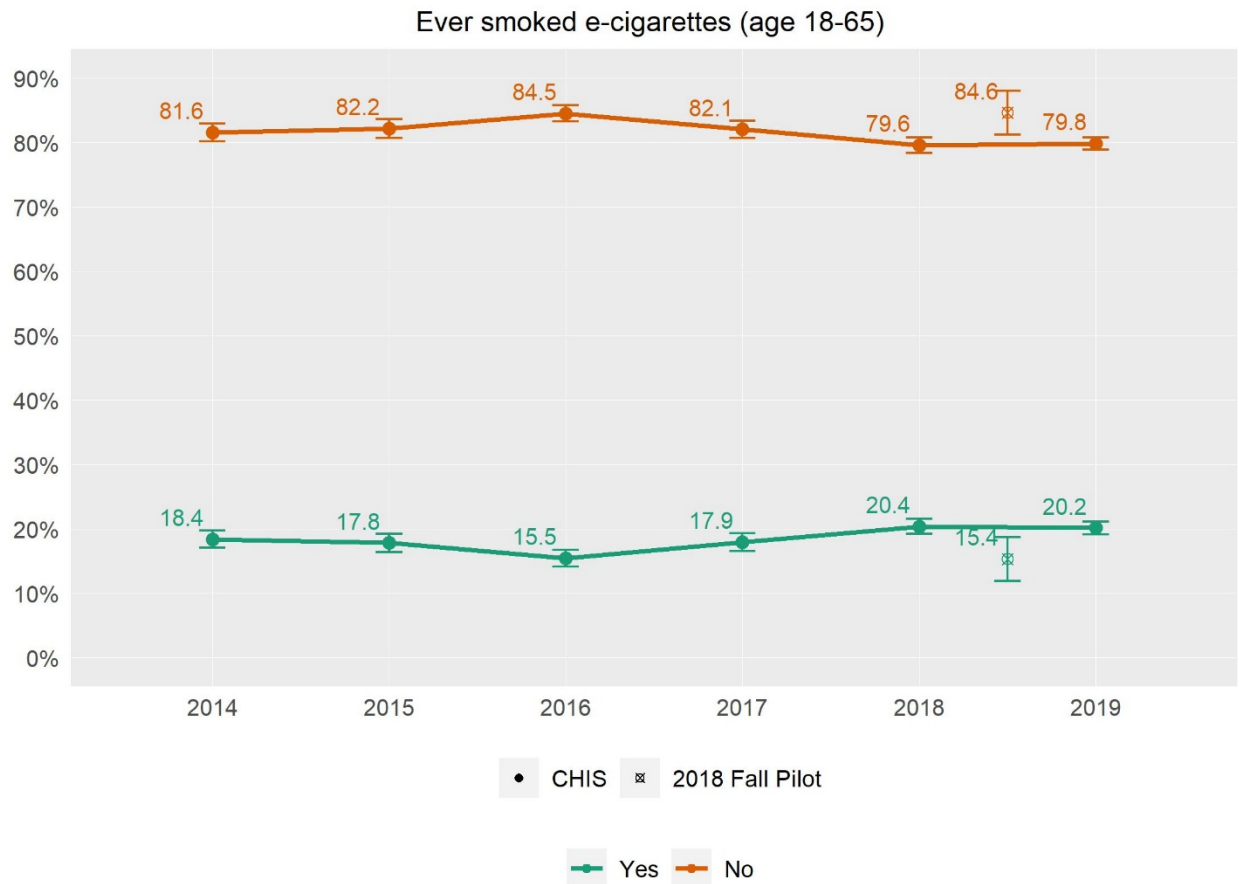


**Table 5.** Ever smoked e-cigarettes (age 18-65), CHIS 2014-2019 and 2018 Fall Pilot (weighted)

| Ever smoked e-cigarettes | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|
| No | 81.6 | 82.2 | 84.5 | 82.1 | 79.6 | 79.8 | 84.6 |
| | (80.2, 82.9) | (80.7, 83.6) | (83.3, 85.8) | (80.7, 83.4) | (78.4, 80.8) | (78.9, 80.8) | (81.2, 88.1) |
| Yes | 18.4 | 17.8 | 15.5 | 17.9 | 20.4 | 20.2 | 15.4 |
| | (17.1, 19.8) | (16.4, 19.3) | (14.2, 16.7) | (16.6, 19.3) | (19.2, 21.6) | (19.2, 21.1) | (11.9, 18.8) |

For current e-cigarette use, we do observe a decline like with current cigarette smoking compared to CHIS 2018, but the 2019 rate is consistent with years before CHIS 2018. While the 2018 to 2019 difference is not as large as current smoking prevalence, we note that the 2018 Fall Pilot anticipated a downward shift with the CHIS 2018 and 2018 Fall Pilot confidence intervals barely crossing. This is tenuous evidence of a mode related impact on this estimate.

When looking at subgroups, Hispanic and non-Hispanic Asians saw the largest drops in current e-cigarette use compared to CHIS 2018, but the CHIS 2019 rates are very similar to previous years. We also see a significant drop in those in the 300% FPL or greater group.

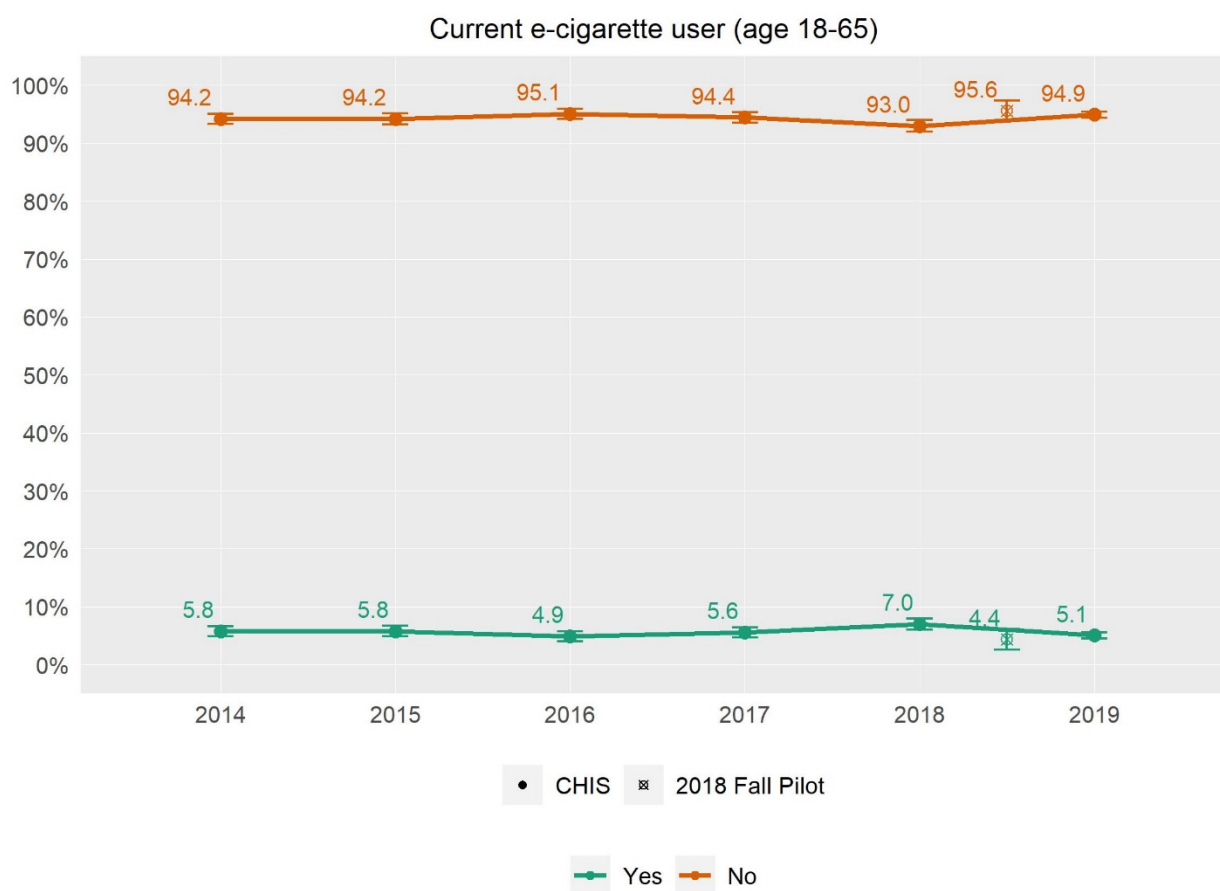**Figure 3.** Current e-cigarette user (age 18-65), CHIS 2014-2019 and 2018 Fall Pilot



**Table 6.** Current e-cigarette user (age 18-65), CHIS 2014-2019 and 2018 Fall Pilot (weighted)

| Current e-cigarette user | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|
| No | 94.2 | 94.2 | 95.1 | 94.4 | 93.0 | 94.9 | 95.6 |
|  | (93.4, 95.1) | (93.3, 95.1) | (94.2, 95.9) | (93.5, 95.3) | (92.0, 94.0) | (94.4, 95.4) | (93.8, 97.4) |
| Yes | 5.8 | 5.8 | 4.9 | 5.6 | 7.0 | 5.1 | 4.4 |
|  | (4.9, 6.6) | (4.9, 6.7) | (4.1, 5.8) | (4.7, 6.5) | (6.0, 8.0) | (4.6, 5.6) | (2.6, 6.2) |

Breaking down e-cigarette use over the past month, we look at two age groups of interest: age 18-65 and young adults, age 18-25. For those ages 18-65, 2019 sees a general increase in every day use and 11-29 days a month and a decrease in 1-2 days a month, but the confidence intervals with previous years do overlap. For ages 18-25, it also remains statistically consistent. Confidence intervals for the corresponding subgroups analyses are too large to interpret and have insufficient sample sizes for ages 18-25.

**Figure 4.** E-cigarette monthly use (age 18-65), CHIS 2014-2019 and 2018 Fall Pilot
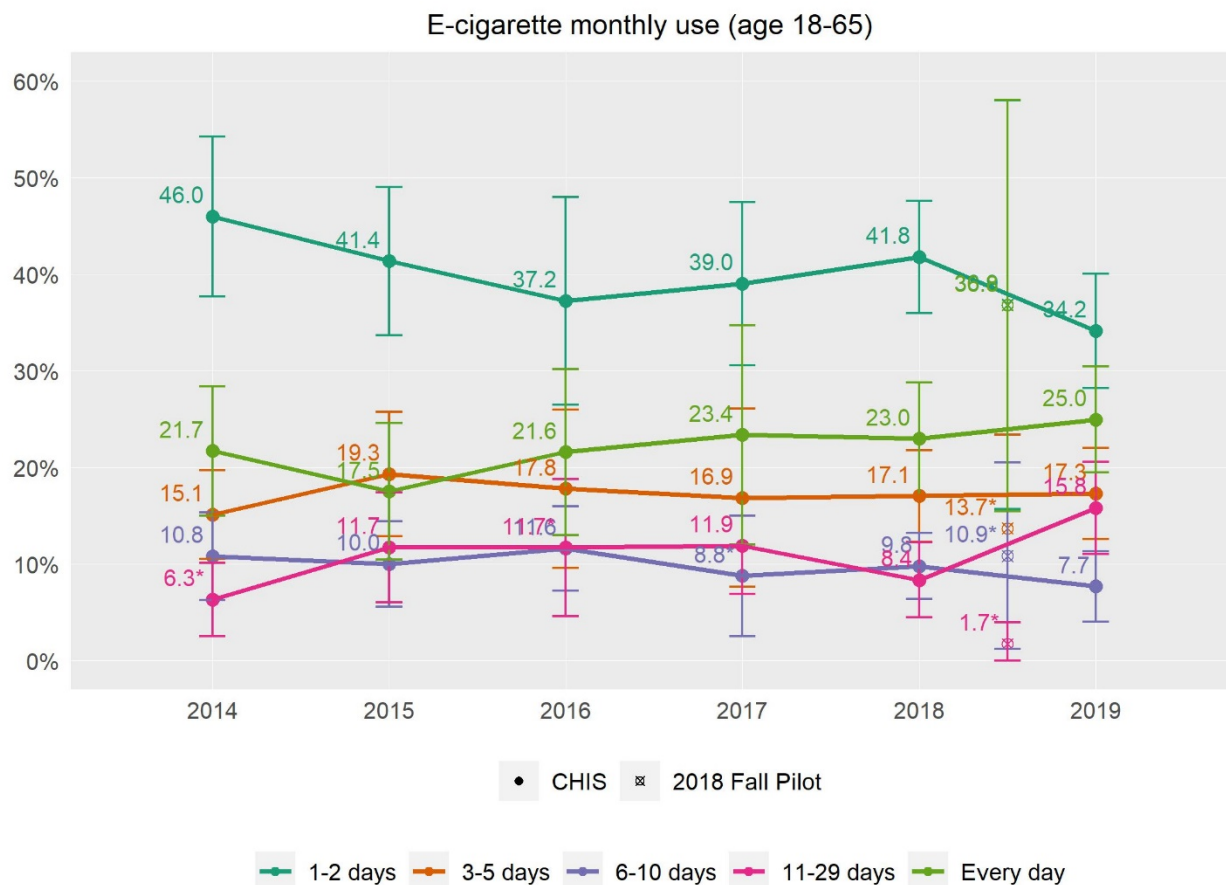


E-cigarette monthly use (age 18-65)

**Table 7.** E-cigarette monthly use (age 18-65), CHIS 2014-2019 and 2018 Fall Pilot (weighted)

| E-cigarette monthly use (age 18-65) | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|
| 1-2 days | 46.0 | 41.4 | 37.2 | 39.0 | 41.8 | 34.2 | 36.9 |
| | (37.7, 54.3) | (33.7, 49.0) | (26.5, 48.0) | (30.6, 47.5) | (36.0, 47.6) | (28.2, 40.1) | (15.7, 58.0) |
| 3-5 days | 15.1 | 19.3 | 17.8 | 16.9 | 17.1 | 17.3 | 13.7* |
| | (10.5, 19.7) | (12.9, 25.8) | (9.6, 26.0) | (7.6, 26.1) | (12.3, 21.8) | (12.6, 22.0) | (4.0, 23.4) |
| 6-10 days | 10.8 | 10.0 | 11.6 | 8.8* | 9.8 | 7.7 | 10.9* |
| | (6.3, 15.4) | (5.6, 14.5) | (7.3, 16.0) | (2.5, 15.0) | (6.4, 13.2) | (4.0, 11.4) | (1.2, 20.5) |
| 11-29 days | 6.3* | 11.7 | 11.7* | 11.9 | 8.4 | 15.8 | 1.7* |
| | (2.5, 10.1) | (6.0, 17.4) | (4.6, 18.8) | (6.9, 17.0) | (4.5, 12.2) | (11.0, 20.6) | (0.0, 4.0) |

(continued)

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| Every day | 21.7 | 17.5 | 21.6 | 23.4 | 23.0 | 25.0 | 36.8 |
|---|---|---|---|---|---|---|---|
| | (15.0, 28.4) | (10.5, 24.6) | (13.0, 30.2) | (12.0, 34.8) | (17.1, 28.8) | (19.5, 30.5) | (15.5, 58.1) |

Note. * = statistically unstable.

**Figure 5.** E-cigarette monthly use (age 18-25), CHIS 2014-2019 and 2018 Fall Pilot
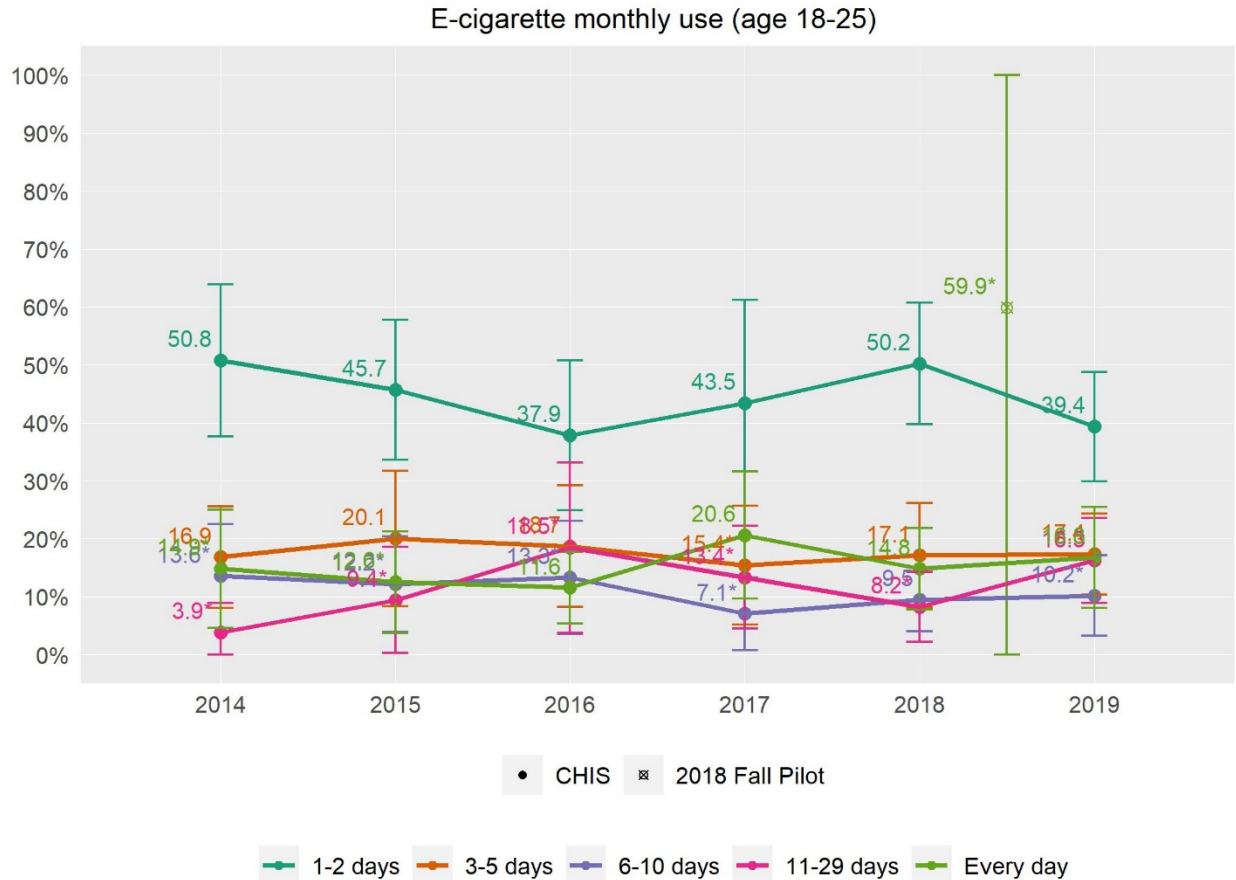


E-cigarette monthly use (age 18-25)

**Table 8.** E-cigarette monthly use (age 18-25), CHIS 2014-2019 and 2018 Fall Pilot (weighted)

| E-cigarette monthly use (age 18-25) | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|
| 1-2 days | 50.8 | 45.7 | 37.9 | 43.5 | 50.2 | 39.4 | - |
| | (37.7, 63.9) | (33.7, 57.8) | (24.9, 50.8) | (25.7, 61.2) | (39.8, 60.7) | (29.9, 48.8) | - |
| 3-5 days | 16.9 | 20.1 | 18.7 | 15.4* | 17.1 | 17.4 | - |
| | (8.1, 25.6) | (8.4, 31.8) | (8.3, 29.2) | (5.2, 25.7) | (8.1, 26.1) | (10.4, 24.4) | - |
| 6-10 days | 13.6* | 12.2* | 13.3* | 7.1* | 9.5 | 10.2* | - |
| | (4.6, 22.5) | (4.0, 20.4) | (3.5, 23.1) | (0.8, 13.3) | (4.0, 15.1) | (3.3, 17.2) | - |
| 11-29 days | 3.9* | 9.4* | 18.5* | 13.4* | 8.2* | 16.3 | - |
| | (0.0, 8.9) | (0.3, 18.6) | (3.8, 33.2) | (4.5, 22.3) | (2.2, 14.3) | (8.9, 23.6) | - |
| Every day | 14.9* | 12.6* | 11.6 | 20.6 | 14.8 | 16.8 | 59.9* |
| | (4.7, 25.1) | (3.8, 21.3) | (5.4, 17.7) | (9.7, 31.6) | (7.8, 21.9) | (8.1, 25.5) | (0.0, 100.0) |

Note. * = statistically unstable. - = suppressed due to small sample size.

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### *Non-cigarette and flavored tobacco products*

Non-cigarette and flavored tobacco product variables were introduced in CHIS 2018; therefore, only two years of data are available for consideration.

For current use (past 30 days) of non-cigarette tobacco products, there is evidence of a mode effect as the CHIS 2019 estimate matches the 2018 Fall Pilot with 7.3% using non-cigarette tobacco products and neither confidence interval crosses with the 2018 confidence interval. This fits with the previous trends for cigarette and e-cigarette use.

**Figure 6.** Current non-cigarette tobacco product use, CHIS 2018-2019 and 2018 Fall Pilot



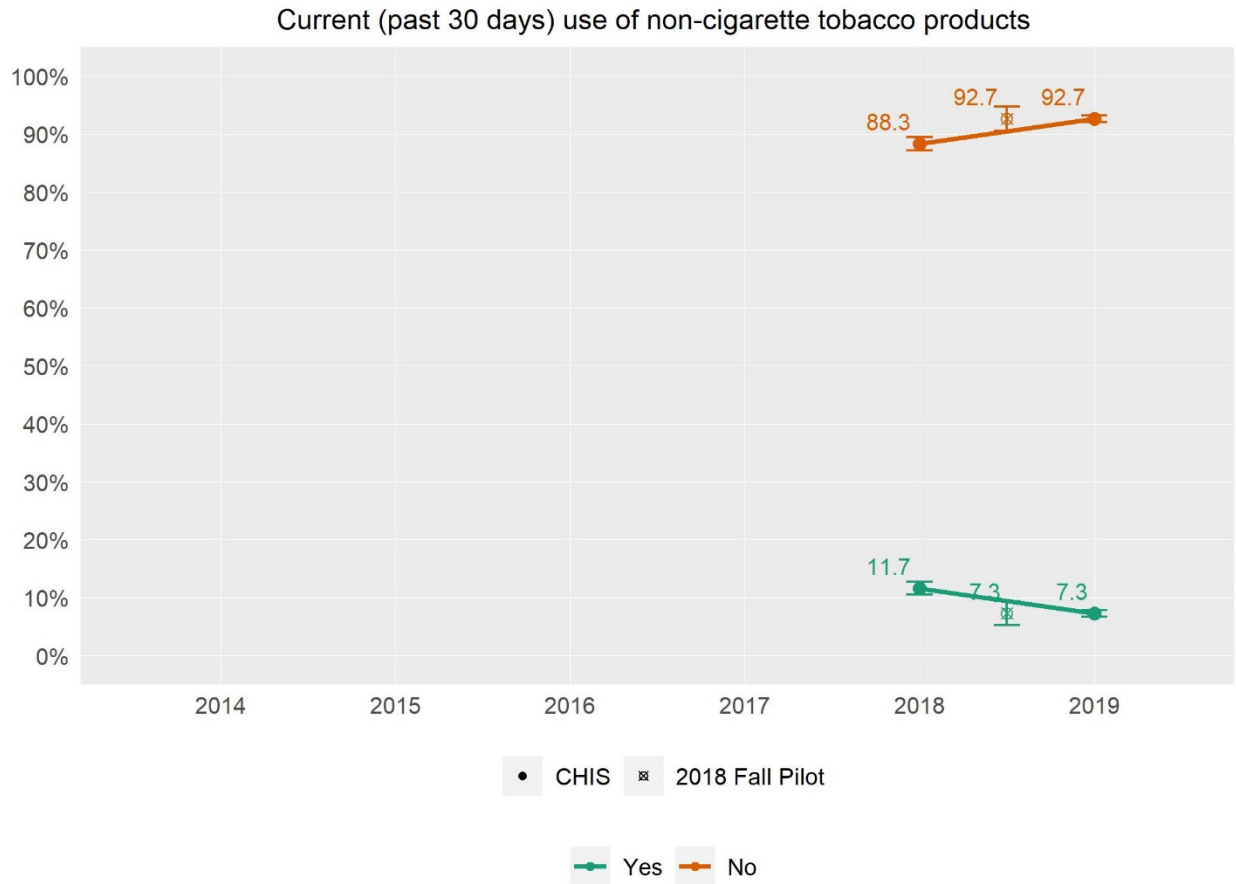Current (past 30 days) use of non-cigarette tobacco products

**Table 9.** Current non-cigarette tobacco product use, CHIS 2018-2019 and 2018 Fall Pilot (weighted)

| Current use non-cigarette tobacco product use | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|
| No | 88.3 | 92.7 | 92.7 |
| | (87.2, 89.5) | (92.1, 93.2) | (90.6, 94.7) |
| Yes | 11.7 | 7.3 | 7.3 |
| | (10.5, 12.8) | (6.8, 7.9) | (5.3, 9.4) |

For current use (past 30 days) of flavored tobacco products, the same pattern of tobacco product use is observed. The 2018 Fall Pilot data denoted a decrease in flavored tobacco product use and the CHIS 2019 data followed through showing a decline from 9.1% in 2018 to 6.1% in 2019. Variations of this pattern are seen across racial and poverty subgroups (see Appendices A and B).

**Figure 7.** Current flavored tobacco product use, CHIS 2018-2019 and 2018 Fall Pilot

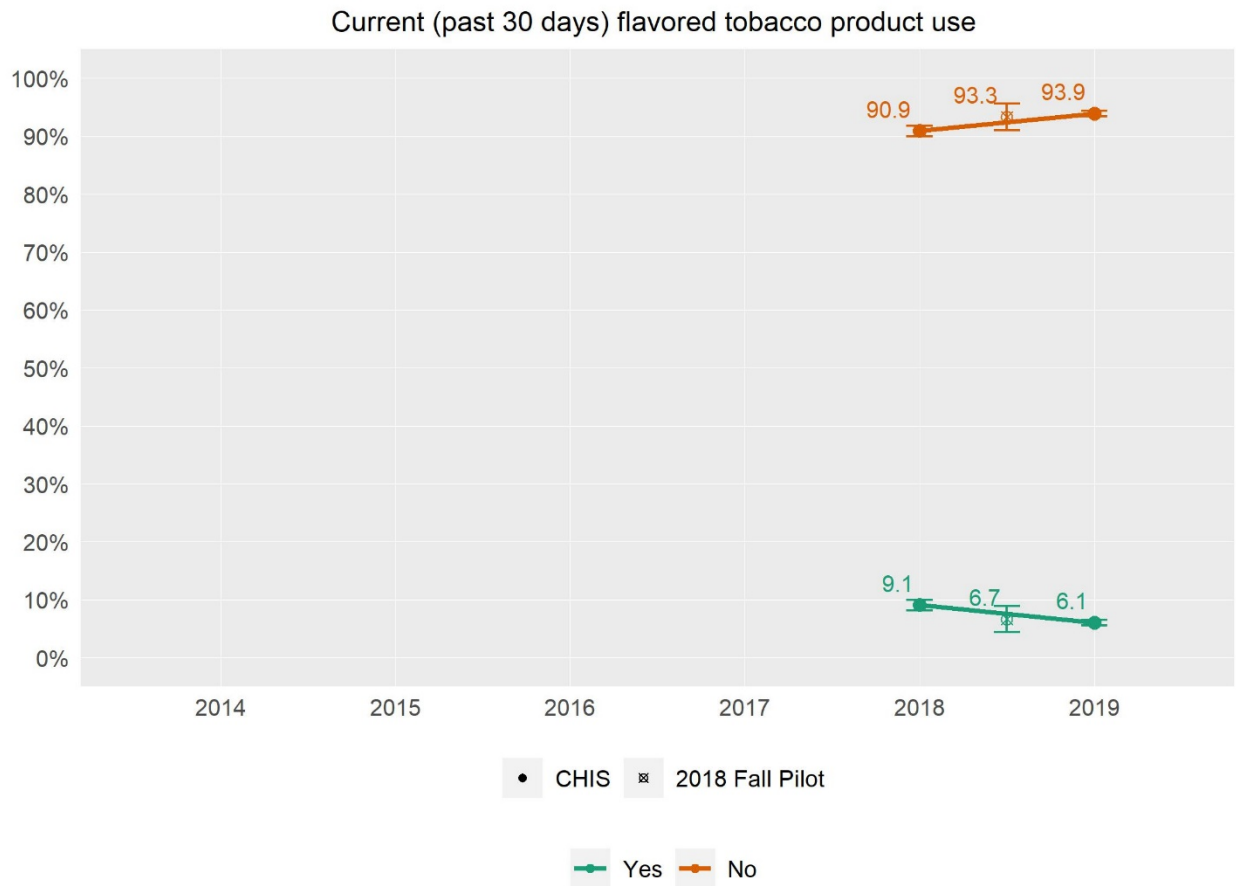Current (past 30 days) flavored tobacco product use



**Table 10.** Current flavored tobacco product use, CHIS 2018-2019 and 2018 Fall Pilot (weighted)

| Current use flavored tobacco products | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|
| No | 90.9 | 93.9 | 93.3 |
| | (90.0, 91.8) | (93.5, 94.4) | (91.0, 95.6) |
| Yes | 9.1 | 6.1 | 6.7 |
| | (8.2, 10.0) | (5.6, 6.5) | (4.4, 9.0) |

### Secondhand tobacco smoke exposure

Secondhand smoke exposure is also a recent addition to CHIS, beginning with CHIS 2018. CHIS 2019 data would suggest significantly less exposure to cigarette smoke and electronic vapor than in 2018. The 2018 Fall Pilot confidence interval includes the CHIS 2018 estimate, inconclusively pointing to a mode effect with the web data collection given the additional changes in sample design for CHIS 2019.

**Figure 8.** Secondhand tobacco smoke exposure in past 2 weeks, CHIS 2018-2019 and 2018 Fall Pilot
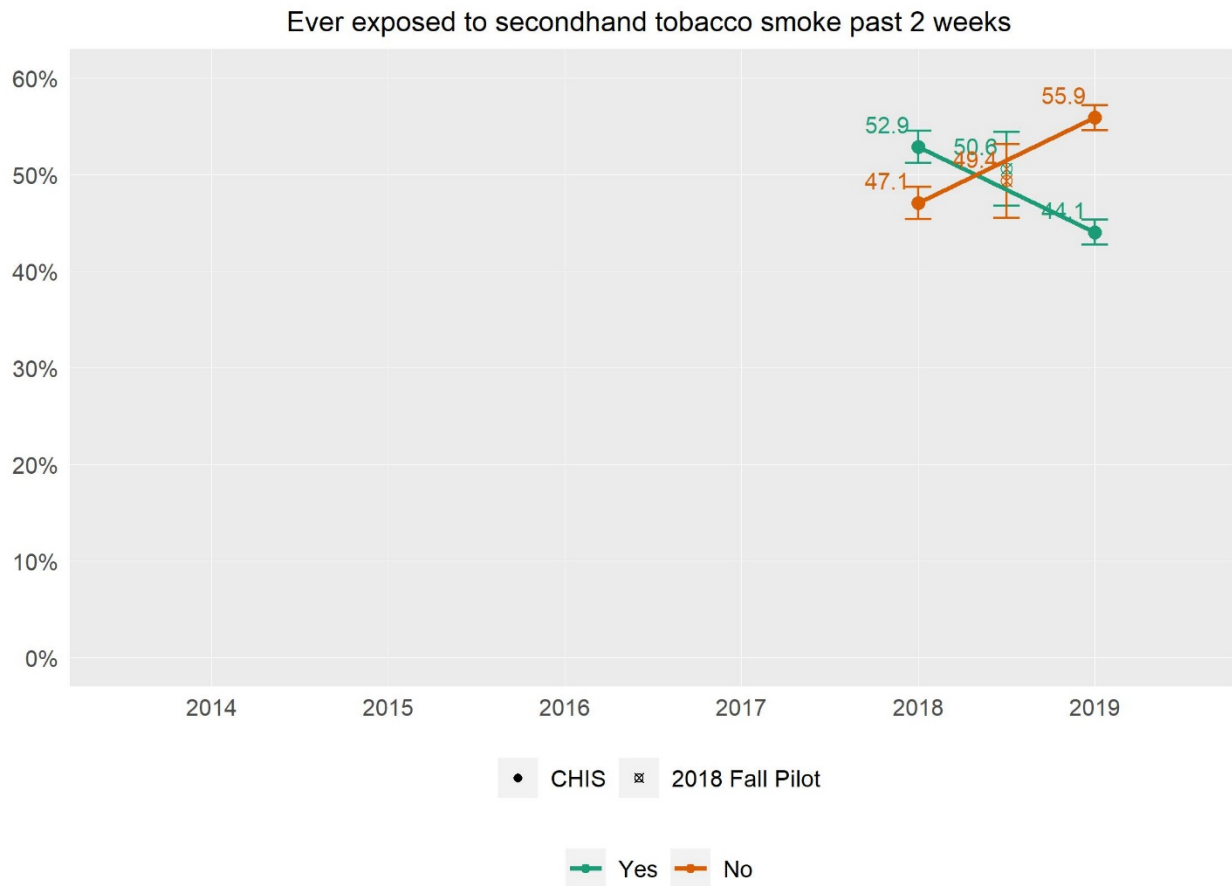


**Table 11**. Secondhand tobacco smoke exposure in past 2 weeks, CHIS 2018-2019 and 2018 Fall Pilot (weighted)

| Secondhand smoke exposure | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|
| No | 47.1 | 55.9 | 49.4 |
| | (45.4, 48.8) | (54.6, 57.2) | (45.5, 53.2) |
| Yes | 52.9 | 44.1 | 50.6 |
| | (51.2, 54.6) | (42.8, 45.4) | (46.8, 54.5) |

*Smoking cessation*

Two measures of smoking cessation are available for CHIS 2014 through 2019. Regarding those who are thinking about quitting in the next 6 months, the confidence intervals for CHIS 2019 are within the range of previous years. While the CHIS 2019 estimate is particularly consistent with the CHIS 2017 estimate, when considered in conjunction with the 2018 Fall Pilot data, we cannot conclusively point to a mode effect for this outcome.

**Figure 9.** Thinking about quitting smoking in next 6 months, CHIS 2014-2019 and 2018 Fall Pilot
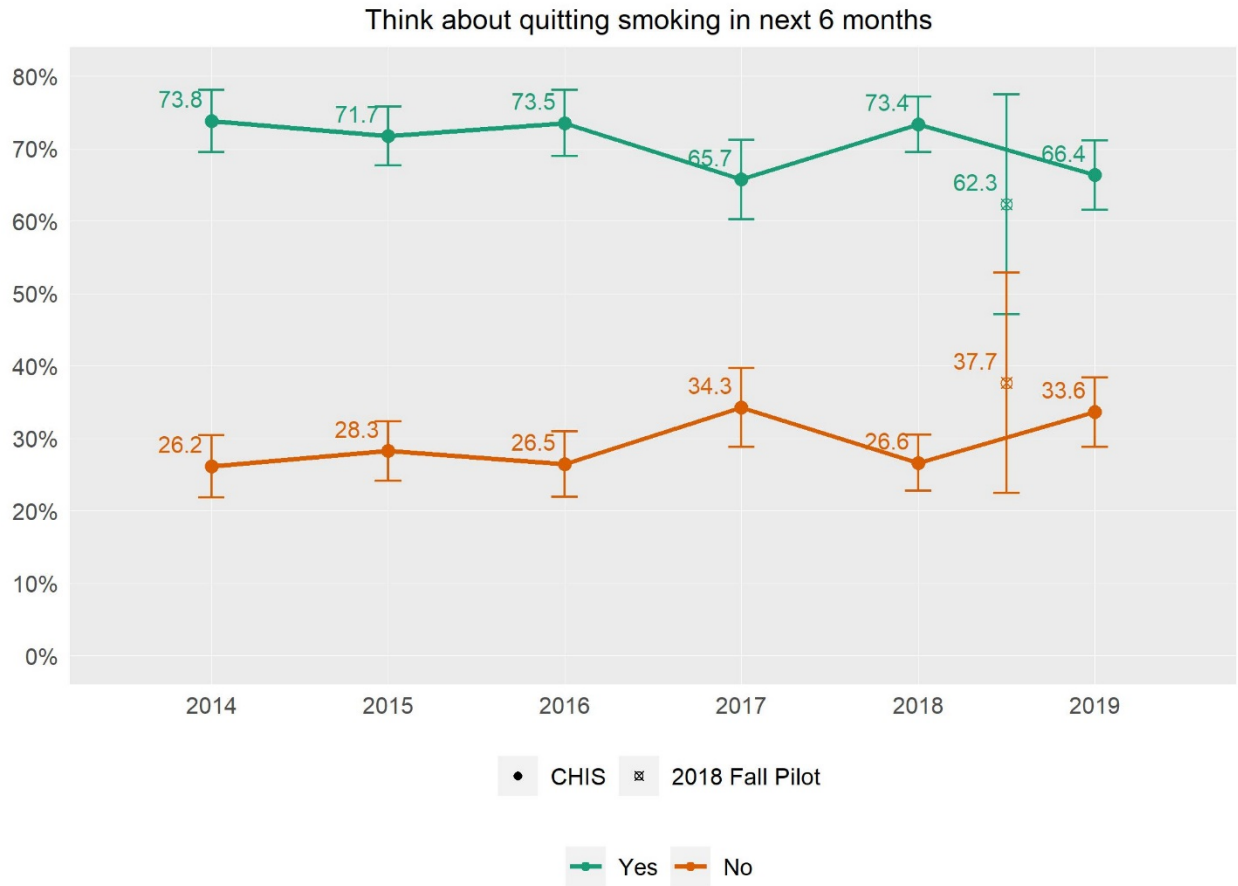


**Table 12.** Thinking about quitting smoking in next 6 months, CHIS 2014-2019 and 2018 Fall Pilot (weighted)

| Thinking about quitting | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|
| No | 26.2 | 28.3 | 26.5 | 34.3 | 26.6 | 33.6 | 37.7 |
| | (21.9, 30.5) | (24.2, 32.3) | (21.9, 31.0) | (28.8, 39.7) | (22.8, 30.5) | (28.9, 38.4) | (22.5, 52.9) |
| Yes | 73.8 | 71.7 | 73.5 | 65.7 | 73.4 | 66.4 | 62.3 |
| | (69.5, 78.1) | (67.7, 75.8) | (69.0, 78.1) | (60.3, 71.2) | (69.5, 77.2) | (61.6, 71.1) | (47.1, 77.5) |

Looking at those who stopped smoking for one day or more in the past year, we see a similar result to the previous cessation item. The 2019 estimate of those stopping smoking for at least one day in the past year seems very consistent with previous years of CHIS. Here we can more definitively say that we see no evidence of temporal change or a mode effect.

**Figure 10.** Stop smoking for at least one day in the past year, CHIS 2014-2019 and 2018 Fall Pilot
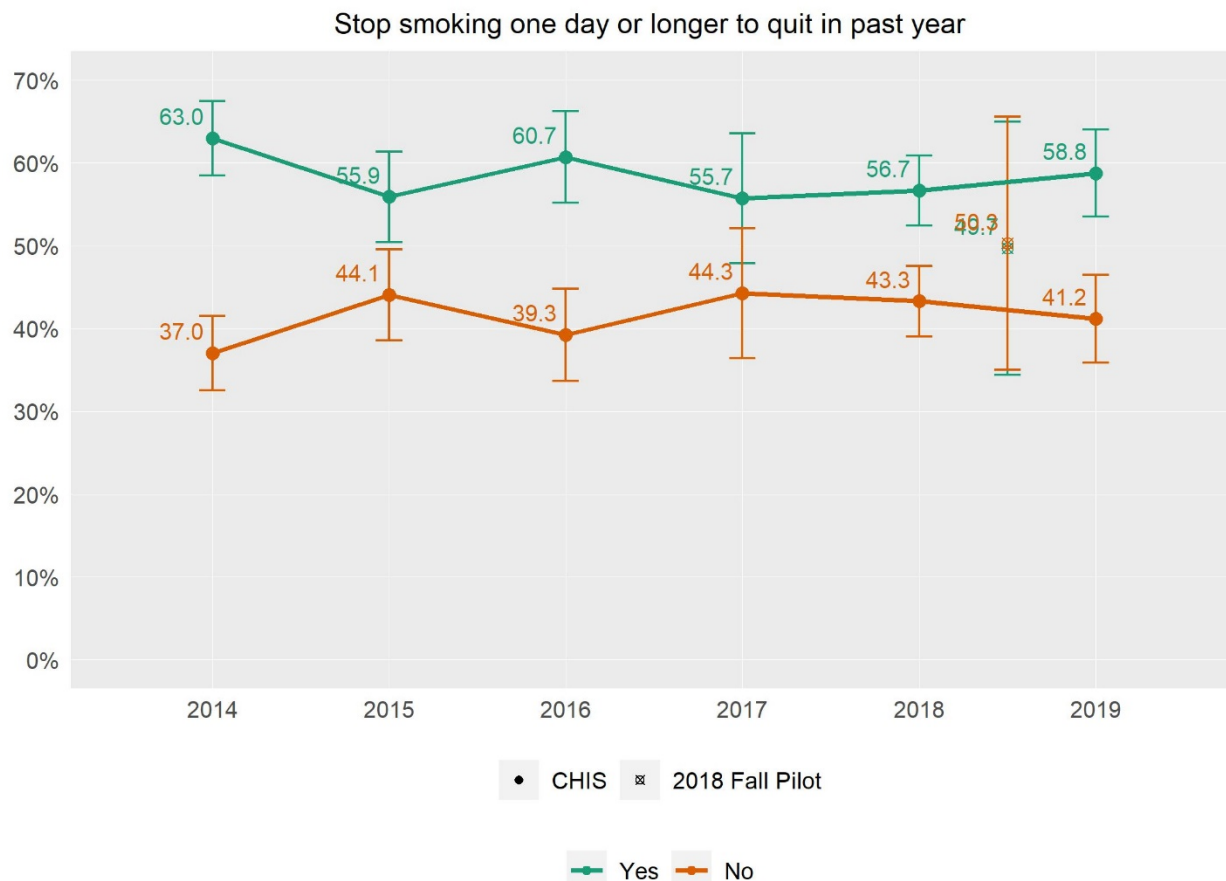


**Table 13.** Stop smoking for at least one day in the past year, CHIS 2014-2019 and 2018 Fall Pilot (weighted)

| Stopped smoking at least one day | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|
| No | 37.0 | 44.1 | 39.3 | 44.3 | 43.3 | 41.2 | 50.3 |
| | (32.5, 41.5) | (38.6, 49.6) | (33.7, 44.8) | (36.4, 52.1) | (39.1, 47.5) | (35.9, 46.5) | (35.0, 65.6) |
| Yes | 63.0 | 55.9 | 60.7 | 55.7 | 56.7 | 58.8 | 49.7 |
| | (58.5, 67.5) | (50.4, 61.4) | (55.2, 66.3) | (47.9, 63.6) | (52.5, 60.9) | (53.5, 64.1) | (34.4, 65.0) |

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**Discussion and Conclusions**

This evaluation helps to illuminate the differences in tobacco-related variables relative to the new ABS mixed-mode design for CHIS. There is some evidence of a mode effect for most types of current tobacco use (cigarette, flavored, and non-cigarette), but less so for those variables measuring ever use of an e-cigarette, monthly use, and smoking cessation. These findings are generally consistent with the patterns observed in the literature.

Therefore, we suggest that the following trends should be considered a break in series due to likely mode effects:

- Current cigarette use
- Current flavored tobacco use
- Current non-cigarette tobacco use

We also suggest that the following variables can be trended across the methodological change, but should still be interpreted with caution:

- Ever smoked an e-cigarette (especially given wording changes across CHIS years)
- Current e-cigarette use
- Monthly use of e-cigarettes
- Thinking about quitting smoking in the next 6 months
- Quit smoking for at least one day in the last year

While we note a significant change in secondhand tobacco smoke exposure, there is insufficient data at this time to say conclusively if this change is a mode effect. We also note that questions related to smoking cessation are for a subset of the population, which seem to be smaller than previously estimated. As these questions are conditional on current smoker status, we feel that these responses are still representative of the attitudes toward cessation generally.

There is currently no research to suggest why smokers would be less likely to respond to a web survey. Data from CHIS 2015-2016 related to internet use shows no differences in use between current and never smokers (84.5% vs. 84.2%, respectively)[2]. Both the unweighted and weighted examinations show these losses are not confined to one age group, race/ethnic group, or poverty status group. While internet access does differ between these groups, the losses are not necessarily proportional to these differences.

The proliferation of e-cigarettes and flavored tobacco products, especially among young adults, is a growing public health crisis and measuring current use is key in those efforts. Additional work into understanding the reasons why current use of cigarette and other tobacco-related products is underrepresented in self-administered surveys (or potentially overrepresented in interviewer-administered surveys) is needed.

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[2] Source: UCLA Center for Health Policy Research, California Health Interview Survey 2015-2016 (AskCHIS).

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**Disclaimer**

The analyses, interpretations, conclusions, and views expressed in this working paper are those of the author and do not necessarily represent the UCLA Center for Health Policy Research, the Regents of the University of California, or collaborating organizations or funders.

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**Appendix A – Trends by Race/Ethnicity**

The following figures and tables examine the nine variables previously looked at, divided by five race/ethnic groups and correspond to Figures 1 through 10, and Tables 3 and 5 through 13. All estimates presented are weighted.

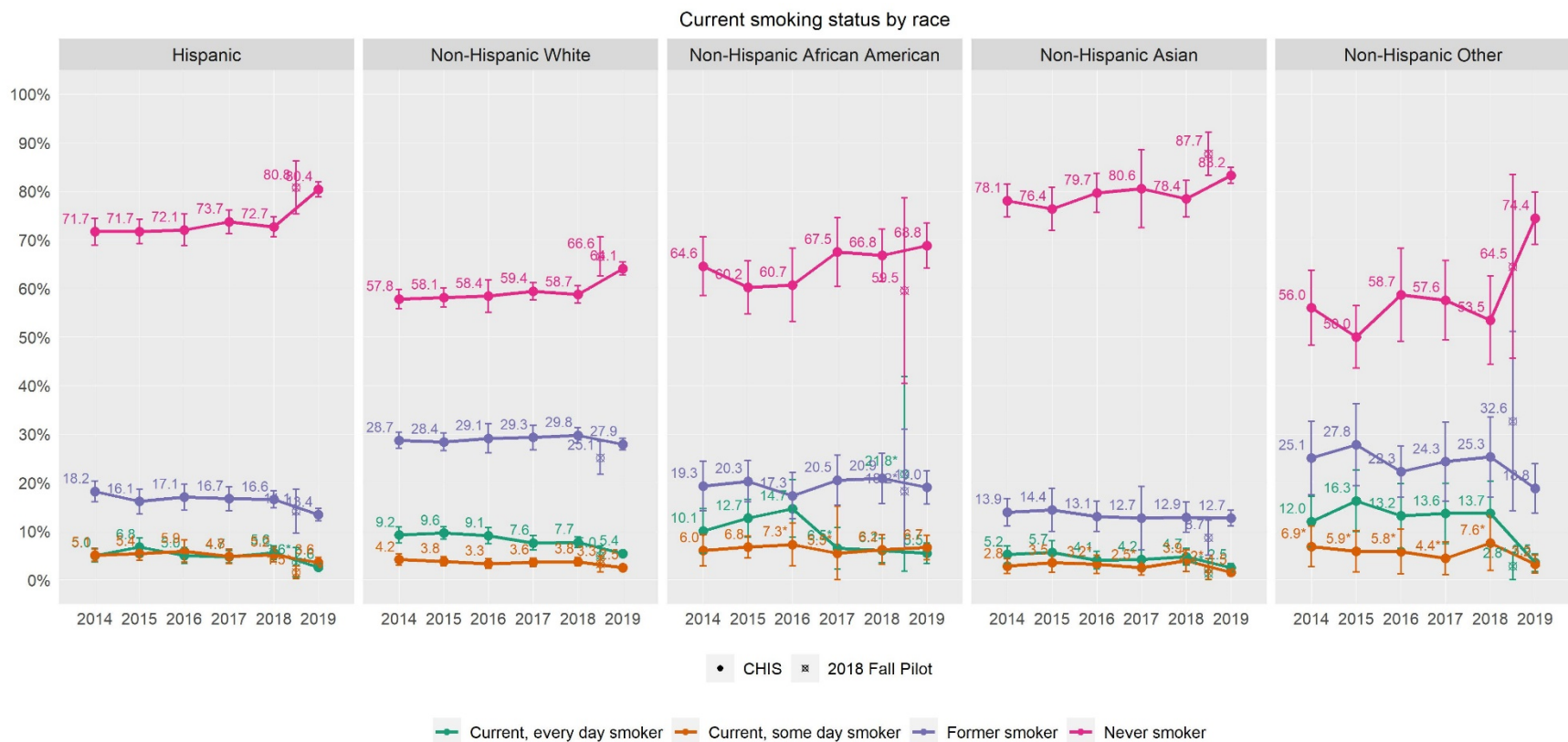**Figure A-1.** Current smoking status by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot



Current smoking status by race

**Table A-1.** Current smoking status by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot

| Subgroup | Level | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|---|
| Non-Hispanic African American | Current, every day smoker | 10.1 (5.4, 14.7) | 12.7 (8.8, 16.6) | 14.7 (8.8, 20.6) | 6.5* (2.2, 10.8) | 6.1 (3.6, 8.6) | 5.5 (3.4, 7.6) | 21.8* (1.8, 41.8) |
| | Current, some day smoker | 6.0 (2.8, 9.2) | 6.8 (4.5, 9.0) | 7.3* (2.9, 11.7) | 5.5* (0.0, 15.1) | 6.2 (3.2, 9.3) | 6.7 (4.1, 9.2) | - - |
| | Former smoker | 19.3 (14.2, 24.4) | 20.3 (16.1, 24.5) | 17.3 (12.5, 22.1) | 20.5 (15.4, 25.7) | 20.9 (15.7, 26.0) | 19.0 (15.6, 22.4) | 18.2* (5.4, 31.0) |
| | Never smoker | 64.6 (58.5, 70.6) | 60.2 (54.8, 65.7) | 60.7 (53.2, 68.3) | 67.5 (60.4, 74.6) | 66.8 (61.4, 72.2) | 68.8 (64.1, 73.5) | 59.5 (40.5, 78.6) |
| Non-Hispanic Asian | Current, every day smoker | 5.2 (3.4, 7.0) | 5.7 (3.3, 8.0) | 4.1 (2.3, 5.9) | 4.2 (2.3, 6.1) | 4.7 (3.0, 6.5) | 2.5 (1.7, 3.3) | 1.4* (0.1, 2.7) |
| | Current, some day smoker | 2.8 (1.3, 4.4) | 3.5 (1.5, 5.5) | 3.2* (1.3, 5.1) | 2.5* (1.0, 4.0) | 3.9 (1.7, 6.1) | 1.5 (0.8, 2.2) | 2.2* (0.1, 4.4) |
| | Former smoker | 13.9 (11.1, 16.7) | 14.4 (10.0, 18.8) | 13.1 (10.0, 16.1) | 12.7 (6.2, 19.3) | 12.9 (9.8, 16.0) | 12.7 (11.1, 14.3) | 8.7 (5.1, 12.3) |
| | Never smoker | 78.1 (74.7, 81.5) | 76.4 (72.0, 80.8) | 79.7 (75.6, 83.7) | 80.6 (72.5, 88.6) | 78.4 (74.6, 82.2) | 83.2 (81.6, 84.9) | 87.7 (83.3, 92.1) |
| Hispanic | Current, every day smoker | 5.0 (3.6, 6.4) | 6.8 (4.9, 8.6) | 5.0 (3.4, 6.6) | 4.7 (3.4, 6.0) | 5.6 (4.1, 7.0) | 2.6 (1.9, 3.3) | 3.6* (0.5, 6.7) |
| | Current, some day smoker | 5.1 (3.8, 6.4) | 5.4 (4.0, 6.7) | 5.9 (3.6, 8.2) | 4.8 (3.4, 6.3) | 5.2 (3.7, 6.7) | 3.6 (2.6, 4.6) | 1.5* (0.2, 2.8) |
| | Former smoker | 18.2 (16.1, 20.3) | 16.1 (13.6, 18.7) | 17.1 (14.4, 19.7) | 16.7 (14.3, 19.1) | 16.6 (14.8, 18.3) | 13.4 (12.1, 14.7) | 14.1 (9.6, 18.7) |
| | Never smoker | 71.7 (68.9, 74.5) | 71.7 (69.2, 74.2) | 72.1 (68.8, 75.3) | 73.7 (71.3, 76.2) | 72.7 (70.6, 74.8) | 80.4 (78.8, 81.9) | 80.8 (75.3, 86.2) |
| Non-Hispanic White | Current, every day smoker | 9.2 (7.6, 10.9) | 9.6 (8.4, 10.9) | 9.1 (7.4, 10.8) | 7.6 (6.1, 9.1) | 7.7 (6.6, 8.9) | 5.4 (4.8, 6.1) | 5.0 (3.0, 7.0) |

(continued)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Current, some day smoker | 4.2 (3.0, 5.3) | 3.8 (2.9, 4.7) | 3.3 (2.3, 4.3) | 3.6 (2.8, 4.4) | 3.8 (2.9, 4.6) | 2.5 (2.1, 3.0) | 3.3 (1.7, 4.9) |
| | Former smoker | 28.7 (27.1, 30.4) | 28.4 (26.6, 30.3) | 29.1 (26.2, 32.1) | 29.3 (26.8, 31.9) | 29.8 (28.1, 31.4) | 27.9 (26.8, 29.1) | 25.1 (21.7, 28.6) |
| | Never smoker | 57.8 (55.8, 59.8) | 58.1 (56.2, 60.0) | 58.4 (55.1, 61.7) | 59.4 (57.7, 61.2) | 58.7 (57.0, 60.5) | 64.1 (62.8, 65.4) | 66.6 (62.5, 70.6) |
| Non-Hispanic Other | Current, every day smoker | 12.0 (6.8, 17.2) | 16.3 (9.9, 22.6) | 13.2 (6.6, 19.8) | 13.6 (7.4, 19.9) | 13.7 (7.1, 20.3) | 3.5 (1.7, 5.4) | 2.8* (0.0, 5.6) |
| | Current, some day smoker | 6.9* (2.7, 11.0) | 5.9* (1.6, 10.1) | 5.8* (1.2, 10.4) | 4.4* (1.1, 7.8) | 7.6* (1.9, 13.2) | 3.2 (1.4, 5.1) | - - |
| | Former smoker | 25.1 (17.6, 32.7) | 27.8 (19.4, 36.3) | 22.3 (17.1, 27.6) | 24.3 (16.2, 32.5) | 25.3 (17.1, 33.5) | 18.8 (13.8, 23.9) | 32.6 (14.2, 51.1) |
| | Never smoker | 56.0 (48.3, 63.7) | 50.0 (43.6, 56.5) | 58.7 (49.1, 68.3) | 57.6 (49.4, 65.8) | 53.5 (44.4, 62.5) | 74.4 (69.0, 79.9) | 64.5 (45.6, 83.5) |

Note. * = statistically unstable. - = suppressed due to small sample size.

**Figure A-2.** Ever smoked e-cigarettes by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot



Ever smoked e-cigarettes (age 18-65) by race

**Table A-2.** Ever smoked e-cigarettes by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot

| Subgroup | Level | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|---|
| Non-Hispanic African American | No | 71.8 (64.9, 78.8) | 83.1 (78.5, 87.6) | 83.2 (77.7, 88.7) | 83.6* (73.3, 93.8) | 82.6 (78.3, 86.9) | 79.8 (74.9, 84.6) | 72.4* (49.2, 95.7) |
| | Yes | 28.2 (21.2, 35.1) | 16.9 (12.4, 21.5) | 16.8 (11.3, 22.3) | 16.4* (6.2, 26.7) | 17.4 (13.1, 21.7) | 20.2 (15.4, 25.1) | 27.6* (4.3, 50.8) |
| Non-Hispanic Asian | No | 86.5 (83.3, 89.8) | 83.3 (77.7, 89.0) | 87.3 (83.5, 91.0) | 84.0 (79.3, 88.8) | 82.2 (78.5, 85.9) | 88.0 (86.0, 90.0) | 91.4 (86.9, 95.9) |
| | Yes | 13.5 (10.2, 16.7) | 16.7 (11.0, 22.3) | 12.7 (9.0, 16.5) | 16.0 (11.2, 20.7) | 17.8 (14.1, 21.5) | 12.0 (10.0, 14.0) | 8.6 (4.1, 13.1) |
| Hispanic | No | 86.5 (84.6, 88.4) | 84.6 (82.3, 86.9) | 88.7 (86.5, 90.9) | 83.8 (81.8, 85.9) | 80.4 (78.4, 82.5) | 80.4 (78.5, 82.2) | 85.7 (79.7, 91.8) |
| | Yes | 13.5 (11.6, 15.4) | 15.4 (13.1, 17.7) | 11.3 (9.1, 13.5) | 16.2 (14.1, 18.2) | 19.6 (17.5, 21.6) | 19.6 (17.8, 21.4) | 14.3 (8.2, 20.3) |
| Non-Hispanic White | No | 77.4 (74.9, 80.0) | 80.3 (77.9, 82.7) | 80.9 (78.4, 83.3) | 80.0 (77.5, 82.5) | 78.1 (76.1, 80.2) | 75.4 (73.8, 77.1) | 84.6 (80.0, 89.2) |
| | Yes | 22.6 (20.0, 25.1) | 19.7 (17.3, 22.1) | 19.1 (16.7, 21.6) | 20.0 (17.5, 22.5) | 21.9 (19.8, 23.9) | 24.6 (22.9, 26.2) | 15.4 (10.8, 20.0) |
| Non-Hispanic Other | No | 66.8 (57.4, 76.1) | 67.5 (60.0, 75.0) | 67.2 (59.7, 74.8) | 71.1 (63.7, 78.5) | 69.7 (59.9, 79.5) | 77.1 (71.0, 83.3) | 57.0 (31.1, 82.8) |
| | Yes | 33.2 (23.9, 42.6) | 32.5 (25.0, 40.0) | 32.8 (25.2, 40.3) | 28.9 (21.5, 36.3) | 30.3 (20.5, 40.1) | 22.9 (16.7, 29.0) | 43.0 (17.2, 68.9) |

Note. * = statistically unstable.

**Figure A-3.** Current e-cigarette status by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot



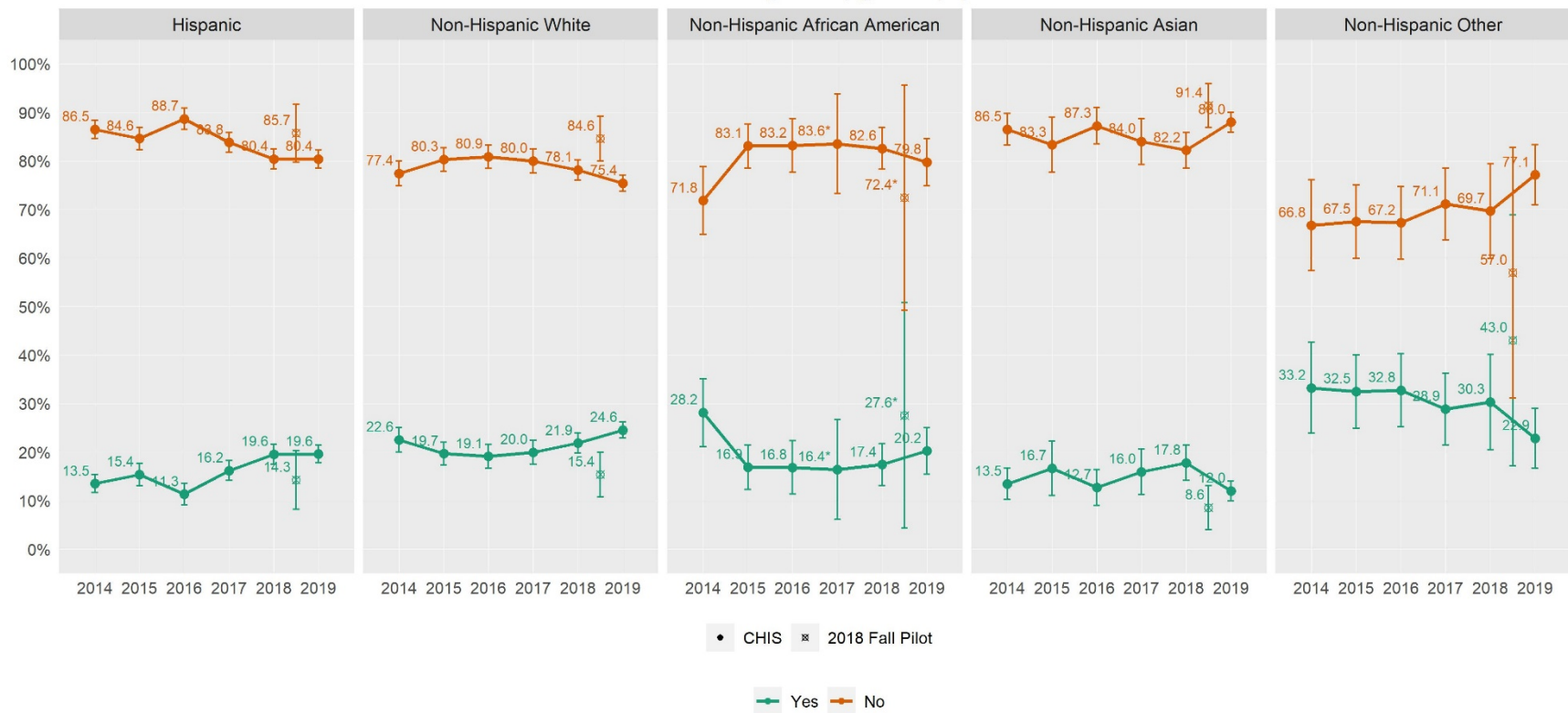Current e-cigarette user (age 18-65) by race
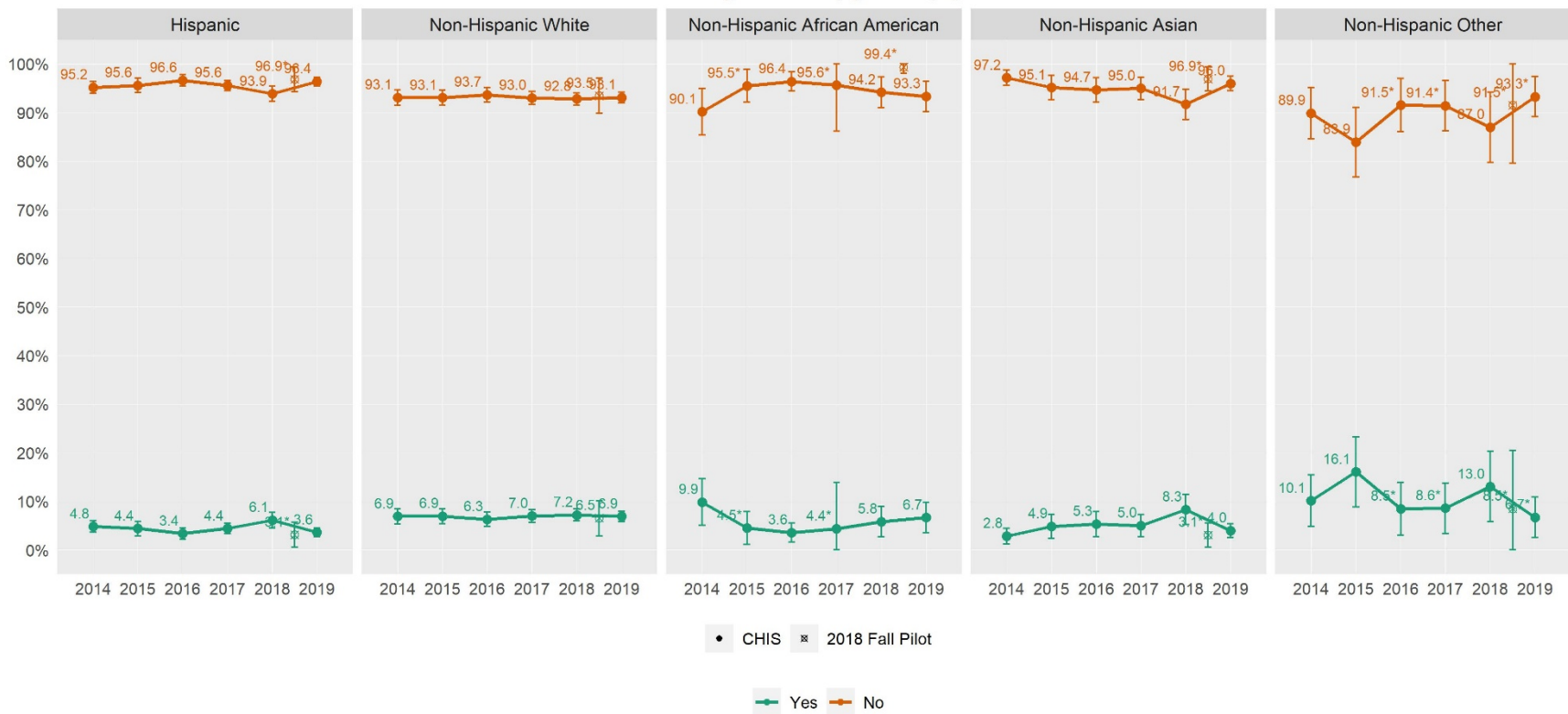
**Table A-3.** Current e-cigarette status by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot

| Subgroup | Level | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|---|
| Non-Hispanic African American | No | 90.1 (85.4, 94.9) | 95.5* (92.1, 98.9) | 96.4 (94.5, 98.4) | 95.6* (86.2, 100.0) | 94.2 (91.0, 97.3) | 93.3 (90.2, 96.5) | 99.4* (98.1, 100.0) |
| | Yes | 9.9 (5.1, 14.6) | 4.5* (1.1, 7.9) | 3.6 (1.6, 5.5) | 4.4* (0.0, 13.8) | 5.8 (2.7, 9.0) | 6.7 (3.5, 9.8) | - - |
| Non-Hispanic Asian | No | 97.2 (95.6, 98.8) | 95.1 (92.6, 97.6) | 94.7 (92.1, 97.2) | 95.0 (92.7, 97.3) | 91.7 (88.6, 94.8) | 96.0 (94.6, 97.5) | 96.9* (94.5, 99.4) |
| | Yes | 2.8 (1.2, 4.4) | 4.9 (2.4, 7.4) | 5.3 (2.8, 7.9) | 5.0 (2.7, 7.3) | 8.3 (5.2, 11.4) | 4.0 (2.5, 5.4) | 3.1* (0.6, 5.5) |
| Hispanic | No | 95.2 (94.0, 96.4) | 95.6 (94.1, 97.1) | 96.6 (95.5, 97.8) | 95.6 (94.5, 96.6) | 93.9 (92.3, 95.5) | 96.4 (95.5, 97.2) | 96.9* (94.3, 99.4) |
| | Yes | 4.8 (3.6, 6.0) | 4.4 (2.9, 5.9) | 3.4 (2.2, 4.5) | 4.4 (3.4, 5.5) | 6.1 (4.5, 7.7) | 3.6 (2.8, 4.5) | 3.1* (0.6, 5.7) |
| Non-Hispanic White | No | 93.1 (91.5, 94.7) | 93.1 (91.6, 94.6) | 93.7 (92.2, 95.1) | 93.0 (91.7, 94.3) | 92.8 (91.6, 94.1) | 93.1 (92.0, 94.2) | 93.5 (89.8, 97.1) |
| | Yes | 6.9 (5.3, 8.5) | 6.9 (5.4, 8.4) | 6.3 (4.9, 7.8) | 7.0 (5.7, 8.3) | 7.2 (5.9, 8.4) | 6.9 (5.8, 8.0) | 6.5 (2.9, 10.2) |
| Non-Hispanic Other | No | 89.9 (84.6, 95.1) | 83.9 (76.8, 91.1) | 91.5* (86.1, 97.0) | 91.4* (86.2, 96.6) | 87.0 (79.7, 94.2) | 93.3* (89.1, 97.4) | 91.5* (79.6, 100.0) |
| | Yes | 10.1 (4.9, 15.4) | 16.1 (8.9, 23.2) | 8.5* (3.0, 13.9) | 8.6* (3.4, 13.8) | 13.0 (5.8, 20.3) | 6.7* (2.6, 10.9) | 8.5* (0.0, 20.4) |

Note. * = statistically unstable. - = suppressed due to small sample size.

**Figure A-4.** E-cigarette monthly use (age 18-65) by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot



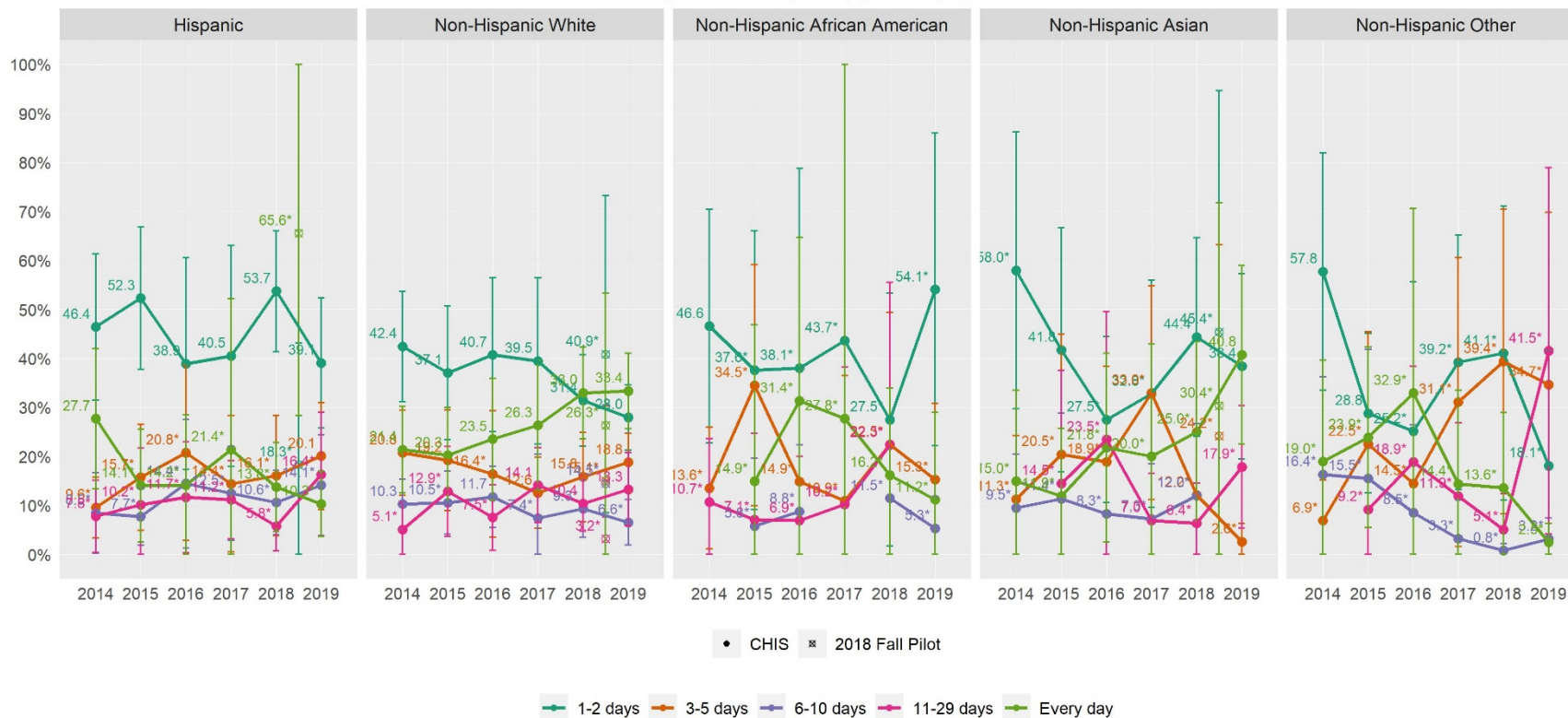E-cigarette monthly use (age 18-65) by race

**Table A-4.** E-cigarette monthly use (age 18-65) by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot

| Subgroup | Level | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|---|
| Non-Hispanic African American | 1-2 days | 46.6 | 37.6* | 38.1* | 43.7* | 27.5* | 54.1* | - |
| | | (22.8, 70.4) | (9.2, 66.0) | (0.0, 78.8) | (0.0, 100.0) | (1.7, 53.4) | (22.2, 86.0) | - |
| | 3-5 days | 13.6* | 34.5* | 14.9* | 10.9* | 22.5* | 15.3* | - |
| | | (1.1, 26.0) | (9.9, 59.2) | (0.0, 37.9) | (0.0, 36.5) | (0.0, 49.4) | (0.0, 30.8) | - |
| | 6-10 days | - | 5.8* | 8.8* | - | 11.5* | 5.3* | - |
| | | - | (0.0, 19.6) | (0.0, 22.3) | - | (0.0, 28.2) | (0.0, 11.8) | - |
| | 11-29 days | 10.7* | 7.1* | 6.9* | 10.2* | 22.3* | - | - |
| | | (0.0, 23.6) | (0.0, 24.7) | (0.0, 20.0) | (0.0, 38.3) | (0.0, 55.6) | - | - |
| | Every day | - | 14.9* | 31.4* | 27.8* | 16.2* | 11.2* | - |
| | | - | (0.0, 46.9) | (0.0, 64.7) | (0.0, 100.0) | (0.0, 34.0) | (0.0, 29.0) | - |
| Non-Hispanic Asian | 1-2 days | 58.0* | 41.8 | 27.5* | 32.8* | 44.4 | 38.4 | 45.4* |
| | | (29.8, 86.2) | (16.9, 66.6) | (10.6, 44.4) | (9.6, 56.0) | (24.2, 64.6) | (19.5, 57.3) | (0.0, 94.7) |
| | 3-5 days | 11.3* | 20.5* | 18.9* | 33.0* | 12.2* | 2.6* | 24.2* |
| | | (0.0, 24.3) | (0.0, 44.9) | (0.0, 38.4) | (11.2, 54.8) | (0.0, 25.3) | (0.0, 6.4) | (0.0, 63.2) |
| | 6-10 days | 9.5* | 11.4* | 8.3* | 7.3* | 12.0* | - | - |
| | | (0.0, 20.5) | (0.0, 28.8) | (0.0, 21.3) | (0.0, 18.5) | (0.0, 26.7) | - | - |
| | 11-29 days | - | 14.5* | 23.5* | 7.0* | 6.4* | 17.9* | - |
| | | - | (0.0, 37.5) | (0.0, 49.5) | (0.0, 16.6) | (0.0, 14.6) | (5.4, 30.4) | - |
| | Every day | 15.0* | 11.9* | 21.8* | 20.0* | 25.0* | 40.8 | 30.4* |
| | | (0.0, 33.5) | (0.0, 25.7) | (2.5, 41.1) | (0.0, 42.9) | (6.6, 43.4) | (22.5, 59.0) | (0.0, 71.8) |
| Hispanic | 1-2 days | 46.4 | 52.3 | 38.9 | 40.5 | 53.7 | 39.1 | 18.3* |
| | | (31.5, 61.3) | (37.8, 66.8) | (17.3, 60.6) | (18.0, 63.1) | (41.4, 66.1) | (25.8, 52.3) | (0.0, 43.1) |
| | 3-5 days | 9.6* | 15.7* | 20.8* | 14.4* | 16.1* | 20.1 | - |
| | | (3.4, 15.8) | (4.9, 26.5) | (2.8, 38.7) | (0.5, 28.3) | (3.8, 28.4) | (9.2, 31.0) | - |
| | 6-10 days | 8.5* | 7.7* | 14.4* | 12.5* | 10.6* | 14.1* | - |
| | | (0.3, 16.6) | (1.9, 13.6) | (1.3, 27.6) | (2.9, 22.1) | (4.0, 17.2) | (3.9, 24.4) | - |

(continued)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 11-29 days | 7.8* | 10.2* | 11.7* | 11.2* | 5.8* | 16.4* | - |
| | | (0.5, 15.1) | (0.0, 21.7) | (0.3, 23.0) | (3.2, 19.1) | (0.7, 10.8) | (3.7, 29.0) | - |
| | Every day | 27.7 | 14.1* | 14.2* | 21.4* | 13.8* | 10.3* | 65.6* |
| | | (13.4, 42.1) | (2.5, 25.6) | (0.0, 28.4) | (0.0, 52.1) | (4.7, 22.9) | (3.7, 16.9) | (28.4, 100.0) |
| Non-Hispanic White | 1-2 days | 42.4 | 37.1 | 40.7 | 39.5 | 31.4 | 28.0 | 40.9* |
| | | (31.2, 53.7) | (23.4, 50.7) | (25.1, 56.4) | (22.5, 56.4) | (22.1, 40.8) | (21.3, 34.6) | (8.5, 73.2) |
| | 3-5 days | 20.8 | 19.2 | 16.4* | 12.6 | 15.8 | 18.8 | 15.1* |
| | | (12.1, 29.4) | (8.9, 29.5) | (3.5, 29.3) | (5.3, 19.9) | (6.7, 25.0) | (12.9, 24.7) | (0.0, 30.3) |
| | 6-10 days | 10.3 | 10.5* | 11.7 | 7.4* | 9.3* | 6.6* | 14.5* |
| | | (5.2, 15.4) | (4.1, 17.0) | (5.5, 18.0) | (0.0, 20.5) | (3.5, 15.2) | (2.0, 11.2) | (0.0, 30.4) |
| | 11-29 days | 5.1* | 12.9* | 7.5* | 14.1 | 10.4 | 13.3 | 3.2* |
| | | (0.0, 10.5) | (3.7, 22.0) | (0.8, 14.3) | (6.5, 21.8) | (4.8, 16.1) | (5.8, 20.7) | (0.0, 7.6) |
| | Every day | 21.4 | 20.3 | 23.5 | 26.3 | 33.0 | 33.4 | 26.3* |
| | | (12.5, 30.3) | (10.5, 30.0) | (11.1, 35.9) | (13.1, 39.6) | (23.6, 42.4) | (25.6, 41.1) | (0.0, 53.3) |
| Non-Hispanic Other | 1-2 days | 57.8 | 28.8 | 25.2* | 39.2* | 41.1* | 18.1* | - |
| | | (33.5, 82.0) | (12.6, 45.1) | (0.0, 55.6) | (13.3, 65.2) | (11.1, 71.0) | (0.0, 41.6) | - |
| | 3-5 days | 6.9* | 22.5* | 14.5* | 31.1* | 39.4* | 34.7* | - |
| | | (0.0, 15.2) | (0.0, 45.4) | (0.0, 32.6) | (1.6, 60.6) | (8.3, 70.5) | (0.0, 69.9) | - |
| | 6-10 days | 16.4* | 15.5* | 8.5* | 3.3* | 0.8* | 3.2* | - |
| | | (0.0, 36.2) | (0.0, 41.9) | (0.0, 26.5) | (0.0, 11.1) | (0.0, 2.2) | (0.0, 7.4) | - |
| | 11-29 days | - | 9.2* | 18.9* | 11.9* | 5.1* | 41.5* | - |
| | | - | (0.0, 21.7) | (0.0, 38.5) | (0.0, 26.9) | (0.0, 12.4) | (4.2, 78.9) | - |
| | Every day | 19.0* | 23.9* | 32.9* | 14.4* | 13.6* | 2.5* | - |
| | | (0.0, 39.6) | (5.5, 42.4) | (0.0, 70.5) | (0.0, 33.5) | (0.0, 28.9) | (0.0, 6.3) | - |

Note. * = statistically unstable. - = suppressed due to small sample size.

**Figure A-5.** Current (past 30 days) non-cigarette tobacco product use by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot



Current (past 30 days) use of non-cigarette tobacco products by race

**Table A-5.** Current (past 30 days) non-cigarette tobacco product use by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot

| Subgroup | Level | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|
| Non-Hispanic African American | No | 87.0 | 90.5 | 92.5* |
| | | (82.9, 91.1) | (87.2, 93.8) | (80.1, 100.0) |
| | Yes | 13.0 | 9.5 | 7.5* |
| | | (8.9, 17.1) | (6.2, 12.8) | (0.0, 19.9) |
| Non-Hispanic Asian | No | 92.3 | 95.5 | 96.2* |
| | | (89.7, 95.0) | (94.2, 96.8) | (93.5, 98.8) |
| | Yes | 7.7 | 4.5 | 3.8* |
| | | (5.0, 10.3) | (3.2, 5.8) | (1.2, 6.5) |
| Hispanic | No | 87.3 | 93.4 | 93.8* |
| | | (85.2, 89.3) | (92.2, 94.6) | (90.2, 97.5) |
| | Yes | 12.7 | 6.6 | 6.2* |
| | | (10.7, 14.8) | (5.4, 7.8) | (2.5, 9.8) |
| Non-Hispanic White | No | 88.5 | 91.3 | 91.0 |
| | | (86.9, 90.2) | (90.4, 92.2) | (87.7, 94.2) |
| | Yes | 11.5 | 8.7 | 9.0 |
| | | (9.8, 13.1) | (7.8, 9.6) | (5.8, 12.3) |
| Non-Hispanic Other | No | 81.4 | 89.5 | 85.1* |
| | | (72.9, 90.0) | (84.5, 94.5) | (70.9, 99.3) |
| | Yes | 18.6 | 10.5 | 14.9* |
| | | (10.0, 27.1) | (5.5, 15.5) | (0.7, 29.1) |

Note. * = statistically unstable.

**Figure A-6.** Current (past 30 days) flavored tobacco product use by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot



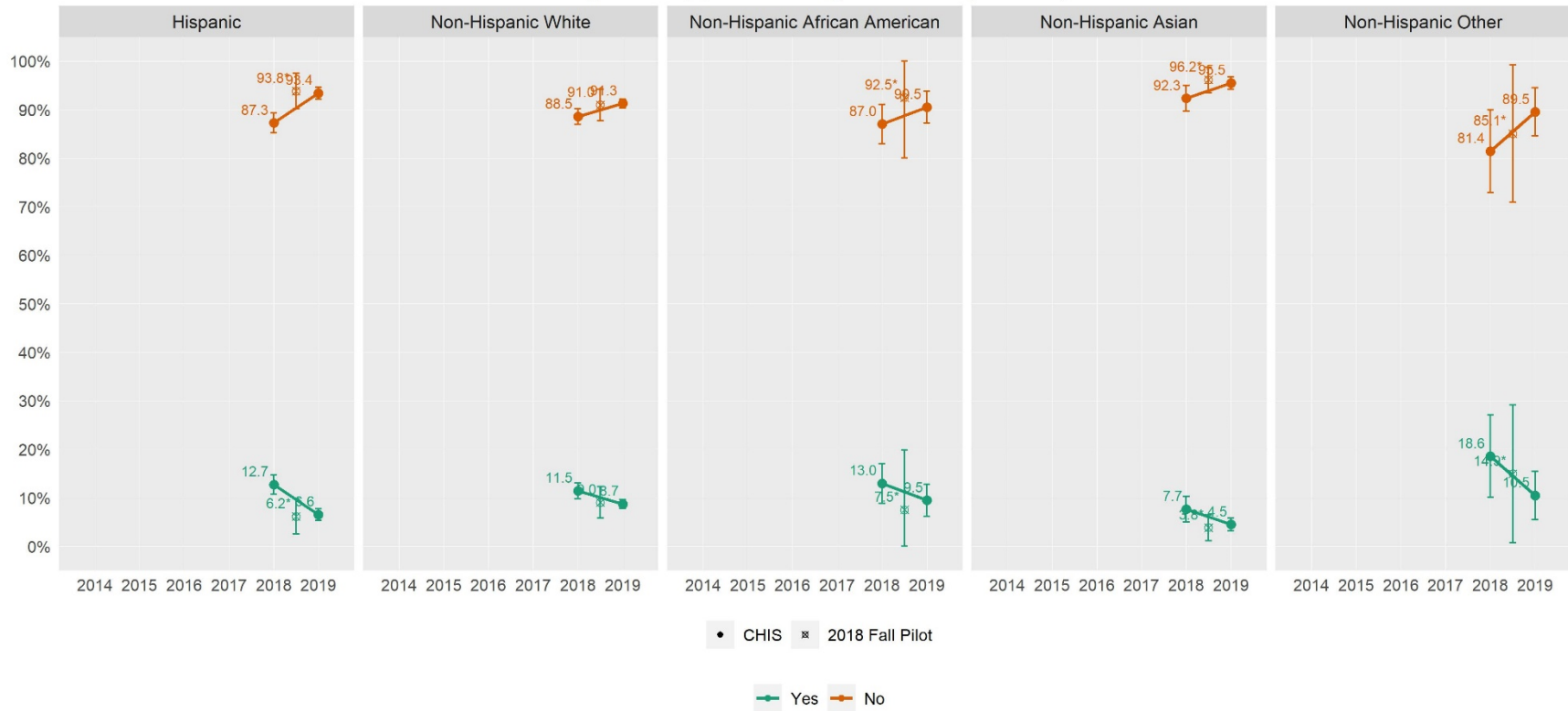Current (past 30 days) flavored tobacco product use by race
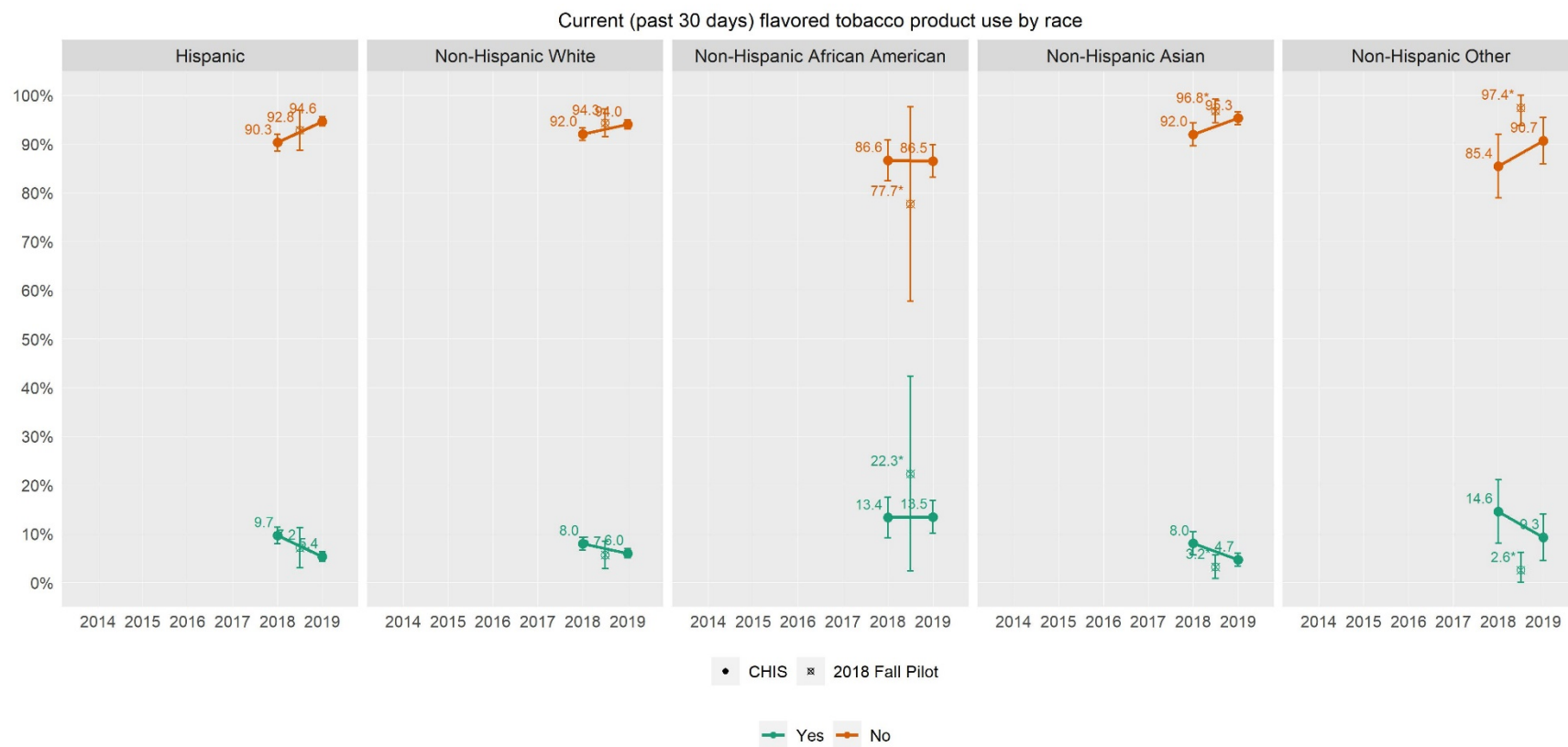
**Table A-6.** Current (past 30 days) flavored tobacco product use by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot

| Subgroup | Level | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|
| Non-Hispanic African American | No | 86.6 (82.5, 90.8) | 86.5 (83.2, 89.9) | 77.7* (57.7, 97.6) |
| | Yes | 13.4 (9.2, 17.5) | 13.5 (10.1, 16.8) | 22.3* (2.4, 42.3) |
| Non-Hispanic Asian | No | 92.0 (89.6, 94.4) | 95.3 (94.0, 96.7) | 96.8* (94.4, 99.2) |
| | Yes | 8.0 (5.6, 10.4) | 4.7 (3.3, 6.0) | 3.2* (0.8, 5.6) |
| Hispanic | No | 90.3 (88.6, 92.0) | 94.6 (93.7, 95.6) | 92.8 (88.7, 97.0) |
| | Yes | 9.7 (8.0, 11.4) | 5.4 (4.4, 6.3) | 7.2 (3.0, 11.3) |
| Non-Hispanic White | No | 92.0 (90.7, 93.3) | 94.0 (93.1, 94.9) | 94.3 (91.5, 97.2) |
| | Yes | 8.0 (6.7, 9.3) | 6.0 (5.1, 6.9) | 5.7 (2.8, 8.5) |
| Non-Hispanic Other | No | 85.4 (78.9, 91.9) | 90.7 (85.9, 95.5) | 97.4* (93.8, 100.0) |
| | Yes | 14.6 (8.1, 21.1) | 9.3 (4.5, 14.1) | 2.6* (0.0, 6.2) |

Note. * = statistically unstable.

**Figure A-7.** Secondhand smoke exposure by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot



Ever exposed to secondhand tobacco smoke past 2 weeks by race
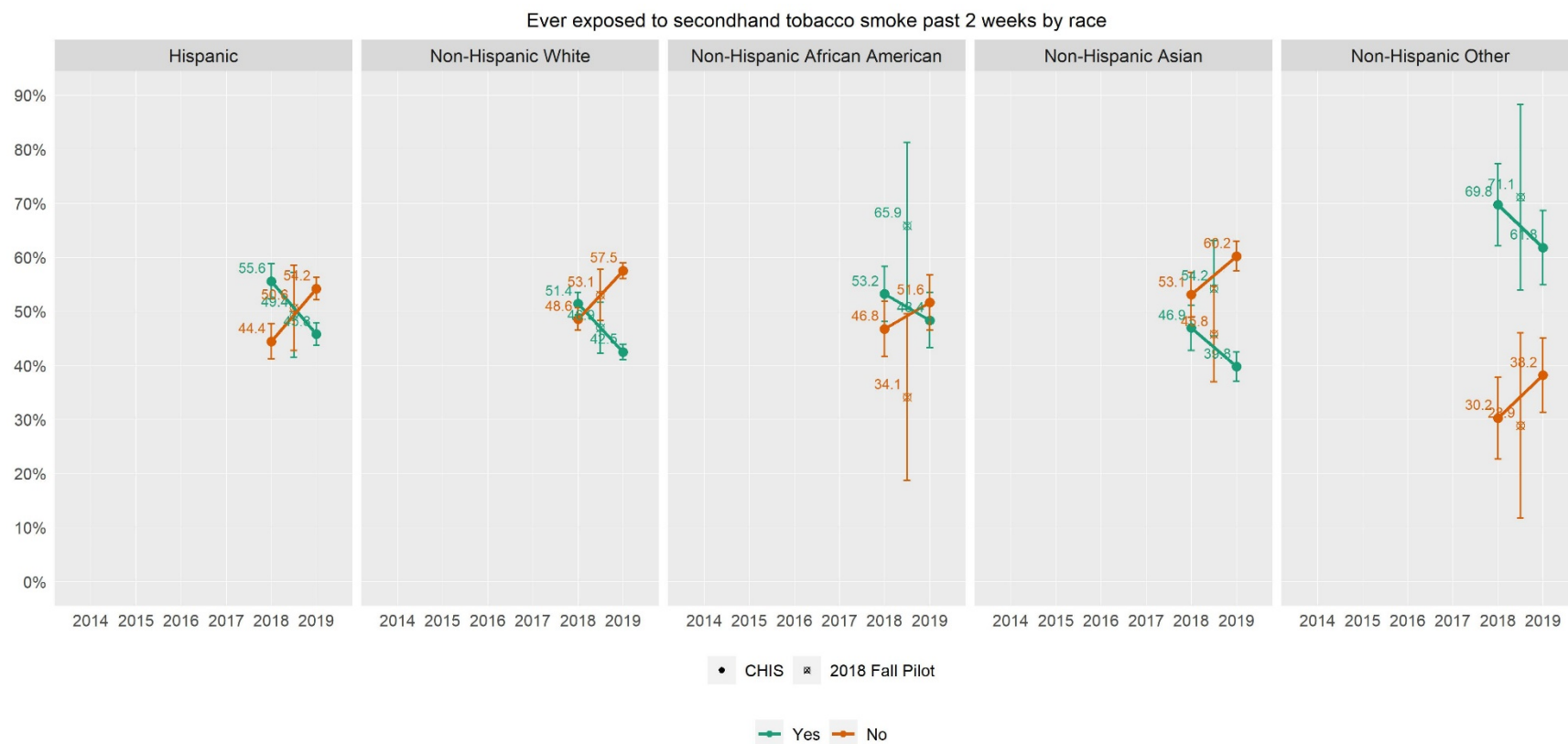
**Table A-7.** Secondhand smoke exposure by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot

| Subgroup | Level | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|
| Non-Hispanic African American | No | 46.8 (41.7, 51.9) | 51.6 (46.5, 56.8) | 34.1 (18.7, 49.5) |
| | Yes | 53.2 (48.1, 58.3) | 48.4 (43.2, 53.5) | 65.9 (50.5, 81.3) |
| Non-Hispanic Asian | No | 53.1 (48.9, 57.2) | 60.2 (57.5, 62.9) | 45.8 (36.9, 54.6) |
| | Yes | 46.9 (42.8, 51.1) | 39.8 (37.1, 42.5) | 54.2 (45.4, 63.1) |
| Hispanic | No | 44.4 (41.2, 47.7) | 54.2 (52.2, 56.3) | 50.6 (42.7, 58.5) |
| | Yes | 55.6 (52.3, 58.8) | 45.8 (43.7, 47.8) | 49.4 (41.5, 57.3) |
| Non-Hispanic White | No | 48.6 (46.5, 50.6) | 57.5 (56.1, 59.0) | 53.1 (48.4, 57.8) |
| | Yes | 51.4 (49.4, 53.5) | 42.5 (41.0, 43.9) | 46.9 (42.2, 51.6) |
| Non-Hispanic Other | No | 30.2 (22.7, 37.8) | 38.2 (31.3, 45.1) | 28.9 (11.7, 46.0) |
| | Yes | 69.8 (62.2, 77.3) | 61.8 (54.9, 68.7) | 71.1 (54.0, 88.3) |

**Figure A-8.** Thinking about quitting smoking in next 6 months by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot

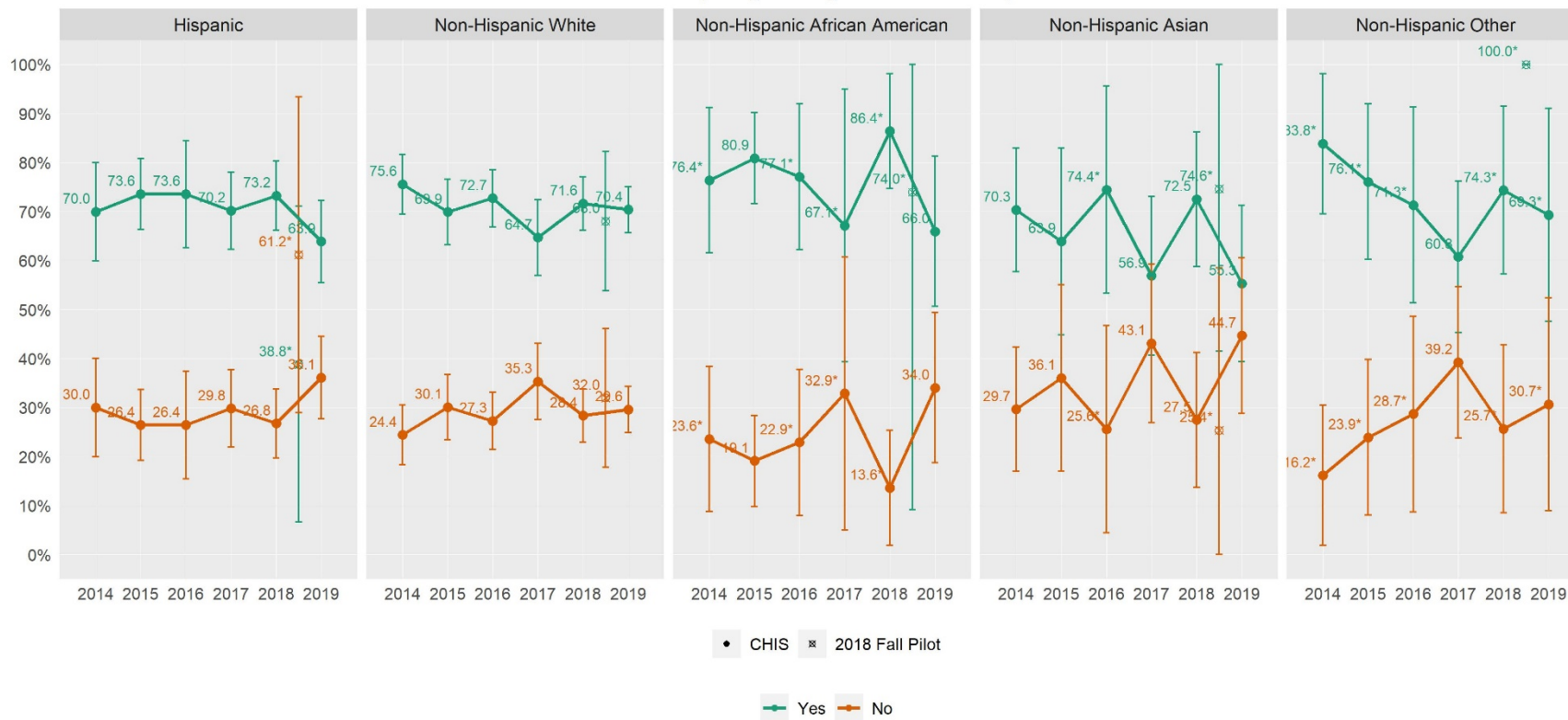Think about quitting smoking in next 6 months by race

**Table A-8.** Thinking about quitting smoking in next 6 months by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot

| Subgroup | Level | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|---|
| Non-Hispanic African American | No | 23.6* | 19.1 | 22.9* | 32.9* | 13.6* | 34.0 | - |
| | | (8.8, 38.4) | (9.8, 28.4) | (8.0, 37.8) | (5.0, 60.7) | (1.9, 25.3) | (18.7, 49.4) | - |
| | Yes | 76.4* | 80.9 | 77.1* | 67.1* | 86.4* | 66.0 | 74.0* |
| | | (61.6, 91.2) | (71.6, 90.2) | (62.2, 92.0) | (39.3, 95.0) | (74.7, 98.1) | (50.6, 81.3) | (9.2, 100.0) |
| Non-Hispanic Asian | No | 29.7 | 36.1 | 25.6* | 43.1 | 27.5 | 44.7 | 25.4* |
| | | (17.0, 42.3) | (17.0, 55.1) | (4.5, 46.7) | (26.9, 59.3) | (13.7, 41.2) | (28.8, 60.6) | (0.0, 58.5) |
| | Yes | 70.3 | 63.9 | 74.4* | 56.9 | 72.5 | 55.3 | 74.6* |
| | | (57.7, 83.0) | (44.9, 83.0) | (53.3, 95.5) | (40.7, 73.1) | (58.8, 86.3) | (39.4, 71.2) | (41.5, 100.0) |
| Hispanic | No | 30.0 | 26.4 | 26.4 | 29.8 | 26.8 | 36.1 | 61.2* |
| | | (20.0, 40.1) | (19.2, 33.7) | (15.5, 37.4) | (21.9, 37.7) | (19.7, 33.8) | (27.7, 44.5) | (29.0, 93.4) |
| | Yes | 70.0 | 73.6 | 73.6 | 70.2 | 73.2 | 63.9 | 38.8* |
| | | (59.9, 80.0) | (66.3, 80.8) | (62.6, 84.5) | (62.3, 78.1) | (66.2, 80.3) | (55.5, 72.3) | (6.6, 71.0) |
| Non-Hispanic White | No | 24.4 | 30.1 | 27.3 | 35.3 | 28.4 | 29.6 | 32.0 |
| | | (18.3, 30.5) | (23.4, 36.8) | (21.4, 33.1) | (27.6, 43.1) | (22.9, 33.8) | (24.9, 34.3) | (17.8, 46.2) |
| | Yes | 75.6 | 69.9 | 72.7 | 64.7 | 71.6 | 70.4 | 68.0 |
| | | (69.5, 81.7) | (63.2, 76.6) | (66.9, 78.6) | (56.9, 72.4) | (66.2, 77.1) | (65.7, 75.1) | (53.8, 82.2) |
| Non-Hispanic Other | No | 16.2* | 23.9* | 28.7* | 39.2 | 25.7* | 30.7* | - |
| | | (1.9, 30.5) | (8.1, 39.8) | (8.7, 48.7) | (23.8, 54.7) | (8.5, 42.8) | (8.9, 52.4) | - |
| | Yes | 83.8* | 76.1* | 71.3* | 60.8 | 74.3* | 69.3* | 100.0 |
| | | (69.5, 98.1) | (60.2, 91.9) | (51.3, 91.3) | (45.3, 76.2) | (57.2, 91.5) | (47.6, 91.1) | - |

Note. * = statistically unstable. - = suppressed due to small sample size.

**Figure A-9.** Stopped smoking at least one day in the past year by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot



Stop smoking one day or longer to quit in past year by race

**Table A-9.** Stopped smoking at least one day in the past year by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot

| Subgroup | Level | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|---|
| Non-Hispanic African American | No | 35.4 | 38.1 | 28.2 | 43.6* | 43.7 | 38.6 | - |
| | | (20.5, 50.3) | (24.6, 51.7) | (12.9, 43.4) | (10.5, 76.8) | (26.7, 60.8) | (24.1, 53.1) | - |
| | Yes | 64.6 | 61.9 | 71.8 | 56.4* | 56.3 | 61.4 | 74.0* |
| | | (49.7, 79.5) | (48.3, 75.4) | (56.6, 87.1) | (23.2, 89.5) | (39.2, 73.3) | (46.9, 75.9) | (9.2, 100.0) |
| Non-Hispanic Asian | No | 33.2 | 48.5 | 36.2* | 46.1 | 33.1 | 31.0 | 18.5* |
| | | (20.6, 45.9) | (27.3, 69.7) | (12.9, 59.5) | (25.0, 67.2) | (18.0, 48.1) | (16.1, 45.9) | (0.0, 48.3) |
| | Yes | 66.8 | 51.5 | 63.8* | 53.9 | 66.9 | 69.0 | 81.5* |
| | | (54.1, 79.4) | (30.3, 72.7) | (40.5, 87.1) | (32.8, 75.0) | (51.9, 82.0) | (54.1, 83.9) | (51.7, 100.0) |
| Hispanic | No | 26.4 | 37.9 | 37.2 | 36.8 | 41.3 | 45.0 | 76.0* |
| | | (18.6, 34.3) | (27.9, 47.9) | (25.8, 48.6) | (21.7, 51.8) | (31.5, 51.2) | (35.7, 54.3) | (51.5, 100.0) |
| | Yes | 73.6 | 62.1 | 62.8 | 63.2 | 58.7 | 55.0 | 24.0* |
| | | (65.7, 81.4) | (52.1, 72.1) | (51.4, 74.2) | (48.2, 78.3) | (48.8, 68.5) | (45.7, 64.3) | (0.0, 48.5) |
| Non-Hispanic White | No | 44.9 | 49.0 | 44.2 | 50.0 | 46.7 | 42.4 | 50.1 |
| | | (38.8, 51.0) | (42.5, 55.5) | (37.6, 50.8) | (43.4, 56.6) | (40.6, 52.8) | (36.9, 47.8) | (34.0, 66.3) |
| | Yes | 55.1 | 51.0 | 55.8 | 50.0 | 53.3 | 57.6 | 49.9 |
| | | (49.0, 61.2) | (44.5, 57.5) | (49.2, 62.4) | (43.4, 56.6) | (47.2, 59.4) | (52.2, 63.1) | (33.7, 66.0) |
| Non-Hispanic Other | No | 33.4 | 42.9 | 37.5 | 40.1 | 50.0 | 21.2* | - |
| | | (16.5, 50.3) | (22.1, 63.7) | (21.4, 53.7) | (20.3, 59.9) | (30.8, 69.3) | (7.9, 34.5) | - |
| | Yes | 66.6 | 57.1 | 62.5 | 59.9 | 50.0 | 78.8* | 55.5* |
| | | (49.7, 83.5) | (36.3, 77.9) | (46.3, 78.6) | (40.1, 79.7) | (30.7, 69.2) | (65.5, 92.1) | (0.0, 100.0) |

Note. * = statistically unstable. - = suppressed due to small sample size.

**Appendix B – Trends by Poverty Status**

The following figures and tables examine the nine variables previously looked at, divided by four poverty status levels and correspond to Figures 1 through 10, and Tables 3 and 5 through 13. All estimates presented are weighted.

**Figure B-1.** Current smoking status by poverty status, CHIS 2014-2019 and 2018 Fall Pilot



**Table B-1.** Current smoking status by poverty status, CHIS 2014-2019 and 2018 Fall Pilot

| Subgroup | Level | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|---|
| 0-99% FPL | Current, every day smoker | 9.4 (7.4, 11.4) | 12.4 (9.6, 15.3) | 11.5 (8.4, 14.5) | 9.5 (4.6, 14.3) | 10.5 (8.3, 12.8) | 6.0 (4.6, 7.4) | 1.7* (0.0, 3.4) |
| | Current, some day smoker | 5.3 (3.5, 7.1) | 6.7 (4.2, 9.2) | 5.0 (3.0, 7.1) | 5.6* (0.4, 10.9) | 7.2 (4.8, 9.6) | 2.9 (1.8, 4.0) | - - |

(continued)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Former smoker | 18.5 (15.6, 21.4) | 17.2 (14.1, 20.4) | 15.7 (12.3, 19.1) | 14.2 (11.8, 16.7) | 18.3 (15.1, 21.6) | 13.8 (11.5, 16.1) | 11.1* (4.2, 18.0) |
| | Never smoker | 66.8 (63.2, 70.4) | 63.7 (60.3, 67.1) | 67.8 (63.2, 72.4) | 70.7 (66.9, 74.5) | 64.0 (60.1, 67.8) | 77.3 (74.6, 80.0) | 86.9 (79.6, 94.3) |
| 100-199% FPL | Current, every day smoker | 7.7 (5.8, 9.6) | 9.4 (7.3, 11.6) | 10.2 (7.3, 13.0) | 8.1 (5.3, 10.8) | 8.8 (6.8, 10.7) | 6.3 (4.9, 7.7) | 5.6* (0.0, 12.9) |
| | Current, some day smoker | 6.8 (4.9, 8.7) | 5.3 (3.6, 7.0) | 7.2 (4.4, 9.9) | 4.4 (2.3, 6.6) | 5.2 (3.4, 6.9) | 5.3 (3.7, 6.9) | 3.1* (0.6, 5.7) |
| | Former smoker | 19.8 (17.4, 22.3) | 20.7 (17.6, 23.7) | 20.4 (17.1, 23.8) | 21.5 (17.9, 25.2) | 19.4 (16.5, 22.3) | 19.4 (17.6, 21.2) | 16.3 (9.2, 23.5) |
| | Never smoker | 65.7 (62.9, 68.5) | 64.6 (60.5, 68.6) | 62.2 (58.5, 66.0) | 66.0 (61.6, 70.3) | 66.7 (63.6, 69.7) | 69.0 (66.4, 71.5) | 75.0 (65.1, 84.8) |
| 200-299% FPL | Current, every day smoker | 8.8 (6.3, 11.3) | 8.5 (5.8, 11.2) | 8.3 (5.4, 11.2) | 7.5 (5.2, 9.8) | 7.6 (5.4, 9.8) | 3.6 (2.4, 4.8) | 3.3* (0.0, 7.1) |
| | Current, some day smoker | 5.5 (3.6, 7.4) | 4.5 (2.9, 6.1) | 6.4 (3.1, 9.7) | 3.9 (1.9, 6.0) | 5.5 (3.6, 7.3) | 3.1 (1.9, 4.2) | 0.4* (0.0, 0.8) |
| | Former smoker | 25.5 (22.1, 28.8) | 23.2 (19.6, 26.8) | 22.5 (17.5, 27.4) | 22.7 (19.2, 26.1) | 21.4 (17.9, 24.8) | 20.6 (17.9, 23.2) | 23.8 (15.3, 32.2) |
| | Never smoker | 60.2 (56.6, 63.9) | 63.8 (59.3, 68.3) | 62.9 (57.4, 68.4) | 65.9 (61.3, 70.5) | 65.6 (61.7, 69.4) | 72.8 (69.7, 75.9) | 72.6 (63.5, 81.6) |
| 300% FPL or above | Current, every day smoker | 6.1 (4.9, 7.2) | 6.5 (5.4, 7.7) | 4.6 (3.6, 5.6) | 4.4 (3.3, 5.4) | 4.5 (3.6, 5.3) | 2.6 (2.2, 3.1) | 6.6 (3.5, 9.7) |
| | Current, some day smoker | 2.9 (2.1, 3.7) | 3.5 (2.6, 4.3) | 2.9 (1.7, 4.0) | 3.4 (2.6, 4.3) | 3.3 (2.5, 4.2) | 2.3 (1.9, 2.8) | 2.2* (0.8, 3.5) |
| | Former smoker | 23.9 (22.3, 25.5) | 23.2 (21.3, 25.1) | 24.0 (21.5, 26.6) | 23.8 (22.1, 25.5) | 24.0 (22.3, 25.7) | 20.7 (19.6, 21.9) | 20.6 (17.2, 24.1) |
| | Never smoker | 67.2 (65.4, 69.0) | 66.8 (64.5, 69.1) | 68.5 (65.8, 71.1) | 68.4 (66.3, 70.5) | 68.3 (66.4, 70.1) | 74.3 (73.2, 75.4) | 70.6 (66.3, 75.0) |

Note. * = statistically unstable. - = suppressed due to small sample size.

**Figure B-2.** Ever smoked e-cigarettes by poverty status, CHIS 2014-2019 and 2018 Fall Pilot



Ever smoked e-cigarettes (age 18-65) by FPL

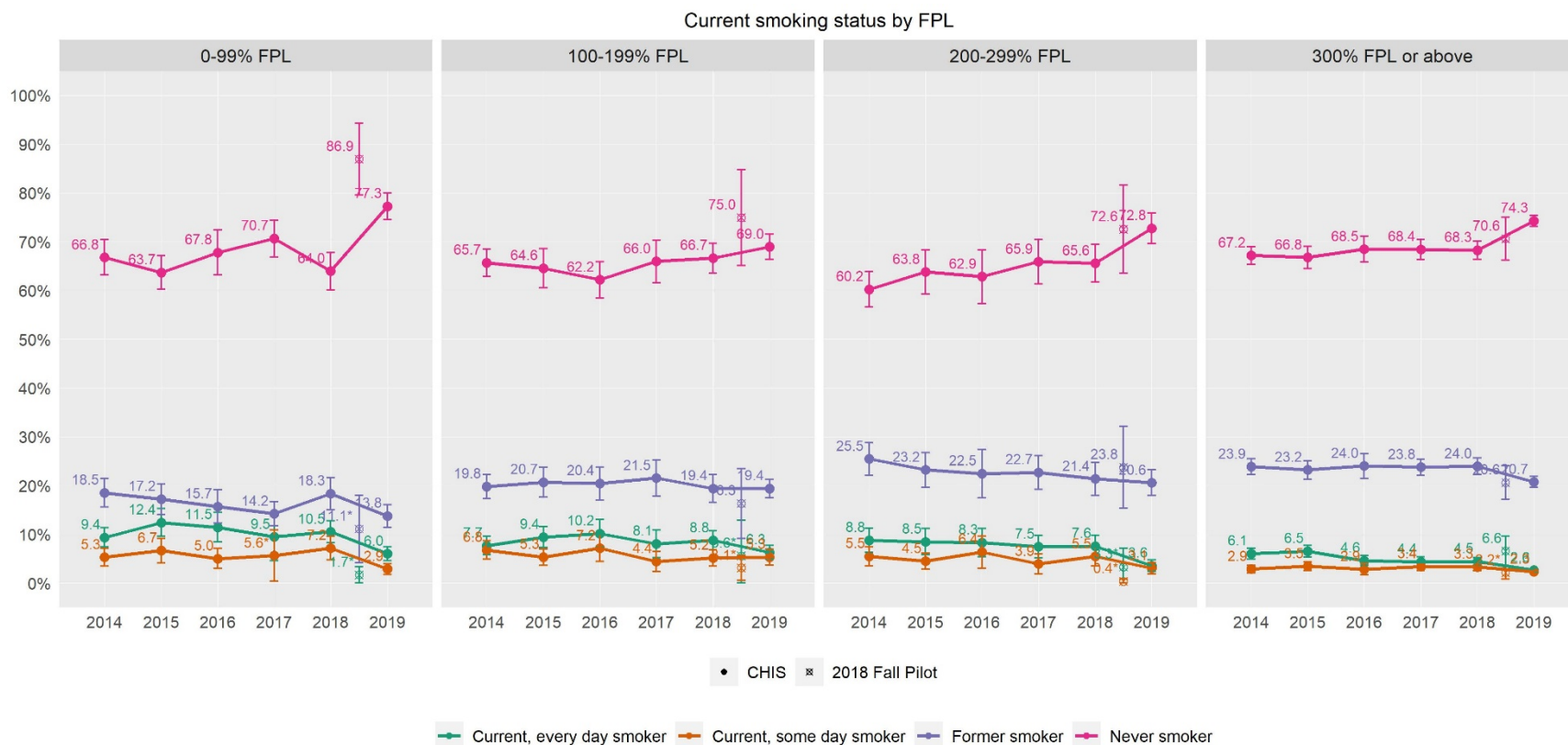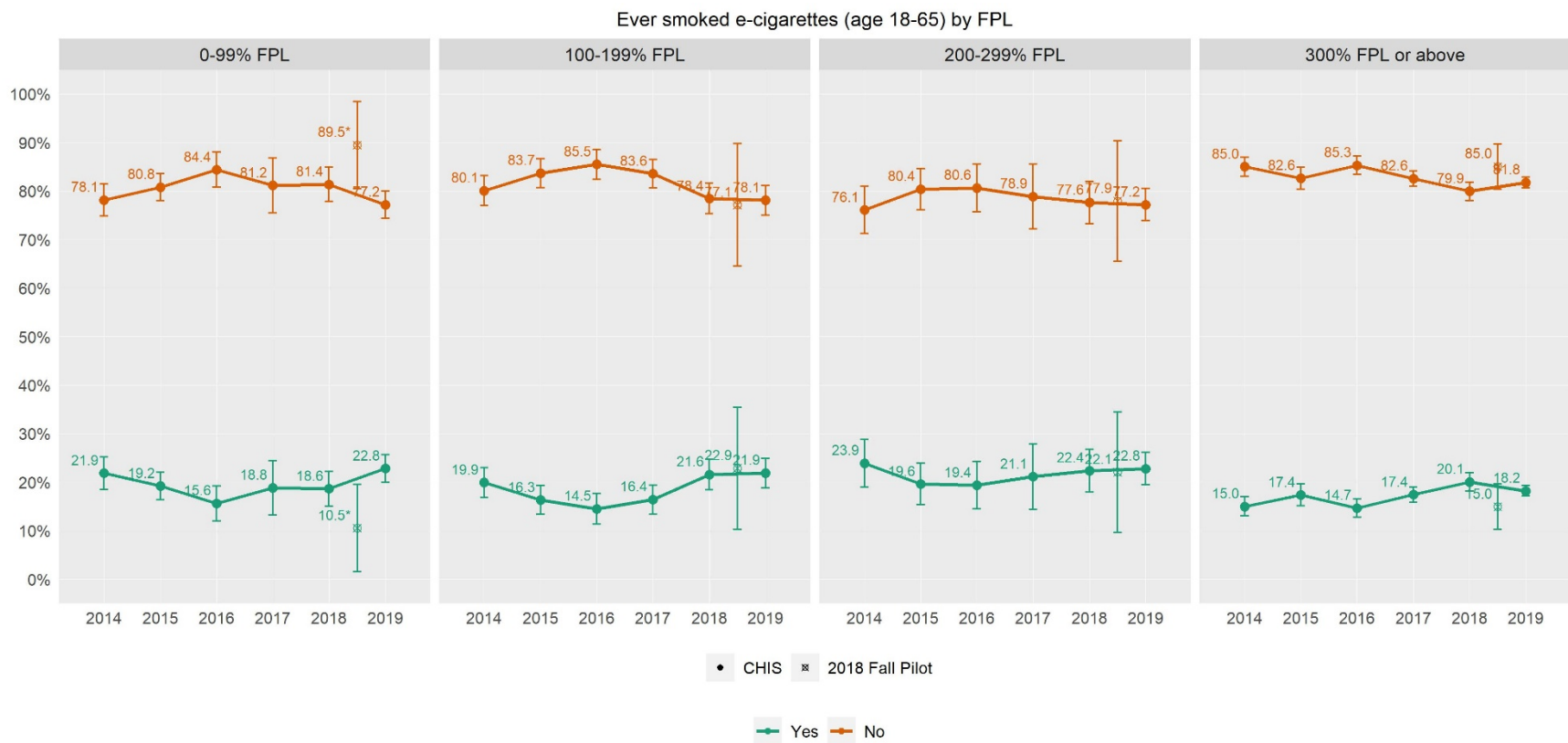**Table B-2.** Ever smoked e-cigarettes by poverty status, CHIS 2014-2019 and 2018 Fall Pilot

| Subgroup | Level | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|---|
| 0-99% FPL | No | 78.1 | 80.8 | 84.4 | 81.2 | 81.4 | 77.2 | 89.5* |
| | | (74.8, 81.5) | (78.0, 83.6) | (80.8, 88.0) | (75.5, 86.8) | (77.8, 84.9) | (74.3, 80.0) | (80.4, 98.5) |
| | Yes | 21.9 | 19.2 | 15.6 | 18.8 | 18.6 | 22.8 | 10.5* |
| | | (18.5, 25.2) | (16.4, 22.0) | (12.0, 19.2) | (13.2, 24.5) | (15.1, 22.2) | (20.0, 25.7) | (1.5, 19.6) |
| 100-199% FPL | No | 80.1 | 83.7 | 85.5 | 83.6 | 78.4 | 78.1 | 77.1 |
| | | (77.0, 83.2) | (80.7, 86.6) | (82.4, 88.6) | (80.6, 86.5) | (75.3, 81.6) | (75.0, 81.2) | (64.5, 89.8) |
| | Yes | 19.9 | 16.3 | 14.5 | 16.4 | 21.6 | 21.9 | 22.9 |
| | | (16.8, 23.0) | (13.4, 19.3) | (11.4, 17.6) | (13.5, 19.4) | (18.4, 24.7) | (18.8, 25.0) | (10.2, 35.5) |
| 200-299% FPL | No | 76.1 | 80.4 | 80.6 | 78.9 | 77.6 | 77.2 | 77.9 |
| | | (71.2, 81.0) | (76.1, 84.7) | (75.8, 85.5) | (72.2, 85.6) | (73.2, 82.0) | (73.9, 80.5) | (65.5, 90.3) |
| | Yes | 23.9 | 19.6 | 19.4 | 21.1 | 22.4 | 22.8 | 22.1 |
| | | (19.0, 28.8) | (15.3, 23.9) | (14.5, 24.2) | (14.4, 27.8) | (18.0, 26.8) | (19.5, 26.1) | (9.7, 34.5) |
| 300% FPL or above | No | 85.0 | 82.6 | 85.3 | 82.6 | 79.9 | 81.8 | 85.0 |
| | | (83.1, 87.0) | (80.4, 84.9) | (83.4, 87.2) | (81.0, 84.1) | (78.1, 81.8) | (80.7, 82.9) | (80.4, 89.7) |
| | Yes | 15.0 | 17.4 | 14.7 | 17.4 | 20.1 | 18.2 | 15.0 |
| | | (13.0, 16.9) | (15.1, 19.6) | (12.8, 16.6) | (15.9, 19.0) | (18.2, 21.9) | (17.1, 19.3) | (10.3, 19.6) |

Note. * = statistically unstable.

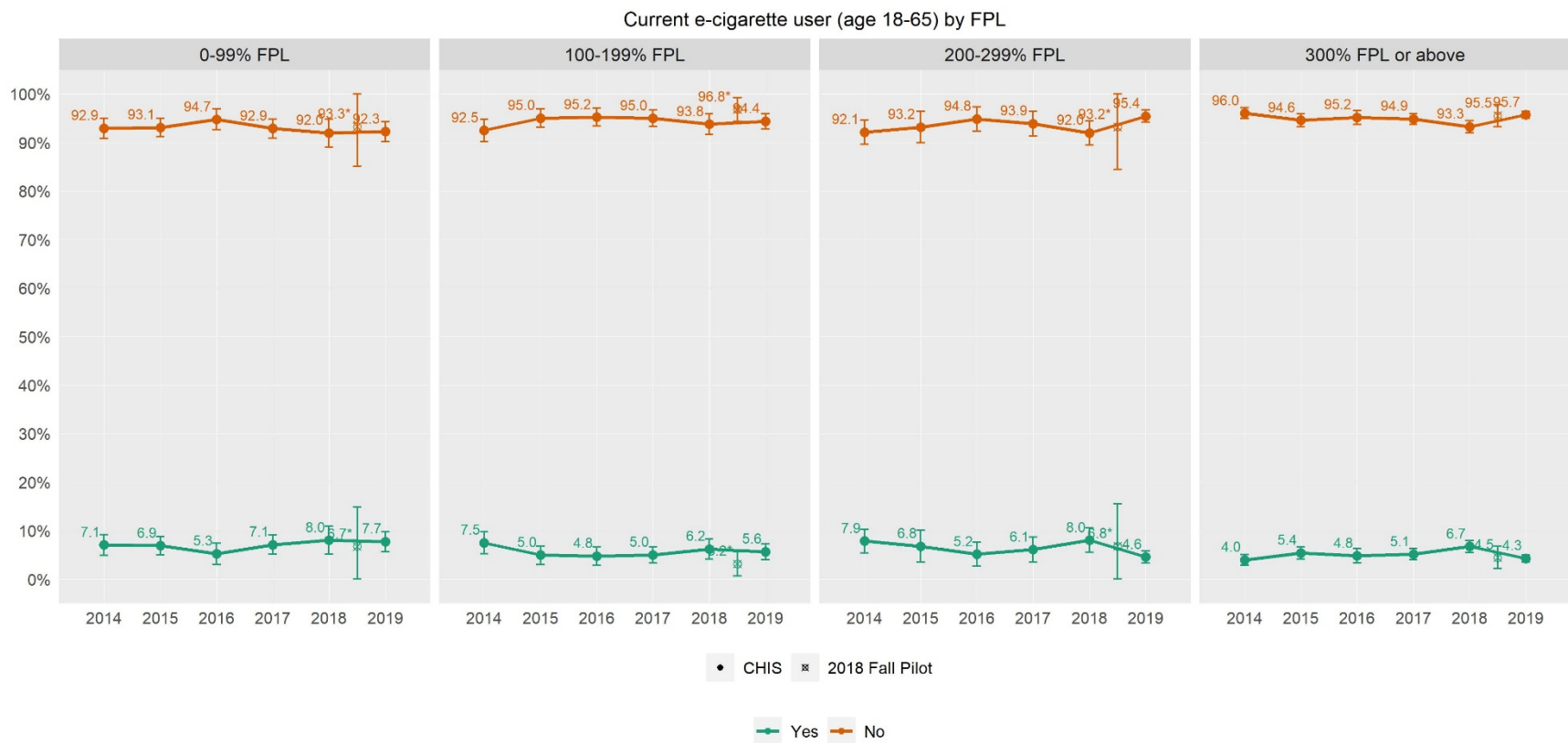**Figure B-3.** Current e-cigarette status by poverty status, CHIS 2014-2019 and 2018 Fall Pilot



Current e-cigarette user (age 18-65) by FPL

**Table B-3.** Current e-cigarette status by poverty status, CHIS 2014-2019 and 2018 Fall Pilot

| Subgroup | Level | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|---|
| 0-99% FPL | No | 92.9 | 93.1 | 94.7 | 92.9 | 92.0 | 92.3 | 93.3* |
| | | (90.8, 95.0) | (91.2, 95.0) | (92.6, 96.9) | (90.9, 94.9) | (89.1, 94.8) | (90.2, 94.3) | (85.1, 100.0) |
| | Yes | 7.1 | 6.9 | 5.3 | 7.1 | 8.0 | 7.7 | 6.7* |
| | | (5.0, 9.2) | (5.0, 8.8) | (3.1, 7.4) | (5.1, 9.1) | (5.2, 10.9) | (5.7, 9.8) | (0.0, 14.9) |
| 100-199% FPL | No | 92.5 | 95.0 | 95.2 | 95.0 | 93.8 | 94.4 | 96.8* |
| | | (90.2, 94.8) | (93.1, 96.9) | (93.4, 97.1) | (93.3, 96.7) | (91.7, 95.9) | (92.8, 95.9) | (94.4, 99.3) |
| | Yes | 7.5 | 5.0 | 4.8 | 5.0 | 6.2 | 5.6 | 3.2* |
| | | (5.2, 9.8) | (3.1, 6.9) | (2.9, 6.6) | (3.3, 6.7) | (4.1, 8.3) | (4.1, 7.2) | (0.7, 5.6) |
| 200-299% FPL | No | 92.1 | 93.2 | 94.8 | 93.9 | 92.0 | 95.4 | 93.2* |
| | | (89.7, 94.6) | (90.0, 96.4) | (92.4, 97.3) | (91.3, 96.4) | (89.5, 94.4) | (94.2, 96.7) | (84.5, 100.0) |
| | Yes | 7.9 | 6.8 | 5.2 | 6.1 | 8.0 | 4.6 | 6.8* |
| | | (5.4, 10.3) | (3.6, 10.0) | (2.7, 7.6) | (3.6, 8.7) | (5.6, 10.5) | (3.3, 5.8) | (0.0, 15.5) |
| 300% FPL or above | No | 96.0 | 94.6 | 95.2 | 94.9 | 93.3 | 95.7 | 95.5 |
| | | (94.9, 97.2) | (93.3, 95.9) | (93.7, 96.6) | (93.7, 96.0) | (92.0, 94.5) | (95.0, 96.4) | (93.2, 97.8) |
| | Yes | 4.0 | 5.4 | 4.8 | 5.1 | 6.7 | 4.3 | 4.5 |
| | | (2.8, 5.1) | (4.1, 6.7) | (3.4, 6.3) | (4.0, 6.3) | (5.5, 8.0) | (3.6, 5.0) | (2.2, 6.8) |

Note. * = statistically unstable.

**Figure B-4.** E-cigarette monthly use (age 18-65) by poverty status, CHIS 2014-2019 and 2018 Fall Pilot
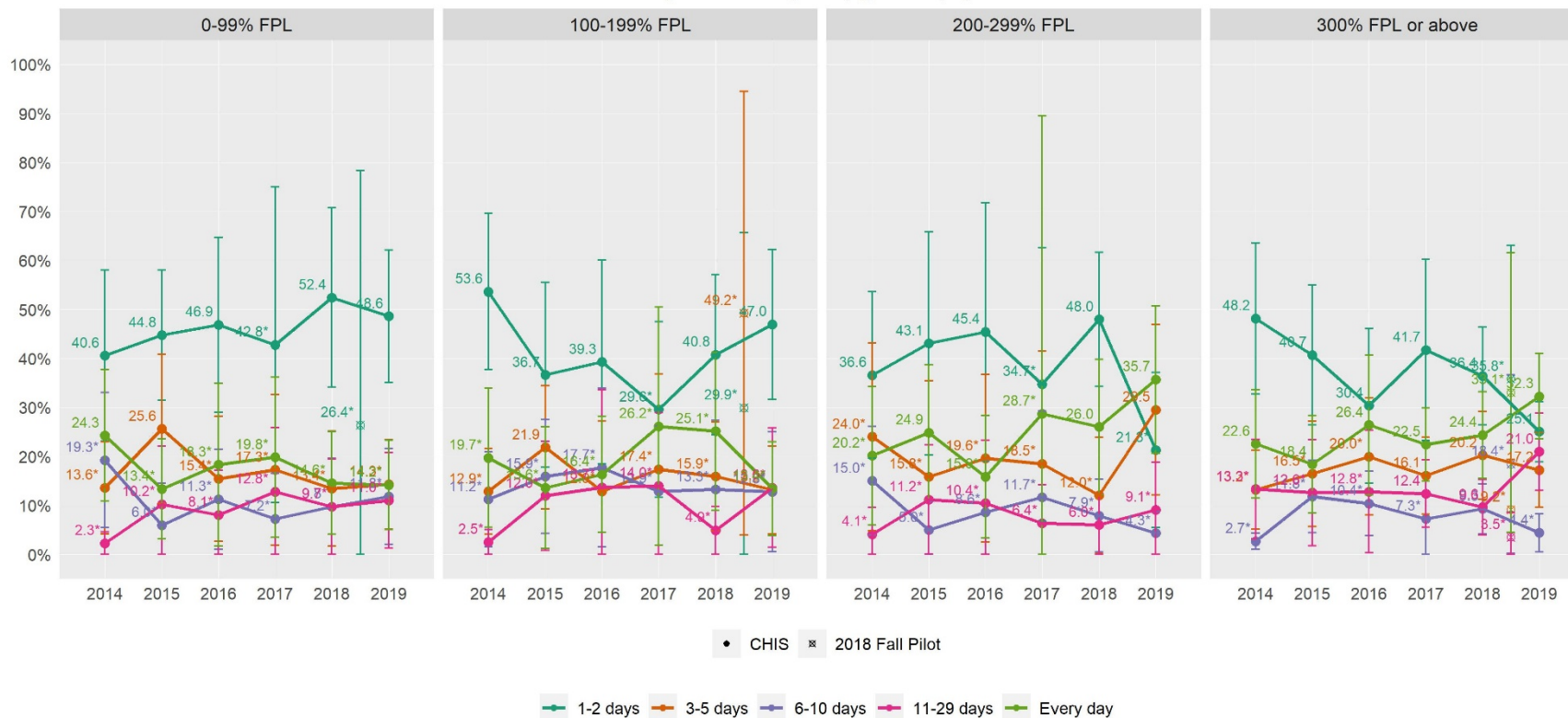
**Table B-4.** E-cigarette monthly use (age 18-65) by poverty status, CHIS 2014-2019 and 2018 Fall Pilot

| Subgroup | Level | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|---|
| 0-99% FPL | 1-2 days | 40.6 | 44.8 | 46.9 | 42.8* | 52.4 | 48.6 | 26.4* |
| | | (23.1, 58.0) | (31.5, 58.0) | (29.0, 64.7) | (10.6, 75.0) | (34.2, 70.7) | (35.1, 62.2) | (0.0, 78.4) |
| | 3-5 days | 13.6* | 25.6 | 15.4* | 17.3* | 13.4* | 14.3* | - |
| | | (4.2, 23.0) | (10.4, 40.9) | (2.7, 28.2) | (1.9, 32.7) | (1.7, 25.2) | (5.2, 23.4) | - |
| | 6-10 days | 19.3* | 6.0* | 11.3* | 7.2* | 9.8* | 11.8* | - |
| | | (5.5, 33.1) | (0.0, 14.6) | (1.1, 21.5) | (0.0, 16.6) | (0.0, 19.6) | (2.0, 21.7) | - |
| | 11-29 days | 2.3* | 10.2* | 8.1* | 12.8* | 9.7* | 11.0* | - |
| | | (0.0, 4.6) | (0.0, 22.2) | (0.0, 17.2) | (0.0, 25.9) | (0.0, 19.5) | (1.3, 20.7) | - |
| | Every day | 24.3 | 13.4* | 18.3* | 19.8* | 14.6* | 14.2* | - |
| | | (10.8, 37.7) | (3.2, 23.6) | (1.7, 34.9) | (3.5, 36.2) | (4.1, 25.1) | (5.0, 23.3) | - |
| 100-199% FPL | 1-2 days | 53.6 | 36.7 | 39.3 | 29.6* | 40.8 | 47.0 | 29.9* |
| | | (37.7, 69.6) | (17.7, 55.6) | (18.5, 60.1) | (11.6, 47.5) | (24.4, 57.1) | (31.7, 62.2) | (0.0, 65.6) |
| | 3-5 days | 12.9* | 21.9 | 12.9* | 17.4* | 15.9* | 13.2* | 49.2* |
| | | (4.1, 21.6) | (9.2, 34.5) | (0.0, 27.3) | (0.0, 36.8) | (4.8, 27.0) | (4.2, 22.1) | (4.0, 94.5) |
| | 6-10 days | 11.2* | 15.9* | 17.7* | 12.9* | 13.3* | 12.8* | - |
| | | (1.5, 21.0) | (4.3, 27.6) | (1.5, 34.0) | (0.0, 26.2) | (0.0, 27.4) | (0.6, 25.0) | - |
| | 11-29 days | 2.5* | 12.0* | 13.7* | 14.0* | 4.9* | 13.6* | - |
| | | (0.0, 5.1) | (0.9, 23.1) | (0.0, 33.6) | (0.0, 28.9) | (0.0, 9.8) | (1.4, 25.8) | - |
| | Every day | 19.7* | 13.6* | 16.4* | 26.2* | 25.1* | 13.4* | - |
| | | (5.6, 33.9) | (1.2, 26.1) | (4.6, 28.1) | (1.8, 50.5) | (9.0, 41.3) | (3.8, 23.0) | - |
| 200-299% FPL | 1-2 days | 36.6 | 43.1 | 45.4 | 34.7* | 48.0 | 21.3* | - |
| | | (19.6, 53.6) | (20.3, 65.9) | (19.1, 71.8) | (6.9, 62.6) | (34.4, 61.6) | (5.5, 37.2) | - |
| | 3-5 days | 24.0* | 15.8* | 19.6* | 18.5* | 12.0* | 29.5 | - |
| | | (4.8, 43.2) | (0.0, 35.5) | (2.5, 36.7) | (0.0, 41.5) | (0.2, 23.9) | (12.1, 46.9) | - |
| | 6-10 days | 15.0* | 5.0* | 8.6* | 11.7* | 7.9* | 4.3* | - |
| | | (3.9, 26.1) | (0.0, 10.7) | (0.0, 19.2) | (0.0, 29.3) | (0.5, 15.4) | (0.0, 8.7) | - |

(continued)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 11-29 days | 4.1* | 11.2* | 10.4* | 6.4* | 6.0* | 9.1* | - |
| | | (0.0, 9.6) | (0.1, 22.4) | (0.0, 23.3) | (0.0, 14.2) | (0.0, 12.5) | (0.0, 18.8) | - |
| | Every day | 20.2* | 24.9 | 15.9* | 28.7* | 26.0 | 35.7 | - |
| | | (6.1, 34.3) | (11.0, 38.7) | (3.4, 28.4) | (0.0, 89.5) | (12.3, 39.8) | (20.7, 50.7) | - |
| 300% FPL or above | 1-2 days | 48.2 | 40.7 | 30.4 | 41.7 | 36.4 | 25.1 | 35.8* |
| | | (32.8, 63.6) | (26.4, 55.0) | (14.6, 46.1) | (23.3, 60.2) | (26.5, 46.4) | (18.9, 31.2) | (8.6, 63.1) |
| | 3-5 days | 13.2* | 16.5* | 20.0* | 16.1 | 20.2 | 17.2 | 9.2* |
| | | (5.2, 21.2) | (5.7, 27.2) | (8.0, 31.9) | (8.2, 23.9) | (11.3, 29.2) | (9.6, 24.8) | (0.0, 19.4) |
| | 6-10 days | 2.7* | 11.8* | 10.4* | 7.3* | 9.3 | 4.4* | 18.4* |
| | | (1.1, 4.3) | (4.4, 19.2) | (3.9, 17.0) | (0.0, 22.5) | (4.2, 14.4) | (0.5, 8.3) | (0.2, 36.6) |
| | 11-29 days | 13.3* | 12.6* | 12.8* | 12.4 | 9.6 | 21.0 | 3.5* |
| | | (3.2, 23.5) | (1.8, 23.4) | (0.3, 25.3) | (5.6, 19.3) | (4.0, 15.3) | (13.1, 28.9) | (0.0, 8.6) |
| | Every day | 22.6 | 18.4 | 26.4 | 22.5 | 24.4 | 32.3 | 33.1* |
| | | (11.5, 33.6) | (8.5, 28.3) | (12.1, 40.7) | (15.0, 29.9) | (15.5, 33.2) | (23.6, 41.0) | (4.5, 61.6) |

Note. * = statistically unstable. - = suppressed due to small sample size.

**Figure B-5.** Current (past 30 days) non-cigarette tobacco product use by poverty status, CHIS 2014-2019 and 2018 Fall Pilot



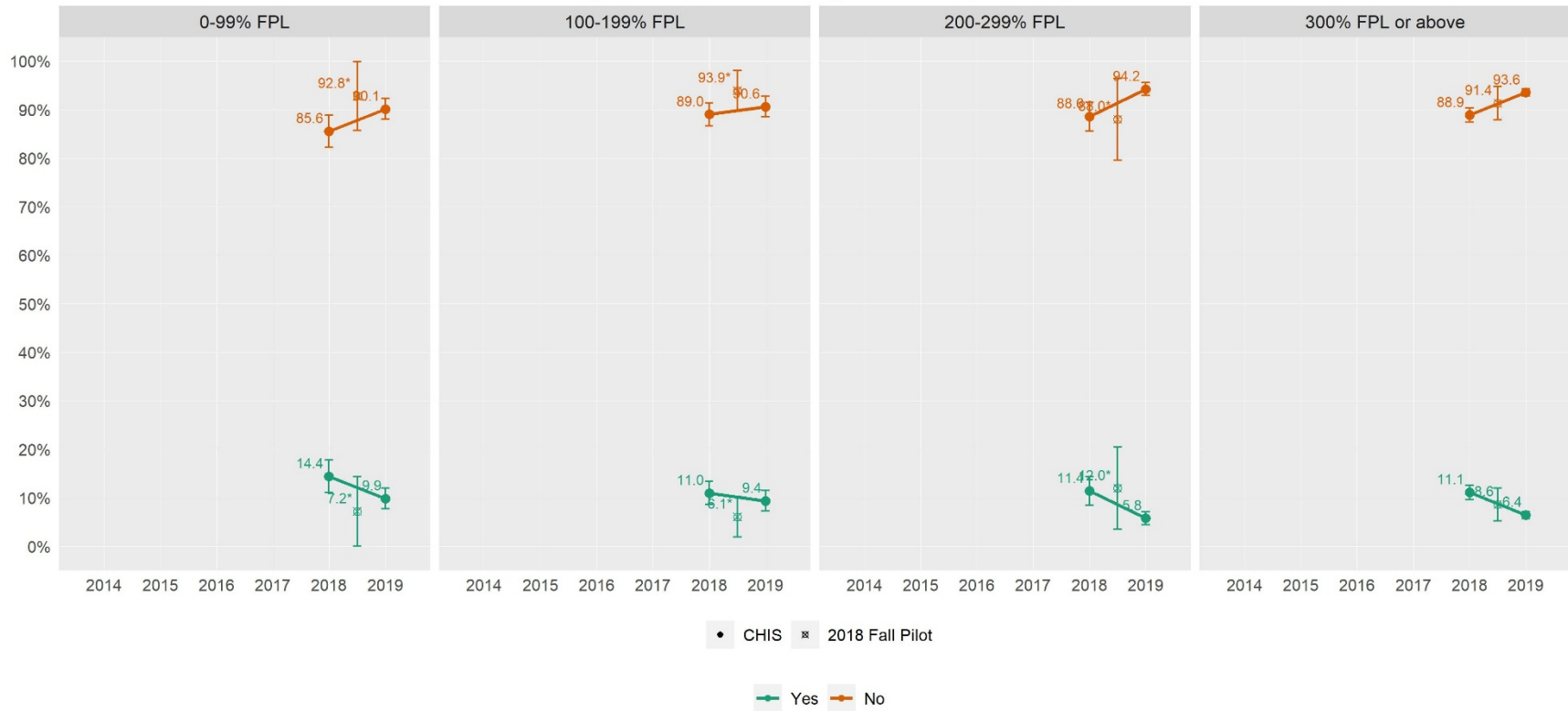Current (past 30 days) use of non-cigarette tobacco products by FPL

**Table B-5.** Current (past 30 days) non-cigarette tobacco product use by poverty status, CHIS 2014-2019 and 2018 Fall Pilot

| Subgroup | Level | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|
| 0-99% FPL | No | 85.6 | 90.1 | 92.8* |
| | | (82.2, 88.9) | (88.0, 92.3) | (85.7, 100.0) |
| | Yes | 14.4 | 9.9 | 7.2* |
| | | (11.1, 17.8) | (7.7, 12.0) | (0.0, 14.3) |
| 100-199% FPL | No | 89.0 | 90.6 | 93.9* |
| | | (86.7, 91.4) | (88.5, 92.7) | (89.8, 98.0) |
| | Yes | 11.0 | 9.4 | 6.1* |
| | | (8.6, 13.3) | (7.3, 11.5) | (2.0, 10.2) |
| 200-299% FPL | No | 88.6 | 94.2 | 88.0* |
| | | (85.6, 91.6) | (92.9, 95.5) | (79.6, 96.4) |
| | Yes | 11.4 | 5.8 | 12.0* |
| | | (8.4, 14.4) | (4.5, 7.1) | (3.6, 20.4) |
| 300% FPL or above | No | 88.9 | 93.6 | 91.4 |
| | | (87.5, 90.3) | (92.8, 94.3) | (88.0, 94.7) |
| | Yes | 11.1 | 6.4 | 8.6 |
| | | (9.7, 12.5) | (5.7, 7.2) | (5.3, 12.0) |

Note. * = statistically unstable.

**Figure B-6.** Current (past 30 days) flavored tobacco product use by poverty status, CHIS 2014-2019 and 2018 Fall Pilot
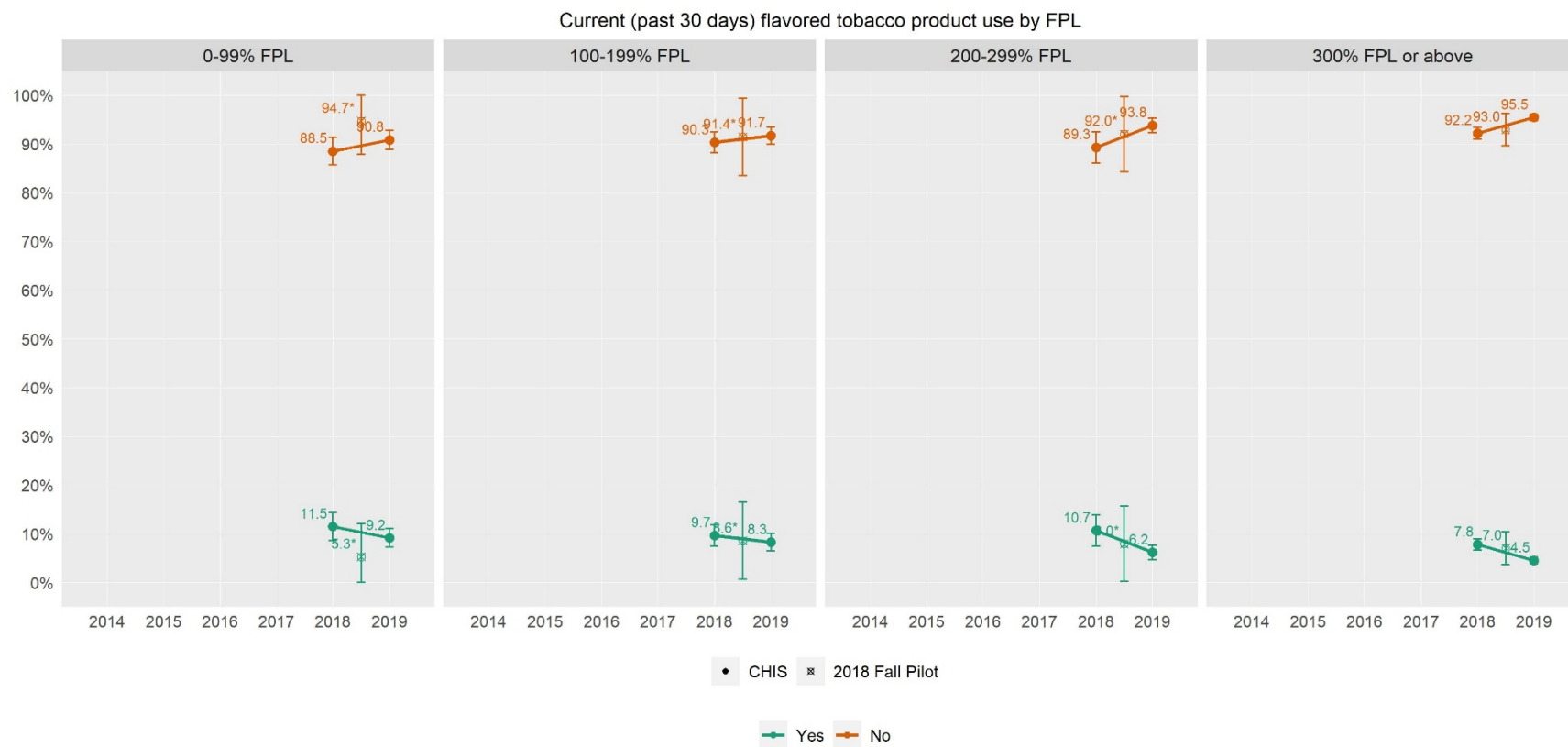


Current (past 30 days) flavored tobacco product use by FPL

**Table B-6.** Current (past 30 days) flavored tobacco product use by poverty status, CHIS 2014-2019 and 2018 Fall Pilot

| Subgroup | Level | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|
| 0-99% FPL | No | 88.5 | 90.8 | 94.7* |
| | | (85.7, 91.4) | (88.9, 92.7) | (87.9, 100.0) |
| | Yes | 11.5 | 9.2 | 5.3* |
| | | (8.6, 14.3) | (7.3, 11.1) | (0.0, 12.1) |
| 100-199% FPL | No | 90.3 | 91.7 | 91.4* |
| | | (88.2, 92.5) | (90.0, 93.5) | (83.5, 99.4) |
| | Yes | 9.7 | 8.3 | 8.6* |
| | | (7.5, 11.8) | (6.5, 10.0) | (0.6, 16.5) |
| 200-299% FPL | No | 89.3 | 93.8 | 92.0* |
| | | (86.1, 92.5) | (92.3, 95.3) | (84.3, 99.8) |
| | Yes | 10.7 | 6.2 | 8.0* |
| | | (7.5, 13.9) | (4.7, 7.7) | (0.2, 15.7) |
| 300% FPL or above | No | 92.2 | 95.5 | 93.0 |
| | | (91.0, 93.4) | (94.8, 96.1) | (89.6, 96.3) |
| | Yes | 7.8 | 4.5 | 7.0 |
| | | (6.6, 9.0) | (3.9, 5.2) | (3.7, 10.4) |

Note. * = statistically unstable.

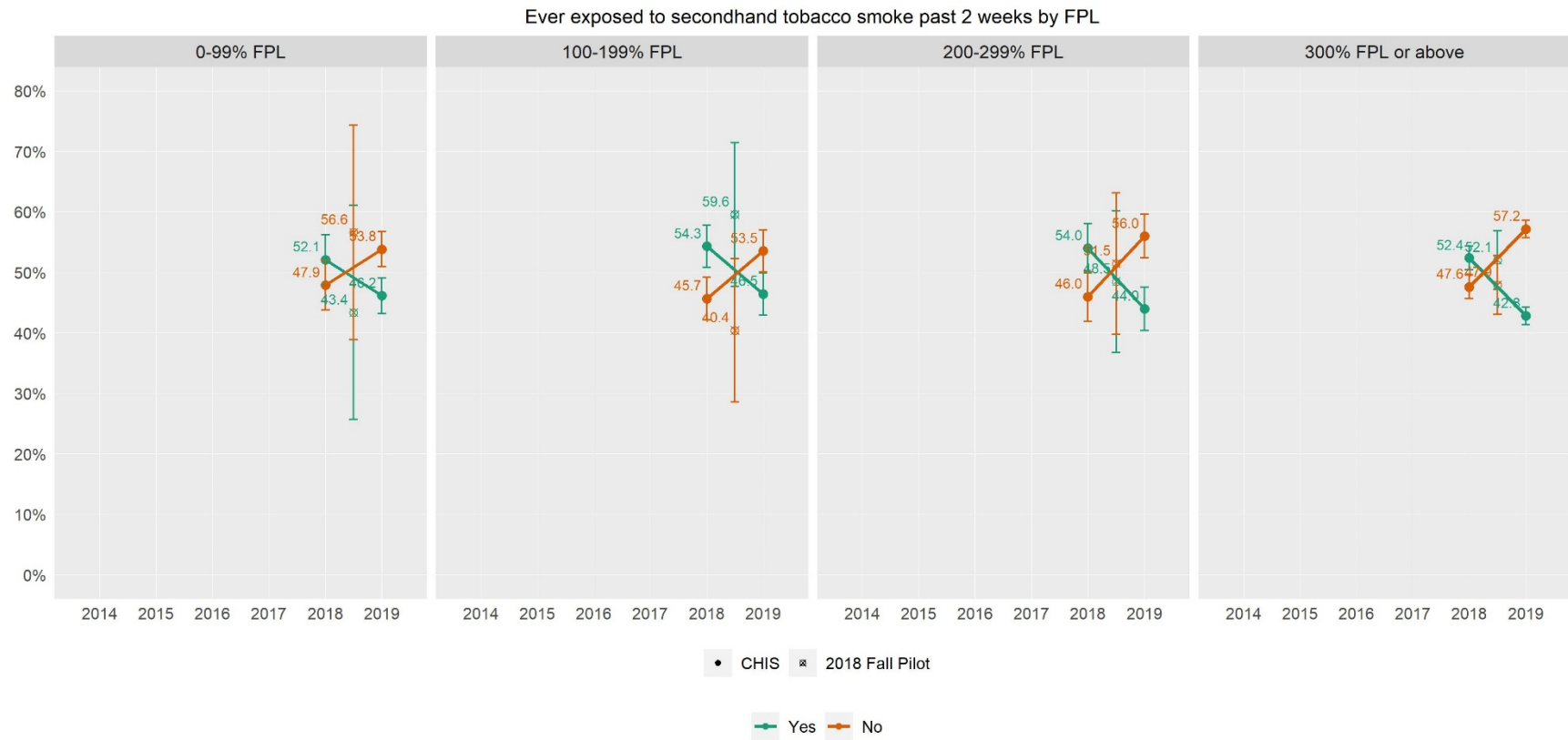**Figure B-7.** Secondhand smoke exposure by poverty status, CHIS 2014-2019 and 2018 Fall Pilot



Ever exposed to secondhand tobacco smoke past 2 weeks by FPL

**Table B-7.** Secondhand smoke exposure by poverty status, CHIS 2014-2019 and 2018 Fall Pilot

| Subgroup | Level | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|
| 0-99% FPL | No | 47.9 | 53.8 | 56.6 |
| | | (43.8, 52.0) | (50.9, 56.8) | (38.9, 74.3) |
| | Yes | 52.1 | 46.2 | 43.4 |
| | | (48.0, 56.2) | (43.2, 49.1) | (25.7, 61.1) |
| 100-199% FPL | No | 45.7 | 53.5 | 40.4 |
| | | (42.2, 49.2) | (50.1, 57.0) | (28.6, 52.3) |
| | Yes | 54.3 | 46.5 | 59.6 |
| | | (50.8, 57.8) | (43.0, 49.9) | (47.7, 71.4) |
| 200-299% FPL | No | 46.0 | 56.0 | 51.5 |
| | | (41.9, 50.1) | (52.4, 59.6) | (39.8, 63.2) |
| | Yes | 54.0 | 44.0 | 48.5 |
| | | (49.9, 58.1) | (40.4, 47.6) | (36.8, 60.2) |
| 300% FPL or above | No | 47.6 | 57.2 | 47.9 |
| | | (45.7, 49.6) | (55.7, 58.7) | (43.1, 52.8) |
| | Yes | 52.4 | 42.8 | 52.1 |
| | | (50.4, 54.3) | (41.3, 44.3) | (47.2, 56.9) |

**Table B-8.** Thinking about quitting smoking in next 6 months by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot

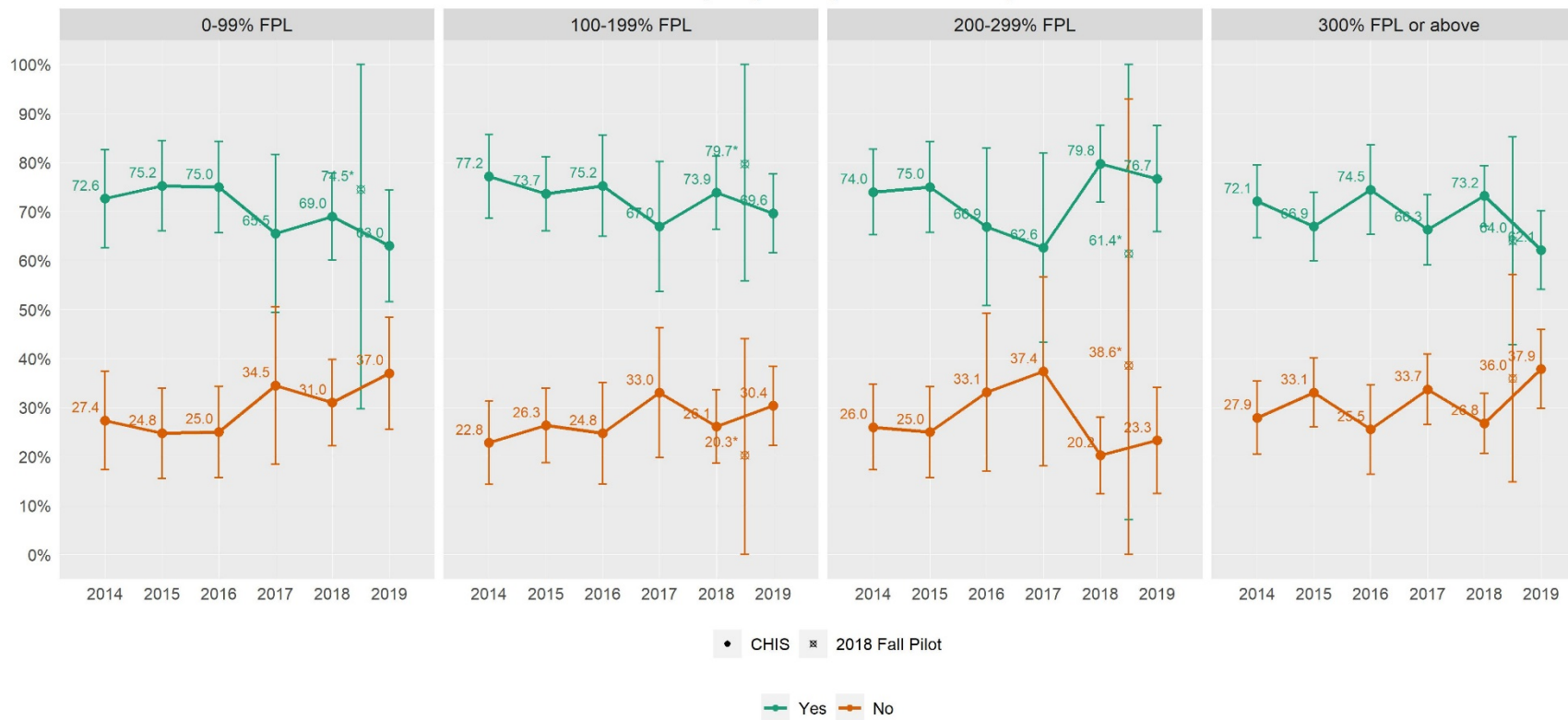Think about quitting smoking in next 6 months by FPL

**Figure B-8.** Thinking about quitting smoking in next 6 months by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot

| Subgroup | Level | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|---|
| 0-99% FPL | No | 27.4 | 24.8 | 25.0 | 34.5 | 31.0 | 37.0 | - |
| | | (17.4, 37.4) | (15.6, 34.0) | (15.7, 34.4) | (18.4, 50.6) | (22.2, 39.8) | (25.6, 48.4) | - |
| | Yes | 72.6 | 75.2 | 75.0 | 65.5 | 69.0 | 63.0 | 74.5* |
| | | (62.6, 82.6) | (66.0, 84.4) | (65.6, 84.3) | (49.4, 81.6) | (60.2, 77.8) | (51.6, 74.4) | (29.8, 100.0) |
| 100-199% FPL | No | 22.8 | 26.3 | 24.8 | 33.0 | 26.1 | 30.4 | 20.3* |
| | | (14.3, 31.3) | (18.8, 33.9) | (14.4, 35.1) | (19.8, 46.3) | (18.6, 33.6) | (22.3, 38.4) | (0.0, 44.1) |
| | Yes | 77.2 | 73.7 | 75.2 | 67.0 | 73.9 | 69.6 | 79.7* |
| | | (68.7, 85.7) | (66.1, 81.2) | (64.9, 85.6) | (53.7, 80.2) | (66.4, 81.4) | (61.6, 77.7) | (55.9, 100.0) |
| 200-299% FPL | No | 26.0 | 25.0 | 33.1 | 37.4 | 20.2 | 23.3 | 38.6* |
| | | (17.3, 34.7) | (15.7, 34.3) | (17.1, 49.2) | (18.1, 56.6) | (12.4, 28.1) | (12.5, 34.1) | (0.0, 92.9) |
| | Yes | 74.0 | 75.0 | 66.9 | 62.6 | 79.8 | 76.7 | 61.4* |
| | | (65.3, 82.7) | (65.7, 84.3) | (50.8, 82.9) | (43.4, 81.9) | (71.9, 87.6) | (65.9, 87.5) | (7.1, 100.0) |
| 300% FPL or above | No | 27.9 | 33.1 | 25.5 | 33.7 | 26.8 | 37.9 | 36.0 |
| | | (20.5, 35.4) | (26.0, 40.1) | (16.4, 34.7) | (26.5, 40.9) | (20.7, 32.9) | (29.8, 45.9) | (14.8, 57.2) |
| | Yes | 72.1 | 66.9 | 74.5 | 66.3 | 73.2 | 62.1 | 64.0 |
| | | (64.6, 79.5) | (59.9, 74.0) | (65.3, 83.6) | (59.1, 73.5) | (67.1, 79.3) | (54.1, 70.2) | (42.8, 85.2) |

Note. * = statistically unstable. - = suppressed due to small sample size.

**Figure B-9.** Stopped smoking at least one day in the past year by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot



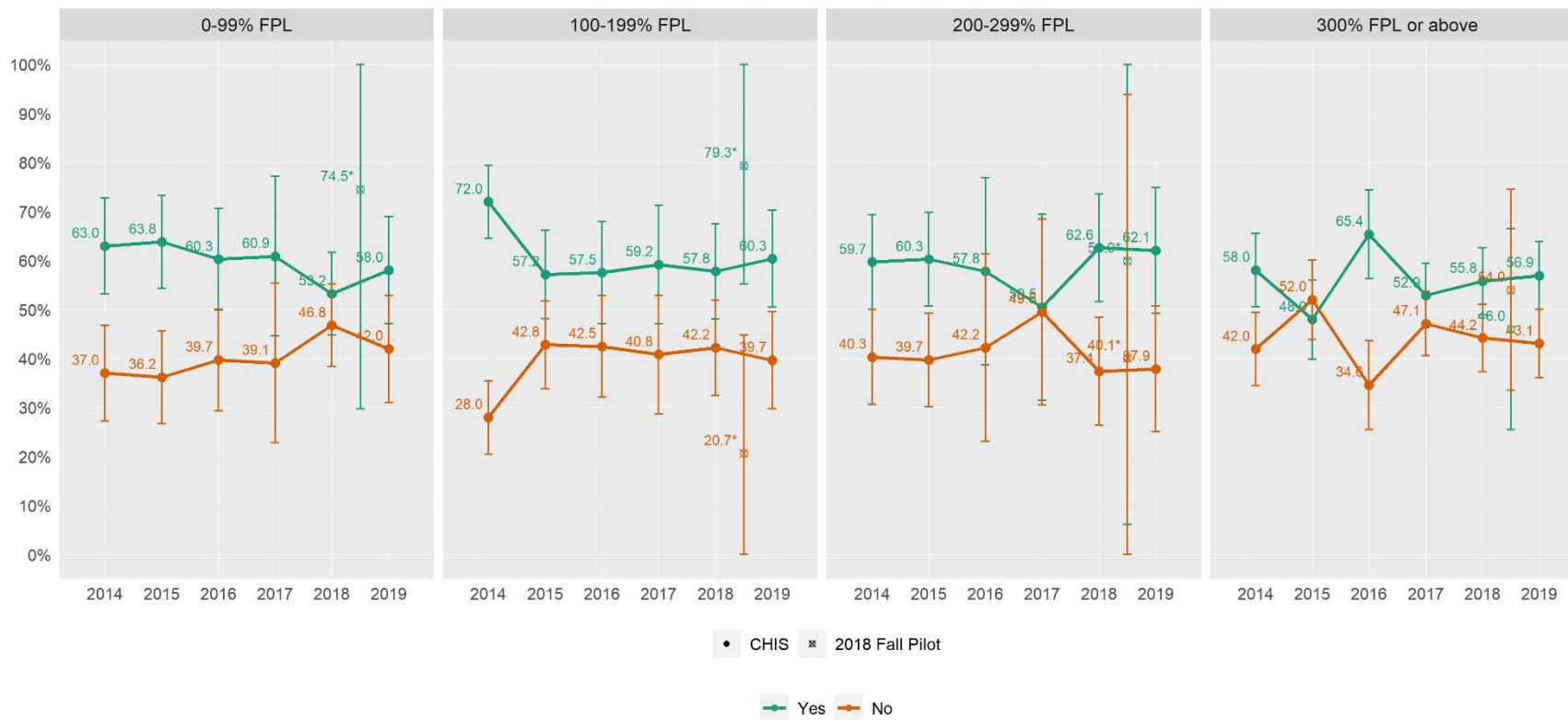Stop smoking one day or longer to quit in past year by FPL

**Table B-9.** Stopped smoking at least one day in the past year by race/ethnicity, CHIS 2014-2019 and 2018 Fall Pilot

| Subgroup | Level | CHIS 2014 | CHIS 2015 | CHIS 2016 | CHIS 2017 | CHIS 2018 | CHIS 2019 | 2018 Fall Pilot |
|---|---|---|---|---|---|---|---|---|
| 0-99% FPL | No | 37.0 | 36.2 | 39.7 | 39.1 | 46.8 | 42.0 | - |
| | | (27.3, 46.8) | (26.7, 45.7) | (29.4, 50.1) | (22.8, 55.4) | (38.3, 55.2) | (31.1, 52.9) | - |
| | Yes | 63.0 | 63.8 | 60.3 | 60.9 | 53.2 | 58.0 | 74.5* |
| | | (53.2, 72.7) | (54.3, 73.3) | (49.9, 70.6) | (44.6, 77.2) | (44.8, 61.7) | (47.1, 68.9) | (29.8, 100.0) |
| 100-199% FPL | No | 28.0 | 42.8 | 42.5 | 40.8 | 42.2 | 39.7 | 20.7* |
| | | (20.5, 35.4) | (33.9, 51.8) | (32.1, 52.9) | (28.7, 52.9) | (32.5, 51.9) | (29.8, 49.5) | (0.0, 44.7) |
| | Yes | 72.0 | 57.2 | 57.5 | 59.2 | 57.8 | 60.3 | 79.3* |
| | | (64.6, 79.5) | (48.2, 66.1) | (47.1, 67.9) | (47.1, 71.3) | (48.1, 67.5) | (50.5, 70.2) | (55.3, 100.0) |
| 200-299% FPL | No | 40.3 | 39.7 | 42.2 | 49.5 | 37.4 | 37.9 | 40.1* |
| | | (30.6, 50.0) | (30.2, 49.3) | (23.1, 61.4) | (30.5, 68.5) | (26.4, 48.4) | (25.1, 50.7) | (0.0, 93.9) |
| | Yes | 59.7 | 60.3 | 57.8 | 50.5 | 62.6 | 62.1 | 59.9* |
| | | (50.0, 69.4) | (50.7, 69.8) | (38.6, 76.9) | (31.5, 69.5) | (51.6, 73.6) | (49.3, 74.9) | (6.1, 100.0) |
| 300% FPL or above | No | 42.0 | 52.0 | 34.6 | 47.1 | 44.2 | 43.1 | 54.0 |
| | | (34.5, 49.4) | (43.9, 60.1) | (25.5, 43.7) | (40.6, 53.7) | (37.3, 51.0) | (36.1, 50.0) | (33.5, 74.5) |
| | Yes | 58.0 | 48.0 | 65.4 | 52.9 | 55.8 | 56.9 | 46.0 |
| | | (50.6, 65.5) | (39.9, 56.1) | (56.3, 74.5) | (46.3, 59.4) | (49.0, 62.7) | (50.0, 63.9) | (25.5, 66.5) |

Note. * = statistically unstable. - = suppressed due to small sample size.