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CHIS 2017-2018 Methodology Report Series

Report 4

Response Rates

CALIFORNIA HEALTH INTERVIEW SURVEY

CHIS 2017-2018 METHODOLOGY SERIES

REPORT 4

RESPONSE RATES

OCTOBER 2019

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www.chis.ucla.edu

This report provides analysts with information about the response rates in CHIS 2017-2018. The response rates are estimates of the percentage of sampled persons that participated in the survey, where the sample may be across the entire state, restricted to a county, or some other subgroup. To estimate response rates, the probability of sampling persons is taken into account. Thus, the response rates are weighted percentages of the number responding rather than simple unweighted percentages. Procedures used to increase the response rates are also discussed and, where possible, evaluated.

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PREFACE

Response Rates is the fourth in a series of methodological reports describing the 2017-2018 California Health Interview Survey (CHIS 2017-2018). The other reports are listed below.

CHIS is a collaborative project of the University of California, Los Angeles (UCLA) Center for Health Policy Research, the California Department of Public Health, and the Department of Health Care Services. SSRS was responsible for data collection and the preparation of five methodological reports from the 2017-2018 survey. The survey examines public health and health care access issues in California. The telephone survey is the largest state health survey ever undertaken in the United States.

Methodological Report Series for CHIS 2017-2018

The methodological reports for CHIS 2017-2018 are as follows:

- Report 1: Sample Design;
- Report 2: Data Collection Methods;
- Report 3: Data Processing Procedures;
- Report 4: Response Rates; and
- Report 5: Weighting and Variance Estimation.

The reports are interrelated and contain many references to each other. For ease of presentation, the references are simply labeled by the report numbers given above. After the Preface, each report includes an “Overview” (Chapter 1) that is nearly identical across reports, followed by detailed technical documentation on the specific topic of the report.

The primary purpose of presenting these response rates is to provide information for analysts of the data. As a result, the response rates are also reported separately for the main analysis subgroups—adults (ages 18 and older), children (age less than 12), and adolescents (ages 12 to 17). The response rates are estimates of the percentage of sampled persons that participated in the survey, where the sample may be across the entire state, or it may be restricted to a county or another subgroup. To estimate response rates, the probability of sampling persons is taken into account. Thus, the response rates are weighted percentages of the number responding rather than simple unweighted percentages.

A secondary goal of this report is to examine procedures used in the survey to improve response. The specific operational methods are described more completely in *CHIS 2017-2018 Methodology Series*:

Report 2 – Data Collection Methods. These methods are summarized to provide some context for the examination in this report.

For further methodological details not covered in this report, refer to the other methodological reports in the series at <http://www.chis.ucla.edu/chis/design/Pages/methodology.aspx>. General information on CHIS data can be found on the California Health Interview Survey Web site at <http://www.chis.ucla.edu> or by contacting CHIS at CHIS@ucla.edu.

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1. CHIS 2017-2018 SAMPLE DESIGN AND METHODOLOGY SUMMARY

1.1 Overview

A series of five methodology reports are available with more detail about the methods used in CHIS 2017-2018.

- Report 1 – Sample Design;
- Report 2 – Data Collection Methods;
- Report 3 – Data Processing Procedures;
- Report 4 – Response Rates; and
- Report 5 – Weighting and Variance Estimation.

For further information on CHIS data and the methods used in the survey, visit the California Health Interview Survey Web site at <http://www.chis.ucla.edu> or contact CHIS at CHIS@ucla.edu. For methodology reports from previous CHIS cycles, go to <http://www.chis.ucla.edu/chis/design/Pages/methodology.aspx>

The CHIS is a population-based telephone survey of California’s residential, noninstitutionalized population conducted every other year since 2001 and continually beginning in 2011. CHIS is the nation’s largest state-level health survey and one of the largest health surveys in the nation. The UCLA Center for Health Policy Research (UCLA-CHPR) conducts CHIS in collaboration with the California Department of Public Health and the California Department of Health Care Services. CHIS collects extensive information for all age groups on health status, health conditions, health-related behaviors, health insurance coverage, access to health care services, and other health and health-related issues.

The sample is designed and optimized to meet two objectives:

- 1) Provide estimates for large- and medium-sized counties in the state, and for groups of the smallest counties (based on population size), and
- 2) Provide statewide estimates for California’s overall population, its major racial and ethnic groups, as well as several racial and ethnic subgroups.

The CHIS sample is representative of California’s non-institutionalized population living in households. CHIS data and results are used extensively by federal and State agencies, local public health agencies and organizations, advocacy and community organizations, other local agencies, hospitals, community clinics, health plans, foundations, and researchers. These data are used for analyses and publications to assess public health and health care needs, to develop and advocate policies to meet those

needs, and to plan and budget health care coverage and services. Many researchers throughout California and the nation use CHIS data files to further their understanding of a wide range of health related issues (visit UCLA-CHPR's publication page at <http://healthpolicy.ucla.edu/publications/Pages/default.aspx> for examples of CHIS studies).

1.2 Switch to a Continuous Survey

From the first CHIS cycle in 2001 through 2009, CHIS data were collected during a 7 to 9 month period every other year. Beginning in 2011, CHIS data have been collected continually over a 2-year cycle. This change was driven by several factors including the ability to track and release information about health in California on a more frequent and timely basis and to eliminate potential seasonality in the biennial data.

CHIS 2017-2018 data were collected between June 2017 and January 2019. As in previous CHIS cycles, weights are included with the data files and are based on the State of California's Department of Finance population estimates and projections, adjusted to remove the population living in group quarters (such as nursing homes, prisons, etc.) and thus not eligible to participate in CHIS. When the weights are applied to the data, the results represent California's residential population during the two year period for the age group corresponding to the data file in use (adult, adolescent, or child). In CHIS 2017-2018, data users will be able to produce single-year estimates using the weights provided (referred to as CHIS 2017 and CHIS 2018, respectively).

See what's new in the 2017-2018 CHIS sampling and data collection here:

<http://www.chis.ucla.edu/chis/design/Documents/whats-new-chis-2017-2018.pdf>

In order to provide CHIS data users with more complete and up-to-date information to facilitate analyses of CHIS data, additional information on how to use the CHIS sampling weights, including sample statistical code, is available at <http://www.chis.ucla.edu/chis/analyze/Pages/sample-code.aspx>.

Additional documentation on constructing the CHIS sampling weights is available in the *CHIS 2017-2018 Methodology Series: Report 5—Weighting and Variance Estimation* posted at <http://www.chis.ucla.edu/chis/design/Pages/methodology.aspx>. Other helpful information for understanding the CHIS sample design and data collection processing can be found in the four other methodology reports for each CHIS cycle year.

1.3 Sample Design Objectives

The CHIS 2017-2018 sample was designed to meet the two sampling objectives discussed above: (1) provide estimates for adults in most counties and in groups of counties with small populations; and (2) provide estimates for California's overall population, major racial and ethnic groups, and for several smaller racial and ethnic subgroups.

To achieve these objectives, CHIS employed a dual-frame, multi-stage sample design. The random-digit-dial (RDD) sample included telephone numbers assigned to both landline and cellular service. The RDD sample was designed to achieve the required number of completed adult interviews by using approximately 50% landline and 50% cellular phone numbers. For the RDD sample, the 58 counties in the state were grouped into 44 geographic sampling strata, and 14 sub-strata were created within the two most populous counties in the state (Los Angeles and San Diego). The same geographic stratification of the state has been used since CHIS 2005. The Los Angeles County stratum included eight sub-strata for Service Planning Areas, and the San Diego County stratum included six sub-strata for Health Service Districts. Most of the strata (39 of 44) consisted of a single county with no sub-strata (see counties 3-41 in Table 1-1). Three multi-county strata comprised the 17 remaining counties (see counties 42-44 in Table 1-1). A sufficient number of adult interviews were allocated to each stratum and sub-stratum to support the first sample design objective for the two-year period—to provide health estimates for adults at the local level. Asian surname sample list frames added 127 Korean, and 214 Vietnamese adult interviews based on self-identified ethnicity for the 2017-2018 survey year.¹ Additional samples from both the landline and cell phone frames produced 1,375 interviews in 2017-2018 within San Diego County. In 2018, an oversample of American Indian and Alaska Native residents of California added 317 completed interviews, and specific gender and ethnic oversamples in San Francisco provided an additional 498 interviews. Furthermore, an address-based sample from the USPS Delivery Sequence File produced 339 landline or cell phone interviews in 2017 within the northern part of Imperial County.

Within each geographic stratum, residential telephone numbers were selected, and within each household, one adult (age 18 and over) respondent was randomly selected. In those households with adolescents (ages 12-17) and/or children (under age 12), one adolescent and one child of the randomly selected parent/guardian were randomly selected; the adolescent was interviewed directly, and the adult sufficiently knowledgeable about the child's health completed the child interview.

¹ For the 2017-2018, RDD landline and cell sample frames produced totals of 290 Korean, and 235 Vietnamese adult interviews.

Table 1-1. California county and county group strata used in the CHIS 2017-2018 sample design

1. Los Angeles	7. Alameda	27. Shasta
1.1 Antelope Valley	8. Sacramento	28. Yolo
1.2 San Fernando Valley	9. Contra Costa	29. El Dorado
1.3 San Gabriel Valley	10. Fresno	30. Imperial
1.4 Metro	11. San Francisco	31. Napa
1.5 West	12. Ventura	32. Kings
1.6 South	13. San Mateo	33. Madera
1.7 East	14. Kern	34. Monterey
1.8 South Bay	15. San Joaquin	35. Humboldt
2. San Diego	16. Sonoma	36. Nevada
2.1 N. Coastal	17. Stanislaus	37. Mendocino
2.2 N. Central	18. Santa Barbara	38. Sutter
2.3 Central	19. Solano	39. Yuba
2.4 South	20. Tulare	40. Lake
2.5 East	21. Santa Cruz	41. San Benito
2.6 N. Inland	22. Marin	42. Colusa, Glenn, Tehama
3. Orange	23. San Luis Obispo	43. Del Norte, Lassen, Modoc, Plumas, Sierra, Siskiyou, Trinity
4. Santa Clara	24. Placer	44. Amador, Alpine, Calaveras, Inyo, Mariposa, Mono, Tuolumne
5. San Bernardino	25. Merced	
6. Riverside	26. Butte	

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

The CHIS RDD sample is of sufficient size to accomplish the second objective (produce estimates for the state’s major racial/ethnic groups, as well as many ethnic subgroups). However, given the smaller sample sizes of one-year data files, two or more pooled cycles years of CHIS data are generally required to produce statistically stable estimates for small population groups such as racial/ethnic subgroups, children, teens, etc. To increase the precision of estimates for Koreans and Vietnamese, areas with relatively high concentrations of these groups were sampled at higher rates. These geographically targeted oversamples were supplemented by telephone numbers associated with group-specific surnames, drawn from listed telephone directories to increase the sample size further for Koreans and Vietnamese.

To help compensate for the increasing number of households without landline telephone service, a separate RDD sample was drawn of telephone numbers assigned to cellular service. In CHIS 2017-

2018, the goal was to complete approximately 50% of all RDD interviews statewide with adults contacted via cell phone. Because the geographic information available for cell phone numbers is limited and not as precise as that for landlines, cell phone numbers were assigned to the same 44 geographic strata (i.e., 41 strata defined by a single county and 3 strata created by multiple counties) using a classification associated with the rate center linked to the account activation. The cell phone stratification closely resembles that of the landline sample and has the same stratum names, though the cell phone strata represent slightly different geographic areas than the landline strata. The adult owner of the sampled cell phone number was automatically selected for CHIS. Cell numbers used exclusively by children under 18 were considered ineligible. A total of 880 teen interviews and 3,186 child interviews were completed in CHIS 2017-2018 with approximately 48% of teen interviews and 65% of child interviews coming from the cell phone sample.

The cell phone sampling method used in CHIS has evolved significantly since its first implementation in 2007 when only cell numbers belonging to adults in cell-only households were eligible for sampling adults. These changes reflect the rapidly changing nature of cell phone ownership and use in the US.² There have been three significant changes to the cell phone sample since 2009. First, all cell phone sample numbers used for non-business purposes by adults living in California were eligible for the extended interview. Thus, adults in households with landlines who had their own cell phones or shared one with another adult household member could have been selected through either the cell or landline sample. The second change was the inclusion of child and adolescent extended interviews. The third, enacted in CHIS 2015-2016 was to increase the fraction of the sample comprised of cell phones from 20% to 50% of completed interviews. In 2017-2018, we additionally sampled out-of-area cell phone numbers. These are cell phone numbers with exchanges outside of California that can be matched to an address that is within California, indicating that the owner of the cell phone resides in California but purchased a cell phone in another state.

The cell phone sample design and targets by stratum of the cell phone sample have also changed throughout the cycles of the survey. In CHIS 2007, a non-overlapping dual-frame design was implemented where cell phone only users were screened and interviewed in the cell phone sample. Beginning in 2009, an overlapping dual-frame design has been implemented. In this design, dual phone users (e.g., those with both cell and landline service) can be selected and interviewed from either the landline or cellphone samples.

² <https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201906.pdf>

The number of strata has also evolved as more information about cell numbers has become available. In CHIS 2007, the cell phone frame was stratified into seven geographic sampling strata created using telephone area codes. In CHIS 2009 and 2011-2012, the number of cell phone strata was increased to 28. These strata were created using both area codes and the geographic information assigned to the number. Beginning in CHIS 2011, with the availability of more detailed geographic information, the number of strata was increased to 44 geographic areas that correspond to single and grouped counties similar to the landline strata. The use of 44 geographic strata continued in CHIS 2017-2018.

1.4 Data Collection

To capture the rich diversity of the California population, interviews were conducted in six languages: English, Spanish, Chinese (Mandarin and Cantonese dialects), Vietnamese, Korean, and Tagalog. Tagalog interviews were conducted for part of the CHIS 2013-2014 cycle, but 2015-2016 were the first cycle years that Tagalog interviews were conducted from the beginning of data collection. These languages were chosen based on analysis of 2010 Census data to identify the languages that would cover the largest number of Californians in the CHIS sample that either did not speak English or did not speak English well enough to otherwise participate.

SSRS designed the methodology and collected data for CHIS 2017-2018, under contract with the UCLA Center for Health Policy Research. SSRS is an independent research firm that specializes in innovative methodologies, optimized sample designs, and reaching low-incidence populations. For all sampled households, SSRS staff interviewed one randomly selected adult in each sampled household, and sampled one adolescent and one child if they were present in the household and the sampled adult was their parent or legal guardian. Thus, up to three interviews could have been completed in each household. Children and adolescents were generally sampled at the end of the adult interview. If the screener respondent was someone other than the sampled adult, children and adolescents could be sampled as part of the screening interview, and the extended child (and adolescent) interviews could be completed before the adult interview. This “child-first” procedure was first used in CHIS 2005 and has been continued in subsequent CHIS cycles because it substantially increases the yield of child interviews. While numerous subsequent attempts were made to complete the adult interview for child-first cases, the final data contain completed child and adolescent interviews in households for which an adult interview was not completed. Table 1-2 shows the number of completed adult, child, and adolescent interviews in CHIS 2017-2018 by the type of sample (landline RDD, surname list, cell RDD, and ABS). Note that these figures were accurate as of data collection completion for 2017-2018 and may differ slightly from numbers in the data files due to data cleaning and edits. Sample sizes to compare against data files you are using are found online at <http://www.chis.ucla.edu/chis/design/Pages/sample.aspx>.

Table 1-2. Number of completed CHIS 2017-2018 interviews by type of sample and instrument

Type of sample ¹	Adult ²	Child	Adolescent
Total all samples	42,330	3,186	880
Landline RDD ³	18,896	1,049	434
Cell RDD	21,554	1,996	409
Vietnamese surname list landline	188	10	5
Vietnamese surname list cell phone	80	10	3
Korean surname list landline	354	16	3
Korean surname list cell phone	56	5	1
Both Korean and Vietnamese landline	48	1	1
Imperial County ABS Oversample	339	42	15
AIAN Oversample landline	130	10	-
AIAN Oversample cell phone	187	20	3
San Francisco Oversample landline	148	4	1
San Francisco Oversample cell phone	350	23	5

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

¹ Completed interviews listed for each sample type refer to the sampling frame from which the phone number was drawn. Interviews could be conducted using numbers sampled from a frame with individuals who did not meet the target criteria for the frame but were otherwise eligible residents of California. For example, only 157 of the 190 adult interviews completed from the Vietnamese surname list involved respondents who indicated being having Vietnamese ethnicity.

² Includes interviews meeting the criteria as partially complete.

³ Breakdown of completes by frame deviates slightly from original sample numbers due to numbers changing frames following post-sampling database processing.

Interviews in all languages were administered using SSRS's computer-assisted telephone interviewing (CATI) system. The average adult interview took about 42 minutes to complete. The average child and adolescent interviews took about 19 minutes and 24 minutes, respectively. For "child-first" interviews, additional household information asked as part of the child interview averaged about 14 minutes. Interviews in non-English languages typically took longer to complete with an average length of about 50 minutes for the adult interview, 29 minutes for the teen, and 23 minutes for the child. More than eight percent of the adult interviews were completed in a language other than English, as were about 13 percent of all child (parent proxy) interviews and six percent of all adolescent interviews.

Table 1-3 shows the major topic areas for each of the three survey instruments (adult, child, and adolescent). If questions were asked in only one year of survey implementation, the specific year is indicated in the table.

Table 1-3. CHIS 2017-2018 survey topic areas by instrument

Health status	Adult	Teen	Child
General health status	✓	✓	✓
Days missed from work or school due to health problems		✓	✓
Health conditions	Adult	Teen	Child
Asthma	✓	✓	✓
Diabetes, gestational diabetes, pre-diabetes/borderline diabetes	✓		
Heart disease, high blood pressure	✓		
Physical disability	✓		
Physical, behavioral, and/or mental conditions			✓
Developmental assessment, referral to a specialist by a doctor			✓
Mental health	Adult	Teen	Child
Mental health status	✓	✓	
Perceived need, access and utilization of mental health services	✓	✓	
Functional impairment, stigma, three-item loneliness scale (2017)	✓		
Suicide ideation and attempts	✓	✓	
Health behaviors	Adult	Teen	Child
Dietary and water intake, breastfeeding (younger than 3 years)	✓	✓	✓
Physical activity and exercise		✓	✓
Commute from school to home		✓	✓
Walking for transportation and leisure (2017)	✓		
Alcohol, cigarette, and E-cigarette use	✓	✓	
Marijuana use	✓	✓	
Opioid use	✓		
Chewing tobacco, tobacco flavors (2018)	✓	✓	
Exposure to second-hand smoke (2018)	✓		
Sexual behaviors	✓	✓	
HIV testing, HIV prevention medication	✓	✓	
Sleep and technology		✓	
Sedentary time		✓	✓
Contraceptive use	✓	✓	

(continued)

Table 1-3. CHIS 2017-2018 survey topic areas by instrument (continued)

Women's health	Adult	Teen	Child
Pregnancy status, postpartum care	✓		
Dental health	Adult	Teen	Child
Last dental visit, main reason haven't visited dentist	✓	✓	✓
Current dental insurance coverage	✓		✓
Condition of teeth	✓	✓	
Neighborhood and housing	Adult	Teen	Child
Safety, social cohesion	✓	✓	✓
Homeownership	✓		
Length of time at current residence (2017)	✓		
Park use, park and neighborhood safety		✓	✓
Civic engagement	✓	✓	
Access to and use of health care	Adult	Teen	Child
Usual source of care, visits to medical doctor	✓	✓	✓
Emergency room visits	✓	✓	✓
Delays in getting care (prescriptions and medical care)	✓	✓	✓
Communication problems with doctor	✓		✓
Discrimination (2017)	✓		
Timely appointment	✓	✓	✓
Access to specialist and general doctors	✓		
Tele-medical care	✓		
Care coordination (2018)	✓	✓	✓
Voter engagement	Adult	Teen	Child
Voter engagement	✓		
Food environment	Adult	Teen	Child
Access to fresh and affordable foods	✓		
Availability of food in household over past 12 months	✓		
Hunger	✓		
Health insurance	Adult	Teen	Child
Current insurance coverage, spouse's coverage, who pays for coverage	✓	✓	✓
Health plan enrollment, characteristics and assessment of plan	✓	✓	✓
Whether employer offers coverage, respondent/spouse eligibility	✓		
Coverage over past 12 months, reasons for lack of insurance	✓	✓	✓
High deductible health plans	✓	✓	✓
Partial scope Medi-Cal	✓		
Medical debt, hospitalizations	✓		

(continued)

Table 1-3. CHIS 2017-2018 survey topic areas by instrument (continued)

Public program eligibility	Adult	Teen	Child
Household poverty level	✓		
Program participation (CalWORKs, Food Stamps, SSI, SSDI, WIC, TANF)	✓	✓	✓
Assets, child support, Social security/pension	✓		
Medi-Cal eligibility, Medi-Cal renewal	✓		
Reason for Medi-Cal non-participation	✓	✓	✓
Bullying	Adult	Teen	Child
Bullying, school safety		✓	
Parental involvement/adult supervision	Adult	Teen	Child
Parental involvement			✓
Parental support, teach support		✓	
Child care and school	Adult	Teen	Child
Current child care arrangements			✓
Paid child care	✓		
First 5 California: Talk, Read, Sing Program / Kit for New Parents			✓
Preschool/school attendance, school name		✓	✓
Preschool quality			✓
School instability, school programs and organizational involvement		✓	
Employment	Adult	Teen	Child
Employment status, spouse's employment status	✓		
Hours worked at all jobs	✓		
Industry and occupation, firm size	✓		
Income	Adult	Teen	Child
Respondent's and spouse's earnings last month before taxes	✓		
Household income, number of persons supported by household income	✓		
Placement on quality of life ladder (2018)	✓		
Respondent characteristics	Adult	Teen	Child
Race and ethnicity, age, gender, height, weight	✓	✓	✓
Veteran status	✓		
Marital status, registered domestic partner status (same-sex couples)	✓		
Sexual orientation, gender identity	✓		
Gender expression		✓	
Living with parents	✓		
Education, English language proficiency	✓		
Citizenship, immigration status, country of birth, length of time in U.S., languages spoken at home	✓	✓	✓

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

1.5 Response Rates

The overall response rates for CHIS 2017-2018 are composites of the screener completion rate (i.e., success in introducing the survey to a household and randomly selecting an adult to be interviewed) and the extended interview completion rate (i.e., success in getting one or more selected persons to complete the extended interview). For CHIS 2017-2018, the landline/list sample household response rate was 5.6 percent (the product of the screener response rate of 10.8 percent and the extended interview response rate at the household level of 52.0 percent). The cell sample household response rate was 3.5 percent, incorporating a screener response rate of 7.1 percent and household-level extended interview response rate of 49.0 percent. CHIS uses AAPOR response rate RR4 (see more detailed in *CHIS 2017-2018 Methodology Series: Report 4 – Response Rates*).

Within the landline and cell phone sampling frames for 2017-2018, the extended interview response rate for the landline/list sample varied across the adult (43.8 percent), child (60.0 percent) and adolescent (25.6 percent) interviews. The adolescent rate includes the process of obtaining permission from a parent or guardian.

The adult interview response rate for the cell sample was 40.9 percent, the child rate was 57.5 percent, and the adolescent rate was 18.0 percent in 2017-2018 (see Table 1-4a). Multiplying these rates by the screener response rates used in the household rates above gives an overall response rate for each type of interview for each survey year (see Table 1-4b). As in previous years, household and person level response rates vary by sampling stratum. CHIS response rates are similar to, and sometimes higher than, other comparable surveys that interview by telephone.

Table 1-4a. CHIS 2017-2018 response rates – Conditional

Type of Sample	Screener	Household	Adult (given screened)	Child (given screened & eligibility)	Adolescent (given screened & permission)
Overall	8.0%	49.9%	42.3%	58.3%	21.3%
Landline RDD/List	10.8%	52.0%	43.8%	60.0%	25.6%
Cell RDD/List	7.1%	49.0%	40.9%	57.5%	18.0%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

Note. This table does not include the Imperial County, AIAN, and San Francisco oversamples.

Table 1-4b. CHIS 2017-2018 response rates – Unconditional

Type of Sample	Screener	Household	Adult (given screened)	Child (given screened & eligibility)	Adolescent (given screened & permission)
Overall	8.0%	4.0%	3.4%	4.6%	1.7%
Landline RDD/List	10.8%	5.6%	4.7%	6.4%	2.8%
Cell RDD/List	7.1%	3.5%	2.9%	4.1%	1.3%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

Note. This table does not include the Imperial County, AIAN, and San Francisco oversamples

To maximize the response rate, especially at the screener stage, an advance letter in six languages was mailed to all landline sampled telephone numbers for which an address could be obtained from reverse directory services. An advance letter was mailed for 39.1 percent of the landline RDD sample telephone numbers not identified by the sample vendor as business numbers or not identified by SSRS’s dialer software as nonworking numbers, and for 100 percent of surname list sample numbers. Combining these two frames, advance letters were sent to 41.0 percent of all fielded landline telephone numbers. From the onset of 2017 fielding until April of 2018, cell phone sample with matched telephone numbers also received an advance letter. However, after a randomized experiment confirmed that the accuracy of the matching for cell phone sample did not warrant continuing these mailings, they were discontinued (for full experiment details, see Section 7.1 in *CHIS 2017-2018 Methodology Series: Report 4 – Response Rates*). Overall, across the two years, for cell sample, an advance letter was mailed for 27.2 percent of the RDD sample telephone numbers not identified by the sample vendor as business numbers or not identified by SSRS’s dialer software as nonworking numbers, and for 100 percent of surname list sample numbers. Combining these two frames, advance letters were sent to 30.4 percent of all fielded cell telephone numbers. As in all CHIS cycles since CHIS 2005, a \$2 bill was included with the CHIS 2017-2018 advance letter to encourage cooperation. Unlike previous cycles, additional incentives were not offered to cell phone and nonresponse follow up (NRFU) respondents.

After all follow-up attempts to complete the full questionnaire were exhausted, adults who completed at least approximately 80 percent of the questionnaire (i.e., through Section K which covers employment, income, poverty status, and food security), were counted as “complete.” At least some responses in the employment and income series, or public program eligibility and food insecurity series were missing from those cases that did not complete the entire interview. They were imputed to enhance the analytic utility of the data.

Proxy interviews were conducted for any adult who was unable to complete the extended adult interview for themselves, in order to avoid biases for health estimates of chronically ill or handicapped people. Eligible selected persons were re-contacted and offered a proxy option. In CHIS 2017-2018, either a spouse/partner or adult child completed a proxy interview for 20 adults. A reduced questionnaire, with questions identified as appropriate for a proxy respondent, was administered.

Further information about CHIS data quality and nonresponse bias is available at <http://www.chis.ucla.edu/chis/design/Pages/data-quality.aspx>.

1.6 Weighting the Sample

To produce population estimates from CHIS data, weights were applied to the sample data to compensate for the probability of selection and a variety of other factors, some directly resulting from the design and administration of the survey. The sample was weighted to represent the noninstitutionalized population for each sampling stratum and statewide. The weighting procedures used for CHIS 2017-2018 accomplish the following objectives:

- Compensate for differential probabilities of selection for phone numbers (households) and persons within household;
- Reduce biases occurring because non respondents may have different characteristics than respondents;
- Adjust, to the extent possible, for undercoverage in the sampling frames and in the conduct of the survey; and
- Reduce the variance of the estimates by using auxiliary information

As part of the weighting process, a household weight was created for all households that completed the screener interview. This household weight is the product of the “base weight” (the inverse of the probability of selection of the telephone number) and a variety of adjustment factors. The household weight was used to compute a person-level weight, which includes adjustments for the within-household sampling of persons and for nonresponse. The final step was to adjust the person-level weight using weight calibration, a procedure that forced the CHIS weights to sum to estimated population control totals simultaneously from an independent data source (see below).

Population control totals of the number of persons by age, race, and sex at the stratum level for CHIS 2017-2018 were created primarily from the California Department of Finance’s (DOF) 2017 and 2018 Population Estimates, and associated population projections. The procedure used several

dimensions, which are combinations of demographic variables (age, sex, race, and ethnicity), geographic variables (county, Service Planning Area in Los Angeles County, and Health Region in San Diego County), and education. One limitation of using Department of Finance (DOF) data is that it includes about 2.4 percent of the population of California who live in “group quarters” (i.e., persons living with nine or more unrelated persons and includes, for example nursing homes, prisons, dormitories, etc.). These persons were excluded from the CHIS target population and, as a result, the number of persons living in group quarters was estimated and removed from the Department of Finance control totals prior to calibration.

The DOF control totals used to create the CHIS 2017-2018 weights are based on 2010 Census counts, as were those used for the 2015-2016 cycle. Please pay close attention when comparing estimates using CHIS 2017-2018 data with estimates using data from CHIS cycles before 2010. The most accurate California population figures are available when the U.S. Census Bureau conducts the decennial census. For periods between each census, population-based surveys like CHIS must use population projections based on the decennial count. For example, population control totals for CHIS 2009 were based on 2009 DOF estimates and projections, which were based on Census 2000 counts with adjustments for demographic changes within the state between 2000 and 2009. These estimates become less accurate and more dependent on the models underlying the adjustments over time. Using the most recent Census population count information to create control totals for weighting produces the most statistically accurate population estimates for the current cycle, but it may produce unexpected increases or decreases in some survey estimates when comparing survey cycles that use 2000 Census-based information and 2010 Census-based information.

1.7 Imputation Methods

Missing values in the CHIS data files were replaced through imputation for nearly every variable. This was a substantial task designed to enhance the analytic utility of the files. SSRS imputed missing values for those variables used in the weighting process and UCLA-CHPR staff imputed values for nearly every other variable.

Three different imputation procedures were used by SSRS to fill in missing responses for items essential for weighting the data. The first imputation technique was a completely random selection from the observed distribution of respondents. This method was used only for a few variables when the percentage of the items missing was very small. The second technique was hot deck imputation. The hot deck approach is one of the most commonly used methods for assigning values for missing responses. Using a hot deck, a value reported by a respondent for a specific item was assigned or donated to a

“similar” person who did not respond to that item. The characteristics defining “similar” vary for different variables. To carry out hot-deck imputation, the respondents who answered a survey item formed a pool of donors, while the item non respondents formed a group of recipients. A recipient was matched to the subset pool of donors based on household and individual characteristics. A value for the recipient was then randomly imputed from one of the donors in the pool. SSRS used hot deck imputation to impute the same items that have been imputed in all CHIS cycles since 2003 (i.e., race, ethnicity, home ownership, and education). The last technique was external data assignment. This method was used for geocoding variables such as strata, Los Angeles SPA, San Diego HSR, and zip where the respondent provided inconsistent information. For such cases geocoding information was used for imputation.

UCLA-CHPR imputed missing values for nearly every variable in the data files other than those imputed by SSRS and some sensitive variables for which nonresponse had its own meaning. Overall, item nonresponse rates in CHIS 2017-2018 were low, with most variables missing valid responses for less than 1% of the sample. Questions that go to fewer overall respondents or that ask about more sensitive topics can have higher nonresponse.

The imputation process conducted by UCLA-CHPR started with data editing, sometimes referred to as logical or relational imputation: for any missing value, a valid replacement value was sought based on known values of other variables of the same respondent or other sample(s) from the same household. For the remaining missing values, model-based hot-deck imputation without donor replacement was used. This method replaced a missing value for one respondent using a valid response from another respondent with similar characteristics as defined by a generalized linear model with a set of control variables (predictors). The link function of the model corresponded to the nature of the variable being imputed (e.g. linear regression for continues variables, logistic regression for binary variables, etc.). Donors and recipients were grouped based on their predicted values from the model.

Control variables (predictors) used in the model to form donor pools for hot-decking always included standard measures of demographic and socioeconomic characteristics, as well as geographic region; however, the full set of control variables varies depending on which variable is being imputed. Most imputation models included additional characteristics, such as health status or access to care, which are used to improve the quality of the donor-recipient match.

Among the standard list of control variables, gender, age, race/ethnicity, educational attainment and region of California were imputed by SSRS. UCLA-CHPR began their imputation process by imputing household income so that this characteristic was available for the imputation of other variables. Sometimes CHIS collects bracketed information about the range in which the respondent’s value falls

when the respondent will not or cannot report an exact amount. Household income, for example, was imputed using the hot-deck method within ranges defined by a set of auxiliary variables such as bracketed income range and/or poverty level.

The imputation order of the other variables generally followed the questionnaire. After all imputation procedures were complete, every step in the data quality control process was performed once again to ensure consistency between the imputed and non-imputed values on a case-by-case basis.

2. USE OF RESPONSE RATES

Response rates provide one indicator of the success of a survey at representing the population sampled. They are not sufficient for fully assessing data quality, because the bias in an estimate is related to both the response rate and the characteristics of those responding and not responding. Keeter, Miller, Kohut, Groves, & Presser (2000), Curtin, Presser, & Singer (2000, 2003), Groves (2006), and Groves and Peytcheva (2008) have provided examples that show the correlation between response rates and nonresponse bias is often weak. More recently, Brick and Tourangeau (2017) reexamined the data compiled by Groves and Peytcheva (2008) and show evidence for a between-study component of variance in addition to the within-study variance identified by Groves and Peytcheva (2008). This finding implies that response rates could be correlated with nonresponse bias so that surveys with higher response rates have less nonresponse bias in their estimates. Alternative measures that are more related to nonresponse bias have been proposed (see Wagner, 2012), but response rates are still reported as an indicator of the overall success of a data collection effort.

The main objectives of this report are: (1) to present response rates to analysts of CHIS 2017-2018 data; (2) to explain the methods used to calculate the response rates; and (3) to provide information about variation in the response for subgroups of the California population that might be related to nonresponse bias. To accomplish these goals, the response rates are weighted so that they estimate proportions of the population responding to the survey. This procedure is consistent with the standards given by the American Association for Public Opinion Research (AAPOR) (The American Association for Public Opinion Research, 2016). For example, weighting accounts for differences in sampling rates by county and facilitates appropriate state-level response rate reporting.

Sample weights are used in computing response rates because the bias of a simple statistic, such as a mean based on respondent data (\bar{y}_r), is a function of the response rate and of the difference between respondents and nonrespondents on the characteristic being measured. If we assume the population is partitioned into a stratum of respondents (R) and a stratum of nonrespondents (NR), survey estimates are computed only with the observations from the respondent stratum. Each observation from a respondent is weighted by the inverse of its selection probability. In a probability sample survey, the bias attributable to nonresponse of \bar{y}_r would be:

$$bias(\bar{y}_r) = (1 - r)(\bar{Y}_R - \bar{Y}_{NR}) \quad (2-1)$$

where r is the appropriately weighted response rate and the quantity on the right is the difference in the means between the respondent and nonrespondent strata (Lessler & Kalsbeek, 1992). This formula shows

that the bias increases as the response rate decreases, provided the difference between respondents and nonrespondents remains constant. If the response rate is not weighted, this relationship does not hold for a survey like CHIS where selection probabilities vary across sample units. If the county samples are not weighted by their selection probabilities, then the response rate cannot be used in this nonresponse bias equation.

3. DEFINING RESPONSE RATES

The term “response rate” is used in many ways across surveys and organizations, so its careful definition is important. Two organizations that describe response rates in a relatively consistent manner are the Council of American Survey Research Organizations (CASRO) (Council of American Survey Research Organizations, 1982) and AAPOR (The American Association for Public Opinion Research, 2016). The AAPOR report is periodically updated and is available on the organization’s website.

We used the definitions described in the AAPOR guidelines, which include several different response rate definitions. Among these, RR3 and RR4 are most commonly accepted in the current survey research field for telephone surveys like CHIS. The only difference between them is that RR3 does not include partial completes in the numerator while RR4 does. This report uses AAPOR’s RR4 for the telephone samples in CHIS 2017-2018 (landline, surname list, and cell phone samples). The 2017 address-based sample (ABS) in Imperial County is excluded from the computation of overall 2017-2018 CHIS response rates so that the rates are comparable with those reported in previous CHIS cycles. The report also excludes the 2018 oversamples in San Francisco and of American Indian and Alaskan Natives (AIAN). Independent response rates are reported for these oversamples in Section 6.4. Since telephone numbers were sampled with different selection probabilities, we use the weighted number of telephone numbers rather than the number of cases (unweighted) for the response rate computation. This approach also compensates for differential sampling across geographic areas.

Both AAPOR and CASRO recommend that a survey response rate be defined as the ratio of completed interviews to eligible reporting units (i.e., residential households). This recommendation is more difficult to apply than it may appear, especially in telephone surveys. Determining eligibility is problematic because some telephone numbers, even after being called multiple times over a range of days and times of day, are never answered or are picked up only by voice mail or answering machines. These outcomes may occur for many reasons, as discussed by Shapiro et al. (1995). A voicemail message or answering machine may not indicate whether a number is used for a business or a residence and additionally, for those that are residential there is not enough information to know whether the residence is actually in California or not. The eligibility of numbers with these outcomes cannot be determined directly, adding ambiguity to the definition of a response rate.

The proportion of sample units (telephone numbers or addresses) that are eligible is denoted as ‘*e*’ in the AAPOR RR4 equation. Once the eligibility proportion is established, the response rate can be computed as the weighted ratio of the responding units to the total of known and estimated eligible units.

The approach we used for estimating e was recommended by AAPOR (2016). This formula estimates e as the proportion of cases of known eligibility divided by all cases with known eligibility, both known eligible and known ineligible (AAPOR, 2016). This approach was used to estimate e in the landline, list, and cell phone samples; this estimate of e is also used in the weighting process.

The next step in computing response rates depends on the specific extended interview being analyzed, such as the adult interview. For example, to compute the conditional response rate for the adult interview, the numerator is the weighted number of completed adult interviews and the denominator is the weighted number of eligible adults sampled in households that completed the screening interview. An overall or joint response rate can be computed by multiplying the screening and adult interview rates. This approach applies to all samples in CHIS 2017-2018.

In CHIS 2001 and 2003, the adult interview in the landline samples had to be completed before children or adolescents could be interviewed. Beginning in 2005, the child-first procedure has permitted child or adolescent interviews to be done before the adult interview under certain circumstances in the landline and surname list samples. This results in a computed household-level response rate that considers a household to be a respondent if either an adult or a child interview is completed. No child-first procedure is used in the cell phone sample. The specifics of the computations are discussed in Chapter 5.

Computing a response rate for a subgroup (e.g., females) requires that all the units in both the numerator and denominator of the rate can be classified as members of the subgroup. To do this, data must be available to classify all sampled units, not just respondents. At the screener level, data to identify subgroups from the sampled telephone numbers are limited. However, the telephone numbers can be classified by geography (county or stratum), and by whether an address could be matched to the telephone number. At the extended interview or person level, data from the screener can be used to classify households by characteristics that are known for virtually all completed households. Because the screening interview identifies the gender of selected persons, extended interview response rates can be computed separately for males and females. However, screener response rates cannot be computed by gender because data on gender are not available for every sampled telephone number. Therefore, the subgroup overall response rate must be computed by multiplying the extended interview response rate for the subgroup by the overall screener response rate. Data for subgroup classification collected at the screener interview are used to compute subgroup response rates in CHIS 2017-2018.

An alternative approach involves computing the response rate over both the screener and the extended interview as a single interview. This alternative approach is used in the Behavioral Risk Factor

Surveillance System (BRFSS); the specifics of the computation of the response rate are given in the 2016 BRFSS Data Quality Summary report (Centers for Disease Control, 2017). In that report, the combined response rate labeled “AAPOR response rate #4” is the alternative computation. The difference in the computed response rates is substantial. For example, the 2017 California BRFSS AAPOR response rate 4 for landline and cell phone sample combined was 44.9 percent, over 11 times higher than the overall response rate for CHIS 2017-2018 of 3.6 percent. Section 7.3 in this report addresses differences between the BRFSS and CHIS response rate calculations that could explain some of the difference in overall response rates. As such, the BRFSS and CHIS overall response rates are not strictly comparable without accounting for these differences. In addition, comparing response rates between two surveys provides only a general sense of the relative representativeness of each survey. Specific differences in methods and protocols between surveys could produce different outcomes in nonresponse bias for key estimates that are not associated with lower or higher response rates (Groves and Peytcheva, 2008).

4. REVIEW OF CONTACT METHODS

4.1 Landline and Surname List Samples

CHIS includes both screening and extended interviews. For the landline and list samples, one adult was sampled from each household completing a screening interview. In households with persons under age 17, up to one child and one adolescent were also sampled. The screening interview took just under 3 minutes to conduct on average. A parent or legal guardian was interviewed about the sampled child and the sampled adolescent was interviewed if a parent or legal guardian gave permission. The adult extended interview averaged just over 41 minutes, the child interview about 19 minutes, and the adolescent interview about 22 minutes. Interviews in languages other than English generally took longer than these averages. Detailed interview timing information is given in *CHIS 2017-2018 Methodology Series: Report 2 – Data Collection Methods*.

Before calling landline or surname list sample telephone numbers, SSRS mailed a prenotification letter to those for which an address could be obtained from reverse directory services. The letter informed the household that they would be called to participate in CHIS, that their participation was voluntary but important to the success of the survey, and that the survey was legitimate. The letter contained a two-dollar bill to encourage the sampled household to respond. After the advance mailing, initial telephone calls were made to complete the screener interview with a household respondent at least 18 years old. Multiple attempts, up to an average of 10 calls if needed, were made to establish the initial contact with the household. If the household refused to participate, additional attempts were made to complete the screener after waiting 1 to 3 weeks following the refusal.

A similar process was used at the extended level for sampled adults, children and teens in the landline, and surname list samples. Attempts at refusal conversion were stopped at any point if the respondent expressed hostility at being called or specifically requested that they not be called again.

A variety of other methods were used to increase response rates in CHIS 2017-2018. A very important procedure involved translating and conducting the interview in Spanish, Chinese (Cantonese and Mandarin dialects), Korean, Vietnamese, and Tagalog to accommodate respondents who did not speak English. Another method was the use of proxy interviews for any adults who were unable to participate because of mental or physical limitations. Other adult household members knowledgeable about the sampled persons' health, usually a parent, spouse, or an adult child of the sampled adult completed a proxy interview in these cases; 17 adult proxy extended interviews were completed. In addition to the efforts to encourage respondents to participate, other approaches were used to increase

response rates. Interviewers were trained and given refresher training on methods to avoid refusals and to convert those who had refused. Only those interviewers who had above average response rates were trained and allowed to conduct refusal conversions. Multiple call attempts were made to contact sampled household members to complete the extended interviews.

Later in this report, we discuss some of these methods and describe the increases in the number of interviews that resulted, where possible. Some methods, such as interviewer training, cannot be assessed quantitatively without specially designed experiments.

4.2 Cell Phone Sample

Data collection methods for the cell phone sample were similar to those for the landline and surname list samples. SSRS stopped mailing a prenotification letter to the cell phone sample during 2018 given the low return and high cost. For more details on this experiment, see the subheading “Advance Letter” in Section 7.1.

5. RESPONSE RATE FORMULAS

This chapter describes the formulas used to compute the response rates for CHIS 2017-2018. Response rates are calculated for the **screeener** and **extended interviews**, including **household** and **person** overall response rates. Because of the different subsampling rates by stratum, unweighted response rates are not comparable to the weighted rates and should not be used to assess response patterns.

A **screeener response rate** is calculated for each sampling stratum by frame, where the stratum is a county or group of counties in the landline sample or California region in the cell phone sample. The formula for the screeener response rate (rr_s) in a single stratum is:

$$rr_s = \frac{\sum_{i \in S_{resp}} w_i}{\sum_{i \in S_{elig}} w_i} \quad (5-1)$$

where w_i is the weight for household i in the stratum after adjusting for differential sampling rates (see *CHIS 2017-2018 Methodology Series: Report 2 – Data Collection Methods*). It is also adjusted for the assignment of sampled units with unknown residential status and the assignment of households with unknown eligibility status. For both the cell and landline samples, S_{resp} is the set of households in the stratum that responded to the screening interview and S_{elig} is the set of households in the stratum that were eligible. As noted earlier, the estimated eligibility rates in all samples were determined using the CASRO method where the proportion of the sampled units with unknown residency status is estimated by the observed proportion of residency telephone numbers among the cases where residency status is known and then the proportion of sampled units with unknown eligibility status is estimated by the observed proportion of eligible telephone numbers among cases where eligibility status is known; these rates are computed separately for landline and cell.

The screeener response rate for the state by frame type is computed in exactly the same way, except the sum is over the whole state rather than for the specific stratum. Thus, the state screeener response rate in each sample is a weighted average of the stratum screeener response rates for a specific frame type where the weights are equal to the population size in the stratum. As a result, the state response rate differs from what would be obtained from the unweighted average of the response rates of the strata.

As mentioned in the previous chapter, because of the child-first procedure, some sampled households in the landline samples completed a child or adolescent interview or both without completing an adult interview. Some household-level information normally collected as part of the adult interview was collected in child interviews in these situations. As a result, a **household-level response rate** for the extended interview can be calculated to represent the proportion of households cooperating in CHIS.

The household is counted as responding if an adult, child, or adolescent extended interview was completed. The household extended interview response rate is computed as:

$$rr_h = \frac{\sum_{i \in H_{resp}} w_i^*}{\sum_{i \in H_{scr}} w_i^*} \quad (5-2)$$

where w_i^* is the adjusted weight for household i in the stratum, H_{resp} is the set of households in the stratum where at least one adult or child extended interview was completed, and H_{scr} is the set of households where the screener interview was completed. In other words, the household response rate is conditioned on the completion of the screener interview, and thus should not be interpreted as overall survey response rate.

The next set of response rates is for each **extended interview**. The **extended response rate for the adult interview** in a stratum is the weighted percentage of the adults sampled in the screener who completed the adult extended interview. The weight is the inverse of the probability of selecting the adult within the household, while for the cell phone sample it is one because of the assumption that there is one adult user per cell phone number. Because of this weighting, adults sampled from landline households with more than one adult have a larger effect on the response rate than those in cell households and landline households with only one adult. The extended adult response rate (rr_a) is computed as

$$rr_a = \frac{\sum_{i \in A_{resp}} w_i^1}{\sum_{i \in A_{elig}} w_i^1} \quad (5-3)$$

where the numerator is summed over all adult respondents in 2017-2018, and the denominator is summed over all eligible sampled adults. The weight being summed in this case, w_i^1 is the adult weight that accounts for selecting the adult. The adult response rate is conditioned on the completion of the screener interview.

The **extended interview response rate** computation for **children and adolescents** is similar to the adult procedure; however, the child-first procedure adds some complexity in the landline samples. *If the adult interview was conducted before the child interview because the conditions for the child-first procedure were not met, then the child and adolescent extended response rates include only those households in which the adult extended interview is completed.* In this case, the child or adolescent rate is conditional on the adult interview. If the child first procedure was implemented, then the child response rate is conditioned only on the screener. The **extended child response rate** (rr_c) is:

$$rr_c = \frac{\sum_{i \in C_{resp}} w_i^n}{\sum_{i \in C_{elig}} w_i^n} \quad (5-4)$$

where the numerator is summed over all completed child interviews in 2017-2018, and the denominator is summed over all eligible sampled children. The weight being summed in this case, w_i^n , is the inverse of the probability of selecting the child within the household.

The exact same procedure is used for the **adolescent extended interview response rate** (rr_t), and it is computed as:

$$rr_t = \frac{\sum_{i \in T_{resp}} w_i^m}{\sum_{i \in T_{elig}} w_i^m} \quad (5-5)$$

where the numerator is summed over all adolescent respondents in 2017-2018, and the denominator is summed over all eligible sampled adolescents. The weight being summed in this case, is the inverse of the probability of selecting the adolescent within the household. Again, is used to identify the rate for adolescents sampled in the screener, and is for adolescents who were sampled in the adult interview. An important source of nonresponse for the adolescent interview was the parent's refusal to provide permission to conduct the interview with the adolescent. The response rate given by (5-5) includes the parent permission as a source of nonresponse (i.e., cases where parent permission is not obtained where it is obtained but an adolescent interview is not completed are both included in the denominator).

The extended response rates defined above are conditional rates in the sense that they are defined for households participating at the screener stage of CHIS. We next calculate **overall response rates** to eliminate the conditioning. For example, the household response rate is conditioned only on the

completion of the screener. The **overall household response rate** is the product of the screener and household response rates and is:

$$orr_h = rr_s \bullet rr_h \quad (5-6)$$

Since the **adult response rate** is conditioned on the completion of the screener, like the household response rate, the product of the screener and adult response rate is an **unconditional or overall adult response rate**. Thus, the overall adult response is:

$$orr_a = rr_s \bullet rr_a \quad (5-7)$$

In the landline/surname list samples, the **child response rate** is conditioned on the screener being completed and on the adult interview being completed for households with children where a child was not sampled in the screener. To discriminate between the different sampling situations, we add a subscript K to identify the procedure. The overall response rate for the child, is defined as:

$$orr_c = rr_s \bullet (p_{Kc} \bullet rr_{c,K} + p_{\bar{K}c} \bullet rr_{ac,\bar{K}} \bullet rr_{c,\bar{K}}) \quad (5-8)$$

where $rr_{ac,\bar{K}}$ is the extended adult interview response rate for sampled adults in households with children where a child was not sampled in the screener, and p_{Kc} $p_{\bar{K}c}$ are the proportions of households with children in which the child-first procedure was used (i.e., a child was sampled in the screener) or not, respectively (i.e., $p_{Kc} + p_{\bar{K}c} = 1$). In the cell phone sample, where child-first procedures were not used, the overall child response rate is similar to (5-7), that is, the product of the screener response rate and the child extended interview response rate.

In the landline/surname list samples, the **adolescent overall response rate** accounting for all levels of response (completion of the screener, the completion of the adult interview in households with adolescents, and the use of the child-first procedure) is:

$$orr_t = rr_s \bullet (p_{Kt} \bullet rr_{t,K} + p_{\bar{K}t} \bullet rr_{at,\bar{K}} \bullet rr_{t,\bar{K}}) \quad (5-9)$$

where $rr_{at,\bar{K}}$ is the extended adult interview response rate for adults in households with adolescents where the child-first procedure was not used, and p_{Kt} and $p_{\bar{K}t}$ are the proportions of households with

adolescents in which the child-first procedure was used or not, respectively (i.e., $p_{Kt} + p_{\bar{Kt}} = 1$). The overall response rate for the adolescent excluding the permission request is not presented because it is not of much interest as an overall rate. Similar to the child response rate for the cell phone sample, the overall cell phone adolescent response rate is computed as the product of the screener response rate and the cell phone adolescent extended interview response rate.

Calculation of the child and adolescent response rates assumes that the screener response rate is the same in households where children and/or adolescents are present as in those without children or adolescents. This is a necessary assumption, since the household composition for screener interview nonrespondents cannot be verified.

We also computed the **overall response rates for the cell phone sample**. The expressions for the overall response rate for adults and households in the cell sample are similar to (5-6) and (5-7), respectively, use the sample screener response rate, household extended response rate, and adult response rate for the cell phone sample. Since there was no child-first procedure in the cell phone sample, the overall response rate for children in the cell phone sample is conditioned on the completion of the adult interview and is computed as:

$$ORR_{c_cell} = RR_{s_cell} \cdot RR_{ac_cell} \cdot RR_{c_cell} \quad (5-10)$$

where RR_{s_cell} is the cell phone screener interview response rate, RR_{ac_cell} is the extended adult interview response rate for adults in households with children in the cell phone sample, and RR_{c_cell} is child extended interview response rate in the cell phone sample. The **overall adolescent response rate** in the cell phone sample is computed using a similar expression but using the extended adult interview response rate for adults in households with adolescents in the cell phone, RR_{at_cell} , and the sample and the adolescent extended interview response rate in the cell phone sample RR_{t_cell} .³

In addition, we computed the **overall response rate for the combined landline/surname list and cell phone samples**. The adult response rate is the weighted average of the overall response rates of adults in the landline or surname list samples and adults in the cell sample. These overall rates are

³ 2013-2014 CHIS Methodology Series: Report 4 – Response Rates used the subscript c_cell for the adolescent extended interview response rate, but the subscript for this element should be t_cell , consistent with formulas 5 and 9.

weighted by the weighted sample size. The overall combined response rate for the landline/surname list and cell phone adult sample, orr_{a_comb} , is computed as:

$$orr_{a_comb} = p_{a_LL} \cdot rr_{a_LL} + p_{a_cell} \cdot rr_{a_cell} \quad (5-11)$$

where the proportions p_{a_LL} and p_{a_cell} are the weighted proportions of adults by sampling frame.

The overall combined response rate for the landline/surname list and cell phone child sample, orr_{c_comb} , is computed as:

$$orr_{c_comb} = p_{c_LL} \cdot rr_{c_LL} + p_{c_cell} \cdot rr_{c_cell} \quad (5-12)$$

where the proportions p_{c_LL} and p_{c_cell} are the weighted proportions of children by sampling frame.

The overall combined response rate for the landline/surname list and cell phone adolescent sample, orr_{t_comb} , is computed as:

$$orr_{t_comb} = p_{t_LL} \cdot rr_{t_LL} + p_{t_cell} \cdot rr_{t_cell} \quad (5-13)$$

where the proportions p_{t_LL} and p_{t_cell} are the weighted proportions of adolescents by sampling frame.

6. RESPONSE RATE TABLES

This chapter provides tables of response rates for the different samples used in CHIS 2017-2018. The first section presents the screener response rates for the combined landline and surname list statewide and by sampling stratum, and the cell phone sample. We also computed the screener response rate for the combined landline, surname list, and cell phone samples. The second section presents the response rates for the screener interview, adult, child, and adolescent interviews for all samples. This section also presents the household response rates and response rates by respondent characteristics across all samples. Finally, the last section presents the overall response rates for each extended interview type. All the rates are weighted and use the formulas presented in the previous chapter.

6.1 Screener Response Rates

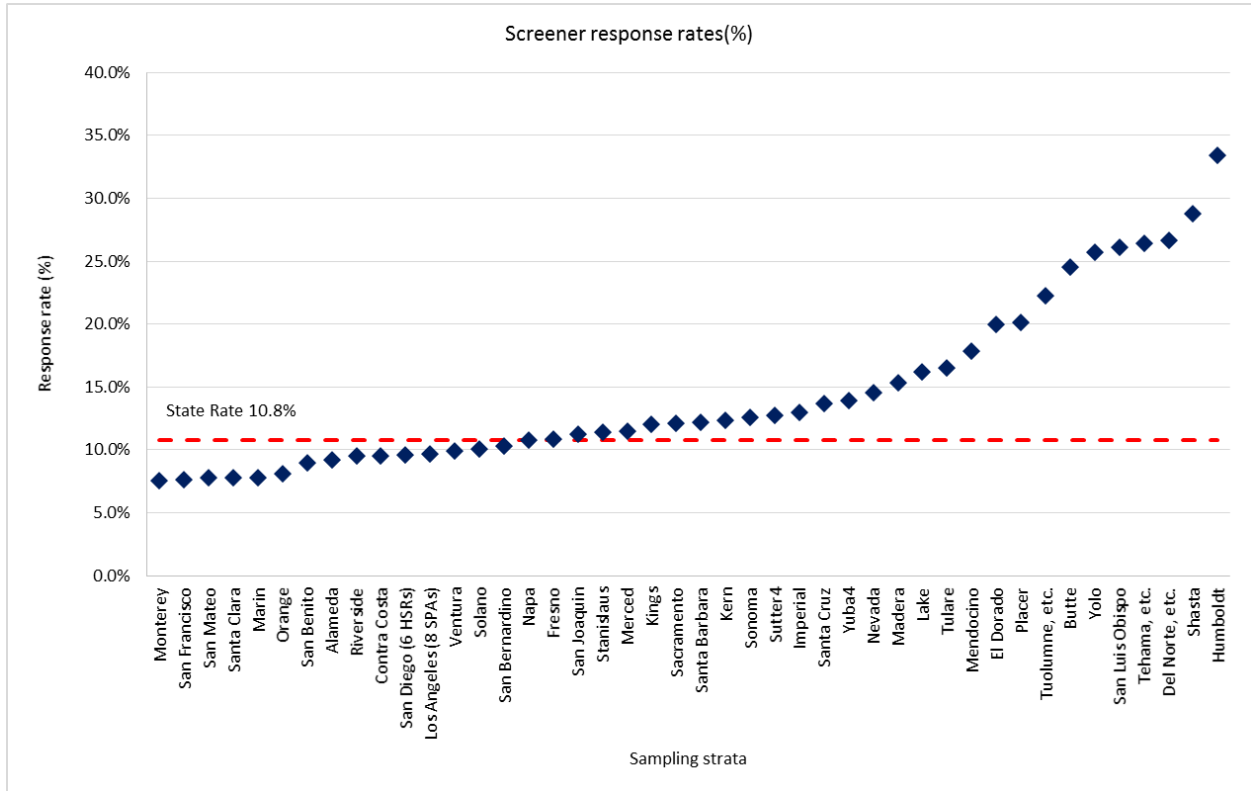
The screener response rates for the combined landline and surname list samples, by sampling stratum, are given in Table 6-1. The first column in the table gives the number of households in the landline/surname list samples that completed the screening interview. Overall, 42,619 households from these samples completed the CHIS 2017-2018 screener interview. In each of these households, one adult was sampled. Please note, all landline and cell sample numbers reported in the current report are based on the original sampling frame and not the actual sampling frame based on dialing.

As Figure 6-1 shows, the overall weighted screener response rate for the state, including the sample drawn from the landline and surname lists, is 10.8 percent. As discussed in Chapter 3, this response rate was computed using the CASRO method to allocate the numbers whose eligibility cannot be determined (eq. those for which every call was not answered or went to voice mail/answering machine). Surveys vary in how they account for undetermined residential number status, and the method used can lead to very different estimates of response rates. One approach is to ignore the undetermined numbers in the computation of response rates. This approach gives a *cooperation rate*. This rate assumes that none of the undetermined cases were eligible households and produces the most liberal (i.e., highest) response rates. This assumption is not reasonable in most sample surveys, which is why CHIS uses the CASRO method for undetermined eligibility cases.

The table shows that the screener response rates for the landline/surname list samples vary by county, which is also illustrated in Figure 6-1. The median response across all counties is 12.2 percent, and the highest response rate is 33.4 percent in the stratum for Humboldt. Monterey has the lowest response rate at 7.6 percent while the next lowest response rate (San Francisco, which has been the lowest

in the past) is about 0.02 points higher than the Monterey rate. The screener response rate in Los Angeles is 2.1 points higher than the San Francisco rate and 1.1 points lower than the state response rate. The county rankings shown in Figure 6-1 are similar to those in previous CHIS cycles. The mean screener response rate in CHIS 2015-2016 for landline/surname list sample was 20.6 percent, so the response rate decreased by 9.8 percentage points in 2017-2018.

Figure 6-1. Landline screener response rate distribution by sampling stratum



The median response rate for counties with a population of more than 500,000 persons (as of January 1, 2016 which consists of the counties from Los Angeles through Stanislaus in Table 6-1) is 9.7 percent. This is 5.7 percentage points lower than the 15.4 percent median response rate for the smaller counties. Looking at the individual counties suggests that this difference may be a function of proximity to a metropolitan area or population density rather than the population size of the county. Small, highly urban counties have rates similar to those of the more populous counties.

Table 6-1 also tabulates the landline response rates by whether an advance letter was mailed to the household. We discuss these advance letter impacts later in Chapter 7.

Table 6-1. Number of completed screeners and screener response rates by sampling stratum and whether an advance letter was sent for the landline/surname list sample

	Stratum ³	Advance letter mailed					
		Total		Yes		No	
		Complete ¹	Response rate ² (%)	Complete	Response rate (%)	Complete	Response rate (%)
	State total	42,619	10.8%	32,295	13.3%	10,324	6.8%
1	Los Angeles (8 SPAs)	8,586	9.7%	6,939	11.2%	1,647	6.2%
2	San Diego (6 HSRs)	5,039	9.6%	3,535	11.4%	1,504	6.7%
3	Orange	3,166	8.1%	2,316	9.6%	850	5.8%
4	Santa Clara	1,373	7.8%	1,105	10.7%	268	3.9%
5	San Bernardino	1,536	10.3%	1,106	12.1%	430	7.4%
6	Riverside	2,082	9.5%	1,707	11.9%	375	5.5%
7	Alameda	1,149	9.2%	826	12.3%	323	5.9%
8	Sacramento	1,010	12.1%	750	16.8%	260	7.1%
9	Contra Costa	804	9.5%	626	13.1%	178	5.2%
10	Fresno	750	10.9%	566	14.6%	184	6.6%
11	San Francisco	666	7.6%	525	10.2%	141	4.4%
12	Ventura	724	9.9%	569	11.9%	155	6.5%
13	San Mateo	613	7.8%	455	10.2%	158	5.0%
14	Kern	663	12.3%	501	15.9%	162	8.0%
15	San Joaquin	491	11.2%	374	14.2%	117	7.5%
16	Sonoma	415	12.6%	305	18.2%	110	7.1%
17	Stanislaus	469	11.4%	371	14.4%	98	7.0%
18	Santa Barbara	414	12.2%	320	18.6%	94	6.4%
19	Solano	415	10.1%	331	12.8%	84	5.9%
20	Tulare	463	16.5%	351	19.1%	112	11.6%
21	Santa Cruz	451	13.7%	335	16.9%	116	9.3%
22	Marin	486	7.8%	356	13.6%	130	4.1%
23	San Luis Obispo	486	26.1%	418	30.3%	68	13.4%
24	Placer	481	20.2%	363	26.7%	118	10.7%
25	Merced	500	11.5%	375	14.8%	125	7.3%
26	Butte	523	24.5%	395	30.5%	128	15.8%
27	Shasta	630	28.8%	460	31.6%	170	22.2%
28	Yolo	434	25.8%	372	30.7%	62	14.1%
29	El Dorado	476	20.0%	349	25.1%	127	11.6%

(continued)

Table 6-1. Number of completed screeners and screener response rates by sampling stratum and whether an advance letter was sent for the landline/surname list sample (continued)

Stratum ³	Total		Advance letter mailed				
	Complete ¹	Response rate ² (%)	Yes		No		
			Complete	Response rate (%)	Complete	Response rate (%)	
30	Imperial	673	13.0%	543	15.0%	130	9.2%
31	Napa	469	10.8%	358	13.3%	111	6.6%
32	Kings	535	12.0%	400	14.6%	135	7.7%
33	Madera	556	15.4%	387	18.5%	169	11.5%
34	Monterey	382	7.6%	296	12.1%	86	3.6%
35	Humboldt	557	33.4%	451	36.1%	106	21.7%
36	Nevada	514	14.5%	373	18.8%	141	8.9%
37	Mendocino	442	17.9%	282	21.9%	160	13.8%
38	Sutter	594	12.8%	465	16.3%	129	7.1%
39	Yuba	530	13.9%	338	17.5%	192	10.1%
40	Lake	464	16.2%	293	18.1%	171	13.1%
41	San Benito	334	8.9%	240	10.9%	94	5.7%
42	Colusa, etc.	494	26.4%	386	30.2%	108	17.0%
43	Del Norte, etc.	359	26.7%	220	33.2%	139	19.6%
44	Amador, etc.	421	22.2%	262	29.7%	159	14.8%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

Note. Dividing line separates counties with a population of more than 500,000 persons as of January 1, 2016.

¹ A complete here includes any HH with a completed screening interview. The Imperial County, San Francisco and AIAN oversamples are not included in these rates.

² Response rate is calculated as the sum of completes and partial completes divided by the sum of eligible cases and unknown cases (adjusted by the eligibility rate).

³ Stratum displayed is the stratum as each household was sampled, not their reported strata

Table 6-2 shows the screener response rates for households from the cell phone sample for the state and sampling strata which is also illustrated in Figure 6-2. Overall, 49,239 screener interviews were completed statewide and the weighted state screener response rate was 7.1 percent. The screener response rate in CHIS 2015-2016 for the cell phone sample was 19.6 percent, so the response rate decreased by 12.5 percentage points in 2017-2018.

Table 6-2. Number of completed screener interviews and screener response rates by sampling stratum for the cell phone sample

Stratum ³	Total		Advance letter mailed			
			Yes		No	
	Complete ¹	Response rate ² (%)	Complete	Response rate (%)	Complete	Response rate (%)
State total	49,239	7.1%	18,944	7.7%	30,295	6.8%
1 Los Angeles (8 SPAs)	9,891	7.1%	4051	7.7%	5,840	6.8%
2 San Diego (6 HSRs)	5,261	6.5%	2142	7.4%	3,119	6.0%
3 Orange	2,301	6.1%	1100	7.1%	1,201	5.6%
4 Santa Clara	1,856	6.4%	923	7.5%	933	5.6%
5 San Bernardino	1,636	7.3%	605	7.9%	1,031	7.0%
6 Riverside	2,241	7.1%	816	7.6%	1,425	6.9%
7 Alameda	1,516	6.4%	650	6.6%	866	6.3%
8 Sacramento	1,225	7.1%	464	8.6%	761	6.5%
9 Contra Costa	1,017	7.0%	458	7.5%	559	6.7%
10 Fresno	761	8.0%	269	8.3%	492	7.9%
11 San Francisco	970	7.3%	534	7.4%	436	7.1%
12 Ventura	699	7.1%	279	6.9%	420	7.3%
13 San Mateo	764	6.0%	344	7.0%	420	5.5%
14 Kern	808	8.5%	265	8.9%	543	8.3%
15 San Joaquin	541	6.6%	220	6.6%	321	6.7%
16 Sonoma	379	8.4%	135	8.5%	244	8.4%
17 Stanislaus	672	6.1%	282	7.4%	390	5.4%
18 Santa Barbara	635	7.8%	200	8.7%	435	7.5%
19 Solano	712	5.7%	332	6.2%	380	5.4%
20 Tulare	593	9.4%	169	9.3%	424	9.4%
21 Santa Cruz	581	8.6%	147	9.1%	434	8.4%
22 Marin	654	5.4%	214	6.5%	440	5.1%
23 San Luis Obispo	538	11.2%	174	12.3%	364	10.4%
24 Placer	484	9.2%	201	9.1%	283	9.4%
25 Merced	634	6.8%	206	7.6%	428	6.5%
26 Butte	422	11.9%	152	13.1%	270	11.3%
27 Shasta	619	13.6%	183	15.3%	436	12.7%

(continued)

Table 6-2. Number of completed screener interviews and screener response rates by sampling stratum for the cell phone sample (continued)

Stratum ³	Total		Advance letter mailed				
	Complete ¹	Response rate ² (%)	Yes		No		
			Complete	Response rate (%)	Complete	Response rate (%)	
28	Yolo	618	10.5%	208	9.4%	410	11.1%
29	El Dorado	562	10.6%	209	10.2%	353	10.6%
30	Imperial	739	7.6%	238	9.2%	501	6.9%
31	Napa	730	6.9%	284	8.7%	446	6.1%
32	Kings	763	6.7%	250	7.6%	513	6.2%
33	Madera	711	7.2%	173	9.0%	538	6.7%
34	Monterey	598	8.1%	178	7.4%	420	8.4%
35	Humboldt	497	15.2%	92	16.4%	405	14.9%
36	Nevada	639	7.1%	165	9.4%	474	6.3%
37	Mendocino	667	9.7%	100	12.0%	567	9.2%
38	Sutter	1,088	7.3%	369	9.6%	719	5.6%
39	Yuba	430	7.5%	428	7.5%	2	66.7%
40	Lake	560	10.3%	132	12.3%	428	9.6%
41	San Benito	1247	6.6%	350	6.4%	897	6.0%
42	Colusa, etc.	325	11.3%	125	11.8%	200	10.5%
43	Del Norte, etc.	331	13.4%	62	12.0%	269	13.7%
44	Amador, etc.	324	7.9%	66	6.5%	258	8.5%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

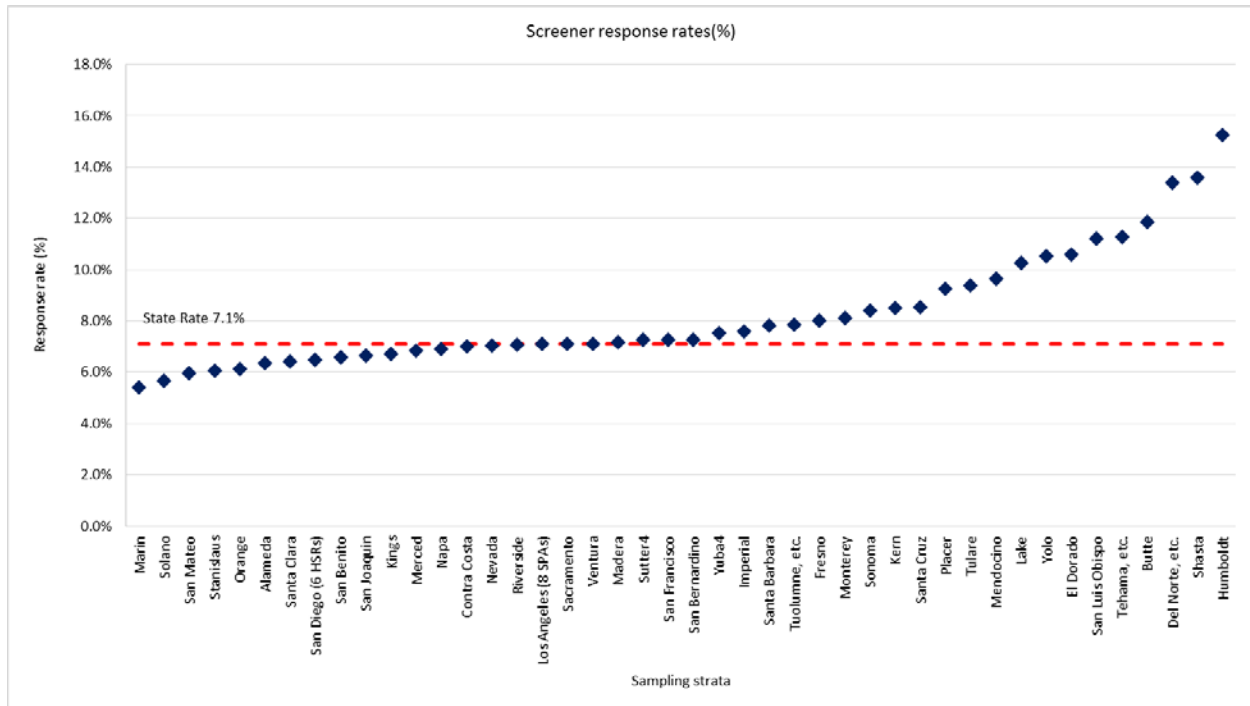
Note. Dividing line separates counties with a population of more than 500,000 persons as of January 1, 2016.

¹ A complete here includes any HH with a completed screening interview. The Imperial County, San Francisco and AIAN oversamples are not included in these rates.

² Response rate is calculated as the sum of completes and partial completes divided by the sum of eligible cases and unknown cases (adjusted by the eligibility rate).

³ Stratum displayed is the stratum as each household was sampled, not their reported strata

Figure 6-2. Cell phone screener response rate distribution by sampling stratum



Response rates in the cell phone sample range from a low of 5.4 percent in Marin County to a high of 15.2 percent in Humboldt County. The state level cell phone sample screener response rate is 7.1 percent, which is about 3.7 percentage points lower than the landline screener response rate. When looking at the telephone sample response rates, it should be noted that these are based on the sampling of telephone number assignment, not self-reported residence (which is not available for nonrespondents). For additional details, see *CHIS 2017-2018 Methodology Series: Report 2 – Data Collection Methods*, which presents a comparison of the final cell sample and landline sample screener dispositions in CHIS 2017-2018.

6.2 Person and Household Response Rates

The household, adult, child, and adolescent extended interview response rates for each stratum of the landline and surname list samples are given in Table 6-3, along with the number of completed interviews. There were 19,881 landline and surname list samples households where either an adult, child or adolescent extended interview was completed, resulting in a statewide household level response rate of 52.0 percent. Additionally, 19,486 adult interviews, 1,071 interviews about children, and 443 adolescent interviews were completed in the landline and surname list samples.

The statewide adult response rate for the landline/surname list sample shown in Table 6-3 for the adult interview was 43.8 percent, an increase of 2.1 percentage points from CHIS 2015-2016. As with the screener, counties with larger populations tended to have lower adult extended interview response rates. The median adult response rate for the counties with a population of more than 500,000 is 44 percent, while for counties with less than 500,000 the median adult response rate is 47 percent. This difference may be attributable to a variety of reasons, for instance there are meaningful differences in the age breakdown, and education between respondents in the larger and smaller counties and these variables tend to be correlated with response rates. The 2017-2018 child interview state level response rate for the landline/surname list sample was 60 percent, which is 3 percentage points higher than the child response rate observed in CHIS 2015-2016. The state level adolescent interview rate for the landline/surname list sample is 25.6 percent, which is 8 points higher than the rate observed in CHIS 2015-2016.

Table 6-3. Number of completed extended interviews and response rates by sampling stratum and type of interview for the landline/surname list sample (conditional on completed screener)

	Stratum ³	Household		Adult		Child		Adolescent	
		Complete ¹	Response rate ² (%)	Complete	Response rate (%)	Complete	Response rate (%)	Complete	Response rate (%)
	State total	19,881	52.0%	19,486	43.8%	1,071	60.0%	443	25.6%
1	Los Angeles (8 SPAs)	3,698	44.4%	3,621	40.1%	220	57.2%	80	22.9%
2	San Diego (6 HSRs)	2,262	46.9%	2,227	42.0%	114	57.3%	43	21.3%
3	Orange	1,429	47.6%	1,399	42.8%	66	58.0%	28	25.6%
4	Santa Clara	686	53.1%	665	47.0%	33	76.7%	24	30.7%
5	San Bernardino	653	45.4%	633	39.6%	46	67.7%	16	22.6%
6	Riverside	922	47.4%	898	40.9%	55	58.2%	23	27.8%
7	Alameda	569	52.3%	559	48.9%	28	64.9%	12	23.7%
8	Sacramento	542	55.6%	532	51.3%	21	64.3%	12	29.2%
9	Contra Costa	392	52.4%	382	46.6%	23	68.5%	12	36.4%
10	Fresno	353	48.9%	346	44.0%	18	64.5%	13	33.1%
11	San Francisco	354	61.9%	351	53.1%	15	67.5%	8	42.3%
12	Ventura	313	45.8%	309	40.2%	18	51.6%	8	21.4%
13	San Mateo	287	48.5%	283	43.6%	17	58.9%	6	22.7%
14	Kern	295	47.3%	291	42.3%	16	51.0%	5	23.4%
15	San Joaquin	230	48.5%	226	45.5%	16	62.2%	5	19.9%
16	Sonoma	219	56.0%	214	49.7%	10	62.3%	7	39.1%
17	Stanislaus	228	50.3%	225	45.0%	16	61.4%	5	27.4%
18	Santa Barbara	207	52.4%	205	48.2%	10	68.8%	5	36.9%
19	Solano	204	51.6%	197	45.5%	16	74.4%	6	24.1%
20	Tulare	231	52.6%	223	48.8%	17	60.9%	5	40.6%
21	Santa Cruz	224	54.5%	216	44.1%	14	69.6%	7	30.9%
22	Marin	260	56.4%	256	50.4%	11	80.0%	3	24.7%
23	San Luis Obispo	262	77.2%	258	49.9%	12	75.0%	8	59.3%
24	Placer	239	71.9%	236	48.2%	9	42.9%	5	29.9%
25	Merced	228	47.7%	221	41.6%	19	80.2%	2	7.9%
26	Butte	288	73.8%	286	52.8%	12	60.7%	4	15.8%
27	Shasta	312	68.0%	306	47.7%	16	53.3%	5	21.6%
28	Yolo	243	79.3%	239	52.1%	13	64.2%	9	33.7%

(continued)

Table 6-3. Number of completed extended interviews and response rates by sampling stratum and type of interview for the landline/surname list sample (conditional on completed screener) (continued)

	Stratum ³	Household		Adult		Child		Adolescent	
		Complete ¹	Response rate ² (%)	Complete	Response rate (%)	Complete	Response rate (%)	Complete	Response rate (%)
29	El Dorado	237	73.4%	229	46.1%	15	51.9%	9	37.8%
30	Imperial	266	42.6%	259	36.6%	21	49.8%	12	23.9%
31	Napa	235	52.2%	234	47.3%	7	81.8%	6	41.2%
32	Kings	242	46.7%	237	42.1%	11	50.0%	2	7.9%
33	Madera	275	51.3%	268	47.0%	16	78.7%	3	15.4%
34	Monterey	186	50.3%	185	46.6%	6	57.1%	2	10.7%
35	Humboldt	318	74.2%	312	53.3%	18	68.6%	9	41.1%
36	Nevada	257	51.7%	257	48.0%	7	62.7%	3	27.3%
37	Mendocino	224	53.1%	220	48.5%	11	61.9%	1	7.4%
38	Sutter	262	46.8%	257	41.8%	15	50.0%	5	20.6%
39	Yuba	235	46.5%	227	42.9%	13	50.0%	4	19.0%
40	Lake	231	51.2%	227	46.4%	11	60.9%	6	54.9%
41	San Benito	156	48.9%	153	45.0%	10	38.9%	4	37.5%
42	Colusa, etc.	231	66.2%	228	43.9%	8	59.5%	2	8.9%
43	Del Norte, etc.	193	75.4%	191	51.4%	9	65.2%	5	46.2%
44	Amador, etc.	203	68.6%	198	46.2%	12	77.4%	4	22.2%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

¹ A complete here includes any HH with any completed extended interview (adult, child, or teen) weighted by the HH weight. The Imperial County, San Francisco and AIAN oversamples are not included in these rates.

² Response rate is calculated as the sum of completes and partial completes divided by the sum of eligible cases and unknown cases (adjusted by the eligibility rate).

³ Stratum displayed is the stratum as each household was sampled, not their reported strata

Table 6-4 shows the household, adult, child, and adolescent extended interview response rate for the cell phone sample. There were 21,698 households where either an adult, child, or adolescent extended interview was completed, resulting in a statewide household level response rate of 48.8 percent. Within stratum, there was a wide range of rates, with a low of 41.1 percent in Kern to a high of 77.9 percent in Shasta County. Although the number of cases used to compute the household response rate is only eight cases more than the number of adult cases for the adult response rate in Table 6-4, the adult and household response rates are computed using different weights as described in Chapter 5. The adult response rate is computed using the adult base weight and reflects the probability of selection of the adult within the household. As shown in Table 6-4, the adult response rate is lower than the household response rate because of these weight variations. Though there were no child first interviews conducted for cell sample, the 8 additional cases for household interviews reflects a difference in sampled versus actual mode. Though these eight cases were listed as cell sample, they were noted to be landline in the call outcome.

Additionally, 21,690 adult interviews, 2,016 interviews about children, and 413 adolescent interviews were completed in the cell phone sample. The statewide response rate for the adult interview was 40.9 percent. This represents a decrease of 7 percentage points from CHIS 2015-2016. The cell phone child interview response rate was 57.5 percent, which is 10.2 points higher than the equivalent response rate observed CHIS 2015-2016. The cell phone sample adolescent response rate was 18 percent, which is 0.8 percentage points lower than the response rate observed in CHIS 2015-2016.

Table 6-4. Number of completed extended interviews and extended interview response rate by cell phone sampling stratum for the cell phone sample

	Stratum ³	Household		Adult		Child		Adolescent	
		Complete ¹	Response rate ² (%)	Complete	Response rate (%)	Complete	Response rate (%)	Complete	Response rate (%)
	State total	21,698	48.8%	21,690	40.9%	2,016	57.5%	413	18.0%
1	Los Angeles (8 SPAs)	3,909	44.6%	3,907	37.4%	360	54.6%	74	17.9%
2	San Diego (6 HSRs)	2,304	52.2%	2,304	41.7%	217	61.9%	48	19.3%
3	Orange	990	45.3%	990	39.0%	76	54.8%	12	11.8%
4	Santa Clara	838	45.5%	838	40.6%	87	60.2%	15	17.2%
5	San Bernardino	684	47.8%	684	39.6%	72	58.6%	12	12.7%
6	Riverside	971	48.4%	971	39.5%	88	63.4%	20	17.7%
7	Alameda	707	51.5%	707	45.6%	71	57.1%	18	18.6%
8	Sacramento	588	50.0%	587	43.2%	48	59.0%	16	21.8%
9	Contra Costa	466	47.1%	466	40.7%	31	48.5%	6	12.7%
10	Fresno	326	45.4%	326	39.0%	34	54.7%	10	23.2%
11	San Francisco	493	56.0%	493	47.5%	56	68.1%	4	9.1%
12	Ventura	297	48.2%	297	40.0%	24	48.9%	4	13.7%
13	San Mateo	331	46.5%	331	40.6%	26	61.1%	11	25.5%
14	Kern	310	41.1%	310	35.5%	34	44.4%	7	19.0%
15	San Joaquin	235	52.3%	235	41.3%	16	51.5%	3	11.9%
16	Sonoma	193	52.7%	192	44.2%	19	52.6%	1	4.8%
17	Stanislaus	288	50.9%	288	40.2%	34	62.4%	1	2.0%
18	Santa Barbara	285	50.4%	285	42.8%	18	56.1%	5	19.0%
19	Solano	325	48.8%	324	42.4%	33	53.1%	7	16.4%
20	Tulare	278	44.6%	278	43.0%	26	45.6%	5	11.6%
21	Santa Cruz	274	52.2%	273	43.0%	19	46.0%	4	11.9%
22	Marin	292	45.3%	291	41.3%	22	56.1%	7	28.4%
23	San Luis Obispo	245	45.5%	245	40.8%	21	55.9%	6	22.5%
24	Placer	241	47.8%	241	45.0%	20	62.1%	1	7.0%
25	Merced	296	48.4%	295	42.5%	31	53.9%	7	25.4%

(continued)

Table 6-4. Number of completed extended interviews and extended interview response rate by cell phone sampling stratum for the cell phone sample (continued)

Stratum ³	Household		Adult		Child		Adolescent		
	Complete ¹	Response rate ² (%)	Complete	Response rate (%)	Complete	Response rate (%)	Complete	Response rate (%)	
26	Butte	217	70.8%	217	45.7%	17	50.3%	3	26.0%
27	Shasta	310	77.9%	310	46.6%	33	68.7%	5	15.3%
28	Yolo	313	76.1%	313	44.5%	32	52.1%	8	33.7%
29	El Dorado	296	74.8%	296	47.5%	28	64.3%	8	19.6%
30	Imperial	295	46.5%	295	37.0%	29	50.0%	8	33.0%
31	Napa	352	52.1%	352	44.4%	34	72.3%	4	12.3%
32	Kings	344	55.1%	344	41.9%	51	68.1%	4	7.7%
33	Madera	304	50.6%	304	38.1%	45	64.7%	7	18.5%
34	Monterey	248	44.6%	248	36.6%	20	53.9%	4	14.3%
35	Humboldt	262	69.2%	262	46.3%	30	66.5%	9	45.4%
36	Nevada	307	56.4%	307	45.8%	15	49.2%	5	19.9%
37	Mendocino	321	52.2%	321	44.6%	26	71.6%	2	10.0%
38	Sutter	511	62.0%	511	44.4%	42	61.1%	9	17.3%
39	Yuba	204	51.4%	204	44.0%	21	65.8%	3	18.5%
40	Lake	268	49.7%	268	45.2%	27	70.3%	4	19.7%
41	San Benito	503	53.1%	503	38.7%	35	46.6%	9	16.2%
42	Colusa, etc.	139	61.2%	139	40.3%	16	62.5%	3	28.6%
43	Del Norte, etc.	179	70.6%	179	48.5%	23	52.3%	6	27.5%
44	Amador, etc.	159	57.9%	159	46.1%	9	61.1%	8	45.5%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

¹ A complete here includes any HH with any completed extended interview (adult, child, or teen) weighted by the HH weight. The Imperial County, San Francisco and AIAN oversamples are not included in these rates.

² Response rate is calculated as the sum of completes and partial completes divided by the sum of eligible cases and unknown cases (adjusted by the eligibility rate).

³ Stratum displayed is the stratum as each household was sampled, not their reported strata

Data collected in the screener interview about the household and the sampled adult can be used to examine the adult extended response rates since the data are available for all sampled adults. Table 6-5 shows the adult response rates by these screener data items. Results are shown separately for the combined landline and surname list samples and the cell sample. Overall, the cell response rate is 2.9 percentage points lower than that for the landline/surname list samples.

Table 6-5. Adult response rates by characteristics of the sampled adult

Characteristic	Sample type response rate (%)	
	Landline/Surname list	Cell phone
Total	43.8%	40.9%
Sex		
Male	39.4%	40.2%
Female	47.5%	41.8%
Age		
18 to 30 years	23.6%	40.2%
31 to 45 years	31.5%	38.5%
46 to 65 years	44.0%	42.7%
Over 65 years	53.0%	46.1%
Type of household		
With somebody less than 18 years old	34.7%	37.4%
Without somebody less than 18 years old	46.6%	43.7%
Number of adults in household		
1	62.4%	46.1%
2	45.0%	42.1%
3 or more	33.2%	38.6%
Sampled adult was screener respondent		
Yes	59.2%	N/A
No	24.8%	N/A

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

A notable difference in the response rate pattern between the landline/surname list and cell samples is by sampled adult gender. Women are traditionally more cooperative than men in landline and surname list samples, and this pattern is borne out in CHIS 2017-2018. In contrast, this gender response gap is smaller in the cell sample (1.6 percent vs. 8.1 percent). Men responded at a slightly higher rate (40.2 percent) in the cell sample than in the landline/surname list sample (39.4 percent).

Older adults are also typically more cooperative than younger adults, and again this pattern is borne out in the landline/surname list sample, with a 29.4 percentage point difference between the rates for those 18-30 and those over 65. In the cell sample, which includes respondents with both cell phones and landlines and with only cell phone service, the difference between these groups is much smaller at 5.9 percentage points.

In the landline/surname list sample, adult response rates decline substantially as more adults are present in the household. A major reason for this is that, as noted earlier, response rates are lower (and declining more rapidly) for sampled adults who are not the screener respondent (shown in the last rows of Table 6-5). The more adults in the household, the more likely the sampled adult is not the screener respondent. If the sampled adult is not home, a call-back is required, essentially creating a second contact attempt. In contrast, this response rate pattern does not hold in the cell sample, where sampling among adults is only needed when the cell phone is shared, which is a rare occurrence.

These differences in response rates, and in the proportions of adults sampled, by respondent characteristics across samples have implications for the utility of the cell phone sample. In addition to reducing the potential bias by including persons without a landline, the cell sample increases the representation of men, young adults, those in households with children, and those in multi-adult households compared with the landline sample alone.

Now, we examine the child extended interview response rates. Table 6-6 shows that the statewide child-level response rate is 60 percent for the landline/surname sample, which is 3 points higher than that in CHIS 2015-2016. The median rate in the more populous counties (62.2%) is 0.3 points higher than the rate in smaller counties (61.9%). The statewide child-level response for the cell phone sample is 57.5 percent, which is 2.5 points lower than the response rate in the combined landline and surname samples, and 10.2 points higher than the rate for the cell phone child sample in CHIS 2015-2016.

Table 6-6 shows the child response rates by the characteristics of the child and household using data collected in the screener or adult interview where the children were enumerated for sampling. The child rates do not show much variation by sex in both the landline/surname list and cell phone samples.

Note, child gender was missing for approximately 10% of sampled child cases, since child gender was not a pre-requisite to the selection of an eligible child, which results in a slightly higher child response rate for those cases where gender was provided compared with the total child response rate. *CHIS 2017-2018 Methodology Series: Report 2 – Data Collection Methods* contains more detail on response to the child interview.

Table 6-6. Child response rates by characteristics of the sampled child

Characteristic	Sample type response rate (%)	
	Landline/Surname list	Cell phone
Total	60.0%	57.5%
Sex		
Male	63.0%	64.0%
Female	62.0%	65.0%
Number of children in household		
1	59.8%	59.5%
2	62.1%	56.3%
3	57.4%	55.6%
4 or more	56.2%	60.7%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

The last person-level response rates presented are for the adolescent interview. Recall that the adolescent could not be interviewed unless a parent or guardian gave verbal permission. This requirement means that we had to contact and get permission from the parent or legal guardian, and then contact and interview the adolescent. Consequently, response rates for the adolescent interview are much lower than for the child interview, because the latter required only one person to agree. Table 6-7 shows that the state-level landline adolescent response rate is 25.6 percent. If we exclude nonresponse due to parents not giving permission, the landline cooperation rate rises to 84.0 percent (see Table 6-8). The state-level adolescent response rate in the cell phone sample is 18 percent while the cell phone adolescent cooperation is 71.3 percent if the nonresponse due to parents not giving permission is excluded.

Table 6-7 gives the landline and cell phone adolescent response rates by the gender characteristics of the adolescent and household based on data collected in the adult interview or screener. There is also some minor difference between the landline/surname list and cell samples in gender distribution.

Table 6-7. Adolescent response rates conditional on parent permission by characteristics of the sampled adolescent

Characteristic	Sample type response rate (%)	
	Landline/Surname list	Cell phone
Total	25.6%	18.0%
Sex		
Male	26.1%	20.9%
Female	27.9%	18.9%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

Table 6-8. Adolescent cooperation rates excluding parental permission nonresponse by characteristics of the sampled adolescent

Characteristic	Sample type response rate (%)	
	Landline/Surname list	Cell phone
Total	84.0%	71.3%
Sex		
Male	82.5%	70.2%
Female	85.5%	72.5%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

To better understand the success rate for interviewing adolescents, we examine the response rates for the adolescent interview including only those adolescents the parents gave permission to interview (i.e., response rate conditional on parent permission). This rate is indicative of the ability to contact and interview the adolescents. These rates are given in Table 6-8, which is like Table 6-7 but excludes the sampled adolescents without parental permission from the denominator of the response rate computation, so the rates are much higher. The overall adolescent cooperation rate is 12.7 points higher for the landline/surname list sample than for the cell sample.

Differences in response rates can lead to nonresponse bias as suggested by the formula presented in Chapter 2 for the bias attributable to nonresponse. To reduce this potential for bias, geographic and demographic characteristics examined in Tables 6-1 through 6-8 were taken into account in developing the weights as described in *CHIS 2017-2018 Methodology Series: Report 5 – Weighting and Variance Estimation*. For example, nonresponse adjustments were done separately by county, thus accounting for the differences in response rates noted above by the size and urbanicity of the counties. In addition, the weights were also adjusted to be consistent with data from the control totals to reduce residual biases.

6.3 Overall Response Rates

This section presents the overall, or unconditional, response rates for the household and for the adult, child, and adolescent interviews for the different samples in CHIS 2017-2018. Table 6-9 gives these response rates for the entire state and by county for the combined landline/surname list sample. As discussed in Chapter 5 (Response Rates Formulas), the overall rates are the product of screener and extended response rates. At the household level, the overall household response rate is the screener response rate (from Table 6-1) multiplied by the household response rate (from Table 6-3). This rate is computed using equation (5-6). The adult response rates are computed using equation (5-7). The child and adolescent overall rates are computed using equations (5-8) and (5-9), respectively.

Table 6-9. Overall response rates by sampling stratum and type of interview, landline/surname list sample

Stratum ²	Interview type overall response rate (%) ¹			
	Household	Adult	Child	Adolescent
State total	5.6%	4.7%	6.4%	2.8%
1 Los Angeles (8 SPAs)	4.3%	3.9%	5.5%	2.2%
2 San Diego (6 HSRs)	4.5%	4.0%	5.5%	2.0%
3 Orange	3.9%	3.5%	4.7%	2.1%
4 Santa Clara	4.1%	3.7%	6.0%	2.4%
5 San Bernardino	4.7%	4.1%	7.0%	2.3%
6 Riverside	4.5%	3.9%	5.5%	2.6%
7 Alameda	4.8%	4.5%	6.0%	2.2%
8 Sacramento	6.7%	6.2%	7.8%	3.5%
9 Contra Costa	5.0%	4.4%	6.5%	3.5%
10 Fresno	5.3%	4.8%	7.0%	3.6%
11 San Francisco	4.7%	4.0%	5.1%	3.2%
12 Ventura	4.6%	4.0%	5.1%	2.1%
13 San Mateo	3.8%	3.4%	4.6%	1.8%
14 Kern	5.8%	5.2%	6.3%	2.9%
15 San Joaquin	5.4%	5.1%	7.0%	2.2%
16 Sonoma	7.1%	6.3%	7.9%	4.9%
17 Stanislaus	5.7%	5.1%	7.0%	3.1%
18 Santa Barbara	6.4%	5.9%	8.4%	4.5%
19 Solano	5.2%	4.6%	7.5%	2.4%
20 Tulare	8.7%	8.1%	10.1%	6.7%

(continued)

Table 6-9. Overall response rates by sampling stratum and type of interview, landline/surname list sample (continued)

Stratum ²	Interview type overall response rate (%) ¹			
	Household	Adult	Child	Adolescent
21 Santa Cruz	7.5%	6.0%	9.5%	4.2%
22 Marin	4.4%	3.9%	6.3%	1.9%
23 San Luis Obispo	20.2%	13.1%	19.6%	15.5%
24 Placer	14.5%	9.7%	8.6%	6.0%
25 Merced	5.5%	4.8%	9.2%	0.9%
26 Butte	18.1%	13.0%	14.9%	3.9%
27 Shasta	19.6%	13.7%	15.3%	6.2%
28 Yolo	20.4%	13.4%	16.5%	8.7%
29 El Dorado	14.7%	9.2%	10.4%	7.6%
30 Imperial	5.5%	4.8%	6.5%	3.1%
31 Napa	5.6%	5.1%	8.8%	4.4%
32 Kings	5.6%	5.1%	6.0%	1.0%
33 Madera	7.9%	7.2%	12.1%	2.4%
34 Monterey	3.8%	3.5%	4.3%	0.8%
35 Humboldt	24.8%	17.8%	22.9%	13.7%
36 Nevada	7.5%	7.0%	9.1%	4.0%
37 Mendocino	9.5%	8.7%	11.1%	1.3%
38 Sutter	6.0%	5.3%	6.4%	2.6%
39 Yuba	6.5%	6.0%	7.0%	2.7%
40 Lake	8.3%	7.5%	9.9%	8.9%
41 San Benito	4.4%	4.0%	3.5%	3.4%
42 Colusa, etc.	17.5%	11.6%	15.7%	2.4%
43 Del Norte, etc.	20.1%	13.7%	17.4%	12.3%
44 Amador, etc.	15.3%	10.3%	17.2%	4.9%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

¹ Overall response rate is calculated by multiplying the screener interview response rate by the extended interview response rate (where the extended response rate is conditional on a completed screener). The Imperial County, San Francisco and AIAN oversamples are not included in these rates.

² Stratum displayed is the stratum as each household was sampled, not their reported strata.

Since the response rates in these tables are the product of two or more interview-level rates, the previously described issues regarding the differences in response rates by county, type of household, and characteristic of the sampled person also apply here. The overall landline/surname list adult response rate in CHIS 2017-2018 was 3.8 percentage points lower than the overall landline/surname list adult response rate in CHIS 2015-2016.

Table 6-10 shows the overall response rate for the cell phone sample. The lowest adult response rate was in Marin County (2.2 percent) while the highest was in Humboldt County (7.1 percent). The overall adult response rate was 2.9 percent, which is about 1.8 percentage point lower than the overall percent rate that was observed for adults in the landline/surname list sample. This is also 6.5 points lower than the overall cell adult response rate in CHIS 2015-2016.

Table 6-10. Overall response rates for the cell phone sample by sampling stratum and type of interview

Stratum ²		Interview type overall response rate (%) ¹			
		Household	Adult	Child	Adolescent
	State total	3.5%	2.9%	4.1%	1.3%
1	Los Angeles (8 SPAs)	3.2%	2.7%	3.9%	1.3%
2	San Diego (6 HSRs)	3.4%	2.7%	4.0%	1.2%
3	Orange	2.8%	2.4%	3.4%	0.7%
4	Santa Clara	2.9%	2.6%	3.9%	1.1%
5	San Bernardino	3.5%	2.9%	4.3%	0.9%
6	Riverside	3.4%	2.8%	4.5%	1.3%
7	Alameda	3.3%	2.9%	3.6%	1.2%
8	Sacramento	3.6%	3.1%	4.2%	1.5%
9	Contra Costa	3.3%	2.9%	3.4%	0.9%
10	Fresno	3.6%	3.1%	4.4%	1.9%
11	San Francisco	4.1%	3.5%	4.9%	0.7%
12	Ventura	3.4%	2.8%	3.5%	1.0%
13	San Mateo	2.8%	2.4%	3.6%	1.5%
14	Kern	3.5%	3.0%	3.8%	1.6%
15	San Joaquin	3.5%	2.7%	3.4%	0.8%
16	Sonoma	4.4%	3.7%	4.4%	0.4%
17	Stanislaus	3.1%	2.4%	3.8%	0.1%
18	Santa Barbara	4.0%	3.4%	4.4%	1.5%
19	Solano	3.0%	2.4%	3.0%	0.9%
20	Tulare	5.1%	4.0%	4.3%	1.1%
21	Santa Cruz	4.9%	3.7%	3.9%	1.0%
22	Marin	3.0%	2.2%	3.0%	1.5%
23	San Luis Obispo	7.4%	4.6%	6.3%	2.5%
24	Placer	6.3%	4.2%	5.7%	0.6%
25	Merced	3.8%	2.9%	3.7%	1.7%
26	Butte	8.4%	5.4%	6.0%	3.1%
27	Shasta	10.6%	6.3%	9.3%	2.1%
28	Yolo	8.0%	4.7%	5.5%	3.5%
29	El Dorado	7.9%	5.0%	6.8%	2.1%
30	Imperial	3.5%	2.8%	3.8%	2.5%

(continued)

Table 6-10. Overall response rates for the cell phone sample by sampling stratum and type of interview (continued)

	Stratum ²	Interview type overall response rate (%) ¹			
		Household	Adult	Child	Adolescent
31	Napa	3.6%	3.1%	5.0%	0.9%
32	Kings	3.7%	2.8%	4.6%	0.5%
33	Madera	3.6%	2.7%	4.6%	1.3%
34	Monterey	3.6%	3.0%	4.4%	1.2%
35	Humboldt	10.5%	7.1%	10.1%	6.9%
36	Nevada	4.0%	3.2%	3.5%	1.4%
37	Mendocino	5.0%	4.3%	6.9%	1.0%
38	Sutter	4.5%	3.2%	4.4%	1.3%
39	Yuba	3.9%	3.3%	4.9%	1.4%
40	Lake	5.1%	4.6%	7.2%	2.0%
41	San Benito	3.5%	2.5%	3.1%	1.1%
42	Colusa, etc.	6.9%	4.5%	7.0%	3.2%
43	Del Norte, etc.	9.4%	6.5%	7.0%	3.7%
44	Amador, etc.	4.6%	3.6%	4.8%	3.6%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

¹ Overall response rate is calculated by multiplying the screener interview response rate by the extended interview response rate (where the extended response rate is conditional on a completed screener). The Imperial County, San Francisco and AIAN oversamples are not included in these rates.

² Stratum displayed is the stratum as each household was sampled, not their reported strata.

Table 6-11 summarizes the overall response rates by sample types. The cell phone sample has lower overall response rates than landline and surname samples. The overall response rates are lower than the rates observed in CHIS 2015-2016 and follow the trends of response rates in telephone surveys in the U.S.

Table 6-11. Overall response rates by sample by sample type and type of interview

Sample type	Overall response rate (%) ¹			
	Household	Adult	Child	Adolescent
Landline/surname list	5.6%	4.7%	6.4%	2.8%
Cell phone	3.5%	2.9%	4.1%	1.3%
Landline/surname list/cell-phone	4.0%	3.4%	4.6%	1.7%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

¹ Overall response rate is calculated by multiplying the screener interview response rate by the extended interview response rate (where the extended response rate is conditional on a completed screener). The Imperial County, San Francisco and AIAN oversamples are not included in these rates.

6.4 Oversample Response Rates

In 2017, UCLA received funding to supplement the CHIS sample in the northern part of Imperial County for starting after Labor Day and continuing through the end of the year in 2017. Consistent with the 2016 effort and due to the small, isolated geography, an ABS oversample was used to sample Imperial County rather than an RDD sample. A detailed discussion of the design and results is included in Section 6.3 in the *CHIS 2017-2018 Methodology Series: Report 2: Data Collection Methods*.

In 2018, additional statistical power was requested for San Francisco County, specific to Hispanic males, African American males and females, and Chinese males. Attaining these interviews presented an extremely challenging task as survey incidences were exceedingly low given not only due to the low incidence nature of these populations but the stated requirement to attain specific numbers by gender, and the natural screen outs that occur because people report not living in the state, or the county, or in the case of cell phones, that they were not over the age of 17.

In 2018, additional statistical power was also requested for AIAN statewide. Attaining these interviews was equally challenging, as sample listed and appended to likely reach an AIAN household resulted in very poor incidences (less than 10% whereas similar appends for Asians, African Americans and others typically attain between 35% and 75%).

Table 6-12 and 6-13 summarize the conditional and overall response rates for these additional samples.

Table 6-12. Response rates for CHIS 2017-2018 oversamples

Type of Sample	Screener	Household	Adult (given screened)	Child (given screened & permission)	Adolescent (given screened & permission)
Imperial OS	24.8%	50.7%	45.6%	50.6%	30.6%
AIAN OS	1.5%	45.0%	47.0%	66.2%	10.0%
San Francisco OS	1.0%	38.0%	33.2%	51.1%	13.1%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

Table 6-13. Overall response rates for CHIS 2017-2018 oversamples

Type of Sample	Screener	Household	Adult (given screened)	Child (given screened & permission)	Adolescent (given screened & permission)
Imperial OS	24.8%	12.6%	11.3%	12.5%	7.6%
AIAN OS	1.5%	0.7%	0.7%	1.0%	0.2%
San Francisco OS	1.0%	0.4%	0.3%	0.5%	0.1%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

7. DISCUSSION OF RESPONSE RATES

This chapter presents a discussion of the response rates obtained in CHIS 2017-2018, including procedures used to increase response rates and comparison of these rates with other telephone surveys. The first section briefly reviews some of the methods used in CHIS 2017-2018 that impact response rates. A more complete discussion of these data collection methods is provided in *CHIS 2017-2018 Methodology Series: Report 2 – Data Collection Methods*.

7.1 Methods to Enhance Response Rates

Several methods to enhance response rates have been used across previous CHIS cycles. Methods for enhancing response rates in CHIS 2017-2018 included:

- **Repeated call attempts:** Most interviews were completed within the first few call attempts to a sample number, but the procedures implemented in CHIS 2017-2018 allowed for an average of 10 calls when no contact had been made previously. These additional attempts were intended to maximize response rates among sample members who were less likely to answer phone calls from unknown callers. This procedure also has the potential to reduce nonresponse bias from this source of nonresponse by including at least some sample members who require more than a few call attempts to reach.
- **Recontacting initial refusals:** The refusal conversion protocol is described for landline and cell phone sample in Chapter 4.
- **Proxy reporting:** As in previous cycles, proxy respondents could report for sampled adults when the sampled adult was unable to answer for himself/herself due to illness or impairment. As indicated in Section 4.1, in CHIS 2017-2018, a total of 17 adult proxy interviews were completed. Proxy respondents had to be adult household members who were knowledgeable about the sampled person's health. The proxy respondent was typically a spouse or an adult child of the sampled adult. While the number of interviews completed using the proxy interviews is relatively small, the proxy interviews add responses from adults who would otherwise be excluded from the survey and who likely have very different health characteristics than other adult respondents.
- **Advance letter:** Another method used to increase response rates was mailing an introductory letter in advance to all landline and surname list sampled cases with mailable addresses provided by sample vendors. In a departure from previous years, from the onset of 2017 fielding until April 2018, cell phone sample with matched telephone numbers also received

an advance letter.

In April 2018, SSRS conducted a randomized experiment to test the efficacy of sending advanced letters to cell sample as compared with landline sample. For the purpose of the experiment, landline and cell sample with a listed address and unlisted sample were randomly assigned to either receive an advance letter or not. These yielded four experimental conditions, landline sample, who received a mail (n=2,413), and who did not receive a mail (n=2,384), and cell sample, who received a mail (n=2,556), and who did not receive a mail (n=2,518).

Below are tables that show the results of the screening response rate (Table 7-1a) and adult response rates (Table 7-1b). These tables show results for four types of samples: listed sample versus unlisted sample, by frame (landline and cell). This is shown then rolled up into simple random samples in the combo columns. There are two tables, one for the condition that got letters and the group that did not get letters.

Table 7-1a. Screener interview response rates by type of interview and advance letter

Condition		Landline			Cell		
		Listed	Not Listed	Combined	Listed	Not Listed	Combined
Advance letter	Completes	188	33	221	114	331	445
	RR	19%	7%	15%	7%	6%	6%
No advance letter	Completes	78	36	114	75	337	412
	RR	9%	9%	9%	5%	6%	6%
% Difference in RR (Letter vs. No letter)		120%	-21%	73%	43%	-3%	6%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

The difference line shows that overall for listed landline sample, there was a 73% improvement in landline response rates and a 6% improvement in the cellular response rate.

Below are the adult response rates and the rollup response rates:

Table 7-1b. Adult interview response rates by type advance letter experiment condition

Condition		Landline			Cell		
		Listed	Not Listed	Combined	Listed	Not Listed	Combined
Advance letter	Completes	85	13	98	55	150	205
	Adult RR	46%	39%	45%	49%	45%	46%
	Overall RR	8.8%	2.9%	6.8%	3.5%	2.8%	3.0%
No advance letter	Completes	26	16	42	38	134	172
	Adult RR	33%	44%	37%	51%	40%	42%
	Overall RR	2.9%	4.1%	3.2%	2.6%	2.6%	2.6%
% Difference in RR (Letter vs. No letter)	Adult RR	38%	-11%	22%	-5%	13%	9%
	Overall RR	204%	-30%	111%	36%	9%	15%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

Overall then, the letters improved the landline response rate by 111%, and cell phone by 15%. Factoring in the cost for conducting these interviews, we found that on average, utilizing letters in the experiment in fact reduces cost for landlines, but significantly increases cost for cell. Thus, since the randomized experiment did not provide evidence for the efficacy of mailing cell phone, the advance letters were discontinued for cell sample but continued for landline sample.

- **In-language interviews:** A very important procedure incorporated to enhance the response rates was conducting the interviews in the language requested by the sampled person. The languages included in 2017-2018 were: Spanish, Chinese (Cantonese and Mandarin), Korean, Vietnamese, and Tagalog. In many cases, households that did not speak English would not have been included in CHIS had these additional languages not been offered to sample members. In addition, the quality of the screener and extended interview data are likely better for these households than if they had been only allowed to respond in English. Table 7-2 gives the number of interviews that were completed by language. More than 10,200 households completed the screener using a language other than English, accounting for about 12 percent of all the completed screener interviews in CHIS 2017-2018. Spanish was the most frequently used language, with 87 percent of the non-English screener interviews being completed in Spanish. Chinese was the second most frequently used language in the interviews.

Table 7-2. Number of completed screener and extended interviews by sample type and language

Interview type	Non-English						Total	Total
	English	Spanish	Vietnamese	Korean	Chinese	Tagalog		
Screeners Interviews								
Total	84,460	8,987	401	383	503	24	10,298	94,758
Landline	38,648	2,620	79	46	171	4	2,920	41,568
Cell phone sample	42,619	5,948	65	147	151	15	6,326	48,945
Korean surname	434	5	2	182	120	4	313	747
Vietnamese surname	276	4	255	8	55	0	322	598
Imperial county	484	260	0	0	0	0	260	744
AIAN OS	661	1	0	0	0	0	1	662
San Francisco OS	1338	149	0	0	6	1	156	1,494
Adult Interviews								
Total	38,818	2,694	276	233	299	10	3,512	42,330
Landline	18,036	671	60	27	97	5	860	18,896
Cell phone sample	19,423	1,886	40	105	95	5	2,131	21,554
Korean surname	234	0	2	93	81	0	176	410
Vietnamese surname	112	0	174	8	22	0	204	316
Imperial county	241	98	0	0	0	0	98	339
AIAN OS	317	0	0	0	0	0	0	317
San Francisco OS	455	39	0	0	4	0	43	498
Child Interviews								
Total	2,759	396	12	7	11	1	427	3,186
Landline	941	99	1	0	2	1	103	1,044
Cell phone sample	1,709	277	3	5	7	0	292	2,001
Korean surname	16	0	1	2	2	0	5	21
Vietnamese surname	14	0	7	0	0	0	7	21
Imperial county	24	18	0	0	0	0	18	42
AIAN OS	30	0	0	0	0	0	0	30
San Francisco OS	25	2	0	0	0	0	2	27
Teen Permission Interviews								
Total	1,060	108	4	2	0	0	114	1,174
Landline	512	28	0	0	0	0	28	540
Cell phone sample	506	73	2	1	0	0	76	582
Korean surname	10	0	0	0	0	0	0	10
Vietnamese surname	7	0	2	1	0	0	3	10
Imperial county	13	7	0	0	0	0	7	20
AIAN OS	5	0	0	0	0	0	0	5
San Francisco OS	7	0	0	0	0	0	0	7

(continued)

Table 7-2. Number of completed screener and extended interviews by sample type and language
(continued)

Interview type	Non-English						Total	Total
	English	Spanish	Vietnamese	Korean	Chinese	Tagalog		
Teen Interviews								
Total	805	70	4	1	0	0	75	880
Landline	413	21	0	0	0	0	21	434
Cell phone sample	361	45	2	1	0	0	48	409
Korean surname	4	0	0	0	0	0	0	4
Vietnamese surname	7	0	2	0	0	0	2	9
Imperial county	11	4	0	0	0	0	4	15
AIAN OS	3	0	0	0	0	0	0	3
San Francisco OS	6	0	0	0	0	0	0	6

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

7.2 Comparisons of Response Rates over the Cycles

While the sampling and content varies somewhat across CHIS cycles, the survey procedures are very similar. One adult is sampled from each household and asked to complete an interview of about 30 minutes. Other household members are sampled and interviewed if there are children and/or adolescents present in the household. The response disposition codes and formulas used to compute the response rates in CHIS 2017-2018 are similar to the ones used in previous cycles, although the child-first procedures have some implications for the response rates beginning in 2005, as noted earlier.

Table 7-3 summarizes the screener interview, extended interview, overall, and combined response rates by cycle for the CHIS samples. The same information is presented graphically in Figures 7-1 and 7-2. The state-level response rates for the landline/surname list sample have been declining steadily since the first cycle of CHIS in 2001. The screener response rate decreased 9.8 points, or about 48 percent, between 2015-2016 and 2017-2018 in the landline/surname list sample, and 12.5 points, or about 64 percent, in the cell phone sample.

Table 7-3. Comparison of state-level response rates for the landline/surname list and cell phone sample from CHIS 2001 to 2017-2018

Type	CHIS cycle response rate (%)								
	2001	2003	2005	2007	2009	2011-2012	2013-2014	2015-2016	2017-2018
Landline/surname list sample									
Screener	59.2	55.9	49.8	35.6	36.1	31.6	28.8	20.6	10.8
Extended interviews									
Household	-	-	59.3	59.4	54.7	53.9	51.4	43.6	52.0
Adult	63.7	59.9	54.0	52.8	49.0	47.4	44.8	41.5	43.8
Child	87.6	81.4	75.2	73.7	72.9	73.2	68.9	57.0	60.0
Adolescent	63.5	57.3	48.5	44.1	42.8	42.7	40.2	17.6	25.6
Adolescent w/ parental permission	84.5	83.3	77.5	74.7	75.1	74.0	73.9	56.5	84.0
Overall landline/surname list									
Household	-	-	29.6	21.1	19.7	17.0	14.8	9.0	5.6
Adult	37.7	33.5	26.9	18.7	17.7	15.0	12.9	8.5	4.7
Child	33.0	27.3	25.2	16.8	15.7	13.8	11.0	11.7	6.4
Adolescent	23.9	19.2	14.2	10.2	7.9	6.7	5.3	3.6	2.8

(continued)

Table 7-3. Comparison of state-level response rates for the landline/surname list and cell phone sample from CHIS 2001 to 2017-2018 (continued)

Type	CHIS cycle response rate (%)								
	2001	2003	2005	2007	2009	2011-2012	2013-2014	2015-2016	2017-2018
Cell phone sample									
Screener	-	-	-	-	19.3	33.0	30.7	19.6	7.1
Extended interviews									
Household	-	-	-	-	57.6	55.5	53.9	45.7	48.8
Adult	-	-	-	-	56.2	53.8	52.1	47.9	40.9
Child	-	-	-	-	76.0	73.4	72.2	47.3	57.5
Adolescent	-	-	-	-	46.4	42.6	41.0	18.8	18.0
Adolescent w/ parental permission	-	-	-	-	75.6	69.9	69.7	61.2	71.3
Overall cell phone									
Household	-	-	-	-	11.1	18.3	16.6	8.9	3.5
Adult	-	-	-	-	10.8	17.8	16.0	9.4	2.9
Child	-	-	-	-	8.2	13.0	11.5	9.3	4.1
Adolescent	-	-	-	-	5.0	7.6	6.6	3.7	1.3
Combined landline/ surname list and cell phone sample									
Household	-	-	-	-	17.4	17.7	16.0	8.9	4.0
Adult	-	-	-	-	15.6	16.5	15.0	9.1	3.4
Child	-	-	-	-	14.1	13.3	11.4	9.7	4.6
Adolescent	-	-	-	-	7.5	7.1	6.1	3.7	1.7

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

Figure 7-1. CHIS overall response rates by sample type (landline LL and cell phone) and type of interview (adult, child, and adolescent)

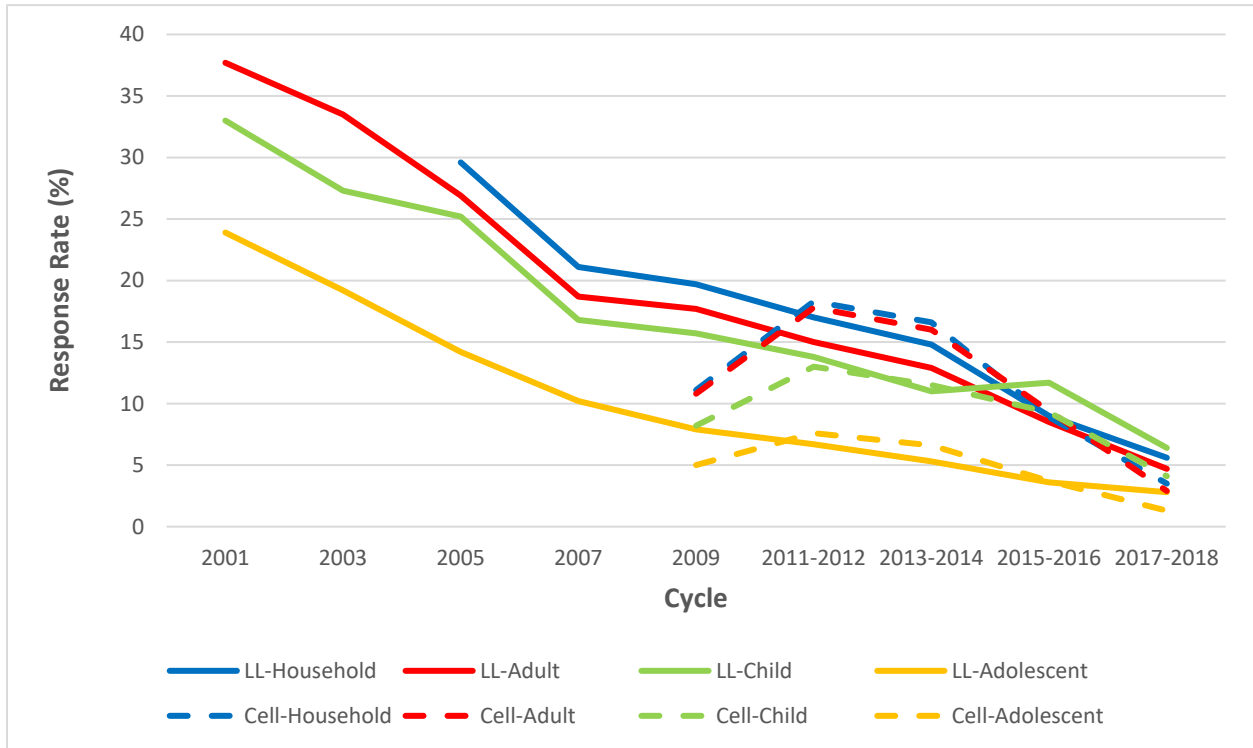
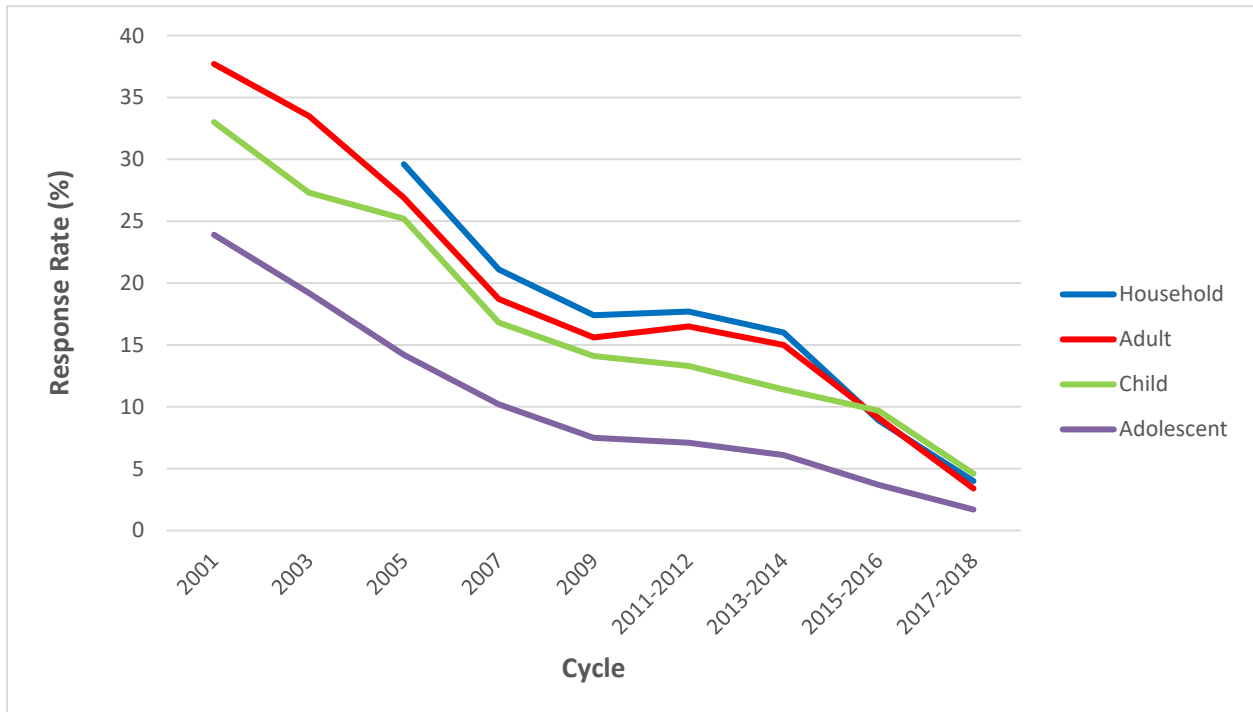


Figure 7-2. CHIS overall response rates by type of interview (adult, child, and adolescent)



7.3 Comparisons of Response Rates with Other Telephone Surveys

This section compares the response rates from CHIS 2017-2018 to those from other telephone surveys of the adult population in California. These comparisons are not direct because other surveys may differ in sampling methods, the types of persons selected for interview, the length of interview, and other factors. A more generic reason for the difficulty of comparisons to other surveys involves the lack of detailed information on disposition codes available for most telephone surveys conducted in the United States as noted in several places, such as by McCarty (2003). Publications with definitions of response rates by AAPOR (The American Association for Public Opinion Research, 2016) are attempts to address this problem. This section compares two RDD surveys conducted in California between 2016 and 2017.

One RDD survey that has been compared to each cycle of CHIS is the California Behavioral Risk Factor Surveillance System (BRFSS). This is an annual survey conducted in each state as a cooperative venture with the Centers for Disease Control and Prevention (CDC). The documentation on the 2017 BRFSS and its data quality report with response rates is available from the CDC web site (https://www.cdc.gov/brfss/annual_data/2017/pdf/2017-sdqr-508.pdf). In the BRFSS, one adult in each household is sampled and asked to complete an interview of about 20 minutes on health-related topics. The BRFSS interview is about 15 minutes shorter than CHIS 2017-2018 and does not have multiple interviews within the household. Nonetheless, it is probably more like CHIS than any other survey for which detailed response rate information is available.

The 2017 BRFSS Summary Data Quality Report with Response Rates (Centers for Disease Control, 2017) includes information about its response rates. The report shows disposition codes that follow the spirit of the AAPOR recommendations. Despite the detail given, it is very difficult to map the 2017 California BRFSS disposition codes unambiguously to the corresponding disposition codes used in CHIS 2017-2018 because different survey organizations use different classification schemes to create the disposition codes. The codes from both systems provide much-needed information for survey operations, but they are not the same. Such differences make direct comparisons between surveys difficult.

One difference between the CHIS and BRFSS disposition classification systems is the definition of a “partial interview.” Each survey’s response rates include partial interviews per the survey’s own definition. The BRFSS definition appears to include many more cases than does the CHIS definition. The 2017 report does not distinguish between partial and full interviews. CHIS cycles have maintained a consistent rate of about 0.5 percent partial interviews. If this difference were taken into account, then the CHIS response rates would likely be higher, or the BRFSS rates would be lower.

The 2017 BRFSS Summary Data Quality Report includes AAPOR response rate 4 for the landline, cell phone, and combined samples. This rate, which is closest to the definition used in CHIS, is the overall response rate. However the overall response rates for the 2017 California BRFSS for landline and cell phone samples are over 30 percentage points higher than the response rates reported for CHIS 2017-2018 as detailed in the previous sections. It is essential to emphasize that the BRFSS and CHIS overall response rates are not comparable because of the numerous differences in the design and calculations.

In previous cycles, attempts have been made to create more comparable response rates to BRFSS (for example, see *CHIS 2013-2014 Methodology Series: Report 4 – Response Rates*). These comparable measures have historically found that CHIS achieves a similar response rate to BRFSS. No attempt to create comparable response rates is done here. Given similar declines in response rates for both BRFSS and CHIS over recent years, we assume that CHIS continues to maintain a similar response rate to BRFSS.

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APPENDIX A

Appendix A contains supplemental tables which report on the response rates combining across the landline/list and cell sample frames

Table A-1 reports on the number of completed screeners and screener response rates by sampling stratum and whether an advanced letter was sent or not for the combined, landline/surname list and cell, sample

Table A-2 reports on the number of completed extended interviews and response rates by sampling stratum and type of interview for the combined, landline/surname list sample (conditional on completed screener) and cell, sample

Table A-3 reports on the overall response rates by sampling stratum and type of interview for the combined, landline/surname list and cell, sample

Table A-1. Number of completed screeners and screener response rates by sampling stratum and whether an advance letter was sent for the combined, landline/surname list and cell, sample

	Stratum ³	Advance letter mailed					
		Total		Yes		No	
		Complete ¹	Response rate ² (%)	Complete	Response rate (%)	Complete	Response rate (%)
	State total	91,858	8.0%	51,239	9.8%	40,619	6.6%
1	Los Angeles	18,477	7.6%	10,990	8.9%	7,487	6.5%
2	San Diego	10,300	7.1%	5,677	8.7%	4,623	6.0%
3	Orange	5,467	6.5%	3,416	7.9%	2,051	5.4%
4	Santa Clara	3,229	6.7%	2,028	8.6%	1,201	5.0%
5	San Bernardino	3,172	7.7%	1,711	9.3%	1,461	6.8%
6	Riverside	4,323	7.6%	2,523	9.4%	1,800	6.4%
7	Alameda	2,665	7.0%	1,476	8.5%	1,189	6.0%
8	Sacramento	2,235	8.5%	1,214	12.1%	1,021	6.4%
9	Contra Costa	1,821	7.9%	1,084	10.2%	737	6.1%
10	Fresno	1,511	8.6%	835	10.7%	676	7.5%
11	San Francisco	1,636	7.2%	1,059	8.2%	577	6.1%
12	Ventura	1,423	7.6%	848	8.6%	575	6.9%
13	San Mateo	1,377	6.6%	799	8.7%	578	5.1%
14	Kern	1,471	9.3%	766	11.6%	705	8.0%
15	San Joaquin	1,032	7.8%	594	9.3%	438	6.8%
16	Sonoma	794	9.7%	440	12.8%	354	7.8%
17	Stanislaus	1,141	7.6%	653	10.3%	488	5.6%
18	Santa Barbara	1,049	9.1%	520	13.1%	529	7.0%
19	Solano	1,127	6.9%	663	8.7%	464	5.5%
20	Tulare	1,056	10.4%	520	12.3%	536	9.4%
21	Santa Cruz	1,032	10.3%	482	13.3%	550	8.4%
22	Marin	1,140	6.4%	570	10.2%	570	4.6%
23	San Luis Obispo	1,024	16.4%	592	22.0%	432	10.8%
24	Placer	965	12.6%	564	16.0%	401	9.7%
25	Merced	1,134	7.9%	581	10.3%	553	6.5%
26	Butte	945	16.3%	547	22.0%	398	12.3%
27	Shasta	1,249	18.6%	643	23.9%	606	14.6%
28	Yolo	1,052	16.1%	580	19.8%	472	11.7%
29	El Dorado	1,038	15.1%	558	18.6%	480	11.0%

(continued)

Table A-1. Number of completed screeners and screener response rates by sampling stratum and whether an advance letter was sent for the combined, landline/surname list and cell, sample (continued)

	Stratum ³	Advance letter mailed					
		Total		Yes		No	
		Complete ¹	Response rate ² (%)	Complete	Response rate (%)	Complete	Response rate (%)
30	Imperial	1,412	8.5%	781	11.2%	631	7.0%
31	Napa	1,199	8.0%	642	10.7%	557	6.1%
32	Kings	1,298	7.8%	650	9.9%	648	6.3%
33	Madera	1,267	9.6%	560	14.4%	707	7.5%
34	Monterey	980	7.9%	474	9.7%	506	6.9%
35	Humboldt	1,054	22.3%	543	30.5%	511	16.0%
36	Nevada	1,153	10.4%	538	15.7%	615	7.0%
37	Mendocino	1,109	12.4%	382	18.4%	727	10.2%
38	Sutter	1,682	8.5%	834	12.0%	848	5.8%
39	Yuba	960	11.8%	766	12.8%	194	10.2%
40	Lake	1,024	13.1%	425	16.5%	599	10.7%
41	San Benito	1,581	7.2%	590	8.2%	991	5.9%
42	Colusa, etc.	819	18.7%	511	23.4%	308	12.4%
43	Del Norte, etc.	690	19.3%	282	25.8%	408	15.6%
44	Amador, etc.	745	13.9%	328	19.3%	417	10.6%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

Note. Dividing line separates counties with a population of more than 500,000 persons as of January 1, 2016.

¹ A complete here includes any HH with a completed screening interview. The Imperial County, San Francisco and AIAN oversamples are not included in these rates.

² Response rate is calculated as the sum of completes and partial completes divided by the sum of eligible cases and unknown cases (adjusted by the eligibility rate).

³ Stratum displayed is the stratum as each household was sampled, not their reported strata

Table A-2. Number of completed extended interviews and response rates by sampling stratum and type of interview for the combined, landline/surname list sample and cell, sample (conditional on completed screener)

	Stratum ³	Household		Adult		Child		Adolescent	
		Complete ¹	Response rate ² (%)	Complete	Response rate (%)	Complete	Response rate (%)	Complete	Response rate (%)
	State total	41,579	49.9%	41,176	42.3%	3,087	58.3%	856	21.3%
1	Los Angeles (8 SPAs)	7,607	44.5%	7,528	38.7%	580	55.5%	154	20.3%
2	San Diego (6 HSRs)	4,566	50.5%	4,531	41.9%	331	60.3%	91	20.2%
3	Orange	2,419	45.9%	2,389	41.3%	142	56.2%	40	19.4%
4	Santa Clara	1,524	47.9%	1,503	43.4%	120	63.9%	39	23.4%
5	San Bernardino	1,337	47.1%	1,317	39.6%	118	61.9%	28	17.4%
6	Riverside	1,893	48.1%	1,869	40.2%	143	61.3%	43	22.1%
7	Alameda	1,276	51.8%	1,266	47.1%	99	59.0%	30	20.4%
8	Sacramento	1,130	52.4%	1,119	47.1%	69	60.7%	28	24.2%
9	Contra Costa	858	49.5%	848	43.5%	54	54.9%	18	22.8%
10	Fresno	679	46.5%	672	41.7%	52	58.1%	23	27.8%
11	San Francisco	847	57.6%	844	49.9%	71	67.9%	12	22.7%
12	Ventura	610	47.6%	606	40.1%	42	49.8%	12	17.4%
13	San Mateo	618	47.4%	614	42.0%	43	60.2%	17	24.5%
14	Kern	605	43.0%	601	38.8%	50	46.3%	12	20.7%
15	San Joaquin	465	50.8%	461	43.4%	32	56.4%	8	16.1%
16	Sonoma	412	54.2%	406	47.1%	29	55.2%	8	23.7%
17	Stanislaus	516	50.6%	513	42.3%	50	61.8%	6	12.0%
18	Santa Barbara	492	51.3%	490	45.1%	28	60.4%	10	25.0%
19	Solano	529	51.8%	521	43.7%	49	58.0%	13	19.0%
20	Tulare	509	53.7%	501	45.7%	43	50.0%	10	21.1%
21	Santa Cruz	498	55.9%	489	43.5%	33	53.4%	11	19.9%
22	Marin	552	55.6%	547	45.2%	33	60.7%	10	26.6%
23	San Luis Obispo	507	72.0%	503	45.1%	33	61.6%	14	36.5%
24	Placer	480	69.9%	477	46.6%	29	55.8%	6	17.2%
25	Merced	524	52.3%	516	42.1%	50	60.3%	9	20.4%
26	Butte	505	72.4%	503	49.7%	29	54.5%	7	21.7%
27	Shasta	622	72.7%	616	47.2%	49	63.0%	10	17.7%
28	Yolo	556	78.0%	552	47.6%	45	55.4%	17	33.6%

(continued)

Table A-2. Number of completed extended interviews and response rates by sampling stratum and type of interview for the combined, landline/surname list sample and cell, sample (conditional on completed screener) (continued)

	Stratum ³	Household		Adult		Child		Adolescent	
		Complete ¹	Response rate ² (%)	Complete	Response rate (%)	Complete	Response rate (%)	Complete	Response rate (%)
29	El Dorado	533	73.9%	525	46.9%	43	59.5%	17	26.6%
30	Imperial	561	45.5%	554	36.8%	50	50.0%	20	27.2%
31	Napa	587	52.2%	586	45.6%	41	73.9%	10	21.7%
32	Kings	586	52.3%	581	42.0%	62	64.1%	6	7.8%
33	Madera	579	51.0%	572	42.1%	61	67.5%	10	17.5%
34	Monterey	434	46.5%	433	40.8%	26	54.4%	6	12.7%
35	Humboldt	580	72.1%	574	50.1%	48	67.2%	18	43.3%
36	Nevada	564	53.4%	564	46.8%	22	53.3%	8	22.3%
37	Mendocino	545	52.7%	541	46.2%	37	69.0%	3	9.2%
38	Sutter	773	56.6%	768	43.4%	57	57.6%	14	18.3%
39	Yuba	439	47.5%	431	43.4%	34	59.5%	7	18.7%
40	Lake	499	50.6%	495	45.8%	38	67.6%	10	31.1%
41	San Benito	659	51.8%	656	40.0%	45	44.5%	13	20.9%
42	Colusa, etc.	370	64.6%	367	42.5%	24	61.4%	5	16.5%
43	Del Norte, etc.	372	73.5%	370	50.0%	32	55.3%	11	35.2%
44	Amador, etc.	362	65.1%	357	46.1%	21	69.1%	12	32.5%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

¹ A complete here includes any HH with any completed extended interview (adult, child, or teen) weighted by the HH weight. The Imperial County, San Francisco and AIAN oversamples are not included in these rates.

² Response rate is calculated as the sum of completes and partial completes divided by the sum of eligible cases and unknown cases (adjusted by the eligibility rate).

³ Stratum displayed is the stratum as each household was sampled, not their reported strata

Table A-3. Overall response rates by sampling stratum and type of interview for the combined, landline/surname list and cell, sample

	Stratum ²	Interview type overall response rate (%) ¹			
		Household	Adult	Child	Adolescent
	State total	4.0%	3.4%	4.6%	1.7%
1	Los Angeles (8 SPAs)	3.4%	2.9%	4.2%	1.5%
2	San Diego (6 HSRs)	3.6%	3.0%	4.3%	1.4%
3	Orange	3.0%	2.7%	3.6%	1.3%
4	Santa Clara	3.2%	2.9%	4.3%	1.6%
5	San Bernardino	3.6%	3.1%	4.8%	1.3%
6	Riverside	3.6%	3.1%	4.7%	1.7%
7	Alameda	3.6%	3.3%	4.1%	1.4%
8	Sacramento	4.4%	4.0%	5.1%	2.1%
9	Contra Costa	3.9%	3.4%	4.4%	1.8%
10	Fresno	4.0%	3.6%	5.0%	2.4%
11	San Francisco	4.1%	3.6%	4.9%	1.6%
12	Ventura	3.6%	3.0%	3.8%	1.3%
13	San Mateo	3.1%	2.8%	4.0%	1.6%
14	Kern	4.0%	3.6%	4.3%	1.9%
15	San Joaquin	3.9%	3.4%	4.4%	1.3%
16	Sonoma	5.3%	4.6%	5.4%	2.3%
17	Stanislaus	3.8%	3.2%	4.7%	0.9%
18	Santa Barbara	4.7%	4.1%	5.5%	2.3%
19	Solano	3.6%	3.0%	4.0%	1.3%
20	Tulare	5.6%	4.8%	5.2%	2.2%
21	Santa Cruz	5.7%	4.5%	5.5%	2.0%
22	Marin	3.6%	2.9%	3.9%	1.7%
23	San Luis Obispo	11.8%	7.4%	10.1%	6.0%
24	Placer	8.8%	5.9%	7.0%	2.2%
25	Merced	4.1%	3.3%	4.8%	1.6%
26	Butte	11.8%	8.1%	8.9%	3.5%
27	Shasta	13.6%	8.8%	11.7%	3.3%
28	Yolo	12.5%	7.6%	8.9%	5.4%
29	El Dorado	11.1%	7.1%	9.0%	4.0%
30	Imperial	3.8%	3.1%	4.2%	2.3%

(continued)

Table A-3. Overall response rates by sampling stratum and type of interview for the combined, landline/surname list and cell, sample (continued)

	Stratum ²	Interview type overall response rate (%) ¹			
		Household	Adult	Child	Adolescent
31	Napa	4.2%	3.6%	5.9%	1.7%
32	Kings	4.1%	3.3%	5.0%	0.6%
33	Madera	4.9%	4.0%	6.4%	1.7%
34	Monterey	3.7%	3.2%	4.3%	1.0%
35	Humboldt	16.1%	11.2%	15.0%	9.7%
36	Nevada	5.6%	4.9%	5.6%	2.3%
37	Mendocino	6.5%	5.7%	8.6%	1.1%
38	Sutter	4.8%	3.7%	4.9%	1.6%
39	Yuba	5.6%	5.1%	7.0%	2.2%
40	Lake	6.6%	6.0%	8.9%	4.1%
41	San Benito	3.7%	2.9%	3.2%	1.5%
42	Colusa, etc.	12.0%	7.9%	11.5%	3.1%
43	Del Norte, etc.	14.2%	9.7%	10.7%	6.8%
44	Amador, etc.	9.0%	6.4%	9.6%	4.5%

Source: UCLA Center for Health Policy Research, 2017-2018 California Health Interview Survey.

¹ Overall response rate is calculated by multiplying the screener interview response rate by the extended interview response rate (where the extended response rate is conditional on a completed screener). The Imperial County, San Francisco and AIAN oversamples are not included in these rates.

² Stratum displayed is the stratum as each household was sampled, not their reported strata