Report 1

Sample Design

CALIFORNIA HEALTH INTERVIEW SURVEY

CHIS 2015-2016 METHODOLOGY SERIES

REPORT 1

SAMPLE DESIGN

OCTOBER 2017

www.chis.ucla.edu

This report provides analysts with information about the sampling methods used for CHIS 2015-2016, including both the household and person (within household) sampling. This report also provides a discussion on achieved sample size and how it compares to the planned sample size.

PREFACE

Sample Design is the first in a series of methodological reports describing the 2015-2016 California Health Interview Survey (CHIS 2015-2016). 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. RTI International was responsible for data collection and the preparation of five methodological reports from the 2015-2016 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 2015-2016

The methodological reports for CHIS 2015-2016 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.

Report 1: Sample Design (this report) describes the procedures used to design and select the sample from CHIS 2015-2016. An appropriate sample design is a feature of a successful survey, and CHIS 2015-2016 presented many issues that had to be addressed at the design stage. This report explains why the design features of CHIS were selected and presents the alternatives that were considered and provides analysts information about the sampling methods used for both the household and person (within household) sampling. In general terms, once a household was sampled, an adult within that household was sampled. If there were children and/or adolescents in the household, one child and/or one adolescent was eligible for sampling. This report also provides a discussion on achieved sample size and how it compares to the planned sample size.

The purposes of this report are:

- To serve as a reference for researchers using CHIS 2015-2016 data;
- To document data collection procedures so that future iterations of CHIS, or other similar surveys, can replicate those procedures if desired;
- To describe lessons learned from the data collection experience and make recommendations for improving future surveys; and
- To evaluate the level of effort required for the various kinds of data collection undertaken.

For further methodological details not covered in this report, refer to the other methodological reports in the series at http://healthpolicy.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 2015-2016 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 2015-2016.

- 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://healthpolicy.ucla.edu/chis/design/Pages/methodology.aspx

The CHIS is a population-based telephone survey of California's residential, non-institutionalized 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 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 2015 data were collected between May 2015 and mid-February 2016. CHIS 2016 data were collected between January and December 2016. Approximately half of the interviews were conducted during the 2015 calendar year and half during the 2016 calendar year. 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 that year for the age group corresponding to the data file in use (adult, adolescent, or child). In CHIS 2015-2016, data users will be able to produce single-year estimates using the weights provided (referred to as CHIS 2015 and CHIS 2016, respectively).

See what's new in the 2015-2016 CHIS sampling and data collection here:
http://healthpolicy.ucla.edu/chis/design/Documents/whats-new-chis-2015-2016.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://healthpolicy.ucla.edu/chis/analyze/Pages/sample-code.aspx.

Additional documentation on constructing the CHIS sampling weights is available in the *CHIS 2015-2016 Methodology Series: Report 5—Weighting and Variance Estimation* posted at http://healthpolicy.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 2015-2016 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 426 Japanese, 280 Korean, and 359 Vietnamese adult interviews based on self-identified ethnicity for the combined 2015 and 2016 survey years.[1] Additional samples from both the landline and cell phone frames produced 1,042 interviews in 2015 within Marin County and 2,388 interviews in 2016 within San Diego County. Furthermore, an address-based sample from the USPS Delivery Sequence File produced 258 landline or cell phone interviews in 2016 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

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[1] For the 2015 and 2016 survey years combined, all sample frames produced totals of 667 Japanese, 497 Korean, and 597 Vietnamese adult interviews.

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.

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 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. Surname and given name lists were used similarly to increase the yield of Californians of Japanese descent.

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 2015 and 2016, 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 1,594 teen interviews and 4,293 child interviews were completed in CHIS 2015-2016 with approximately 58% 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

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[2] http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201605.pdf

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.

Table 1-1.   California county and county group strata used in the CHIS 2015-2016 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, Glen, Tehama
3. Orange	23. San Luis Obispo	43. Plumas, Sierra, Siskiyou,
4. Santa Clara	24. Placer	Lassen, Modoc, Trinity, Del Norte
5. San Bernardino	25. Merced	44. Mariposa, Mono, Tuolumne,
6. Riverside	26. Butte	Alpine, Amador, Calaveras, Inyo

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

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.

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 2015-2016.

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 interviewers 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.

RTI International designed the methodology and collected data for CHIS 2015-2016, under contract with the UCLA Center for Health Policy Research. RTI is an independent, nonprofit institute that provides research, development, and technical services to government and commercial clients worldwide, with specialization in designing and implementing large-scale sample surveys. For all sampled households, RTI 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 2015-2016 by the type of sample (landline RDD, surname list, cell RDD,

and ABS). Note that these figures were accurate as of data collection completion 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://healthpolicy.ucla.edu/chis/design/Pages/sample.aspx.

Interviews in all languages were administered using RTI's computer-assisted telephone interviewing (CATI) system. The average adult interview took about 41 minutes to complete. The average child and adolescent interviews took about 19 minutes and 22 minutes, respectively. For "child-first" interviews, additional household information asked as part of the child interview averaged about 12 minutes. Interviews in non-English languages typically took somewhat longer to complete. More than 13 percent of the adult interviews were completed in a language other than English, as were about 24 percent of all child (parent proxy) interviews and 25 percent of all adolescent interviews.

Table 1-2.   Number of completed CHIS 2015-2016 interviews by type of sample and instrument

Type of sample[1]	Adult[2]	Child	Adolescent
Total all samples	42,089	4,293	1,594
Landline RDD	15,106	1,178	542
Vietnamese surname list	3,558	316	111
Korean surname list	1,772	130	64
Japanese surname list	631	34	25
Cell RDD	19,722	2,521	807
Marin County Oversample[3]	1,042	83	33
Imperial County ABS Oversample	258	31	12

Source: UCLA Center for Health Policy Research, 2015-2016 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. Interviews from the Marin County oversample include respondents who did not live in this county and interviews from the Vietnamese, Korean, or Japanese surname lists include respondents who do not have one of these ethnicities. For example, only 182 of the 3,558 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] Completed interviews for the Marin County oversample do not include interviews completed via the Vietnamese surname list frame. These interviews are counted in the row for the Vietnamese surname list.

Table 1-3 shows the major topic areas for each of the three survey instruments (adult, child, and adolescent).

Table 1-3.   CHIS 2015-2016 survey topic areas by instrument

Health status	Adult	Teen	Child
General health status	✓	✓	✓
Days missed from school due to health problems		✓	✓
Health-related quality of life (HRQOL)	✓	✓	

Health conditions	Adult	Teen	Child
Asthma	✓	✓	✓
Diabetes, gestational diabetes, pre- /borderline diabetes	✓		
Heart disease, high blood pressure, stroke	✓		
Physical, behavioral, and/or mental conditions			✓
Physical disabilities, blindness, deafness	✓		

Mental health	Adult	Teen	Child
Mental health status	✓	✓	
Perceived need, access and utilization of mental health services	✓	✓	
Suicide ideation and attempts	✓	✓	
Functional impairment, stigma	✓		

Health behaviors	Adult	Teen	Child
Dietary intake, fast food and soda intake	✓	✓	✓
Water Consumption		✓	
Physical activity and exercise, commute from school to home		✓	✓
Sedentary time		✓	✓
Walking for transportation and leisure	✓		
Doctor discussed nutrition/physical activity		✓	✓
Flu Shot	✓	✓	✓
Alcohol use	✓	✓	
Cigarette and E-cigarette use	✓	✓	
Sexual behavior	✓	✓	
Breastfeeding			✓

Women's health	Adult	Teen	Child
Mammography screening	✓		
Pregnancy	✓		

Dental health	Adult	Teen	Child
Last dental visit, main reason haven't visited dentist	✓	✓	✓

(continued)

Table 1-3. CHIS 2015-2016 survey topic areas by instrument (continued)

Neighborhood and housing	Adult	Teen	Child
Safety, social cohesion	✓	✓	✓
Homeownership, length of time at current residence	✓		
Park use		✓	✓
Civic engagement	✓	✓	
Building Healthy Communities	✓		

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)	✓	✓	✓
Medical home, timely appointments, hospitalizations	✓	✓	✓
Developmental screening			✓
Communication problems with doctor	✓		✓
Internet use for health information	✓		✓
Tele-medical care	✓		
Family planning	✓		
Change of usual source of care	✓		

Food environment	Adult	Teen	Child
Access to fresh and affordable foods	✓		
Where teen/child eats breakfast/lunch, fast food at school		✓	✓
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 plan assessment	✓	✓	✓
Whether employer offers coverage, respondent/spouse eligibility	✓		
Coverage over past 12 months, reasons for lack of insurance	✓	✓	✓
Difficulty finding private health insurance	✓		
High deductible health plans	✓	✓	✓
Partial scope Medi-Cal	✓		

(continued)

Table 1-3.   CHIS 2015-2016 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, alimony/child support, social security/pension, worker's compensation	✓		
Medi-Cal and Healthy Families eligibility	✓	✓	✓
Reason for Medi-Cal non-participation among potential beneficiaries	✓	✓	✓

Bullying and interpersonal violence	Adult	Teen	Child
Bullying, personal safety, school safety, interpersonal violence		✓	

Parental involvement/adult supervision	Adult	Teen	Child
Adult presence after school, role models, resiliency		✓	
Parental involvement		✓	

Child care and school attendance	Adult	Teen	Child
Current child care arrangements			✓
Paid child care	✓		
Preschool/school attendance, name of school		✓	✓
Preschool quality			✓
School instability		✓	
First 5 California: "Talk, Read, Sing Program"			✓

Employment	Adult	Teen	Child
Employment status, spouse's employment status	✓		
Hours worked at all jobs	✓		

Income	Adult	Teen	Child
Respondent's and spouse's earnings last month before taxes	✓		
Household income, number of persons supported by household income	✓		

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	✓		
Education, English language proficiency	✓		
Citizenship, immigration status, country of birth, length of time in U.S., languages spoken at home	✓	✓	✓
Education of primary caretaker			✓
Citizenship, immigration status, country of birth, and length of time in U.S. of parents			✓

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

1.5   Responsive and Adaptive Design Elements

The CHIS 2015 and 2016 data collection protocol included the following two responsive design protocols to maximize response rates, provide protection against nonresponse bias, and control data collection costs:

1) a propensity model experiment in the first phase of each quarterly data collection that identified a set of cases with low propensities to discontinue calling for the remainder of Phase 1

2) a second nonresponse follow-up (NRFU) phase in each quarterly data collection period where a different protocol was implemented to increase response rates and reduce the risk of nonresponse bias.

Additional documentation on the responsive design protocols and outcomes is available in the *CHIS 2015-2016 Methodology Series: Report 2—Data Collection Methods* posted at http://healthpolicy.ucla.edu/chis/design/Pages/methodology.aspx.

1.6   Response Rates

The overall response rates for CHIS 2015 and 2016 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 2015, the landline/list sample household response rate was 9.1 percent (the product of the screener response rate of 21.0 and the extended interview response rate at the household level of 43.2 percent). The cell sample household response rate was 9.8 percent, incorporating a screener response rate of 21.5 percent household-level extended interview response rate of 45.9 percent. For CHIS 2016, the landline/list sample household response rate was 6.8 percent (the product of the screener response rate of 15.5 and the extended interview response rate at the household level of 44.0 percent). The cell sample household response rate was 8.4 percent, incorporating a screener response rate of 18.5 percent household-level extended interview response rate of 45.4 percent. CHIS uses AAPOR response rate RR4 (see more detailed in *CHIS 2015-2016 Methodology Series: Report 4 – Response Rates*).

Within the landline and cell phone sampling frames for 2015, the extended interview response rate for the landline/list sample varied across the adult (41.8 percent), child (44.7 percent) and adolescent (17.1 percent) interviews. For 2016, the extended interview response rate for the landline/list sample varied across the adult (41.3 percent), child (69.6 percent) and adolescent (17.9 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 48.5 percent, the child rate was 43.9 percent, and the adolescent rate was 17.4 percent in 2015 (see Table 1-4a). The adult interview response rate for the cell sample was 46.9 percent, the child rate was 59.7 percent, and the adolescent rate was 21.6 percent in 2016 (see Table 1-4c). 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 and Table 1-4d, respectively). 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 2015 response rates – Conditional

Type of sample	Screener	Household	Adult (given screened)	Child (given screened)	Adolescent (given screened & permission)
Overall	21.4%	45.2%	47.2%	44.0%	17.3%
Landline RDD	21.0%	43.2%	41.8%	44.8%	17.1%
Cell RDD	21.5%	45.9%	48.5%	43.9%	17.4%

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

Table 1-4b. CHIS 2015 response rates – Unconditional

Type of sample	Screener	Household	Adult (given screened)	Child (given screened)	Adolescent (given screened & permission)
Overall	21.4%	9.7%	10.1%	9.4%	3.7%
Landline RDD	21.0%	9.1%	8.8%	9.4%	3.6%
Cell RDD	21.5%	9.8%	10.4%	9.4%	3.7%

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

Table 1-4c. CHIS 2016 response rates – Conditional

Type of sample	Screener	Household	Adult (given screened)	Child (given screened)	Adolescent (given screened & permission)
Overall	17.8%	45.1%	44.6%	63.0%	20.0%
Landline RDD	15.5%	44.0%	41.3%	69.6%	17.9%
Cell RDD	18.5%	45.4%	46.9%	59.7%	21.6%

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

Table 1-4d. CHIS 2016 response rates – Unconditional

Type of sample	Screener	Household	Adult (given screened)	Child (given screened)	Adolescent (given screened & permission)
Overall	17.8%	8.0%	7.9%	11.2%	3.6%
Landline RDD	15.5%	6.8%	6.4%	10.8%	2.8%
Cell RDD	18.5%	8.4%	8.7%	11.1%	4.0%

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

To maximize the response rate, especially at the screener stage, an advance letter in five 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 34.5 percent of the landline RDD sample telephone numbers not identified by the sample vendor as business numbers or not identified by RTI's dialer software as nonworking numbers, and for 92.3 percent of surname list sample numbers. Combining these two frames, advance letters were sent to 40.5 percent of all fielded landline telephone numbers. Addresses were not available for the cell sample. As in all CHIS cycles since CHIS 2005, a $2 bill was included with the CHIS 2015-2016 advance letter to encourage cooperation. Additional incentives were offered to cell phone and Phase 2 nonresponse follow up (NRFU) respondents. Details on the incentives are provided in Table 1-5.

Table 1-5. 2015-2016 CHIS incentives by interview type

Type of interview	Adult
Cell Phone Screener	$5
Cell Phone Adult Interview	$20
Cell Phone Child Interview	$10
Cell Phone Teen Interview	$10
Nonresponse Follow-Up Adult Interview	$40
Nonresponse Follow-Up Child Interview	$20
Nonresponse Follow-Up Teen Interview	$20

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

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 the 2015-2016 CHIS, either a spouse/partner or adult child completed a proxy interview for 274 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://healthpolicy.ucla.edu/chis/design/Pages/data-quality.aspx.

1.7 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 non-institutionalized population for each sampling stratum and statewide. The weighting procedures used for CHIS 2015-2016 accomplish the following objectives:

- Compensate for differential probabilities of selection for phone numbers (households) and persons within household;
- Reduce biases occurring because nonrespondents may have different characteristics than respondents;
- Adjust, to the extent possible, for undercoverage in the sampling frames and in the conduct of the survey;
- Reduce the variance of the estimates by using auxiliary information; and
- Account for the second-phase sampling that was part of the responsive and adaptive design (Phase 2 NRFU).

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 2015-2016 were created primarily from the California Department of Finance's (DOF) 2015 and

2016 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 2015 and 2016 weights are based on 2010 Census counts, as were those used for the 2013-2014 cycle. Please pay close attention when comparing estimates using CHIS 2015-2016 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.

1.8   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. RTI imputed missing values for those variables used in the weighting process and UCLA-CHPR staff imputed values for nearly every other variable.

Two different imputation procedures were used by RTI 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 nonrespondents 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. RTI 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).

UCLA-CHPR imputed missing values for nearly every variable in the data files other than those imputed by RTI and some sensitive variables for which nonresponse had its own meaning. Overall, item nonresponse rates in CHIS 2015 and CHIS 2016 were low, with most variables missing valid responses for less than 1% of the sample.

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 and region of California were imputed by RTI. UCLA-CHPR began their imputation process by imputing household income and educational attainment, so that these characteristics are 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. SAMPLING FRAMES AND METHODS

The sample design for CHIS 2015-2016 is summarily described as a stratified two-stage dual-frame design (Phase 1) with a follow-up study on a subsample of nonrespondents (Phase 2). The strata are consistent with prior years of the study and are shown in Table 2-1.

Quarterly household samples were randomly chosen from four landline list frames and one cell phone list frame in CHIS 2015 and 2016, and from an address-based list frame for one county in CHIS 2016 only. The sampling frames included: random-digit-dial (RDD) landline frame; Japanese surname landline frame; Korean surname landline frame; Vietnamese surname landline frame; RDD cellular telephone (cell phone) frame; and a proprietary address-based sampling (ABS) frame. Table 2.1 contains a list of the list frames used for sampling by CHIS data collection quarter.

Table 2-1. Sampling frames used by data collection year and quarter

Quarter	Sampling Frame[1]					
	LL	SJ	SK	SV	CE	ABS
2015 Quarter 1-2	✓				✓	
Quarter 3-4	✓	✓	✓	✓	✓	
2016 Quarter 1	✓				✓	
Quarter 2	✓	✓	✓	✓	✓	
Quarter 3	✓	✓	✓	✓	✓	
Quarter 4	✓		✓		✓	✓

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

[1] Random-digit-dial (RDD) landline (LL), Japanese surname landline (SJ), Korean surname landline (SK), Vietnamese surname landline (SV), RDD cellular (CE), and address-based sample (ABS).

Allocation of sample across the strata was designed to yield two-year targets discussed below. Allocation of sample to frame was designed to yield approximately 50 percent of the adult completed interviews from one of landline frame and 50 percent from the cell phone frame. Samples were selected to increase representation from Vietnamese, Korean, and Japanese residents through the targeted surname (landline phone) lists. Finally, additional samples were selected from an ABS frame to target a specific subarea within northern Imperial County.

Section 2.1 contains a discussion of sampling methods for the quarterly RDD landline samples, followed by those for the RDD cell phone samples in Section 2.2. Section 2.3 includes information on

the supplemental samples for Vietnamese, Korean, and Japanese residents as well as two geographic areas. We conclude this chapter in Section 2.4 with a discussion of vendor-provided screening information and procedures used to increase the efficiencies for the sample files.

2.1   List-Assisted Random Digit Dial (RDD) Sampling of Landlines

The landline frame consists of all working 100-number banks. A 100-number bank contains 100 landline numbers with the same first eight digits; each 100-number bank is included in the frame if it has at least one working residential number that is matched to a listing in a public directory. This frame construction allows for the inclusion of unlisted telephone numbers, thereby improving coverage because 22.4% of California landline numbers are estimated to be unlisted.[3] Additionally the frame construction methodology excludes 100-number banks without at least one working number, sometimes referred to as unlisted or non-working 100-number banks. Boyle, et al. (2009) estimate that undercoverage associated with excluding the non-working banks is approximately 5 percent on a national level and is more acute for "younger, lower income, [and] minority" adults and for rental households. However, the inclusion of cellular telephones in the CHIS sample (see Section 2.2) are more likely to reach these same kinds of households that would otherwise be underrepresented (see, e.g., Blumberg and Luke, 2017).

Landline samples in 2015 were purchased quarterly from Survey Sampling International (SSI) and Marketing Systems Group (MSG) to evaluate differences in vendor sampling frames such as the match rate between sampled location (i.e., design strata) and reported location and vendor-provided working telephone number indicators. Minimal differences were identified. Landline samples in 2016 were purchased only from MSG, the vendor that has provided landline RDD samples for the previous rounds of CHIS. All telephone numbers were delivered regardless of their vendor status for further evaluation (see Section 2.4 for further discussion).

2.2   Households with only Cellular Phones

The cell phone frame was introduced to the CHIS in 2009 to accommodate changes in telephone use among the population. The National Center for Health Statistics (NCHS) estimated that 36.4% of the California households had become cell-phone-only households in 2014 Blumberg and Luke (2014). The modeled estimate from 2015 (46.8%) indicates that the rate of wireless-only households continues to increase.[4] This presents a problem with only using a landline-based sample because substantively

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[3] Estimates provided by MSG on April 24, 2017 via electronic communication.
[4] https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless_state_201608.pdf

meaningful differences exist for adults using only cell phones versus those with only access to a landline phone number. For example, Blumberg and Luke (2017), estimate that "Adults living in poverty (66.3%) and near poverty (59.0%) were more likely than higher income adults (48.5%) to be living in households with only wireless telephones." Consequently, sampling from only a landline frame will introduce a large bias in the final estimates.

This frame contains all randomly generated numbers within 1,000-number banks (first seven digits) dedicated to cellular service. All banks are available for sampling regardless of their activation status (working, non-working, and unassigned) which ensure complete coverage especially of the cell-only households.

As with landline, 2015 cell phone samples were purchased quarterly from SSI and MSG and from MSG only in 2016. All telephone numbers were delivered regardless of their vendor status for further evaluation (see Section 2.4 for further discussion).

Samples of landline and cell phone numbers were selected independently. The respective frames capture landline-only households (those without a cell phone) and cell-only households (those without a landline phone). They also cover dual-use households (those with both landline and cell phones). Therefore, CHIS is a dual-frame design with sampling frames that overlap; among all households with at least telephone numbers, this overlap is estimated to be 46.9%.[5]

2.3   Supplemental Sampling

Supplemental sampling was used to increase representation for certain Asian nationalities and for certain geographic areas. We discuss each below.

2.3.1   Vietnamese, Korean, and Japanese Nationalities

CHIS used two approaches to oversample Vietnamese, Koreans, and Japanese. First, we oversampled counties that had a relatively high proportion of Asians. The five strata with the highest population proportion of one of the three Asian nationalities were identified using the 2013 American Community Survey (ACS) 5-Year estimates for CHIS 2015. Study rates obtained from 2015 along with ACS estimates were used for CHIS 2016. See Section 3.3.3 for additional details.

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[5] https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless_state_201608.pdf

Second, surname list frames for all three nationalities were introduced in the latter quarter of CHIS 2015. These frames, provided by MSG, were generated from listed landline telephone numbers with surnames likely to be associated with Asian persons. Use of the surname frames was implemented in part to address shortfalls in the projected yield. Additionally, preliminary research conducted by UCLA suggested true differences between those listed and not listed on the surname frames. Thus, samples were selected from these specialized frames to enable further evaluation of differences between the Asian subpopulation listed on and excluded from the surname frame.

2.3.2 Geographic Areas

The CHIS design regularly includes additional sample for specialized analyses of certain geographic areas. In CHIS 2015, extra landline and cell telephone numbers were randomly selected to increase the yield for Marin County. Two geographic supplemental samples were chosen in CHIS 2016. As with Marin County, extra telephone numbers were randomly chosen to increase the number of adult interviews within San Diego County. To target an area within northern Imperial County in Quarter 4 2016, addresses where randomly selected from certain census tracts. Additional details on the sampling methodologies are provided in Section 3.3.

2.4 Increasing the Efficiency of Data Collection through Sample Processing

Vendors tested all telephone numbers for working status and delivered the entire sample regardless of this status. The landline sample was evaluated again just prior to data collection. First, the landline samples were submitted to Interactive Marketing Solutions (IMS) for comparison against the latest listing of cell phone blocks and landline-to-wireless ported number files. All telephone numbers matching these files were classified as "ported landline" and made available for data collection (i.e., no further pre-data collection screening was conducted). All other IMS-evaluated telephone numbers were then submitted to autodialer screening to evaluate their current working status. All non-working landline numbers identified in this last step were purged from the sample prior to release regardless of their vendor result code.

Table 2-2 contains a comparison of vendor-provided result codes against the final working status. The sample was monitored throughout the data collection period to determine if any landline phone numbers with certain vendor-provided codes also could be purged from the sample. However, none were found and instead all working telephone numbers were released for data collection.

Table 2-2.   Vendor result codes for landline sample by final purge status

| Vendor result code[1] | Description | Telephone numbers by purge status | | | | | |
| | | Total | | Working | | Non-working | |
		n	pct	n	pct	n	pct
B	Business/government	47,478	5.0	39,319	7.5	8,159	1.9
G	Productive or unknown	230,614	24.1	196,977	37.4	33,637	7.8
N	Non-productive	395,321	41.4	128,660	24.4	266,661	62.2
M	Fax/Modem	12,738	1.3	5,061	1.0	7,677	1.8
P	Privacy Manager	4,222	0.4	3,788	0.7	434	0.1
C	Cell Phone (Agent)	124	0.0	106	0.0	18	0.0
W	Cell Phone (Other)	8,171	0.9	8,086	1.5	85	0.0
D	Disconnected	135,823	14.2	41,451	7.9	94,372	22.0
O	Other	121,319	12.7	103,673	19.7	17,646	4.1
	Total	955,810	100	527,121	100	428,689	100

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

Note: n = sample size; pct = unweighted percent.

[1] Codes D and O were assigned by Survey Sampling International in 2015. All other codes were assigned by Marketing Systems Group.

Conversely, owing to the *Telephone Consumer Protection Act*, further screening of the cell phone samples was not possible. Thus, all sampled cell phone numbers were released regardless of their vendor result code (Table 2-3). As reported with the landline sample, the response status for the cell phone sample was monitored by vendor codes in the hopes to identify cases that could be removed from the data release to increase the efficiency of the data collection. However, associations between the final status and vendor codes were not strong enough, most likely due to the length of the data collection quarter (~12 weeks) and the true status change of the cell phone sample.

Table 2-3.   Vendor result codes for cellular telephone sample

Vendor result code[1]	Description	Cell phone numbers	
		n	pct
Active	Cell phone is likely to be active	204,978	51.4
Unknown	Productive or unknown	4,038	1.0
Inactive	Non-productive	86,517	21.7
1	Active number for the past 10 months	61,111	15.3
2	Inactive but active over past 10 months	16,802	4.2
3	Inactive, other	25,397	6.4
	Total	398,843	100.0

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

Note: n = sample size; pct = unweighted percent.

[1] Codes 1-3 were assigned by Survey Sampling International in 2015. All other codes were assigned by Marketing Systems Group.

3. SAMPLING HOUSEHOLDS

In this chapter, we describe the random sampling methodology for the first stage of selection in the CHIS design—the household. Section 3.1 contains a description of the CHIS population of interest (also referred to as a target population), along with those who were not eligible for the study. This information provides a link between the CHIS estimates and the inferential population within California. Details of the general sampling design used to select the CHIS households is contained in Section 3.2. Here, we provide an overview of the design, followed by details on supplemental samples needed to enhance analytic capabilities for certain domains. Tables are included to identify the targeted number of completed adult interviews by strata and sampling frame. Section 3.3 contains information on the size of the samples selected to achieve the targets and on procedures for sample release to maintain efficiency.

3.1   Population of Interest

Estimates from CHIS represent the non-institutionalized population in California including adults (ages 18 years and older), children (ages 11 and younger), and adolescents (ages 12-17 years) living in residential households (i.e., non-group quarters). Residential households are randomly chosen either through a landline telephone frame, a cell phone frame, an address frame, or possibly a combination of two or more of these frames. Households without telephone service cannot be selected for CHIS through the telephone frames but are included as part of the target population through expansion of the survey weights (see *CHIS 2015-2016 Methodology Series: Report 5 – Weighting and Variance Estimation*).[6] Eligible residences include, for example, households, apartments, and mobile homes containing individuals with (multiple or) extended families or unrelated persons if they number less than nine. Telephone numbers, households and persons not eligible for the CHIS include

- cellular telephone numbers belonging to persons under the age of 18;
- telephone numbers belonging to households residing outside the state of California;
- institutionalized residences (e.g., prisons, jails, juvenile detention facilities, psychiatric hospitals, extended-stay treatment programs, and long-time care); and
- group quarters (those with nine or more unrelated persons).

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[6] Estimates from the 2013 National Health Interview Survey suggest that less than 2.0 percent of California households do not have either a landline or cell phone, and are therefore excluded from sampling for CHIS 2015-2016 (http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless_state_201412.pdf).

3.2   Analytic Objectives

Sample designs cannot be constructed without specific objectives for analyses. The goal of CHIS is to provide the user community with data that will produce unbiased estimates with high precision of health and health-related metrics within each design stratum (county or groups of small counties) for adults residing in California overall and by racial/ethnic groups, including the Asian nationalities (Japanese, Korean, and Vietnamese) included in the oversample. We summarize the sample size for key groups to meet the analytic objectives for CHIS 2015-2016 in Table 3-1.

Overall, CHIS 2015-2016 was originally designed to yield 40,000 completed adult interviews in relatively equal proportions from landline and cell phone samples. Per projections from CHIS 2013-2014, the targeted number of teen and child (proxy) interviews were established. As the study progressed, supplemental samples were selected to meet new analytic objectives by geographic areas (e.g., Marin County) beyond the initial targets shown in Table 3-1. Targets by design strata and for the supplemental samples are discussed in detail in Section 3.3.

Table 3-1.   Initial targeted number of interviews by sample characteristics

Characteristics	Interviews (n)
State-wide, Main Study, Overall	
Adults (overall)[a]	40,000
Landline sample, 50% of total	20,000
Cell phone sample, 50% of total	20,000
Teens (overall)[b]	2,583
Children (overall)[b]	6,833
Supplemental geographic samples (adults only)	
Marin County, CHIS 2015	890
San Diego County, CHIS 2016	700
Imperial County, CHIS 2016	350
State-wide, Asian Nationality	
Adults, Korean	500
Adults, Vietnamese	500
Adults, Japanese	500

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

[a] Approximately 50% of the interviews (±5%) was targeted for the landline phone sample.

[b] Teen and child targets were projected based on prior rounds of CHIS.

3.3   Sample Design

The sample design for CHIS 2015-2016 is summarily described as a stratified two-stage dual-frame design (Phase 1) with a follow-up study on subsamples of nonrespondents (Phase 2) by quarter. The design strata were consistent with prior rounds of the study and are shown in Table 3-2.

Table 3-2.   Design strata and subareas

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

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

[a] Service Planning Areas (SPAs) are analytically important substrata of Los Angeles county.

[b] Health Service Regions (HSRs) are analytically important substrata of San Diego county.

[c] Vendors assigned cellular telephone numbers to design strata using rate center information. Rate centers were available for the design strata except Yuba County.

When CHIS was first conducted, only a list-assisted RDD landline telephone frame was used to generate a telephone sample. However, due to telephone-use changes brought about by the introduction of cell phones, samples from a cell-phone frame have been included with the landline sample since 2007, making the CHIS a dual-frame survey. Today, cell phones are used by more people in California than landlines (Blumberg and Luke, 2014). Therefore, the continuation of the dual-frame methodology for CHIS 2015-2016, but with a higher sample allocation to cell phone numbers than used in CHIS 2013-2014 (equal vs. 80% landline), was warranted.

In the subsections below, we discuss sampling related to each sampling frame highlighted in Section 2, beginning with the landline and cell phone RDD samples. Targeted number of adult interviews by design strata along with relative population size in California is shown in Table 3-3. Next, we provide details on supplemental sampling. Information on the nonresponse follow-up rounds out our discussion of the CHIS sampling design.

Table 3-3.　Initial targets for completed adult interviews by design strata (excluding supplemental samples)

Stratum	Landline sample	Cell sample	Total[a,b]	Population size
State Total	20,000	20,000	40,000	
1　Los Angeles (total)[a]	3,860	3,860	7,720	Over 9 million
1.1 – Antelope Valley	250	250	500	
1.2 – San Fernando Valley	806	806	1,612	
1.3 – San Gabriel Valley	689	689	1,378	
1.4 – Metro	457	457	913	
1.5 – West	266	266	532	
1.6 – South	368	368	736	
1.7 – East	459	459	917	
1.8 – South Bay	566	566	1,132	
2　San Diego (total)[b]	1,570	1,570	3,140	1.2 million or greater
2.1 – North Coastal	262	262	523	
2.2 – North Central	262	262	523	
2.3 – Central	262	262	523	
2.4 – South	262	262	523	
2.5 – East	262	262	523	
2.6 – North Inland	262	262	523	

(continued)

Table 3-3. Initial targets for completed adult interviews by design strata (excluding supplemental samples) (continued)

	Stratum	Landline sample	Cell sample	Total[a,b]	Population size
3	Orange	1,114	1,114	2,228	
4	Santa Clara	760	760	1,520	
5	San Bernardino	660	660	1,320	
6	Riverside	1,030	1,030	2,060	
7	Alameda	606	606	1,212	
8	Sacramento	694	694	1,388	
9	Contra Costa	526	526	1,052	800,000 to 1.2 million
10	Fresno	450	450	900	
11	San Francisco	374	374	748	500,000 to 800,000
12	Ventura	286	286	572	
13	San Mateo	352	352	704	
14	Kern	368	368	736	
15	San Joaquin	250	250	500	
16	Sonoma	250	250	500	Medium counties
17	Stanislaus	250	250	500	
18	Santa Barbara	250	250	500	100,000 to 500,000
19	Solano	250	250	500	
20	Tulare	250	250	500	
21	Santa Cruz	250	250	500	
22	Marin	250	250	500	
23	San Luis Obispo	250	250	500	
24	Placer	250	250	500	
25	Merced	250	250	500	
26	Butte	250	250	500	
27	Shasta	250	250	500	
28	Yolo	250	250	500	
29	El Dorado	250	250	500	
30	Imperial	250	250	500	
31	Napa	250	250	500	
32	Kings	250	250	500	

(continued)

Table 3-3.   Initial targets for completed adult interviews by design strata (excluding supplemental samples) (continued)

	Stratum	Landline sample	Cell sample	Total[a,b]	Population size
33	Madera	250	250	500	
34	Monterey	250	250	500	
35	Humboldt	250	250	500	
36	Nevada	250	250	500	Small counties
37	Mendocino	250	250	500	Less than 100,000
38	Sutter	250	250	500	
39	Yuba	250	250	500	
40	Lake	250	250	500	
41	San Benito	250	250	500	
42	Colusa, Glenn, Tehama	200	200	400	Small counties combined
43	Del Norte, Lassen, Modoc, Plumas, Sierra, Siskiyou, Trinity	200	200	400	
44	Amador, Alpine, Calaveras, Inyo, Mariposa, Mono, Tuolumne	200	200	400	

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

[a] Service Planning Areas (SPAs) are analytically important substrata of Los Angeles county. Counts are rounded target allocations; the sum across and by SPA differ from the total targets due to rounding.

[b] Health Service Regions (HSRs) are analytically important substrata of San Diego county. Counts are rounded target allocations; the sum across and by HSR differ from the total targets due to rounding.

3.3.1   Landline Sample

Sample vendors selected a stratified simple random sample of landline telephone numbers from the frame of working 100-number blocks discussed in Section 2.1. Assignment of telephone numbers to the geographic design strata was made through area code.

Samples were purchased on a quarterly basis from the updated RDD landline frame containing almost 33 million telephone numbers. The requested quarterly sample sizes by stratum was inflated to account for sample loss during data collection (e.g., non-working numbers, ineligible households, and nonresponse). Sizes were also inflated slightly to account for landline numbers ported to cell phones. The inflation factors varied by quarter and stratum to accommodate differential needs toward meeting stratum-specific targets (Table 3-3).

3.3.2 Cell Phone Sample

As with the landline sample, vendors randomly selected a stratified simple random sample of cellular telephone numbers quarterly from working 1000-number blocks dedicated to cellular service (see Section 2.2). Assignment of telephone numbers to the geographic design strata was by vendor-specific rate center guidelines. All but one design stratum (Yuba County) had at least one corresponding rate center.

Quarterly samples were selected from an updated RDD cell phone frame containing over 109 million numbers. The requested quarterly sample sizes by stratum was inflated to account for sample loss during data collection (e.g., non-working numbers, ineligible cell phone owners, and nonresponse). Samples were additionally inflated to account for those sampled in one county but reporting that they reside in another. The inflation factors varied by quarter to ensure stratum-specific targets were met, in addition to the desired equal number of adult interviews completed for the landline and cell phone sample.

3.3.3 Supplemental Surname List Samples

MSG provides a series of sampling frames containing listed landline telephone numbers with surnames linked to certain race/ethnicities. As with the landline frame, telephone numbers were linked to CHIS design strata through the area code.

Stratified simple random samples from these frames were chosen beginning it the last quarter of CHIS 2015 to target Korean, Vietnamese and Japanese residents. Table 3-4 displays the subset of 44 design strata covered by these frames. The requested quarterly sample sizes were inflated to account for sample loss during data collection (e.g., non-working numbers and nonresponse) and allocated to assist in meeting the stratum-specific targets. Table 3-5 shows the counties with higher concentrations of one or more Asian nationalities. Table 3-6 contains the size and associated sample for the three frames.

Prior rounds of CHIS included experimental screener questions to terminate the interview if no adult within the household was classified as either Japanese, Korean or Vietnamese. These questions were excluded from the CHIS 2015-2016 screener to reduce respondent burden. Instead, all households with at least one an age-eligible adult resident contacted through the surname lists were interviewed.

Table 3-4.   Design strata relevant to the surname lists

Design Stratum		Design Stratum Indicator by Surname List		
		Japanese	Korean	Vietnamese
1	Los Angeles	✓	✓	✓
2	San Diego	✓	✓	✓
3	Orange	✓	✓	✓
4	Santa Clara	✓	✓	✓
5	San Bernardino	✓	✓	✓
6	Riverside	✓	✓	✓
7	Alameda	✓	✓	✓
8	Sacramento	✓	✓	✓
9	Contra Costa	✓	✓	✓
10	Fresno		✓	✓
11	San Francisco	✓	✓	✓
12	Ventura	✓	✓	✓
13	San Mateo		✓	✓
14	Kern		✓	✓
15	San Joaquin		✓	✓
16	Sonoma		✓	
17	Stanislaus		✓	✓
23	San Luis Obispo		✓	
28	Yolo		✓	✓
34	Monterey	✓	✓	
43	Del Norte-Siskiyou-Lassen-Trinity-Modoc-Plumas-Sierra		✓	
44	Tuolumne-Calaveras-Amador-Inyo-Mariposa-Mono-Alpine		✓	✓

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

Note: ✓ = frame includes telephone numbers for the corresponding design stratum.

Table 3-5. Counties with higher concentrations of Asians by Nationality

	Design Stratum	High-density Areas by Nationality			100-No. Blocks[a]	1,000-No. Blocks[b]
		Japanese	Korean	Vietnamese		
1	Los Angeles	✓	✓	✓		
	1.1 Antelope Valley					
	1.2 San Fernando Valley	✓		✓		
	1.3 San Gabriel Valley	✓		✓		
	1.4 Metro	✓			87,776	27,710
	1.5 West					
	1.6 South					
	1.7 East					
	1.8 South Bay	✓				
2	San Diego	✓	✓	✓	27,434	4,393
3	Orange	✓	✓	✓	29,389	8,584
4	Santa Clara	✓	✓	✓	16,952	5,192
5	San Bernardino	✓	✓	✓	14,096	5,074
6	Riverside	✓	✓	✓	14,826	5,110
7	Alameda	✓	✓	✓	15,896	11,985
8	Sacramento	✓	✓	✓	12,468	7,296
9	Contra Costa	✓	✓	✓	10,282	5,435
10	Fresno		✓	✓	6,807	1,252
11	San Francisco	✓	✓	✓	11,274	8,040
12	Ventura	✓	✓	✓	6,848	1,033
13	San Mateo		✓	✓	8,559	3,930
14	Kern		✓	✓	5,489	1,052
15	San Joaquin	✓	✓	✓	4,540	777
16	Sonoma	✓	✓		4,816	606
17	Stanislaus		✓	✓	3,652	624
18	Santa Barbara				3,897	535
19	Solano				3,345	493
20	Tulare				2,730	456
21	Santa Cruz	✓	✓		2,806	296
22	Marin				3,555	1,595
23	San Luis Obispo		✓		2,562	331

(continued)

Table 3-5.   Counties with higher concentrations of Asians by Nationality (continued)

	Design Stratum	High-density Areas by Nationality			100-No. Blocks[a]	1,000-No. Blocks[b]
		Japanese	Korean	Vietnamese		
24	Placer			✓	3,441	1,768
25	Merced				1,373	257
26	Butte				1,799	266
27	Shasta				1,586	233
28	Yolo	✓	✓	✓	1,508	676
29	El Dorado				1,706	572
30	Imperial				1,006	298
31	Napa				1,233	127
32	Kings				755	146
33	Madera				897	151
34	Monterey	✓	✓	✓	3,685	521
35	Humboldt				1,334	167
36	Nevada	✓			1,107	97
37	Mendocino				873	116
38	Sutter	✓			663	1,616
39	Yuba				557	0
40	Lake				677	56
41	San Benito				378	134
42	Tehama-Glenn-Colusa				868	56
43	Del Norte-Siskiyou-Lassen-Trinity-Modoc-Plumas-Sierra		✓		1,832	67
44	Tuolumne-Calaveras-Amador-Inyo-Mariposa-Mono-Alpine		✓	✓	2,438	52

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

[a] Landline information provided by Marketing Systems Group in January 2015.

[b] Cell phone information provided by Marketing Systems Group in January 2015.

Note: ✓ = frame includes telephone numbers for the corresponding design stratum.

Table 3-6.   Japanese, Korean, and Vietnamese surname frame and sample sizes

MSG surname frame[a]	Targets n[b]	Frame size n[c]	Sampled phone numbers	
			n	pct[d]
Japanese	500	69,646	5,714	0.55
Korean	500	213,229	47,683	4.57
Vietnamese	500	102,727	14,247	1.37

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

Note: n = size; pct = unweighted percent.

[a] Marketing Systems Group (MSG) provided the surname frame samples for CHIS 2015 and CHIS 2016.

[b] Two-year targeted number of completed adult interviews by reported Asian nationality.

[c] Counts provided from the 2016 sampling frames.

[d] Unweighted percent of surname sample out of the total records available on each surname frame.

3.3.4   Supplemental Samples for Marin and San Diego Counties

Additional landline and cell phone samples were chosen to address increased targets for Marin County in 2015 and for San Diego County in 2016 after the initial sample design was planned. As with the primary sample design, the supplemental samples were selected to yield an equal distribution of interviews by landline and cell phone, accounting for sample loss and ported number rates. Additionally, we selected additional cell phone sample in other counties with a high likelihood of reporting that they lived in either Marin or San Diego counties. These rates were determined based on cumulative experience for responding cases across the quarters of data collection.

3.3.5   Supplemental Imperial County ABS Sample

Additional yield was requested for a northern area within Imperial County in the latter half of 2016. Because of the need to target a relatively small geographic area, addresses in comparison to telephone numbers were deemed a more efficient unit of sampling. Addresses were selected through a stratified simple random sampling design from a subset of eligible Census tracts listed on an Address-Based Sampling (ABS) frame. This frame is based on the U.S. household population Postal Service's Computerized Delivery Sequence file and provides near-complete coverage of the household population (see, e.g., Iannacchione, 2011; Shook-Sa, 2014).

A sample of 4,180 addresses was selected and released for the northern Imperial County supplement. The sampled addresses were sent to MSG to identify an associated telephone number. Of the total sample, 61.1% had at least one landline or cell phone matched to the address for outbound calling (Table 3-7). Telephone interviewers confirmed the address prior to the start of the telephone

interview; survey materials were sent to addresses without an associated telephone number. Additional details on the data collection procedures are found in the *CHIS 2015-2016 Methodology Series: Report 2 – Data Collection Methods*.

Table 3-7.   Telephone match rate for northern Imperial County supplemental sample

		Frame	Sampled addresses	
Vendor result code[a]	Description	n	n	pct
Telephone	Telephone number matched to address		2,556	61.1
No telephone	No landline telephone number identified		1,624	38.9
	Total	16,545	4,180	100.0

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

Note: n = size; pct = unweighted percent.

[a] All phone numbers were assigned by Marketing Systems Group (MSG).

3.3.6   Two-Phase Sampling of Households

Nonresponse follow-up (NRFU or phase 2) subsamples were selected in each quarter of CHIS 2015-2016 to qualify and lower nonresponse bias. Households without a completed screener and those with a completed screener but requiring one or more interviews were eligible for sampling. The overall NRFU subsampling rate was approximately 40% across strata defined by existence of a completed screener and the need for either a child or teen interview. Additionally, differential sampling rates were used to increase representation of households with children, those with a completed screener, and certain underperforming strata. Household members selected for CHIS were offered an incentive larger than the amounts offered initially.

3.4   Sample Selection and Sample Releases

The revised two-year adult interview targets including the three supplemental geographic samples (Marin County, San Diego County, and the northern area of Imperial County) are shown in Table 3-8.

Table 3-8. Final two-year targets for completed adult interviews by design strata

Stratum		Landline sample	Cell sample	ABS sample	Total
	State Total	20,795	20,795	350	41,940
1	Los Angeles (total)[a]	3,860	3,860	-	7,720
	1.1 – Antelope Valley	250	250	-	500
	1.2 – San Fernando Valley	806	806	-	1,612
	1.3 – San Gabriel Valley	689	689	-	1,378
	1.4 – Metro	457	457	-	913
	1.5 – West	266	266	-	532
	1.6 – South	368	368	-	736
	1.7 – East	459	459	-	917
	1.8 – South Bay	566	566	-	1,132
2	San Diego (total)[b]	1,920	1,920	-	3,840
	2.1 – North Coastal	320	320	-	640
	2.2 – North Central	320	320	-	640
	2.3 – Central	320	320	-	640
	2.4 – South	320	320	-	640
	2.5 – East	320	320	-	640
	2.6 – North Inland	320	320	-	640
3	Orange	1,114	1,114	-	2,228
4	Santa Clara	760	760	-	1,520
5	San Bernardino	660	660	-	1,320
6	Riverside	1,030	1,030	-	2,060
7	Alameda	606	606	-	1,212
8	Sacramento	694	694	-	1,388
9	Contra Costa	526	526	-	1,052
10	Fresno	450	450	-	900
11	San Francisco	374	374	-	748
12	Ventura	286	286	-	572
13	San Mateo	352	352	-	704
14	Kern	368	368	-	736
15	San Joaquin	250	250	-	500
16	Sonoma	250	250	-	500

(continued)

Table 3-8.   Final two-year targets for completed adult interviews by design strata (continued)

	Stratum	Landline sample	Cell sample	ABS sample	Total
17	Stanislaus	250	250	-	500
18	Santa Barbara	250	250	-	500
19	Solano	250	250	-	500
20	Tulare	250	250	-	500
21	Santa Cruz	250	250	-	500
22	Marin	695	695	-	1,390
23	San Luis Obispo	250	250	-	500
24	Placer	250	250	-	500
25	Merced	250	250	-	500
26	Butte	250	250	-	500
27	Shasta	250	250	-	500
28	Yolo	250	250	-	500
29	El Dorado	250	250	-	500
30	Imperial	250	250	350	850
31	Napa	250	250	-	500
32	Kings	250	250	-	500
33	Madera	250	250	-	500
34	Monterey	250	250	-	500
35	Humboldt	250	250	-	500
36	Nevada	250	250	-	500
37	Mendocino	250	250	-	500
38	Sutter	250	250	-	500
39	Yuba	250	250	-	500
40	Lake	250	250	-	500
41	San Benito	250	250	-	500
42	Colusa, Glenn, Tehama	200	200	-	400
43	Del Norte, Lassen, Modoc, Plumas, Sierra, Siskiyou, Trinity	200	200	-	400
44	Amador, Alpine, Calaveras, Inyo, Mariposa, Mono, Tuolumne	200	200	-	400

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

[a] Service Planning Areas (SPAs) are analytically important substrata of Los Angeles county.

[b] Health Service Regions (HSRs) are analytically important substrata of San Diego county.

To meet these targets, quarterly stratified samples were selected from a total of six sampling frames (Table 3-1). Table 3-9 contains the total number of telephone numbers and addresses randomly chosen. These sample sizes were inflated to account for differential sample loss by design stratum and sampling frame:

- Nonworking telephone numbers,
- Screener nonresponse (noncontacts and verbal refusals);
- Interview nonresponse (refusals and incomplete questionnaires);
- Cellular telephones belonging to persons under age 18;
- Households with more than nine unrelated residence (group quarters); and
- Cell numbers for residents no longer living in California.

Samples were also inflated to account for

- Landline telephone numbers ported to cellular status (to target an equal split between landline and cell phone interviews);
- Differences in sampled versus reported California county of residence (to meet stratum-specific targets); and
- Supplemental sample needs.

Initial inflation rates were projected each quarter prior to finalizing the sample allocation. We used information from prior rounds of CHIS, cumulative results from the current two-year series, and model-based projections to inform these rates. This resulted in the selection of over 1.5 million telephone numbers (Table 3-8) and 4,180 Imperial County addresses (Table 3-7). We purged 32.2% of the telephone sample for CHIS 2015-2016 because of their non-working status.

Table 3-9.　Number of telephone numbers selected and fielded by sampling frame

Sampling Frame	Telephone numbers	
	Selected	Fielded[a]
Total	1,442,249	968,873
Landline [b]	915,073	480,404
Cell Phone	459,615	433,757
Surname		
Japanese	11,786	9,853
Korean	47,621	38,387
Vietnamese	8,154	6,472
Mailing address for landline/surname samples [c]		
Yes	288,570	216,007
No	694,064	319,109

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

[a] A small set of cell phone cases were not fielded in 2015 Quarter 3 based on vendor non-working codes. This protocol was later changed to release all cell phone sample because some numbers originally designated as non-working were found to be active during data collection.

[b] Landline counts include address-based sampled selected for northern Imperial County.

[c] Surname sample cases were included in the counts.

　　　　New samples were selected quarterly and released as soon as the numbers were ready for contact. Prior to release landline telephone numbers were evaluated for possible porting to a cell phone and non-working numbers purged; all remaining landline numbers with a matched address were mailed study material. All telephone numbers (regardless of sampling frame) were randomly assigned to sample replicates to enable the model-based projections of response status. Table 3-10 contains the numbers selected by release group, along with the numbers released for data collection.

Table 3-10. Release groups of telephone numbers by sample type by year

Year	Quarter [a,b]	Release	Sample	Date of Sample Release [c]	Fielded Sample (n)
2015	3	1	Cell, Landline	April 30, 2015	
	3	2	Cell, Landline	May 21, 2015	140,678
	3	3	Cell, Landline	June 18, 2015	
	3	4	Cell, Landline	July 14, 2015	
	4	1	Cell	August 24, 2015	
	4	1	Landline	September 6, 2015	
	4	2	Cell, Landline	September 9-11, 2015	317,001
	4	3	Cell	October 22, 2015	
	4	3	Landline	November 3, 2015	
2016	1	1	Cell, Landline	January 4, 2016	140,164
	2	1	Cell, Landline	March 28, 2016	129,065
	3	1	Cell, Landline	June 20, 2016	135,390
	4	1	Cell, Landline	September 12, 2016	
	4	1	Cell, Landline	October 10, 2016	106,575
	4	1	Cell, Landline	October 31, 2016	

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

Note: n = number of sampled telephone numbers fielded.

[a] Quarter 3 release 1 was the CHIS Pilot; Quarter 3 release 2 was the original Quarter 2.

[b] Counts for the Marin County oversample are included in CHIS 2015 Quarter 4. Counts for the Imperial County address-based sample are included in CHIS 2016 Quarter 4.

[c] Sampled phone numbers with an address were fielded approximately 2 weeks after the release date.

4. WITHIN-HOUSEHOLD SAMPLING

In this chapter, we describe the random sampling methodology for the second stage of selection in the CHIS design—persons within household. One adult was randomly chosen from each household. If the selected adult was the parent of at least one child less than the age of 12, then a proxy interview was conducted for one randomly chosen child. If the selected adult was a parent of at least one teen (age 12-17), then an interview was conducted with a randomly chosen teen after receiving parent permission.

Section 4.1 contains a description of the interview procedure implemented in this and prior rounds of CHIS to increase the number of child (proxy) interviews. Details of the sampling design to select one adult from each eligible CHIS household are provided in Section 4.2. Differential sampling within two child age groups is discussed in Section 4.3. Section 4.4 provides a discussion of procedures for choosing one teen for interview.

4.1   Child-First Procedure

To increase the rate of proxy interviews for children aged less than 12 years, CHIS 2005 researchers introduced a method known as the child-first procedure for landline telephone numbers. This method allowed us to conduct the interview for the chosen child with the screener respondent who was not the randomly chosen adult. Per protocol the screener respondent had to be the parent of the child and sufficiently knowledgeable to conduct the interview. Hence under this procedure the screener respondent was the spouse or partner of the selected adult chosen for a CHIS interview. Once the child interview was completed for landline households with an eligible teen, the screener respondent was asked to consent to the conduct of the teen interview.

For the cell phone sample, the adult answering the phone was assumed to be the owner and was automatically selected for the study. Because the screener respondent was always the selected adult, the child-first procedure was not implemented on the cell phone sample.

In 2016, there were fewer households with children and teens overall than there were in 2015. Of note are the within category differences for the no child-first procedure for both households with children and households with teens. Households without child interviews decreased by 23.4 percentage points from 2015 to 2016, while households without teen interviews decreased by 12.2 percentage points during that same time. Thus, child and teen interviews increased within the no child-first procedure groups from 2015 to 2016.

Differences from prior years are also worth noting. Prior rounds of CHIS resulted in higher rates of child-first interviews than in CHIS 2015-2016. The most plausible explanation is the higher percentage of cell phone sample (e.g., 50% in CHIS 2015-2016 vs. 20% in CHIS 2013-2014) where this methodology was not implemented.

Table 4-1.   Effect of the child-first procedure on completed child and adolescent interviews in the landline sample by year

Type of landline household[a]	CHIS 2015		CHIS 2016	
	n	pct [b,c]	n	pct [b,c]
Households with children (total)	5,830	100.0	3,707	100.0
Child-first procedure	712	12.2	463	12.5
Child interview	359	50.4	237	51.2
No child interview	353	49.6	226	48.8
No child-first procedure	5,118	87.8	3,244	87.5
Child interview	1,798	35.1	1,899	58.5
No child interview	3,320	64.9	1,345	41.5
Households with teens (total)	4,175	100.0	2,833	100.0
Child-first procedure	406	9.7	184	6.5
Teen interview	63	15.5	32	17.4
No Teen interview	343	84.5	152	82.6
No child-first procedure	3,769	90.3	2,649	93.5
Teen interview	691	18.3	808	30.5
No Teen interview	3,078	81.7	1,841	69.5

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

Note: n = sample size; pct = unweighted percent.

[a] Sampled phone numbers with an address were fielded approximately 2 weeks after the release date. Only households with a completed screener were included in the calculations.

[b] Unweighted percent by child-first procedure (Y/N) taken with respect to total child/teen households.

[c] Unweighted percent by interview complete (Y/N) taken with respect to households by child-first procedure (Y/N).

4.2   Adult Sampling

The procedure to select one adult 18 years of age or older from eligible households differed by type of telephone number. For the landline sample, the Rizzo method of selection (Rizzo et al., 2004) was used to select one adult. The Rizzo method is a modified next-birthday method that does not require enumerating all adults within a household. This method is intended to reduce screener duration and respondent burden, while giving each adult resident an equal probability of selection. The total number

of adults in the household is collected in the screener. With this information in hand, the procedure works as follow:

- If only one adult lives in the household, then that adult was selected for CHIS.
- If two adults live in the household, each adult had a 50% chance of being selected. The computer assisted telephone interview (CATI) system generated a random number between 0 and 1. If the number was less than or equal to 0.5, then the screener adult was selected for the interview; otherwise, the other adult was selected for the CHIS interview.
- If more than two adults live in the household, then a more detailed procedure was implemented to select one adult with equal probability equal to the inverse of the number of adults. The CATI system generated a random number between 0 and 1.
  - If the generated number was less than or equal to the selection probability, then the screener respondent was selected for CHIS.
  - If the generated number was greater than the selection probability and the screener respondent could name the adult resident with the next birthday, then the "next birthday" adult was selected for CHIS.
  - Otherwise, the selected adult was chosen randomly from the adult household residents excluding the screener respondent.

If the screener respondent did not provide the number of adults in the house, then the interviewer attempted to roster the household. One adult was then randomly chosen from the list.

Cellular telephones were assumed to belong to one person. Thus, the sampling method for choosing the adult from the cell phone sample mimicked the one-person landline household noted above. In other words, the adult answering the cell phone was automatically invited to participate in CHIS.

4.3   Child Sampling

A child is defined for CHIS as a person less than 12 years of age normally residing in the eligible household. Eligible children are those who are the legal child of the sampled adult; foster children are excluded from this definition. One child was selected from the eligible set rostered either in the screener under the child-first procedure (Section 4.1) or in Section G of the adult questionnaire. Children 0-5 years of the selected adult were sampled at twice the rate as older children 6-11 years to increase their representation in the sample. The probability of selecting a child in the 0-5 year group was

defined as $2n_{1ij} / (2n_{1ij} + n_{2ij})$, where n_{1ij} was the number of eligible children ages 0-5 years and n_{2ij} was the number of children ages 6-11 years within household i. The corresponding selection probability for eligible children ages 6-11 years was $n_{2ij} / (2n_{1ij} + n_{2ij})$. Either the screener respondent or the sampled adult completed the "child interview" about the sampled child. Table 4-2 shows the distribution of households by child age category for CHIS 2015 and CHIS 2016.

Table 4-2. Distribution of households with children by child selection probability and year

Child selection probability	Age category of children in household	CHIS 2015 households [a]		CHIS 2016 households [a]	
		n	pct	n	pct
Equal	Only children 0 to 5 years	1,864	32.0	1,096	29.7
	Only children 6 to 11 years	2,551	43.8	1,613	43.7
Unequal	Children 0 to 5 and 6 to 11 years	1,413	24.2	984	26.6
	Total	5,828	100.0	3,693	100.0

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

Note: n = sample size; pct = unweighted percent.

[a] Includes all sampled households with eligible children regardless of the sampling frame and final response status.

4.4   Teen Sampling

A teen is defined for CHIS as a person between the ages of 12 and 17 years normally residing in the sampled household. Like the child, the teen was eligible for the study only if they were the legal child of the selected sample adult. One teen was selected with equal probability, i.e., the selection probability was one over the number of eligible teens. The eligible teens were rostered either in the screener under the child-first procedure (Section 4.1) or in Section G of the adult questionnaire as with the selection of the eligible child (Section 4.3).

5. ACHIEVED SAMPLE SIZES

In this chapter, we detail the number of completed person-specific interviews by key characteristics for CHIS 2015-2016. The associated response rates are presented in *CHIS 2015-2016 Methodology Series: Report 4 – Response Rates.*

Table 5-1 compares the number of completed interviews by study targets. Targets were only set for the number of adult interviews by frame, Asian ethnicity, and design stratum (discussed below). These goals were exceeded for the landline and cell phone samples combined (100.6%) and the ratio of landline to cell phone interviews was 1.13 (=22,187/19,644). Except for Imperial County, the geographic oversample goals were also attained. The Imperial County ABS address goals were the hardest to meet, owing to for example limited time to recruit the sampled households.

Table 5-1.   Number of completed interviews by type of sample and year

Sample type/interview type	Completed interviews by year			Two-year targets	
	2015	2016	Two-year	n	pct[b]
Landline/surname samples[a]					
Adult	11,674	10,513	22,187	20,795	106.7
Child	1,033	693	1,726	-	-
Teen	387	399	786	-	-
Cell sample					
Adult	9,360	10,284	19,644	20,795	94.5
Child	1,124	1,412	2,536	-	-
Teen	367	429	796	-	-
ABS sample					
Adult	-	258	-	350	73.7
Child	-	31	-	-	-
Teen	-	12	-	-	-
All samples					
Adult	21,034	21,055	42,089	41,940	100.4
Child	2,157	2,136	4,293	-	-
Teen	754	840	1,594	-	-

(continued)

Table 5-1.　Number of completed interviews by type of sample and year (continued)

Sample type/interview type	Completed interviews by year			Two-year targets	
	2015	2016	Two-year	n	pct[b]
All samples (excluding ABS)					
Adult	21,034	20,797	41,831	41,590	100.6
Child	2,157	2,105	4,262	-	-
Teen	754	828	1,582	-	-

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

Note: n = sample size; pct = unweighted percent; "-" = not applicable.

[a] Details for the surname samples are found in Table 5-5.

[b] Unweighted percent is calculated as the number of completed adult interviews for the two-year interval divided by the two-year target within sample type.

　　　　Table 5-2 provides the distribution of completed adult interviews by stratum and RDD sampling frame. Note that the stratum information reported here corresponds to the design strata but is based on the location of the household as reported by the screener respondent. Differences between design and reported strata were minimal for the landline sample, and existed only for landline numbers ported to a cellular telephone. Conversely, differences between design and reported strata for the cell phone sample in CHIS 2016 ranged from 41% to 90% with a median value of 75.3%.

　　　　Table 5-3 and Table 5-4 contains the number of completed child and teen interviews distributed by reported stratum and RDD sampling frame. The reported stratum in these tables corresponds to the information provided by the screener respondent and is the same as reported in Table 5-2.

Table 5-2.   Number of completed adult interviews by RDD sample, self-reported stratum and year

	Reported stratum	CHIS 2015-2016 n	CHIS 2015-2016 % of target	LL/SUR sample n	LL/SUR sample % of target	Cell sample n	Cell sample % of target	CHIS 2015 Total	CHIS 2015 LL/SUR	CHIS 2015 Cell	CHIS 2016 Total	CHIS 2016 LL/SUR	CHIS 2016 Cell
	State-wide	41,831	100.6	22,187	106.7	19,644	94.5	21,034	11,674	9,360	20,797	10,513	10,284
1	Los Angeles	7,919	102.6	4,154	107.6	3,765	97.5	3,974	2,193	1,781	3,945	1,961	1,984
2	San Diego	3,882	101.1	2,060	107.3	1,822	94.9	1,497	869	628	2,385	1,191	1,194
3	Orange	2,104	94.4	1,225	110.0	879	78.9	1,056	634	422	1,048	591	457
4	Santa Clara	1,583	104.1	939	123.6	644	84.7	806	443	363	777	496	281
5	San Bernardino	1,325	100.4	668	101.2	657	99.5	686	373	313	639	295	344
6	Riverside	2,013	97.7	1,067	103.6	946	91.8	1,029	561	468	984	506	478
7	Alameda	1,242	102.5	666	109.9	576	95.0	684	395	289	558	271	287
8	Sacramento	1,373	98.9	714	102.9	659	95.0	774	421	353	599	293	306
9	Contra Costa	998	94.9	526	100.0	472	89.7	494	268	226	504	258	246
10	Fresno	860	95.6	448	99.6	412	91.6	497	294	203	363	154	209
11	San Francisco	858	114.7	386	103.2	472	126.2	432	179	253	426	207	219
12	Ventura	751	131.3	455	159.1	296	103.5	315	193	122	436	262	174
13	San Mateo	686	97.4	339	96.3	347	98.6	314	162	152	372	177	195
14	Kern	765	103.9	370	100.5	395	107.3	357	192	165	408	178	230
15	San Joaquin	511	102.2	239	95.6	272	108.8	237	121	116	274	118	156
16	Sonoma	514	102.8	254	101.6	260	104.0	309	160	149	205	94	111
17	Stanislaus	553	110.6	272	108.8	281	112.4	243	120	123	310	152	158
18	Santa Barbara	477	95.4	249	99.6	228	91.2	233	130	103	244	119	125
19	Solano	487	97.4	243	97.2	244	97.6	229	130	99	258	113	145

(continued)

Table 5-2. Number of completed adult interviews by RDD sample, self-reported stratum and year (continued)

	Reported stratum	CHIS 2015-2016		LL/SUR sample		Cell sample		CHIS 2015			CHIS 2016		
		n	*% of target*	n	*% of target*	n	*% of target*	Total	LL/SUR	Cell	Total	LL/SUR	Cell
20	Tulare	523	104.6	261	104.4	262	104.8	231	132	99	292	129	163
21	Santa Cruz	498	99.6	251	100.4	247	98.8	241	114	127	257	137	120
22	Marin	1,377	99.1	850	122.3	527	75.8	1,140	743	397	237	107	130
23	San Luis Obispo	493	98.6	248	99.2	245	98.0	231	121	110	262	127	135
24	Placer	482	96.4	247	98.8	235	94.0	236	119	117	246	128	118
25	Merced	489	97.8	260	104.0	229	91.6	252	152	100	237	108	129
26	Butte	501	100.2	241	96.4	260	104.0	276	130	146	225	111	114
27	Shasta	501	100.2	265	106.0	236	94.4	229	130	99	272	135	137
28	Yolo	478	95.6	254	101.6	224	89.6	234	127	107	244	127	117
29	El Dorado	472	94.4	268	107.2	204	81.6	218	121	97	254	147	107
30	Imperial	503	100.6	287	114.8	216	86.4	248	168	80	255	119	136
31	Napa	509	101.8	293	117.2	216	86.4	238	141	97	271	152	119
32	Kings	478	95.6	286	114.4	192	76.8	243	139	104	235	147	88
33	Madera	474	94.8	250	100.0	224	89.6	239	144	95	235	106	129
34	Monterey	489	97.8	260	104.0	229	91.6	279	155	124	210	105	105
35	Humboldt	470	94.0	247	98.8	223	89.2	210	115	95	260	132	128
36	Nevada	475	95.0	271	108.4	204	81.6	222	121	101	253	150	103
37	Mendocino	479	95.8	244	97.6	235	94.0	221	118	103	258	126	132
38	Sutter	607	121.4	252	100.8	355	142.0	357	130	227	250	122	128
39	Yuba	483	96.6	217	86.8	266	106.4	291	129	162	192	88	104

(continued)

Table 5-2.   Number of completed adult interviews by RDD sample, self-reported stratum and year (continued)

	Reported stratum	CHIS 2015-2016		LL/SUR sample		Cell sample		CHIS 2015			CHIS 2016		
		n	*% of target*	n	*% of target*	n	*% of target*	Total	LL/SUR	Cell	Total	LL/SUR	Cell
40	Lake	475	95.0	243	97.2	232	92.8	203	109	94	272	134	138
41	San Benito	484	96.8	300	120.0	184	73.6	266	156	110	218	144	74
42	Colusa, Glenn, Tehama	413	103.3	182	91.0	231	115.5	217	106	111	196	76	120
43	Del Norte, Lassen, Modoc, Plumas, Sierra, Siskiyou, Trinity	386	96.5	206	103.0	180	90.0	176	109	67	210	97	113
44	Amador, Alpine, Calaveras, Inyo, Mariposa, Mono, Tuolumne	391	97.8	230	115.0	161	80.5	170	107	63	221	123	98

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

Note: n = sample size; '% of target'= percent of target excluding ABS; ABS = address based sample for Imperial County; LL/SUR = landline and surname samples combined.

Table 5-3.　Number of completed child interviews by RDD sample, self-reported stratum and year

	Reported stratum	CHIS 2015-2016			CHIS 2015			CHIS 2016		
		Total	LL/SUR	Cell	Total	LL/SUR	Cell	Total	LL/SUR	Cell
	State-wide	4,262	1,726	2,536	2,157	1,033	1,124	2,105	693	1,412
1	Los Angeles	783	334	449	401	193	208	382	141	241
2	San Diego	398	161	237	157	85	72	241	76	165
3	Orange	189	82	107	95	46	49	94	36	58
4	Santa Clara	149	79	70	82	47	35	67	32	35
5	San Bernardino	140	53	87	70	31	39	70	22	48
6	Riverside	237	93	144	101	44	57	136	49	87
7	Alameda	116	44	72	57	25	32	59	19	40
8	Sacramento	143	51	92	83	33	50	60	18	42
9	Contra Costa	102	41	61	46	23	23	56	18	38
10	Fresno	114	43	71	68	33	35	46	10	36
11	San Francisco	60	18	42	35	13	22	25	5	20
12	Ventura	83	35	48	44	23	21	39	12	27
13	San Mateo	64	27	37	35	17	18	29	10	19
14	Kern	118	48	70	58	31	27	60	17	43
15	San Joaquin	65	22	43	29	11	18	36	11	25
16	Sonoma	54	20	34	36	17	19	18	3	15
17	Stanislaus	58	18	40	28	9	19	30	9	21
18	Santa Barbara	46	13	33	19	7	12	27	6	21
19	Solano	45	15	30	20	9	11	25	6	19

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Table 5-3. Number of completed child interviews by RDD sample, self-reported stratum and year (continued)

	Reported stratum	CHIS 2015-2016			CHIS 2015			CHIS 2016		
		Total	LL/SUR	Cell	Total	LL/SUR	Cell	Total	LL/SUR	Cell
20	Tulare	69	24	45	30	15	15	39	9	30
21	Santa Cruz	47	19	28	22	10	12	25	9	16
22	Marin	98	53	45	79	49	30	19	4	15
23	San Luis Obispo	40	11	29	18	4	14	22	7	15
24	Placer	39	13	26	15	3	12	24	10	14
25	Merced	62	24	38	33	16	17	29	8	21
26	Butte	54	23	31	27	11	16	27	12	15
27	Shasta	49	16	33	23	10	13	26	6	20
28	Yolo	63	23	40	34	12	22	29	11	18
29	El Dorado	34	14	20	19	8	11	15	6	9
30	Imperial	66	34	32	35	24	11	31	10	21
31	Napa	46	20	26	23	11	12	23	9	14
32	Kings	80	46	34	48	31	17	32	15	17
33	Madera	50	13	37	18	6	12	32	7	25
34	Monterey	72	25	47	39	19	20	33	6	27
35	Humboldt	33	13	20	16	11	5	17	2	15
36	Nevada	28	13	15	11	6	5	17	7	10
37	Mendocino	44	19	25	21	15	6	23	4	19
38	Sutter	74	27	47	53	18	35	21	9	12
39	Yuba	55	21	34	34	13	21	21	8	13

(continued)

Table 5-3.   Number of completed child interviews by RDD sample, self-reported stratum and year (continued)

	Reported stratum	CHIS 2015-2016			CHIS 2015			CHIS 2016		
		Total	LL/SUR	Cell	Total	LL/SUR	Cell	Total	LL/SUR	Cell
40	Lake	39	13	26	16	8	8	23	5	18
41	San Benito	54	25	29	32	15	17	22	10	12
42	Colusa, Glenn, Tehama	38	14	24	20	8	12	18	6	12
43	Del Norte, Lassen, Modoc, Plumas, Sierra, Siskiyou, Trinity	34	13	21	17	9	8	17	4	13
44	Amador, Alpine, Calaveras, Inyo, Mariposa, Mono, Tuolumne	30	13	17	10	4	6	20	9	11

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

Note: LL/SUR = landline and surname samples combined, excluding the address-based sample for Imperial County.

Table 5-4.   Number of completed adolescent interviews by RDD sample, self-reported stratum and year

	Reported stratum	CHIS 2015-2016			CHIS 2015			CHIS 2016		
		Total	LL/SUR	Cell	Total	LL/SUR	Cell	Total	LL/SUR	Cell
	State-wide	1,582	786	796	754	387	367	828	399	429
1	Los Angeles	290	155	135	142	88	54	148	67	81
2	San Diego	150	71	79	52	27	25	98	44	54
3	Orange	78	47	31	36	19	17	42	28	14
4	Santa Clara	49	38	11	26	18	8	23	20	3
5	San Bernardino	61	29	32	24	11	13	37	18	19
6	Riverside	87	33	54	40	12	28	47	21	26
7	Alameda	40	24	16	20	15	5	20	9	11
8	Sacramento	46	25	21	25	14	11	21	11	10
9	Contra Costa	34	20	14	13	7	6	21	13	8
10	Fresno	33	15	18	22	10	12	11	5	6
11	San Francisco	18	7	11	10	5	5	8	2	6
12	Ventura	29	19	10	12	10	2	17	9	8
13	San Mateo	22	12	10	8	4	4	14	8	6
14	Kern	54	24	30	31	17	14	23	7	16
15	San Joaquin	19	6	13	7	0	7	12	6	6
16	Sonoma	12	3	9	7	2	5	5	1	4
17	Stanislaus	25	9	16	10	4	6	15	5	10
18	Santa Barbara	30	14	16	13	8	5	17	6	11
19	Solano	9	5	4	5	2	3	4	3	1

(continued)

Table 5-4.   Number of completed adolescent interviews by RDD sample, self-reported stratum and year (continued)

	Reported stratum	CHIS 2015-2016			CHIS 2015			CHIS 2016		
		Total	LL/SUR	Cell	Total	LL/SUR	Cell	Total	LL/SUR	Cell
20	Tulare	28	8	20	15	6	9	13	2	11
21	Santa Cruz	16	6	10	7	1	6	9	5	4
22	Marin	51	32	19	37	26	11	14	6	8
23	San Luis Obispo	17	8	9	8	4	4	9	4	5
24	Placer	16	5	11	6	1	5	10	4	6
25	Merced	25	10	15	14	5	9	11	5	6
26	Butte	18	6	12	9	3	6	9	3	6
27	Shasta	13	7	6	6	2	4	7	5	2
28	Yolo	24	12	12	8	2	6	16	10	6
29	El Dorado	17	10	7	4	2	2	13	8	5
30	Imperial	37	21	16	20	13	7	17	8	9
31	Napa	24	11	13	9	3	6	15	8	7
32	Kings	21	10	11	10	3	7	11	7	4
33	Madera	12	5	7	6	4	2	6	1	5
34	Monterey	21	11	10	11	7	4	10	4	6
35	Humboldt	10	5	5	5	3	2	5	2	3
36	Nevada	20	9	11	14	7	7	6	2	4
37	Mendocino	12	5	7	7	2	5	5	3	2
38	Sutter	28	13	15	16	5	11	12	8	4
39	Yuba	18	4	14	11	1	10	7	3	4

(continued)

Table 5-4.　Number of completed adolescent interviews by RDD sample, self-reported stratum and year (continued)

	Reported stratum	CHIS 2015-2016			CHIS 2015			CHIS 2016		
		Total	LL/SUR	Cell	Total	LL/SUR	Cell	Total	LL/SUR	Cell
40	Lake	17	8	9	6	4	2	11	4	7
41	San Benito	18	10	8	9	4	5	9	6	3
42	Colusa, Glenn, Tehama	17	6	11	5	2	3	12	4	8
43	Del Norte, Lassen, Modoc, Plumas, Sierra, Siskiyou, Trinity	9	3	6	7	3	4	2	0	2
44	Amador, Alpine, Calaveras, Inyo, Mariposa, Mono, Tuolumne	7	5	2	1	1	0	6	4	2

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

Note: LL/SUR = landline and surname samples combined, excluding the address-based sample for Imperial County.

Table 5-5 shows the distribution of completed adult interviews by Asian nationality included in the CHIS supplemental samples and sampling frame. As noted previously, Vietnamese and Japanese two-year goals were exceeded but the targets for Korean adults fell short by 5.8%.

Table 5-5.   Number of completed adult interviews by ethnicity, sampling frame, and year

	Japanese nationality			Korean nationality			Vietnamese nationality		
Sampling frame	2015-16	2015	2016	2015-16	2015	2016	2015-16	2015	2016
Landline	147	99	48	63	41	22	83	55	28
Cell	108	58	50	146	66	80	179	70	109
Surname frames									
Japanese	394	12	382	1	0	1	2	1	1
Korean	11	3	8	261	38	223	178	22	156
Vietnamese	1	0	1	0	0	0	158	64	94
ABS	1	-	1	0	-	0	0	-	0
Total	662	172	490	471	145	326	600	212	388
Target	500			500			500		
Percent of target	132.4			94.2			120.0		

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

Note: n = sample size; pct = unweighted percent; "-" = not applicable; ABS = address based sample for Imperial County.

Table 5-6 contains the number of completed interviews by family structure. As shown, we accepted proxy interviews for children and teen interviews for households without a corresponding adult interview.

Table 5-6.   Number of completed interviews by interview combinations and year

Interview combinations[a]	CHIS 2015-2016		CHIS 2015		CHIS 2016	
	n	pct	n	pct	n	pct
Adult only	37,450	87.7	18,819	87.8	18,631	87.6
Adult and child	3,156	7.4	1,519	7.1	1,637	7.7
Adult and teen	901	2.1	431	2.0	470	2.2
Adult, child and teen	582	1.4	265	1.2	317	1.5
Child only	513	1.2	352	1.6	161	0.8
Teen only	69	0.2	37	0.2	32	0.2
Child and teen only	42	0.1	21	0.1	21	0.1
Total	42,713	100.0	21,444	100.0	21,269	100.0

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

Note: n = sample size; pct = unweighted percent.

[a] Includes completed interviews only.

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Appendix A – Supplemental Tables

Appendix A contains supplemental information on the CHIS 2015-2016 sample design.

Table A-1 compares the definitions of the design strata since CHIS 2001 through the current study.

Table A-2 provides the size of the landline and surname telephone samples for CHIS 2015 and CHIS 2016 separately by sampling frame and design stratum. The corresponding information for the cell phone sample is shown in Table A-3.

Table A-4 provides the number of completed adult interviews by reported stratum and sampling frame by single year of the CHIS 2015-2016 cycle. The corresponding distributions for the child and teen interviews are shown in Table A-5 and Table A-6, respectively.

Table A-1.   Design strata definitions for CHIS 2001, 2003, 2005, 2007, 2009, 2011-2012, 2013-2014, and 2015-2016

County	2015-2016 Strata	2013-2014 Strata	2005, 2007, 2009, 2011-2012 Strata	2001, 2003 Strata
Los Angeles	1	1	1	1
San Diego	2	2	2	2
Orange	3	3	3	3
Santa Clara	4	4	4	4
San Bernardino	5	5	5	5
Riverside	6	6	6	6
Alameda	7	7	7	7
Sacramento	8	8	8	8
Contra Costa	9	9	9	9
Fresno	10	10	10	10
San Francisco	11	11	11	11
Ventura	12	12	12	12
San Mateo	13	13	13	13
Kern	14	14	14	14
San Joaquin	15	15	15	15
Sonoma	16	16	16	16
Stanislaus	17	17	17	17
Santa Barbara	18	18	18	18
Solano	19	19	19	19
Tulare	20	20	20	20
Santa Cruz	21	21	21	21

(continued)

Table A-1.   Design strata definitions for CHIS 2001, 2003, 2005, 2007, 2009, 2011-2012, 2013-2014, and 2015-2016 (continued)

County	2015-2016 Strata	2013-2014 Strata	2005, 2007, 2009, 2011-2012 Strata	2001, 2003 Strata
Marin	22	22	22	22
San Luis Obispo	23	23	23	23
Placer	24	24	24	24
Merced	25	25	25	25
Butte	26	26	26	26
Shasta	27	27	27	27
Yolo	28	28	28	28
El Dorado	29	29	29	29
Imperial	30	30	30	30
Napa	31	31	31	31
Kings	32	32	32	32
Madera	33	33	33	33
Monterey	34	34	34	34
San Benito	41	41	41	
Lake	40	40	40	37
Mendocino	37	37	37	
Sutter	38	38	38	39
Yuba	39	39	39	
Colusa Glenn Tehama	42	42	42	38

Table A-1.   Design strata definitions for CHIS 2001, 2003, 2005, 2007, 2009, 2011-2012, 2013-2014, and 2015-2016 (continued)

County	2015-2016 Strata	2013-2014 Strata	2005, 2007, 2009, 2011-2012 Strata	2001, 2003 Strata
Nevada	36	36	36	40
Humboldt	35	35	35	35
Del Norte				
Lassen				
Modoc		43		
Plumas	43		43	36
Sierra				
Trinity				40
Siskiyou		43.2		36
Amador				
Alpine				
Inyo		44		
Mariposa	44		44	41
Mono				
Tuolumne		44.1		
Calaveras		44.2		

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

Table A-2. Number of landline and surname telephone numbers selected by year, sampling frame, and design stratum

| | | CHIS 2015 | | | | | | | CHIS 2016 | | | | | | |
| | | Landline | | | Surname | | | | Landline | | | Surname | | | |
	Sampling stratum	LL	Ported	Total	SJ	SK	SV	Total	LL	Ported	Total	SJ	SK	SV	Total
	State-wide	498,182	6,498	504,680	484	6,604	2,928	10,016	400,424	5,789	406,213	11,302	41,017	5,226	57,545
1	Los Angeles	108,008	1,393	109,401	186	2,229	592	3,007	80,025	1,029	81,054	4,384	13,879	1,017	19,280
2	San Diego	36,671	609	37,280	32	291	211	534	61,338	1,010	62,348	618	1,527	307	2,452
3	Orange	37,093	466	37,559	54	770	658	1,482	19,753	311	20,064	1,519	5,998	1,423	8,940
4	Santa Clara	23,301	241	23,542	43	644	488	1,175	13,316	159	13,475	1,116	4,441	970	6,527
5	San Bernardino	17,597	201	17,798	15	193	76	284	10,282	121	10,403	389	1,312	126	1,827
6	Riverside	23,567	293	23,860	15	152	73	240	18,931	225	19,156	378	945	118	1,441
7	Alameda	18,734	170	18,904	26	544	210	780	7,580	80	7,660	535	2,926	313	3,774
8	Sacramento	16,597	194	16,791	23	210	131	364	8,350	78	8,428	418	1,013	162	1,593
9	Contra Costa	9,840	100	9,940	18	197	63	278	9,477	102	9,579	289	862	71	1,222
10	Fresno	12,175	190	12,365	13	60	23	96	7,273	108	7,381	285	332	37	654
11	San Francisco	10,715	116	10,831	18	646	174	838	6,162	77	6,239	422	3,873	296	4,591
12	Ventura	7,944	113	8,057	10	67	27	104	10,429	165	10,594	220	347	37	604
13	San Mateo	7,897	65	7,962	17	245	53	315	8,766	123	8,889	427	1,642	87	2,156
14	Kern	5,743	92	5,835	0	25	11	36	9,296	135	9,431	0	146	26	172
15	San Joaquin	5,359	73	5,432	8	54	46	108	4,154	61	4,215	171	276	64	511
16	Sonoma	4,892	86	4,978	0	37	16	53	3,107	51	3,158	0	126	18	144
17	Stanislaus	4,907	73	4,980	0	25	11	36	5,593	96	5,689	0	163	25	188
18	Santa Barbara	4,176	58	4,234	0	22	8	30	3,665	55	3,720	0	118	20	138
19	Solano	5,495	55	5,550	0	33	14	47	5,614	70	5,684	0	153	20	173
20	Tulare	5,212	88	5,300	0	11	0	11	4,757	83	4,840	0	89	0	89
21	Santa Cruz	4,353	52	4,405	0	0	0	0	6,118	84	6,202	0	0	0	0
22	Marin	40,379	478	40,857	0	0	0	0	5,053	58	5,111	0	0	0	0
23	San Luis Obispo	3,166	45	3,211	0	11	0	11	3,742	46	3,788	0	65	0	65

(continued)

Table A-2.   Number of landline and surname telephone numbers selected by year, sampling frame, and design stratum (continued)

		CHIS 2015							CHIS 2016						
		Landline			Surname				Landline			Surname			
	Sampling stratum	LL	Ported	Total	SJ	SK	SV	Total	LL	Ported	Total	SJ	SK	SV	Total
24	Placer	3,612	30	3,642	0	33	13	46	3,958	75	4,033	0	134	19	153
25	Merced	5,279	91	5,370	0	8	0	8	4,672	93	4,765	0	93	0	93
26	Butte	2,669	37	2,706	0	13	7	20	2,122	41	2,163	0	59	13	72
27	Shasta	2,801	39	2,840	0	9	0	9	2,990	27	3,017	0	38	0	38
28	Yolo	3,473	37	3,510	0	19	6	25	4,201	59	4,260	0	78	14	92
29	El Dorado	3,480	79	3,559	0	0	0	0	4,098	83	4,181	0	0	0	0
30	Imperial	5,238	111	5,349	0	0	0	0	4,351	96	4,447	0	0	0	0
31	Napa	5,120	53	5,173	0	8	0	8	5,587	73	5,660	0	91	0	91
32	Kings	6,608	83	6,691	0	0	0	0	6,761	124	6,885	0	0	0	0
33	Madera	4,434	58	4,492	0	0	0	0	3,606	57	3,663	0	0	0	0
34	Monterey	7,167	89	7,256	6	28	11	45	3,705	48	3,753	131	198	27	356
35	Humboldt	2,328	15	2,343	0	0	0	0	3,669	37	3,706	0	0	0	0
36	Nevada	2,906	43	2,949	0	0	0	0	3,514	59	3,573	0	0	0	0
37	Mendocino	2,668	43	2,711	0	0	0	0	3,333	74	3,407	0	0	0	0
38	Sutter	4,014	62	4,076	0	0	0	0	5,118	90	5,208	0	0	0	0
39	Yuba	4,639	62	4,701	0	0	0	0	3,948	70	4,018	0	0	0	0
40	Lake	2,835	59	2,894	0	0	0	0	4,116	55	4,171	0	0	0	0
41	San Benito	6,882	150	7,032	0	0	0	0	9,008	179	9,187	0	0	0	0
42	Colusa, Glenn, Tehama	2,874	48	2,922	0	0	0	0	2,505	59	2,564	0	0	0	0
43	Del Norte, Lassen, Modoc, Plumas, Sierra, Siskiyou, Trinity	2,638	37	2,675	0	8	0	8	2,683	40	2,723	0	30	0	30
44	Amador, Alpine, Calaveras, Inyo, Mariposa, Mono, Tuolumne	2,696	21	2,717	0	12	6	18	3,698	23	3,721	0	63	16	79

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

[1] Random-digit-dial (RDD) landline (LL), Japanese surname landline (SJ), Korean surname landline (SK), Vietnamese surname landline (SV).

Table A-3. Number of cellular telephone numbers selected by year and design stratum

	Sampling stratum[a]	Cell Sample	
		CHIS 2015	CHIS 2016
	State-wide	206,429	253,186
1	Los Angeles	34,149	41,852
2	San Diego	14,430	33,930
3	Orange	9,918	11,481
4	Santa Clara	7,851	7,421
5	San Bernardino	5,379	6,075
6	Riverside	9,100	11,479
7	Alameda	4,870	6,196
8	Sacramento	3,773	4,564
9	Contra Costa	3,508	5,885
10	Fresno	3,693	4,678
11	San Francisco	3,011	5,429
12	Ventura	2,413	3,283
13	San Mateo	2,992	6,482
14	Kern	3,193	3,670
15	San Joaquin	1,922	2,969
16	Sonoma	1,380	1,581
17	Stanislaus	2,860	3,673
18	Santa Barbara	2,080	2,820
19	Solano	1,682	2,832

(continued)

Table A-3.   Number of cellular telephone numbers selected by year and design stratum (continued)

		Cell Sample	
	Sampling stratum[a]	CHIS 2015	CHIS 2016
20	Tulare	1,699	4,170
21	Santa Cruz	2,260	2,697
22	Marin	30,245	8,098
23	San Luis Obispo	2,561	4,015
24	Placer	2,358	3,828
25	Merced	1,858	3,409
26	Butte	1,320	1,782
27	Shasta	2,035	3,694
28	Yolo	1,657	2,706
29	El Dorado	2,017	3,574
30	Imperial	2,658	4,891
31	Napa	2,707	4,225
32	Kings	2,594	2,753
33	Madera	2,294	3,915
34	Monterey	1,622	2,090
35	Humboldt	1,362	2,273
36	Nevada	2,193	3,500
37	Mendocino	2,211	3,573
38	Sutter	13,655	8,052
39	Yuba	0	0

(continued)

Table A-3.   Number of cellular telephone numbers selected by year and design stratum (continued)

	Sampling stratum[a]	Cell Sample	
		CHIS 2015	CHIS 2016
40	Lake	1,747	2,554
41	San Benito	3,013	3,430
42	Colusa, Glenn, Tehama	1,430	2,125
43	Del Norte, Lassen, Modoc, Plumas, Sierra, Siskiyou, Trinity	1,343	2,023
44	Amador, Alpine, Calaveras, Inyo, Mariposa, Mono, Tuolumne	1,386	3,509

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

[a] Rate centers were mapped to all design strata with the exception of Yuba County.

Table A-4. Number of completed adult interviews by year, sampling frame, and self-reported stratum

| | | CHIS 2015 | | | | | | CHIS 2016 | | | | | |
| | | | | Surname | | | | | | Surname | | | |
	Reported stratum[1]	LL	CE	SJ	SK	SV	Total	LL	CE	SJ	SK	SV	Total
	State-wide	11,211	9,360	28	311	124	21,034	8,264	10,284	609	1,477	163	20,797
1	Los Angeles	2,075	1,781	7	97	14	3,974	1,258	1,984	240	427	36	3,945
2	San Diego	836	628	2	17	14	1,497	1,086	1,194	28	65	12	2,385
3	Orange	577	422	4	30	23	1,056	286	457	67	205	33	1,048
4	Santa Clara	387	363	2	31	23	806	216	281	66	190	24	777
5	San Bernardino	358	313	2	9	4	686	227	344	21	43	4	639
6	Riverside	554	468	1	5	1	1,029	440	478	22	39	5	984
7	Alameda	350	289	3	32	10	684	137	287	29	96	9	558
8	Sacramento	402	353	1	11	7	774	191	306	32	60	10	599
9	Contra Costa	250	226	3	11	4	494	199	246	16	39	4	504
10	Fresno	288	203	0	3	3	497	127	209	16	10	1	363
11	San Francisco	143	253	1	26	9	432	65	219	22	113	7	426
12	Ventura	188	122	1	3	1	315	229	174	12	19	2	436
13	San Mateo	147	152	0	12	3	314	111	195	18	46	2	372
14	Kern	188	165	0	3	1	357	169	230	0	8	1	408
15	San Joaquin	117	116	0	3	1	237	92	156	13	11	2	274
16	Sonoma	154	149	0	6	0	309	89	111	0	5	0	205
17	Stanislaus	117	123	0	3	0	243	138	158	0	10	4	310
18	Santa Barbara	130	103	0	0	0	233	111	125	0	6	2	244

(continued)

Table A-4. Number of completed adult interviews by year, sampling frame, and self-reported stratum (continued)

| | | CHIS 2015 | | | | | | CHIS 2016 | | | | | |
| | | | | Surname | | | | | | Surname | | | |
	Reported stratum[1]	LL	CE	SJ	SK	SV	Total	LL	CE	SJ	SK	SV	Total
19	Solano	130	99	0	0	0	229	103	145	0	10	0	258
20	Tulare	132	99	0	0	0	231	119	163	0	10	0	292
21	Santa Cruz	114	127	0	0	0	241	136	120	0	1	0	257
22	Marin	743	397	0	0	0	1,140	107	130	0	0	0	237
23	San Luis Obispo	119	110	0	2	0	231	124	135	0	3	0	262
24	Placer	119	117	0	0	0	236	118	118	0	9	1	246
25	Merced	151	100	0	0	1	252	101	129	0	7	0	237
26	Butte	130	146	0	0	0	276	107	114	0	4	0	225
27	Shasta	130	99	0	0	0	229	129	137	0	6	0	272
28	Yolo	123	107	0	2	2	234	119	117	0	7	1	244
29	El Dorado	121	97	0	0	0	218	147	107	0	0	0	254
30	Imperial	168	80	0	0	0	248	118	136	0	1	0	255
31	Napa	141	97	0	0	0	238	148	119	0	4	0	271
32	Kings	139	104	0	0	0	243	147	88	0	0	0	235
33	Madera	144	95	0	0	0	239	106	129	0	0	0	235
34	Monterey	150	124	1	2	2	279	80	105	7	16	2	210
35	Humboldt	115	95	0	0	0	210	132	128	0	0	0	260
36	Nevada	121	101	0	0	0	222	150	103	0	0	0	253
37	Mendocino	118	103	0	0	0	221	126	132	0	0	0	258

(continued)

Table A-4. Number of completed adult interviews by year, sampling frame, and self-reported stratum (continued)

	Reported stratum[1]	CHIS 2015						CHIS 2016					
				Surname						Surname			
		LL	CE	SJ	SK	SV	Total	LL	CE	SJ	SK	SV	Total
38	Sutter	130	227	0	0	0	357	122	128	0	0	0	250
39	Yuba	129	162	0	0	0	291	88	104	0	0	0	192
40	Lake	109	94	0	0	0	203	134	138	0	0	0	272
41	San Benito	156	110	0	0	0	266	144	74	0	0	0	218
42	Colusa, Glenn, Tehama	106	111	0	0	0	217	76	120	0	0	0	196
43	Del Norte, Lassen, Modoc, Plumas, Sierra, Siskiyou, Trinity	107	67	0	2	0	176	95	113	0	2	0	210
44	Amador, Alpine, Calaveras, Inyo, Mariposa, Mono, Tuolumne	105	63	0	1	1	170	117	98	0	5	1	221

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

[1] Random-digit-dial (RDD) landline (LL), Japanese surname landline (SJ), Korean surname landline (SK), Vietnamese surname landline (SV), RDD cellular (CE).

Table A-5.   Number of completed child interviews by year, sampling frame, and self-reported stratum

	Reported stratum[1]	CHIS 2015						CHIS 2016					
				Surname						Surname			
		LL	CE	SJ	SK	SV	Total	LL	CE	SJ	SK	SV	Total
	State-wide	997	1,124	2	22	12	2,157	538	1,412	32	108	15	2,105
1	Los Angeles	184	208	0	7	2	401	91	241	14	29	7	382
2	San Diego	83	72	0	1	1	157	63	165	2	9	2	241
3	Orange	39	49	0	4	3	95	13	58	4	18	1	94
4	Santa Clara	41	35	0	3	3	82	13	35	3	16	0	67
5	San Bernardino	31	39	0	0	0	70	17	48	0	5	0	70
6	Riverside	43	57	0	0	1	101	41	87	1	6	1	136
7	Alameda	25	32	0	0	0	57	7	40	4	7	1	59
8	Sacramento	31	50	0	1	1	83	14	42	1	2	1	60
9	Contra Costa	23	23	0	0	0	46	15	38	1	1	1	56
10	Fresno	33	35	0	0	0	68	10	36	0	0	0	46
11	San Francisco	10	22	0	3	0	35	1	20	0	4	0	25
12	Ventura	22	21	1	0	0	44	9	27	2	1	0	39
13	San Mateo	13	18	0	3	1	35	7	19	0	3	0	29
14	Kern	31	27	0	0	0	58	15	43	0	2	0	60
15	San Joaquin	11	18	0	0	0	29	11	25	0	0	0	36
16	Sonoma	17	19	0	0	0	36	3	15	0	0	0	18
17	Stanislaus	9	19	0	0	0	28	8	21	0	1	0	30
18	Santa Barbara	7	12	0	0	0	19	6	21	0	0	0	27

(continued)

Table A-5.　Number of completed child interviews by year, sampling frame, and self-reported stratum (continued)

| | | CHIS 2015 | | | | | | CHIS 2016 | | | | | |
| | | | | Surname | | | | | | Surname | | | |
	Reported stratum[1]	LL	CE	SJ	SK	SV	Total	LL	CE	SJ	SK	SV	Total
19	Solano	9	11	0	0	0	20	5	19	0	1	0	25
20	Tulare	15	15	0	0	0	30	9	30	0	0	0	39
21	Santa Cruz	10	12	0	0	0	22	9	16	0	0	0	25
22	Marin	49	30	0	0	0	79	4	15	0	0	0	19
23	San Luis Obispo	4	14	0	0	0	18	7	15	0	0	0	22
24	Placer	3	12	0	0	0	15	9	14	0	1	0	24
25	Merced	16	17	0	0	0	33	8	21	0	0	0	29
26	Butte	11	16	0	0	0	27	12	15	0	0	0	27
27	Shasta	10	13	0	0	0	23	6	20	0	0	0	26
28	Yolo	12	22	0	0	0	34	9	18	0	1	1	29
29	El Dorado	8	11	0	0	0	19	6	9	0	0	0	15
30	Imperial	24	11	0	0	0	35	10	21	0	0	0	31
31	Napa	11	12	0	0	0	23	9	14	0	0	0	23
32	Kings	31	17	0	0	0	48	15	17	0	0	0	32
33	Madera	6	12	0	0	0	18	7	25	0	0	0	32
34	Monterey	18	20	1	0	0	39	5	27	0	1	0	33
35	Humboldt	11	5	0	0	0	16	2	15	0	0	0	17
36	Nevada	6	5	0	0	0	11	7	10	0	0	0	17
37	Mendocino	15	6	0	0	0	21	4	19	0	0	0	23

(continued)

Table A-5. Number of completed child interviews by year, sampling frame, and self-reported stratum (continued)

| | | CHIS 2015 | | | | | | CHIS 2016 | | | | | |
| | | | | Surname | | | | | | Surname | | | |
	Reported stratum[1]	LL	CE	SJ	SK	SV	Total	LL	CE	SJ	SK	SV	Total
38	Sutter	18	35	0	0	0	53	9	12	0	0	0	21
39	Yuba	13	21	0	0	0	34	8	13	0	0	0	21
40	Lake	8	8	0	0	0	16	5	18	0	0	0	23
41	San Benito	15	17	0	0	0	32	10	12	0	0	0	22
42	Colusa, Glenn, Tehama	8	12	0	0	0	20	6	12	0	0	0	18
43	Del Norte, Lassen, Modoc, Plumas, Sierra, Siskiyou, Trinity	9	8	0	0	0	17	4	13	0	0	0	17
44	Amador, Alpine, Calaveras, Inyo, Mariposa, Mono, Tuolumne	4	6	0	0	0	10	9	11	0	0	0	20

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

[1] Random-digit-dial (RDD) landline (LL), Japanese surname landline (SJ), Korean surname landline (SK), Vietnamese surname landline (SV), RDD cellular (CE).

Table A-6.   Number of completed teen interviews by year, sampling frame, and self-reported stratum

| | | CHIS 2015 | | | | | | CHIS 2016 | | | | | |
| | | | | Surname | | | | | | Surname | | | |
	Reported stratum[1]	LL	CE	SJ	SK	SV	Total	LL	CE	SJ	SK	SV	Total
	State-wide	367	367	3	10	7	754	316	429	22	55	6	828
1	Los Angeles	82	54	2	3	1	142	39	81	8	19	1	148
2	San Diego	26	25	0	1	0	52	40	54	1	2	1	98
3	Orange	17	17	0	1	1	36	19	14	3	4	2	42
4	Santa Clara	16	8	0	1	1	26	9	3	2	8	1	23
5	San Bernardino	10	13	0	0	1	24	14	19	1	3	0	37
6	Riverside	11	28	1	0	0	40	17	26	2	2	0	47
7	Alameda	15	5	0	0	0	20	5	11	1	3	0	20
8	Sacramento	12	11	0	1	1	25	8	10	0	2	1	21
9	Contra Costa	7	6	0	0	0	13	9	8	1	3	0	21
10	Fresno	9	12	0	0	1	22	4	6	0	1	0	11
11	San Francisco	2	5	0	3	0	10	1	6	0	1	0	8
12	Ventura	10	2	0	0	0	12	8	8	0	1	0	17
13	San Mateo	3	4	0	0	1	8	7	6	1	0	0	14
14	Kern	17	14	0	0	0	31	7	16	0	0	0	23
15	San Joaquin	0	7	0	0	0	7	5	6	1	0	0	12
16	Sonoma	2	5	0	0	0	7	1	4	0	0	0	5
17	Stanislaus	4	6	0	0	0	10	5	10	0	0	0	15
18	Santa Barbara	8	5	0	0	0	13	6	11	0	0	0	17

(continued)

Table A-6.   Number of completed teen interviews by year, sampling frame, and self-reported stratum (continued)

		CHIS 2015						CHIS 2016					
				Surname						Surname			
	Reported stratum[1]	LL	CE	SJ	SK	SV	Total	LL	CE	SJ	SK	SV	Total
19	Solano	2	3	0	0	0	5	1	1	0	2	0	4
20	Tulare	6	9	0	0	0	15	2	11	0	0	0	13
21	Santa Cruz	1	6	0	0	0	7	5	4	0	0	0	9
22	Marin	26	11	0	0	0	37	6	8	0	0	0	14
23	San Luis Obispo	4	4	0	0	0	8	4	5	0	0	0	9
24	Placer	1	5	0	0	0	6	3	6	0	1	0	10
25	Merced	5	9	0	0	0	14	5	6	0	0	0	11
26	Butte	3	6	0	0	0	9	3	6	0	0	0	9
27	Shasta	2	4	0	0	0	6	4	2	0	1	0	7
28	Yolo	2	6	0	0	0	8	9	6	0	1	0	16
29	El Dorado	2	2	0	0	0	4	8	5	0	0	0	13
30	Imperial	13	7	0	0	0	20	8	9	0	0	0	17
31	Napa	3	6	0	0	0	9	8	7	0	0	0	15
32	Kings	3	7	0	0	0	10	7	4	0	0	0	11
33	Madera	4	2	0	0	0	6	1	5	0	0	0	6
34	Monterey	7	4	0	0	0	11	2	6	1	1	0	10
35	Humboldt	3	2	0	0	0	5	2	3	0	0	0	5
36	Nevada	7	7	0	0	0	14	2	4	0	0	0	6
37	Mendocino	2	5	0	0	0	7	3	2	0	0	0	5

Table A-6.   Number of completed teen interviews by year, sampling frame, and self-reported stratum (continued)

| | | CHIS 2015 | | | | | | CHIS 2016 | | | | | |
| | | | | Surname | | | | | | Surname | | | |
	Reported stratum[1]	LL	CE	SJ	SK	SV	Total	LL	CE	SJ	SK	SV	Total
38	Sutter	5	11	0	0	0	16	8	4	0	0	0	12
39	Yuba	1	10	0	0	0	11	3	4	0	0	0	7
40	Lake	4	2	0	0	0	6	4	7	0	0	0	11
41	San Benito	4	5	0	0	0	9	6	3	0	0	0	9
42	Colusa, Glenn, Tehama	2	3	0	0	0	5	4	8	0	0	0	12
43	Del Norte, Lassen, Modoc, Plumas, Sierra, Siskiyou, Trinity	3	4	0	0	0	7	0	2	0	0	0	2
44	Amador, Alpine, Calaveras, Inyo, Mariposa, Mono, Tuolumne	1	0	0	0	0	1	4	2	0	0	0	6

Source: UCLA Center for Health Policy Research, 2015-2016 California Health Interview Survey.

[1] Random-digit-dial (RDD) landline (LL), Japanese surname landline (SJ), Korean surname landline (SK), Vietnamese surname landline (SV), RDD cellular (CE).