



california  
health  
interview  
survey

## CHIS 2021-2022 Methodology Report Series

# Report 4

# Response Rates

September 2023

**CALIFORNIA HEALTH INTERVIEW SURVEY**

**CHIS 2021-2022 METHODOLOGY SERIES**

**REPORT 4**

**RESPONSE RATES**

**SEPTEMBER 2023**

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[www.chis.ucla.edu](http://www.chis.ucla.edu)

This report provides analysts with information about the response rates in CHIS 2021-2022. The response rates are estimates of the percentage of sampled persons that participated in the survey, where the sample may be across the entire state, restricted to a county, or some other subgroup. To estimate response rates, the probability of sampling persons is taken into account. Thus, the response rates are weighted percentages of the number responding rather than simple unweighted percentages. Procedures used to increase the response rates are also discussed and, where possible, evaluated.

**Suggested citation:**

California Health Interview Survey. *CHIS 2021-2022 Methodology Series: Report 4 - Response Rates*. Los Angeles, CA: UCLA Center for Health Policy Research, 2023.

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The California Health Interview Survey is a collaborative project of the UCLA Center for Health Policy Research with multiple funding sources. Funding for CHIS 2021-2022 came from the following sources: the California Department of Health Care Services, the California Department of Health Care Services (Community Services Division), the California Department of Public Health, The California Endowment, the California Health Benefit Exchange, the California Health Care Foundation, the California Mental Health Services Authority, the California Tobacco Prevention Program, the California Wellness Foundation, First 5 California, Cedars-Sinai, The National Collaborative for Gun Violence Research, The National Bureau of Economic Research, Martin Luther King Community Healthcare, UCLA Asian-American Studies Center, and San Diego County Health and Human Services Agency.

## PREFACE

*Response Rates* is the fourth in a series of methodological reports describing the 2021-2022 California Health Interview Survey (CHIS 2021-2022). The other reports are listed below.

CHIS is a collaborative project of the University of California, Los Angeles (UCLA) Center for Health Policy Research with multiple funding sources from public, private, and non-profit organizations. SSRS was responsible for data collection and the preparation of five methodological reports from the 2021-2022 survey. The survey examines public health and health care access issues in California. The survey is the largest state health survey ever undertaken in the United States.

### **Methodological Report Series for CHIS 2021-2022**

The methodological reports for CHIS 2021-2022 are as follows:

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

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

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

A secondary goal of this report is to examine procedures used in the survey to improve response. The specific operational methods are described more completely in *CHIS 2021-2022 Methodology Series*:

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

For further methodological details not covered in this report, refer to the other methodological reports in the series at <https://healthpolicy.ucla.edu/our-work/california-health-interview-survey-chis/chis-design-and-methods/chis-methodology-reports-repository>. 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](mailto:CHIS@ucla.edu).

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# 1. CHIS 2021-2022 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 2021-2022.

- 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](mailto:CHIS@ucla.edu). For methodology reports from previous CHIS cycles, go to <https://healthpolicy.ucla.edu/our-work/california-health-interview-survey-chis/chis-design-and-methods/chis-methodology-reports-repository>.

The CHIS is a population-based multimode (web and telephone) survey of California’s residential, noninstitutionalized population conducted every other year since 2001 and continually beginning in 2011. CHIS is the nation’s largest state-level health survey and one of the largest health surveys in the nation. The UCLA Center for Health Policy Research (UCLA-CHPR) conducts CHIS in collaboration with multiple funding sources from public, private, and non-profit organizations. 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 <https://healthpolicy.ucla.edu/our-work/publications> for examples of CHIS studies).

## **1.2 Sample Additions and Data Collection Methodology Updates**

Starting in 2021, the CHIS added a prepaid cell phone sample to the primary ABS sample. A second innovation was altering the envelope for the initial mailing to have a window that would allow the incentive to be seen. The CHIS research team deemed these changes necessary to improve representation of California's diverse population and improve response rates.

For CHIS 2021-2022, respondents in the ABS sample are invited to either complete the survey online or call in to be interviewed by a member of the SSRS interviewing staff. Respondents receive an initial invitation letter with a \$2.00 pre-incentive. This is followed by a reminder postcard, a standard letter, and a final postcard. Where addresses can be matched to a listed telephone number, the nonresponding households are also called up to six times to attempt to complete an interview before the sampled household is considered to be a resolved nonresponse.

The prepaid cell phone sample followed the same dialing protocol of up to six dials before retiring the sample. In addition, the sampled phone number was screened for respondents who were either aged 18 to 24, Hispanic, African American, or would take the survey in one of the non-English languages offered for CHIS 2021-2022.

The CHIS design regularly includes additional samples for focused analysis of specific geographic areas or populations. The CHIS 2021-2022 included four oversamples:

- 1) In 2021 only, the Cedar-Sinai oversample was composed of ABS sample from LA County Service Planning Areas 1,2,4, and 5. These households were screened for Latinos or Asians who are aged 50 or older.
- 2) In both 2021 and 2022 American Indian and Alaska Natives (AIAN), were also oversampled in 2021. Respondents in this sample were asked in the screener whether they considered themselves to be American Indian or Alaska Native or to be of American Indian or Alaska Native decent.
- 3) CHIS 2022 oversampled households from 13 ZIP codes in LA County Service Planning Areas 6, 7, and 8 that surround the Martin Luther King Community Healthcare (MLKCH) hospital.
- 4) Lastly, CHIS 2022 oversampled Santa Clara County households.

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 [https://healthpolicy.ucla.edu/our-work/training?keys=&gid%5B45%5D=45&sort\\_bef\\_combine=publish\\_date\\_DESC..](https://healthpolicy.ucla.edu/our-work/training?keys=&gid%5B45%5D=45&sort_bef_combine=publish_date_DESC..)

Additional documentation on constructing the CHIS sampling weights is available in the *CHIS 2021-2022 Methodology Series: Report 5—Weighting and Variance Estimation* posted at <https://healthpolicy.ucla.edu/our-work/california-health-interview-survey-chis/chis-design-and-methods/chis-methodology-reports-repository>. 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 and year.

### **1.3 Sample Design Objectives**

The CHIS 2021-2022 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, as with CHIS 2019-2020, CHIS 2021-2022 continued to employ an address-based sample design. For the ABS 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 cycle—to provide health estimates for adults at the local level.

As with CHIS 2019-2020, the address-based sample in CHIS 2021-2022 was stratified into different strata that had higher incidences of individuals with targeted characteristics. For CHIS 2021-2022, these strata were based on predictive models that employed Big Data techniques to identify household attributes such as demographics, spoken languages, and even attitudinal metrics that are correlated with important respondent characteristics. The process begins by taking prior data and

building models with those data, and then scoring future samples with the outcomes of those models. In addition to evaluating the predictive models, for CHIS 2021-2022 we also investigated the utility of individual sample flags provided by MSG database information, including the surname flags, child indicator variables, and resident age information as well as PDB block-group characteristics including the density of households with African American residents and households with limited English proficiency.

For CHIS 2021-2022, the following strata were created<sup>1</sup>:

1. Vietnamese
2. Korean
3. Likely Asian-language Interview
4. Likely Spanish-language interview
5. Hispanic
6. Other high-density non-English
7. Other Asian
8. High density African American
9. HH with children
10. Other 65+
11. Residual - Match
12. Residual – No match

This stratification scheme was designed to make use of the most effective predictive variables to target key demographic subgroups in an efficient way that minimizes the impact of the disproportionate sampling on the design effect. Those models that were not sufficiently predictive to add value were excluded. It should be noted that this stratification includes two additional strata: 1) sample records for which none of the variables or models predicted any attribute, but for which auxiliary data could be matched to the address (“Residual - Match” sample) and sample for which no Big Data was found (“Residual - No match” sample). The final step in utilizing the models is to develop sampling fractions by which modelled households will be selected. The final sample fractions balanced the need to increase the frequency of the lowest incidence groups, while accounting for subgroups differences in response propensity and minimizing disproportionate weighting whenever possible.

Within each geographic and modeled stratum combination, residential addresses were selected, and within each household, one adult (age 18 and over) respondent was randomly selected. In those

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<sup>1</sup> The Santa Clara oversample employs a slightly different strata, please refer to Methodology Report 1 – Sample Design for additional details.

households with adolescents (ages 12-17) and/or children (under age 12), one adolescent and one child of the randomly selected parent/guardian were randomly selected. The adolescent was interviewed directly via CATI or Web. The child interview was completed by the randomly selected respondent who was the parent or guardian.

Table 1-1. California county and county group strata used in the CHIS 2021-2022 sample design

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

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey.

Prepaid cell phone numbers are associated with cell phones that are “pay-as-you-go” and do not require a contract. Prepaid numbers are more likely to be used by Hispanics, people with lower education and lower income, and other related groups that are often underrepresented in general population samples (e.g., the uninsured). To better target populations not adequately covered under the ABS frame in CHIS 2021-2022, we utilized a Prepaid cell oversample and targeted 900 completes to obtain additional in-

language interviews, Hispanic and African American samples, and young adults. The CHIS ABS sample and the prepaid oversample were of sufficient size to accomplish the second objective, i.e., to produce statistically stable estimates for small population groups such as racial/ethnic subgroups, children, adolescents, etc.

#### 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 dialect), Vietnamese, Korean, and Tagalog. These languages were chosen based on analysis of 2010 Census data to identify the languages that would cover the largest number of Californians in the CHIS sample that either did not speak English or did not speak English well enough to otherwise participate.

SSRS collaborated with UCLA on the methodology and collected data for CHIS 2021-2022, under contract with the UCLA Center for Health Policy Research. SSRS is an independent research firm that specializes in innovative methodologies, optimized sample designs, and reaching low-incidence populations. For all sampled households, one randomly selected adult in each sampled household either completed an on-line survey or was interviewed by telephone by an SSRS interviewer. In addition, the study 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. The child interview was moved in 2021-2022 to take place immediately after Section A of the adult survey and the rostering of the household. The adolescent survey took place either immediately after the adult with phone interviews or in a separate session online.

Table 1-2 shows the number of completed adult, child, and adolescent interviews in CHIS 2021-2022 by mode of interview. Note that these figures were accurate as of data collection completion for 2021-2022 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 <https://healthpolicy.ucla.edu/our-work/california-health-interview-survey-chis/chis-design-and-methods/chis-design>.

Table 1-2. Number of completed interviews by mode of interview and instrument<sup>1</sup>

	Adult	Child	Adolescent
Totals <sup>2</sup>	46,810	7,505	2,177
Completes by Web	41,912	6,963	2,012
Completes by phone	4,898	542	165

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey.

<sup>1</sup> This table excludes the Santa Clara oversample.

<sup>2</sup> Includes interviews meeting the criteria as partially complete.

Interviews in all languages were administered using SSRS's computer-assisted web interviewing and computer-assisted telephone interviewing (CAWI/CATI) system. As expected, the CATI interviews were longer in duration. The duration of the CATI interviews averaged almost 72 minutes, 19 minutes, and 30 minutes for the adult, child, and adolescent interviews, respectively; the duration of the CAWI interviews averaged around 47 minutes, 13 minutes, and 21 minutes for the adult, child, and adolescent interviews, respectively. Interviews in non-English languages typically took longer to complete across both modes: the non-English CATI interviews had an average length of about 83 minutes, 22 minutes, and 33 minutes for the adult, child, and adolescent interviews respectively; the non-English CAWI interviews had an average length of about 56 minutes, 16 minutes, and 23 minutes for the adult, child, and adolescent interviews, respectively. Nearly 8 percent of the adult interviews were completed in a language other than English, as were about 13 percent of all child (parent proxy) interviews and 2 percent of all adolescent interviews.

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

Table 1-3. CHIS 2021-2022 survey topic areas by instrument

<b>Health status</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
General health status	✓	✓	✓
Days missed from work or school due to health problems	✓	✓	✓
<b>Health conditions</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Asthma	✓	✓	✓
Diabetes, pre-diabetes/borderline diabetes	✓		
Heart disease, high blood pressure	✓		
Physical disability	✓		
<b>Mental health</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Mental health status	✓	✓	
Perceived need, access and utilization of mental health services	✓	✓	
Functional impairment, stigma	✓		
Suicide ideation and attempts	✓	✓	
Mental health and technology	✓	✓	
Climate Change	✓	✓	
<b>Health behaviors</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Dietary and nutritional intake, breastfeeding (younger than 3 years)	✓		✓
Sugar-sweetened beverages		✓	✓
Alcohol use, Cigarette use, E-cigarette use, Marijuana use, CBD use		✓	
Opioid use	✓		
Exposure to second-hand smoke/vapor, Exposure to marijuana smoke	✓		
Sexual behaviors, HIV testing, HIV prevention medication	✓	✓	
Caregiving	✓		
<b>Gun Violence</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Firearm ownership/presence, loaded, and secure, firearm victimization, quick access to firearm	✓	✓	✓
<b>Women's health</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Pregnancy status/plans and birth control	✓	✓	
<b>Intimate Partner violence</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Intimate partner violence	✓		
<b>Dental health</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Last dental visit, Main reason have not visited dentist, Number of dental visits, Location of dental service	✓	✓	✓
Current dental insurance coverage	✓		✓
Condition of teeth	✓	✓	

(continued)

Table 1-3. CHIS 2021-2022 survey topic areas by instrument (continued)

<b>Neighborhood and housing</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Safety, social cohesion	✓	✓	✓
Housing security/stability, length of residency	✓		
Civic engagement, community involvement	✓	✓	
Encounters with police	✓		
<b>Adverse Childhood Experiences</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
ACES Screener	✓	✓	
Past ACES screener	✓	✓	✓
Positive Childhood Experiences	✓	✓	
<b>Access to and use of health care</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Usual source of care, visits to medical doctor	✓	✓	✓
Emergency room visits	✓	✓	✓
Delays in getting care (prescriptions and medical care)	✓	✓	✓
Communication problems with doctor	✓		✓
Contraception	✓	✓	
Timely appointment	✓	✓	✓
Access to specialist and general doctors	✓		
Tele-medical care	✓		
Mammogram screening, colon cancer screening, HPV vaccination (only administered in Los Angeles Service Planning Areas 1, 2, 4, 5)	✓		
Care coordination	✓	✓	✓
Discrimination in healthcare setting	✓		
<b>Voter engagement</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Voter engagement	✓		
Voter attitudes	✓		
<b>Food environment</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Availability of food in household over past 12 months, Hunger	✓		
<b>Health insurance</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Current insurance coverage, spouse's coverage, who pays for coverage	✓	✓	✓
Health plan enrollment, characteristics and assessment of plan	✓	✓	✓
Whether employer offers coverage, respondent/spouse eligibility	✓		
Coverage over past 12 months, reasons for lack of insurance	✓	✓	✓
High deductible health plans	✓	✓	✓
Partial scope Medi-Cal, medical debt, hospitalizations	✓		

(continued)



Table 1-3. CHIS 2021-2022 survey topic areas by instrument (continued)

<b>Public program eligibility</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Household poverty level	✓		
Program participation (CalWORKs, Food Stamps, SSI, SSDI, WIC, TANF)	✓	✓	✓
Assets, child support, Social security/pension, worker's compensation	✓		
Medi-Cal eligibility, Medi-Cal renewal, Notice of actions from Medi-Cal	✓		
Reason for Medi-Cal non-participation among potential beneficiaries	✓	✓	✓
Use of public benefits among immigrant residents	✓		
<b>Parental involvement/adult supervision</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Parental involvement			✓
Book ownership, source of reading materials, challenges to reading to child			✓
<b>Child care and school</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Current child care arrangements			✓
Paid child care	✓		
First 5 California: Talk, Read, Sing Program / Kit for New Parents			✓
Preschool/school attendance, school name		✓	✓
Preschool quality			✓
<b>Employment</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Employment status, spouse's employment status	✓		
Hours worked at all jobs	✓		
Industry and occupation, firm size	✓		
Paid Family Leave	✓		
<b>Income</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Respondent's and spouse's earnings last month before taxes	✓		
Household income, number of persons supported by household income	✓		

(continued)

Table 1-3. CHIS 2021-2022 survey topic areas by instrument (continued)

<b>Respondent characteristics</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Race and ethnicity, age, gender, height, weight	✓	✓	✓
Veteran status	✓		
Marital status, registered domestic partner status (same-sex couples)	✓		
Sexual orientation	✓		
Gender identity	✓	✓	
Gender expression		✓	
Living with parents	✓		
Education, English language proficiency	✓		
Citizenship, immigration status, country of birth, length of time in U.S., languages spoken at home	✓	✓	✓
<b>COVID-19</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Ever though had COVID-19	✓		
Ever tested positive for COVID-19	✓		
COVID-19 vaccine status	✓	✓	✓
Challenges experience due to COVID-19 pandemic	✓		
Risk reduction practices	✓		
<b>Hate Incident (2022 only)</b>	<b>Adult</b>	<b>Adolescent</b>	<b>Child</b>
Experienced hate incident	✓		

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey.

## 1.5 Response Rates

The overall response rates for CHIS 2021-2022 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 2021-2022, the overall household response rate was 9.2 percent (the product of the screener response rate of 13.3 percent and the extended interview response rate at the household level of 69.5 percent). CHIS uses the RR4 type response rate described in the AAPOR (The American Association for Public Opinion Research), 2016 guidelines (see more detailed in *CHIS 2021-2022 Methodology Series: Report 4 – Response Rates*).

The extended interview response rate for the ABS sample varied across the adult (64.6 percent), child (82.5 percent) and adolescent (28.6 percent) interviews. The adolescent rate includes the process of obtaining permission from a parent or guardian.

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 2021-2022 (see Table 1-4b).

Table 1-4a. CHIS response rates - Conditional

Type of Sample	Screener <sup>1</sup>	Household (given screened) <sup>1</sup>	Adult (given screened) <sup>1</sup>	Child (given screened & eligibility) <sup>1</sup>	Adolescent (given screened & permission) <sup>1</sup>
Overall	13.3%	69.5%	64.6%	82.5%	28.6%

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey.

<sup>1</sup> The prepaid cell, Cedars-Sinai, MLKCH, Santa Clara, and AIAN oversamples are not included in these rates.

Table 1-4b. CHIS response rates - Unconditional

Type of Sample	Screener <sup>1</sup>	Household (given screened) <sup>1</sup>	Adult (given screened) <sup>1</sup>	Child (given screened & eligibility) <sup>1</sup>	Adolescent (given screened & permission) <sup>1</sup>
Overall	13.3%	9.2%	8.6%	10.9%	3.8%

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey.

<sup>1</sup> The prepaid cell, Cedars-Sinai, MLKCH, Santa Clara, and AIAN oversamples are not included in these rates.

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

Proxy interviews were conducted for any adult who was unable to complete the extended adult interview for themselves, in order to avoid biases for health estimates of chronically ill or handicapped people. Eligible selected persons were re-contacted and offered a proxy option. In CHIS 2021-2022, either a spouse/partner or adult child completed a proxy interview for twenty-two 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 <https://healthpolicy.ucla.edu/our-work/california-health-interview-survey-chis/chis-design-and-methods/chis-design/chis-2019-2020-redesign>.

## **1.6 Weighting the Sample**

To produce population estimates from CHIS data, weights were applied to the sample data to compensate for the probability of selection and a variety of other factors, some directly resulting from the design and administration of the survey. The sample was weighted to represent the noninstitutionalized population for each sampling stratum and statewide. The weighting procedures used for CHIS 2021-2022 accomplish the following objectives:

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

As part of the weighting process, a household weight was created for all households that completed the screener interview. This household weight is the product of the “base weight” (the inverse of the probability of selection of the address) and several 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 2021-2022 were primarily created from the California Department of Finance's (DOF) 2021 and 2022 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 and Human Services Agency (HHSA) region in San Diego County), and education. One limitation of using 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 DOF control totals prior to calibration.

The DOF control totals used to create the CHIS 2021-2022 weights are based on 2010 Census counts, as were those used for the 2019-2020 cycle. Please pay close attention when comparing estimates using CHIS 2021-2022 data with estimates using data from CHIS cycles before 2010. The most accurate California population figures are available when the U.S. Census Bureau conducts the decennial census. For periods between each census, population-based surveys like CHIS must use population projections based on the decennial count. For example, population control totals for CHIS 2009 were based on 2009 DOF estimates and projections, which were based on Census 2000 counts with adjustments for demographic changes within the state between 2000 and 2009. These estimates become less accurate and more dependent on the models underlying the adjustments over time. Using the most recent Census population count information to create control totals for weighting produces the most statistically accurate population estimates for the current cycle, but it may produce unexpected increases or decreases in some survey estimates when comparing survey cycles that use 2000 Census-based information and 2010 Census-based information.

## **1.7 Imputation Methods**

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

every other variable.

Three different imputation procedures were used by SSRS to fill in missing responses for items essential for weighting the data. The first imputation technique was a completely random selection from the observed distribution of respondents. This method was used only for a few variables when the percentage of the items missing was very small. The second technique was hot-deck imputation. The hot-deck approach is one of the most used methods for assigning values for missing responses. Using a hot deck, a value reported by a respondent for a specific item was assigned or donated to a “similar” person who did not respond to that item. The characteristics defining “similar” vary for different variables. To carry out hot-deck imputation, the respondents who answered a survey item formed a pool of donors, while the item non-respondents formed a group of recipients. A recipient was matched to the subset pool of donors based on household and individual characteristics. A value for the recipient was then randomly imputed from one of the donors in the pool. SSRS used hot-deck imputation to impute the same items that have been imputed in all CHIS cycles since 2003 (i.e., race, ethnicity, home ownership, and education). The last technique was external data assignment. This method was used for geocoding variables such as strata, Los Angeles SPA, San Diego HSSA region, and zip where the respondent provided inconsistent information. For such cases geocoding information was used for imputation.

UCLA-CHPR imputed missing values for nearly every variable in the data files other than those imputed by SSRS and some sensitive variables for which nonresponse had its own meaning. Overall, item nonresponse rates in CHIS 2021-2022 were low, with most variables missing valid responses for less than 1% of the sample. Questions that go to fewer overall respondents or that ask about more sensitive topics can have higher nonresponse.

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

Control variables (predictors) used in the model to form donor pools for hot-decking always included standard measures of demographic and socioeconomic characteristics, as well as geographic

region; however, the full set of control variables varies depending on which variable is being imputed. Most imputation models included additional characteristics, such as health status or access to care, which are used to improve the quality of the donor-recipient match.

Among the standard list of control variables, gender, age, race/ethnicity, educational attainment and region of California were imputed by SSRS. UCLA-CHPR began their imputation process by imputing household income so that this characteristic was available for the imputation of other variables. Sometimes CHIS collects bracketed information about the range in which the respondent's value falls when the respondent will not or cannot report an exact amount. Household income, for example, was imputed using the hot-deck method within ranges defined by a set of auxiliary variables such as bracketed income range and/or poverty level.

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

## 2. USE OF RESPONSE RATES

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

The main objectives of this report are: (1) to present response rates to analysts of CHIS 2021-2022 data; (2) to explain the methods used to calculate the response rates; and (3) to provide information about variation in the response for subgroups of the California population that might be related to nonresponse bias. To accomplish these goals, the response rates are weighted so that they estimate proportions of the population responding to the survey. This procedure is consistent with the standards given by the American Association for Public Opinion Research (AAPOR) (The American Association for Public Opinion Research, 2016). For example, weighting accounts for differences in sampling rates by county and facilitates appropriate state-level response rate reporting.

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

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

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



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

### 3. DEFINING RESPONSE RATES

The term “response rate” is used in many ways across surveys and organizations, so its careful definition is important. We used the definitions described in the AAPOR (The American Association for Public Opinion Research, 2016) guidelines, which include several different response rate definitions. Among these definitions, RR3 and RR4 are commonly accepted in the research field for surveys like CHIS, as indicated in the following formulae.

$$RR3 = \frac{I}{(I + P) + (R + NC + O) + e(UH + UO)}$$

$$RR4 = \frac{(I + P)}{(I + P) + (R + NC + O) + e(UH + UO)}$$

RR = Response rate

I = Complete interview

P = Partial interview

R = Refusal and break-off

NC = Non-contact

O = Other

UH = Unknown if household/occupied HU

UO = Unknown, other

e = Estimated proportion of cases of unknown eligibility that are eligible

The only difference between them is that RR3 does not include partial completes in the numerator while RR4 does. This report uses AAPOR’s RR4 for the address-based sample (ABS) in CHIS 2021-2022. Since sample was drawn with different selection probabilities, we use the weighted number of addresses rather than the number of cases (unweighted) for the response rate computation. This approach also compensates for differential sampling across geographic areas.

AAPOR recommends that a survey response rate be defined as the ratio of completed interviews to eligible reporting units (e.g., residential households). To be eligible, the selected address must be an occupied dwelling unit with at least one resident who is an 18 years or older adult. Determining eligibility can be problematic because despite repeated mail and phone attempts, the household may never attempt the survey. In such a case their eligibility would be deemed unknown. Further, some postal return codes may fail to establish whether an eligible adult lives at the sampled address. The eligibility of sample with these outcomes cannot be determined directly, adding ambiguity to the definition of a response rate.

The proportion of sample units (addresses) with unknown eligibility that are actually eligible is denoted as  $e$  in the AAPOR equations. Once the eligibility proportion is established, the response rate can be computed as the weighted ratio of the responding units to the total of known and estimated eligible units. The approach we used for estimating  $e$  was recommended by AAPOR (2016). This formula estimates  $e$  as the number of cases known to be eligible divided by the number of cases known to be either eligible or ineligible (AAPOR, 2016). This approach was used to estimate  $e$  while computing the response rates; a similar estimate of  $e$  is also used in the weighting process.

The next step in computing response rates depends on the specific extended interview being analyzed, such as the adult interview. For example, to compute the conditional response rate for the adult interview, the numerator is the weighted number of completed adult interviews and the denominator is the weighted number of eligible adults sampled in households that completed the screening interview. An overall or joint response rate can be computed by multiplying the screening and adult response rates. This approach applies to all samples in CHIS 2021-2022. In CHIS 2001 and 2003, the adult interview in the landline samples had to be completed before children or adolescents could be interviewed. Beginning in 2005, the child-first procedure permitted child or adolescent interviews to be done before the adult interview under certain circumstances in the landline and surname list samples. Starting in 2019, aside from a few child completes started before the adult interview under the child-first protocol, all child interviews were completed after Section A in the adult survey. This results in a computed household-level response rate that considers a household to be a respondent if either an adult, child, or a teen interview is completed. The specifics of the computations are discussed in Chapter 5.

Computing a response rate for a subgroup (e.g., females, number of adults in the household) requires that all the units in both the numerator and denominator of the rate can be classified as members of the subgroup. To do this, data must be available to classify all sampled units, not just respondents. At the screener level, data to identify subgroups from the sample is limited. However, the sample can be classified by geography (county or stratum) and modeled strata. At the extended interview or person level, data from the screener can be used to classify households by characteristics that are known for virtually all completed households. Because the screening interview identifies the number of adults in the household, extended interview response rates can be computed separately for households with one, two, or three or more adults. However, screener response rates cannot be computed by the numbers of adults in the household because this data is not available for every sampled telephone number. Therefore, the subgroup overall response rate must be computed by multiplying the extended interview response rate for the subgroup by the overall screener response rate. Data for subgroup classification collected at the screener interview are used to compute subgroup response rates in CHIS 2021-2022.

## **4. REVIEW OF CONTACT METHODS**

CHIS includes both screening and extended interviews. One adult was sampled from each household completing a screening interview. In households with persons under age 17, up to one child and one adolescent were also sampled. The screening interview took just under 3 minutes to conduct on average. A parent or legal guardian was interviewed about the sampled child, and the sampled adolescent was interviewed as soon as parental permission and teen assent were obtained. The adult extended interview averaged just over 49 minutes, the child interview about 13 minutes, and the adolescent interview averaged 22 minutes. Interviews in languages other than English generally took longer than these averages. Detailed interview timing information is given in *CHIS 2021-2022 Methodology Series: Report 2 – Data Collection Methods*.

### **4.1 Mail**

All ABS sample was mailed an initial invitation letter with a \$2 pre-incentive and a Frequently Asked Questions (FAQ) sheet in their targeted language. The letter prominently featured who should complete the survey, the survey URL and a secure access code unique to the household. In addition, a toll-free number was offered for those who wished to complete the survey by phone. The initial mailing was followed by up to three additional mailings. The second mailing was a pressure sealed postcard reminder sent to all sampled addresses. This invitation also included the survey URL and a secure access code unique to the household. The third mailing was a letter and FAQ sent to households who had not yet responded, and had also not refused, and were not designated as undeliverable. The fourth mailing was another pressure sealed postcard reminder to households who had not yet responded and had also not refused and were not designated as undeliverable. Detailed information on the mailings is given in *Report 2 – Section 5.2*.

### **4.2 Telephone**

For those ABS households that did not respond to any of the mailed reminders by completing the survey and for whom a telephone number was able to be matched to the mailing address, and for all the prepaid cell oversample up to 6 outbound calls were made to complete a CATI interview. In addition, all the ABS recruiting materials offered a telephone number for respondents to dial in and request to be interviewed over the phone. Screening for any telephone interviewing was essentially the same regardless of whether the respondent called in or was contacted by a telephone interviewer.

A variety of other methods were used to increase response rates in CHIS 2021-2022. A very important procedure involved translating and conducting the interview in Spanish, Chinese (Mandarin and Cantonese dialect), Korean, Vietnamese, and Tagalog to accommodate respondents with limited English proficiency. Another method was the use of proxy interviews for any adults who were unable to participate because of mental or physical limitations. Other adult household members knowledgeable about the sampled person's health, usually a parent, spouse, or an adult child of the sampled adult completed a proxy interview in these cases; 23 adult proxy extended interviews were completed. In addition to the efforts to encourage respondents to participate, other approaches were used to increase response rates. For CATI interviews, interviewers were trained and given refresher training on methods to avoid refusals and to convert those who had refused. Only interviewers who had above average response rates were trained and allowed to conduct refusal conversions. Multiple call attempts were made to contact sampled household members to complete the extended interviews.

## 5. RESPONSE RATE FORMULAS

This chapter describes the formulas used to compute the response rates for CHIS 2021-2022. Response rates are calculated for the **screeener** and **extended interviews**, including **household, adult, child and adolescent** overall response rates. Because of the different subsampling rates by stratum, unweighted response rates are not comparable to the weighted rates and should not be used to assess response patterns.

A **screeener response rate** is calculated for each geographic sampling stratum, where the stratum is a county or group of counties. The formula for the screener response rate ( $rr_s$ ) in a single stratum is:

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

where  $w_i$  is the weight for household  $i$  after adjusting for differential sampling rates (see *CHIS 2021-2022 Methodology Series: Report 2 – Data Collection Methods*). It is also adjusted for the assignment of sampled units with unknown residential status and the assignment of households with unknown eligibility status.  $S_{resp}$  is the set of households in the stratum that responded to the screening interview and  $S_{elig}$  is the set of eligible households in the stratum. As noted earlier, estimated eligibility rates were determined using the AAPOR method where the residency rate of the sampled units with unknown residency status is estimated by the observed proportion of residential addresses among all cases where residency status is known.

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

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

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

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

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

The next set of response rates is for each **extended interview**. The **extended response rate for the adult interview** in a stratum is the weighted percentage of the adults sampled in the screener who completed the adult extended interview. The weight is the inverse of the probability of selecting the adult within the household. Because of this weighting, adults sampled from households with more than one adult have a larger effect on the response rate than those in households with only one adult. The extended adult response rate ( $rr_a$ ) is computed as

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

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

The **extended interview response rate** computation for **children and adolescents** is similar to the adult procedure. The **extended child response rate** ( $rr_c$ ) is:

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

where the numerator is summed over all completed child interviews in 2021-2022, and the denominator is summed over all eligible sampled children. The weight being summed in this case,  $w_i''$ , is the inverse of the probability of selecting the child within the household.

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

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

where the numerator is summed over all adolescent respondents in 2021-2022, and the denominator is summed over all eligible sampled adolescents. The weight being summed in this case,  $w_i'''$ , is the inverse of the probability of selecting the adolescent within the household.

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

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

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

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

The **child response rate** is also conditioned on the screener being completed and on the child interview being completed for households with children. The **overall child response rate**, is defined as:

$$orr_c = rr_s \times rr_c \quad (5-8)$$

The **overall adolescent response rate** accounting for screener response and teen response in households with an eligible teen is:

$$orr_t = rr_s \times rr_t \quad (5-9)$$

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



## 6. RESPONSE RATE TABLES

This chapter provides tables of response rates for CHIS 2021-2022. The first section presents the screener response rates by county-level and modeled sampling stratum. The second section presents the response rates for the adult, child, and adolescent interviews by the same sampling stratum. This section also presents the household response rates and response rates by respondent characteristics across all samples. Later, we present the response rates for the CHIS 2021-2022 oversamples. Finally, the last section presents the overall response rates for each extended interview type. All the rates, including the oversample response rates, are weighted and use the formulas presented in the previous chapter.

### 6.1 Screener Response Rates

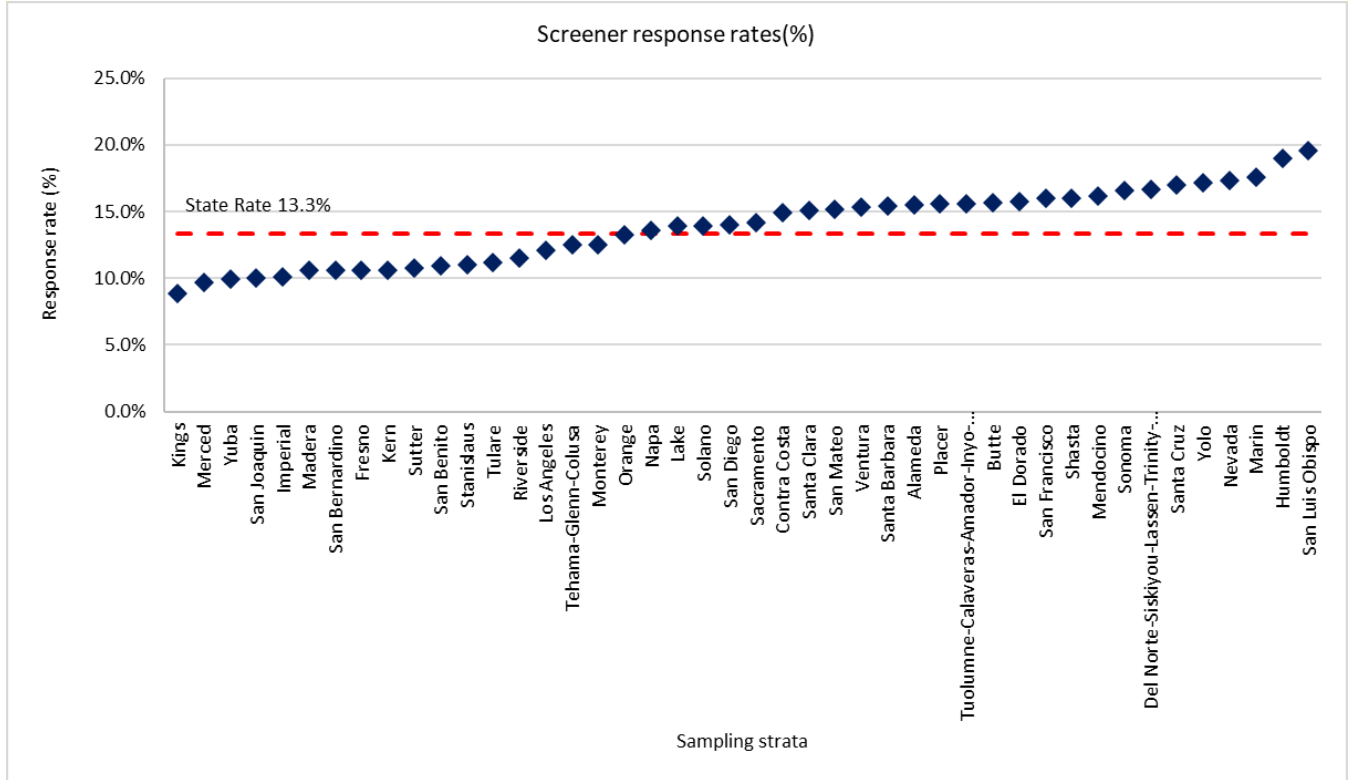
The screener response rates by the county-level sampling stratum are presented in Table 6-1, and the response rates by the modeling level stratum are presented in Table 6-2. The first column in these tables gives the number of households that completed the screening interview. Overall, 67,126 households completed the CHIS 2021-2022 screener interview. In each of these households, one adult was sampled.

As Figure 6-1 shows, the overall weighted screener response rate for the state is 13.3 percent. As discussed in Chapter 3, this response rate was computed using the AAPOR RR4 method to allocate sampled addresses whose eligibility cannot be determined (e.g., households that did not respond to the survey invite or where mail was returned with certain postal codes). Surveys vary in how they account for undetermined residential status, and the method used can lead to very different estimates of response rates. One approach is to ignore the undetermined numbers in the computation of response rates. This approach gives a *cooperation rate*. This rate assumes that none of the undetermined cases were eligible households and produces the most liberal (i.e., highest) response rates. This assumption is not reasonable in most sample surveys, which is why CHIS uses the AAPOR RR4 method for undetermined eligibility cases.

Table 6-1 shows that the screener response rates vary by county, which is also illustrated in Figure 6-1. The median response across all counties is 14.2 percent, and the highest response rate is 19.6 percent in the stratum for San Luis Obispo. Kings has the lowest response rate at 8.9 percent while the next lowest response rate, Merced, is 0.8 points higher than the response rate in Kings. The screener response rate in Los Angeles is 3.2 points higher than the Kings rate and 1.2 points lower than the state response rate. The county rankings shown in Figure 6-1 vary from those in previous CHIS cycles, likely

due to the change in sampling frame and mode in CHIS 2021-2022 (for a detailed discussion please refer to *CHIS 2021-2022 Methodology Series: Report 2 – Data Collection Methods*).

Figure 6-1. Screener response rate distribution by county-level sampling stratum



The median response rate for counties with a population of more than 500,000 persons (as of January 1, 2019, which consists of the counties from Los Angeles through Stanislaus in Table 6-1) is 14.0 percent. This is 1.4 percentage points lower than the 15.4 percent median response rate for the smaller counties.

Table 6-1. Number of completed screeners and screener response rates by sampling stratum

Stratum <sup>3</sup>		Total	
		Complete <sup>1</sup>	Response rate <sup>2</sup> (%)
	State total	67,126	13.3%
1	Los Angeles (8 SPAs)	13,805	12.1%
2	San Diego (6 HSRs)	6,941	14.0%
3	Orange	3,871	13.2%
4	Santa Clara	2,448	15.1%
5	San Bernardino	2,564	10.6%
6	Riverside	2,779	11.6%
7	Alameda	2,194	15.5%
8	Sacramento	1,908	14.2%
9	Contra Costa	1,425	14.9%
10	Fresno	1,259	10.6%
11	San Francisco	1,391	16.0%
12	Ventura	1,015	15.3%
13	San Mateo	988	15.2%
14	Kern	1,088	10.6%
15	San Joaquin	880	10.0%
16	Sonoma	724	16.6%
17	Stanislaus	792	11.0%
18	Santa Barbara	776	15.4%
19	Solano	773	13.9%
20	Tulare	870	11.1%
21	Santa Cruz	763	17.0%
22	Marin	779	17.6%
23	San Luis Obispo	746	19.6%
24	Placer	771	15.6%
25	Merced	852	9.7%
26	Butte	727	15.7%
27	Shasta	700	16.0%
28	Yolo	805	17.1%
29	El Dorado	761	15.7%
30	Imperial	925	10.1%
31	Napa	695	13.6%
32	Kings	931	8.9%
33	Madera	866	10.6%
34	Monterey	812	12.5%
35	Humboldt	723	19.0%
36	Nevada	716	17.4%

(continued)

Table 6-1. Number of completed screeners and screener response rates by sampling stratum (continued)

Stratum <sup>3</sup>		Total	
		Complete <sup>1</sup>	Response rate <sup>2</sup> (%)
37	Mendocino	747	16.2%
38	Sutter	854	10.8%
39	Yuba	821	9.9%
40	Lake	788	13.9%
41	San Benito	915	10.9%
42	Tehama, etc.	709	12.5%
43	Del Norte, etc.	619	16.7%
44	Tuolumne, etc.	610	15.6%

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey.

Note. Dividing line separates counties with a population of more than 500,000 persons as of January 1, 2019.

<sup>1</sup> A complete here includes any household with a completed screening interview. The prepaid cell, Cedars-Sinai, MLKCH, Santa Clara and AIAN oversamples are not included in these rates.

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

<sup>3</sup> Stratum displayed is the stratum as each household was sampled.

Table 6-2 shows that the screener response rates also vary slightly by modeled stratum. Households deemed to have a Hispanic surname had the lowest response rate at 8.4%, which was 4.9 points lower than the state response rate. The Other 65+ strata had the highest response rate within the modeled stratum at 21.4%, which was 8.1 point higher than the state response rate.

Table 6-2. Number of completed screeners and screener response rates by modeled stratum

Stratum <sup>3</sup>	Total	
	Complete <sup>1</sup>	Response rate <sup>2</sup> (%)
Vietnamese flag	2,021	14.0%
Korean flag	3,256	17.6%
Model Asian Language Interview	5,223	13.6%
Model Spanish-language interview	16,193	8.8%
Hispanic surname	1,540	8.4%
Other high density non-English	15,246	13.2%
Asian flag or model or both	890	14.5%
High density AA	4,350	13.3%
HH with children	11,131	14.7%
Other 65+	3,568	21.4%
Residual - No match	1,680	10.8%
Residual - Match	2,028	13.4%
State total	67,126	13.3%

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey.

<sup>1</sup> A complete here includes any HH with a completed screening interview. The prepaid cell, Cedars-Sinai, MLKCH, Santa Clara and AIAN oversamples are not included in these rates.

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

<sup>3</sup> Stratum displayed is the stratum as each household was sampled.

## 6.2 Person and Household Response Rates

The household, adult, child, and adolescent extended interview response rates for each county-level stratum are presented in Table 6-3, along with the number of completed interviews, and for each modeled stratum are presented in Table 6-4. There were 45,917 households where either an adult, child or adolescent extended interview was completed, resulting in a statewide household level response rate of 69.5 percent. Additionally, 44,129 adult interviews (including 2,296 partial interviews), 7,087 interviews about children, and 2,101 adolescent interviews were completed.

The statewide adult conditional response rate, as shown in Tables 6-3 and 6-4, for the adult interview was 64.6 percent, a decrease of 7.4 percentage points from CHIS 2019-2020.

As with the screener, counties with larger populations tended to have lower adult extended interview response rates. The median adult response rate for counties with a population of more than

500,000 is 65.7 percent, while for counties with less than 500,000 the median adult response rate is 67.4 percent. This difference may be attributable to a variety of reasons, for instance there are meaningful differences in the age breakdown, and education between respondents in the larger and smaller counties and these variables tend to be correlated with response rates. The 2021-2022 child interview state level conditional response rate was 82.5 percent, which is 3.2 percentage points lower than the child response rate observed in CHIS 2019-2020. The state level adolescent conditional interview rate is 28.6 percent, which is 4.6 points lower than the rate observed in CHIS 2019-2020.

Table 6-3. Number of completed extended interviews and response rates by sampling stratum and type of interview (conditional on completed screener)

Stratum <sup>3</sup>	Household		Adult <sup>4</sup>		Child		Adolescent	
	Complete <sup>1</sup>	Response rate <sup>2</sup> (%)	Complete	Response rate (%)	Complete	Response rate (%)	Complete	Response rate (%)
State total	45,917	69.5%	44,129	64.6%	7,087	82.5%	2,101	28.6%
1 Los Angeles	8,950	66.4%	8,579	60.8%	1,373	82.9%	382	26.7%
2 San Diego	4,909	71.9%	4,722	67.1%	749	83.7%	224	30.6%
3 Orange	2,658	69.6%	2,559	65.7%	399	83.4%	118	26.7%
4 Santa Clara	1,733	71.2%	1,661	66.9%	288	84.6%	66	25.0%
5 San Bernardino	1,687	66.8%	1,596	61.3%	312	84.5%	93	28.2%
6 Riverside	1,842	67.6%	1,765	62.8%	303	83.3%	86	26.4%
7 Alameda	1,608	72.7%	1,550	69.6%	280	91.0%	78	33.9%
8 Sacramento	1,370	71.8%	1,340	69.1%	194	81.2%	51	24.6%
9 Contra Costa	1,004	70.9%	983	68.8%	130	80.2%	47	31.9%
10 Fresno	821	66.0%	773	60.2%	154	77.6%	46	29.8%
11 San Francisco	1007	73.6%	988	69.6%	106	82.5%	22	29.2%
12 Ventura	703	71.7%	674	64.1%	106	87.6%	29	27.5%
13 San Mateo	699	69.7%	670	65.7%	120	86.0%	29	25.2%
14 Kern	697	64.4%	659	59.5%	131	79.0%	52	34.7%
15 San Joaquin	591	66.4%	566	63.8%	89	75.9%	23	22.9%
16 Sonoma	524	73.3%	510	69.0%	58	80.9%	18	29.3%
17 Stanislaus	530	66.2%	511	64.2%	88	75.6%	30	24.0%
18 Santa Barbara	563	71.2%	540	67.6%	71	83.1%	30	31.6%

(continued)

Table 6-3. Number of completed extended interviews and response rates by sampling stratum and type of interview (conditional on completed screener) (continued)

Stratum <sup>3</sup>	Household		Adult <sup>4</sup>		Child		Adolescent	
	Complete <sup>1</sup>	Response rate <sup>2</sup> (%)	Complete	Response rate (%)	Complete	Response rate (%)	Complete	Response rate (%)
19 Solano	552	73.2%	542	69.5%	61	80.0%	16	28.1%
20 Tulare	569	65.7%	534	60.6%	122	76.9%	25	20.0%
21 Santa Cruz	548	73.3%	531	67.9%	74	86.7%	23	33.0%
22 Marin	597	77.8%	573	73.5%	91	80.1%	31	37.7%
23 San Luis Obispo	552	76.7%	539	71.0%	68	84.5%	18	25.0%
24 Placer	554	74.0%	528	66.3%	102	86.0%	32	31.6%
25 Merced	549	65.3%	522	59.8%	99	74.9%	35	37.3%
26 Butte	523	70.7%	501	67.6%	90	90.4%	27	42.4%
27 Shasta	508	72.4%	494	70.4%	66	82.1%	24	31.3%
28 Yolo	596	73.7%	569	69.5%	91	80.3%	32	36.9%
29 El Dorado	532	73.6%	513	67.4%	73	87.2%	29	29.9%
30 Imperial	576	61.8%	546	58.0%	115	77.2%	43	30.6%
31 Napa	515	75.8%	506	71.9%	67	89.4%	18	28.2%
32 Kings	589	62.3%	547	56.9%	139	84.9%	37	33.1%
33 Madera	580	68.3%	550	61.9%	98	84.1%	33	29.9%
34 Monterey	540	66.8%	516	62.1%	89	82.3%	20	20.7%
35 Humboldt	543	74.5%	531	72.8%	67	81.8%	25	29.0%
36 Nevada	517	74.4%	501	70.2%	60	81.3%	27	30.8%
37 Mendocino	541	72.6%	526	69.1%	60	81.4%	13	23.1%
38 Sutter	547	64.7%	524	59.9%	75	70.0%	26	28.3%
39 Yuba	550	65.9%	526	63.9%	100	85.6%	32	29.7%
40 Lake	542	67.5%	529	65.3%	59	79.5%	20	31.5%
41 San Benito	596	66.2%	570	62.6%	100	76.5%	30	25.3%
42 Tehama, etc.	452	63.5%	432	60.6%	72	73.0%	23	29.2%
43 Del Norte, etc.	435	74.5%	423	67.6%	52	82.0%	18	34.7%
44 Tuolumne, etc.	418	69.5%	410	66.5%	46	79.8%	20	31.7%

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey.

<sup>1</sup> A complete here includes any household with any completed extended interview (adult, child, or teen) weighted by the HH weight. The prepaid cell, Cedars-Sinai, MLKCH, Santa Clara and AIAN oversamples are not included in these rates.

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

<sup>3</sup> Stratum displayed is the stratum as each household was sampled.

<sup>4</sup> The adult completes also include partial interviews.

Displaying a similar trend as the screener response rates, the modeled Spanish language strata had the lowest adult response rate at 57.9%, which was 6.7 points lower than the state response rate. The Other 65+ stratum had the highest response rate within the modeled stratum at 73.5%, which was 8.9 points higher than the state response rate.

Table 6-4. Number of completed extended interviews and response rates by modeling stratum and type of interview (conditional on completed screener)

Stratum <sup>3</sup>	Household		Adult		Child		Adolescent	
	Complete <sup>1</sup>	Response rate <sup>2</sup> (%)	Complete	Response rate (%)	Complete	Response rate (%)	Complete	Response rate (%)
Vietnamese flag	1,367	66.8%	1,306	64.0%	235	81.8%	52	24.1%
Korean flag	2,286	70.5%	2,186	66.7%	360	86.0%	106	29.4%
Model Asian	3,668	70.5%	3,520	66.5%	541	82.8%	154	29.4%
Language Interview								
Model Spanish-language interview	10,064	61.2%	9,490	57.9%	1,997	81.5%	634	27.4%
Hispanic surname	991	63.2%	938	59.4%	205	72.5%	55	23.8%
Other high density non-English	10,719	70.5%	10,380	66.9%	1,337	82.4%	339	27.2%
Asian flag or model or both	649	72.9%	629	70.5%	113	88.6%	31	25.7%
High density AA	3,023	69.1%	2,939	66.7%	367	84.5%	75	23.4%
HH with children	7,861	70.9%	7,526	67.1%	1,612	84.0%	578	33.5%
Other 65+	2,672	76.4%	2,660	73.5%	55	84.3%	18	32.5%
Residual - No match	1,158	68.4%	1,124	66.1%	153	82.8%	26	20.8%
Residual - Match	1,459	71.9%	1,431	69.3%	112	80.5%	33	30.3%
State total	45,917	69.5%	44,129	64.6%	7,087	82.5%	2,101	28.6%

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey.

<sup>1</sup> A complete here includes any household with any completed extended interview (adult, child, or teen) weighted by the HH weight. The prepaid cell, Cedars-Sinai, MLKCH, Santa Clara and AIAN oversamples are not included in these rates.

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



Data collected in the screener interview about the household and the sampled adult can be used to examine the adult extended response rates since the data are available for all sampled adults. Table 6-5 shows the adult response rates by these screener data items.

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

Characteristic	Response Rate <sup>1</sup>
Total	64.6%
Number of adults in household	
1	70.5%
2	66.1%
3 or more	60.8%

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey.

<sup>1</sup> The prepaid cell, Cedars-Sinai, MLKCH, Santa Clara and AIAN oversamples are not included in these rates.

Response rates tend to decline as more adults are present in the household. A major reason for this is that, for households with more than one adult the person reached might not be the person with the next birthday. For CAWI, this would require the person to log off and ask the adult with the next birthday to log on and complete the survey. For CATI, if the sampled adult is not home, a call-back is required, essentially creating a second contact attempt.

Now, we examine the child extended interview response rates. Table 6-3 shows that the statewide child-level response rate is 82.5 percent. Section 7.2 offers a more in-depth discussion of the reason for the higher response rate. Table 6-6 shows the child response rates by the characteristics of the child and household using data collected in the screener or adult interview where the children were enumerated for sampling. The child response rate was slightly higher for female children. Also, there was an inverse relation between the child response rate and number of children in the house. Note, child gender was missing for approximately 3% of sampled child cases, which results in a slightly higher child response rate for those cases where gender was provided compared with the total child response rate. *CHIS 2021-2022 Methodology Series: Report 2 – Data Collection Methods* contains more detail on response to the child interview.

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

Characteristic	Response Rate <sup>1</sup>
Total	82.5%
Sex	
Male	82.4%
Female	83.6%
Number of children in household	
1	85.7%
2	81.8%
3	81.1%
4 or more	75.7%
Age group	
0-5	82.7%
6-11	82.4%

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey.

<sup>1</sup>The prepaid cell, Cedars-Sinai, MLKCH, Santa Clara and AIAN oversamples are not included in these rates.

The last person-level response rates presented are for the adolescent interview. An eligible teen was interviewed as soon as parental permission and teen assent were obtained. If a parent refused permission, they received a letter asking them to reconsider and offering an incentive. Further, all teens were offered a \$10 post-incentive for completion. Table 6-7 shows that the state-level adolescent response rate is 28.6 percent. This table also gives the adolescent response rates by the gender and age of the adolescent based on data collected in the adult interview or screener. Note, gender was missing for approximately 3% of sampled teen cases, and age was missing for approximately 5% of sampled teen cases, which results in a slightly higher teen response rate for those cases where gender and age were provided compared with the total teen response rate.

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

Characteristic	Response Rate <sup>1</sup>
Total	28.6%
Sex	
Male	29.5%
Female	28.7%
Age group	
12-14	30.3%
15-17	28.8%

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey.

<sup>1</sup> The prepaid cell, Cedars-Sinai, MLKCH, Santa Clara and AIAN oversamples are not included in these rates.

To better understand the success rate for interviewing adolescents, we parsed the response rates for the adolescent interview by whether the parents gave initial permission to interview or not. This rate indicates the ability to contact and interview the adolescents where initial permission was granted and suggests the success rate for converting refusals for parental permissions. These rates are presented in Table 6-8. Not surprisingly, the adolescent response rate for cases where initial parental permission was granted is much higher (55.2%) when compared with cases where permission was not granted during the survey (6.4%).

Table 6-8. Adolescent conditional response rates by parental permission status

Characteristic	Initial Parent Permission <sup>2</sup>		Final Permission Granted <sup>2</sup>
	Granted	Not Granted	
Total	55.2%	6.4%	28.6%
N <sup>1</sup>	3,357	4,017	3,606
Sex			
Male	55.6%	6.6%	29.5%
Female	55.2%	6.1%	28.7%
Age group			
12-14	57.9%	6.7%	30.3%
15-17	53.0%	6.5%	28.8%

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey

<sup>1</sup>Ns are unweighted, but the response rates are weighted.

<sup>2</sup> The prepaid cell, Cedars-Sinai, MLKCH, Santa Clara and AIAN oversamples are not included in these rates.

Differences in response rates can lead to nonresponse bias as suggested by the formula presented in Chapter 2 for the bias attributable to nonresponse. To reduce this potential for bias, geographic and demographic characteristics examined in Tables 6-1 through 6-8 were considered in developing the weights as described in *CHIS 2021-2022 Methodology Series: Report 5 – Weighting and Variance Estimation*. For example, nonresponse adjustments were done separately by county, thus accounting for the differences in response rates noted above by the size and urbanicity of the counties. In addition, the weights were also adjusted to be consistent with data from the control totals to reduce residual biases.

### **6.3 Overall Response Rates**

This section presents the overall, or unconditional, response rates for the household and for the adult, child, and adolescent interviews for CHIS 2019. Table 6-9 gives these response rates for the entire state and by county, and Table 6-10 gives these response rates by the modeled stratum. As discussed in Chapter 5 (Response Rates Formulas), the overall rates are the product of screener and extended response rates. At the household level, the overall household response rate is the screener response rate (from Table 6-1 and 6-2) multiplied by the household response rate (from Table 6-3 and 6-4). This rate is computed using equation (5-6). The adult response rates are computed using equation (5-7). The child and adolescent overall rates are computed using equations (5-8) and (5-9), respectively.

Table 6-9. Overall response rates by sampling stratum and type of interview

Stratum <sup>2</sup>	Interview type overall response rate (%) <sup>1</sup>			
	Household	Adult	Child	Adolescent
State total	9.2%	8.6%	10.9%	3.8%
1 Los Angeles (8 SPAs)	8.0%	7.3%	10.0%	3.2%
2 San Diego (6 HSRs)	10.1%	9.4%	11.7%	4.3%
3 Orange	9.2%	8.7%	11.0%	3.5%
4 Santa Clara	10.7%	10.1%	12.8%	3.8%
5 San Bernardino	7.1%	6.5%	9.0%	3.0%
6 Riverside	7.8%	7.2%	9.6%	3.0%
7 Alameda	11.2%	10.8%	14.1%	5.2%
8 Sacramento	10.2%	9.8%	11.5%	3.5%
9 Contra Costa	10.6%	10.3%	11.9%	4.7%
10 Fresno	7.0%	6.4%	8.2%	3.2%
11 San Francisco	11.8%	11.1%	13.2%	4.7%
12 Ventura	11.0%	9.8%	13.4%	4.2%
13 San Mateo	10.6%	10.0%	13.1%	3.8%
14 Kern	6.9%	6.3%	8.4%	3.7%
15 San Joaquin	6.6%	6.4%	7.6%	2.3%
16 Sonoma	12.1%	11.4%	13.4%	4.9%
17 Stanislaus	7.3%	7.1%	8.3%	2.7%
18 Santa Barbara	11.0%	10.4%	12.8%	4.9%
19 Solano	10.2%	9.7%	11.1%	3.9%
20 Tulare	7.3%	6.8%	8.6%	2.2%
21 Santa Cruz	12.4%	11.5%	14.7%	5.6%
22 Marin	13.7%	12.9%	14.1%	6.6%
23 San Luis Obispo	15.0%	13.9%	16.5%	4.9%
24 Placer	11.5%	10.3%	13.4%	4.9%
25 Merced	6.3%	5.8%	7.3%	3.6%
26 Butte	11.1%	10.6%	14.2%	6.6%
27 Shasta	11.6%	11.3%	13.2%	5.0%
28 Yolo	12.6%	11.9%	13.8%	6.3%
29 El Dorado	11.6%	10.6%	13.7%	4.7%
30 Imperial	6.3%	5.9%	7.8%	3.1%
31 Napa	10.3%	9.8%	12.2%	3.8%
32 Kings	5.5%	5.1%	7.5%	2.9%
33 Madera	7.2%	6.6%	8.9%	3.2%
34 Monterey	8.4%	7.8%	10.3%	2.6%
35 Humboldt	14.1%	13.8%	15.5%	5.5%
36 Nevada	12.9%	12.2%	14.1%	5.4%
37 Mendocino	11.7%	11.2%	13.2%	3.7%
38 Sutter	7.0%	6.5%	7.5%	3.0%
39 Yuba	6.5%	6.3%	8.5%	3.0%

(continued)

Table 6-9. Overall response rates by sampling stratum and type of interview (continued)

Stratum <sup>2</sup>	Interview type overall response rate (%) <sup>1</sup>			
	Household	Adult	Child	Adolescent
40 Lake	9.4%	9.1%	11.1%	4.4%
41 San Benito	7.2%	6.8%	8.3%	2.8%
42 Tehama, etc.	7.9%	7.6%	9.1%	3.6%
43 Del Norte, etc.	12.4%	11.3%	13.7%	5.8%
44 Tuolumne, etc.	10.8%	10.4%	12.4%	4.9%

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey.

<sup>1</sup> Overall response rate is calculated by multiplying the screener interview response rate by the extended interview response rate (where the extended response rate is conditional on a completed screener). The prepaid cell, Cedars-Sinai, MLKCH, Santa Clara and AIAN oversamples are not included in these rates.

<sup>2</sup> Stratum displayed is the stratum as each household was sampled.

Table 6-10. Overall response rates by modeling stratum and type of interview

Stratum <sup>2</sup>	Interview type overall response rate (%) <sup>1</sup>			
	Household	Adult	Child	Adolescent
Vietnamese flag	9.4%	9.0%	11.5%	3.4%
Korean flag	12.4%	11.7%	15.1%	5.2%
Model Asian Language Interview	9.6%	9.0%	11.2%	4.0%
Model Spanish-language interview	5.4%	5.1%	7.2%	2.4%
Hispanic surname	5.3%	5.0%	6.1%	2.0%
Other high density non-English	9.3%	8.8%	10.9%	3.6%
Asian flag or model or both	10.6%	10.2%	12.9%	3.7%
High density AA	9.2%	8.9%	11.3%	3.1%
HH with children	10.4%	9.8%	12.3%	4.9%
Other 65+	16.4%	15.8%	18.1%	7.0%
Residual - No match	7.4%	7.1%	8.9%	2.2%
Residual - Match	9.6%	9.3%	10.8%	4.1%
State total	9.2%	8.6%	10.9%	3.8%

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey.

<sup>1</sup> Overall response rate is calculated by multiplying the screener interview response rate by the extended interview response rate (where the extended response rate is conditional on a completed screener). The prepaid cell, Cedars-Sinai, MLKCH, Santa Clara and AIAN oversamples are not included in these rates.

<sup>2</sup> Stratum displayed is the stratum as each household was sampled.

Since the response rates in these tables are the product of two or more interview-level rates, the previously described issues regarding the differences in response rates by county, type of household, and

characteristic of the sampled person also apply here. The overall adult response rate in CHIS 2021-2022 was 8.6 percent, 3.0 percentage points lower than the overall adult response rate in CHIS 2021-2022.

## **6.4 Oversample Response Rates**

### **6.4.1 Cedars-Sinai Oversample**

To provide researchers at Cedars-Sinai with sufficient sample to produce estimates for a variety of cancer screening questions, CHIS 2021 oversampled 800 Latinos and Asians aged 50 and older in LA County SPAs 1,2,4, and 5.

### **6.4.2 Prepaid Cell Oversample**

To better target populations not adequately covered under the ABS frame, CHIS 2021-2022 utilized a Prepaid cell oversample and targeted 900 completes, 450 in each 2021 and 2022, for this oversample. In particular, this sample was targeted to reach in-language interviews, Hispanic and African American samples, and young adults.

### **6.4.3 American Indian and Alaskan Native (AIAN) Oversample**

CHIS 2021-2022 sought to conduct an additional oversample of 250 adults, 125 in each 2021 and 2022, who identify as American Indian or Alaska Native and live in rural areas. The sample for this oversample was an address-based sample. Using a rural definition of at least 75% of the Block Group addresses being classified as rural, the sample design focused on Block Groups that were a minimum AIAN density and also meet the 75% rural definition. For CHIS 2021 the minimum threshold for a block group to be oversampled was to have a 4.2% AIAN density. This threshold was lowered to 3.2% in July 2022.

### **6.4.4. Martin Luther King Community Healthcare (MLKCH) Oversample**

CHIS 2022 also oversampled 400 adults from 13 ZIP codes in LA county SPAs 6, 7, 8 that surround MLKCH hospital. This oversample used the same model-based stratification as the main ABS sample, while sampling proportionally from the 13 ZIP codes.

### **6.4.5. Santa Clara Oversample**

To provide Santa Clara County with sufficient samples to produce estimates for a variety of topics, CHIS 2022 oversampled 1,925 respondents from the county.

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

Table 6-12. Response rates for CHIS 2021-2022 oversamples

Type of Sample	Screener	Household	Adult (given screened)	Child (given screened & permission)	Adolescent (given screened & permission)
Prepaid OS	3.0%	23.0%	21.4%	28.8%	10.7%
AIAN OS	2.1%	59.9%	61.6%	4.1%	13.1%
Cedars Sinai OS	4.5%	63.8%	61.6%	72.6%	43.9%
MLKCH OS	7.4%	54.9%	49.2%	4.4%	35.5%
Santa Clara	12.6%	72.7%	69.3%	3.8%	39.9%

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey.

Table 6-13. Overall CHIS response rates for CHIS 2021-2022 oversamples

Type of Sample	Screener	Household	Adult	Child	Adolescent
Prepaid OS	3.0%	0.7%	0.6%	0.9%	0.3%
AIAN OS	2.1%	1.2%	1.3%	0.1%	0.3%
Cedars Sinai OS	4.5%	2.9%	2.8%	3.3%	2.0%
MLKCH OS	7.4%	4.1%	3.7%	0.3%	2.6%
Santa Clara	12.6%	9.2%	8.8%	0.5%	5.0%

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey.



## 7. DISCUSSION OF RESPONSE RATES

This chapter presents a discussion of the response rates obtained in CHIS 2021-2022, including procedures used to increase response rates. The first section briefly reviews some of the methods used in CHIS 2021-2022 that impact response rates. A more complete discussion of these data collection methods is provided in *CHIS 2021-2022 Methodology Series: Report 2 – Data Collection Methods*.

### 7.1 Methods to Enhance Response Rates

Methods for enhancing response rates in CHIS 2021-2022 included:

- **ABS sampling frame** – Due to a precipitous drop in telephone response rates, and an accompanying increase in costs, in 2018 UCLA and SSRS conducted extensive pilot testing in 2018 to explore the possibility of using ABS sample for future CHIS waves (Wells et al., 2018, 2019), as opposed to RDD sample used for previous waves. The results from these preliminary pilot tests were encouraging with higher response rates and lower costs. Based on these results CHIS transitioned to address-based sampling ABS for CHIS 2019-2020 and continued with this frame in 2021-2022.
- **Mixed-mode design** –As with CHIS 2019-2020, CHIS 2021-2022 employed a mixed-mode design with a mail push-to-web and a telephone non-response follow up. This approach involved sending mail to all sampled addresses and encouraging them to participate in CHIS 2021-2022 via web. For sample where a phone append was obtained, the push-to-web mailings were followed up with telephone dialing. Respondents could also call in at any time during the field period to complete the survey.
- **\$2 pre-incentive** – All sample was mailed a \$2 pre-incentive with the initial invitation letter.
- **Repeated mailings** – Respondents received up to four mailing. The second mailing and fourth mailing were postcards, and the third mailing was a letter. (Please see *CHIS 2021-2022 Methodology Series: Report 2 – Data Collection Methods* for a more detailed discussion).
- **Repeated call attempts:** The procedures implemented in CHIS 2021-2022 allowed for an average of 6 calls when no contact had been made previously. These additional attempts were intended to maximize response rates among sample members who were less likely to answer phone calls from unknown callers. This procedure also has the potential to reduce nonresponse bias from this source of nonresponse by including at least some sample members who require more than a few call attempts to reach.

- **Recontacting initial refusals:** The refusal conversion protocol is described in Chapter 4.
- **Proxy reporting:** As in previous cycles, proxy respondents could report for sampled adults when the sampled adult was unable to answer for himself/herself due to illness or impairment. As indicated in Section 4.1, in CHIS 2021-2022, a total of 23 adult proxy interviews were completed. Proxy respondents had to be adult household members who were knowledgeable about the sampled person’s health. The proxy respondent was typically a spouse or an adult child of the sampled adult. While the number of interviews completed using the proxy interviews is relatively small, the proxy interviews add responses from adults who would otherwise be excluded from the survey and who likely have very different health characteristics than other adult respondents.
- **In-language interviews:** A very important procedure incorporated to enhance the response rates was conducting the interviews in the language requested by the sampled person. The languages included in 2021-2022 were: Spanish, Chinese (Cantonese and Mandarin), Korean, Vietnamese, and Tagalog. In many cases, households that did not speak English would not have been included in CHIS had these additional languages not been offered to sample members. In addition, the quality of the screener and extended interview data are likely better for these households than if they had been only allowed to respond in English. Table 7-1 gives the number of interviews that were completed by language. 6,041 households completed the screener using a language other than English, accounting for about 9 percent of all the completed screener interviews in CHIS 2021-2022. Spanish was the most frequently used language, with 66 percent of the non-English screener interviews being completed in Spanish. Chinese was the second most frequently used language in the interviews, with 18% of the non-English screener interviews being completed in Chinese.

Table 7-1. Number of completed screener and extended interviews by sample type and language

Interview type Sample type	English	Non-English					Total	Total
		Spanish	Vietnamese	Korean	Chinese	Tagalog		
Screener Interviews	61,085	4,013	372	568	1,064	24	6,041	67,126
Adult Interviews	40,990	1,826	202	391	711	9	3,139	44,129
Child Interviews	6,269	591	22	47	156	2	818	7,087
Teen Permission Interviews	3,167	359	14	25	47	0	445	3,612
Teen Interviews	2,052	38		2	9		49	2,101

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey.

<sup>a</sup> Includes completed and partial interviews.

## 7.2 Comparisons of Response Rates over the Cycles

As with CHIS 2019-2020, CHIS 2021-2022 employed an ABS sampling frame and mixed-mode survey design. Like previous cycles of CHIS, one adult is sampled from each household and asked to complete an interview of about 45 minutes. Other household members are sampled and interviewed if there are children and/or adolescents present in the household. In CHIS 2019-2020 and CHIS 2021-2022, the child and teen rostering section and the child interview was moved up to the end of Section A, leading to all child interviews being completed before the corresponding adult interview. The teen protocol was also the same as CHIS 2019-2020, where parents refusing permission got a letter asking them to reconsider and offering them a \$10 post incentive if their teen completed, along with all teens getting a \$10 post-incentive.

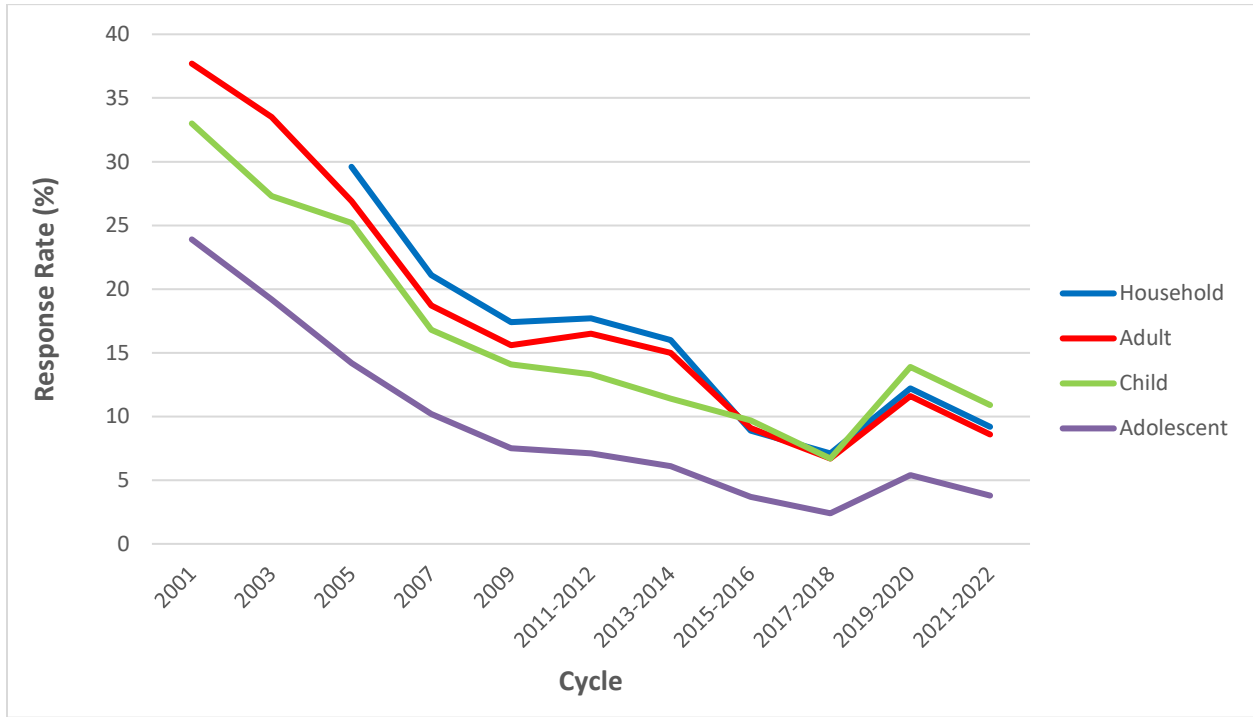
Table 7-2 summarizes the screener interview, extended interview, overall, and combined overall response rates by cycle for the CHIS samples. The same information is presented graphically in Figure 7-1. The state-level response rate had been showing a downward trend since CHIS 2015-2016, but the changes made to CHIS 2019-2020 yielded dramatic improvements. However, the response rates in 2021-2022 were slightly lower compared with CHIS 2019-2020, and we hypothesize that the reason for this is the decrease in the increased response attributable to COVID stay-at-home conditions prevalent during the second year of CHIS 2019-2020. In 2021-2022 the adult response rate was 8.6 percent, 3.0 points lower than CHIS 2019-2020. The child response rate in 2021-2022 was 10.9 percent, also 3.0 points lower than the rate in CHIS 2019-2020, and the teen response rates in 2021-2022 was 3.8 percent, which was 1.6 points lower than the previous CHIS cycle.

Table 7-2. Comparison of state-level overall response rates from CHIS 2009 to 2021-2022

Type	2009	2011-2012	2013-2014	2015-2016	2017-2018	2019-2020	2021-2022
Household	17.4	17.7	16.0	8.9	4.0	12.2	9.2
Adult	15.6	16.5	15.0	9.1	3.4	11.6	8.6
Child	14.1	13.3	11.4	9.7	4.6	13.9	10.9
Adolescent	7.5	7.1	6.1	3.7	1.7	5.4	3.8

Source: UCLA Center for Health Policy Research, 2021-2022 California Health Interview Survey.

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



## **8. LIMITATIONS FOR RESPONSE RATES**

While efforts were made to maximize response rates with multiple survey request reminders, survey access in dual modes, and multiple language support, there is the possibility of unmeasured nonresponse error due to missing eligible respondents who did not speak one of the offered languages, those who did not respond within the multiple survey requests and/or those who did not wish to complete their interview on the modes we offered. There also remains the possibility that individuals who do not respond to the survey differ systematically from those who do, thereby introducing bias.

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