CHIS 2021 Methodology Report Series

Report 4

Response Rates

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UCLA CENTER FOR HEALTH POLICY RESEARCH

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CHIS 2021 METHODOLOGY SERIES

REPORT 4

RESPONSE RATES

SEPTEMBER 2022

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www.chis.ucla.edu

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

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PREFACE

Response Rates is the fourth in a series of methodological reports describing the 2021 California Health Interview Survey (CHIS 2021). 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 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

The methodological reports for CHIS 2021 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 Methodology Series:*

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

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

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1. CHIS 2021 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.

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

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

The CHIS is a population-based 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 http://healthpolicy.ucla.edu/publications/Pages/default.aspx 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, 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 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 an average of 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.

In addition, two oversamples were included. 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 and Asians and aged 50 and older. 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.

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

Additional documentation on constructing the CHIS sampling weights is available in the *CHIS 2021 Methodology Series: Report 5—Weighting and Variance Estimation* posted at

http://www.chis.ucla.edu/chis/design/Pages/methodology.aspx. Other helpful information for understanding the CHIS sample design and data collection processing can be found in the four other methodology reports for each CHIS cycle and year.

1.3 Sample Design Objectives

The CHIS 2021 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 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 was stratified into different strata that had higher incidences of individuals with targeted characteristics. For CHIS 2021, 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 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, the following strata were created:

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 deigned 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 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 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,
4. Santa Clara	24. Placer	Plumas, Sierra, Siskiyou, Trinity
5. San Bernardino	25. Merced	44. Amador, Alpine, Calaveras, Inyo,
6. Riverside	26. Butte	Mariposa, Mono, Tuolumne

Source: UCLA Center for Health Policy Research, 2021 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, we utilized a Prepaid cell oversample and targeted 500 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, 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 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 by mode of interview. Note that these figures were accurate as of data collection completion for 2021 and may differ slightly from numbers in the data files due to data cleaning and edits. Sample sizes to compare against data files you are using are found online at http://www.chis.ucla.edu/chis/design/Pages/sample.aspx.

Table 1-2. Number of completed interviews by mode of interview and instrument across all samples[2]

	Adult	Child	Adolescent
Totals[1]	25,347	4,110	1,192
Completes by Web	22,939	3,822	1,088
Completes by phone	2,408	288	104

Source: UCLA Center for Health Policy Research, 2021 California Health Interview Survey.
[1] Includes interviews meeting the criteria as partially complete.
[2] Includes all samples – Main CHIS, prepaid cell phone, Cedar Sinai, and AIAN

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 31 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 34 minutes for the adult, child, and adolescent interviews respectively; the non-English CAWI interviews had an average length of about 60 minutes, 18 minutes, and 30 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 survey topic areas by instrument

Health status	**Adult**	**Adolescent**	**Child**
General health status	✓	✓	✓
Days missed from work or school due to health problems	✓	✓	✓
Health conditions	**Adult**	**Adolescent**	**Child**
Asthma	✓	✓	✓
Diabetes, pre-diabetes/borderline diabetes	✓		
Heart disease, high blood pressure	✓		
Physical disability	✓		
Mental health	**Adult**	**Adolescent**	**Child**
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	✓	✓	
Health behaviors	**Adult**	**Adolescent**	**Child**
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	✓		
Sexual behaviors, HIV testing, HIV prevention medication	✓	✓	
Caregiving	✓		
Gun Violence	**Adult**	**Adolescent**	**Child**
Firearm ownership/presence, loaded, and secure, firearm victimization, quick access to firearm	✓	✓	✓
Women's health	**Adult**	**Adolescent**	**Child**
Pregnancy status/plans and birth control	✓	✓	
Intimate Partner violence	**Adult**	**Adolescent**	**Child**
Past unwanted sexual encounter	✓		
Dental health	**Adult**	**Adolescent**	**Child**
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 survey topic areas by instrument (continued)

Neighborhood and housing	**Adult**	**Adolescent**	**Child**
Safety, social cohesion	✓	✓	✓
Housing security/stability, length of residency	✓		
Civic engagement, community involvement	✓	✓	
Encounters with police	✓		
Adverse Childhood Experiences	**Adult**	**Adolescent**	**Child**
ACES Screener	✓	✓	
Past ACES screener	✓	✓	✓
Positive Childhood Experiences	✓	✓	
Access to and use of health care	**Adult**	**Adolescent**	**Child**
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	✓		
Voter engagement	**Adult**	**Adolescent**	**Child**
Voter engagement	✓		
Voter attitudes	✓		
Food environment	**Adult**	**Adolescent**	**Child**
Availability of food in household over past 12 months	✓		
Health insurance	**Adult**	**Adolescent**	**Child**
Current insurance coverage, spouse's coverage, who pays for coverage	✓	✓	✓
Health plan enrollment, characteristics and assessment of plan	✓	✓	✓
Whether employer offers coverage, respondent/spouse eligibility	✓		
Coverage over past 12 months, reasons for lack of insurance	✓	✓	✓
High deductible health plans	✓	✓	✓
Partial scope Medi-Cal, medical debt, hospitalizations	✓		

(continued)

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

Public program eligibility	Adult	Adolescent	Child
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	✓		
Parental involvement/adult supervision	**Adult**	**Adolescent**	**Child**
Parental involvement			✓
Book ownership, source of reading materials, challenges to reading to child			✓
Child care and school	**Adult**	**Adolescent**	**Child**
Current child care arrangements			✓
Paid child care	✓		
First 5 California: Talk, Read, Sing Program / Kit for New Parents			✓
Preschool/school attendance, school name		✓	✓
Preschool quality			✓
Employment	**Adult**	**Adolescent**	**Child**
Employment status, spouse's employment status	✓		
Hours worked at all jobs	✓		
Industry and occupation, firm size	✓		
Paid Family Leave	✓		
Income	**Adult**	**Adolescent**	**Child**
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 survey topic areas by instrument (continued)

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

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

1.5 Response Rates

The overall response rates for CHIS 2021 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, the overall household response rate was 9.5 percent (the product of the screener response rate of 13.7 percent and the extended interview response rate at the household level of 69.6 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 Methodology Series: Report 4 – Response Rates*).

The extended interview response rate for the ABS sample varied across the adult (65.1 percent), child (85.3 percent) and adolescent (29.1 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 (see Table 1-4b).

Table 1-4a. CHIS response rates - Conditional

Type of Sample	Screener[1]	Household (given screened)[1]	Adult (given screened)[1]	Child (given screened & eligibility)[1]	Adolescent (given screened & permission)[1]
Overall	13.7%	69.6%	65.1%	85.3%	29.1%

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

[1] The prepaid cell, Cedars-Sinai and AIAN oversamples are not included in these rates.

Table 1-4b. CHIS response rates - Unconditional

Type of Sample	Screener[1]	Household (given screened)[1]	Adult (given screened)[1]	Child (given screened & eligibility)[1]	Adolescent (given screened & permission)[1]
Overall	13.7%	9.5%	8.9%	11.7%	4.0%

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

[1] The prepaid cell, Cedars-Sinai 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, either a spouse/partner or adult child completed a proxy interview for twelve adults. A reduced questionnaire, with questions identified as appropriate for a proxy respondent, was administered.

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

1.6 Weighting the Sample

To produce population estimates from CHIS data, weights were applied to the sample data to compensate for the probability of selection and a variety of other factors, some directly resulting from the design and administration of the survey. The sample was weighted to represent the noninstitutionalized population for each sampling stratum and statewide. The weighting procedures used for CHIS 2021 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 undercoverage 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 were created primarily from the California Department of Finance's (DOF) 2021 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 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 data with estimates using data from CHIS cycles before 2010. The most accurate California population figures are available when the U.S. Census Bureau conducts the decennial census. For periods between each census, population-based surveys like CHIS must use population projections based on the decennial count. For example, population control totals for CHIS 2009 were based on 2009 DOF estimates and projections, which were based on Census 2000 counts with adjustments for demographic changes within the state between 2000 and 2009. These estimates become less accurate and more dependent on the models underlying the adjustments over time. Using the most recent Census population count information to create control totals for weighting produces the most statistically accurate population estimates for the current cycle, but it may produce unexpected increases or decreases in some survey estimates when comparing survey cycles that use 2000 Census-based information and 2010 Census-based information.

1.7 Imputation Methods

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

Three different imputation procedures were used by SSRS to fill in missing responses for items essential for weighting the data. The first imputation technique was a completely random selection from the observed distribution of respondents. This method was used only for a few variables when the percentage of the items missing was very small. The second technique was hot-deck imputation. The hot-deck approach is one of the most commonly used methods for assigning values for missing responses. Using a hot deck, a value reported by a respondent for a specific item was assigned or donated to a "similar" person who did not respond to that item. The characteristics defining "similar" vary for different variables. To carry out hot-deck imputation, the respondents who answered a survey item formed a pool of donors, while the item non-respondents formed a group of recipients. A recipient was matched to the subset pool of donors based on household and individual characteristics. A value for the recipient was then randomly imputed from one of the donors in the pool. SSRS used hot-deck imputation to impute the same items that have been imputed in all CHIS cycles since 2003 (i.e., race, ethnicity, home ownership, and education). The last technique was external data assignment. This method was used for geocoding variables such as strata, Los Angeles SPA, San Diego 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 were low, with most variables missing valid responses for less than 1% of the sample. Questions that go to fewer overall respondents or that ask about more sensitive topics can have higher nonresponse.

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

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

are used to improve the quality of the donor-recipient match.

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

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

2. USE OF RESPONSE RATES

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

The main objectives of this report are: (1) to present response rates to analysts of CHIS 2021 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:

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

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 = Patrial 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. 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. In CHIS 2001 and 2003, the adult interview in the landline samples had to be completed before children or adolescents could be interviewed. Beginning in 2005, the child-first procedure has permitted child or adolescent interviews to be done before the adult interview under certain circumstances in the landline and surname list samples. 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 are 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 the 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.

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 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. 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; 12 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. Response rates are calculated for the **screener** 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 **screener 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:

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

where w_i is the weight for household *i* after adjusting for differential sampling rates (see *CHIS 2021 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:

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

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

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

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:

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

where the numerator is summed over all completed child interviews in 2021, 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:

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

where the numerator is summed over all adolescent respondents in 2021, 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:

$$orr_h = rr_s \times rr_h \tag{5-6}$$

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:

$$orr_a = rr_s \times rr_a \tag{5-7}$$

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:

$$orr_c = rr_s \times rr_c \tag{5-8}$$

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

$$orr_t = rr_s \times rr_t \tag{5-9}$$

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. 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 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

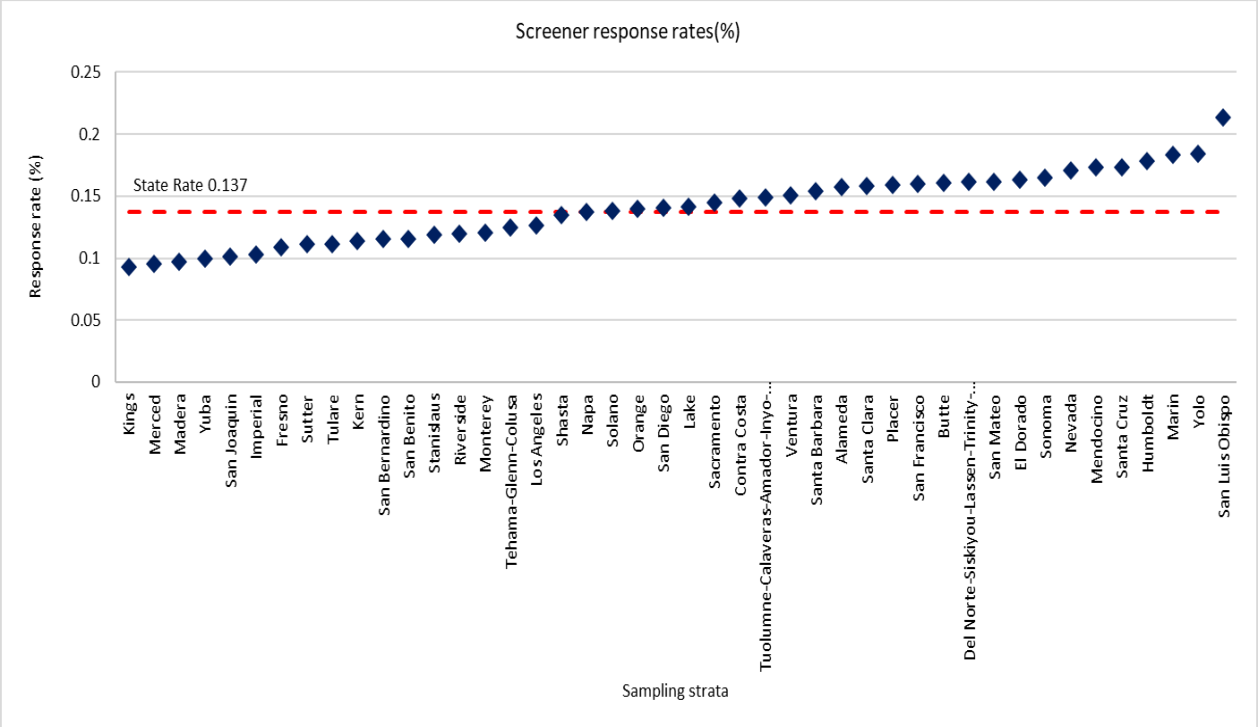
The screener response rates by the county-level sampling stratum are presented in Table 6-1, and the response rates by the modeling level stratum are presented in Table 6-2. The first column in these tables gives the number of households that completed the screening interview. Overall, 36,023 households completed the CHIS 2021 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 13.7 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 14.1 percent, and the highest response rate is 21.4 percent in the stratum for San Luis Obispo. Kings has the lowest response rate at 9.3 percent while the next lowest response rate, Merced, is about 0.2 points higher than the response rate in Kings. The screener response rate in Los Angeles is 3.4 points higher than the Kings rate and 1.0 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 (for a detailed discussion please refer to *CHIS 2021 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 14.1 percent. This is 0.1 percentage points lower than the 14.2 percent median response rate for the smaller counties.

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

	Stratum[3]	Total	
		Complete[1]	Response rate[2] (%)
	State total	36,023	13.7%
1	Los Angeles (8 SPAs)	7,489	12.7%
2	San Diego (6 HSRs)	3,659	14.1%
3	Orange	2,126	14.0%
4	Santa Clara	1,359	15.8%
5	San Bernardino	1,324	11.5%
6	Riverside	1,481	11.9%
7	Alameda	1,233	15.7%
8	Sacramento	1,029	14.4%
9	Contra Costa	774	14.8%
10	Fresno	657	10.9%
11	San Francisco	790	16.0%
12	Ventura	498	15.1%
13	San Mateo	544	16.2%
14	Kern	561	11.4%
15	San Joaquin	432	10.1%
16	Sonoma	374	16.5%
17	Stanislaus	418	11.9%
18	Santa Barbara	407	15.4%
19	Solano	423	13.8%
20	Tulare	458	11.2%
21	Santa Cruz	397	17.3%
22	Marin	434	18.3%
23	San Luis Obispo	423	21.4%
24	Placer	417	15.9%
25	Merced	452	9.5%
26	Butte	404	16.1%
27	Shasta	374	13.5%
28	Yolo	456	18.4%
29	El Dorado	403	16.3%
30	Imperial	550	10.3%
31	Napa	373	13.7%
32	Kings	518	9.3%
33	Madera	470	9.7%
34	Monterey	405	12.0%
35	Humboldt	412	17.9%
36	Nevada	333	17.1%

(continued)

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

	Stratum[3]	Total	
		Complete[1]	Response rate[2] (%)
37	Mendocino	419	17.3%
38	Sutter	418	11.1%
39	Yuba	425	9.9%
40	Lake	399	14.2%
41	San Benito	496	11.6%
42	Tehama, etc.	345	12.4%
43	Del Norte, etc.	344	16.1%
44	Tuolumne, etc.	320	14.9%

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

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

[1] A complete here includes any household with a completed screening interview. The prepaid cell, Cedars-Sinai and AIAN oversamples are not included in these rates.

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

[3] Stratum displayed is the stratum as each household was sampled.

Table 6-2 shows that the screener response rates also vary slightly by modeled stratum. Households deemed to be Hispanic or Spanish speaking had the lowest response rate at 8.7%, which was 5 points lower than the state response rate. The Other 65+ strata had the highest response rate within the modeled stratum at 22.0%, which was 8.3 point higher than the state response rate.

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

Stratum[3]	Total	
	Complete[1]	Response rate[2] (%)
Vietnamese flag	1,165	15.4%
Korean flag	1,730	18.3%
Model Asian Language Interview	2,859	14.2%
Model Spanish-language interview	8,551	9.2%
Hispanic surname	770	8.7%
Other high density non-English	8,000	13.6%
Asian flag or model or both	514	15.3%
High density AA	2,331	13.8%
HH with children	6,155	15.0%
Other 65+	1,945	22.0%
Residual - No match	951	10.5%
Residual - Match	1,052	13.7%
State total	36,023	13.7%

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

[1] A complete here includes any HH with a completed screening interview. The prepaid cell, Cedars-Sinai and AIAN oversamples are not included in these rates.

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

[3] Stratum displayed is the stratum as each household was sampled

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 24,732 households where either an adult, child or adolescent extended interview was completed, resulting in a statewide household level response rate of 69.6 percent. Additionally, 23,816 adult interviews (including 1,224 partial interviews), 3,931 interviews about children, and 1,159 adolescent interviews were completed.

The statewide adult conditional response rate, as shown in Tables 6-3 and 6-4, for the adult interview was 65.1 percent, a decrease of 6.9 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 the counties with a population of more than

500,000 is 67.3 percent, while for counties with less than 500,000 the median adult response rate is 65.9 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 child interview state level conditional response rate was 85.3 percent, which is 0.4 percentage points lower than the child response rate observed in CHIS 2019-2020. The state level adolescent conditional interview rate is 29.1 percent, which is 4.1 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[3]		Household		Adult[4]		Child		Adolescent	
		Complete[1]	Response rate[2] (%)	Complete	Response rate (%)	Complete	Response rate (%)	Complete	Response rate (%)
	State total	24,732	69.6%	23,816	65.1%	3,931	85.3%	1,159	29.1%
1	Los Angeles	4,890	66.7%	4,696	61.4%	779	85.8%	212	26.5%
2	San Diego	2,620	72.3%	2,523	68.1%	427	89.1%	117	30.1%
3	Orange	1,422	67.6%	1,374	64.2%	213	81.6%	68	25.9%
4	Santa Clara	962	70.7%	921	67.1%	154	90.0%	39	24.0%
5	San Bernardino	890	67.4%	850	63.2%	167	87.0%	44	26.9%
6	Riverside	1,000	68.7%	956	64.1%	184	87.6%	51	31.4%
7	Alameda	919	74.3%	898	72.0%	158	88.7%	44	33.0%
8	Sacramento	747	72.4%	729	70.2%	105	84.7%	31	28.0%
9	Contra Costa	547	70.6%	533	68.9%	75	89.1%	26	36.7%
10	Fresno	435	67.6%	402	59.5%	94	80.7%	27	26.7%
11	San Francisco	570	73.4%	558	68.9%	64	86.7%	13	25.0%
12	Ventura	355	74.0%	342	67.3%	56	88.1%	16	27.5%
13	San Mateo	389	71.0%	370	66.4%	68	80.3%	16	24.1%
14	Kern	352	63.0%	335	59.1%	57	80.4%	25	33.0%
15	San Joaquin	301	69.1%	291	66.6%	53	77.6%	12	25.7%
16	Sonoma	274	73.9%	266	70.1%	32	92.6%	8	34.5%
17	Stanislaus	272	66.0%	261	62.5%	52	90.5%	17	24.7%
18	Santa Barbara	303	73.1%	293	69.5%	38	85.3%	17	32.9%

(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[3]		Household		Adult[4]		Child		Adolescent	
		Complete[1]	Response rate[2] (%)	Complete	Response rate (%)	Complete	Response rate (%)	Complete	Response rate (%)
19	Solano	295	71.5%	291	68.2%	31	83.3%	11	35.2%
20	Tulare	300	65.9%	283	60.8%	62	80.8%	14	19.8%
21	Santa Cruz	283	71.3%	275	68.2%	41	85.4%	14	41.8%
22	Marin	335	79.8%	321	74.0%	52	81.3%	18	43.5%
23	San Luis Obispo	317	77.5%	307	70.9%	36	79.4%	12	31.9%
24	Placer	291	72.5%	275	63.9%	56	87.5%	16	31.9%
25	Merced	292	65.7%	283	60.8%	48	81.0%	19	40.3%
26	Butte	291	71.8%	280	68.4%	61	93.6%	14	40.9%
27	Shasta	282	75.4%	275	73.7%	39	84.4%	17	41.8%
28	Yolo	353	77.4%	341	74.1%	58	87.5%	25	45.8%
29	El Dorado	279	70.1%	272	66.8%	40	84.4%	13	28.4%
30	Imperial	333	59.7%	315	56.4%	76	81.8%	27	30.2%
31	Napa	275	75.6%	269	71.4%	28	92.3%	10	28.3%
32	Kings	327	61.8%	310	57.3%	67	81.8%	19	32.1%
33	Madera	305	65.3%	287	60.3%	54	72.5%	14	28.6%
34	Monterey	270	65.7%	259	62.8%	45	86.7%	11	25.4%
35	Humboldt	300	71.8%	295	70.3%	36	87.9%	17	26.0%
36	Nevada	238	73.6%	230	69.5%	31	83.9%	12	25.0%
37	Mendocino	298	71.5%	291	68.8%	31	83.3%	6	20.5%
38	Sutter	265	64.2%	252	58.5%	36	73.7%	11	23.9%
39	Yuba	280	66.3%	265	62.4%	55	90.0%	21	35.7%
40	Lake	276	66.0%	271	67.1%	30	87.5%	11	36.7%
41	San Benito	330	67.8%	320	65.5%	52	78.0%	17	27.3%
42	Tehama, etc.	217	64.0%	208	58.6%	37	75.0%	9	21.0%
43	Del Norte, etc.	238	73.7%	232	66.0%	30	88.5%	11	42.5%
44	Tuolumne, etc.	214	67.7%	211	65.9%	23	85.7%	7	22.2%

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

[1] 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 and AIAN oversamples are not included in these rates.

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

[3] Stratum displayed is the stratum as each household was sampled.

[4] 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 7.2 points lower than the state response rate. The Other 65+ stratum had the highest response rate within the modeled stratum at 73.2%, which was 8.1 point 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[3]	Household		Adult		Child		Adolescent	
	Complete[1]	Response rate[2] (%)	Complete	Response rate(%)	Complete	Response rate (%)	Complete	Response rate (%)
Vietnamese flag	802	68.5%	770	65.4%	136	83.3%	33	24.5%
Korean flag	1,247	72.0%	1,191	68.5%	193	86.5%	62	28.7%
Model Asian Language Interview	2,034	71.1%	1,959	67.6%	314	85.9%	84	27.7%
Model Spanish-language interview	5,275	61.0%	4,994	57.9%	1,084	82.8%	333	27.7%
Hispanic surname	495	62.4%	470	59.7%	101	73.5%	29	22.6%
Other high density non-English	5,626	70.5%	5,458	67.0%	716	87.1%	180	26.7%
Asian flag or model or both	370	72.9%	355	68.3%	78	92.9%	18	25.8%
High density AA	1,638	70.3%	1,594	67.9%	219	88.3%	50	26.1%
HH with children	4,354	71.3%	4,173	67.6%	898	86.0%	325	35.3%
Other 65+	1,453	76.4%	1,447	73.2%	28	86.4%	10	40.0%
Residual - No match	671	70.2%	652	68.4%	98	87.4%	16	23.3%
Residual - Match	767	73.2%	753	70.5%	66	91.1%	19	31.9%
State total	24,732	69.6%	23,816	65.1%	3,931	85.3%	1,159	29.1%

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

[1] 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 and AIAN oversamples are not included in these rates.

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

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[1]
Total	65.1%
Number of adults in household	
1	70.2%
2	66.9%
3 or more	61.2%

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

[1] The prepaid cell, Cedars-Sinai 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 85.3 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 rates do not show much variation by sex. Note, child gender and age was missing for approximately 3% of sampled child cases, which results in a slightly higher child response rate for those cases where gender and age were provided compared with the total child response rate. *CHIS 2021 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[1]
Total	85.3%
Sex	
Male	85.0%
Female	86.7%
Number of children in household	
1	86.0%
2	83.7%
3	84.3%
4 or more	81.3%
Age group	
0-5	85.0%
6-11	85.6%

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

[1] The prepaid cell, Cedars-Sinai 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 29.1 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 5% of sampled teen cases, and age was missing for approximately 8% 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[1]
Total	29.1%
Sex	
Male	30.6%
Female	28.6%
Age group	
12-14	30.7%
15-17	30.7%

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

[1] The prepaid cell, Cedars-Sinai 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 (55.3%) when compared with cases where permission was not granted during the survey (6.6%).

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

	Initial Parent Permission[2]		Final Permission Granted[2]
Characteristic	Granted	Not Granted	
Total	55.3%	6.6%	29.1%
N[1]	1,831	2,168	1,971
Sex			
Male	56.3%	7.1%	30.6%
Female	54.6%	6.1%	28.6%
Age group			
12-14	57.0%	6.9%	30.7%
15-17	55.1%	7.6%	30.7%

Source: UCLA Center for Health Policy Research, 2021 California Health Interview Survey
[1]Ns are unweighted, but the response rates are weighted.

[2] The prepaid cell, Cedars-Sinai 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 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

		Interview type overall response rate (%)[1]			
	Stratum[2]	Household	Adult	Child	Adolescent
	State total	9.5%	8.9%	11.7%	4.0%
1	Los Angeles (8 SPAs)	8.5%	7.8%	10.9%	3.4%
2	San Diego (6 HSRs)	10.2%	9.6%	12.5%	4.2%
3	Orange	9.4%	9.0%	11.4%	3.6%
4	Santa Clara	11.2%	10.6%	14.2%	3.8%
5	San Bernardino	7.8%	7.3%	10.0%	3.1%
6	Riverside	8.2%	7.7%	10.5%	3.7%
7	Alameda	11.7%	11.3%	14.0%	5.2%
8	Sacramento	10.5%	10.1%	12.2%	4.0%
9	Contra Costa	10.5%	10.2%	13.2%	5.4%
10	Fresno	7.3%	6.5%	8.8%	2.9%
11	San Francisco	11.7%	11.0%	13.9%	4.0%
12	Ventura	11.2%	10.2%	13.3%	4.2%
13	San Mateo	11.5%	10.7%	13.0%	3.9%
14	Kern	7.2%	6.7%	9.2%	3.8%
15	San Joaquin	7.0%	6.8%	7.9%	2.6%
16	Sonoma	12.2%	11.6%	15.3%	5.7%
17	Stanislaus	7.8%	7.4%	10.7%	2.9%
18	Santa Barbara	11.3%	10.7%	13.2%	5.1%
19	Solano	9.9%	9.4%	11.5%	4.9%
20	Tulare	7.4%	6.8%	9.0%	2.2%
21	Santa Cruz	12.4%	11.8%	14.8%	7.3%
22	Marin	14.6%	13.6%	14.9%	8.0%
23	San Luis Obispo	16.6%	15.2%	17.0%	6.8%
24	Placer	11.6%	10.2%	13.9%	5.1%
25	Merced	6.3%	5.8%	7.7%	3.8%
26	Butte	11.5%	11.0%	15.0%	6.6%
27	Shasta	10.2%	10.0%	11.4%	5.6%
28	Yolo	14.3%	13.7%	16.1%	8.5%
29	El Dorado	11.4%	10.9%	13.7%	4.6%
30	Imperial	6.2%	5.8%	8.4%	3.1%
31	Napa	10.4%	9.8%	12.7%	3.9%
32	Kings	5.7%	5.3%	7.6%	3.0%
33	Madera	6.3%	5.8%	7.0%	2.8%
34	Monterey	7.9%	7.6%	10.4%	3.1%
35	Humboldt	12.8%	12.5%	15.7%	4.6%
36	Nevada	12.6%	11.9%	14.3%	4.3%
37	Mendocino	12.4%	11.9%	14.4%	3.5%
38	Sutter	7.1%	6.5%	8.2%	2.7%
39	Yuba	6.6%	6.2%	9.0%	3.6%

(continued)

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

Stratum[2]		Interview type overall response rate (%)[1]			
		Household	Adult	Child	Adolescent
40	Lake	9.4%	9.5%	12.4%	5.2%
41	San Benito	7.9%	7.6%	9.0%	3.2%
42	Tehama, etc.	8.0%	7.3%	9.3%	2.6%
43	Del Norte, etc.	11.9%	10.7%	14.3%	6.9%
44	Tuolumne, etc.	10.1%	9.8%	12.8%	3.3%

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

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

[2] Stratum displayed is the stratum as each household was sampled.

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

Stratum[2]	Interview type overall response rate (%)[1]			
	Household	Adult	Child	Adolescent
Vietnamese flag	10.6%	10.1%	12.9%	3.8%
Korean flag	13.1%	12.5%	15.8%	5.2%
Model Asian Language Interview	10.1%	9.6%	12.2%	3.9%
Model Spanish-language interview	5.6%	5.3%	7.7%	2.6%
Hispanic surname	5.4%	5.2%	6.4%	2.0%
Other high density non-English	9.6%	9.1%	11.8%	3.6%
Asian flag or model or both	11.1%	10.4%	14.2%	3.9%
High density AA	9.7%	9.4%	12.2%	3.6%
HH with children	10.7%	10.1%	12.9%	5.3%
Other 65+	16.8%	16.1%	19.0%	8.8%
Residual - No match	7.4%	7.2%	9.1%	2.4%
Residual - Match	10.1%	9.7%	12.5%	4.4%
State total	9.5%	8.9%	11.7%	4.0%

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

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

[2] 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 was 8.9 percent, 2.7 percentage points lower than the overall adult response rate in CHIS 2021.

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 in CHIS 2021, we utilized a Prepaid cell oversample and targeted 500 completes 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 sought to conduct an additional oversample of 125 adults 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 120 Block Groups that exceed the 60th percentile in AIAN density and also meet the 75% rural definition.

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 oversamples

Type of Sample	Screener	Household	Adult (given screened)	Child (given screened & permission)	Adolescent (given screened & permission)
Prepaid OS	3.1%	22.5%	21.2%	70.7%	6.5%
AIAN OS	2.2%	69.0%	57.3%	91.2%	7.3%
Cedars Sinai OS	4.5%	63.8%	61.6%	87.1%	22.5%

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

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

Type of Sample	Screener	Household	Adult	Child	Adolescent
Prepaid OS	3.1%	0.7%	0.7%	2.2%	0.2%
AIAN OS	2.2%	1.5%	1.3%	2.0%	0.2%
Cedars Sinai OS	4.5%	2.9%	2.8%	3.9%	1.0%

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

7. DISCUSSION OF RESPONSE RATES

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

7.1 Methods to Enhance Response Rates

Methods for enhancing response rates in CHIS 2021 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.
- **Mixed-mode design** –As with CHIS 2019-2020, CHIS 2021 employed a mixed-mode design with a mail push-to-web and a telephone non-response follow up. This approach involved sending a mail to all sampled addresses and encouraging them to participate in CHIS 2021 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 Methodology Series: Report 2 – Data Collection Methods* for a more detailed discussion).
- **Repeated call attempts:** The procedures implemented in CHIS 2021 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, a total of 12 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 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. 3,181 households completed the screener using a language other than English, accounting for about 9 percent of all the completed screener interviews in CHIS 2021. Spanish was the most frequently used language, with 65 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
		Spanish	Vietnamese	Korean	Chinese	Tagalog	Total	
Screener Interviews	32,842	2,076	221	290	577	17	3,181	36,023
Adult Interviews	22,132	981	122	199	377	5	1,684	23,816
Child Interviews	3,456	348	16	30	80	1	475	3,931
Teen Permission Interviews	1,727	200	10	13	25	0	248	1,975
Teen Interviews	1,134	20		1	4		25	1,159

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

[a] Includes completed and partial interviews.

7.2 Comparisons of Response Rates over the Cycles

As with CHIS 2019-2020, CHIS 2021 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, 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.

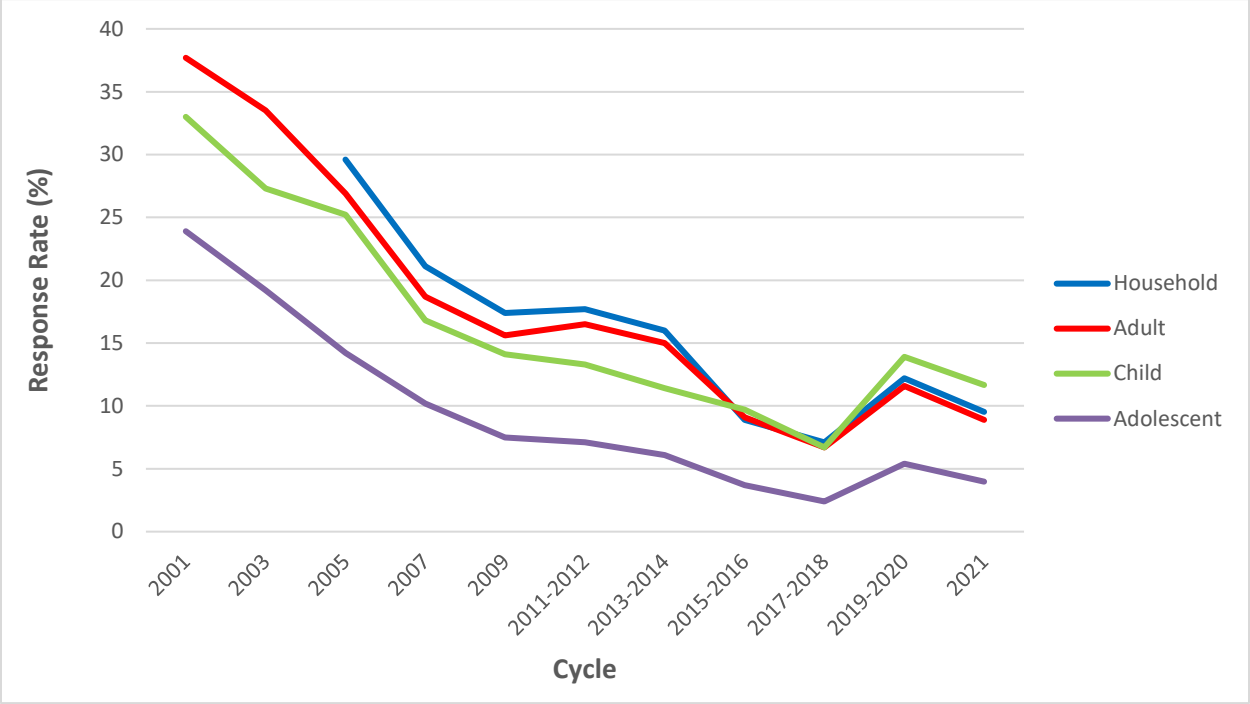
Table 7-2 summarizes the screener interview, extended interview, overall, and combined overall response rates by cycle for the CHIS samples. The same information is presented graphically in Figure 7-1. The state-level response rate had been showing a downward trend since CHIS 2015-2016, but the changes made to CHIS 2019-2020 yielded dramatic improvements. However, the response rates in 2021 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 the adult response rate was 8.9 percent, 2.7 points lower than CHIS 2019-2020. The child response rate in 2021 was 11.7 percent, 2.2 points lower than the rate in CHIS 2019-2020, and the teen response rates in 2021 was 4.0 percent, which was 1.4 points lower than the previous CHIS cycle.

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

Type	2009	2011-2012	2013-2014	2015-2016	2017-2018	2019-2020	2021
Household	17.4	17.7	16.0	8.9	4.0	12.2	9.5
Adult	15.6	16.5	15.0	9.1	3.4	11.6	8.9
Child	14.1	13.3	11.4	9.7	4.6	13.9	11.7
Adolescent	7.5	7.1	6.1	3.7	1.7	5.4	4.0

Source: UCLA Center for Health Policy Research, 2021 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.

9. REFERENCES

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