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# **2022-2023 Los Angeles County Health Survey (LACHS)**

## **Methodology Report**

Prepared for

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# Table of Contents

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Chapter	Page
Executive Summary .....	1
Sample Design .....	3
1.1 Objectives .....	3
1.2 Sampling Frame .....	3
1.3 Sample Size Determination.....	12
1.4 Within-Household Selection .....	14
Study Design .....	15
2.1 Proposed Design: One Stage Versus Two Stage.....	15
2.2 Hybrid Design .....	18
Instrumentation .....	20
3.1 Questionnaire Development.....	20
3.2 Screener.....	20
3.3 Adult Survey Content.....	21
3.4 Child Survey Content.....	26
3.5 Questionnaire Translation .....	29
Contact Materials .....	30
4.1 Pretest.....	30
4.2 Pilot Test 1.0 .....	30
4.3 Pilot Test 2.0 .....	30
4.4 Data Collection .....	31
Data Collection .....	33
5.1 Pretest.....	33
5.2 Pilot Test 1.0 .....	34
5.3 Pilot Test 2.0 .....	34
5.4 Experiments .....	35
5.5 Data Collection Schedule.....	37
5.6 CATI NRFU.....	38
5.7 CATI Survey Languages.....	38
5.8 Incentives Protocol.....	40
5.9 Study Contact Information.....	40

5.10	Incidents and Issues Protocol.....	41
5.11	Mail Receipting.....	42
5.12	Monitoring .....	43
5.13	Recontact Efforts .....	44
	Final Data Preparation .....	45
6.1	Data Processing and Cleaning.....	45
6.2	Imputation .....	45
6.3	Disposition Codes and Outcome Rates .....	45
6.3.1	Adult Survey Disposition Codes.....	46
6.3.2	Child Survey Disposition Codes .....	46
6.3.3	LACHS Targets and Completes.....	47
6.3.4	Adult Survey Timings .....	48
6.3.5	Child Survey Timings .....	48
	Weighting .....	49
	References .....	54

## Appendix

Appendix A.	CAWI Screener and Adult Survey specs (all languages)
Appendix B.	CATI Screener and Adult Survey specs (all languages)
Appendix C.	PAPI Screener
Appendix D.	CAWI Child Survey specs (all languages)
Appendix E.	CATI Child Survey specs (all languages)
Appendix F.	Pretest contact materials
Appendix G.	Pilot Test 1.0 contact materials
Appendix H.	Pilot Test 2.0 contact materials
Appendix I.	Main Data Collection contact materials
Appendix J.	Pretest report
Appendix K.	Pilot report

Appendices are available upon request.

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# Exhibits

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Number		Page
1.	2022-2023 LACHS Data Collection Summary .....	1
2.	Summary of Density Strata Definitions and Auxiliary Data Sources.....	5
3.	2022-2023 LACHS Sampling Strata Definitions and Counts .....	7
4.	Census Block Group Concentrations of Adults Who Speak an Asian Language and English Not Very Well Within Health Districts and Service Planning Areas of Los Angeles County .....	12
5.	2022-2023 LACHS Final Sampling Frame, Sample Size, and Target Respondent Counts by SPA.....	13
6.	One Stage and Two Stage Designs .....	17
7.	LACHS Contact Protocol .....	38
8.	2022-2023 LACHS Language of Completion – CATI Only.....	39
9.	2022-2023 LACHS Language of Completion – CATI and CAWI .....	39
10.	Screenshot of LACHS Respondent Website .....	41
11.	Screenshot From LACHS ATD Dashboard .....	43
12.	Household Screener Disposition Codes.....	46
13.	Adult Survey Disposition Codes .....	46
14.	Child Survey Disposition Codes.....	47
15.	Adult Survey and Child Survey Completes versus Minimum Targets Established Prior to Start of LACHS 2022-2023.....	48
16.	Overview of LACHS 2022-2023 Weighting Procedures .....	49
17.	Definition, Purpose, and Distributional Summary of LACHS 2022-2023 Analysis Weights .....	53

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# Executive Summary

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The Los Angeles County Health Survey (LACHS) was first commissioned by the Los Angeles County Department of Public Health (Public Health) in 1997 to provide information about the health of Los Angeles County residents and to understand the disparities for different groups driven by inequities. Between 1997 and 2018, there were eight iterations of LACHS using a random-digit-dial (RDD) methodology to conduct telephone surveys. Each of the eight cycles of LACHS was conducted via telephone interviews, and the design was adjusted to include cellular telephone numbers in 2011, resulting in a dual-frame RDD sample design (DFRDD). Like other DFRDD surveys over the last 10 years, LACHS has suffered from declining response rates, leading to increased costs and the threat of bias. The combined landline and cell phone response rates for LACHS declined from 15% for the Adult Survey and 16% for the Child Survey in 2015 to 10% for both Adult Survey and Child Survey in 2018. LACHS also faced underrepresentation by specific demographic groups, including ethnic minority residents, young adults, and residents with lower educational attainment.

The 2022-2023 LACHS is the first iteration of the survey to implement an address-based sample (ABS) design and to administer the survey as multimode. Computer-assisted web interviewing (CAWI) was the primary mode of collecting 2022-2023 LACHS data, and computer-assisted telephone interviewing (CATI) was used for nonresponse follow-up (NRFU) and as an option for respondents who called in to complete the survey over the telephone. The overall targets were 8,500-9,500 Adult Survey completes and 6,400-7,400 Child Survey completes. The Adult Survey was administered to a selected adult from an eligible household, while the Child Survey was administered to an adult with sufficient knowledge about the health of the selected child between the ages of 0 and 17 years. Surveys were completed in English, Spanish, Mandarin, Cantonese, Korean, and Vietnamese.

Prior to the start of data collection, a pretest and two pilot tests were conducted, which helped the project team refine the optimal design for primary data collection. Sampled addresses from the pretest and first Pilot Test were excluded from the sampling frame used to select addresses for the second Pilot Test and primary data collection. Start and end dates of these data collection milestones are provided in Exhibit 1 below.

## Exhibit 1. 2022-2023 LACHS Data Collection Summary

Key Activity	Start Date	End Date
Pretest	3/29/2022	4/18/2022
Pilot Test (1.0)	6/22/2022	9/8/2022
Pilot Test (2.0)	10/12/2022	12/17/2022
Data Collection	12/6/2022	6/25/2023

Excluding the pilot and first pretest, a total of 28,080 household screener surveys were completed from a sample of 109,847 addresses. Of these, 18,240 were screened into the survey with either an adult and/or child selected, while 9,840 were screened out. The screener response rate was 19.7%, as calculated per American Association of Public Opinion Research (AAPOR) Response Rate 3 (AAPOR, 2023).

A total of 9,372 Adult Survey completes were obtained from 11,413 adults sampled following a completed screener, for a conditional response rate of 82.1%, and combined response rate of 16.2% (product of screener response rate and Adult Survey response rate). A total of 7,391 Child Survey completes were obtained from a starting sample of 10,521 children sampled following a completed screener, for a conditional response rate of 70.2% and a combined response rate of 13.9%. More details about these rates and other sample dispositions are provided in Section 6.3.

This report describes the methodology and data collection protocol used to administer the 2022-2023 LACHS. Section 1 discusses the sample design, including the objectives, sample size determination, and within-household selection. Section 2 discusses the study design, including the original One Stage and Two Stage designs, and the Hybrid design ultimately used to administer the 2022-2023 LACHS. Section 3 discusses Instrumentation, including the questionnaire development process, and summarizes the screener, Adult Survey, and Child Survey content. Section 4 reviews the contact materials used in each major data collection activity, including pretest, Pilot Test, and main data collection. Section 5 provides a comprehensive overview of data collection, including pretest, Pilot Test, and main data collection. This section also explains the two experiments conducted during data collection and the data collection schedule. Section 5 also summarizes all components of the data collection administration, including study contact information, incidents and issues protocol, mail receipting process, survey languages, and NRFU. Section 6 discusses data cleaning and data processing. Finally, Section 7 discusses weighting.

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# Sample Design

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## 1.1 Objectives

The primary objective of the 2022-2023 LACHS sample design was to collect data from a representative sample of Los Angeles County (LAC) residents to formulate unbiased population estimates as precisely as possible, while at the same time targeting minimum completes for a select number of population domains. Specifically, the sample design was originally crafted to target a total of 8,000–9,000 Adult Survey completes and a total of 6,000–7,000 Child Survey completes. Of these, the goal was to obtain no fewer than 500 Adult Survey completes and 500 Child Survey completes, respectively, in each of eight mutually exclusive and exhaustive Service Planning Areas (SPAs). Following consultation with Public Health, four additional domains of interest and associated targeted minimum numbers of completes are as follows:

1. Asian Language Speakers
  - a. 100 Adult Survey completes in each of Mandarin, Cantonese, and Vietnamese
  - b. 150 Adult Survey completes in Korean
2. American Indian or Alaska Native (AI/AN) Individuals
  - a. 150 Adult Survey completes
  - b. 150 Child Survey completes
3. Native Hawaiian or Pacific Islander (NHPI) Individuals
  - a. 150 Adult Survey completes
  - b. 150 Child Survey completes
4. Lesbian, Gay, Bisexual, Transgender, and Queer (LGBTQ) Individuals
  - a. 1,200 Adult Survey completes

In March 2023, RTI International and Public Health agreed to increase the target number of Adult Survey completes to 8,500–9,500 and Child Survey completes to 6,400–7,400. These increases, and a corresponding modest sample size increase, were pursued to improve the representation of respondents. Specifically, minimum targets were added for the following groups for the Adult Survey: (1) households below 200% of the Federal Poverty Level (N = 3,300), (2) Spanish language speakers (N = 500), and (3) Hispanic households (N = 3,150).

## 1.2 Sampling Frame

All eight iterations of LACHS fielded between 1997 and 2018 were interviewer-administered, random-digit-dial (RDD) telephone surveys. The 2022-2023 LACHS, marking the ninth in the series, is the first time that the survey has been fielded using an address-based sampling (ABS) frame (English et al., 2019). The 2022-2023 LACHS is also the first time that individuals have been given the opportunity to complete the survey in a self-administered CAWI mode.

A few noteworthy advantages of the ABS design and introduction of the CAWI mode are as follows:

1. Improved geographic precision for targeting residents of Service Planning Areas (SPAs) and Health Districts (HDs) by geocoding addresses prior to selection.
2. Increased response rate (Unangst et al., 2022), thereby reducing the risk of nonresponse bias (Biemer & Peytchev, 2013).
3. Reduced measurement error for questions on sensitive topics (Tourangeau & Smith, 1996).
4. Lower cost per complete (Unangst et al., 2022).

As described in <http://abs.rti.org/background>, RTI maintains an ABS frame in-house, which is derived from the United States Postal Services' (USPS's) Computerized Delivery Sequence (CDS) file. Information from private data sources like Acxiom® InfoBase™ (<https://www.acxiom.com/customer-data/infobase/>), L2 Consumer and Voter Files (<https://l2-data.com/our-data/>), and public sources from the U.S. Census Bureau are appended to increase the frame's utility. The ABS frame is updated monthly, and the 2022-2023 LACHS frame was built using the April 2022 version, the most recently available version prior to onset of the first of two pilot tests.

Note that a small portion of addresses on the CDS, and thus RTI's ABS frame, are flagged as drop point units (Amaya, 2017). Drop point units are addresses for which an apartment or unit designator is unavailable, where mail for multiple households is delivered to a single delivery point or receptacle referred to as a drop point. These addresses pose a challenge for mail contact surveys because units within the drop point cannot be uniquely identified. Fortunately, unlike other metropolitan areas in the United States such as Chicago, where upward of 14% of addresses are drop point units, fewer than 1% of addresses in LAC are drop point units. For this reason, we opted to exclude drop points from the 2022-2023 LACHS sampling frame.

Exhibit 2 documents the specific auxiliary data sources used to create density strata within the sampling frame, groupings of addresses believed to contain substantively large portions of individuals from one of the four domains of interest outlined in Section 1.1 above. For sources labeled Acxiom, L2 Consumer File, or L2 Voter File, the auxiliary variable is populated at the address level, where available. There is a non-negligible rate of missingness for these indicators. For sources derived from the Census Bureau, the auxiliary variable is populated for the larger geography as a whole—namely, the Census block group (CBG). Only Census data were utilized for identifying areas with potentially high concentrations of Asian language speakers. American Community Survey (ACS) data and 2020 Decennial Census data were assessed to determine whether meaningfully high concentrations of AI/AN or NHPI individuals in certain geographies could be identified. Unfortunately, we concluded that the Census Bureau's data sources were unlikely to be effective at oversampling these two population domains. CBG-level statistics from the ACS do not yield sufficiently high concentrations, and we were not confident in block-level statistics derived from the 2020 Decennial Census because of errors intentionally embedded to protect privacy at these more granular geographies. Moreover, given significant pandemic-related challenges in fielding both the 2020 Decennial Census and the 2020 ACS, we elected to use the 2019 vintage of the ACS 5-year file for the 2022-2023 LACHS sample design purposes.

Two independent strategies were used in concert to target 1,200 Adult Survey completes coming from individuals within the LGBTQ population domain. The first was based on subject matter experts



from Public Health and the Williams Institute at the UCLA School of Law, who suggested that higher concentrations of LGBTQ individuals reside within the West Hollywood and Long Beach areas of LAC. Addresses in these two areas are readily identifiable in RTI’s ABS frame, so this information was used to create density strata for oversampling purposes, as shown in Exhibit 2. The second strategy was to include an item in the household screener asking whether specific adults identify as a member of the LGBTQ community. As discussed below in Section 1.4, adults who answered affirmatively to this question were given a higher selection probability than those who did not.

**Exhibit 2. Summary of Density Strata Definitions and Auxiliary Data Sources**

<b>Population Domain</b>	<b>Density Stratum Description</b>	<b>Sources</b>	<b>Note(s)</b>
1. Asian Language Speakers	1. Possible Chinese Address and > 30% in CBG Speaking Asian Language and English Less Than Very Well	<ol style="list-style-type: none"> <li>1. L2 Consumer File flags for ethnicity/language</li> <li>2. L2 Voter File flags for ethnicity/language</li> <li>3. Acxiom flags for ethnicity/language and country of origin</li> <li>4. ACS 2019 5-year file for CBG-level language threshold</li> </ol>	<ul style="list-style-type: none"> <li>▪ Assigned if “yes” for any one of 7 address-level flags</li> <li>▪ Cantonese/Mandarin grouped together since not all auxiliary sources make distinction</li> </ul>
	2. Possible Korean Address and > 30% in CBG Speaking Asian Language and English Less Than Very Well	<ol style="list-style-type: none"> <li>1. L2 Consumer File flags for ethnicity/language</li> <li>2. L2 Voter File flags for ethnicity/language</li> <li>3. Acxiom flags for ethnicity/language and country of origin</li> <li>4. ACS 2019 5-year file for CBG-level language threshold</li> </ol>	<ul style="list-style-type: none"> <li>▪ Assigned if “yes” for any one of 7 address-level flags</li> </ul>
	3. Possible Vietnamese Address and > 30% in CBG Speaking Asian Language and English Less Than Very Well	<ol style="list-style-type: none"> <li>1. L2 Consumer File flags for ethnicity/language</li> <li>2. L2 Voter File flags for ethnicity/language</li> <li>3. Acxiom flags for ethnicity/language and country of origin</li> <li>4. ACS 2019 5-year file for CBG-level language threshold</li> </ol>	<ul style="list-style-type: none"> <li>▪ Assigned if “yes” for any one of 7 address-level flags</li> </ul>

(continued)

**Exhibit 2. Summary of Density Strata Definitions and Auxiliary Data Sources (continued)**

Population Domain	Density Stratum Description	Sources	Note(s)
	4. Other Addresses where > 30% in CBG Speaking Asian Language and English Less Than Very Well	1. ACS 2019 5-year file for CBG-level language threshold	<ul style="list-style-type: none"> <li>Catch-all for where no specific address-level Asian language flag is available, but where Asian language speakers are likely to reside</li> </ul>
2. American Indian or Alaska Native (AI/AN) Individuals	1. Possible AI/AN Address	<ol style="list-style-type: none"> <li>L2 Consumer File flags for ethnicity</li> <li>L2 Voter File flag for ethnicity</li> <li>Acxiom flag for ethnicity</li> <li>Acxiom flag for Inuktitut language</li> </ol>	<ul style="list-style-type: none"> <li>Assigned if “yes” for any one of 4 address-level flags</li> </ul>
3. Native Hawaiian or Pacific Islander (NHPI) Individuals	1. Possible NHPI Address	<ol style="list-style-type: none"> <li>L2 Consumer File flags for ethnicity/language (Samoan or Tongan)</li> <li>L2 Voter File flags for ethnicity</li> <li>Acxiom flags for ethnicity/language (Samoan or Tongan) and country of origin (e.g., Samoa, Tonga)</li> </ol>	<ul style="list-style-type: none"> <li>Assigned if “yes” for any one of 6 address-level flags.</li> </ul>
4. Lesbian, Gay, Bisexual, Transgender, and Queer (LGBTQ) Individuals	1. West Hollywood Address	1. HD definition and place name on ABS frame	<ul style="list-style-type: none"> <li>Addresses within Hollywood-Wilshire HD with place name of “West Hollywood”</li> </ul>
	2. Long Beach Address	1. HD definition from ABS frame	<ul style="list-style-type: none"> <li>Addresses in the Long Beach HD not already assigned to any of the other density strata</li> </ul>

A total of 3,512,217 addresses on the ABS frame were geocoded into 26 HDs, which are nested within one of 8 SPAs. Geocoding was originally based on HD shape files posted at <https://egis-lacounty.hub.arcgis.com/datasets/health-districts-2012/explore?location=33.898773%2C-117.511897%2C9.02>. Public Health took the latitude/longitude coordinates of the addresses of complete respondents and updated geocodes for a small number of cases based on updated HD boundaries.

Exhibit 3 provides an accounting of all 3,512,217 addresses based on HD and density strata. In all, the 26 distinct HDs crossed with the 9 density strata definitions—the 8 defined in Table 1 plus the catch-all labeled “All Other”—make for 107 mutually exclusive and exhaustive sampling strata. Technically, an address could qualify for two or more density stratum definitions (e.g., possible Korean

speaker living in West Hollywood). In these situations, the order of assignment was prioritized as follows: (1) NHPI; (2) AI/AN; (3) Korean speaker; (4) Vietnamese speaker; (4) Chinese speaker; (5) Other high Asian language speaker concentration CBG; and (6) Possible high LGBTQ concentration.

Exhibit 3 shows how many of the sampling strata are small, particularly those based on NHPI or AI/AN flags, and that not all density strata appear within an HD. Moreover, distributions can vary markedly across HD/SPA boundaries. Exhibit 4 visualizes this for concentrations of Asian language speakers, showing how the largest concentrations appear in CBGs within just a few HDs (Alhambra, Foothill, and Pomona) situated within the San Gabriel SPA.

### Exhibit 3. 2022-2023 LACHS Sampling Strata Definitions and Counts

Service Planning Area (SPA)	Health District (HD)	Density Stratum Description	Address Count
Antelope Valley	Antelope Valley	Possible NHPI	192
Antelope Valley	Antelope Valley	Possible AI/AN	238
Antelope Valley	Antelope Valley	All Other	125,648
		<b>Subtotal - Antelope Valley</b>	<b>126,078</b>
San Fernando	East Valley	Possible NHPI	133
San Fernando	East Valley	Possible AI/AN	166
San Fernando	East Valley	All Other	152,327
San Fernando	Glendale	Possible NHPI	134
San Fernando	Glendale	Possible AI/AN	213
San Fernando	Glendale	All Other	138,613
San Fernando	San Fernando	Possible NHPI	213
San Fernando	San Fernando	Possible AI/AN	272
San Fernando	San Fernando	All Other	165,685
San Fernando	West Valley	Possible NHPI	357
San Fernando	West Valley	Possible AI/AN	341
San Fernando	West Valley	All Other	320,143
		<b>Subtotal - San Fernando</b>	<b>778,597</b>
San Gabriel	Alhambra	Possible NHPI	120
San Gabriel	Alhambra	Possible AI/AN	142
San Gabriel	Alhambra	Possible Korean	2,026

(continued)

**Exhibit 3. 2022-2023 LACHS Sampling Strata Definitions and Counts (continued)**

<b>Service Planning Area (SPA)</b>	<b>Health District (HD)</b>	<b>Density Stratum Description</b>	<b>Address Count</b>
San Gabriel	Alhambra	Possible Vietnamese	5,444
San Gabriel	Alhambra	Possible Chinese	7,854
San Gabriel	Alhambra	Possible High Asian Language Concentration Area	10,840
San Gabriel	Alhambra	All Other	90,186
San Gabriel	El Monte	Possible NHPI	166
San Gabriel	El Monte	Possible AI/AN	150
San Gabriel	El Monte	Possible Korean	217
San Gabriel	El Monte	Possible Vietnamese	393
San Gabriel	El Monte	Possible Chinese	746
San Gabriel	El Monte	Possible High Asian Language Concentration Area	1,666
San Gabriel	El Monte	All Other	109,031
San Gabriel	Foothill	Possible NHPI	130
San Gabriel	Foothill	Possible AI/AN	181
San Gabriel	Foothill	Possible Korean	67
San Gabriel	Foothill	Possible Vietnamese	54
San Gabriel	Foothill	Possible Chinese	368
San Gabriel	Foothill	Possible High Asian Language Concentration Area	293
San Gabriel	Foothill	All Other	104,996
San Gabriel	Pasadena	Possible NHPI	48
San Gabriel	Pasadena	Possible AI/AN	78
San Gabriel	Pasadena	All Other	61,314
San Gabriel	Pomona	Possible NHPI	283
San Gabriel	Pomona	Possible AI/AN	256
San Gabriel	Pomona	Possible Korean	194
San Gabriel	Pomona	Possible Vietnamese	84

(continued)

**Exhibit 3. 2022-2023 LACHS Sampling Strata Definitions and Counts (continued)**

<b>Service Planning Area (SPA)</b>	<b>Health District (HD)</b>	<b>Density Stratum Description</b>	<b>Address Count</b>
San Gabriel	Pomona	Possible Chinese	512
San Gabriel	Pomona	Possible High Asian Language Concentration Area	607
San Gabriel	Pomona	All Other	167,163
		<i>Subtotal - San Gabriel</i>	565,609
Metro	Central	Possible NHPI	113
Metro	Central	Possible AI/AN	162
Metro	Central	Possible Korean	878
Metro	Central	Possible Vietnamese	236
Metro	Central	Possible Chinese	1,085
Metro	Central	Possible High Asian Language Concentration Area	3,407
Metro	Central	All Other	151,545
Metro	Hollywood-Wilshire	Possible NHPI	148
Metro	Hollywood-Wilshire	Possible AI/AN	224
Metro	Hollywood-Wilshire	Possible Korean	1,041
Metro	Hollywood-Wilshire	Possible Vietnamese	18
Metro	Hollywood-Wilshire	Possible Chinese	86
Metro	Hollywood-Wilshire	Possible High Asian Language Concentration Area	1,936
Metro	Hollywood-Wilshire	Possible High LGBTQ Concentration Area	25,632
Metro	Hollywood-Wilshire	All Other	216,323
Metro	Northeast	Possible NHPI	67
Metro	Northeast	Possible AI/AN	137
Metro	Northeast	Possible Korean	14

(continued)

### Exhibit 3. 2022-2023 LACHS Sampling Strata Definitions and Counts (continued)

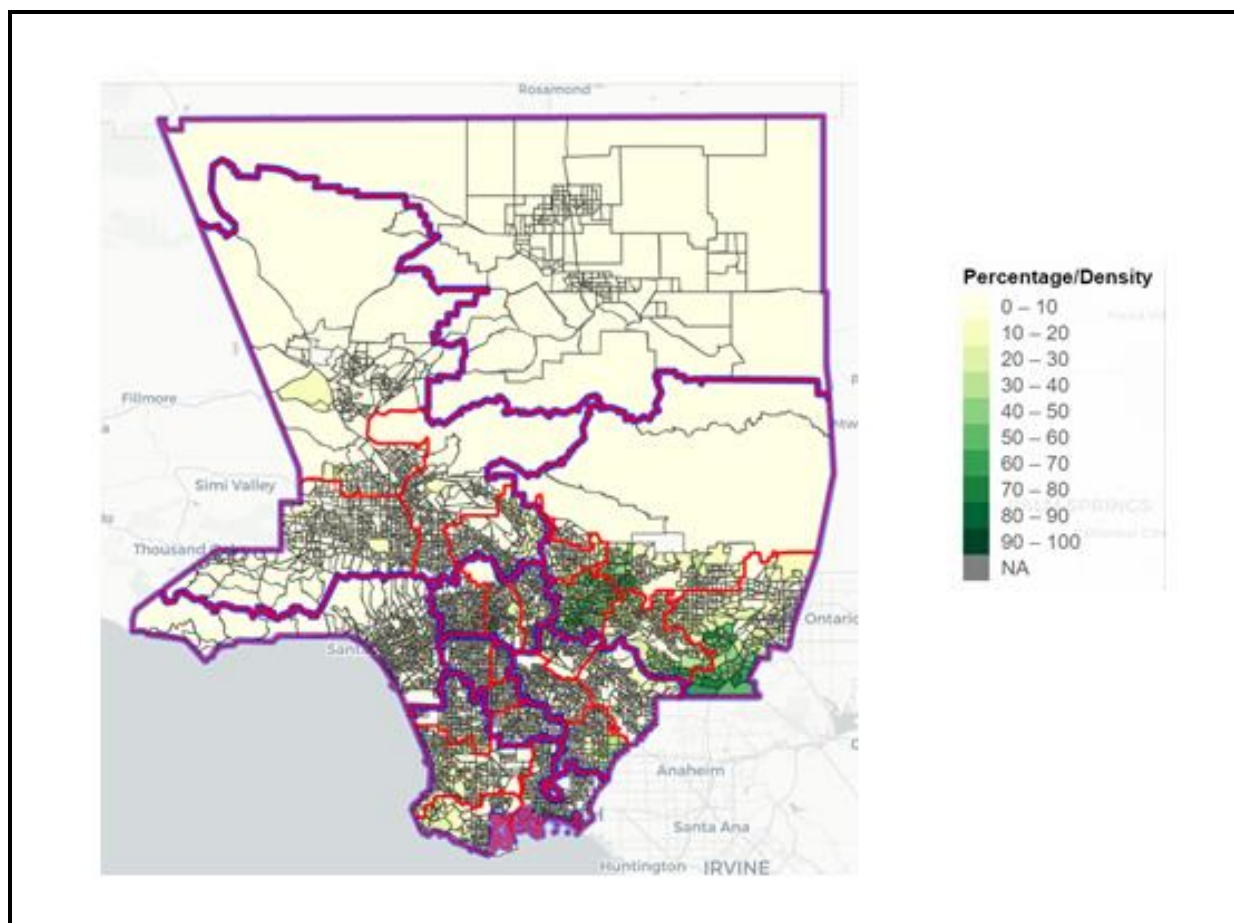
Service Planning Area (SPA)	Health District (HD)	Density Stratum Description	Address Count
Metro	Northeast	Possible Vietnamese	56
Metro	Northeast	Possible Chinese	52
Metro	Northeast	Possible High Asian Language Concentration Area	182
Metro	Northeast	All Other	92,905
		<b>Subtotal - Metro</b>	<b>496,247</b>
West	West	Possible NHPI	295
West	West	Possible AI/AN	395
West	West	All Other	321,946
		<b>Subtotal - West</b>	<b>322,636</b>
South	Compton	Possible NHPI	317
South	Compton	Possible AI/AN	80
South	Compton	All Other	67,272
South	South	Possible NHPI	50
South	South	Possible AI/AN	62
South	South	Other	47,463
South	Southeast	Possible NHPI	19
South	Southeast	Possible AI/AN	41
South	Southeast	All Other	39,339
South	Southwest	Possible NHPI	113
South	Southwest	Possible AI/AN	144
South	Southwest	All Other	127,554
		<b>Subtotal - South</b>	<b>282,454</b>
East	Bellflower	Possible NHPI	583
East	Bellflower	Possible AI/AN	182
East	Bellflower	All Other	108,820
East	East LA	Possible NHPI	47
East	East LA	Possible AI/AN	52

(continued)

**Exhibit 3. 2022-2023 LACHS Sampling Strata Definitions and Counts (continued)**

<b>Service Planning Area (SPA)</b>	<b>Health District (HD)</b>	<b>Density Stratum Description</b>	<b>Address Count</b>
East	East LA	All Other	54,555
East	San Antonio	Possible NHPI	124
East	San Antonio	Possible AI/AN	102
East	San Antonio	All Other	111,210
East	Whittier	Possible NHPI	155
East	Whittier	Possible AI/AN	136
East	Whittier	All Other	96,341
		<b><i>Subtotal - East</i></b>	<b>372,307</b>
South Bay	Harbor	Possible NHPI	240
South Bay	Harbor	Possible AI/AN	116
South Bay	Harbor	All Other	73,185
South Bay	Inglewood	Possible NHPI	533
South Bay	Inglewood	Possible AI/AN	162
South Bay	Inglewood	All Other	140,343
South Bay	Long Beach	Possible NHPI	1,113
South Bay	Long Beach	Possible AI/AN	323
South Bay	Long Beach	Possible High LGBTQ Concentration Area	176,267
South Bay	Torrance	Possible NHPI	961
South Bay	Torrance	Possible AI/AN	247
South Bay	Torrance	All Other	174,799
		<b><i>Subtotal - South Bay</i></b>	<b>568,289</b>
<b><i>Total - All SPAs</i></b>			<b>3,512,217</b>

#### Exhibit 4. Census Block Group Concentrations of Adults Who Speak an Asian Language and English Not Very Well Within Health Districts and Service Planning Areas of Los Angeles County



### 1.3 Sample Size Determination

RTI originally anticipated releasing a total sample of 103,768 addresses across the pilot and two subsequent releases to achieve the targets of 8,000-9,000 and 6,000-7,000 Adult and Child Survey completes, respectively. The overall sample was allocated across the strata defined above in Exhibit 3 by factoring in differential expected yield rates across the county. This was done by merging information from the publicly available tract-level Census Bureau Planning Database (PDB). As described in Akers and Alnwick (2001), the first iteration of the PDB was used as a resource for the 2000 Decennial Census—in particular, for identifying areas where enumerators might experience barriers or where special procedures need to be applied. It consisted of a range of housing, demographic, and socioeconomic variables from the 1990 Decennial Census. The latest version available, from 2021 and accessible via <https://www.census.gov/topics/research/guidance/planning-databases.html>, contains hundreds of variables that can be used for myriad purposes. Some of these variables are derived from the 2010 Decennial Census, and others from the 2019 American Community Survey (ACS) 5-year data file. A variable pertinent to 2022-2023 LACHS is the tract-level ACS self-response rate. This captured the rate at which



eligible housing units responded during the first phase of ACS data collection, which involves a sequential series of mail contacts inviting households to complete the survey by Web, paper, or Telephone Questionnaire Assistance.

Given the overall expected yield rate (EYR), we defined the probability address  $i$  results in a survey complete as  $P_i = EYR * (ACS\_RR_i / ACS\_RR)$ , where  $ACS\_RR_i$  is the ACS self-response rate for the  $i^{th}$  household (depending on tract) and  $ACS\_RR$  is the overall ACS self-response rate for the entire study area. In this way, probabilities are inflated for addresses in tracts where the ACS self-response rate exceeds  $ACS\_RR$ , and vice versa. For any geography of interest or aggregations thereof (e.g., sampling strata defined in Exhibit 2), the EYR was found by summing the  $P_i$  values from the sampling frame and dividing by the number of addresses. The initial sample size required was then determined by multiplying the target number of completes in the geography/domain by the inverse of this EYR. For the second sample release, empirical yield rates observed in the first release (i.e., not those derived from the PDB) served as inputs for a subsequent (re)allocation effort undertaken in advance of the second sample release.

As mentioned above, in advance of the second sample release, RTI and Public Health agreed to raise the target completes for the Adult Survey and Child Survey to 8,500-9,500 and 6,400-7,400, respectively, which resulted in a slight increase in the sample size, from 103,768 to 109,487. Additional (sub)strata based on Census Bureau data on Federal Poverty Level thresholds and rates of Hispanic residents were formed to increase representation of both Hispanics and residents of a lower socioeconomic status. This raised the number of design strata from 107 to 423. Note that the reallocation also sought to ensure a minimum of 500 Child Survey completes within each SPA, as some were running below expectations, primarily because of variable rates of children present in households across SPA boundaries.

Both sample allocations, that in advance of Release 1 (and pilot) and that in advance of Release 2, were produced using SAS’s PROC OPTMODEL (SAS Institute, 2014). Our criteria included the aforementioned targets and assumed yield rates while minimizing the estimated precision loss because of unequal selection probabilities (Kish, 1992), colloquially referred to as the unequal weighting effect (UWE). A summary of the ultimate sample sizes and target completes by SPA is given below in Exhibit 5.

**Exhibit 5. 2022-2023 LACHS Final Sampling Frame, Sample Size, and Target Respondent Counts by SPA**

Service Planning Area (SPA)	Count of Addresses on Frame	Percent of Addresses on Frame	Addresses Sampled	Percent of Sampled Addresses	Target Respondent Count to Adult Survey	Target Respondent Count to Child Survey	Target Overall Respondent Count
Antelope Valley	126,078	3.6	6,760	6.2	557	662	1,219
San Fernando	778,597	22.2	9,845	9.0	1,295	672	1,966
San Gabriel	565,609	16.1	22,599	20.6	1,665	1,647	3,312
Metro	496,247	14.1	13,494	12.3	1,125	700	1,825
West	322,636	9.2	12,838	11.7	1,329	550	1,879
South	282,454	8.0	16,332	14.9	1,018	1,053	2,071

<b>East</b>	372,307	10.6	20,258	18.4	964	1,526	2,490
<b>South Bay</b>	568,289	16.2	7,721	7.0	1,147	568	1,715
<b>Totals</b>	3,512,217		109,847		9,100	7,378	16,478

## 1.4 Within-Household Selection

Selection of an individual within a household in a self-administered survey (i.e., without an interviewer present) is often based on a pseudo-randomization technique such as the next/last birthday method (Olson et al., 2014). In an effort to maximize the chances of hitting target completes for the key domains outlined above, households were first classified upon completing the screener by the following factors: composition of household (whether 1 or 2+ adults and 0, 1, or 2+ children), and whether any of these individuals identified as LGBTQ, NHPI, AI/AN, Black, or Hispanic, in that order. In all, 168 combinations were possible, and each was assigned a prescribed probability of selecting one adult and/or one child. These probabilities were updated eight times during data collection to slow the rate of completes of overrepresented groups and, conversely, increase the rate of completes for underrepresented groups.

As discussed in Section 6, this within-household selection procedure resulted in roughly 30% of households being screened out of the survey, most often because we were on track to meet adult targets yet there were no children present to sample for the Child Survey. A weighting adjustment based on the given selection probability at the time of screener completion was made to households screened in to either the Adult and/or Child Survey to compensate for households that were screened out. See Section 7 for more details on the multistep weighting procedures employed.

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# Study Design

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RTI proposed experimenting with two designs using the first release of sample, as shown in Exhibit 6. The first design, referred to as the One Stage design, featured a simple contact protocol of up to four mailings to encourage respondents to complete the web survey. If respondents were eligible, they could screen into the survey and complete the Adult Survey. If they completed the Adult Survey and the household was eligible to complete the Child Survey, they could continue into and complete that survey as an adult proxy. The second design, referred to as the Two Stage design, featured a separate screening stage (stage one) to allow control of the sample invited to complete the actual survey (stage two). The first four mailings invited respondents to complete a screener, which included primarily demographic questions providing data to select one adult from all adults in a household or to select one child from all children in a household. A second set of four mailings invited the selected adult for the Adult Survey or the adult proxy for the Child Survey to complete the survey.

Given schedule constraints, RTI conducted the One Stage design for the pretest and the Two Stage design for the first Pilot Test. Early into the Pilot Test, it became clear that there was a low response to the Two Stage design that would not meet the overall adult and child data collection targets. The One Stage design, while obtaining a better response, would not have been effective in meeting all the demographic targets. Therefore, the team redesigned the study and the actual study design used for the 2022-2023 LACHS was a “hybrid” design, which combined elements of both the One and Two Stage designs. This section provides a summary of the originally proposed designs and the final Hybrid design.

## 2.1 Proposed Design: One Stage Versus Two Stage

The One Stage design invited sampled members to complete the survey, which started with a screener that flowed immediately into the Adult Survey if the screener respondent was selected for the survey. Each sampled member received up to four mailings with instructions for accessing the web survey:

1. Invitation letter with a \$2 bill
2. Reminder self-mailer postcard 1
3. Reminder letter
4. Reminder self-mailer postcard 2

With the One Stage design, the project team could not control the number of Child Survey completes collected because Child Survey completes would only flow from eligible respondents who completed the Adult Survey first.

The Two Stage design featured two discrete stages for collecting data. Stage one invited sampled members to complete a short screener survey. The screener included a household roster and collected phone numbers and email addresses for the purpose of contacting the selected respondent. Each sampled

member received up to four mailings with instructions for accessing the screener survey by web; the third mailing also included a paper screener:

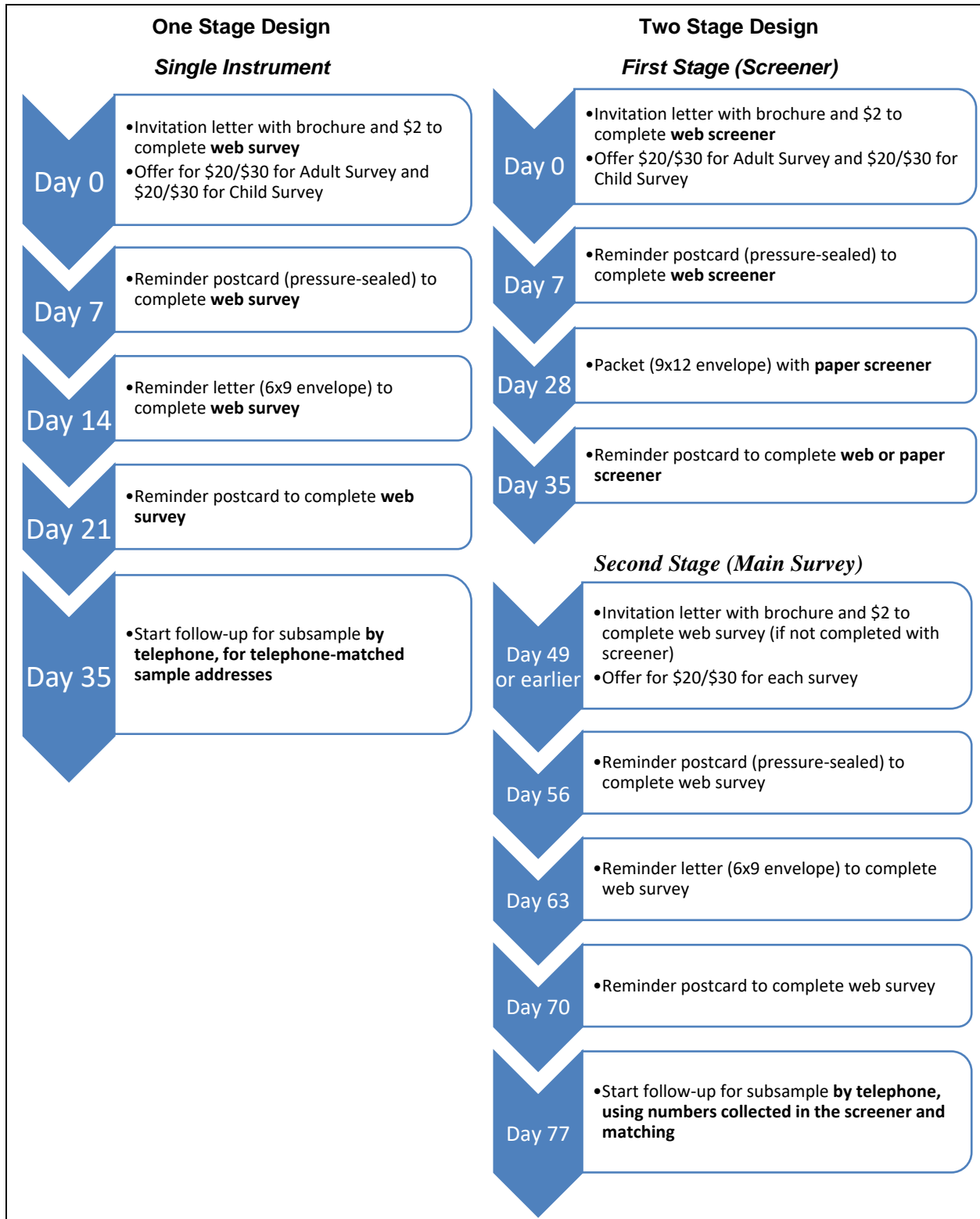
1. Invitation letter with a \$2 bill
2. Reminder self-mailer postcard 1
3. Reminder letter with paper screener
4. Reminder self-mailer postcard 2

After receiving responses to the screener, the project team reviewed the data and selected a respondent from each responding household. That person received another set of up to four mailings as part of stage two, which invited them to complete the Adult Survey or the Child Survey by proxy:

1. Invitation letter with a \$2 bill
2. Reminder self-mailer postcard 1
3. Reminder letter
4. Reminder self-mailer postcard 2

The Two Stage design allowed for more targeted sampling of Adult Survey and Child Survey respondents to achieve a total sample more closely aligned with geographic and demographic targets. However, the number of respondents who could be selected was limited to the number of completed screeners. Additionally, if incomplete contact information was received, the total number of respondents to select from was reduced. Another disadvantage to this design was the time between the stages. There could be several weeks between when a screener survey was received and when the selected respondent was contacted to complete the actual survey, which could significantly lower the response rate.

## Exhibit 6. One Stage and Two Stage Designs



## 2.2 Hybrid Design

The final study design used to collect 2022-2023 LACHS data was a hybrid of the original One Stage and Two Stage designs. The greatest advantage of the One Stage design was the efficient contact protocol, which invited respondents to complete the survey without a separate, discrete screening stage like in the Two Stage design. The greatest advantage of the Two Stage design was retaining the ability to select the respondent based on demographic data collected from the household and to select the respondent for the Adult Survey and/or Child Survey.

RTI factored the following considerations into redesigning data collection:

- Data quality, specifically the overall response rate and ability to meet demographic targets
- Respondent burden, such as the steps required to complete the survey and respondent selection burden
- Budget, including printing and telephone interviewing costs, and labor costs associated with additional work required to modify the instrument and processes in place
- Schedule, including the time required to implement design changes, timings between mailings and sample releases, and time needed for final data processing and weighting

The Hybrid design effectively removed the gap between stage one and stage two of the Two Stage design and reduced the number of potential respondents lost between initial contact and invitation to complete the actual survey. RTI revised the screener section of the survey program to collect sufficient demographic information to automate the selection of a respondent based on a combination of that information and a series of selection probabilities set by RTI statisticians. The Hybrid design retained the intention to push respondents to complete the web version of the survey, which was programmed into Voxco. No one could access the Voxco survey without a valid PIN that matched RTI's sample file. Each PIN was unique to a sampled record and could not be used to complete the survey more than once.

The Hybrid design maintained up to four mail contacts, including an invitation letter then reminder self-mailer postcards for the second and fourth mailings. The third mailing includes a reminder letter to 80% of the sample and a paper-and-pencil interview (PAPI) screener for 20% of the sample. The PAPI screener used in the Hybrid design was redesigned from the original PAPI screener, which was a double-sided screener with 26 questions, into a simplified screener with 4 questions. The substantially shortened length of the modified screener allowed for the screener questions to be translated into each of the five non-English languages and still fit onto a double-sided single page. In the first sample release (including pilot), subsample that received the PAPI screener was assigned completely at random. However, in the second sample release, American Community Survey (ACS) data were used to oversample households in areas with a lower socioeconomic status; these oversampled households received the PAPI screener. This change addressed the concern that web access could be a barrier to completing the survey for people of lower socioeconomic backgrounds and the concern that a lengthy and invasive screener survey could reduce total response.

CATI was available as a supplemental mode in two ways. First, a telephone number unique to LACHS was included in the mailings. At any point in the protocol, respondents could call in to complete the survey over the phone. Second, the CATI NRFU stage was an outbound CATI effort to 20% of the nonrespondent sample. Sampled cases who had received the PAPI screener packet were prioritized. RTI

worked with Marketing Systems Group (MSG) to obtain up to three telephone numbers associated with the address. Each number was assigned an accuracy score by MSG, and the number with the highest accuracy score was retained. Approximately 65% of addresses were matched to a phone number, of which 15% were landline numbers and the remaining 85% cellular numbers.

Contact Protocol:

Day 0 – Invitation letter

Day 7 – Reminder self-mailer 1

Day 35 – Reminder letter to 80% of sample and PAPI screener packet to 20% of sample

Day 42 – Reminder self-mailer 2

Day 56 – CATI NRFU

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# ***Instrumentation***

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## **3.1 Questionnaire Development**

The 2022-2023 LACHS Adult Survey and Child Survey draft questionnaires were provided by Public Health to RTI in September 2021. Public Health had engaged in iterative questionnaire development independently, in consultation with several programs within Public Health who wished to collect data through LACHS. RTI and Public Health worked together to finalize the survey questionnaires. When RTI and Public Health finalized the drafts, the Adult Survey was in its 13th version and the Child Survey was in its 11th version.

Using the draft questionnaires, RTI created technical specification documents for Voxco CAWI and CATI administration. Particular attention was paid to redesigning the questionnaires for self-administration via web, since this was the first time a web version of LACHS was offered. The CAWI version was largely based on the original CATI questionnaire, and every attempt was made to retain the original wording of LACHS questions, since most of them have been asked in previous cycles, and RTI wanted to allow for continuity of analyzing trends over time. Pronouns were adjusted where appropriate, to match conventions of questions and responses in a standard web survey. Interviewer notes that would have been read to a respondent over the telephone were translated into notes or definitions presented to the respondent on the same screen as the relevant question. Transition text that would have been read by an interviewer between question topics was also revised for someone reading the text to themselves.

Whenever possible, RTI retained a question's variable name from previous waves of LACHS. Because the Adult Survey and Child Survey were built into the same, single program, whenever questions were the same between both surveys, the Child Survey version included a "c" in the prefix of the variable name to distinguish it as the Child Survey version of the question and to avoid duplicated variable names in the program and dataset.

## **3.2 Screener**

Like in previous waves of LACHS, respondents had to be LAC residents and 18 years of age or older to be eligible for either the Adult or Child Survey. Previous versions of LACHS included several screening questions to determine a respondent's geographic eligibility; this was not necessary for the 2022-2023 LACHS. Instead, since the sample frame consisted of addresses, the 2022-2023 LACHS screener included a single question asking the respondent to confirm that they lived at the sampled address and a question to confirm age eligibility. Follow-up questions were included to either transition the survey to a qualified, age-eligible adult or to terminate the survey if there was no qualified adult resident in the household.

The screener also included several demographic questions to determine eligibility to complete the survey. First, up to four adults were enumerated by the respondent. Initials of each adult were collected. Then the respondent was asked for demographic attributes, including their age, race and ethnicity, and



whether they belonged to the LGBTQ community. Finally, the respondent was asked to enumerate the number of children in the household, up to a total of four. RTI created a series of selection algorithms with probabilities based on targets by race and ethnicity and by membership in the LGBTQ community and overall complete targets by Adult Survey and Child Survey. These selection algorithms were applied in the Voxco program and, based on the demographic data collected in the screener, a respondent was either screened out or selected to complete either the Adult Survey and/or Child Survey.

All respondents invited to complete the survey received the same version of the web screener. In addition to the web-based screener, 20% of the sample identified as residing in high density Hispanic and/or low-income areas received an abridged paper version of the screener with questions in each of the LACHS languages: English, Spanish, Vietnamese, Korean, Mandarin, and Cantonese. The paper screener asked for the respondent's name or initials, their phone number, and number of adults and children living at that household. This simplified version of the screener was intended to encourage participation by respondents who did not want to participate by web or who found the longer web-based screener intrusive.

### **3.3 Adult Survey Content**

As with previous waves of LACHS, the Adult Survey included eight subsample modules, which were assigned randomly to each Adult Survey respondent and focused on different topic areas. The subsample questions were programmed to follow main Adult Survey questions of the same topic and only administered to respondents assigned that subsample.

- Subsample 1: Fast food, water fluoridation, and gun rights
  - Total of 3 questions
- Subsample 2: Caregiving
  - Up to 5 questions in total
- Subsample 3: Traffic safety, emergency preparedness
  - Up to 6 questions in total
- Subsample 4: E-cigarette policy and secondhand smoke
  - Up to 9 questions in total
- Subsample 5: Tobacco policy and tobacco secondhand smoke
  - Up to 9 questions in total
- Subsample 6: Tobacco policy
  - Total of 10 questions
- Subsample 7: Marijuana
  - Up to 5 questions in total
- Subsample 8: Climate change
  - Total of 3 questions

Following is an outline of the questionnaire content for the 2022-2023 LACHS Adult Survey:

- Health Status
  - This section asks questions about the respondent's general health, including overall, physical, and mental health. The section concludes with a question about how many days in the past month the respondent's poor physical or mental health kept them from engaging in their usual activities.
- About You

- This section asks a few basic demographic questions about the respondent, including gender identity, sex at birth, and age.
- Nutrition
  - This section asks questions about the respondent’s food-related behavior. The first question in the section asks for the number of servings of fruit and vegetables the respondent ate yesterday. Another question asks how hard it was for the respondent to regularly eat healthy foods in the last year. The respondent is then asked about a series of reasons people do not eat healthier foods. The main section ends with a question about how many sodas the respondent drinks on an average day. Two questions at the end of this section are only asked if the respondent was assigned subsample 1 and pertain to consumption of fast food and water fluoridation.
- Health Conditions
  - This section asks about other aspects of the respondent’s overall health, including their height and weight. It includes questions about whether the respondent has ever been diagnosed with heart disease, diabetes, high blood pressure, high cholesterol, depression, or asthma. Follow-up questions are related to depression diagnosis and whether the respondent is receiving treatment for depression, including medication and counseling. There are also questions related to asthma, including whether the respondent still has it and whether they have experienced any asthma attacks in the past year.
- Mental Health
  - This section includes various items to determine the respondent’s mental health and level of social isolation.
- Health Impairments
  - This section asks the respondent about whether they have various health impairments, including deafness, blindness, cognitive impairment, and mobility issues. Other questions ask about experience with falls and whether the respondent ever experienced an injury from a fall.
- Employment
  - This section includes a single question about the respondent’s current employment status.
- Caregiving
  - Only for respondents assigned to subsample 2, this section asks the respondent about care they provide to a friend or family member. Several follow-up questions ask about who the person is in relation to the respondent and whether the person lives with the respondent. The section ends with a question about what support services the respondent needs as a caregiver that they are not currently receiving.
- Physical Activity
  - This section asks questions about the respondent’s physical activity, including vigorous and moderate exercise, how often the respondent engages in physical activity, and for how long each activity lasts. The final question in the section asks for how many days the respondent engages in strength-training activities.
- Traffic Safety
  - Only for respondents assigned to subsample 3, this section asks the respondent a hypothetical question about a traffic safety project to slow traffic and how many total minutes the respondent would be willing to add to their commute to accommodate this change. Two questions ask about the respondent’s driving habits, including how many days in the past month they drove and whether they have ever texted while driving.
- Climate Change
  - This section includes several questions about various aspects of climate change, including whether the respondent has ever experienced any potentially hazardous weather-related events, whether the physical health or mental health of anyone in the respondent’s household

- was impacted, and whether anyone required medical attention or treatment because of those events. The final question for all respondents in this section asks if they would want to have a free tree planted in front of their residence. The remaining questions in this section were asked only of people assigned subsample 8. The first question asks whether the issue of climate change stresses the respondent mentally. The final questions ask for reasons the respondent would not want a free tree planted in front of their residence and what public investments the respondent would support to help neighborhoods adapt to heat waves.
- **Emergency Preparedness**
    - Only for respondents assigned to subsample 3, this section asks the respondent a few questions about their household’s and their community’s preparedness for large-scale disasters or emergencies, and their confidence in the county’s public health system to respond effectively to protect the public’s health.
  - **Health Insurance**
    - This section includes several questions aimed at identifying the type of health insurance that the respondent has, including Medicare, Medi-Cal or Medicaid, insurance through the respondent’s or family member’s employer, Covered California, Indian Health Service, military insurance, or other policy directly from an insurance provider.
  - **Access to Care**
    - This section includes questions about the respondent’s access to various types of care. The first question asks the respondent about ease of getting care when they needed it. The next two questions ask about how long ago the respondent visited a dentist and how many of their permanent teeth have been removed because of decay or disease. The final questions in the section ask if there is one place that the respondent goes to most often when they are sick.
  - **Cancer Screening**
    - This section asks the respondent whether they have been screened for breast cancer and cervical cancer and how long ago the respondent has had one of the associated screening exams. Another question asks if the respondent has had a hysterectomy.
  - **Vaccinations**
    - This section asks the respondent if they have received vaccinations for flu, pneumonia, and human papilloma virus (HPV). One follow-up question asks about whether the respondent received two or more HPV vaccines.
  - **E-Cigarettes**
    - This section includes several questions on the respondent’s usage of e-cigarettes. The first set of questions ask if the respondent has ever used an e-cigarette and for how many days they used one in the past 30 days. There are questions about the reasons for using e-cigarettes, what type of e-cigarettes they used, and whether they were flavored. Another question asks for the age the respondent first used e-cigarettes and then for how long they have been using e-cigarettes. There are a few questions about cessation of e-cigarettes, including number of attempts made and reasons for attempting to stop using e-cigarettes. The section also includes questions about the use of e-cigarettes in the respondent’s home in the past week and about exposure in their home to e-cigarettes used by someone else. The final set of questions in the section was only for respondents assigned to subsample 4 and asks the respondent’s opinion about a law banning the use of e-cigarettes in areas such as outdoor dining areas, public event areas, and service areas.
  - **Tobacco Use**
    - This section includes several questions on the respondent’s use of tobacco. The first question asks if the respondent has ever smoked at least 100 cigarettes in their entire life and then whether they now smoke cigarettes. All follow-up questions pertain to either current or former smokers. The section asks for the average number of cigarettes smoked daily in the past month. For former smokers, there is a question about how long it has been since the

respondent last smoked. For current smokers, there are questions about how many days they smoked in their home in the past week, at what age they first started smoking cigarettes, whether they switched to smoking e-cigarettes, and whether they are thinking seriously of quitting smoking cigarettes. There are several follow-up questions about attempts at cigarette cessation, reasons for it, strategies that the respondent may have attempted, and whether the respondent was advised by medical professionals to quit smoking cigarettes. A series of questions asks for the methods of tobacco use, including cigars, hookah, and dissolvable products. Follow-up questions ask about whether each method of tobacco use was flavored to taste sweet. The section includes a question about exposure to someone else's tobacco smoke. The main section concludes with questions about resources the respondent may have used to quit using tobacco products and what services the respondent's health insurance may cover for tobacco cessation. The remaining questions in the section were only for respondents assigned to subsamples 4, 5, and 6. The subsample 4 questions ask about exposure to secondhand e-cigarette smoke and where it occurred. The subsample 5 questions ask for how many days in the past 2 weeks exposure to someone else's tobacco smoke occurred and where the exposure took place. A series of questions asks for the respondent's opinion about a law banning tobacco smoking in various places, such as outdoor recreational and work areas. The subsample 6 questions ask for the respondent's opinion about various statements related to tobacco issues, such as store owners being licensed to sell tobacco products or penalized for selling tobacco products to minors.

- **Alcohol Use**
  - This section includes questions about the respondent's alcohol use, including whether they have ever had an alcoholic beverage, how many alcohol beverages they consumed in the past month, and how many alcoholic drinks the respondent consumes on average per day. There is a question about binge drinking based on sex at birth. There is another question about how old the respondent was when they first tried alcohol. The final question in the section asks whether the respondent has ever used a home delivery service to buy alcohol.
- **Marijuana Use**
  - This section includes several questions about the respondent's use of marijuana. The first questions ask if the respondent has ever used marijuana, how old they were when they first used marijuana, and on how many days in the past month they used marijuana. The next questions ask for the methods used in the past month to consume marijuana and whether the respondent smoked marijuana in their home over the past week. The next question asks if the respondent was prescribed marijuana by a doctor to treat a medical condition. Other questions ask how often the respondent used marijuana and e-cigarettes at the same time, whether the respondent ever drove within 3 hours of using marijuana, and how often in the past week the respondent was around someone else's marijuana smoke in their home. The final questions in the section were only for respondents assigned to subsample 7 and ask the respondent about their exposure to someone else's marijuana smoke in outdoor areas, the specific type(s) of outdoor areas, and the level of concern about exposure to someone else's marijuana smoke. The final question asks for the respondent's opinion about the level of harm marijuana poses to the average adult's health.
- **Prescription Medication Use**
  - This section asks questions about the respondent's use of prescription medication outside of a doctor's instructions, including use, methods for obtaining them, how old the respondent was at the first usage, and on how many days in the past month the respondent used them."
- **Methamphetamine Use**
  - This section includes three questions about the respondent's methamphetamine use, including whether the respondent has ever used methamphetamines, how old the respondent was at the first usage, and on how many days in the past month the respondent used methamphetamines.
- **Heroin Use**

- This section includes three questions about the respondent’s heroin use, including whether the respondent has ever used heroin, how old the respondent was at the first usage, and on how many days in the past month the respondent used heroin.
- Cocaine Use
  - This section includes two questions about the respondent’s cocaine use, including whether the respondent has ever used cocaine and how old the respondent was at the first usage.
- Violence and Injury Prevention
  - This section includes several questions about various types of violence and injuries. The first few questions ask about firearms, whether they are kept in the respondent’s home, whether the firearms are loaded, and whether the firearms are securely stored. There is a question about the respondent’s opinion on gun rights that was only for respondents assigned to subsample 1. The main section of questions continues with the respondent’s perception of their neighborhood’s safety. Other questions ask about the respondent’s experience with burglary in their home or car and with mugging in their neighborhood. There is a question about whether the respondent or anyone in their household has been sexually assaulted in their neighborhood in the past year. Several questions ask about the respondent’s experience with intimate partner violence, including physical abuse, unwanted sex, stalking, verbal abuse, and controlling behavior. The section concludes with questions about suicidality and whether the respondent has ever attempted suicide and then required medical attention for it.
- Discrimination
  - This section includes a series of questions asking the frequency that respondents have experienced various types of discriminatory behavior, such as being treated with less courtesy than others and being threatened or harassed. There is a follow-up question asking for the respondent’s opinion about the reasons for these experiences.
- Sexual Activity
  - This section asks two questions about the respondent’s sexual activity. The first question asks if the respondent has had any sexual partners in the past year. The second question asks for the gender of the respondent’s sexual partner(s).
- Reproductive Health
  - This section includes questions about pregnancy, pregnancy outcomes, and pregnancy prevention methods.
- Demographics
  - This section includes various demographic questions about the respondent. The section begins by asking for the respondent’s place of birth, how long they have lived in the United States, and whether the respondent is currently a U.S. citizen. Several standard demographic questions ask for the respondent’s race and ethnicity, education level, marital status, and sexual orientation. There are also questions about the language most often spoken by the respondent at home and their level of English fluency.
- Sexual Health
  - This section asks several questions about sexual health, including HIV prevention, where the respondent feels most comfortable seeking testing and treatment for sexually transmitted infections, and syphilis infections.
- About Your Household
  - This section asks the respondent to enumerate the members of their household, including adults by age group and children by age group. Follow-up questions provide the respondent an opportunity to correct these numbers if there are any discrepancies.
- Housing
  - This section includes questions about the respondent’s housing situation, including whether they own or rent their home, what type of housing they live in, whether they have had financial issues in paying their rent or mortgage, and what percentage of their income is spent

- on their rent or mortgage. The final question in the section asks if the respondent has ever been homeless in the past 5 years.
- **Household Income**
    - This section includes a series of questions used to determine the respondent’s household Federal Poverty Level. Another question asks the respondent to describe their household’s financial situation. Several questions ask about food security, including how often the respondent and people in their household had to skip or cut meals because they did not have enough money for food and whether the respondent could not afford to eat balanced meals. The final question in the section asks if the respondent is currently receiving food stamps.
  - **Technology Access**
    - This section asks the respondent about the types of computers and devices that they or others in their household own or use and whether anyone in the household has access to the Internet.
  - **COVID-19**
    - This section includes several questions about the respondent’s experience with the COVID-19 pandemic, including having a COVID-19 infection, having symptoms from a COVID-19 infection, whether the respondent self-isolated during their COVID-19 infection, and any post-COVID symptoms the respondent may have had. Several follow-up questions ask about persistent symptoms after the respondent’s COVID-19 infection.
  - **Closing**
    - The closing section of the Adult Survey asks if the respondent is willing to participate in future surveys and collects contact information for the purpose of fulfilling the promised incentive for completing the survey. Another question asks for permission to text the respondent for potential follow-up contact. If the respondent is ineligible to take the Child Survey, the survey terminates at this point. Respondents who are eligible to complete the Child Survey proceed into that survey within the same program.

### **3.4 Child Survey Content**

Below is an outline of the questionnaire content for the 2022-2023 LACHS Child Survey. When the same Adult Survey respondent completed the Child Survey, some sections were automatically populated with responses from the Adult Survey without the respondent having to answer them again. When the Adult Survey respondent was a different person than the person who completed the Child Survey in the same household or if the respondent only completed the Child Survey, then all sections of the Child Survey were asked.

- **About Your Child**
  - This section establishes who the selected child is and their relationship to the respondent. The selected child’s name or initials are requested as are their age and gender. The respondent is asked if they are the person or one of the people who makes decisions about the selected child’s health, whether they are the child’s legal guardian, and for the respondent’s gender identity.
- **About Your Infant**
  - This section is administered to respondents if they are the birth mother of the selected child, and that child is 5 years of age or younger. The section begins with questions about the respondent’s pregnancy, including whether they had been trying to get pregnant, when they had their first prenatal care visit, and vaccinations and routine care received during pregnancy. Other questions ask about the respondent’s exposure to cigarette smoke, potential experience of depression during pregnancy, height, current weight, weight before pregnancy, and weight gained during pregnancy. Two questions ask about whether the respondent returned to work after pregnancy and for the child’s age when the respondent returned to

- work. Several questions ask about the respondent's experience with breastfeeding at the hospital where the child was born, whether the respondent is still breastfeeding, and how old the child was when the respondent stopped breastfeeding. Two follow-up questions ask about the use of formula in place of breastmilk. The final question in the section asks if there are workplace accommodations for the respondent to breastfeed or pump breastmilk.
- **Child Activities**
    - This section asks about a variety of activities for the selected child, including soda consumption, fast food consumption, exercise, screen time (e.g., television, computer), and exposure to tobacco smoke in the home.
  - **Your Community**
    - This section includes three questions about the respondent's perception of safety in their neighborhood and their access to fresh fruits and vegetables in their community.
  - **General Health**
    - This section includes several questions about the selected child's general health based on their age group. The section begins with a question about the child's overall health and follows with questions about any illness that required the child to miss school and any medication required because of a health condition. Several questions ask about any conditions that require additional care, therapy, or counseling for any medical, behavioral, or emotional problem and whether these conditions are expected to be long term. Follow-up questions ask about the amount of care required by the respondent and family members because of the child's health condition, how difficult it is to get needed care or services, and the impact on the respondent's family. One question asks about whether the child was hospitalized in the past year. Several questions ask about health care providers' opinions about the child's learning, development, and behavior; whether the child has a special education or early intervention plan; and whether the child receives special services for developmental needs.
  - **Health Conditions**
    - This section includes several questions about health conditions the selected child may have, particularly asthma. Several questions ask about whether the child has asthma, whether they have had an asthma attack in the past year, whether the child has missed daycare or school because of asthma, how often asthma limits physical activity, and how many times asthma sent the child to an emergency room or urgent care center. There are also questions about the child's mental health and weight.
  - **Water Safety and Drowning Prevention**
    - This section includes a few questions about practices used by the child and the child's family to prevent drowning, including using a pool watcher and taking swimming lessons. A follow-up question asks about why the selected child may not have taken formal swimming lessons. The section ends with a question about the child's ability to swim the length of a pool without use of a flotation device.
  - **Child Care**
    - The first set of child care questions in this section are asked if the selected child is 0-4 years of age or 5 years and not in kindergarten. These questions ask the number of hours of child care they receive in a typical week, the type of child care receive, where the child receives child care, and who provides the child care. The next set of questions is about the before and after school childcare received by children 6-12 years of age or 5 years of age and in kindergarten. The last set of questions, asked if the selected child is 0-12 years of age, asks if it is difficult to get child care when needed and why it is difficult to get needed child care.
  - **Health Insurance**
    - This section asks about the type of health insurance the selected child is covered by, including Medi-Cal or Medicaid, insurance through the respondent's or another family

- member's employer, Covered California, Kaiser Permanente Child Health Program, Indian Health Service, military insurance, or some other policy.
- **Access to Care**
    - This section asks the respondent about the selected child's access to routine health care, including a regular health provider and ease of getting necessary medical care. Several questions ask about dental care, starting with how long it has been since the child's last visit to a dentist. Then, several questions ask about a hypothetical program offering free dental screenings, whether the respondent would allow the child to receive a free dental screening and dental sealants, and why they would not give permission for the child to receive these services if not.
  - **Vaccination**
    - This section includes a few questions about vaccinations for flu and HPV that the selected child has received.
  - **Your Mental Health**
    - This section asks the respondent questions about their own mental health, including a question about the impact of childcare on their mental health and strategies for managing their stress related to childcare responsibilities.
  - **Child Demographics**
    - This section includes demographic questions about the selected child, including race and ethnicity, place of birth, and whether the child is a U.S. citizen.
  - **About You**
    - This section asks demographic questions about the respondent, including age, race and ethnicity, language spoken most often at home, level of English fluency, place of birth, U.S. citizenship status, education level, marital status, sexual orientation, employment status, and employment status of the respondent's spouse or partner.
  - **About Your Household**
    - This section includes questions used to determine the number of adults and children in the household.
  - **Household Income**
    - This section includes a series of questions used to determine the respondent's household's total annual income. Several questions ask about food security, including how often the respondent and people in their household had to skip or cut meals because they did not have enough money for food and whether the respondent could not afford to eat balanced meals.
  - **Technology Access**
    - This section asks the respondent about the types of computers and devices that they or others in their household own or use and whether anyone in the household has access to the Internet.
  - **COVID-19**
    - This section includes several questions about the selected child's experience with the COVID-19 pandemic, including having a COVID-19 infection, having symptoms from a COVID-19 infection, whether the child isolated during their COVID-19 infection, and any post-COVID symptoms the child may have had. Several follow-up questions ask about persistent symptoms after the child's COVID-19 infection.
  - **Closing**
    - The closing section of the Child Survey asks if the respondent is willing to participate in future surveys and collects contact information for the purpose of fulfilling the promised incentive for completing the survey. Another question asks for permission to text the respondent for potential follow-up contact.



### **3.5 Questionnaire Translation**

The 2022-2023 LACHS was administered in six languages: English, Spanish, Mandarin, Cantonese, Korean, and Vietnamese. RTI used Lazar Translating & Interpreting for translations into Spanish, Mandarin, Cantonese, and Vietnamese. RTI reviewed all Vietnamese translations. RTI worked with a consultant who is a former RTI survey methodologist for the Korean translation. Public Health reviewed all Spanish and Chinese translations. Adjustments were made to suit the target audience and to correct for any inconsistencies or errors.

RTI programmed and tested each non-English language version prior to fielding. The administration of the survey in each of the languages differed by mode. The CAWI was available in each of the six languages (Mandarin was programmed using Simplified Chinese, while Cantonese was programmed using Traditional Chinese). The PAPI screener had instructions and questions in all six languages, and respondents were instructed to complete the section of the screener in the language they preferred.

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# Contact Materials

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To establish legitimacy of the survey among sampled households, mailing materials included the County of Los Angeles Public Health logo and were also signed by the director of the Public Health.

## 4.1 Pretest

The pretest included a single-sided invitation letter in English only. The letter explained the purpose of the survey and invited the adult in the household ages 18 years or older who had the most recent birthday to complete the web survey. The letter provided instructions for accessing the web survey either by typing in the URL into a web browser or by scanning a Quick Response (QR) code. The recipient was also informed that they would receive either \$20 or \$30 for completing the survey.

The pretest sample was also sent a reminder self-mailer postcard in English only. The mailer reminded the recipient that their household was invited to complete the survey and provided the same details for accessing the web survey.

## 4.2 Pilot Test 1.0

The initial Pilot Test included a bilingual cover letter in both English and Spanish and a four-page English and Spanish paper screener. The cover letter explained the purpose of the survey and the role of the screener which aimed to gather information about the household to identify participants for the full survey. An adult in the household ages 18 years or older was requested to complete the screener, either online or using the provided paper version, which could be returned using the enclosed, postage-paid envelope. Each cover letter contained the survey landing page URL and a unique login ID for accessing the screener. Recipients were also informed about a \$20 or \$30 incentive (incentive amount was randomly assigned) for the invited household member who completed the full survey. See the Incentives Protocol section for more details.

RTI reviewed the completed web and paper screeners and invited a member from each household to participate in the Adult Survey and/or Child Survey based on their screener responses. The invitation letter was bilingual in English and Spanish and included the landing page URL and login ID. Along with the letter was a \$2 incentive as a token of appreciation and the promise of a \$20/\$30 incentive upon completing the survey.

## 4.3 Pilot Test 2.0

In the revised pilot, 80% of the sample (1,200 cases) received an invitation letter with instructions for completing the survey by web, and the remaining 20% (300 cases) received a cover letter with instructions for completing the survey by web or phone, and a PAPI screener. The invitation letter was printed double-sided with English text on the front and Spanish text on the back.

The invitation letter included a \$2 pre-incentive and offered respondents \$20 or \$30 for completing the survey (incentive amount was randomly assigned). The invitation provided instructions

for completing the web survey by going to the study website and entering a unique login ID or by scanning a QR code with a phone to access a personalized survey link. When accessing the web survey, respondents would first complete the web screener; RTI's web program would then select a respondent from each household (based on certain criteria) and immediately invite the selected respondent to complete the survey.

The 20% of cases in the PAPI screener group received a double-sided cover letter with English on the front and Spanish on the back and were offered three methods for completing the survey: a web option, with instructions for accessing the website and entering a unique login ID or using the QR code to access the personalized survey link; a phone option with instructions for calling a toll-free number to complete the survey with an interviewer; and a paper option with instructions for completing the paper screener, mailing it back, and waiting to be called by an interviewer to complete the survey by phone.

The PAPI screener was a simplified version of the web screener and only two pages long. It instructed the person with the next birthday to provide their name or initials, their phone number, and the total number of adults and children in the household. The paper screener asked each of these questions in all six survey languages—English, Spanish, Traditional Chinese, Simplified Chinese, Korean, and Vietnamese. Sampled households that received the letter and paper screener also received a \$2 pre-incentive, and all were offered a \$30 post-incentive rather than being randomly assigned to receive a \$20 or \$30 post-incentive like cases receiving the invitation letter.

## **4.4 Data Collection**

### ***Mailing 1: Invitation Letter***

Similar to the second Pilot Test, the first mailing for data collection was a double-sided invitation letter, with English on the front and Spanish on the back, informing the household that they were invited to complete the survey. On the front right side of the letter was a panel box with short statements in Simplified Chinese, Traditional Chinese, Korean, and Vietnamese telling the household that they are invited to take the survey. All sampled households received a \$2 bill as a pre-incentive. A post-incentive of either \$20 or \$30 was promised. The invitation letter instructed respondents to complete the web version of the survey, providing details about how to access it by unique login ID or by scanning the QR code.

### ***Mailing 2: Reminder Self-mailer 1***

The second mailing was a reminder sent in the form of a self-mailer postcard. Using information from the sampling frame, households where one or more individuals might speak Spanish, Chinese, Korean, or Vietnamese were sent a postcard in English and the alternative language; all other sampled households received the postcard in English and Spanish. We sent 416 Korean/English postcards, 265 Vietnamese/English postcards, 544 Chinese/English postcards, and 107,159 Spanish/English postcards for the second mailing. All postcards included the survey link, unique login ID, and QR code.

### ***Mailing 3: Reminder Letter or PAPI Screener Packet***

The third mailing, sent to 80% of the nonresponding sampled households, consisted of a double-sided reminder letter with English on the front and Spanish on the back. Like the invitation letter, it also

included a panel on the front right side with information on accessing the survey in Traditional Chinese, Simplified Chinese, Vietnamese, and Korean. The letter reminded nonrespondents of the opportunity to participate in the survey, mentioning that responses would be reviewed soon. In this mailing, respondents were once again told they could access the survey by going to the survey link and entering their unique login ID or by using the QR code. Additionally, they were presented with the option to call in to complete the survey by phone. Sampled households were reminded of the \$20 or \$30 post-incentive they were initially offered.

The remaining 20% of the nonresponding sampled households received a PAPI screener packet that included a similar reminder letter presenting the respondent with the option to complete the survey by web, to call in to complete by phone, or to complete the PAPI screener. The PAPI screener was included in the packet along with a business reply envelope for the respondent to send it back to RTI.

RTI made one minor change to the paper screener between sample Release 1 and sample Release 2. In Release 1, several respondents completed the PAPI screener in their preferred language and then cut out their response and only mailed back the part of the screener that they completed. In only mailing back the completed part of the form, we lost the respondent's case ID, which was located on the bottom right-hand corner of the screener. To ensure a match between screener responses and case IDs in Release 2, we modified the paper screener to include the case ID in every language section.

#### ***Mailing 4: Reminder Self-mailer 2***

The fourth mailing was a second self-mailer postcard which was sent to households that had not completed the screener. Similar to the first postcard, it was sent in English and one additional language, using information from the sampling frame. We sent 375 Korean/English postcards, 243 Vietnamese/English postcards, 486 Chinese/English postcards, and 44,470 Spanish/English postcards for the fourth mailing. In this final mailing, the postcard explained that the results would be used to better understand health issues among people in the respondent's neighborhood. Respondents were provided the option to complete the survey by going to the landing page and typing in their unique login ID, using the QR code, or by calling to complete the survey over the phone.

#### ***Mailing Quality Control***

RTI subcontracted the printing and mailing for LACHS. Prior to each mailing, the printer sent digital proofs to RTI for review and approval. RTI then reviewed and verified that the names, addresses, and login IDs on the letters matched both the mailing files and the original sample files. Once the digital proofs were approved, the printer and RTI conducted a live quality check of the materials via a Zoom meeting. During this meeting, RTI ensured that the mailing materials met expectations in terms of appearance, that all barcodes and QR codes functioned, and that all mailing material contents were included in the mailing.

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# **Data Collection**

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In previous waves of LACHS, a pretest and a Pilot Test traditionally preceded the data collection period. These activities provide an opportunity to collect enough data to test the systems involved in collecting data, troubleshoot any issues, and refine and revise the questionnaires. Since the 2022-2023 LACHS marked a significant redesign in both sampling and survey modes, the pretest and pilot tests provided a vital opportunity for testing with live data collection before full data collection.

## **5.1 Pretest**

The pretest was intended to evaluate the web survey as the primary mode of data collection, evaluate the survey length and question wording, and evaluate the use of QR codes as a mode of survey access. The pretest used an abridged contact protocol for the sake of time and set a target of 30 completes each for the Adult Survey and Child Survey.

The pretest sample comprised a systematic random sample of 300 addresses from the 2022-2023 LACHS sample frame after first sorting by SPA, HD, ZIP code, postal carrier ID, route, and walking sequence. Two mailings were sent to all sampled households: an invitation letter, and then a reminder self-mailer sent 7 days later.

The invitation letter was mailed on March 29, 2022. The reminder self-mailer was sent on April 7, 2022, slightly later than scheduled because the printer required additional time to prepare the mailing.

Of the 300 invitation letters mailed, 74 respondents accessed the web survey. Of the 74 respondents who accessed the web survey, a total of 19 dropped the survey at some point, while 10 of those respondents that initially suspended ultimately completed the screener. In total, 55 completed the screener. This implies that successive reminders may have an impact on response and that the reminder self-mailer sent during the pretest might have prompted some people to revisit the survey. Of the 55 Screener completes, 43 completed the Adult Survey. Of these 43 Adult Survey completes, 15 were eligible to complete the Child Survey. Of these eligible cases, 13 completed the Child Survey. One eligible person started the Child Survey but ultimately did not finish. There were no clear patterns of clustering around substantive survey questions that underscored potential hesitation to complete the survey if additional reminder contacts were received by the respondent. Most of the dropouts (14.3%) occurred at the introductory question, which is where most of the dropouts are expected to occur.

The target of 30 Child Survey completes was not met with the pretest, but the Adult Survey target of 30 completes was exceeded. It was clear that the Adult Survey could be conducted successfully on the web and that the Child Survey target would be difficult to reach if it was entirely dependent on routing from eligible Adult Survey respondents.

The Pretest Report can be found in Appendix J.

## 5.2 Pilot Test 1.0

Pilot Test 1.0 was intended to test an abridged version of the Two Stage design, through which household screening data were collected via CAWI and PAPI. RTI then selected a respondent from each household, and the selected respondent was invited to complete the Adult Survey or the Child Survey.

RTI sent an invitation to complete the screener by CAWI or PAPI to 1,000 sampled households on June 22, 2022. Only 19 screeners were completed within 2 weeks of the mailing date, all in English, which was a yield rate of approximately 2%. The success of the Two Stage design depended on collecting a large pool of screeners from which to make selections; over 50% of the sampled households needed to respond to provide a pool large enough to evaluate and make useful selections. Given the low yield rate for the first stage of the Pilot Test, RTI was concerned about the efficacy of the Two Stage design in meeting overall survey targets and targets by SPA and demographic attributes. This prompted RTI to redesign the LACHS methodology to a Hybrid design, incorporating elements from both the original One Stage and Two Stage designs.

Pilot Test 1.0 concluded when RTI mailed an invitation to complete the survey to 49 cases on September 8, 2022. The rest of the planned activities for the Pilot Test, including texting and a CATI NRFU, were suspended in favor of conducting a second Pilot Test of the revised Hybrid design.

## 5.3 Pilot Test 2.0

After RTI drafted the specifications for a Hybrid design, a second Pilot Test was conducted to provide a test of systems and processes, and initial data to assess the efficacy of the modified design with a full screener and automated respondent selection.

Pilot Test 2.0 used an abridged version of the planned contact protocol outlined in Section 2.2 (Hybrid design). The planned protocol included up to four mailings per sampled household; in the interest of completing the second Pilot Test as quickly as possible, a single mailing was used to contact sampled households. Pilot Test 2.0 began on October 12, 2022, when the invitation letter/PAPI screener packet was mailed. A text message reminder was sent on November 3. A second text message reminder was sent on November 7. CATI NRFU started on December 6.

An invitation letter to complete the web survey, which included the eligibility screener, was sent to 1,500 sampled households from the 2022-2023 LACHS sample frame after first sorting by SPA, HD, ZIP code, postal carrier ID, route, and walking sequence. Of these households, a random 20% also received the PAPI screener. The contact protocol also included sending text message reminders on days 22 and 26 to respondents who provided a phone number in the screener but had not completed the Adult and/or Child Survey. Although only a few cases accessed the survey via text message link, the text message effort seemed to serve as an effective reminder for people to complete the survey, since additional completed surveys were recorded in the days following the text messages.

CATI follow-up for all nonrespondents with an available phone number began on Day 55. The nonrespondent sample was sent to MSG, who performed a phone match to the sampled address. Up to three phone numbers were returned, each with an MSG-derived accuracy score. The phone number with the highest accuracy score was selected for dialing. A total of 1,028 numbers were loaded for dialing,

representing a match rate of roughly 70%, although the 1,028 figure also includes a small number of phone numbers provided by respondents from returned screeners. If a nonrespondent provided a phone number in the web or PAPI screener, that phone number was prioritized for CATI follow-up.

RTI made up to six call attempts to complete a CATI survey. The majority of call dispositions from CATI NRFU were noncontacts, e.g., answering machines and no-answers. The hours per complete (HPC) rate averaged close to 200, far exceeding the estimated HPC rate of 10. The poor CATI productivity prompted RTI to suggest a more efficient call protocol for data collection, in which noncontacts were given a final disposition earlier in the protocol.

The target for Pilot Test 2.0 was to collect 50 Adult surveys (40 English and 10 Spanish) and 50 Child surveys (40 English and 10 Spanish). A total of 212 Screeners were completed, including 194 in English and 18 in Spanish. A total of 180 Adult Survey completes were collected, including 168 in English and 12 in Spanish. A total of 44 Child Survey completes were collected, including 39 in English and 5 in Spanish. Although the target for Child Survey completes in Spanish was not met, Pilot 2.0 provided assurances that the revised design would be effective in collecting both Adult Survey and Child Survey completes primarily through CAWI.

After the Pilot Test, the decision was made to remove text message reminders from the protocol. Sending outbound text messages requires documented and explicit consent. RTI could meet this requirement in the Two Stage Design, where contact information and consent to receive text messages were obtained in stage one of screening. In this way, RTI could also be confident that the phone number provided by a household member was accurate and belonged to other members of the household. However, with the Hybrid Design, there was no longer a separate stage to first collect contact information and obtain permission to receive text messages. Thus, the use of text message reminders was not included in the Hybrid design as a method of prompting nonrespondents in the main data collection.

The Pilot Test Report can be found in Appendix K.

## **5.4 Experiments**

### **Study Design**

Since the 2022-2023 LACHS was the first iteration of the study using a new sampling design and new survey mode, RTI conducted two experiments to determine the optimal elements of the study design. Much of the design was proposed based on RTI's experience conducting similar studies, but the 2022-2023 LACHS presented an opportunity to tailor RTI's design for the study's population.

The first experiment was a design experiment to determine the best contact protocol for reaching prospective respondents and the best method for selecting respondents for the Adult Survey and the Child Survey. The two experimental conditions were referred to as the One Stage and Two Stage designs. The One Stage design was evaluated in the pretest and the Two Stage design in the first pilot.

In the One Stage design, sampled addresses received up to a total of four mailings to invite them to complete the web survey:

1. Invitation letter
2. Reminder self-mailer 1
3. Reminder letter
4. Reminder self-mailer 2

In the Two Stage design, sampled addresses received two sets of mailings. The first set of mailings invited sampled addresses to complete the web screener. Households that had not completed the screener after two mailings were sent a paper version of the screener in the third mailing:

1. Screener invitation letter
2. Screener reminder self-mailer 1
3. Screener PAPI screener survey packet
4. Screener reminder self-mailer 2

The screener included several demographic questions designed to provide the RTI team with enough data to select the respondent. The second set of mailings then invited the selected respondent to complete either the Adult Survey or the Child Survey:

1. Invitation letter
2. Reminder self-mailer 1
3. Reminder letter
4. Reminder self-mailer 2

### **Advantages and Disadvantages of One Stage and Two Stage**

With the One Stage design, Child Survey completes could only come from Adult Survey respondents who have at least one child in the household. There was no method for selecting a respondent for only the Adult Survey or only the Child Survey. RTI expected the One Stage design to be insufficient for reaching the total target of Child Survey completes and had anticipated using it only to administer the Adult Survey.

The Two Stage design provided control over the sample that the One Stage did not. Households were first invited to provide demographic data only and, from there, RTI could decide who to invite to complete the survey based on the various geographic and demographic targets. RTI could also select someone specifically for either the Adult Survey or the Child Survey, which would increase the rate of success for reaching survey targets for both surveys. RTI intended to administer the Two Stage design primarily to help reach the Child Survey target and screen out any households without a child.

Compared to the One Stage design, the Two Stage design's major disadvantage was inefficiency. The time between contacts for the screener versus the actual survey was long and greatly reduced overall survey response because someone who was interested enough to complete the screener could have lost interest when they were contacted to complete the actual survey. In addition, the number of people to be selected depended on the number of people who responded to the screener, since selection was made based on demographic data collected from the screener. The Two Stage design idea was abandoned because yield rates were impractically low. One month into the first pilot, just over 50 completes had been obtained from 1,000 households sampled. By comparison, the One Stage design evaluated as part of the pretest, with an abbreviated two-mailing data collection protocol, yielded over 50 completes from a sample of only 300 households.



## **Post-Incentives**

There is theoretical support and evidence from experiments on nonresponse that incentives are disproportionately effective among sample members who are less likely to participate (Groves et al., 2004; Singer, 2002). These experimental findings are consistent with Leverage-Saliency Theory (Groves et al., 2000), which describes how individuals' likelihood of participation is impacted by different factors that carry different weights (leverages), and survey design features can make them less or more salient. In short, if the topic of LACHS makes one person less likely to participate, the inclusion of an incentive can increase their likelihood of participating. The use of both prepaid and promised incentives and use of reasonable amounts takes advantage of this important survey tool to achieve not only higher participation overall, but also better representation.

As such, the goal of the second experiment was to identify the optimal post-incentive amount to offer LACHS respondents. A post-incentive of either \$20 or \$30 was randomly assigned to each household in the first half of data collection. If a household completed both the Adult Survey and the Child Survey, the respondent was offered the same amount for each survey (i.e., \$20 for completing the Adult Survey and \$20 for completing the Child Survey, if eligible). Although households offered \$30 were 15% more likely to complete the Adult Survey and 17% more likely to complete the Child Survey, a cost-benefit analysis in advance of the second sample release indicated that maintaining the \$20 post-incentive would be more cost-effective. This is largely because the cost of printing and postage of reminder mailings was relatively low without a paper instrument included. Thus, the lower cost per complete for the \$20 post-incentive condition helped justify a larger sample size for the second sample release than would be possible with a \$30 post-incentive. As described elsewhere in this report, the resultant larger sample size was utilized to boost respondent counts for underrepresented populations (e.g., individuals from a lower socioeconomic status).

## **5.5 Data Collection Schedule**

The sample for 2022-2023 LACHS data collection was split into two releases. The original plan assumed that a total of 100,809 addresses would be needed to reach all survey targets. After the first sample release, Public Health and RTI decided to increase the sample in the second release to obtain more surveys from underrepresented demographic groups. To accommodate this request, the total target of Adult Survey completes was increased to 8,500-9,500 and the total target of Child Survey completes was increased to 6,400-7,400. The final sample sizes per release deviated from the original 50/50 planned split. The total starting sample size for Release 1 was 50,384 addresses, and the total starting sample size for Release 2 was 58,000 addresses.

### **Data Collection Schedule**

RTI contracted with NPC, Inc., a subcontractor based in Claysburg, PA, to handle printing and mailing of all data collection contact materials. RTI received, receipted, and scanned all returned mail, including undeliverable mail and PAPI screeners. RTI was responsible for fulfilling check incentives, which were mailed to respondents on a weekly basis.

The 2022-2023 LACHS was scheduled to be fielded in two sample releases using the contact protocol shown in Exhibit 7.

## Exhibit 7. LACHS Contact Protocol

Day	Event	Planned Dates		Actual Dates	
		Release 1	Release 2	Release 1	Release 2
0	Mailing 1 - Invitation Letter	12/6/22	4/6/23	12/6/22	4/6/23
7	Mailing 2 - Reminder Self-mailer 1	12/13/22	4/13/23	12/21/22	4/13/23
35	Mailing 3 - Reminder Letter (80% of sample)/ PAPI Screener Packet (20% of sample)	1/10/23	5/11/23	1/10/23 – 1/11/23	5/11/23
42	Mailing 4 - Reminder Self-mailer 2	1/17/23	5/18/23	1/25/23	Canceled
56	CATI to Nonrespondents (20% of sample)	1/25/23	5/23/23	2/1/23	5/23/23

A few of the mailings deviated from the original schedule for Release 1 for a few reasons:

- Release 1, Mailing 2 was originally scheduled to drop on 12/13/22, but because of a delay in updating the format of the mailer and holiday schedules, it did not drop until 12/21/22.
- Release 1, Mailing 3 was originally scheduled to drop on 1/10/23, but the printer required additional time to prepare. The PAPI screeners were dropped on 1/10/23, but the Reminder Letters were dropped on 1/11/23.
  - This deviation pushed Mailing 4 out by 1 day from 1/17/23 to 1/18/23 to retain the desired timing between Mailing 3 and Mailing 4.
- Release 1, Mailing 4 was originally scheduled to drop on 1/18/23, but RTI sent an updated sample file to the printer late, so the mailing did not drop until 1/25/23.
  - This deviation pushed the start of CATI NRFU by 7 days from 1/25/23 to 2/1/23 to match the desired timing between the final mailing at CATI NRFU.

Given the deviations from the scheduled protocol that occurred in Release 1, RTI and NPC worked together to ensure adherence to the desired schedule in Release 2. All Release 2 mailings dropped according to schedule with one exception. Release 2, Mailing 4 was originally scheduled to drop on 5/18/23, but RTI and Public Health agreed to cancel this mailing given the higher than expected rate of productivity.

### 5.6 CATI NRFU

A total of 20% of the nonresponding sample was selected to be contacted via outbound CATI NRFU. Based on RTI’s experience conducting CATI NRFU in the Pilot Test, the data collection call protocol was designed to make calling more efficient. Each case designated for outbound CATI received a maximum of six attempts. If the first three attempts were noncontacts, then the case was resolved and removed from dialing. A total of 183 Adult Surveys and 40 Child Surveys were completed via CATI.

### 5.7 CATI Survey Languages

The CATI interviews in English and Spanish were conducted internally by RTI staff, while CATI interviews in the four Asian languages were contracted by RTI with Steps. Steps typically provides real-time interpretation services, but RTI worked with Steps to customize interpretation for LACHS. Steps provided RTI a study-specific phone number that RTI interviewers could use to reach an

interpreter. RTI provided copies of the Asian language survey translations to a small pool of interpreters selected by Stepes to be available for LACHS. RTI conducted a training with the pool of interpreters to explain the protocol of using the translations and the importance of using them for data quality. Two interpreters per Asian language were on call throughout the 2022-2023 LACHS fielding period for respondents who called RTI requesting to complete the survey over the phone in Mandarin, Cantonese, Korean, or Vietnamese.

RTI interviewers attempted to connect seven potential respondents with Stepes. Two of these calls were attempted for Chinese speakers; neither of the Chinese Stepes interpreters were available to take the call. Stepes connected with one potential Vietnamese respondent, but that call resulted in two hang-ups. For the remaining four cases, RTI and Stepes were not able to determine the language because each attempt only reached a generic answering machine message. No interviews were completed by Stepes in any language.

Exhibit 8 shows the number of completed screeners with an adult and/or child selected and the number of Adult Survey and Child Survey completes for the CATI NRFU. Exhibit 9 thereafter shows the same counts for the entire 2022-2023 LACHS, for both CATI and CAWI respondents.

**Exhibit 8. 2022-2023 LACHS Language of Completion – CATI Only**

Completion language	Number of completes		
	Screener*	Adult Survey	Child Survey
English	235	182	33
Spanish	13	1	7
Mandarin	0	0	0
Cantonese	0	0	0
Korean	0	0	0
Vietnamese	0	0	0
Total	248	183	40

\*Screeners with an adult and/or child selected (excludes screened-out households).

**Exhibit 9. 2022-2023 LACHS Language of Completion – CATI and CAWI**

Completion language	Number of completes		
	Screener*	Adult Survey	Child Survey
English	16,019	8,711	6,161
Spanish	2,074	573	1,182
Mandarin	68	40	23
Cantonese	31	22	12
Korean	43	20	11
Vietnamese	6	6	2
Total	18,241	9,372	7,391

\*Screeners with an adult and/or child selected (excludes screened-out households)

## 5.8 Incentives Protocol

To encourage response to the survey, RTI sent all 2022-2023 LACHS survey recipients a \$2 cash pre-incentive with the first mailing. Respondents who completed the CAWI or CATI Adult or Child Survey instruments received \$20 or \$30 (one post-incentive each for the Adult and Child Surveys). For Release 1, post-incentive amounts were randomly assigned to \$20 or \$30, which allowed for a post-incentive experiment to assess survey yields and cost-efficiency. To encourage PAPI screener responses, Release 1 PAPI screener recipients who were initially offered an incentive of \$20 were offered \$30 with the PAPI screener mailing. As discussed above in Section 5.4, all Release 2 survey recipients were offered \$20 post-incentives.

Post-incentives were offered in two types: electronic VISA gift card or check. Respondents who completed the survey were presented with the choice of either option. Electronic VISA gift cards were sent to the email address provided by a respondent within minutes of the web survey being submitted. Checks were sent on a weekly basis and reissued upon request.

## 5.9 Study Contact Information

RTI provided a toll-free phone number for any inquiries from LACHS respondents. The phone number was set up to ring to RTI's Research Operations Center in Raleigh, North Carolina. If an interviewer was not available to take the call, it would be directed to a voicemail recording indicating the caller had reached the LACHS study line and asking them to leave a message. RTI's team of call center quality experts monitored the voicemail box every hour each business day, logged each call, and responded within 48 hours.

RTI drafted a guide that outlined the most common reasons for calling the study line and provided instructions to interviewers for resolving inquiries. Common reasons for calling included web survey access issues, incentive issues, refusals, reports of already completing the web survey, survey legitimacy, and address issues.

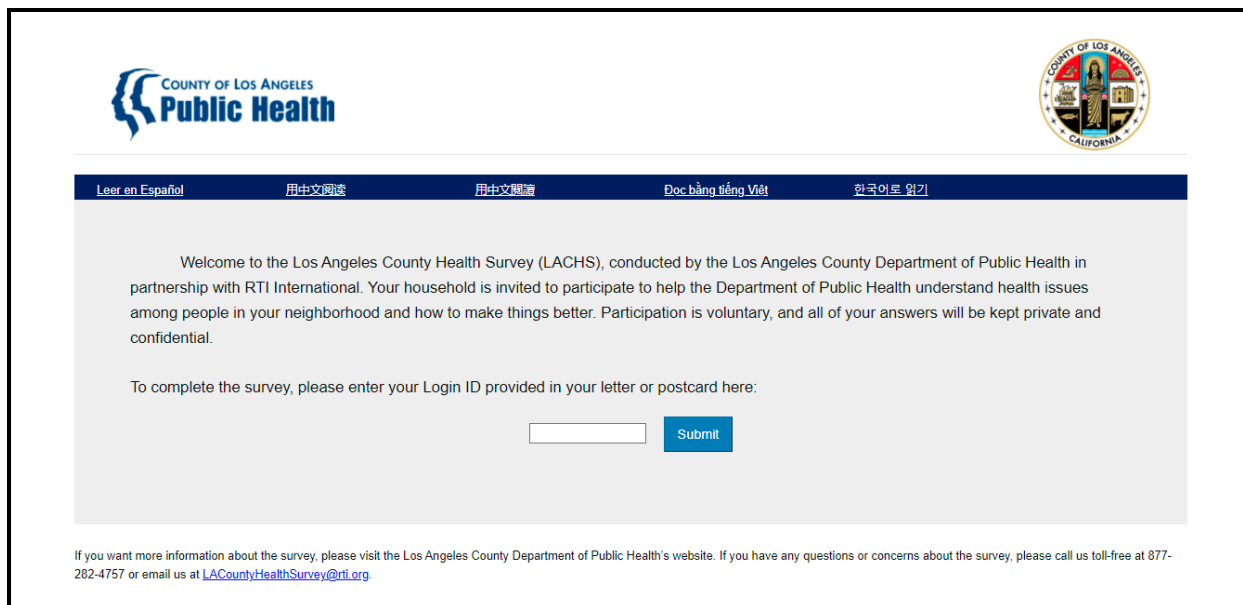
Public Health also had a dedicated survey phone line. The Public Health team followed a similar protocol to RTI's for answering and responding to calls. The Public Health team was briefed on how to respond to general survey inquires and had access to a guide that outlined common reasons for calling and instructions on how to respond to and resolve inquiries. In instances when the caller needed assistance only RTI could provide (e.g., issues accessing web survey or incentive gift card), then Public Health would ask the caller for survey-related details, such as login ID, and would forward the relevant information to RTI for follow-up.

RTI also created an email address specifically for LACHS. The email address was set up as a shared account for the project management team and call center staff. The inbox was monitored each business day, and issues were resolved using the same guide provided for phone inquiries. The study email address was copied on all emails containing the electronic gift card sent to respondents who chose that incentive type. This enabled the RTI team to more easily troubleshoot issues related to electronic gift card incentives.

RTI created a website for LACHS that served two purposes. First, if the respondent visited the website intending to complete the survey, the website was where they entered their login ID code to access their personal web survey. Second, if the respondent was unsure if they wanted to participate and wanted more information, they could find a link to Public Health’s page dedicated to LACHS. Public Health’s website also provided a link to frequently asked questions (FAQ) that respondents could review to address common concerns about the survey and verify its legitimacy. The FAQ was provided in all of the LACHS languages.

A screenshot of the LACHS website that RTI created is presented in Exhibit 10.

## Exhibit 10. Screenshot of LACHS Respondent Website



All outgoing mail listed the address for RTI’s Resource Operations Center:

The Los Angeles County Health Survey  
c/o RTI International  
Attn: Data Capture (0218252.000.007)  
5262 Capital Boulevard  
Raleigh, NC 27690-1653

This was the same address listed on the Business Reply Envelope for respondents to return their completed paper surveys.

## 5.10 Incidents and Issues Protocol

RTI created a Distress Protocol plan that outlined the procedures for monitoring, addressing, and acting upon incidents and issues received by respondents of LACHS. The plan outlined the procedure for handling phone calls and emails from respondents and addressing potentially distressed respondents using either the FAQ or Incidents and Issues Protocol. The plan also outlined the procedure for reviewing

survey data, specifically open-ended data for potential incidents. Anything that the Research Operations Center detected as a potential incident was forwarded to the RTI project team. The RTI project team reviewed and investigated as necessary. At their discretion, the RTI project team escalated potential issues to Public Health for guidance. Any recommended course of action from Public Health was then handled by the RTI project team.

### **Potential Incident**

In May 2023, the RTI project team detected a potential incident when reviewing open-ended data. At question DIS2, which asks for the main reasons for experiencing instances of discrimination, a respondent wrote into the “other specify” response option an indication of potential violence in their household by a relative.

RTI reviewed the rest of the case’s open-ended data for any other potential instances or reports of violence and then reported the situation to Public Health. RTI also extracted the respondent’s name, phone number, email address, and a few demographic variables from the case to assist in identifying the correct person in the household for follow-up contact. Public Health consulted with Public Health’s Institutional Review Board, which recommended that RTI contact the respondent and provide additional resources from Public Health’s Office of Violence Prevention and Domestic Violence Council. This helped RTI protect the respondent’s confidentiality and privacy.

## **5.11 Mail Receipting**

All returned mail, including undeliverable mail and PAPI screeners, was received at RTI’s Research Operations Center in Raleigh, North Carolina. Returns were sorted, categorized by mailing, and then opened. Further sorting took place after opening (completed screener, refusal, etc.). Following mail sorting, the data capture team receipted the returns in RTI’s Symphony Control System. Mailing stages that correspond to each mail-out were set for the receipt of undeliverable mail. The undeliverable mail return type was also captured. The total number of records coded as undeliverable can be found in the Disposition Codes and Outcome Rates section.

Data (or stage outcome, if refusal) were scanned and entered into the data set only for first received survey in duplicate cases. Once batches were receipted, the completed PAPI screeners were scanned into TeleForm, a data capture system that processes paper-based forms. The scanned images were accepted and went through a classification and Optical Character Recognition process in TeleForm.

A data capture clerk (verifier) performed verification of all cases in a batch. The verifier reviewed all constrained print fields and made changes as needed, keyed data in open-ended fields, and reviewed any closed-in fields (bubbles, check boxes) that TeleForm populated for review. Once the data review was finalized, a designated data capture clerk committed the data to the data set.

During Release 1, a small number of PAPI screener forms were returned that were torn to only include the language section that was completed (e.g., the respondent completed the English questions and cut and mailed back only the English section). Because the CaseID was only printed once on the form, these torn PAPI screeners could not be processed. Before Release 2, RTI asked the printing/mailing vendor to print CaseIDs in each of the six language sections on the PAPI screener form.

Respondents to the PAPI screener were contacted by outgoing CATI calls. Any PAPI cases without responses to one or more variables received the CATI screener while those who completed all items began at the Adult CATI survey. A PAPI screener must have contained a response to phone number variables for the case to be eligible for CATI calling. PAPI screener data were loaded into Voxco weekly.

## 5.12 Monitoring

RTI created a custom Adaptive Total Design (ATD) dashboard for LACHS, which was updated daily to assist the project team in monitoring data collection. Using various data sources, including sample frame indicator variables, case dispositions, and survey data, the ATD dashboard presented the most important metrics to Public Health while minimizing superfluous information to enable timely decision-making.

The LACHS ATD dashboard was programmed to display completed surveys by a variety of outcomes, such as by survey component (Adult Survey vs. Child Survey), by mode (CAWI vs. CATI), by language, and by geographic area (SPA). Data could be subset by subsample, incentive amount (to monitor the incentive experiment), and sample release. The ATD also included completed surveys by demographics such as race, education level, and age. These metrics allowed the teams to track progress toward the various survey targets and goals and help inform decisions about the sample allocation between sample releases.

A sample of the LACHS ATD dashboard is presented in Exhibit 11.

### Exhibit 11. Screenshot From LACHS ATD Dashboard



### **5.13 Recontact Efforts**

A total of 617 Adult Survey complete cases were erroneously not asked W2 (question about trying to get pregnant) and if applicable W2a (use of birth control methods). RTI programmed a new CAWI instrument for these cases asking W2 and W2a. RTI sent up to two emails and texts to the 235 cases for which RTI had email addresses and/or cell phone numbers asking respondents to complete the W2/W2a instrument. RTI sent a prompt to complete the W2/W2a instrument via USPS mail to the 482 cases that did not respond to or did not receive the email and text messages. A total of 135 cases completed the W2/W2a instrument.

Forty Adult Survey complete cases were erroneously not asked STi1 (ever heard of PrEP) and, if applicable, STi1a (use of PrEP in the past 12 months). RTI programmed a new CAWI instrument for these cases asking STi1 and STi1a. RTI sent up to two emails and texts to the 27 cases for which RTI had email addresses and/or cell phone numbers asking respondents to complete the STi1/STi1a instrument. Thirteen cases completed the STi1/STi1a instrument.



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# ***Final Data Preparation***

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## **6.1 Data Processing and Cleaning**

Survey data were processed periodically throughout data collection. RTI provided interim datasets to Public Health for review. After review of interim datasets, Public Health provided feedback to RTI with the goal of ensuring accurate data collection. Final data cleaning was led by the Public Health team. The team reviewed all the open-ended responses and upcoded the data as needed. The team also checked the skip patterns, data ranges, and other aspects of the data to ensure consistency and accuracy. Public Health provided a cleaned dataset to RTI for further processing.

## **6.2 Imputation**

Because the survey item missingness is very limited, Public Health decided to only impute key demographic variables. A hot deck imputation method was used to impute respondents' age group, while household income by Federal Poverty Level was imputed by a Markov Chain Monte Carlo method.

## **6.3 Disposition Codes and Outcome Rates**

Each of the 109,847 sampled addresses was assigned one of six possible screener disposition codes. These are summarized in Exhibit 12. Mailing materials for 2,308, or about 2.1% of the originally sampled addresses, were sent back by USPS more than once and were coded out as an undeliverable (UD). A completed screener was obtained from 28,080 households, although only 18,240 of these were determined to be eligible with one adult and/or child selected for the main survey. Hence, the screen out rate  $[(S0 + S1) / (S0 + S1 + CO)]$  was about 35%, attributable primarily to no child present (31.8%). The 3.2% screen out rate for households with one or more child present only occurred toward the end of data collection as child completes were nearing the predetermined target.

For the 76,715 addresses for which no response was obtained, we assumed an eligibility rate of  $e = 93.0\%$ , calculated as  $[(CO + S0 + S1 + PC) / (CO + S0 + S1 + PC + UD)]$ , the rate of eligibility among those addresses where eligibility was determined. Therefore, the AAPOR RR3 response rate calculation comes out to 19.7%, defined as  $[CO / (CO + PC + e*NR)]$ , where we note that screened-out households are removed from both the numerator and denominator.

## Exhibit 12. Household Screener Disposition Codes

Code	Description	Count	Percent
CO	Screener Complete – Adult and/or Child Selected	18,240	16.6
S0	Screener Complete – Screened Out Household Units, No Children Present	8,921	8.1
S1	Screener Complete – Screened Out Household Units, 1+ Child Present	919	0.8
PC	Partial Screener Complete – Breakoff	2,744	2.5
UD	Undeliverable	2,308	2.1
NR	All Other Nonresponse	76,715	69.8
<b>Totals</b>		109,847	100.0

### 6.3.1 Adult Survey Disposition Codes

Exhibit 13 summarizes disposition codes for the Adult Survey. An adult was selected, and a main survey attempted, for  $9,372 + 2,041 = 11,413$  of the 18,240 screened-in households. The other 6,827 households had one or more adults present, but none were selected for participation in the Adult Survey. Thus, the conditional response rate for the Adult Survey was  $[ CO / (CO + NR) ] = 9,372 / 11,413 = 82.1\%$ . However, the final Adult Survey response rate, which is the product of the screener response rate and Adult Survey conditional response rate, is  $19.7\% \times 82.1\% = 16.2\%$ .

### Exhibit 13. Adult Survey Disposition Codes

Code	Description	Count	Percent
CO	Adult Survey Complete	9,372	51.4
NR	Adult Selected, Nonrespondent	2,041	11.2
NS	Adult Present, Not Sampled	6,827	37.4
<b>Totals</b>		18,240	100.0

### 6.3.2 Child Survey Disposition Codes

Exhibit 14 summarizes disposition codes for the Child Survey. A child was selected, and a main survey attempted, for  $7,391 + 3,130 = 10,521$  of the 18,240 screened-in households. The conditional response rate for the Child Survey was therefore  $7,391 / 10,521 = 70.2\%$ , defined as  $[ CO / (CO + NR) ]$ . Note that the child present but not sampled condition is already accounted for with the screener disposition code S1. Of these 10,521 child selections, 3,694 came from a household with an adult selected for the Adult Survey as well, and for 1,433 of these households, both an Adult Survey and Child Survey complete was obtained. In this scenario, it was almost always the case ( $1,391 / 1,433 = 97.1\%$ ) that the same Adult Survey respondent served as the respondent for the Child Survey. The final Child Survey response rate, which is the product of the screener response rate and Child Survey conditional response rate, came out to  $19.7\% \times 70.2\% = 13.9\%$ .

## Exhibit 14. Child Survey Disposition Codes

Code	Description	Count	Percent
CO	Child Survey Complete	7,391	40.5
NR	Child Selected, Nonrespondent	3,130	17.2
NC	No Children Present	7,719	42.3
<b>Totals</b>		18,240	100.0

### 6.3.3 LACHS Targets and Completes

Exhibit 15 summarizes the counts of Adult Survey and Child Survey completes alongside the minimum targeted figures established at the outset of LACHS 2022-2023. All SPA targets were met for both Adult and Child completes, as was the Adult Survey target for AI/AN individuals (any mention in the mark-all-that-apply format). The count of Adult Survey completes by an individual identifying as NHPI (n = 86) and Child Survey completes for children identified as AI/AN (n = 113) or NHPI (n = 74) fell below the target of 150. Likewise, a total of 1,006 Adult Survey completes were from individuals reporting to be part of the LGBTQ community, about 16% below the target of 1,200.

Despite using the language flags on the enhanced ABS frame and appending ACS data to explicitly oversample likely Asian language-speaking households, the survey completes fell well short of the targets for Mandarin, Cantonese, Korean, and Vietnamese. It is important to note that, of those respondents who indicated that a language other than English was most commonly spoken in the home, 75% completed the 2022-2023 LACHS in English, and roughly 65% of these respondents indicated an ability to speak English “very well” or “well.”

**Exhibit 15. Adult Survey and Child Survey Completes versus Minimum Targets Established Prior to Start of LACHS 2022-2023**

<b>Dimension</b>	<b>Target Minimum Adult Survey Respondents</b>	<b>Actual Respondent Count to Adult Survey</b>	<b>Target Minimum Child Survey Respondents</b>	<b>Actual Respondent Count to Child Survey</b>
<i>Service Planning Area (SPA)</i>				
Antelope Valley	500	511	500	573
San Fernando	500	1,311	500	696
San Gabriel	500	1,824	500	1,708
Metro	500	1,141	500	633
West	500	1,201	500	543
South	500	1,002	500	1,121
East	500	1,235	500	1,535
South Bay	500	1,147	500	582
<i>Language</i>				
Mandarin	100	40	--	23
Cantonese	100	22	--	12
Korean	150	20	--	11
Vietnamese	100	6	--	2
<i>Race</i>				
American Indian or Alaska Native	150	183	150	113
Native Hawaiian or Pacific Islander	150	86	150	74
<i>Other</i>				
LGBTQ Community	1,200	1,006	--	--

**6.3.4 Adult Survey Timings**

The average completion time for the Adult Survey in CAWI was 32.39 minutes. The median time was 28.66 minutes. The average completion time for the Adult Survey in CATI was 85.20 minutes. The median time was 80.92 minutes.

**6.3.5 Child Survey Timings**

The average completion time for the Child Survey in CAWI was 49.82 minutes. The median time was 39.42 minutes. The average completion time for the Child Survey in CATI was 59.99 minutes. The median time was 48.53 minutes.

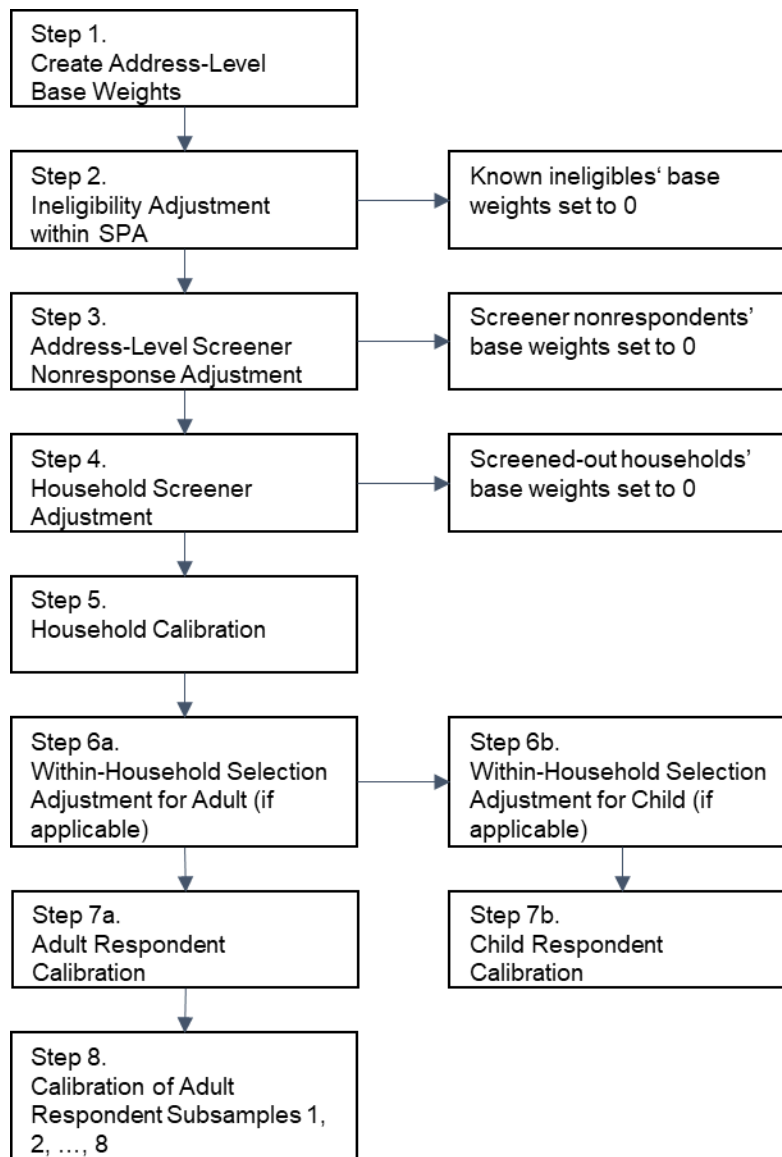
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# Weighting

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This section of the methodology report explains the weighting methods utilized in LACHS 2022-2023. Exhibit 16 is a flowchart showing the sequence of weighting steps. The subsections that follow provide more background and specifications regarding the various weighting steps. In all, 13 unique analysis weights were created, which are summarized in Exhibit 17 at the end of Section 8.

## Exhibit 16. Overview of LACHS 2022-2023 Weighting Procedures



### **Step 1: Assigning a Base Weight**

The first step in the weighting process was to define a base weight equal to the inverse of the selection probability. For the  $i^{\text{th}}$  address in the  $h^{\text{th}}$  stratum ( $h = 1, \dots, 423$ ), this weight was assigned as  $w_{1hi} = N_h/n_h$ , where  $N_h$  is the total number of addresses and  $n_h$  is the number of addresses sampled as part of either of the two releases.

### **Step 2: Address-Level Unknown Eligibility Adjustment**

The second step was to make an adjustment for the likelihood that a portion of the addresses where eligibility status could not be determined. A SPA-specific adjustment factor was computed as the base-weighted eligibility rate for the subset of addresses in the SPA where eligibility status could be determined. These values ranged from a low of 0.891 in the Metro SPA to a high of 0.964 in the East SPA. If we denote the SPA-specific value as  $e_s$  ( $s = 1, \dots, 8$ ), addresses with disposition code NR (see Exhibit 12) were assigned an adjusted weight of  $w_{2i} = w_{1hi} * e_s$ . All other addresses were assigned as weight of  $w_{2i} = w_{1hi}$ .

### **Step 3: Address-Level Screener Nonresponse Adjustment**

The third step in the weighting process was to make an adjustment for screener nonresponse at the address level. In doing so, the goal was to transfer the weights produced in Step 2 from nonresponding addresses to responding addresses within groupings where all addresses within have similar estimated response propensities (Little & Rubin, 2019).

To identify such groupings, we fitted a regression tree model (Breiman et al., 1984) with predictor variables drawn from the enhanced ABS frame, using the screener response indicator as the outcome variable. As described in Buskirk (2018), the notion behind classification and regression tree methodology is to exploit available covariates to recursively partition a data set into groupings referred to as *nodes*, or *leaves*, by making a hierarchical sequence of binary splits that best explain residual variation in the outcome variable. This is an example of an *implicit* response propensity modeling strategy, one that has certain advantages over *explicit* models such as those fit via logistic regression (Phipps & Toth, 2012). Key among them is the ability to identify only the most important relationships—ones that may involve complex, higher order interactions—from a potentially large set of potential covariates.

PROC HPSPLIT in SAS® (SAS Institute Inc., 2015) was used to identify a total of 109 nodes, each of which was defined to contain at least 500 sampled cases, based on approximately 30 covariates. These covariates were derived from the most recently available ACS measures at the same CBG within which the address was situated. Examples include the percent of renter-occupied households, the median home value, the percent of individuals without health insurance, and the percent of individuals living below the poverty level.

Across the 109 nodes, unweighted response rates ranged from 16.3% to 38.4%, but weighted response rates were used in the adjustment factors to ensure that the sum of weights before and after adjustment remained the same. Denoting these weighted response rates as  $RR_c$  ( $c = 1, 2, \dots, 109$ ), then the weight for the  $i^{\text{th}}$  address of a screener respondent (28,080 households) within the  $c^{\text{th}}$  node was inflated to become  $w_{3i} = w_{2i} * RR_c$ . All screener nonrespondents were assigned weights of  $w_{3i} = 0$ .

#### **Step 4: Household Screener Adjustment**

As discussed above, to improve the likelihood of meeting targeted completes for the various domains of interest, a portion of households had neither an adult nor child selected for the main survey. These are referred to as *screened-out households*. The determination of which households were to be screened in (or out) was based on compositional information obtained during the screener. Specifically, the household was classified into one of 168 mutually exclusive cells with affixed probabilities for whether one child and/or one adult would be selected. If a preassigned random uniform number between 0 and 1 was lower than the assigned probability, the household was screened in and a selection of an adult and/or child was made. Otherwise, if the preassigned random number was greater than the assigned probability, the household was screened out. If we denote this probability as  $p_j$ , where  $j = 1, 2, \dots, 168$  represents the  $j^{\text{th}}$  cell, then households screened into the main survey were assigned an adjusted weight of  $w_{4i} = w_{3i} * p_j$ , while screened-out households were assigned  $w_{4i} = 0$ .

#### **Step 5: Household Calibration**

The fifth step in the weighting process was to calibrate households to known population totals within LAC. Control totals used for this step were produced from table B11005 from the 2017-2021 ACS 5-year data file. Households were classified by both HD and whether one or more children under the age of 18 was present. For Adult Survey responses, weights from Step 4 were calibrated to HD totals, summing to a total of 3,342,811 households in the county. For Child Survey respondents, weights from Step 4 were calibrated to HD totals for only those households with 1+ child present, summing to a total of 1,074,354 households. For both calibration procedures—including a comparable calibration of Adult Survey respondents who received subsample 3 of the questionnaire—we used PROC WTADJUST in SUDAAN, which uses the *generalized exponential model* approach described by Folsom & Singh (2000). We denote the calibrated Adult Survey household weight as  $w_{5ai}$  and the calibrated Child Survey household weights as  $w_{5bi}$ .

#### **Step 6: Within-Household Selection Adjustment for an Adult/Child**

The sixth step was to make an adjustment for the within-household selection of a single adult to participate in LACHS 2022-2023, where applicable. This was considered as a (pseudo) simple random sample, with the respondent instructed to have the adult in the household next to celebrate a birthday to complete the survey. If we denote  $1 \leq a_i \leq 4$  as the number of adult household members associated with the  $i^{\text{th}}$  household (capping the small portion of households reporting  $a_i > 4$  to mitigate the risk of exorbitant weight variability), then the new weight for this Adult Survey respondent was defined as  $w_{6ai} = w_{5ai} * a_i$ . An analogous adjustment was made for the  $1 \leq c_i \leq 4$  (capped, as necessary) number of children in the household,  $c_i$ , producing the new weight  $w_{6bi} = w_{5bi} * c_i$ .

#### **Step 7: Calibration to Adult/Child Population Totals**

The seventh step in the weighting process was to calibrate the individual-level Adult Survey weights produced in Step 6 such that the sum of weights for groupings of various respondent dimensions simultaneously match control totals captured from official sources. As with Step 5, this was done using PROC WTADJUST. Formulated at the SPA level, the dimensions for the Adult Survey respondents included the following:

1. Gender

2. Age range (4 categories)
3. Race and ethnicity (4 categories: Hispanic, non-Hispanic White, non-Hispanic Black, Other)
4. Federal Poverty Level threshold (3 categories: < 100%, 100%-199%, and 200%+)
5. Marital status (3 categories: Never Married, Married, Other)
6. Educational attainment (3 categories: High School or less, Some College, College or Higher)
7. Own home vs. renting

Where necessary, a modest amount of collapsing of categories was required (e.g., if the unweighted count of respondents in a given SPA x covariate category was less than 50). This happened most often for the 100%-199% Federal Poverty Level threshold. Where necessary, this category was combined, within the same SPA, with the < 100% threshold. Additionally, a modest amount of imputation of missing values for source questionnaire items was required. This was implemented during the Public Health data cleaning efforts described in Section 6.1. We denote this set of adult individual-level analysis weights as  $w_{7ai}$ .

A set of calibrated individual-level Child Survey weights was developed in a similar manner, using the comparable following dimensions, also calculated at the SPA level:

1. Gender
2. Age range (4 categories)
3. Race and ethnicity (4 categories: Hispanic, non-Hispanic White, non-Hispanic Black, Other)
4. Federal Poverty Level threshold (3 categories: < 100%, 100%-199%, and 200%+)

Because of low respondent counts, collapsing was often required for non-Hispanic Black Child Survey respondents. Where necessary, this category was combined in a given SPA with Child Survey respondents in the “Other” race and ethnicity category. As with the Adult Survey, imputation of missing values for source questionnaire items was required and implemented by Public Health. We denote this set of child individual-level analysis weights as  $w_{7bi}$ .

### **Step 8: Calibration of Adult Survey Individual Weights for Subsamples**

The eighth step in the weighting process was to develop calibrated individual-level Adult Survey weights for each of the eight mutually exclusive questionnaire subsamples. This was implemented by first setting the weights of cases not in the given subsample to 0, then inflating the weights of cases that were in the given subsample. As in Step 7, PROC WTADJUST was used, and with the same seven covariates, with the key exception that benchmark totals were produced or constructed at the county level only, not within SPA. We symbolize the resulting calibrated weights as  $w_{8a(1)i}$ ,  $w_{8a(2)i}$ , ...,  $w_{8a(8)i}$ , respectively.



**Exhibit 17. Definition, Purpose, and Distributional Summary of LACHS 2022-2023 Analysis Weights**

<b>Weight Type</b>	<b>Purpose</b>	<b>Number of Weights &gt; 0</b>	<b>Sum of Weights</b>	<b>Min</b>	<b>Max</b>	<b>UWE</b>
Calibrated Household Weights – Adult Survey Completes <i>w<sub>5ai</sub></i>	Household-Level Analyses for Questions on Adult Survey Instrument	9,372	3,342,811	49.3	3,608.2	1.76
Calibrated Household Weights – Adult Survey Completes (subsample 3 only, covering emergency preparedness) <i>w<sub>5(3)ai</sub></i>	Household-Level Analyses for Questions on Adult Survey Instrument (subsample 3 only)	1,171	3,342,811	352.3	25,285.3	1.84
Calibrated Household Weights – Child Survey Completes <i>w<sub>5bi</sub></i>	Household-Level Analyses for Questions on Child Survey Instrument (applicable only to households with 1+ child)	7,391	1,074,354	25.1	1,267.1	1.87
Calibrated Adult Survey Individual Weights <i>w<sub>7ai</sub></i>	Individual-Level Analyses for Questions on Adult Survey Instrument	9,372	7,850,018	35.3	7,902.3	1.88
Calibrated Adult Survey Individual Weights – Subsamples 1, 2, ..., 8 <i>w<sub>8a(1)i</sub>, w<sub>8a(2)i</sub>, ..., w<sub>8a(8)i</sub></i>	Individual-Level Analyses for Questions on Adult Survey Instrument (subsamples 1, 2, ..., 8)	varies  (approx. 1/8 of 9,372)	7,850,018	varies	varies	varies
Calibrated Child Survey Individual Weights <i>w<sub>7bi</sub></i>	Individual-Level Analyses for Questions on Child Survey Instrument	7,391	1,942,149	33.3	1,449.1	1.89

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