

# 2020 National Post-acute and Long-term Care Study

## Survey Methodology for the Adult Day Services Center and Residential Care Community Components

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## Description

The 2020 National Post-acute and Long-term Care Study (NPALS) is designed to provide national and state representative statistical information about the supply and use of long-term care services providers in the United States. In January 2020, the National Study of Long-Term Care Providers (NSLTCP) was renamed the National Post-acute and Long-term Care Study (NPALS) to reflect the addition of the new post-acute care sectors. NPALS includes seven provider sectors: residential care communities, adult day services centers, nursing homes, home health agencies, hospices, inpatient rehabilitation facilities, and long-term care hospitals. The main goals of NPALS are to: (1) Estimate the supply of paid, regulated long-term care services providers; (2) Estimate key policy-relevant characteristics and practices of these providers; (3) Estimate the number of long-term care services users; (4) Estimate key policy-relevant characteristics of long-term care services users; (5) Produce national and state estimates where feasible within confidentiality and reliability standards; (6) Compare across provider sectors; and (7) Monitor trends over time.

NPALS comprises two components: (1) primary data collected by the National Center for Health Statistics (NCHS) through surveys of residential care communities (RCCs) and adult day services centers (ADSCs), and (2) administrative data on nursing homes, home health agencies, hospices, inpatient rehabilitation facilities, and long-term care hospitals obtained from the Centers for Medicare & Medicaid Services (CMS). With the first wave of NSLTCP in 2012, NCHS conducted the study every two years; the renamed 2020 NPALS is the fifth wave. This documentation focuses on the primary data collection component of the 2020 wave of NPALS.

The residential care community and adult day services center surveys were conducted between November 2020 and July 2021. All residential care communities that participated in the survey were licensed, registered, listed, certified, or otherwise regulated by the state; had four or more licensed, registered, or certified beds; provided room and board with at least two meals a day, around-the-clock on-site supervision, and help with personal care, such as bathing and dressing or health related services such as medication management. These communities served a predominantly adult population. Residential care communities licensed to exclusively serve the mentally ill or the intellectually disabled/developmentally disabled populations were excluded

from NPALS. In 2012, all adult day services centers that participated in the survey self-identified as adult day care, adult day services, or adult day health services centers and were in operation on or before May 31, 2012, and were included in the National Adult Day Services Association's database. Unlike 2012, the 2014, 2016, 2018, and 2020 waves had a set of additional eligibility criteria for study participation. In addition to being included in the National Adult Day Services Association's database, adult day services centers had to: 1) be licensed or certified by the state specifically to provide adult day services, or accredited by the Commission on Accreditation of Rehabilitation Facilities (CARF); or authorized or otherwise set up to participate in Medicaid (Medicaid state plan, Medicaid waiver, or Medicaid managed care) or part of a Program of All-Inclusive Center for the Elderly (PACE); 2) have one or more average daily attendance of participants based on a typical week; and 3) have one or more participants enrolled at the center at the location at the time of the survey.

NPALS uses a multi-mode survey protocol with mail, web, and computer-assisted telephone follow-up for non-response. The questionnaires included survey items on provider characteristics such as ownership, size, number of years in operation, services offered, selected practices, and staffing in addition to aggregate user characteristics, such as age, sex, race, and the number of residents/participants needing assistance with activities of daily living. The 2020 mail questionnaires are available at: <https://www.cdc.gov/nchs/npals/questionnaires.htm>. In total 4,312 residential care communities and 1,780 adult day services centers participated in the 2020 NPALS survey. Data on these providers are available for use in NCHS' Research Data Center.

## Sampling Design

The residential care community component of the 2020 NPALS survey used a sample of residential care communities in some states and a census of residential care communities in other states. The adult day services center component of the survey used a census of adult day services centers in all states and the District of Columbia. In the residential care community component, a state was sampled if it had enough communities to enable state-level estimation, i.e., if it had sufficient number of communities to attain at least 81 completions after inflating the sample size for the estimated ineligibility and nonresponse. In states with an insufficient number of residential care communities on the sampling frame, NCHS took a census of RCCs. Among the

states where a sample was selected, the primary sampling strata were defined by state and community bed size. For each primary stratum defined by state and bed size, NCHS selected residential care communities by systematic random sampling from lists of communities first sorted by metropolitan statistical area (MSA) status and then randomly ordered within each MSA status. A total of 11,618 residential care communities were sampled with probability proportional to size. All 5,466 adult day services centers in the final sampling frame were included in the study.

## Sampling Frame

The residential care community sampling frame was constructed from lists of licensed residential care communities acquired from the licensing agencies in each of the 50 states and the District of Columbia. The state lists were checked for duplicate residential care communities and concatenated to form a list of all communities, resulting in a sampling frame of 44,201. For the census of adult day services centers, NCHS used a frame obtained from the National Adult Day Services Association. Adult day services providers that operated multiple centers at the same address were identified as separate centers. The master list incorporating all sources was checked for duplicate centers; these duplicates were deleted, resulting in a final sampling frame of 5,466 adult day services centers.

## Scope of Survey

For the 2020 NPALS, a sample of 11,618 residential care communities was selected from the sampling frame of 44,201 RCCs. Of the 11,618 RCCs in the sample, 5,818 (50%) could not be contacted and, therefore, the eligibility status of these communities was unknown. Using the eligibility rate, a proportion of these communities of unknown eligibility was estimated to be eligible. This estimated number along with the total number of eligible communities resulting from the screening process was used to estimate the total number of eligible residential care communities. Of the 8,746 in-scope and presumed in-scope residential care communities, 4,312 completed the survey questionnaire, for a weighted response rate (for differential probabilities of selection) of 45% (this is calculated by using AAPOR's Response Rate 4), resulting in an

estimated national total of 30,600 residential care communities, 1,197,600 beds, and 818,800 residents. Response rates (weighted) by state ranged from 33% to 68%.

### **Differences in the number of residential care communities over time**

The estimate of the number of residential care community providers varied across the survey waves beginning with the National Survey of Residential Care Facilities (NSRCF) in 2010, NSLTCP (2012-2018) and NPALS (2020). Estimated number of residential care communities across the waves were: 31,100 in 2010 (NSRCF), 22,200 in 2012, 30,200 in 2014, 28,900 in 2016, 31,400 in 2018, and 30,600 in 2020 (NPALS). These differences in estimated number of residential care communities are likely attributable to differences in eligibility rates. Description of possible reasons for differences in eligibility rates across the survey waves beginning with NSRCF and all NSLTCP waves particularly between the 2010 NSRCF and the 2012 NSLTCP as well as between the 2012 and 2014 NSLTCP waves is provided in a recent publication (Sengupta, Singh and Melekin, 2022) which can be accessed at [https://www.cdc.gov/nchs/data/series/sr\\_02/sr02-192.pdf](https://www.cdc.gov/nchs/data/series/sr_02/sr02-192.pdf). Briefly, the main reasons for ineligibility were RCCs exclusively serving populations with mental retardation/developmental disabilities or with severe mental illness, and not providing 24-hour supervision among other minor modifications of screener questions as well as question instructions.

Table 1. Weighted number and percent distribution of residential care communities, by bed size and survey year

Characteristic	National Post-acute and Long-term Care Study										National Survey of Residential Care Facilities	
	2020		2018		2016		2014		2012		2010	
	Num.	%	Num.	%	Num.	%	Num.	%	Num.	%	Num.	%
<b>Number of RCCs</b>	<b>30,600</b>	<b>100</b>	<b>31,400</b>	<b>100</b>	<b>28,900</b>	<b>100</b>	<b>30,200</b>	<b>100</b>	<b>22,200</b>	<b>100</b>	<b>31,100</b>	<b>100</b>
Small (4–10 beds)	13,000	42.7	14,700	46.7	13,200	45.6	14,500	47.9	9,300	41.7	15,400	50.0
Medium (11–25 beds)	4,400	14.4	4,000	12.8	4,400	15.3	4,500	14.9	3,700	16.8	4,900	16.0
Large (26–100 beds)	10,100	32.9	9,800	31.1	9,100	31.5	9,100	30.1	7,300	32.7	8,700	28.0
Extra large (more than 100 beds)	3,100	10.0	2,900	9.3	2,200	7.7	2,100	7.0	1,900	8.7	2,100	7.0
<b>Number of beds</b>	<b>1,197,600</b>	<b>100</b>	<b>1,183,600</b>	<b>100</b>	<b>996,100</b>	<b>100</b>	<b>1,006,300</b>	<b>100</b>	<b>851,400</b>	<b>100.0</b>	<b>971,900</b>	<b>100</b>
Small (4–10 beds)	81,600	6.8	90,400	7.6	81,800	8.2	89,600	8.9	64,700	7.6	96,700	9.9
Medium (11–25 beds)	76,700	6.4	71,900	6.1	76,500	7.7	76,900	7.6	86,900	10.2	86,800	8.9
Large (26–100 beds)	586,000	48.9	565,300	47.8	518,300	52.0	522,600	51.9	434,800	51.1	493,800	50.8
Extra large (more than 100 beds)	453,300	37.8	456,000	38.5	319,500	32.1	317,200	31.5	265,000	31.1	294,600	30.3

SOURCES: National Center for Health Statistics, National Study of Long-Term Care Providers, 2012, 2014, 2016, and 2018, 2020, and National Survey of Residential Care Facilities, 2010. NOTE: Numbers are rounded to the nearest 100.

The final frame of adult day services centers included 5,466 adult day services centers, which were all included in the data collection efforts. Of the 4,104 in-scope and presumed in-scope ADSCs, 1,780 of them completed the survey questionnaire, for a response rate of 43.0% (this is calculated by using AAPOR’s Response Rate 4), resulting in an estimated national total of 4,127 adult day services centers and 237,367 participants. Response rates by state ranged from 25% to 100%.

Weighted and unweighted response rates are reported per Office of Management and Budget’s (OMB) September 2006 Standards and Guidelines for Federal Statistics. Weighted rates measure the proportion of the total population that is represented by respondents, while unweighted rates reflect only the proportion of the sample that responded.

## Data Collection Procedures

The 2020 NPALS, which was conducted between November 2020 and July 2021, included mail, web, and telephone administered questionnaires. The survey instruments were designed to assess study eligibility and to collect data on services offered, the staffing profile, resident and center participant characteristics, and record keeping at the residential care communities and adult day services centers. Residential care communities and adult day services centers were sent hardcopy questionnaire and information on the Web questionnaire concurrently, and the computer-assisted telephone interview (CATI) option was offered later to those who did not submit their questionnaire via web or mail. For the last month of CATI data collection, several strategies were implemented to increase response rates for ADSCs and small RCCs.

Data collection preparations were underway when the COVID-19 pandemic began in early 2020. Data collection was scheduled to begin in July 2020 but through discussions with provider organizations, NCHS determined that many ADSCs were forced to close temporarily or permanently because of effects of the COVID-19 pandemic, and many RCCs were understaffed and overwhelmed dealing with Covid-19 outbreaks. Although questionnaire items had been finalized when COVID-19 started affecting long-term care providers, new questions were added to assess the COVID-19 experience and other questions were modified. Other protocol changes were made to adapt to the COVID-19 situation. Because many ADSCs were still closed and other ADSCs and RCCs were busy handling the effects of the COVID-19 pandemic in July 2020 and it took time to implement the new questions and protocol changes, data collection was delayed. More information about changes made to the survey are available here: [COVID-19 Pandemic Impact on the National Health Care Surveys | AJPH | Vol. 111 Issue 12](https://aphapublications.org/doi/full/10.1136/aph.2020.000000) ([aphapublications.org](https://aphapublications.org))

The 2020 mailings were sent in batches to RCCs and ADSCs throughout the data collection period. The mailings included an advance notification letter, a chain mail outreach package, two follow-up provider mail questionnaire packets, two letters to thank respondents for submitting the provider questionnaire or to remind them to complete the survey if they had not done so, and a final reminder letter.

After the NPALS data were collected, they were edited to ensure that responses were accurate, consistent, logical, and complete. More information on how the data were processed to prepare the restricted adult day services center file and the residential care community file, which is currently available only through NCHS' Research Data Center (RDC), is available in the readme files available through the NPALS website at:

<https://www.cdc.gov/nchs/npals/questionnaires.htm>.

## Estimation Procedures

The residential care community sample was a mix of sampled communities from states that had enough residential care communities to produce reliable state estimates and a census of residential care communities in states that did not have enough communities to produce a reliable sample. As a result, the residential care communities' estimates were subject to sampling variability and variability due to non-response. For the data on residential care communities in states where these communities were sampled, as well as for national estimates of residential care communities, the probability design of NPALS's residential care community component permits the calculation of sampling errors. The standard error of a statistic is primarily a measure of sampling variability that occurs by chance because only a sample, rather than the entire population, is surveyed. The standard error also reflects part of the variation that arises in the measurement process and non-response leading to unknown eligibility but does not include any systematic bias that may be in the data or any other non-sampling error. The chances are about 95 in 100 that an estimate from the sample differs from the value that would be obtained from a complete census by less than twice the standard error. Point estimates and standard errors can be calculated using appropriate design and weight variables in order to account for complex sampling, when applicable. Although a census of all adult day services centers was attempted, the adult day services center estimates were subject to variability due to the amount of non-response and permits the calculation of standard errors. Software products such as SAS, STATA, and SPSS all have these capabilities. The data files (i.e., adult day services centers and residential care communities) include design variables that can be used to calculate the standard errors.

In the residential care community and adult day services center data files, statistical analysis weights were computed as the product of two components—the sampling weight (only for residential care communities in states where they were sampled) and adjustment for unknown eligibility due to non-response. For sampled states in the residential care community component, the sampling weights reflected the probability of selection for each selected facility. The sampling weight for each sampled facility was the reciprocal of its probability of selection. For all the records in the adult day services center component and for all states for which we selected a census for the residential care community component, the probability of selection was equal to 1. To account for residential care communities and adult day services centers of unknown eligibility status, the weights of the facilities with known eligibility were adjusted upward based on the proportion of facilities that were actually known to be eligible. The adjustment for unknown eligibility was done in SUDAAN, using a constrained logistic model to predict known eligibility and to compute the unknown eligibility adjustment factors for the weights. In both the residential care community data file and the adult day services center data file, the variable STRATA indicates the sampling stratum (bed size and state for residential care communities and state for adult day services centers), and the facility/center indicated by the CASEID, the primary sampling unit. POPFAC represents the total number of residential care communities for calculating the finite population correction in a stratum. Although the records that make up the adult day services centers file were not sampled, the variability associated with the non-response was treated as if it were from a stratified (by state) sample without replacement. POPFAC represents the total number of adult day services centers for calculating the finite population correction in a stratum. The survey weights in the adult day services center data file are indicated similar to the RCC file. The readme files available on the NPALS website (<https://www.cdc.gov/nchs/npals/questionnaires.htm>) provide an example of the syntax for using these design variables to describe the sampling design in SUDAAN, STATA, and SAS.

## Reliability of Estimates

Estimates from sample surveys published by NCHS must meet reliability criteria based on the relative standard error (RSE or coefficient of variation) of the estimate and on the number of sampled records on which the estimate is based. Proportion estimates are not presented or are flagged based on the procedure specified in “National Center for Health Statistics Data

Presentation Standards for Proportions,” available from:

[https://www.cdc.gov/nchs/data/series/sr\\_02/sr02\\_175.pdf](https://www.cdc.gov/nchs/data/series/sr_02/sr02_175.pdf). For all estimates other than estimates of proportions in the tables: estimates are not presented if they are based on fewer than 30 cases in the sample data, in which case only an asterisk (\*) appears. Estimates based on 30 or more cases are replaced with an asterisk if the relative standard error of the estimate exceeds 30%. NCHS also follows data confidentiality standards in published reports to ensure nondisclosure of respondents. Users are strongly recommended to read the readme text and follow the instructions provided for the individual data sets.

## Obtaining the Data

The 2020 ADSC and RCC data files can be accessed through the NCHS’ Research Data Center (RDC). In addition to following the RDC procedures for restricted data file access, there are a few conditions or restrictions for data use, and they are as follows:

1. Use the data in this dataset for statistical reporting and analysis only.
2. Make no use of the identity of any person or establishment discovered inadvertently and advise the Director, NCHS, of any such discovery.
3. Report apparent errors in the data or documentation files to the Long-Term Care Statistics Branch (LTCSB). We also request the user inform LTCSB of any publications or presentations produced based on the 2020 NPALS data and cite relevant NPALS documentations/data products in their work when appropriate.

## Contact Information

To request a codebook or for questions, suggestions, or comments concerning NPALS data, please contact the LTCSB at: Long-Term Care Statistics Branch (LTCSB), NCHS, 3311 Toledo Road, Hyattsville, MD 20782

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