2022 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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The National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC), conducts statistical and epidemiological activities under the authority granted by the Public Health Service Act (42 U.S.C. § 242k). NCHS survey data are protected by Federal confidentiality laws including Section 308(d) Public Health Service Act [42 U.S.C. 242m(d)] and the Confidential Information Protection and Statistical Efficiency Act of 2018 (CIPSEA 44 U.S.C. 3561-3583). These confidentiality laws state the data collected by NCHS may be used only for statistical reporting and analysis. Any effort to determine the identity of individuals and establishments violates the assurances of confidentiality provided by federal law.

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NCHS does all it can to assure that the identity of individuals and establishments cannot be disclosed. All direct identifiers, as well as any characteristics that might lead to identification, are omitted from the dataset. Any intentional identification or disclosure of an individual or establishment violates the assurances of confidentiality given to the providers of the information. Therefore, users will:

- 1. Use the data in this dataset for statistical reporting and analysis only.
- 2. Make no attempt to learn the identity of any person or establishment included in these data.
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Willfully disclosing any information that could identify a person or establishment in any manner to a person or agency not entitled to receive it, shall be guilty of a class E felony and imprisoned for not more than 5 years, or fined not more than \$250,000, or both.

Description

The 2022 National Post-acute and Long-term Care Study (NPALS) (renamed from the National Study of Long-Term Care Providers in 2020) is designed to provide nationally representative estimates about the supply and use of long-term care services providers in the United States.

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 2022 NPALS is the sixth wave. This documentation focuses on the primary data collection component of the 2022 wave of NPALS.

The RCC and ADSC surveys were conducted between September 2022 and March 2023. All RCCs 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. RCCs licensed to exclusively serve severely mentally ill or intellectually disabled/developmentally disabled populations were excluded from NPALS. In 2012, all ADSCs 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, 2020, 2022 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, ADSCs 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 interviewing (CATI). The first 3 waves (2012, 2014, 2016) of NSLTCP and the fifth wave (2020) of NPALS used a mail and web provider questionnaire with CATI follow-up for non-response. In 2018, NSLTCP used a redesigned protocol to include a separate screener questionnaire to determine eligibility using CATI, a provider questionnaire using mail or web,

and a services user (SU) module administered through CATI to randomly select two services users (residents in RCCs and participants in ADSCs) and ask questions about each selected user. The 2022 NPALS had a similar protocol as 2018, except the screener items were incorporated into the provider questionnaire rather than a separate CATI questionnaire. The provider questionnaire included survey items on provider characteristics such as ownership, size, services offered, selected practices, and staffing; questions about aggregate user characteristics (age and race) were included. The SU questionnaire included items on user demographics, health conditions, limitations with activities of daily living, number of prescription medications, adverse events, and services used.

Separate ADSC and RCC instruments for each mode were developed to allow for a subset of items specific to each sector to be administered for each provider type. The 2022 provider questionnaires and SU CATI items are available at https://www.cdc.gov/nchs/npals/questionnaires.htm.

In total, 688 RCCs and 389 ADSCs completed the provider questionnaire for the 2022 NPALS survey components. The services user questionnaire was completed for 549 RCC residents and 439 ADSC participants. Restricted data from the 2022 surveys may be accessed through the NCHS Research Data Center (RDC).

Sampling Design

Two separate random national samples, one of RCCs and the other of ADSCs, were drawn from the two sector-specific frames. The 2022 NPALS used a two-stage probability-based sample design. In the first stage, a stratified random sample of providers were selected among ADSCs and RCCs; in the second stage, current services users (residents in RCCs and participants in ADSCs) were randomly selected. Stratified samples of 2,088 RCCs and 1,660 ADSCs were contacted to participate in the surveys. Within each eligible participating ADSC/RCC, a random sample of two services users were selected. Respondents of eligible RCCs and ADSCs were asked to prepare a list of all services users (a census) as of midnight the day before the date of the CATI appointment. Selection of services users was done via a telephone protocol on the day of CATI appointment. The sampling instructions for the participating ADSC or RCC were described in the SU module instruments and CATI interviewers guided the respondents through the process.

Sampling Frame

The RCC sampling frame was constructed from lists of licensed RCCs acquired from the licensing agencies in each of the 50 states and the District of Columbia. The state lists were checked for duplicate RCCs and concatenated to form a list of all RCCs, resulting in a sampling frame of 46,049 RCCs. For ADSCs, NCHS used a frame obtained from the National Adult Day Services Association. Adult day services providers that operated multiple ADSCs at the same address were identified as separate ADSCs. The master list incorporating all sources was

checked for duplicate ADSCs; these duplicates were deleted, resulting in a final sampling frame of 5,135 ADSCs.

Scope of Survey

For the 2022 NPALS, a sample of 2,088 RCCs was selected from the sampling frame of 46,049 RCCs. Of the 2,088 RCCs in the sample, 1,326 RCCs could not be contacted and, therefore, the eligibility status of these RCCs was unknown. Using the eligibility rate of 90% derived from RCCs that completed the screener questionnaire, a proportion of RCCs of unknown eligibility was estimated to be eligible. This estimated number along with the total number of eligible RCCs resulting from the screening process were used to estimate the total number of eligible RCCs. Of the 1,885 eligible and presumed eligible RCCs, 688 of them completed the provider questionnaire, for a weighted response rate (for differential probabilities of selection) of 34% (this is calculated by using AAPOR's Response Rate 4), resulting in an estimated national total of 32,231 RCCs. The SU module was completed for 549 residents for a response rate of 40%, resulting in an estimated 1,016,424 residents.

For the ADSC component, a sample of 1,660 providers were sampled from a frame of 5,137 ADSCs. Of the sample of 1,660 ADSCs, 997 (60%) could not be contacted and, therefore, the eligibility status of these ADSCs was unknown. Using the eligibility rate of 59% derived from ADSCs that completed the screener questionnaire, a proportion of ADSCs of unknown eligibility was estimated to be eligible. This estimated number along with the total number of eligible ADSCs resulting from the screening process were used to estimate the total number of eligible providers. Of the 974 eligible and presumed eligible ADSCs, 389 of them completed the

provider questionnaire, for a weighted response rate (for differential probabilities of selection) of 40% (this is calculated by using AAPOR's Response Rate 4), resulting in an estimated national total of 3,082 ADSCs. The SU module was completed for 439 participants for a response rate of 56%, resulting in an estimated 182,002 participants.

Weighted 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 2022 NPALS, which was conducted between September 2022 and March 2023, included mail, web, and CATI questionnaires. The RCC and ADSC survey instruments were designed to assess study eligibility and to collect data on services offered, the staffing profile, and RCC resident and ADSC participant characteristics. The 2022 NPALS protocol was similar to the 2018 NSLTCP protocol except for a few changes. RCCs and ADSCs were sent hard copy questionnaires and information on the Web questionnaires concurrently, and the CATI option was offered later to those who did not submit their questionnaire via Web or mail. Unlike the 2018 wave, where RCC and ADSC eligibility was assessed via telephone through a brief screener instrument, the 2022 wave included the screener questions in the provider questionnaire. Similar to the 2018 wave, in addition to collecting provider-level data, the 2022 wave expanded the data collection to gather person-level data on residents of RCCs and participants of ADSCs. A mixed-mode approach was used to collect provider-level survey data through hard-copy and

Web questionnaires, and person-level data through CATI. Separate ADSC and RCC instruments for each mode were developed to allow for a subset of different items to be administered for each provider type.

As the first step of data collection, directors or administrators of sampled RCCs and ADSCs were sent an advance notification packet that included a cover letter from the NCHS director with Frequently Asked Questions (FAQs), web survey login information, a provider-specific insert with selected results from the 2018 wave of NSLTCP, national provider association letters of support, a CDC confidentiality brochure, and NCHS Ethics Review Board letter of approval. In addition, various mailings and e-mails were sent, and prompting calls were made to inform directors or administrators about the study to encourage them to participate. Three questionnaire packets were sent that included the provider-specific questionnaire and a pre-addressed, postage-paid, business reply envelope.

Eligible RCCs and ADSCs had the opportunity to use a scheduler to schedule the SU sampling and interview calls when completing the provider questionnaire by Web.

Unlike 2018 when RCCs and ADSCs could only complete the services user sampling and questionnaire if they had completed the provider module, in 2022, the service user sampling and questionnaire could be completed with respondents who had either completed the provider module or had at least answered the screening items and were deemed eligible.

The approach was to conduct the SU sampling and administer the SU questionnaires at the time of the appointment and prompt during that call if the respondent still needed to complete their provider questionnaire. The SU sampling and questionnaire call included conducting sampling procedures to identify two RCC residents or ADSC participants and administering the service user questionnaire with the director or administrator for each resident or participant sampled.

After data collection, data were edited to ensure that responses were accurate, consistent, logical, and complete.

Estimation Procedures

Because the statistics for ADSCs and RCCs are based on samples, they differ from the data that would have been obtained if a complete census had been taken using the same definitions, instructions, and procedures. However, the probability design of the ADSC and RCC samples permit the calculation of estimates and 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 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 by less than twice the standard error from the value that would be obtained from a complete census.

Standard errors can be calculated for provider and services user estimates by using any statistical software package, as long as clustering within providers and other aspects of the complex

sampling design are taken into account. Software products such as SAS, STATA, R, and SPSS have these capabilities. Statistics presented in NCHS publications are computed using the linearized Taylor series method of approximation as applied in SAS-callable SUDAAN software or STATA, which produces standard error estimates for statistics from complex sample surveys. Both the ADSC and RCC restricted files (provider and services user) include design variables that designate each record's stratum marker and the first-stage unit (or cluster).

In the RCC and ADSC data files, statistical analysis weights were computed as the product of two components—the sampling weight and adjustment for unknown eligibility due to non-response. The sampling weights reflected the probability of selection for each selected facility (the reciprocal of its probability of selection). To account for RCCs and ADSCs 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 RCC data file and the ADSC data file, the variable STRATA indicates the sampling stratum, and the RCC/ADSC indicated by the CASEID, the primary sampling unit. POPFAC represents the total number of RCCs or ADSCs for calculating the finite population correction in a stratum.

The services user restricted files have two stages. In addition to the first stage design variables (SU_FACID, STRATA, POPFAC), in the second stage, the sampling unit is the services user indicated by the variable SUID, the finite population correction is POPSU, and the variable for weight is SUWT.

Because the ADSC and RCC components of the 2022 NPALS are sample surveys, data analyses must include survey weights, to inflate the sample numbers to national estimates. The weight associated with each sampled provider and each sampled services user is constructed to account for the multistage sampling design. An estimator for any given population total *X* can be expressed as a weighted sum over all sampled units, defined as:

$$X = \sum ux(u)W(u)$$

where u represents a sampled unit, x(u) is the characteristic or response of interest for unit u, and W(u) is the final survey weight for sampled unit u. The final weight W(u) for each sampled unit is the product of three components: (1) inverse of the probability of selection, (2) adjustment for unknown eligibility, and (3) nonresponse adjustment.

A sampled provider is deemed a respondent at the SU level if the provider completed the SU questionnaire for at least one services user. Some respondents completed the provider questionnaires but did not respond to the services user module and some providers completed the services user module but did not submit the provider questionnaire. Adjustments for non-respondents at each survey level (provider or SU) are made by shifting the sampling weights of non-respondents at that level to similar respondent providers. Adjustments were also made for sample providers whose eligibility status remained unknown at the survey end by shifting their weights to similar providers whose eligibility status was determined.

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. 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 2022 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 Division of Health Care

Statistics (DHCS). We also request the user inform DHCS of any publications or

presentations produced based on the 2022 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 Division of Health Care Statistics by:

Mail: Division of Health Care Statistics, NCHS, 3311 Toledo Rd, Hyattsville, MD 20782

E-mail: ltcsbfeedback@cdc.gov

Phone: 301-458-4747

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