2018 National Study of Long-Term Care Providers

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

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Description

The 2018 National Study of Long-Term Care Providers (NSLTCP), which was renamed the National Post-acute and Long-term Care Study (NPALS) in January, 2020, is the fourth wave in a series of biennial studies of major post-acute and long-term care providers and their services users. The main goals of the study are to: (1) estimate the supply of paid, regulated post-acute and long-term care services providers; (2) estimate key policy-relevant characteristics and practices of these providers; (3) estimate the number of post-acute and long-term care services users; (4) estimate key policy-relevant characteristics of these 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. For the remainder of this document NPALS will be referred to as NSLTCP in order to correctly match the name of the study when the 2018 surveys were fielded.

Initiated in 2012, the first three waves of NSLTCP (2012, 2014, and 2016) included five provider sectors: residential care communities (RCCs), adult day services centers (ADSCs), nursing homes, home health agencies, and hospices, and provided national and state representative statistical information about the supply and use of long-term care services providers in the United States. In 2018, two post-acute sectors were added: long-term care hospitals and inpatient rehabilitation facilities. NSLTCP collects information about providers and services users in two ways—(1) primary data collected by the National Center for Health Statistics (NCHS) through surveys of RCCs and ADSCs, and (2) by obtaining administrative data on nursing homes, home health agencies, hospices, long-term care hospitals, and inpatient rehabilitation facilities from the Centers for Medicare & Medicaid Services. This document

contains the methodology and documentation for the primary data collection of the 2018 wave of NSLTCP.

The RCC and ADSC survey data collection was conducted between July 2018 and February 2019. To be eligible for the study, RCCs had to be 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. RCCs had to serve a predominantly adult population. RCCs licensed to exclusively serve the mentally ill or the intellectually disabled or developmentally disabled populations were excluded from NSLTCP.

To be eligible for the study, ADSCs had 1) to 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) one or more average daily attendance of participants based on a typical week; and 3) one or more participants enrolled at the ADSC at the location at the time of the survey.

NSLTCP uses a multi-mode survey protocol with mail, web, and computer-assisted telephone interviews (CATI). The first 3 waves of the NSLTCP used a mail and web provider questionnaire with CATI follow-up for non-response. In 2018, the NSLTCP was redesigned 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 provider questionnaire included survey items on provider characteristics such as ownership, size, number of years in operation, services offered, selected practices, and staffing; questions about aggregate user characteristics, such as age, sex, race, and the number of residents or participants needing assistance with activities of daily living were also included. The SU questionnaire included items on user demographics, health conditions, limitations with activities of daily living, number of prescription medications, antipsychotic 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 2018 provider questionnaires and SU CATI items are available at https://www.cdc.gov/nchs/npals/questionnaires.htm. In total, 503 RCCs and 672 ADSCs completed the provider questionnaire for the 2018 NSLTCP survey components. The services user questionnaire was completed for 1,255 ADSC participants and 904 RCC residents. Restricted data from the 2018 surveys may be accessed through the NCHS Research Data Center.

Sampling Design

Two separate random national samples, one of RCCs and the other of ADSCs, were drawn from the two sector-specific frames. The 2018 NSLTCP used a two-stage probability-based sample design. In the first stage , a stratified random sampling 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 2,090 RCCs and 1,650 ADSCs in the 50 states and the District of Columbia were contacted to participate in the surveys. Within each

eligible participating ADSC/RCC, a random sample of two services users were selected. Eligible RCCs and ADSCs were asked to prepare a list of all services users (census) as of midnight the day before the date of CATI. Selection of services users was done via a telephone protocol on the day of CATI. 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 43,770. The ADSC frame was constructed using regulatory information collected from the state regulatory agencies that license or certify ADSCs, state affiliate associations that collect administrative data about member ADSCs, and contacts in national chain provider organizations that collect administrative data about chain-affiliated ADSCs. This database served as the source file for the 2018 sampling frame, further cleaned (deduplicated) and edited by NCHS to create the final frame of ADSCs consisting of 6,361 ADSCs.

Scope of Survey

For the 2018 NSLTCP, a sample of 2,090 RCCs was selected from the sampling frame of 43,770 RCCs. Of the 2,090 RCCs in the sample, 977 RCCs (48%, weighted) could not be contacted and, therefore, the eligibility status of these RCCs was unknown. Using the eligibility rate of 77% 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 was used to estimate the total number of eligible RCCs. Of the 1,609 eligible and presumed eligible RCCs, 503 of them completed the provider questionnaire, for a weighted response rate (for differential probabilities of selection) of 30% (this is calculated by using AAPOR's Response Rate 4), resulting in an estimated national total of 31,400 RCCs. The SU module was completed for 904 residents for a response rate of 28%, resulting in an estimated 918,730 residents.

For the ADSC component, a sample of 1,650 providers were sampled from a frame of 6,361 ADSCs. Of the sample of 1,650 ADSCs, 543 (33% weighted) could not be contacted and, therefore, the eligibility status of these ADSCs was unknown. Using the eligibility rate of 83% 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 was used to estimate the total number of eligible providers. Of the 1,367 eligible and presumed eligible ADSCs, 672 of them completed the provider questionnaire, for a weighted response rate (for differential probabilities of selection) of 50% (this is calculated by using AAPOR's Response Rate 4), resulting in an estimated national total of 4,200 ADSCs. The SU module was completed for 1,255 participants for a response rate of 46%, resulting in an estimated 251,100 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 2018 NSLTCP, which was conducted between July 2018 and February 2019, 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 2018 NSLTCP assessed eligibility via telephone through a brief screener instrument and collected all other provider-level data from RCCs and ADSCs, similar to the data collections conducted for prior waves of NSLTCP. In addition to collecting provider-level data, the 2018 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.

Prior to collecting provider- and person-level data, sampled RCCs and ADSCs were called to collect the most-up-to-date and complete contact information for the director or administrator so that each element of the study could be successfully implemented. Following the contact confirmation telephone call, a short screening questionnaire was conducted over the telephone with directors, administrators, owners, operators, or managers of sampled RCCs and ADSCs to determine eligibility; invite eligible RCCs and ADSCs to complete the provider questionnaire; and schedule an appointment with directors or administrators of eligible RCCs and ADSCs to complete the SU sampling and questionnaire via telephone. 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. An advance notification packet was sent that included a cover letter from the NCHS director, web survey login information, a provider-specific insert

with selected results from the 2016 wave of NSLTCP, national provider association letters of support, a CDC confidentiality brochure, the provider-specific questionnaire, and a pre-addressed, postage-paid, business reply envelope.

Field interviewers attempted to schedule the SU sampling and questionnaire appointment during the screening call. For those respondents completing the survey by web, appointments were scheduled 4- 10 weeks in advance. For those completing the hardcopy questionnaire, an appointment was scheduled 8- 10 weeks in advance. The purpose of scheduling the appointments in advance was to allow sufficient time for respondents to complete and submit their provider questionnaires by Web, and also for NCHS to receive the completed questionnaires by mail before the SU sampling and questionnaire appointments. Respondents were sent the SU CATI confirmation and preparation information, including show cards for the SU questionnaire, either by e-mail or UPS, to arrive at least 5 business days before their scheduled appointments.

Initially, the SU data collection was done once the completed provider questionnaire was received. If the provider questionnaire was not received by the date of the SU call appointment, NCHS conducted a prompting call instead to: confirm that the provider questionnaire was received; encourage the respondent to participate by completing and submitting the provider questionnaire; address any concerns the respondent had about participating; answer any questions about specific items on the provider questionnaire; provide technical assistance if the respondent needed help accessing the Web questionnaire; or reschedule the SU sampling and data collection appointment. However, the protocol was revised in November 2019, because too many respondents were not submitting the provider questionnaire by the time of their SU call appointment, which delayed the process to complete all data collection elements. The revised 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 submit 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. More information about data processing for the ADSC and RCC restricted data files is available in the readme files for each file at: https://www.cdc.gov/nchs/npals/questionnaires.htm

Estimation Procedures

Because the statistics from NSLTCP 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 NSLTCP 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, 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 public-use and 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 provider restricted file, the variable STRATA indicates the sampling stratum, and the provider indicated by the variable CASEID is the primary sampling unit. POPFAC represents the total number of providers 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 2018 NSLTCP 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 $\hat{}$ for any given population total X can be expressed as a weighted sum over all sampled units, defined as:

$$\hat{}X = \Sigma u x(u) W(u)$$

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 include 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 non-disclosure of respondents. Users are strongly recommended to read the readme text and follow the instructions provided for the individual data sets.