1999 National Nursing Home Survey

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Sample Design

The sampling was basically a stratified two-stage probability design. The first stage was the selection of facilities and the second stage was the selection of residents and discharges. The primary sampling strata of facilities were defined by bed size and certification status. The strata of certified facilities consist of facilities certified by either Medicare or Medicaid as a skilled nursing or intermediate care facility. Within primary strata, facilities were sorted by the following factors: hospital-based and nonhospital-based; ownership; geographic region; metropolitan statistical area status; State, county, and zip code. Nursing homes were then selected using systematic sampling with probability proportional to their bed size.

The number of nursing homes estimated by the survey (18,000) is less than the universe figure (18,400) for several reasons. Some facilities went out of business or became ineligible for the scope of the survey between the time the universe figure was frozen and the survey was conducted. A facility was considered out of scope if it did not provide nursing care services.

The second-stage sampling of current residents and discharges was carried out by the interviewers at the time of their visits to the facilities in accordance with specific instructions given for each sample facility. The sample frame for current residents was the total number of residents on the register of the facility as of midnight of the day prior to the day of the survey. Residents who were physically absent from the facility due to overnight leave or a hospital visit, but had a bed maintained for them at the facility, were included in the sample frame. The sample frame for discharges was the total number of residents discharged from care by the nursing home during a designated month between October 1998 and September 1999. Included were discharges that occurred because of death of the resident. A sample of up to six current residents and six discharges per facility was selected.

Data Collection Procedures

The 1999 NNHS utilized three questionnaires and two sampling lists: Facility Questionnaire, Current Resident Questionnaire, Discharged Resident Questionnaire, Current Resident Sampling List, and Discharged Resident Sampling List.

Data were collected according to the following procedures: (I) A letter was sent to the administrators of sample facilities informing them of the survey and the fact that interviewers would contact them for appointments. Letters of endorsement by the American College of Health Care Administrators, American Association of Homes and Services for the Aging, and American Health Care Association were sent with the introductory letter to urge the administrator of the facility to participate in the survey. Also included with this introductory letter was one of the reports from the last survey to illustrate how the data would be displayed. (II) After the mailing of the letters, the interviewer telephoned the sample facility and made an appointment with the administrator. (III) At the time of the appointment, the following procedures were followed: The Facility Questionnaire was completed by the interviewer who interviewed the administrator or designee. After completing this form, the interviewer then completed the Current Resident Sampling List and the Discharged Resident Sampling List. These lists were used to select the sample of current residents and discharges. Sampling was accomplished by using tables showing sets of sample line numbers for each possible count of current residents and discharges in the facility. Up to six current residents and up to six discharges were selected.

After the samples had been selected, the Current Resident Questionnaire and the Discharged Resident Questionnaires were completed for each sampled person by interviewing the member of the nursing staff familiar with care provided to the resident. The nurse referred to the resident's medical records. No resident was interviewed directly.

After the data had been collected, it was converted into machine-readable forms by NCHS. Extensive editing was then conducted by computer to ensure that all responses were accurate, consistent, logical, and complete.

Reliability of Estimates

Because the data presented on this tape are based on a sample, they will differ somewhat from data that would have been obtained if a complete census had been taken using the same schedules, instructions, and procedures. The standard error (SE) is primarily a measure of the variability that occurs by chance because only a sample, rather than the entire universe, is surveyed. The standard error also reflects part of the measurement error, but it does not measure any systematic biases in the data or other nonsampling 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.

The standard errors used in this report were approximated using SUDAAN software. SUDAAN computes standard errors by using a first-order Taylor approximation of the deviation of estimates from their expected values. Although exact standard estimates were used in tests of significance in this report, standard errors for aggregate estimates presented may be estimated by using the general formula:

$$SE\ (X)\ =\ X \cdot RSE\ (X)$$

where X is the estimate and RSE(X) is the relative standard error (RSE) of the estimate. The relative standard error (RSE(X)) may be estimated using the following general formula:

$$RSE(X)\ =\ \sqrt{A\ +\ \frac{B}{X}}$$

where X is the estimate and A and B are the appropriate coefficients.

To approximate the relative standard error (RSE(p)) and the standard error (SE(p)) of a percent $p(0<p<1)$, the appropriate values of parameter B are used in the following equations:

$$RSE(p)\ =\ \sqrt{\frac{B \cdot (1\ -\ p)}{p \cdot Y}}$$

and

$$SE(p)\ =\ p \cdot RSE(p)$$

where $p = 1 \cdot X/Y$, X = the numerator of the estimated percent, and Y = the denominator of the estimated percent.

The approximation of the relative standard error or the standard error of a percent is valid only when one of the following conditions is satisfied: the relative standard error of the

denominator is 5 percent or less or the relative standard errors of the numerator and the denominators are both 10 percent or less.

Presentation of Estimates

Publication of estimates for the NNHS is based on the relative standard error of the estimate and the number of sample records on which the estimate is based (referred to as the sample size). Estimates are not presented in NCHS reports unless a reasonable assumption regarding the probability distribution of the sampling error is possible. Public use files do not include variables required for accurate calculation of sampling error.

Based on consideration of the complex sample design of the NNHS, the following guidelines are used for presenting the NNHS estimates:

If the sample size is less than 30, the value of the estimate is not reported.

If the sample size is 30-59 or if the sample is 60 or more and the RSE is 30 percent or more, the estimate is reported, but should not be assumed reliable. This is indicated by an asterisk (*) in the tables.

If the sample size is 60 or more and the relative standard error is less that 30 percent, the estimate is reported and is considered reliable.