

1997 National Nursing Home Survey (NNHS)

DESCRIPTION

INTRODUCTION--The micro-data tape comprises data collected in the 1997 National Nursing Home Survey (NNHS). This nationwide sample survey of nursing homes, their current residents and discharges was conducted by the National Center for Health Statistics from July through December 1997. The survey was conducted via a combination of personal interviews and review of residents' medical records. Data on nursing home characteristics were obtained by personal interview with the administrator. Data on a sample of current residents currently residing in the facility as well as a sample of discharges were obtained by interviewing a staff person most familiar with the medical records. Responses are for 8,138 current residents and 6,676 discharges from the 1,406 nursing homes that participated in the survey. For a description of the sample design and data collection methods, see below.

HISTORY--The 1997 NNHS, a segment of the Long-Term Care Component of the National Health Care Survey (1), is the fifth survey of nursing home facilities, their current residents and discharges. The first NNHS was conducted between August 1973 and April 1974; the second from May through December 1977; the third survey was conducted from August 1985 through January 1986; and the fourth survey was conducted from July through December 1995.

Prior to the creation of this continuing data collection system, NCHS conducted a series of three ad hoc sample surveys of nursing and personal care homes called the Resident Places Surveys (RPS 1, 2, 3). These surveys provided much of the background information and experience used to develop the first NNHS. These surveys were conducted during April-June 1963, May-June 1964, and June-August 1969, respectively. RPS-1, the first of these surveys, collected data on nursing homes, chronic disease and geriatric hospitals, and

nursing home units and chronic disease wards of general and mental hospitals. RPS-3, the last ad hoc survey, sampled nursing and personal care homes in the conterminous United States.

Sampling Frame and Size of Sample

The sample for the 1997 NNHS was taken from a frame that consisted of all nursing home facilities identified in the 1991 National Health Provider Inventory (NHPI) (2) and updated with current (1997) files of nursing homes. These updated files were obtained from the Health Care Finance Administration (HCFA) and other national organizations.

The universe for the 1997 NNHS consisted of about 17,900 nursing homes in the United States. Places that only provided room and board were excluded. Places were also excluded if they had fewer than three beds set up for use by persons not related to the owner. Facilities in the universe were freestanding or were nursing care units of hospitals, retirement centers, or similar institutions where the unit maintained financial and resident records separate from those of the larger institution.

The sample consisted of 1,488 nursing homes. Of these facilities, 53 refused to participate and 29 were out-of-scope for one or more of the following reasons: the nursing home had gone out of business, it failed to meet the definition of a nursing home as used in this survey, not yet in operation, and temporarily closed. A total of 1,406 nursing homes participated in the survey.

Sample Design

The sampling was basically a stratified two-stage probability design (3). 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 which according to data in the

sampling frame were certified by either Medicare or Medicaid as a skilled nursing or intermediate care facility. Within primary strata, facilities were sorted by hospital based and non hospital based, ownership, geographic region, metropolitan 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 (17,000) is less than the universe figure (17,900) for several reasons. Some facilities went out of business or became ineligible for the scope of the survey between the time universe was frozen and the survey was conducted. A facility was considered out-of-scope if it did not provide nursing, personal or domiciliary care services, e.g., facilities providing only room and board.

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 who were discharged from care by the nursing home during a designated month between October 1996 and September 1997. 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 1997 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 assure that all responses were accurate, consistent, logical, and complete.

Estimation procedure

The statistics presented in this report were derived by a multistage estimation procedure (4) that produces essentially unbiased national estimates and has three principal components. The first component, inflation by the reciprocals of the probabilities of sample selection, is the basic inflation weight. This component consists of the inverse of the probability of selecting the facility and the resident or discharge within each facility. The second component, which consists of an adjustment for nonresponse, brings estimates based only on the responding cases up to the level that would have been achieved if all eligible cases had responded. The third component, ratio adjustment to fixed totals, adjusts for over- or undersampling of facilities reported in the sampling frame.

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 nor 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. A description of the software and the approach it uses has been published (5).

Although exact standard estimates were used in tests of significance in this report, standard errors for aggregate estimates presented may be estimated by

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

using the general formula:

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

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

the following general formula (6):

where X is the estimate and A and B are the appropriate coefficient from Table I.

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

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

from table I are used in the following equations:

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

and

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 (7) or

the relative standard errors of the numerator and the denominators are both 10 percent or less (8).

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 than 30 percent, the estimate is reported and is considered reliable.

TABLE I
Parameters used to compute relative standard errors by type of estimate

Type of Estimate	Parameters	
	A	B
Facilities	0.002888	8.364379
Admissions	0.015809	850.354391
Bed size	-0.00519	1096.816184
Full time employee	-0.000568	1044.497366
Current residents	0.001692	250.959236
Discharged residents	0.028768	634.470897

Questions concerning data on this tape should be directed to:

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