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VITAL STATISTICS REPORT

1973-74 Nursing Home Survey— Provisional Data

FROM THE

NATIONAL CENTER FOR HEALTH STATISTICS

NURSING HOMES: AN OVERVIEW OF NATIONAL CHARACTERISTICS FOR 1973-74

Introduction

This report presents provisional estimates from a nationwide sample survey of nursing homes, their residents, and staff. This survey was conducted from August 1973 to April 1974 by the Division of Health Resources Utilization Statistics of the National Center for Health Statistics. The estimates presented here are provisional in that they are based on a subsample of nearly 300 of the 2,112 homes included in the entire survey sample. Because this subsample was specifically designed to provide only nationally representative estimates, this report provides an overview *at the national level* of the characteristics of U.S. nursing homes. This overview includes national estimates on the following topics:

- Facility characteristics (number of beds, residents, and employees by Medicare and Medicaid certification of the home)
- Utilization (admissions, discharges, measures of turnover, services provided to nonresidents)
- Cost incurred by the facility for providing care (total cost per resident day, major cost components)
- Employees (number and percent of full-time equivalent employees by occupational category, number per 100 residents, availability of round-the-clock nursing service, skill of charge nurse)

Before presenting these national estimates, a brief description of the survey is included to orient the reader to the survey methodology and assist him in interpreting the resulting estimates.

Background

The survey was designed and developed¹ by the Division of Health Resources Utilization Statistics in conjunction with a group of experts in various fields encompassing the broad area of long-term care. It was specifically designed to satisfy the diverse data needs of those who establish standards for, plan, and provide long-term care. Facilities within the scope of this survey were those nursing homes which provided some level of nursing care. The term *nursing home* is used in this report to refer to institutions providing such care. A definition of nursing care and detailed criteria for identifying homes providing nursing care are presented in the Technical Notes.

Data on the nursing home, its services, costs, residents, and staff were collected via a combination of mail and personal interview survey techniques. Data on characteristics of the facility and on total staff were collected by interviewing the administrator. (Detailed data on a sample of employees were collected by leaving a questionnaire for the sampled staff member to complete and return by mail. Although these detailed data do not appear here, they will be presented in future publications.) Data on costs were obtained from the facility's accountant, who completed the questionnaire and returned it by mail. Data for a sample of residents were collected by personal interview of the

¹Van Nostrand, J. F.: Development of Survey Methodology to Measure Cost and Quality of Care in Nursing Homes. Paper presented at 101st Annual Meeting of American Public Health Association, San Francisco, Nov. 8, 1973.

nurse who usually provided care for the resident. Generally, the nurse referred to the resident's medical record in answering the questions.

Because the estimates from the survey are based on a sample of nursing homes rather than on a complete enumeration, they are subject to sampling variability. Detailed information on the sampling variability of these estimates is presented in the Technical Notes.

Facility Characteristics

In 1973-74 there were 16,100 nursing homes in the United States (table 1). Seventy-three percent were operated under proprietary auspices, 27 percent under nonprofit auspices. They provided care for 1,098,500 residents, who comprised 5.2 percent of the U.S. population aged 65 and over. These nursing homes comprised:

- Those homes certified as extended care facilities (ECF's) by Medicare (Title XVIII of the Social Security Act)
- Those certified as skilled nursing homes (SNH's) by Medicaid (Title XIX of the Social Security Act)
- Those certified as intermediate care facilities (ICF's) by Medicaid
- Those not certified by either program but providing some level of nursing care

The 5,565 homes which did *not* provide nursing care as defined in the Technical Notes were not in the scope of the survey.

Because professionals in the field of long-term care are concerned with the level of care provided by nursing homes, one area of major emphasis in the survey was the collection of data concerning Medicare and Medicaid certification. For this reason, many of the provisional estimates in this report are presented according to certification status. In order for provisional estimates by certification status to be reliable, some small certification subgroups were combined with larger ones when both provided similar levels of care. Thus, those 4,100 homes certified by *both* Medicare and Medicaid included 12 percent which were certified by Medicare *only*. Similarly, the 2,900 homes certified by Medicaid as SNH's included 46 percent which were also certified as ICF's. (Because the final estimates from the full survey are based on a much larger sample than these provisional estimates, combining certification subclasses for the final estimates to obtain reliable figures should be unnecessary. Final estimates should be available late this year.)

Seventy-three percent of the nation's nursing homes were certified by Medicare (Title XVIII), Medicaid (Title XIX), or both. Although homes with multiple certification (certified by *both* Medicare and Medicaid)

Table 1. Provisional number and percent of nursing homes, residents, full-time equivalent employees, and rate of employees per 100 residents, by certification status: United States, 1973-74

[Figures may not add to totals due to rounding]

Certification status of home	Homes ¹		Residents		Full-time equivalent employees ²		
	Number	Percent	Number	Percent	Number	Percent	Rate per 100 residents
All types of certification-----	16,100	100.0	1,098,500	100.0	722,200	100.0	65.7
Both Medicare and Medicaid ³ -----	4,100	25.5	393,600	35.8	283,300	39.2	72.0
Medicaid only-----	7,700	47.5	524,800	47.8	333,000	46.1	63.4
SNH ⁴ -----	2,900	18.0	278,600	25.4	196,200	27.2	70.4
ICF-----	4,800	29.5	246,200	22.4	136,800	18.9	55.5
Not certified-----	4,400	27.0	189,100	16.4	105,900	14.7	58.8

¹73 percent of these homes were operated under proprietary auspices; 27 percent were nonprofit.

²Since a full-time employee is one who works at least 35 hours per week, part-time employees were converted to full-time equivalents by dividing the number of hours worked per week by 35.

³12 percent of these homes were certified by Medicare only.

⁴46 percent of these homes were also certified as ICF's.

comprised 26 percent of all homes, they provided care for 36 percent of all residents. Similarly, those certified as SNH's comprised 18 percent of the nation's nursing homes, but provided care for 25 percent of the residents. In contrast, homes not certified by Medicare or Medicaid comprised 27 percent of all homes but provided care for only 16 percent of all residents (table 1). This disparity occurred because homes certified by Medicare and/or Medicaid were larger on the average (84 beds) than homes not certified (44 beds).

In addition to collecting basic information on the certification status of the home, the survey also collected data on the number of certified beds and their occupancy rates. If the administrator indicated that the home had Medicare certification, he was then asked to report the number of beds certified for Medicare recipients and the number of these beds occupied by residents receiving program benefits. This series of questions was repeated to collect data about SNH and ICF certification. These questions yielded the following information.

Of the 1,188,000 existing nursing home beds, 287,400 were certified as ECF beds by Medicare; 538,900 were certified as SNH beds by Medicaid; and 378,600 as ICF beds by Medicaid (table 2). Caution should be used in interpreting these figures: they are *not* mutually exclusive because some beds have dual certification. For example, a bed certified for Medicare may also be certified by Medicaid. Since one bed may be counted twice, the sum of all certified beds exceeds the actual number of beds. For the same reason, the percent distribution of beds by certification status exceeds 100. In spite of this problem of dual certification, one basic conclusion can be drawn from these data: at least 45 percent of all nursing home beds were certified for skilled care.

Examination of the number of certified beds oc-

cupied by residents receiving program benefits indicates that the occupancy rate of 15.7 percent for extended care beds (Medicare-certified beds) was much lower than that for skilled nursing beds (59.6) or intermediate care beds (60.7). Considerably more residents received care financed by Medicaid than by Medicare. Fifty percent of all nursing home residents received care financed by Medicaid (29 percent received skilled nursing care and 21 percent intermediate care), while only 4 percent received care financed by Medicare (table 2). Available financial data for 1973 indicate that Medicaid's outlay to finance nursing home care was over nine times as large as Medicare's. More specifically, \$1.9 billion (or 21 percent) of Medicaid's \$8.9 billion outlay financed nursing home care in 1973, while \$206 million (or 2 percent) of Medicare's \$9.5 billion outlay financed such care.²

Utilization

The 1,098,500 residents in nursing homes were predominantly female (70 percent), a reflection of the higher survival rate for women. The percentage of female residents was about the same regardless of the certification status of the home (table 3).

In 1972, 1,018,300 persons were admitted to nursing homes—an increase of 7.6 percent over 1967 admissions.³ In order to compare admissions for the var-

²Cooper, B., Worthington, N., and Piro, P.: National health expenditures, 1929-73. *Social Security Bulletin* SSA 74-11700. Washington. U.S. Government Printing Office, Feb. 1974.

³National Center for Health Statistics: Nursing homes: Their admission policies, admissions, and discharges, United States, April-September 1968. *Vital and Health Statistics*. Series 12-No. 16. DHEW Pub. No. (HSM) 73-1701. Health Services and Mental Health Administration. Washington. U.S. Government Printing Office, Dec. 1972.

Table 2. Provisional estimates of selected characteristics of nursing home beds certified for Medicare or Medicaid: United States, 1973-74

[Figures may not add to totals due to rounding]

Certification status of bed	Beds ¹		Beds occupied by resident receiving program benefits		Percent of total residents receiving program benefits
	Number	Percent of total beds	Number of beds	Percent occupied night before interview	
ECF beds (Medicare)-----	287,400	24.2	45,200	15.7	4.1
SNH beds (Medicaid)-----	538,900	45.4	321,100	59.6	29.2
ICF beds (Medicaid)-----	378,600	31.9	229,900	60.7	20.9

¹These figures are not mutually exclusive because some beds have dual certification. For example, a bed certified for Medicare may also be certified by Medicaid. Since one bed may be counted twice, the sum of all certified beds exceeds the actual number of beds (1,188,000). For the same reason, the percent distribution exceeds 100 percent.

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Table 3. Provisional number and percent of nursing home residents for 1973-74, and provisional estimates of selected measures of utilization for 1972, by certification status: United States

[Figures may not add to totals due to rounding]

Certification status of home	Residents in 1973-74				Measures of utilization for 1972						
	Number	Percent			Admissions	Number of admissions per bed	Annual occupancy rate ¹	Discharges			
		Both sexes	Male	Female				Number	Percent		
	Total				Live	Dead					
All types of certification----	1,098,500	100.0	29.8	70.2	1,018,300	0.86	88.6	984,600	100.0	69.3	30.7
Both Medicare and Medicaid ² -----	393,600	100.0	28.5	71.5	549,400	1.27	83.6	535,400	100.0	73.0	27.0
Medicaid only-----	524,800	100.0	31.0	69.0	362,300	0.64	90.4	342,700	100.0	65.8	34.2
SNH ³ -----	278,600	100.0	30.3	69.7	209,700	0.71	91.0	194,500	100.0	67.8	32.2
ICF-----	246,200	100.0	31.8	68.2	152,600	0.57	89.7	148,200	100.0	63.2	36.8
Not certified-----	180,100	100.0	29.4	70.6	106,700	0.55	94.6	106,500	100.0	61.8	38.3

¹Aggregate number of days of care provided to residents in 1972
Number of beds X 366 X 100.

²12 percent of these homes were certified by Medicare only.

³46 percent of these homes were also certified as ICF's.

ious types of homes a relative measure of turnover must be employed. One such measure is the number of admissions per bed. Nationally, the number of admissions per bed was 0.86. In other words, 86 out of every 100 beds "turned over" when a current resident was discharged and a new resident admitted. Homes certified by both Medicare and Medicaid had the highest turnover rate—1.27 admissions per bed. Beds in other types of homes turned over less frequently than once a year; rates ranged from 0.55 to 0.71. (See table 3.) This high rate of turnover for homes certified by both Medicare and Medicaid was probably due to two factors influencing length of stay. The first was the short-term nature of the care needed by the Medicare resident. Since Medicare residents are admitted to ECF's following discharge from a hospital stay, many of these residents were recuperating from an operation or illness and were discharged upon recovery. The second factor was the Title XVIII limit on length of stay due to the provision that Medicare will pay for up to 100 days of skilled nursing care in a Medicare-approved home.

In 1972, 984,600 residents were discharged from nursing homes—an increase of 12.9 percent over 1967 discharges.⁴ Of these, almost 70 percent were live discharges. Homes certified by both Medicare and Medicaid had the highest percentage of residents discharged alive (73 percent). For homes with other types of certification, live discharges ranged from 62 to 68 percent. Although only 31 percent of the 1972

discharges were deaths, the death rate of 275 per 1,000 residents was 4.6 times the national rate for persons aged 65 and over.

Another measure of utilization is the demand for nursing home beds as indicated by the number of homes maintaining a waiting list and the number of persons on these lists. Seventy-seven percent of all homes (or 12,400) maintained waiting lists, which contained the names of 170,700 persons seeking admission. If admitted, these 170,700 persons would utilize 14 percent of all beds. Because one person may have his name on several lists, the number 170,700 probably overestimates the demand. Nevertheless, the fact that 77 percent of all homes maintained waiting lists indicates that the demand for nursing home beds exceeds the supply in a majority of homes.

The utilization of nursing home services was not restricted to the facility's residents, but was, in many cases, extended to nonresidents. In addition to providing services to their residents, 30 percent of all homes provided an average of two services to individuals who did not live in the home. These services included information or referral for health needs, friendly visiting, day care, recreational activities, meals, transportation or escort services, laundry service, daily telephone checking, and homemaker or chore services. Information or referral for health needs was the most frequent service to nonresidents; it was provided by 73 percent of these homes. The next most frequent service was friendly visits, provided by 26 percent of these homes. The percent of homes providing any of the other listed services was so small that the figures could not be reported with reliability.

⁴Ibid.

Cost of Providing Care

A major emphasis of this survey was the collection of data on the cost to the facility of providing care. Cost data were collected according to the following major components:

- Labor costs—wages and fringe benefits for staff members and contract employees
- Operating costs—expenses for food, drugs, supplies, equipment, laundry, linen, utilities, buildings and grounds maintenance, and contractual arrangements for laboratory, professional, and household services
- Fixed costs—equipment, building, and land rentals; insurance; taxes; licenses; interest, financing, and depreciation charges; and amortization of leasehold improvements
- Other costs—dues, subscriptions, travel, advertising, and miscellaneous expenses

Table 4. Provisional average cost to nursing home of providing care per resident day and number of resident days of care provided, by certification status: United States, 1972

[Figures may not add to totals due to rounding]

Certification status of home	Average cost to nursing home of providing care per resident day	Resident days of care provided
All types of certification-	\$16.14	384,190,300
Both Medicare and Medicaid ¹ -----	20.94	131,733,000
Medicaid only-----	13.61	185,626,400
SNH ² -----	15.97	97,967,000
ICF-----	11.22	87,659,400
Not certified-----	13.93	66,830,900

¹12 percent of these homes were certified by Medicare only.

²46 percent of these homes were also certified as ICF's.

NOTE: Excludes those homes which were in business for less than 2 years. Total expenses for these newly opened homes were not collected because they include "start-up" costs for purchasing drugs, supplies, and equipment and therefore do not reflect the standard cost of providing health care.

To permit comparison of costs among the various types of homes, the average cost per resident day was calculated for each facility by dividing its costs for 1972 by the aggregate days of resident care it provided during that time. Nationally, the average cost of providing care per resident day was \$16.14 (table 4). (The chances are 95 out of 100 that the value obtained in a complete enumeration of the nation's nursing homes would fall in the interval \$15.18 to \$17.10. See the Technical Notes for a detailed discussion of the variability of these estimates due to sampling.) Analysis of average cost of providing care per resident day and its sampling variability according to the certification status of the home yielded these findings:

- The \$20.94 average cost per resident day for homes certified by both Medicare and Medicaid was significantly higher than the average cost for any of the other types of homes, whether they were SNH's, ICF's, or not certified by either program. This higher cost was probably due to the expense of meeting the exacting standards for staffing, construction, equipment, and provision of services required for Medicare certification.
- When homes certified by Medicaid were compared, those certified as SNH's had significantly higher average costs (\$15.97) than those certified as ICF's (\$11.22). As in the previous instance, this is probably due to the higher expenses of meeting the exacting standards for an SNH.
- The average costs did not differ significantly when homes certified by Medicaid as SNH's (\$15.97) or ICF's (\$11.22) were compared to homes not certified (\$13.93).

Although the national average cost per resident day was \$16.14, 68 percent of all homes had an average cost below \$16.00 and 51 percent had an average cost below \$14.00. Only 14 percent had an average cost per resident day of \$22.00 or more (figure 1).

Examining the major cost components shows that the largest component of average cost per resident day was labor (\$9.50 per resident day), accounting for nearly 59 percent of the total cost (table 5 and figure 2). Operating cost (at \$3.35) was the second largest component, accounting for nearly 21 percent of total cost. Fixed cost (\$2.64) accounted for over 16 percent of the total, and other cost (\$0.65) for 4 percent. These findings corroborate those of previous nursing home cost studies,⁵ which found that labor was by far the largest component of total cost.

⁵Hollis, G., and Fedell, J.: Nursing Home Cost Data: A Review of Previous Studies. American Statistical Association 1972 Proceedings of the Business and Economic Statistics Section, 1972. pp. 336-339.

Figure 1. Provisional cumulative percent distribution of nursing homes by average cost to nursing home of providing care per resident day: United States, 1972.

[Excludes those homes which were in business for less than 2 years. Total expenses for these newly opened homes were not collected because they include "start-up" costs for purchasing drugs, supplies, and equipment and therefore do not reflect the standard cost of providing health care.]

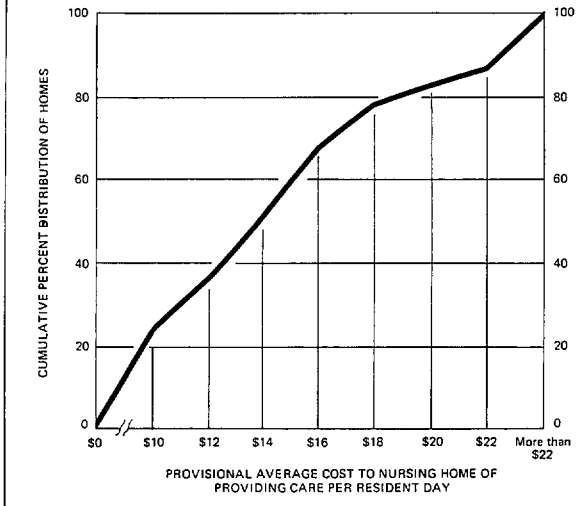


Table 5. Provisional average cost to nursing home of providing care per resident day and percent distribution of average cost, by cost components: United States, 1972

[Figures may not add to totals due to rounding]

Cost component	Average cost to nursing home of providing care per resident day ¹	
	Cost in dollars	Percent distribution
All cost components -	\$16.14	100.0
Labor-----	9.50	58.9
Operating-----	3.35	20.8
Fixed-----	2.64	16.4
Other-----	0.65	4.0

¹Figures are based on 384,190,300 resident days of care for 1972.

NOTE: Excludes those homes which were in business for less than 2 years. Total expenses for these newly opened homes were not collected because they include "start-up" costs for purchasing drugs, supplies, and equipment and therefore do not reflect the standard cost of providing health care.

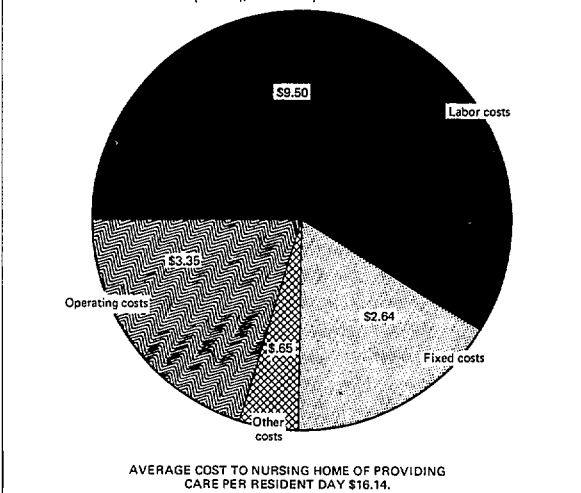
Employees

One measure frequently used to describe the level of care available to residents is the number and type of full-time equivalent (FTE) employees providing care. Since a full-time equivalent employee is defined as one who works a minimum of 35 hours per week, part-time employees were converted to FTE's by dividing the number of hours worked per week by 35. By examining the number of FTE's rather than the number of total employees, the variation in the proportion of part-time staff employed is held constant among the homes.

There were 722,200 FTE employees working in nursing homes in 1973-74—an increase of 56 percent over comparable figures for 1968.⁶ The majority of FTE's (62 percent) were members of the nursing staff. As the level of education and training of the nursing staff increased from nurse's aide to licensed practical nurse (LPN) to registered nurse (RN), the percent of each group employed in nursing homes decreased from 46.5 percent for nurse's aides, to 8.3 percent for

Figure 2. Provisional average cost to nursing home of providing care per resident day, by major cost components: United States, 1972.

[Figures are based on 384,190,300 resident days of care for 1972. Excludes those homes which were in business for less than 2 years. Total expenses for these newly opened homes were not collected because they include "start-up" costs for purchasing drugs, supplies, and equipment and therefore do not reflect the standard cost of providing health care.]



⁶National Center for Health Statistics: Employees in nursing homes: United States, April-September 1968. *Vital and Health Statistics*. Series 12-No. 15. DHEW Pub. No. (HSM) 73-1700. Health Services and Mental Health Administration. Washington. U.S. Government Printing Office, Oct. 1972.

Table 6. Provisional number and percent distribution of full-time equivalent employees, by occupation category of employee and certification status of nursing home: United States, 1973-74

[Figures may not add to totals due to rounding]

Certification status of home	Occupation category						
	All employees	Professional and semiprofessional ¹	Nursing staff				Nonprofessional
			Total	RN	LPN	Nurse's aide	
	Number of full-time equivalent employees ²						
All types of certification-----	722,200	41,500	450,600	54,500	60,300	335,900	230,100
Both Medicare and Medicaid ³ -----	283,300	16,400	178,200	28,200	23,900	126,200	88,700
Medicaid only ⁴ -----	333,000	18,200	208,500	19,100	29,000	160,500	106,200
Not certified-----	105,900	6,900	63,800	7,200	7,400	49,200	35,200
	Percent distribution of full-time equivalent employees ²						
All types of certification-----	100.0	5.7	62.4	7.5	8.3	46.5	31.9
Both Medicare and Medicaid ³ -----	100.0	5.8	62.9	9.9	8.4	44.5	31.3
Medicaid only ⁴ -----	100.0	5.5	62.6	5.7	8.7	48.2	31.9
Not certified-----	100.0	6.5	60.3	6.8	7.0	46.5	33.2

¹Includes administrators, physicians, dentists, pharmacists, therapists, therapist assistants, dietitians, medical record administrators, social workers, and other professional and semiprofessional occupations.

²Since a full-time employee is one who works at least 35 hours per week, part-time employees were converted to full-time equivalents by dividing the number of hours worked per week by 35.

³12 percent of these homes were certified by Medicare only.

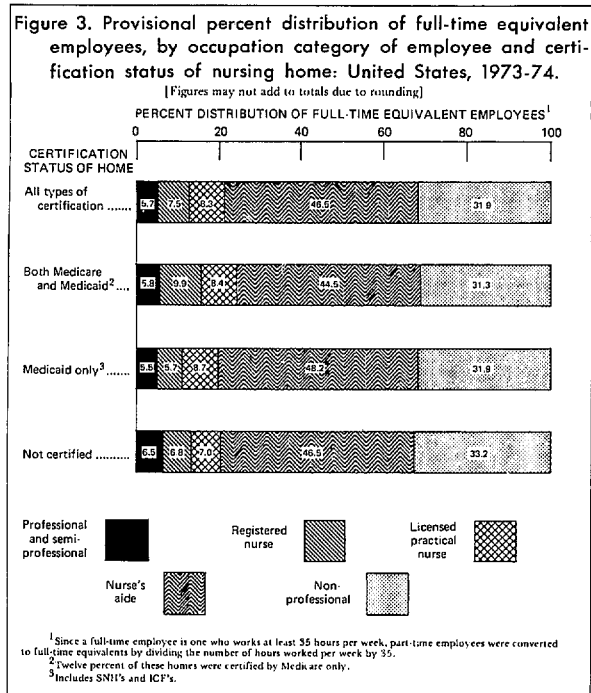
⁴Includes SNH's and ICF's.

LPN's, to 7.5 percent for RN's. (See table 6 and figure 3.) Professional and semiprofessional employees (including administrators, physicians, dentists, pharmacists, therapists, therapist assistants, dietitians, medical record administrators, and social workers) comprised the smallest portion of total FTE staff—6 percent.

It is frequently assumed that homes certified by both Medicare and Medicaid have a higher percentage of professional staff than do other homes. However, when percentages and their sampling variabilities were compared, almost no differences were found. The percentage of FTE professionals and semiprofessionals was virtually the same whether the home was certified by both Medicare and Medicaid, by Medicaid only, or

not certified. Such was not the case with RN's. The percentage of RN's in homes certified for both Medicare and Medicaid (10 percent of the staff) was higher than that for any other type of home, whether certified by Medicaid only (6 percent) or not certified (7 percent). This is probably due to the Medicare requirement that each facility employ a full-time RN.

A crude measure of the workload as well as the availability of staff to provide care is the rate of FTE employees per 100 residents. Overall there were 65.7 FTE's per 100 residents, which means that the average employee provided care for about 1.5 residents (table 7). Of these 65.7 FTE's per 100 residents, 41.0 were nursing staff, 20.9 were nonprofessional staff, and 3.8 were professional and semiprofessional staff.



Examination of the rates of FTE's per 100 residents over the last 10 years indicates an increase of 18.3 FTE's per 100 residents (table 8). In 1964 there were 47.4 FTE's per 100 residents; by 1968 this rate had increased to 61.4. In 1973-74, the rate was 65.7 per 100 residents. This increase in the rates over the last 10 years indicates that residents in 1973-74 received more staff time and, hence, more care than did residents in 1968 or in 1964.

Another type of measure to describe the level of care available in a facility is whether nurses are on duty around the clock and, if so, what type of nurses. Seventy-eight percent of all homes had a charge person on duty around the clock; that is, a person was awake, dressed, and in charge of serving the residents for each of the three daily shifts in 12,600 homes (table 9). Of these homes, only 29 percent had all RN's in charge around the clock (table 10). The most frequent arrangement (34 percent) for a 24-hour period was a combination of RN's and LPN's as charge nurses. Other combinations consisting of nurse's aides with either RN's or LPN's provided 24-hour nursing coverage in 28 percent of all homes.

Table 7. Provisional number of full-time equivalent employees per 100 residents, by occupation category of employee and certification status of nursing home: United States, 1973-74

[Figures may not add to totals due to rounding]

Certification status of home	Full-time equivalent employees ¹ per 100 residents						
	All employees	Professional and semiprofessional ²	Nursing staff				Nonprofessional
			Total	RN	LPN	Nurse's aide	
All types of certification-	65.7	3.8	41.0	5.0	5.5	30.6	20.9
Both Medicare and Medicaid ³ -----	72.0	4.2	45.3	7.2	6.1	32.1	22.5
Medicaid only ⁴ -----	63.4	3.5	39.7	3.6	5.5	30.6	20.2
Not certified-----	58.8	3.8	35.4	4.0	4.1	27.3	19.5

¹ Since a full-time employee is one who works at least 35 hours per week, part-time employees were converted to full-time equivalents by dividing the number of hours worked per week by 35.

² Includes administrators, physicians, dentists, pharmacists, therapists, therapist assistants, dietitians, medical record administrators, social workers, and other professional and semiprofessional occupations.

³ 12 percent of these homes were certified by Medicare only.

⁴ Includes SNH's and ICF's.

Table 8. Number of full-time equivalent employees per 100 nursing home residents for 1964, 1968, and 1973-74: United States

Year	Full-time equivalent employees ¹ per 100 residents
1973-74 ² -----	65.7
1968 ³ -----	61.4
1964 ³ -----	47.4

¹Since a full-time employee is one who works at least 35 hours per week, part-time employees were converted to full-time equivalents by dividing the number of hours worked per week by 35.

²Provisional estimate.

³Source: Vital and Health Statistics, Series 12, Nos. 5 and 15.

NOTE: In order to be comparable to 1973-74 figures, rates for 1968 and 1964 include data for nursing care homes and personal care with nursing homes only (data for personal care homes are excluded).

Table 9. Provisional number and percent of nursing homes, by number of daily shifts having a charge person on duty:¹ United States, 1973-74

[Figures may not add to totals due to rounding]

Number of shifts having a charge person on duty ¹	Number	Per cent
All types of shift arrangements-----	16,100	100.0
Less than three shifts a day-----	3,600	22.0
Three shifts a day-----	12,600	78.0

¹A charge person who is on duty is awake, dressed, and routinely serving the residents.

Table 10. Provisional number and percent of nursing homes with charge persons on duty for three shifts, by level of skill of charge persons: United States, 1973-74

[Figures may not add to totals due to rounding]

Level of skill of charge persons ¹	Homes with charge persons for three shifts ²	
	Number	Percent
All levels of skill-----	12,600	100.0
RN's in charge for three shifts-----	3,600	28.7
Combination of RN's and LPN's in charge for three shifts-----	4,300	34.2
LPN's in charge for three shifts-----	*	*
Nurse's aides in charge for three shifts-----	*	*
Other combinations of skills in charge for three shifts-----	3,500	28.2

¹A person in charge of a shift is on duty, awake, dressed, and routinely serving the residents.

²Excludes 3,600 homes having a charge person on duty less than three shifts a day.

Availability of Data

Final estimates based on the *entire* sample of 2,112 nursing homes should be available late this year. This survey is the first in a continuing series of sample surveys of nursing homes, their residents, and staff to be conducted every 2 years by the National Center for Health Statistics. Thus, future plans call for a survey to be launched late in 1975. By conducting these surveys on a continuing basis, both current estimates and trend information will be available to those in the field of long-term care. Since nursing homes comprise a rapidly expanding sector of the health care delivery system, such data are essential for establishing standards for, planning, and providing long-term care.

TECHNICAL NOTES

SAMPLING ERRORS. Since the estimates for this report are based on a sample rather than the entire population, they are subject to sampling variability. One measure of sampling variability is the standard error. Rather than present specific errors for a particular statistic, the provisional approximate standard errors for a wide variety of estimates have been provided. Thus, this section presents the standard errors for

the estimated numbers of homes (table I), employees (table II), residents and beds (table III), resident days of care (table IV), costs (table V), and the percentage of these estimates (table VI).

The chances are about 68 out of 100 that the value obtained in a complete enumeration of the population is contained in the interval represented by the estimate plus and minus one standard error of the esti-

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Table I. Provisional approximate standard errors of estimated numbers of nursing homes and services

Size of estimate	Standard error	Size of estimate	Standard error
2,000-----	600	10,000---	1,120
4,000-----	848	12,000---	1,152
6,000-----	984	14,000---	1,176
8,000-----	1,056	16,000---	1,216

Illustration of use of table I: Table 1 shows that an estimated 4,400 homes were not certified by Medicare or Medicaid. Linear interpolation between the values shown in table I will yield an approximate standard error of 874 for 4,400.

Table II. Provisional approximate standard errors of estimated numbers of employees

Size of estimate	Standard error	Size of estimate	Standard error
4,000-----	1,280	80,000---	4,800
6,000-----	1,560	100,000--	5,200
8,000-----	1,792	200,000--	8,000
10,000----	2,000	400,000--	11,200
20,000----	2,800	600,000--	14,400
40,000----	4,000	800,000--	16,000
60,000----	4,320		

Illustration of use of table II: Table 6 shows an estimated 19,100 registered nurses were in homes certified by Medicaid only. Linear interpolation between the values shown in table II will yield an approximate standard error of 2,728 for 19,100.

Table V. Provisional approximate standard errors of estimates of average cost per resident day

Base of average (number of resident days)	Estimated average cost per resident day in dollars						
	0.50	1.00	5.00	9.00	13.00	17.00	21.00
	Standard error						
60,000,000-----	0.17	0.24	0.52	0.69	0.83	0.99	1.12
70,000,000-----	0.16	0.22	0.48	0.63	0.79	0.96	1.03
80,000,000-----	0.15	0.21	0.45	0.60	0.75	0.89	0.99
90,000,000-----	0.14	0.20	0.42	0.58	0.72	0.83	0.94
100,000,000-----	0.13	0.19	0.41	0.55	0.69	0.80	0.92
200,000,000-----	0.09	0.13	0.29	0.41	0.52	0.61	0.72
300,000,000-----	0.08	0.11	0.24	0.35	0.44	0.55	0.64
400,000,000-----	0.07	0.09	0.22	0.32	0.42	0.50	0.60

Illustration of use of table V: Table 4 shows \$11.22 average cost per resident day in 1972 for the 87,659,400 resident days of care provided in homes certified as an ICF. Linear interpolation between the values shown in table V will yield an approximate standard error of \$0.66 for an estimate of \$11.22 with a base of 87,659,400.

Table III. Provisional approximate standard errors of estimated numbers of residents and beds

Size of estimate	Standard error	Size of estimate	Standard error
10,000-----	3,600	200,000----	12,800
20,000-----	5,120	400,000----	16,000
40,000-----	7,200	600,000----	19,200
60,000-----	8,400	800,000----	22,400
80,000-----	9,600	1,000,000--	24,000
100,000----	10,400	1,200,000--	28,800

Illustration of use of table III: Table 3 shows an estimated 148,200 total discharges for 1972 from homes certified as an ICF only. Linear interpolation between the values shown in table III will yield an approximate standard error of 11,557 for 148,200.

Table IV. Provisional approximate standard errors of estimated numbers of resident days

Size of estimate	Standard error	Size of estimate	Standard error
60,000,000-	2,220,000	100,000,000-	3,100,000
70,000,000-	2,450,000	200,000,000-	5,200,000
80,000,000-	2,720,000	300,000,000-	7,200,000
90,000,000-	2,880,000	400,000,000-	9,200,000

Illustration of use of table IV: Table 4 shows that an estimated 185,626,400 resident days of care were provided in homes certified by Medicaid only. Linear interpolation between the values shown in table IV will yield an approximate standard error of 4,906,000 for 185,626,400.

Table VI. Provisional approximate standard errors of percentages for estimated numbers of homes, residents, beds, or employees

Base of percentage (number of homes, residents, beds, or employees)	Estimated percentage				
	2 or 98	5 or 95	10 or 90	25 or 75	50
Standard error expressed in percentage points					
10,000-----	1.4	2.2	3.0	4.3	5.0
20,000-----	1.0	1.5	2.1	3.0	3.5
30,000-----	0.8	1.3	1.7	2.5	2.9
40,000-----	0.7	1.1	1.5	2.1	2.5
50,000-----	0.6	1.0	1.3	1.6	2.2
80,000-----	0.5	0.8	1.1	1.5	1.8
100,000-----	0.4	0.7	0.9	1.0	1.6
200,000-----	0.3	0.5	0.7	0.8	1.1
500,000-----	0.2	0.3	0.4	0.5	0.7
800,000-----	0.1	0.2	0.2	0.3	0.4
1,000,000-----	0.1	0.1	0.2	0.2	0.2
1,200,000-----	0.1	0.1	0.1	0.1	0.1

Illustration of use of table VI: Table 3 shows that 67.8 percent of the 194,500 residents in SNH's were live discharges. Linear interpolation between the values shown in table VI will yield an approximate standard error of 0.91 percent for 67.8 percent with a base of 194,500.

mate, 95 out of 100 for two standard errors, and 99 out of 100 for 2½ standard errors. Using the illustration at the bottom of table I as an example, the chances are about 68 out of 100 that the value that would be obtained in a complete enumeration is contained in the interval 4,400 ± 874 (i.e., between 3,526 and 5,274), 95 out of 100 for the interval 4,400 ± 874 multiplied by 2 (i.e., between 2,652 and 6,148), and 99 out of 100 for the interval 4,400 ± 874 multiplied by 2.5 (i.e., between 2,215 and 6,585).

Approximate standard errors of such ratios as occupancy rate, average number of services provided, and full-time equivalent employees per 100 residents can be calculated as in the following example:

Suppose the standard error ($\sigma_{R'}$) of the number of full-time equivalent employees per 100 residents for homes certified by Medicaid only is desired. The estimated number of full-time equivalent employees for this statistic is 333,000, and the estimated number of residents is 524,800 (table 1).

$$\begin{aligned} \text{Let } R' \times 100 &= \frac{\text{Number of full-time equivalent employees}}{\text{Number of residents}} \times 100 \\ &= \frac{X'}{Y'} \times 100 = \frac{333,000}{524,800} \times 100 = .634 \times 100 \\ &= 63.4 \text{ employees} \end{aligned}$$

The relative standard error of an estimate is obtained by dividing the standard error of the esti-

mate by the estimate itself and is expressed as a percentage of the estimate. The standard error of 333,000 is 10,128 (from table II) and the relative standard error ($V_{X'}$) is 3.0 percent, or .030. The standard error of 524,800 is 17,997 (from table III) and the relative standard error ($V_{Y'}$) is 3.4 percent, or .034. The square root of the sum of the squares of these two relative standard errors provides an approximation for the relative standard error ($V_{R'}$) of the desired ratio.

$$\begin{aligned} V_{R'}^2 &= V_{X'}^2 + V_{Y'}^2 \\ &= (.030)^2 + (.034)^2 \\ &= .000900 + .001156 = .002056 \\ V_{R'} &= \sqrt{.002056} = .045 \end{aligned}$$

The standard error of the ratio may be obtained by multiplying the relative standard error by the ratio as done below.

$$\sigma_{R'} = V_{R'} \times R' \times 100 = .045 \times .634 \times 100 = 2.9 \text{ employees}$$

TYPES OF FACILITIES INCLUDED IN THE SURVEY.

Institutions included in the 1973-74 Nursing Home Survey were those classified as either nursing care homes or personal care homes with nursing according to data collected in the 1971 Master Facility Inventory

Survey⁷ conducted by the National Center for Health Statistics.

Definitions for these two classes of nursing homes were as follows:

Nursing Care Home

- Fifty percent or more of the residents received nursing care during the week prior to the survey. (Nursing care is defined as the provision of one or more of the following services: taking temperature-pulse-respiration or blood pressure; full bed bath; application of dressings or bandages; catheterization; intravenous, intramuscular, or hypodermic injection; nasal feeding; irrigation; bowel and bladder retraining; oxygen therapy; enema.)
- At least one full-time (35 or more hours per week) registered nurse (RN) or licensed practical nurse (LPN) was employed.

Personal Care Home with Nursing

- Some, but less than 50 percent, of the residents received nursing care during the week prior to the survey.
 - At least one full-time RN or LPN was employed.
- or
- Some of the residents received nursing care during the week prior to the survey.
 - No full-time RN or LPN was employed.
 - The institution either

Provided administration of medicines or supervision over self-administered medicines.

or

Provided assistance with three or more activities for daily living (such as help with tub bath or shower; help with dressing, correspondence, or shopping; help with walking or getting about; and help with eating).

⁷National Center for Health Statistics: Inpatient health facilities as reported from the 1971 MFI Survey, *Vital and Health Statistics*, Series 14-No. 12. DHEW Pub. No. (HRA) 74-1807. Health Resources Administration. Washington. U.S. Government Printing Office, Mar. 1974.

SYMBOLS	
Data not available-----	---
Category not applicable-----	...
Quantity zero-----	-
Quantity more than 0 but less than 0.05----	0.0
Figure does not meet standards of reliability or precision-----	*
<i>(see text for details)</i>	

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