

Hospital Income and Expense Ratios, 1951

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A RECENT ANALYSIS of the income and expense of nonprofit short-term general hospitals in the United States (1) shows that hospital size (in terms of number of beds) is directly associated with the number of services offered by the hospital. The number of different types of services offered is directly associated with expense per patient-day. When expense per patient-day is high, the hospital is most likely to find little surplus left after total expense is deducted from total income.

Bed Capacity

High per diem expense is an outstanding characteristic of large hospitals. Among the 1,515 hospitals studied, the average per diem expense in 1951 in those with less than 50 beds was

\$14.61 as compared with \$20.67 in those with 250 or more beds. Payroll is the major item of hospital expense, accounting for 52 percent of total expense in the small hospitals and 59 percent in the large ones. The variation in payroll expenditure is explained by the range in the number of personnel in relation to patients, which increases from 145 full-time paid employees per 100 patients per day in the small hospitals to 203 in the large ones. Total income is in excess of total expense for hospitals in each size group, but the percentage of excess is least among the largest hospitals.

Income per patient-day increases with size of hospital, from \$15.49 in the smallest hospitals to \$20.97 in the largest hospitals. Both per diem income from patients and income from all other sources are greatest in the largest hospitals. The proportion of total income that is derived from patients decreases with increased hospital size, to 85 percent of the total in the largest size group.

Occupancy rates of large hospitals tend to be higher than those of small hospitals. The increase in occupancy is from 61 percent in hospitals with less than 50 beds to 79 percent in those with 250 or more beds. The longer average period of hospitalization in the larger institutions—9.4 days in the largest size as compared with 6.1 days in the smallest size—is due in part to the fact that more complicated cases are cared for where specialized facilities and services are available.

Scope of Program

A close relationship is found between bed capacity and the scope of a hospital's service pro-

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This paper presents information from a study made by the Division of Public Health Methods and the Commission on Financing of Hospital Care, using data provided by the American Hospital Association. It supplements the analysis of variation in income and expense ratios among 1,515 nonprofit short-term general hospitals currently being issued as Public Health Service Publication No. 407.

gram as measured by the number of different organized services offered. (The product-moment coefficient of correlation between the two variables is +0.74.) The proportion of small hospitals (less than 50 beds) and of large hospitals (250 or more beds) with each of the 19 selected services is shown below:

Service	Small	Large
	hospi- tals (Percent)	hospi- tals (Percent)
Diagnostic X-ray	88	100
Basal metabolism apparatus	73	99
Clinical laboratory	73	100
Electrocardiograph	67	99
Medical record department	51	100
Outpatient department	44	90
Blood bank	37	92
Medical library	23	100
Pharmacy	18	99
Physiotherapy department	12	91
Routine chest X-ray	11	41
Therapeutic X-ray	8	97
Dental department	5	69
Cancer clinic	3	75
Postoperative recovery room	3	39
Social service department	2	71
Electroencephalograph	2	51
Mental hygiene clinic	1	40
Occupational therapy department	1	40

Because the range of services and the size of hospital are closely related, the several operating ratios vary with scope of program in the same manner as with hospital size. The important characteristics of the hospitals with 14-19 of these selected services, in comparison with the hospitals with 0-5 services, are high occupancy rates, long average duration of patient stay, high per diem expense for payroll and for other items, and a small balance of total income over total expense. The proportion of total expense absorbed by payroll is higher in the hospitals with the largest number of services than in the hospitals with the smallest number of services. The large number of full-time employees in relation to patients in the hospitals with the greatest variety of services is partly due to the different kinds of personnel needed to furnish these services.

The number of services offered determines in large part the cost differentials among hospitals. At one extreme, 36 percent of the hospitals with 0-5 services have a per diem expense of less than

\$12 and 7 percent have an expense of \$20 or more. At the other end of the scale, the corresponding percentages for the hospitals with 14-19 services are 1 and 51. In general, the hospitals which have low per diem costs are those which offer a relatively narrow range of services, although high costs do not in each instance assure the presence of a broad program.

Per Diem Expense

Since both scope of program and bed capacity are related to hospital costs, these two characteristics are held constant in analyzing the variation in operating ratios with per diem expense. From the 1,515 hospitals for which financial data are available, 863 hospitals have been selected on the basis of size and services: under 50 beds and 0-5 services, 50-99 beds and 6-9 services, 100-249 beds and 10-13 services, and 250 or more beds and 14-19 services. The operating ratios for four different levels of expense for each of these homogenous groups are shown in table 1.

Among groups of hospitals with similar bed capacity and scope of program, occupancy rate and length of stay vary inversely with expense per patient-day, except in the case of the largest size and service group. Among the small hospitals with 0-5 services, for example, the occupancy rates are lower and the average patient stays are shorter in the more expensive hospitals than in hospitals with lower per diem expense. As would be expected, per diem income both from patients and from other sources is substantially greater among the hospitals with the highest per diem expense. In the high-cost hospitals (except the smallest size and service group) a relatively large proportion of expenditures is absorbed by payroll, reflecting the high ratio of personnel to patients. Per diem income does not increase at as steep a rate as per diem expense, with the result that the high-cost hospitals are least likely to operate with substantial excess of total income over total expense.

The accompanying figure illustrates the variation in four ratios in relation both to per diem expense and to bed capacity and number of services offered. The lowest occupancy and the

Table 1. Average rates for 863 nonprofit¹ short-term general hospitals, by number of beds and services and expense per patient-day, 1951

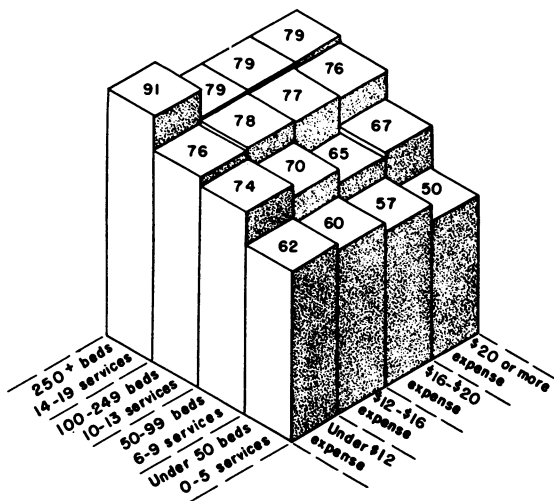
Number of beds and services and expense per patient-day	Number of hospitals	Occupancy rate	Average length of stay (days)	Income per patient-day		
				Total	Patient	Patient as percent of total
<i>Under 50 beds and 0-5 services</i>						
Under \$12.00.....	92	61.6	6.9	\$10.75	\$10.15	94.5
\$12.00-\$15.99.....	89	59.9	6.1	14.61	13.71	93.8
\$16.00-\$19.99.....	32	56.6	5.5	18.39	16.51	89.8
\$20.00 or more.....	18	50.3	4.3	23.32	20.71	88.8
<i>50-99 beds and 6-9 services</i>						
Under \$12.00.....	39	74.2	7.6	10.94	10.05	91.9
\$12.00-\$15.99.....	114	70.2	6.9	14.71	13.36	90.8
\$16.00-\$19.99.....	64	65.4	6.3	18.17	16.69	91.9
\$20.00 or more.....	39	67.4	5.7	25.36	23.03	90.8
<i>100-249 beds and 10-13 services</i>						
Under \$12.00.....	6	76.1	7.8	11.11	9.13	82.2
\$12.00-\$15.99.....	75	78.3	7.9	15.05	13.98	92.9
\$16.00-\$19.99.....	81	77.0	7.7	18.79	17.24	91.7
\$20.00 or more.....	77	76.4	7.2	24.23	21.50	88.7
<i>250 or more beds and 14-19 services</i>						
Under \$12.00.....	1	90.6	11.0	11.54	9.75	84.5
\$12.00-\$15.99.....	27	78.9	9.8	14.77	12.90	87.3
\$16.00-\$19.99.....	38	79.1	9.6	18.56	16.14	87.0
\$20.00 or more.....	71	78.8	9.9	25.34	20.50	80.9

Number of beds and services and expense per patient-day	Expense per patient-day			Full-time paid personnel per 100 patients per day	Deficit-surplus as percent of expense
	Total	Payroll	Payroll as percent of total		
<i>Under 50 beds and 0-5 services</i>					
Under \$12.00.....	\$9.75	\$5.28	54.2	114	+10.3
\$12.00-\$15.99.....	13.81	7.34	53.1	139	+5.8
\$16.00-\$19.99.....	17.49	9.51	54.4	166	+5.1
\$20.00 or more.....	23.22	11.77	50.7	208	+4.4
<i>50-99 beds and 6-9 services</i>					
Under \$12.00.....	9.93	5.19	52.3	125	+10.2
\$12.00-\$15.99.....	14.00	7.81	55.7	153	+5.1
\$16.00-\$19.99.....	17.66	9.72	55.0	171	+2.9
\$20.00 or more.....	24.13	13.66	56.6	212	+5.1
<i>100-249 beds and 10-13 services</i>					
Under \$12.00.....	10.15	4.69	46.1	122	+9.4
\$12.00-\$15.99.....	14.22	7.90	55.6	156	+5.8
\$16.00-\$19.99.....	17.83	10.20	57.2	185	+5.4
\$20.00 or more.....	23.20	13.61	58.7	207	+4.5
<i>250 or more beds and 14-19 services</i>					
Under \$12.00.....	11.87	6.62	55.8	143	-2.8
\$12.00-\$15.99.....	14.48	7.97	55.0	172	+2.0
\$16.00-\$19.99.....	18.18	10.40	57.2	194	+2.1
\$20.00 or more.....	25.47	15.39	60.4	231	-5.5

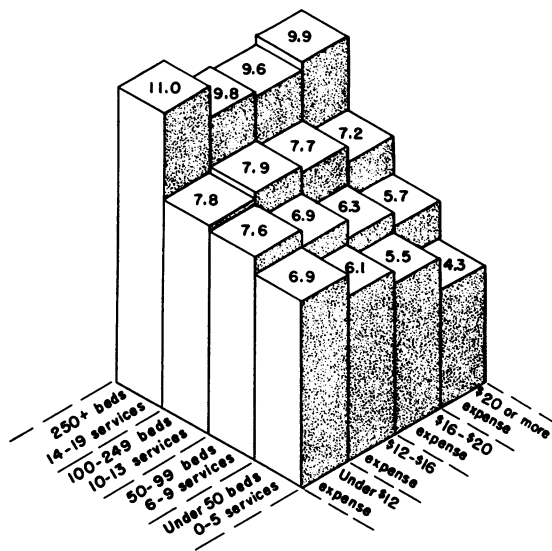
¹ Excludes Catholic and Government hospitals.

Variation in four ratios with per diem expense and with number of beds and services in 863 non-profit short-term general hospitals, 1951

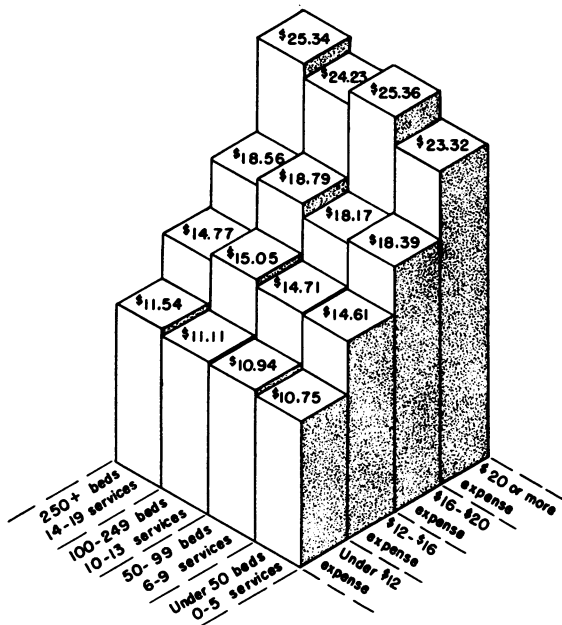
OCCUPANCY RATE



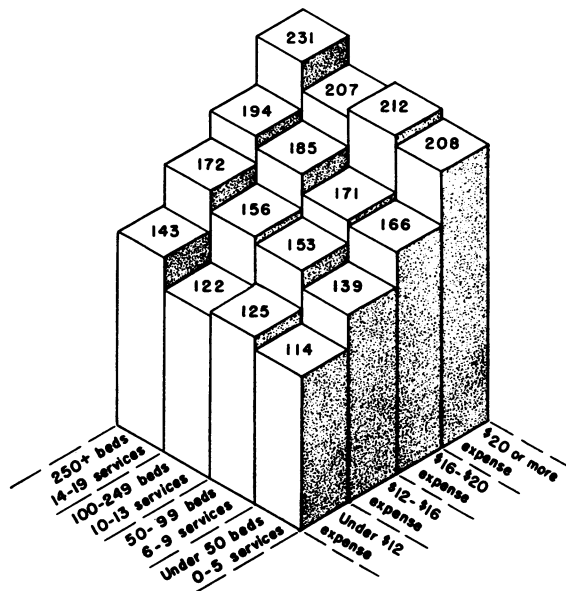
LENGTH OF STAY



TOTAL INCOME PER PATIENT DAY



FULL-TIME PAID PERSONNEL PER 100 PATIENTS PER DAY



shortest stay are found in the high-cost hospitals with less than 50 beds and 0-5 services. The low-cost hospitals in the lowest size and service group have the lowest income per patient-day. These same hospitals have the lowest ratio of personnel to patients.

Deficit or Surplus

In 1951 about three-fourths of the hospitals studied were able to finance current operations from current total income and only one-fourth had a deficit. At the extremes, about 1 hospital in 10 reported a deficit of 5 percent or more,

Table 2. Average rates for 863 nonprofit¹ short-term general hospitals, by number of beds and services and deficit or surplus, 1951

Number of beds and services and deficit or surplus	Number of hospitals	Occupancy rate	Average length of stay (days)	Income per patient day		
				Total	Patient	Patient as percent of total
<i>Under 50 beds and 0-5 services</i>						
Deficit 5 percent or more.....	22	53.7	6.7	\$12.84	\$11.90	92.6
Deficit 0.1-4.9 percent.....	29	59.8	6.6	13.14	12.10	92.1
Surplus 0-4.9 percent.....	76	60.0	6.2	14.22	13.20	92.9
Surplus 5 percent or more.....	104	60.0	5.9	14.64	13.62	93.0
<i>50-99 beds and 6-9 services</i>						
Deficit 5 percent or more.....	27	65.6	7.1	15.99	14.28	89.3
Deficit 0.1-4.9 percent.....	44	69.3	6.8	15.17	13.51	89.1
Surplus 0-4.9 percent.....	70	71.8	6.9	15.85	14.57	91.9
Surplus 5 percent or more.....	115	68.3	6.3	17.52	16.10	91.9
<i>100-249 beds and 10-13 services</i>						
Deficit 5 percent or more.....	10	67.3	8.3	16.62	15.14	91.1
Deficit 0.1-4.9 percent.....	47	74.2	8.1	19.00	17.30	91.0
Surplus 0-4.9 percent.....	84	78.5	7.4	18.28	16.54	90.5
Surplus 5 percent or more.....	98	78.3	7.5	20.21	18.30	90.6
<i>250 or more beds and 14-19 services</i>						
Deficit 5 percent or more.....	15	74.6	11.6	24.50	17.07	69.7
Deficit 0.1-4.9 percent.....	43	78.0	10.1	21.26	17.26	81.2
Surplus 0-4.9 percent.....	56	81.2	9.4	20.89	18.28	87.5
Surplus 5 percent or more.....	23	79.3	9.1	21.53	18.98	88.2

Number of beds and services and deficit or surplus	Expense per patient-day			Full-time paid personnel per 100 patients per day	Deficit-surplus as percent of expense
	Total	Payroll	Payroll as percent of total		
<i>Under 50 beds and 0-5 services</i>					
Deficit 5 percent or more.....	\$14.64	\$7.48	51.1	144	-12.3
Deficit 0.1-4.9 percent.....	13.48	7.35	54.5	139	-2.5
Surplus 0-4.9 percent.....	13.89	7.36	53.0	137	+2.3
Surplus 5 percent or more.....	12.57	6.76	53.8	136	+16.4
<i>50-99 beds and 6-9 services</i>					
Deficit 5 percent or more.....	17.64	9.43	53.5	164	-9.4
Deficit 0.1-4.9 percent.....	15.42	8.19	53.1	159	-1.6
Surplus 0-4.9 percent.....	15.55	8.71	56.0	158	+1.9
Surplus 5 percent or more.....	15.43	8.70	56.4	163	+13.5
<i>100-249 beds and 10-13 services</i>					
Deficit 5 percent or more.....	18.27	10.68	58.5	196	-9.0
Deficit 0.1-4.9 percent.....	19.33	11.13	57.6	191	-1.7
Surplus 0-4.9 percent.....	17.82	10.16	57.0	176	+2.6
Surplus 5 percent or more.....	18.03	10.30	57.1	179	+12.1
<i>250 or more beds and 14-19 services</i>					
Deficit 5 percent or more.....	26.83	15.45	57.6	244	-8.7
Deficit 0.1-4.9 percent.....	21.54	12.69	58.9	213	-1.3
Surplus 0-4.9 percent.....	20.46	12.26	59.9	204	+2.1
Surplus 5 percent or more.....	19.71	11.51	58.4	191	+9.2

¹ Excludes Catholic and Government hospitals.

while 4 in 10 reported a surplus of 5 percent or more. Deficits are most prevalent among the large hospitals which provide a broad scope of service and therefore have a high expense per patient-day.

The operating ratios are shown in table 2 for four different levels of deficit or surplus for each of the homogeneous groups of hospitals selected on the basis of bed capacity and number of services available. Hospitals with deficits have low occupancy rates in comparison with hospitals of similar size and number of services that have surpluses. Average length of stay, on the other hand, is long in the "deficit" hospitals.

Per diem income from patients tends to be low, both dollarwise and percentagewise, in the hospitals with deficits, while expense is relatively high for both payroll and other items. The low occupancy among the hospitals with deficits accounts in part for their high costs per patient-day and their resulting deficits.

The long average patient stay in this group of hospitals may result from a relatively large proportion of complicated cases with high per diem costs. This in turn may result in large total bills. If such bills are less likely than others to be paid in full, then long stay is consistent with the low per diem income from patients found in the hospitals with deficits.

When bed capacity, number of services, and per diem expense are all held constant, the hospitals incurring a deficit have low occupancy rates, long average patient stay, and low income from patients in comparison with the hospitals with a surplus.

REFERENCE

- (1) Pennell, M. Y., Sigmond, R. M., Altman, I., and Altenderfer, M. E.: *Income and expense ratios of general hospitals, 1951*. Public Health Service Pub. No. 407. Washington, D. C., U. S. Government Printing Office, 1954.

National Nurse Week

The first National Nurse Week will be observed October 11-16, 1954. The Department of Health, Education, and Welfare first suggested such a program and, together with the American Nurses Association, supported the joint resolution introduced into the House and Senate last winter and passed August 23, 1954. National Nurse Week will focus public attention and interest on the important contribution of the nursing profession to the health of the Nation.

In active practice in the country today are 391,500 nurses. A little more than 230,000 of these are working in hospitals—a gain of more than 15 percent over 1950. The next largest number of nurses, 80,500, are on private duty; 36,300 are working in doctors' offices, and 25,300 are in the public health field. Industry employs 11,000. Approximately 7,600 are faculty members in schools of nursing.

The American Nurses Association and the National League for Nursing are spearheading the nationwide observance of National Nurse Week. The American Public Health Association, the American Medical Association, the American Hospital Association as well as the nursing services of the Federal agencies and the Red Cross are assisting in the plans. These national associations have sent to their State and local members suggestions for the week's community activities.