

**Labor and Material
Requirements for
Hospital and Nursing
Home Construction**

L2.3:
1691

BULLETIN 1691

U. S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

Dayton & Montgomery Co.
Public Library

JUN 16 1971

DOCUMENT COLLECTION

Labor and Material Requirements for Hospital and Nursing Home Construction

BULLETIN 1691

U. S. DEPARTMENT OF LABOR
J. D. Hodgson, Secretary

BUREAU OF LABOR STATISTICS
Geoffrey H. Moore, Commissioner

1971



Preface

The following study of labor and material requirements for hospital construction is one in a series made by the Bureau of Labor Statistics of various types of construction that might be affected by future governmental action. It is comprised of hospitals for which construction was completed in the main between 1965 and 1966, and is similar to an earlier study made in 1959. Other published studies in this series include schools, highways, Federal office buildings, civil works, public housing, private one-family dwelling units, college housing, and sewer works.

Considerable time is required to construct hospitals, design and draw samples, obtain certified payrolls, tabulate man-hours and wages, and visit all subcontractors who worked on sample projects. Nevertheless, data presented here indicate trends in labor requirements and are useful in analyzing changes in labor and material usage over periods of time.

The Bureau is especially grateful for the assistance and cooperation of the Public Health Service of the Department of Health, Education, and Welfare and the Department of Health of the various States that provided data for determining direct labor requirements. The Bureau also appreciates the cooperation of construction contractors who provided additional direct labor and materials data.

The study was prepared in the Bureau's Office of Productivity and Technology. The text was written by Martha Farnsworth Riche. Data were prepared under the direct supervision of Robert Ball and Joseph T. Finn.

Contents

	<u>Page</u>
Introduction-----	1
Nature of survey-----	1
Highlights-----	2
Some other highlights-----	3
Building characteristics-----	3
Onsite man-hour requirements-----	7
Requirements by occupation-----	8
Apprentices-----	9
General and special trade contractors' shares-----	9
Cost components-----	10
Direct wage cost-----	10
Offsite employment-----	12
Builders' offsite employment-----	13
Manufacturing employment-----	13
Employment in other industries-----	14
Construction time-----	14
Employment by construction period-----	15
Construction materials-----	15
Appendix:	
Scope and method of survey-----	20
Survey coverage-----	20
Man-hour estimates-----	21
Tables:	
1. Man-hours per 100 square feet and per \$1,000 of contract cost for hospital construction-----	2
2. Number and cost of hospital and nursing home construction projects, by selected characteristics and region-----	23
3. Onsite man-hour requirements for hospital and nursing home construction projects, by selected characteristics and region-----	24
4. Onsite man-hour requirements per 100 square feet of hospital and nursing home construction, by occupation and region---	25
5. Man-hour requirements per \$1,000 of hospital construction contract, by occupation and region, 1965-66-----	26

Contents--continued

	<u>Page</u>
6. Apprentices as a percent of employment, by occupation and region-----	27
7. Percent of total man-hour requirements, by type of contractor and region-----	28
8. Wages as a percent of contract cost-----	29
9. Average onsite hourly earnings, by selected characteristics and regions-----	30
10. Man-hour requirements per 100 square feet of construction---	31
11. Average number of weeks for hospital construction-----	32
12. Hospital construction use of major materials per 100 square feet-----	18
13. Total cost of materials per 100 square feet of hospital construction, 1965-66-----	33
14. Total cost of materials per 100 square feet of hospital construction contract, 1959-60-----	36
15. Total cost of material components for each \$1,000 of hospital construction contract, 1965-66-----	39
16. Total cost of material components for each \$1,000 of hospital construction contract, 1959-60-----	42
17. Total cost of materials per 100 square feet of nursing home construction, 1965-66-----	45
18. Total cost of material components for each \$1,000 of nursing home construction contract, 1965-66-----	48
 Charts:	
1. Total man-hour requirements per 100 square feet of hospital construction by sector, 1959-60 and 1965-66-----	4
2. Total man-hour requirements per \$1,000 of contract cost for hospital construction by sector, 1959-60 and 1965-66-----	4

Contents--continued

	<u>Page</u>
3. Percent distribution of hospital construction costs per 100 square feet, 1959-60 and 1965-66-----	11
4. Percent distribution of onsite man-hours of construction labor for each \$1,000 of hospital contract by decile of construction time, 1965-66-----	16

LABOR AND MATERIAL REQUIREMENTS FOR HOSPITAL AND NURSING HOME CONSTRUCTION

Introduction

Hospital and nursing home construction is becoming increasingly important for several reasons: (1) Medical knowledge is advancing; (2) more facilities are needed as population grows; (3) people expect more from the medical community; and (4) people can pay for expanded services as incomes rise. Even those who cannot afford better health care have greater access to hospitals and nursing homes as a result of Medicare and Medicaid.

Hospital and nursing home construction--public and private, profit and nonprofit--represents a growing proportion of all nonresidential construction expenditures, increasing from 7 1/2 percent in 1959 to 9 1/2 percent in 1969. The value of this form of construction rose from \$1 billion in 1959 to \$3 billion in 1969.

Despite substantial expenditures already made on hospital construction, the need for hospital facilities of all types is still widespread. At the end of 1966, the Public Health Service reported that State plans for financing nonfederal hospitals under the Hill-Burton hospital construction program reflected a need to increase bed capacity by 10 percent to cover current deficiencies as well as to meet population growth. In addition, about one-third of the existing facilities needed to be remodeled or replaced to conform to minimum standards of physical construction and patient safety.

To meet at least part of this demand, expenditures for public and private hospitals are expected to rise to \$4 billion by 1978, according to the Public Health Service. Much of this increase should go for additions to existing hospitals, as the Hill-Burton State agencies are encouraging the phasing out of smaller facilities in favor of larger ones (new or expanded) that are more efficient and economical to operate.

This study was designed to measure labor and material requirements for hospital construction in the late 1960's. In addition, by comparing the findings for the current projects with those of a similar study undertaken in 1959 and 1960, some insights into trends in these requirements, occupational requirements, and hospital costs can be obtained.

Nature of survey

This report is based on a survey of selected public and private profit and nonprofit general hospitals and nursing homes throughout the United States, the major part of whose construction took place in 1965 and 1966. Data were collected for 61 hospitals and 12 nursing homes,

including both new facilities and additions. The samples represent one-fifth of all hospitals and one-eighth of all nursing homes built under the Hill-Burton program during the period. The earlier study covered 46 general hospital projects, the greater part of whose construction took place in 1959 and 1960, and did not include nursing homes.

The surveys were designed primarily to determine the number of man-hours required for each \$1,000 and for each 100 square feet of hospital construction. Man-hours include time spent both at and away from the site; the latter represented employment required to produce and deliver construction materials.

Highlights

In 1965-66, 507 man-hours (onsite and offsite) were required to build each 100 square feet of hospital construction--7 percent less than in 1959-60 (see table 10). Man-hours required for onsite construction decreased by 6 percent, or about 1 percent a year. Total man-hours for the two studies were distributed as follows:

Table 1.
Man-hours per 100 square feet and per \$1,000 of contract cost for hospital construction 1/

	1965-66			1959-60		
	Per 100 square feet	Per \$1,000	Per cent	Per 100 square feet	Per \$1,000	Per cent
Total man-hours-----	507	178	100	544	210 <u>2/</u>	100
Construction-----	246	86	49	258	100	47
Onsite-----	217	76	43	230	89	42
Offsite-----	29	10	6	28	11	5
Manufacturing-----	183	64	36	203	79	37
Trade, transportation and services-----	51	18	10	50	19 <u>2/</u>	9
Other-----	26	10	5	33	13	6

1/ Due to rounding, details may not add to totals.

2/ These figures were revised to incorporate changes in the updated input-output model.

Changes in man-hour requirements reflect shifts in the relative importance of hospitals of different sizes, type, and location and in the materials used as well as changes in productivity due to technological and related improvements. The average hospital in the 1965-66 survey had 12 percent more floor space than the hospitals built 6 years earlier and contained fewer beds (see chart 1).

In dollar value, there were 178 man-hours per \$1,000 of contract cost; 86 man-hours came from construction and 92 from other industries. Onsite construction hours were 76, offsite 10. The earlier study found that 210 man-hours were required per \$1,000 of contract cost, of which 89 represented onsite construction and 11 offsite construction (see chart 2).

Some other highlights

- Construction cost per 100 square feet went up 10 percent
 - labor and residual costs climbed substantially, materials only a little.
- Hospitals were larger, with fewer beds but more floor space.
- There were more additions to existing hospitals, fewer new hospitals.
- More projects were in metropolitan areas.
- Occupational requirements changed little.
- Hospitals took longer to build.

Building characteristics

Hospitals. The average size and cost of the 61 hospital projects surveyed in 1966, compared with the 46 surveyed earlier, was:

	<u>1966</u>	<u>1960</u>
Floor space (1,000 square feet)---	63.5	56.5
Cost per 100 square feet-----	\$ 2,851	\$ 2,593
Beds-----	82	86
Cost per bed-----	\$ 22,172	\$ 16,947
Total construction cost-----	\$1,811,459	\$1,463,723

With a 12-percent increase in average floor space and a 5-percent decrease in the average number of beds, the average cost per bed increased 31 percent compared with 10 percent for the average cost per

CHART 1
TOTAL MAN-HOUR REQUIREMENTS PER 100 SQUARE FEET OF HOSPITAL CONSTRUCTION BY SECTOR, 1959-60 AND 1965-66

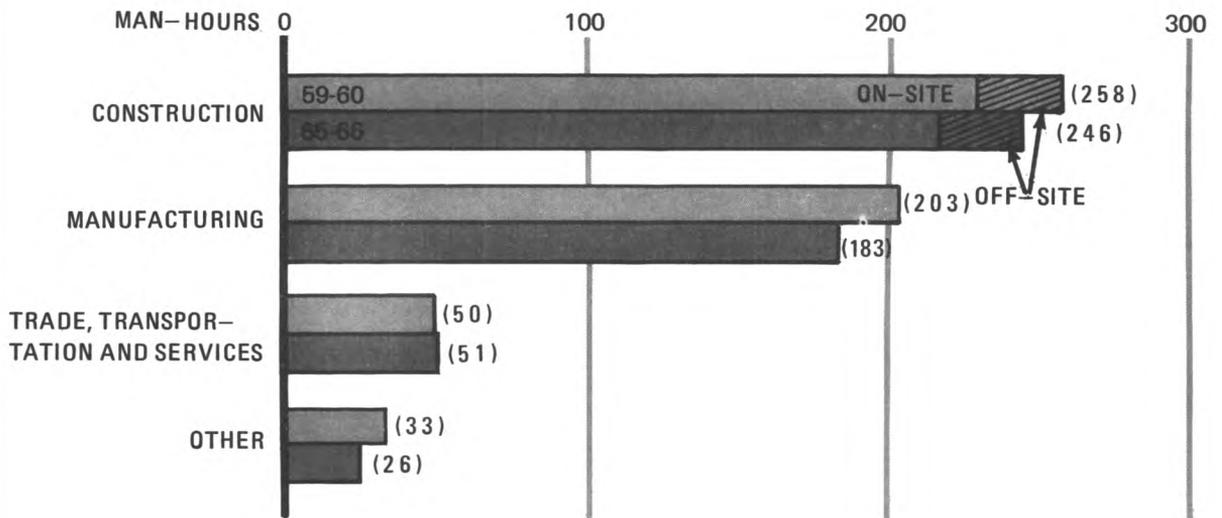
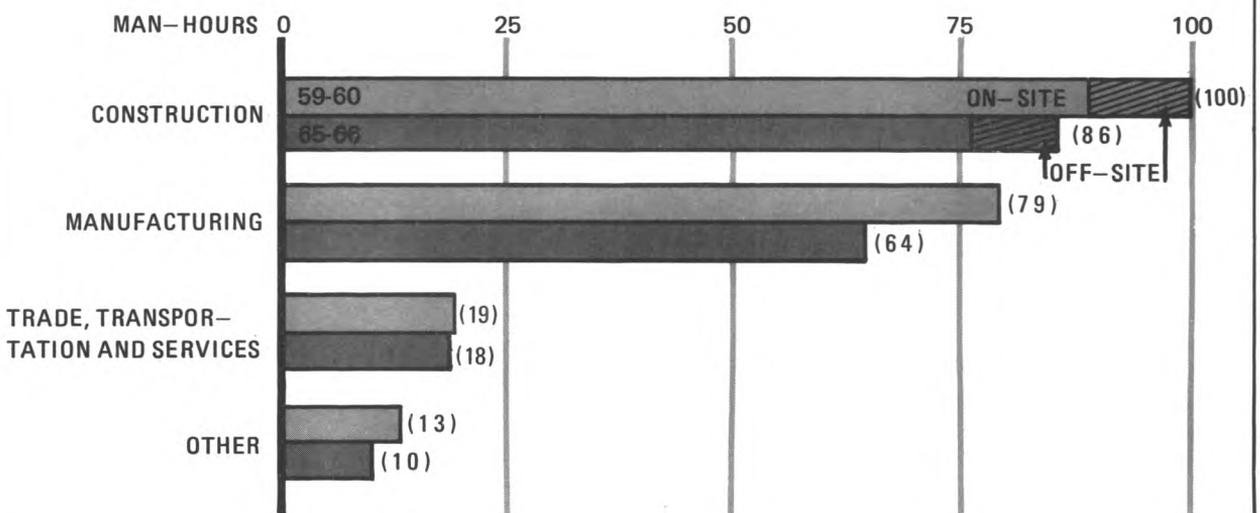


CHART 2
TOTAL MAN-HOUR REQUIREMENTS PER \$1,000 OF CONTRACT COST FOR HOSPITAL CONSTRUCTION BY SECTOR, 1959-60 AND 1965-66



100 square feet. This shift probably reflects the increasing sophistication of the medical care provided in hospitals. Laboratories, treatment rooms, and special equipment tend to take up proportionately more space and displace room which would otherwise have been set aside for patients' beds.

Reflecting differences in design, type of construction, and location, individual hospitals varied in size and cost. At one extreme, one of the new hospitals studied cost less than \$350,000. A one-story 25-bed building cost \$2,189 per 100 square feet and \$13,458 per bed.

At the other extreme, the study included a seven-story 350-bed hospital that cost more than \$10 million. Its cost per 100 square feet was \$2,224--far below the average for the study as a whole, while its cost per bed was \$31,312--well above the study average. This divergence occurred because only one of the project's four buildings was a hospital per se; the others included a nurses' dormitory and a nursing school.

Reversing the pattern set in 1959-60, projects in the 1965-66 study were more likely to be additions to existing hospitals rather than completely new:

	<u>New</u>	<u>Additions</u>
1965-66-----	26	35
1959-60-----	32	14

Additions were not necessarily less important or less substantial than new hospital projects. One seven-story addition cost \$8.5 million and had a square foot area larger than all but four of the new hospitals. On the other hand, all of the smallest projects, in both cost and size, were additions.

Over 60 percent of the projects studied were in metropolitan areas, compared with about 43 percent in 1959-60 (see table 2). These hospitals were generally larger and more expensive than those built in nonmetropolitan areas, mostly because they included more specialized or built-in equipment. This equipment as well as the structural features needed to accommodate it is included in the cost of the projects.

Nearly half of the 1965-66 projects had five stories or more, and more than a third had two to four stories. Nearly half of the 20 percent that were single story projects were in the South. By contrast, over half of the 1959-60 projects had only one story; the remainder were divided evenly between two to four stories and five stories or more.

The 1965-66 projects were not only larger, but more expensive. In 1959-60, fewer than half the projects cost a million dollars or more; in 1966, more than three-fourths of the projects exceeded this amount.

Additions averaged \$2,921 per 100 square feet, compared with \$2,759 for new hospitals; both of these figures were 8 percent higher than in 1959-60. The higher cost of additions appears attributable mainly to greater labor requirements, as additions usually include substantial alterations and repairs.

Except for structural framing, considerable uniformity existed in most hospital construction features. Reinforced concrete was used for framing on 59 percent of the projects, steel on 30 percent. Steel framing was used in the same proportion in the 1959-60 study, but reinforced concrete was only used in 37 percent of the projects that year. Load-bearing masonry was used in 28 percent of the projects in the earlier study compared with 8 percent in the later one.

Other construction features were more uniform. Masonry was the principal exterior wall material in 90 percent of the projects, and over 85 percent of them had elevators. Over 80 percent were fully air conditioned, the remainder were partially air conditioned. And nearly three-fourths of the projects had full or partial basements.

Nursing homes. It is difficult to analyze nursing homes in detail, for a sample of only 12 projects is subject to considerable variance. In general then, this report will discuss nursing home characteristics only where they differ substantially from hospital projects.

The average size and cost of the nursing homes surveyed was:

Floor space (1,000 square feet)-----	29.5
Cost per 100 square feet-----	\$ 2,089
Beds-----	65
Cost per bed-----	\$ 9,436
Total construction cost-----	\$615,388

Nursing homes cost approximately one-third as much as hospitals. On the average, nursing homes had almost half as much floor space and four-fifths as many beds as hospitals. Designed for post-operative or post-hospital care, nursing homes naturally allot a much greater proportion of their floor space to beds for patients (see table 2).

All of the nursing homes were new and they were divided about evenly between metropolitan and nonmetropolitan areas. Like the hospitals studied, nursing homes in metropolitan areas were larger and more expensive than those in nonmetropolitan areas.

Onsite man-hour requirements

Hospitals. Each 100 square feet of the hospitals studied in 1965-66 took an average of 217 onsite man-hours to build. ^{1/} The corresponding figure in 1959-60 was 230, an increase of 6 percent.

One reason for the relatively small decrease in man-hour requirements for hospital construction may be the greater proportion of additions rather than new projects in the later study. Additions needed 225 man-hours per 100 square feet; new projects only 206 (see table 3).

Higher man-hour requirements for additions were probably due to alteration work on already existing structures.

This work--tearing down or breaking through wall, floor, and ceiling areas--required more skilled and unskilled labor, since razing necessarily preceded rebuilding. Thus, additions had a higher ratio of labor to materials costs than new hospitals did.

Structural changes were minor for additions that were designed mainly to add bed space and nurses' stations: They involved tearing out and rebuilding walls, along with linking the necessary supporting facilities (plumbing, heating, and electrical) to the existing structure. Other additions, particularly in large metropolitan areas, housed new, efficient medical, surgical, and administrative equipment. These projects sometimes required extensive changes for the addition to become the core of the hospital's patient servicing functions.

Hospitals built in metropolitan areas required more man-hours than those built in nonmetropolitan areas. Larger hospitals, which have special structural features such as reinforced concrete, are more likely to be built in cities.

Onsite man-hour requirements were 154 per 100 square feet for nursing homes compared with 217 for hospitals (see table 3). Factors determining differences in man-hour requirements between nursing homes were generally the same as those governing hospitals. Nursing homes required more man-hours in metropolitan areas than in smaller areas; more expensive projects, and projects that used reinforced concrete framing all required more labor than other projects.

^{1/} The 1960 study used man-hours required for each \$1,000 of contract cost as its principal measure. Computed on this basis, man-hour requirements cannot be easily compared over time since price changes tend to distort the relationship.

Requirements by occupation

Over 70 percent of all onsite man-hours in hospital construction were worked by skilled craftsmen. Semiskilled and unskilled workers accounted for 26 percent; nonproduction employees (supervisors, engineers, and clerks) for 3 percent (see tables 4 and 5). There was a slight increase in skilled worker man-hours over 1959-60 with a corresponding decrease in semi- and unskilled man-hours.

Three crafts--plumbing, carpentry, and electrical work--accounted for 54 percent of all skilled worker man-hours: Plumbers for 22 percent, carpenters for 18 percent, and electricians for 14 percent. Although man-hour requirements for different crafts varied from project to project, the order of skill requirements was generally the same. The same general hierarchy characterized nursing home construction.

The relatively large demand for plumbers reflects the extensive work required by hospitals for general sanitation and nursing needs, laboratory and therapy installations, and lavatory and toilet facilities. The demand for electricians results from the need for electrically operated surgical and medical equipment, calling and signaling systems, and control systems in addition to the need for lighting equipment.

Regional variations in man-hour requirements for different trades are caused by design and construction needs as well as work practices. The higher proportion of additions (including related changes to existing buildings) was probably responsible for the larger number of carpenters in the Northeast.

A number of factors besides construction requirements affect the regional distribution of occupational man-hour requirements. For example, work crew organization and job classification may vary according to the relative participation of local unions. In addition, availability of low-paid labor may determine the extent to which labor saving equipment is employed.

These factors are particularly important in the division between skilled and unskilled workers. In the South, unskilled and semiskilled employees accounted for 34 percent of total man-hours, compared with 18 percent in the West; the percentages for skilled trades were 62 and 76 percent, respectively.

The persistence in all regions of a relatively large proportion of lesser skilled workers is noteworthy in view of the complex nature of hospital construction. Approximately 26 percent of all onsite man-hours were provided by unskilled and semiskilled employees despite considerable mechanization in materials handling, excavation, cleaning, and similar jobs formerly handled by laborers.

Apprentices

Apprentices in formal, registered apprentice programs accounted for nearly 5 percent of all onsite man-hours in hospital construction in 1965-66 or nearly 7 percent of skilled trade man-hours (see table 6). The proportion of apprentices was a bit higher in nursing home construction in 1965-66--nearly 6 percent of all workers, 8 percent of skilled tradesmen.

Apprentice electricians and tile setters each accounted for 12 percent of the hours worked in their craft, a greater proportion than in other trades. Three trades--equipment installation mechanics, elevator mechanics, and operating engineers--had no apprentices. Training in these occupations is usually acquired formally by assisting a journeyman until the trainee is fully qualified. Workers in a learning status, whether called helpers, as in elevator work, or oilers, as in equipment operation, are grouped with "helpers and tenders" in this report.

General and special trade contractors' shares

Employees of general contractors, a significant number of whom are carpenters, and of three special trade contractors--plumbing and heating, electrical, and plastering and lathing--accounted for 80 percent of all man-hours required to build the hospitals included in the 1965-66 study (see table 7). There was practically no change in this characteristic between the 1959-60 and the 1965-66 studies.

The general contractors' share of all man-hours was highest in the Northeast. This region also had the highest ratio of additions to new hospital projects; for additions the amount of work requiring special tradesmen may not have warranted use of separate contractors.

Plumbing and heating and electrical contractors together accounted for 35 percent of total man-hour requirements--4 percent more than in 1960. This percentage varied only slightly between regions, reflecting the relatively heavy demand for these services in hospital construction. Plastering and lathing contractors accounted for 8.5 percent of all man-hour requirements--evidence of the almost universal use of plaster for interior walls as well as its widespread use for ceilings.

Each project averaged 26 prime and subcontractors--the same as the 1960 projects. However, this number varied considerably with the size of the project, as larger, more expensive ones required a higher degree of contractor specialization.

Cost components

Hospital costs increased by about 10 percent between the two survey periods, as shown by the following tabulation:

Hospital cost per 100 square feet

	<u>1960</u> ^{1/}	<u>1966</u>	<u>Percent change</u>
Total-----	\$2,593	\$2,851	+ 10
Labor-----	731	844	+ 15
Materials-----	1,411	1,474	+ 4
Residual-----	451	533	+ 18

1/ Based on revised data.

The residual cost represents overhead which cannot be attributed to specific functions. It includes administrative offsite salaries, expenses of central office and yard operations, insurance and taxes, as well as other overhead and profit. Partly reflecting increased interest charges late in the period, these costs went up 18 percent between the two studies (see chart 3).

Direct wage cost

Wage payments to onsite labor averaged 29.6 percent of the total cost of the hospitals studied in 1965-66--this percentage was about the same as in 1959-60. 2/ Wages at new projects averaged 28.0 percent of total cost, wages at additions, 30.8 percent (see table 9). This reflects the large unit man-hour requirements for additions compared to new structures.

Average hourly wages rose by 22 percent over the 6-year period. Since productivity, as measured by the reduction in onsite man-hours, increased by over 6 percent, unit wage costs increased by 16 percent. Translating these figures into average annual rates (compounded), productivity rose by 1.0 percent a year, average hourly wages by 3.4 percent and unit wage costs by 2.4 percent.

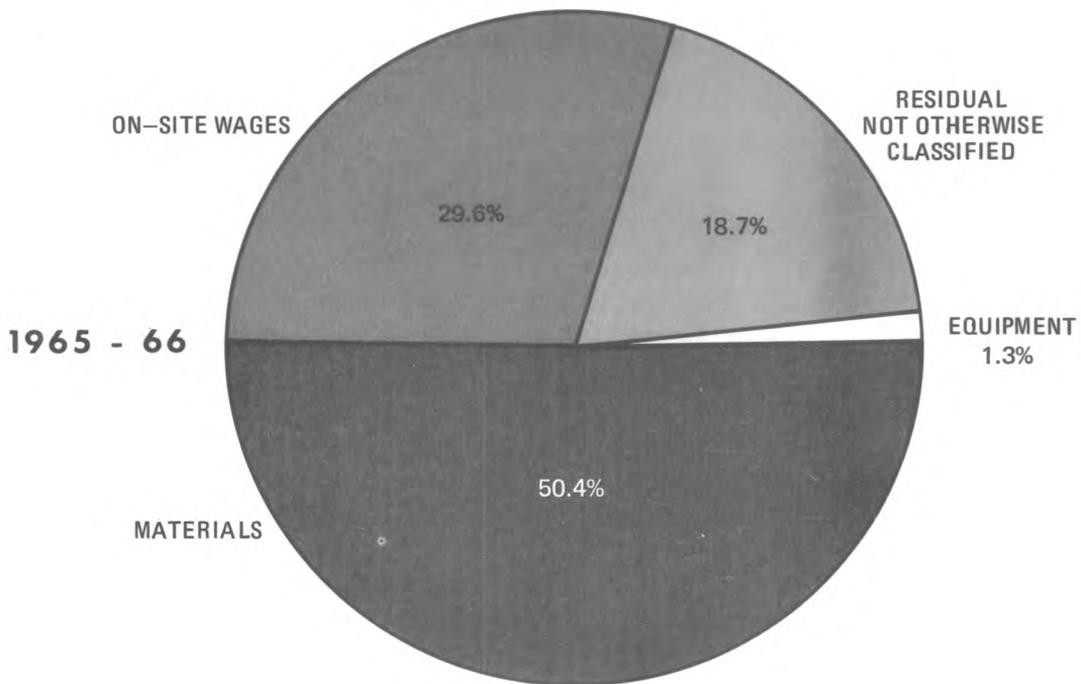
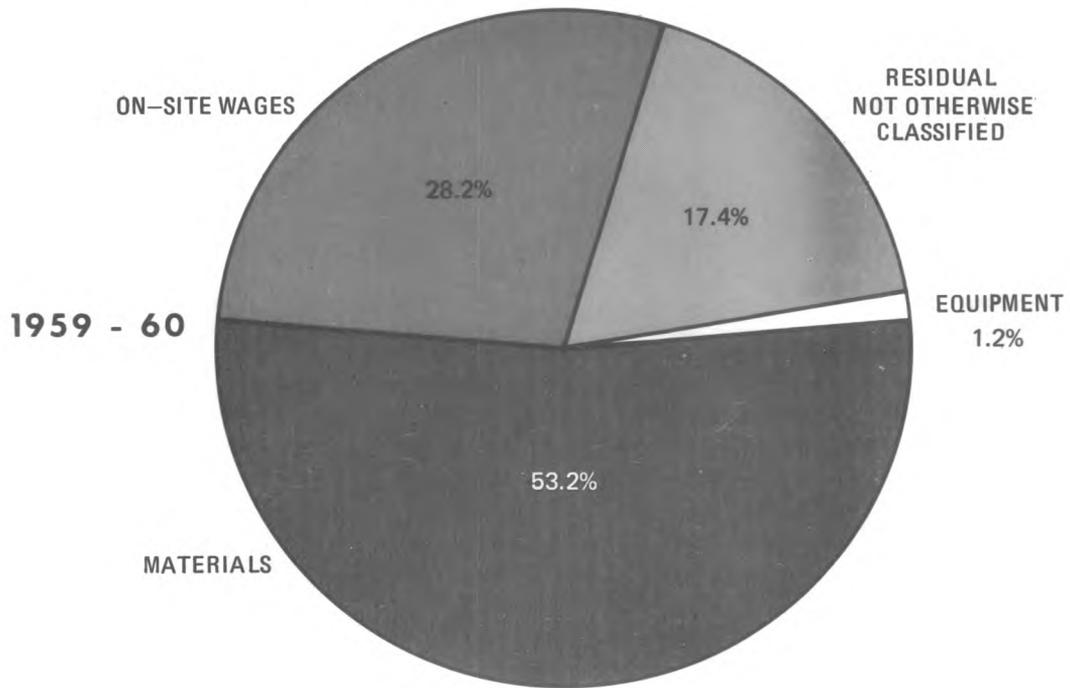
Higher average hourly earnings were generally associated with a higher average proportion of the contract going to wages (see table 9). The exceptions generally resulted from construction differences. For example, the average hourly wage of projects using steel framing was \$4.04; this wage was substantially higher than the \$3.89 average for all

2/ Wage payments do not include fringe benefits.

CHART 3

**PERCENT DISTRIBUTION OF HOSPITAL CONSTRUCTION COSTS
PER 100 SQUARE FEET, 1959-60 and 1965-66--**

**Material Costs Declined but On-site Wages and Residual Items
Increased Between the Two Periods**



projects, yet wages of steel frame projects represented a smaller proportion of costs. This disparity can be explained by lower than average man-hour requirements for this type of project.

Variations in average hourly earnings probably stem more from the distribution of work between metropolitan and nonmetropolitan areas than from any other factor. Wage rates tend to be higher in metropolitan areas than in less densely populated areas in the same region. Therefore, multistory buildings, buildings with several elevators, and costlier projects in general are all associated with higher average hourly earnings, since these projects are usually in urban centers.

The ratio of wages to total construction cost varied substantially (see table 8). Aside from the alteration work that generally accompanied construction of additions, special conditions, such as site problems, or unusual labor arrangements, such as travel time included in regular hourly rates, increased the direct labor cost of some projects. The range of wages as a percent of contract was:

<u>Wages as percent of contract cost</u>	<u>Percent of hospitals studied</u>
	<u>1965-66</u>
Under 20.0	0.0
20.1 - 22.5	9.0
22.6 - 25.0	12.3
25.1 - 27.5	22.0
27.6 - 30.0	18.7
30.1 - 32.5	17.5
32.6 and over	20.5

Offsite Employment

Each man-hour of work at the construction site required approximately 1 1/3 additional man-hours to produce and distribute the materials, supplies, and equipment used in the hospitals whose construction was studied in 1965-66. This ratio was about the same as in 1959-60 (see table 10). The 1965-66 projects generated 290 man-hours of offsite employment per 100 square feet of hospital construction. Both onsite and offsite man-hour requirements declined between the two studies, but the relationship between them was maintained because they declined at about the same rate. Total man-hours in manufacturing, trade and services, etc. dropped 8 percent, onsite construction, 6 percent.

Offsite employment fell into the following industry groups and categories: (1) Construction: builders' administrative, estimating and warehousing activities; (2) manufacturing: activities producing fabricated and raw materials and equipment; (3) transportation: warehousing and distribution of fabricated and raw materials and equipment; and (4) all other industries directly or indirectly affected by the production of fabricated and raw materials. (Interindustry transfers eventually affect industries such as agriculture, forestry, and mining off the site.)

Some people whose work undoubtedly contributed to hospital construction, but who were not covered by the study, included employees in architectural firms, utility companies, and State and local governments.

Builders' offsite employment

The study did not attempt to measure contractors' offsite employment exactly, since it was almost impossible to relate such employment to the projects under study. Consequently, builders' offsite employment includes work done not only on the projects studied but also on the contractors' other projects.

The estimated 29 man-hours for each 100 square feet of hospital construction is based on the difference between construction work employment and total employment in the general building contract construction industry. ^{3/} This estimate also includes self-employed craftsmen who may have worked at the site.

Man-hour requirements in offsite construction barely changed between 1959-50 and 1965-66. Most offsite man-hours represent white-collar employment, which changes relatively slowly.

Manufacturing employment

Three-fourths of the decline in offsite man-hours between the two studies took place in manufacturing--the economic sector most affected by hospital construction.

The same industries provided most of the offsite man-hours in manufacturing for both studies: fabricated and primary metals; stone, clay and glass products; and machinery and electrical products.

^{3/} Administrators, engineers, estimators, and other salaried workers accounted for over 14 percent of all employment in the general building contract construction industry in 1965.

Changes in offsite man-hour requirements can represent either a change in the demand for materials produced in that industry or a change in the industry's productivity. The most marked decline in offsite man-hours in manufacturing industries occurred in fabricated metal products and primary metals. The use of metal products in hospital construction decline substantially between the two studies. Offsite man-hours also dropped in the stone, clay and glass industry. This decline was more or less equivalent to the increase in this industry's output per man-hour over the 6-year period. On the other hand, man-hours required to produce electrical products used in hospital construction barely changed, despite a sizable increase in output per man-hour in this industry. This result is probably due to greater use of these products in hospital construction.

Employment in other industries

Offsite man-hours in nonmanufacturing industries declined by 7.2 percent between 1959-60 and 1965-66. The most significant drop took place in transportation and paralleled that industry's increase in output per man-hour; on the other hand, man-hours in wholesale trade and services increased.

Nursing homes. To build the nursing homes studied in 1965-66 required 375 man-hours per 100 square feet both on and off the site. The proportion of on to offsite man-hours was almost the same for nursing homes as for hospitals--offsite man-hours were 57 percent of all hospital man-hours, 59 percent of all nursing home man-hours (see table 10).

By and large, offsite man-hours for nursing home construction were distributed among the various industries in about the same proportion as for hospital construction. The lumber industry was the only one that contributed more man-hours to nursing home than to hospital construction.

Construction Time

On the average, nearly 2 years--91 weeks--were required to build the hospitals studied (see table 11). Construction for individual projects varied from 43 to 200 weeks. Projects studied in 1965-66 took over 3 months longer to complete than those studied in 1959-60, which took approximately a year and a half, or 77 weeks.

Construction time varied not only by size of project but also by region, due to differences in climate. In the Northeast and North Central regions, construction took far longer than in the West and the South. Only in the West did construction time remain near the 1959-60 level.

Nursing homes, which were smaller on the average than the hospital projects, took an average of 58 weeks to build.

Employment by construction period

To find a typical employment pattern for projects of all sizes, construction time for each hospital was divided into 10 equal parts. For example, 10 1 1/2-month periods were used for a hospital that was constructed in 15 months. According to this method, man-hours required to construct hospitals in this study, by decile, were:

1st.....	3.8	6th.....	14.0
2d.....	8.2	7th.....	12.5
3d.....	10.7	8th.....	10.7
4th.....	13.3	9th.....	8.0
5th.....	14.9	10th.....	3.9

Relatively few man-hours were needed at the beginning of the projects; demand built to a peak in the fifth period and then dropped sharply in the last two (see chart 4). This pattern was more or less the same as in 1959-60. Seventy-six percent of the onsite employment was assignable to the third through the eighth periods, or the middle 60 percent of total construction time. About 4 percent of the man-hours fell in both the first and the last periods.

Construction Materials

Materials cost 4 percent more for each 100 square feet of hospital construction in 1965-66 than in 1959-60. These costs went up much less than did labor or residual costs--the other cost components. Consequently, materials accounted for a smaller proportion of the total cost of hospital construction in 1965-66.

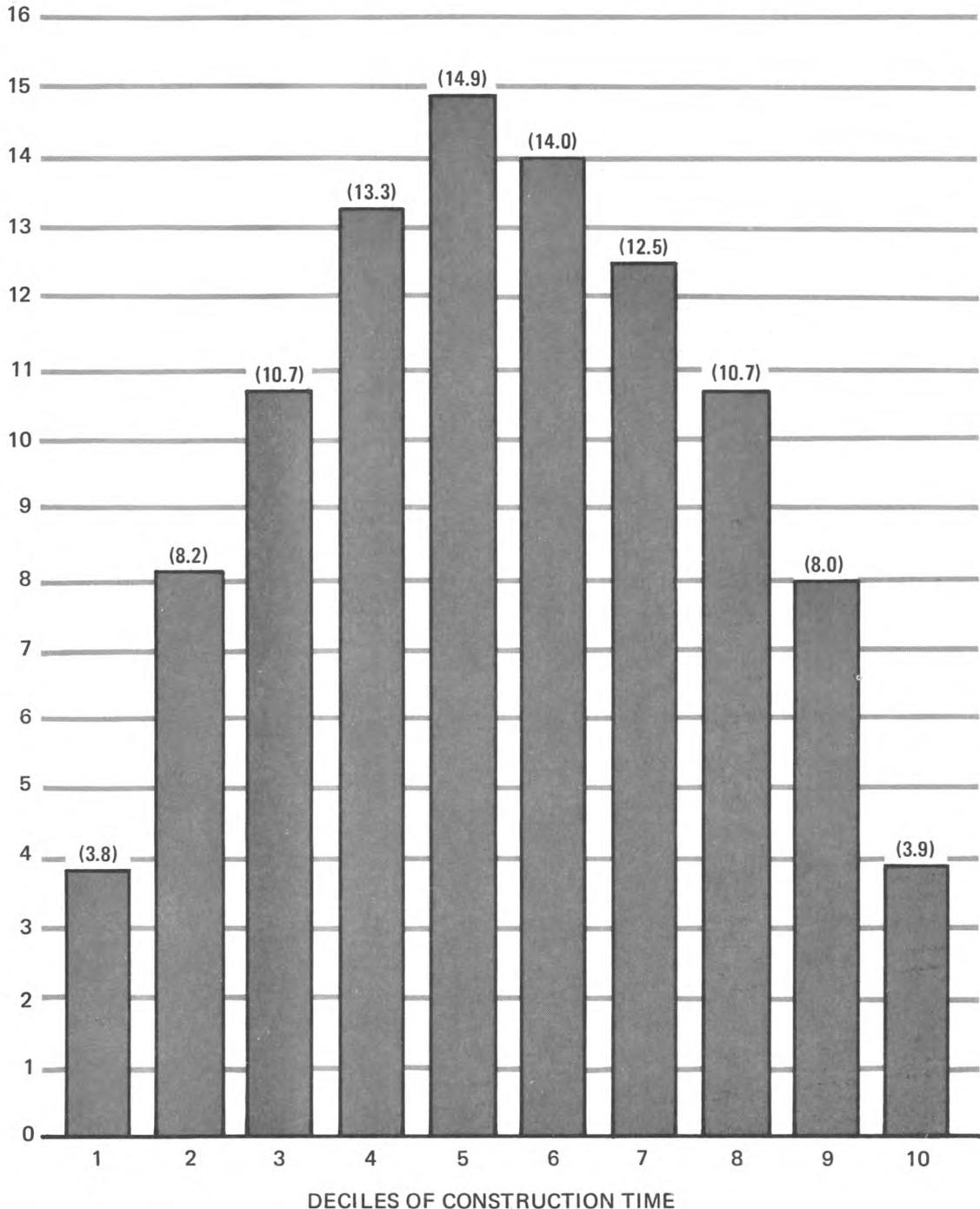
<u>Materials as percent of project cost</u>	<u>1965-66</u>	<u>1959-60^{1/}</u>
All projects <u>2/</u> -----	51.7	54.4
New-----	52.4	55.7
Additions-----	51.2	51.3

^{1/} Based on revised data.

^{2/} The percentage shown here is higher than that shown in chart 3 on page 12. The latter was lowered one-tenth of one percent so that materials, labor, equipment and residual would equal 100.0 percent for graphic presentation.

CHART 4
PERCENT DISTRIBUTION OF ON-SITE MAN-HOURS OF CONSTRUCTION LABOR FOR EACH \$1,000 OF HOSPITAL CONTRACT BY DECILE OF CONSTRUCTION TIME, 1965-66--
Seventy-six Percent of the On-site Labor was Performed in the Middle Six Periods

PERCENT OF ON-SITE
 MAN HOURS



Materials figures include depreciation charges or rental costs for construction equipment used, as well as costs of supplies consumed. They also include materials or fixed equipment incorporated in the structures. Unfortunately, a good deflator to remove the effect of price change from value change is not available for the construction industry. Consequently, changes in materials costs include price movement.

Tables 13 and 14 show the value of the major groups of materials used for each 100 square feet of construction for both the 1965-66 and the 1959-60 hospital studies. ^{4/} Each unit of construction required approximately \$1,474 worth of materials in 1965-66--about \$60 more than in 1959-60.

The relative importance of materials groups changed little between the two periods. In both studies, the four most important groups, in descending order of importance, were metal products; stone, clay and glass products; installed equipment; and electrical products (see table 12). Plumbing materials came next in 1965-66, followed by heating, ventilation, and air conditioning materials; it was the other way around in 1959-60.

Nine specific materials went up by 50 percent or more between the two studies:

Rough and dress lumber	Intercoms and fire
Precast concrete products	alarm devices
Aluminum sheet metal	Compressed air and
Galvanized sheet metal	oxygen systems
Pumps	Pneumatic tube systems
Oil burners	

Some of these changes result from a shift in the kind of buildings being constructed. As treatment facilities become more complex and as hospitals become larger, buildings are designed differently and materials requirements change.

Another explanation for change in materials use is that price changes caused product substitution. For example, cut stone, which is used for decoration, seems to have been supplanted by cheaper alternatives such as precast concrete.

^{4/} To allow comparison with previous studies, material costs per \$1,000 of construction contract are shown in tables 15 and 16.

Change in materials use may also result from new products or new techniques. Heating equipment that includes temperature control devices as an integral part of the unit would account for the nearly 20-percent decline in the use of temperature controls.

In any event, several clearcut substitutions took place between the two surveys. Movement from load bearing masonry to reinforced concrete buildings was pronounced. Increased air conditioning paralleled a decline in the use of windows. Use of installed equipment also increased. Finally, more electrical products resulted from more air conditioning and installed equipment, because these materials often require special electric wiring.

Table 12. Hospital construction
Use of major materials per 100 square feet

Major type of material	Value of materials			
	1960		1966	
	Value	Percent	Value	Percent
Lumber and lumber products-----	59.51	4.2	68.62	4.6
Stone, clay and glass products--	273.33	19.4	267.01	18.1
Metal products-----	371.89	26.4	337.33	22.9
Heating, ventilating and air conditioning equipment-----	138.53	9.8	143.79	9.8
Electrical products-----	154.75	11.0	180.23	12.2
Plumbing products-----	122.88	8.7	152.26	10.3
Installed equipment-----	229.38	16.2	237.98	16.1
Other-----	60.72	4.3	87.04	5.9
Total-----	1,410.99	100.0	1,474.26	100.0

Nursing homes. Nursing homes built in 1965-66 used an average of \$1,146 of materials for each 100 square feet of construction. Materials thus represented about 55 percent of the total cost of nursing homes compared with about 52 percent for hospitals.

Major groups of materials were used in nursing homes in about the same order as in hospitals except as follows:

Nursing homes, on a percentage basis, used more stone, clay and glass products; heating, ventilating, and air conditioning equipment; and lumber products. On the other hand, they used less installed equipment, plumbing products, and electrical products (see tables 17 and 18).

Nursing homes have far less complex medical equipment than hospitals do; consequently, a greater proportion of materials expenditure, including lumber and wood products, goes to construct the building and a smaller proportion to installed equipment, as shown by the following percent distribution:

Use of major materials per 100 square feet

<u>Type of material</u>	<u>Value</u>	<u>Percent</u>
Lumber and lumber products-----	101.87	8.9
Stone, clay and glass products-----	219.16	19.1
Metal products-----	261.19	22.8
Heating, ventilating, and air conditioning equipment-----	118.44	10.3
Electrical products-----	121.55	10.6
Installed equipment-----	120.96	10.6
Plumbing products-----	109.71	9.6
Other-----	93.36	8.1
Total-----	1,146.24	100.0

Appendix

Scope and Method of Survey

Most of the information in this study was obtained through visits to the projects chosen to represent general hospital and nursing home construction during the period surveyed. Additional information came from secondary sources such as the Census of Manufacturers.

Survey coverage

The survey sample was drawn from general hospital and nursing home projects constructed with Federal aid provided under the Hill-Burton Act. Since these projects are required to file reports, data needed for the study were readily available. This factor accounts for the exclusion of medical facilities constructed without Federal aid. The only other exclusion was special purpose hospitals, such as those treating drug addiction, epilepsy, nervous and mental diseases, and tuberculosis.

The universe from which the sample was drawn consisted of projects for which construction bids were opened in 1963 and 1964, as reported in the Public Health Survey publication "Representative Construction Costs of Hill-Burton Hospitals and Realted Health Facilities." The relation of the sample to the universe was the following:

	<u>Universe</u>	<u>Sample</u>
New hospitals-----	117	26
Additions-----	206	35
Nursing homes-----	99	12

Projects in the universe were examined for the following: type of facility (new, addition, nursing home), cost, and location (geographical regions 1/ and metropolitan or nonmetropolitan areas). Sample projects were chosen to include these characteristics in about the same proportion as they occurred in the universe.

1/ The States included in each of the regions were as follows: Northeast--Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; North Central--Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota and Wisconsin; South--Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia; and West--Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

Although the survey did not cover unattached furnishings and equipment used in the institutions, it did include built-in sterilizing equipment, X-ray and dark room equipment, pharmacy and laboratory equipment, and other items, such as elevators and communications systems.

Onsite labor included supervisors, engineers, and clerical and custodial employees at the site, as well as construction workers. Offsite labor included office and warehouse employees of construction contractors, employees engaged in the manufacture and distribution of materials and equipment, and employees in other industries affected by the production and distribution of building materials from the raw material to the final manufacturing stage.

The survey did not cover all construction employment. It excluded preparation of project plans and specifications, production of moveable furniture and administrative office equipment, labor time involved in installations by public utility employees, as well as any site preparation, landscaping, and highway work not covered by the construction contract. It also excluded labor generated by money spent for contractors' overhead, other than offsite administrative salaries. The major part of such overhead consists of executive salaries, profit, rent, bonds, insurance, taxes (including payroll taxes), welfare payments, and office supplies. Employment created by the spending of wages and profits--the multiplier effect--was also outside the scope of this study.

Man-hour estimates

Total man-hour requirements for hospital and nursing home construction represent a combination of estimates of onsite and offsite man-hours.

Contractors and subcontractors were interviewed for completeness of onsite man-hours obtained from payrolls submitted under the Davis-Bacon Act. Contractors also furnished onsite employment data for occupations not covered by the Davis-Bacon Act, such as supervisory, technical, and clerical personnel, as well as self-employed subcontractors.

Offsite man-hours represent the time required to produce and distribute the materials, supplies, and equipment used in construction. Estimates of these hours were made according to the following procedures:

- 1. BLS field representatives obtained the cost of materials from contractors and subcontractors. For those few contractors who were inaccessible, estimates were made from similar jobs.

- 2. The materials were classified into categories consistent with the four-digit Standard Industrial Classification as found in the Census of Manufacturers.
- 3. The average amount of materials required for \$1,000 of construction contract cost was calculated for each group.
- 4. Each of these averages was reduced by a ratio representing the difference between the price at which the manufacturer sold the materials and the price the contractor paid for them--the difference being apportioned between the trade and transportation sectors.
- 5. The bill of materials was deflated to the 1958 price level so that the 1958 interindustry study of the Office of Business Economics of the Department of Commerce could be used.
- 6. These values were matched with the interindustry study to determine the total man-years of employment required in each of 78 different industry sectors during 1965 to produce the materials used.
- 7. The man-years for each industry were multiplied by the average annual hours for all employees in that industry as found in the Labor Department publication, Employment and Earnings Statistics for 1965.
- 8. These man-hours, based on \$1,000 of construction contract cost, were translated to a basis of 100 square feet of construction by determining the cost per square foot of construction.

Estimates were also developed for hours worked off the site by construction contractors' employees. This estimate is based on the difference between the proportion of nonconstruction workers in the general building industry, as reported in the BLS employment trend series, and the proportion of onsite nonconstruction man-hours developed in this study.

Table 2. Number and cost of hospital and nursing home construction projects, by selected characteristics and region

Characteristics	Hospitals															Nursing homes		
	United States			Northeast			North Central			South			West			United States		
	Num- ber	Cost per--		Num- ber	Cost per--		Num- ber	Cost per--		Num- ber	Cost per--		Num- ber	Cost per--		Num- ber	Cost per--	
	Square foot	Bed (thou- sands)		Square foot	Bed (thou- sands)		Square foot	Bed (thou- sands)		Square foot	Bed (thou- sands)		Square foot	Bed (thou- sands)		Square foot	Bed (thou- sands)	
All projects-----	61	\$28.51	\$22.2	15	\$31.87	\$28.9	16	\$29.56	\$21.8	20	\$24.55	\$18.2	10	\$29.56	\$22.8	12	\$20.89	\$ 9.4
New-----	26	27.59	20.0	4	28.61	20.4	6	30.55	20.1	11	23.23	17.5	5	33.56	25.7	12	20.89	9.4
Additions-----	35	29.21	24.0	11	32.33	30.5	10	28.91	23.1	9	26.85	19.3	5	24.88	19.3	--	-----	---
In a metropolitan area-----	38	29.90	23.3	11	33.95	27.8	9	31.59	23.5	12	24.78	19.1	6	30.26	23.8	5	22.29	10.0
Not in a metropolitan area-----	23	25.52	19.8	4	25.66	34.1	7	26.54	19.3	8	24.11	16.7	4	26.43	18.7	7	19.91	9.1
Type of framing:																		
Steel-----	18	30.56	22.0	6	35.22	30.0	2	(1/)	(1/)	5	24.60	17.0	5	32.17	22.0	5	20.67	9.0
Reinforced concrete---	36	28.09	22.9	8	30.39	28.6	12	30.48	23.1	12	24.67	19.2	4	26.04	25.0	1	(1/)	(1/)
Combination-----	2	(1/)	(1/)	1	(1/)	(1/)	--	-----	-----	1	(1/)	(1/)	--	-----	-----	1	(1/)	(1/)
Load bearing masonry--	5	22.76	13.5	--	-----	-----	2	(1/)	(1/)	2	(1/)	(1/)	1	(1/)	(1/)	5	19.02	9.1
1 story-----	12	23.16	15.0	3	(1/)	(1/)	2	(1/)	(1/)	5	21.53	13.8	2	(1/)	(1/)	9	19.39	8.8
2-4 stories-----	22	27.51	21.5	7	29.57	27.9	7	28.39	21.0	6	25.29	19.9	2	(1/)	(1/)	3	(1/)	(1/)
5 and above-----	27	30.15	24.3	5	34.07	30.8	7	32.30	24.5	9	24.89	18.5	6	30.96	26.9	--	-----	-----
Elevator-----	52	29.05	23.2	13	31.91	29.2	15	30.20	22.8	17	24.92	18.5	7	30.77	26.5	6	22.41	9.8
No elevator-----	9	22.55	13.5	2	(1/)	(1/)	1	(1/)	(1/)	3	(1/)	(1/)	3	(1/)	(1/)	6	19.34	9.1
Air conditioned:																		
Full-----	49	28.98	21.3	10	33.41	27.2	14	30.06	21.5	18	24.80	17.7	7	31.03	23.2	9	19.75	9.1
Partial-----	12	26.34	27.9	5	29.15	33.1	2	(1/)	(1/)	2	(1/)	(1/)	3	(1/)	(1/)	1	(1/)	(1/)
Not air conditioned--	--	-----	-----	--	-----	-----	--	-----	-----	--	-----	-----	--	-----	-----	2	(1/)	(1/)
Full or partial basement-----	44	28.84	23.3	9	31.20	31.8	13	30.86	22.9	13	24.66	19.6	9	29.68	23.3	4	22.18	10.7
No basement-----	17	27.37	18.9	6	33.01	25.2	3	(1/)	(1/)	7	24.24	15.1	1	(1/)	(1/)	8	20.17	8.8
Exterior:																		
Masonry-----	55	23.25	21.8	15	31.87	28.9	15	29.36	22.1	18	24.51	18.1	7	26.77	17.7	12	20.89	9.4
Curtain wall-----	1	(1/)	(1/)	--	-----	-----	--	-----	-----	1	(1/)	(1/)	--	-----	-----	--	-----	-----
Other-----	5	31.38	26.3	--	-----	-----	1	(1/)	(1/)	1	(1/)	(1/)	3	(1/)	(1/)	--	-----	-----

1/ Insufficient coverage to warrant presentation.

Table 3. Onsite man-hour requirements for hospital and nursing home construction projects, by selected characteristics and region

Characteristics	Hospitals															Nursing homes		
	United States			Northeast			North Central			South			West			United States		
	Man-hours per--			Man-hours per--			Man-hours per--			Man-hours per--			Man-hours per--			Man-hours per--		
	100 square feet	\$1000 of cost	Bed	100 square feet	\$1000 of cost	Bed	100 square feet	\$1000 of cost	Bed	100 square feet	\$1000 of cost	Bed	100 square feet	\$1000 of cost	Bed	100 square feet	\$1000 of cost	Bed
All projects-----	217.0	76.1	1688	236.5	74.2	2148	228.5	77.5	1688	207.6	84.7	1538	184.3	62.4	1421	153.7	73.7	695
New-----	206.1	74.7	1493	192.3	67.2	1371	234.6	76.8	1544	197.2	84.9	1484	193.0	57.5	1479	153.9	73.7	695
Additions-----	225.3	77.1	1855	242.9	75.1	2292	225.2	77.9	1802	226.5	84.3	1629	174.2	70.0	1353	-----	-----	---
In a metropolitan area-----	222.7	74.5	1733	251.4	74.1	2063	243.2	77.0	1810	205.0	82.7	1578	183.8	60.7	1446	167.1	75.0	746
Not in a metropolitan area--	204.8	80.3	1590	192.4	75.0	2560	207.6	78.2	1512	213.1	88.4	1472	186.7	70.6	1322	144.6	72.6	659
Type of framing:																		
Steel-----	205.3	67.2	1479	246.7	70.0	2099	(1/)	(1/)	(1/)	187.2	76.1	1294	186.7	58.0	1274	142.0	68.7	617
Reinforced concrete-----	223.9	79.7	1823	233.4	76.8	2193	237.9	78.1	1801	215.3	87.3	1675	177.0	68.0	1697	(1/)	(1/)	(1/)
Combination-----	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	-----	-----	-----	(1/)	(1/)	(1/)	-----	-----	-----	(1/)	(1/)	(1/)
Load-bearing masonry-----	187.2	82.3	1114	-----	-----	-----	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	148.3	78.0	706
1 story-----	176.7	76.3	1144	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	167.2	77.7	1072	(1/)	(1/)	(1/)	149.1	76.9	676
2-4 stories-----	213.5	77.6	1669	220.4	74.6	2082	213.8	75.3	1585	220.2	87.1	1731	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)
5 and above-----	226.8	75.2	1824	254.6	74.7	2298	255.4	79.1	1938	211.0	84.8	1568	188.3	60.8	1635	-----	-----	---
Elevator-----	221.3	76.2	1768	236.9	74.2	2166	233.5	77.3	1760	213.2	85.5	1582	187.0	60.8	1611	150.1	67.0	655
No elevator-----	170.0	75.4	1021	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	157.8	81.6	740
Air conditioned:																		
Full-----	220.3	76.0	1622	241.4	72.2	1967	234.9	78.1	1682	209.9	84.6	1499	185.6	59.8	1386	148.5	75.2	687
Partial-----	201.7	76.6	2135	228.3	78.3	2593	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)
Not air conditioned-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	(1/)	(1/)	(1/)
Full or partial basement----	217.5	75.4	1756	224.7	72.0	2292	239.6	77.6	1775	211.6	85.8	1678	183.7	61.9	1441	173.2	78.1	833
No basement-----	215.6	78.8	1486	256.8	77.8	1963	(1/)	(1/)	(1/)	197.6	81.5	1234	(1/)	(1/)	(1/)	143.1	70.9	625
Exterior:																		
Masonry-----	219.2	77.6	1694	233.6	74.2	2148	226.7	77.2	1709	210.5	85.9	1553	177.4	66.3	1173	153.9	73.7	695
Curtain wall-----	(1/)	(1/)	(1/)	-----	-----	-----	-----	-----	-----	(1/)	(1/)	(1/)	-----	-----	-----	-----	-----	---
Other-----	205.7	65.6	1722	-----	-----	-----	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	-----	-----	---

1/ Insufficient coverage to warrant presentation.

Table 4. Onsite man-hour requirements per 100 square feet of hospital and nursing home construction, by occupation and region

Occupation	Hospitals										Nursing homes	
	United States		Northeast		North Central		South		West		United States	
	Percent	Man-hours worked	Percent	Man-hours worked	Percent	Man-hours worked	Percent	Man-hours worked	Percent	Man-hours worked	Percent	Man-hours worked
All occupations-----	100.0	217.0	100.0	236.5	100.0	228.5	100.0	207.6	100.0	184.3	100.0	153.7
Asbestos workers-----	1.9	4.2	1.6	3.9	2.5	5.7	1.8	3.7	1.5	2.7	1.7	2.6
Bricklayers-----	5.0	10.9	6.6	15.6	6.2	14.2	3.9	8.2	1.6	3.0	6.4	9.8
Carpenters-----	13.0	28.2	15.1	35.8	10.9	25.0	12.2	25.4	15.5	28.6	15.2	23.4
Cement finishers-----	1.4	3.0	1.0	2.4	1.5	3.5	1.3	2.7	1.8	3.4	1.2	1.8
Electricians-----	9.9	21.4	10.0	23.7	10.5	23.9	9.3	19.3	9.6	17.7	7.8	12.0
Elevator mechanics-----	0.9	1.9	0.8	1.9	0.7	1.6	1.1	2.2	1.0	1.9	0.5	0.7
Glaziers-----	0.4	0.9	0.3	0.8	0.4	1.0	0.4	0.8	0.5	0.9	0.6	0.9
Lathers-----	2.9	6.4	2.9	6.8	2.5	5.7	2.1	4.4	5.9	10.8	2.5	3.8
Operating engineers-----	1.8	4.0	2.2	5.3	1.8	4.0	1.7	3.6	1.6	2.9	1.8	2.8
Ornamental iron workers--	0.7	1.5	0.7	1.7	1.1	2.4	0.3	0.7	0.4	0.8	0.3	0.4
Painters-----	2.6	5.7	2.3	5.4	2.6	6.0	2.8	5.9	2.9	5.3	4.7	7.3
Plasterers-----	3.2	7.0	2.9	6.9	2.9	6.7	3.1	6.5	4.8	8.8	3.1	4.8
Plumbers-----	15.7	34.0	15.2	35.9	18.0	41.1	13.7	28.5	15.5	28.6	13.7	21.1
Reinforcing iron workers--	1.6	3.4	2.2	5.1	1.3	2.9	1.3	2.8	1.6	3.0	0.5	0.7
Roofers-----	0.6	1.3	0.6	1.4	0.5	1.2	0.7	1.4	0.5	1.0	1.2	1.8
Sheet metal workers-----	5.5	12.0	4.4	10.5	7.2	16.4	3.9	8.1	7.4	13.6	3.5	5.4
Soft floor layers-----	0.4	0.9	0.3	0.7	0.4	0.8	0.5	1.0	0.8	1.4	0.7	1.0
Structural iron workers--	0.8	1.7	0.7	1.7	0.7	1.6	0.6	1.2	1.7	3.2	1.4	2.1
Terrazzo workers-----	0.5	1.0	0.9	2.1	0.3	0.7	0.1	0.2	0.7	1.3	0.3	0.5
Tile setters-----	1.2	2.5	0.9	2.1	1.2	2.7	1.4	3.0	0.8	1.5	1.2	1.8
Other building trades----	0.4	0.9	0.5	1.1	0.6	1.4	0.2	0.4	0.3	0.5	0.3	0.5
Truck drivers-----	0.5	1.1	0.5	1.1	0.4	1.0	0.5	1.0	0.9	1.6	0.4	0.6
Helpers and tenders-----	6.3	13.6	4.4	10.4	6.0	13.6	7.9	16.5	6.8	12.6	6.1	9.4
Laborers-----	19.4	42.2	19.5	46.1	17.5	39.9	25.5	53.0	10.4	19.1	20.6	31.7
Custodial workers-----	0.1	0.3	0.3	0.6	---	0.3	0.3	0.6	---	---	---	---
Supervisors and general foremen-----	2.3	5.0	2.3	5.5	2.1	4.8	2.3	4.7	2.7	4.9	4.4	6.8
Professional and technical employees-----	0.6	1.3	0.4	1.0	0.2	0.4	0.5	1.0	2.3	4.2	---	---
Clerical employees-----	0.3	0.7	0.4	1.0	0.1	0.3	0.4	0.8	0.5	1.0	---	---

NOTE: Because of rounding, sums of individual items may not add to totals.

Table 5. Man-hour requirements per \$1000 of hospital construction contract, by occupation and region, 1965-66

Occupation	United States		Northeast		North Central		South		West	
	Percent	Man-hours	Percent	Man-hours	Percent	Man-hours	Percent	Man-hours	Percent	Man-hours
All occupations-----	100.0	76.1	100.0	74.2	100.0	77.5	100.0	84.7	100.0	62.4
Asbestos workers-----	1.9	1.5	1.7	1.2	2.5	1.9	1.8	1.5	1.5	0.9
Bricklayers-----	5.0	3.8	6.6	4.9	6.2	4.8	4.0	3.4	1.6	1.0
Carpenters-----	13.0	9.9	15.1	11.2	10.9	8.5	12.2	10.3	15.5	9.7
Cement finishers-----	1.4	1.0	1.0	0.8	1.5	1.2	1.3	1.1	1.8	1.1
Electricians-----	9.9	7.5	10.0	7.4	10.4	8.1	9.3	7.9	9.6	6.0
Elevator mechanics-----	0.9	0.7	0.8	0.6	0.7	0.5	1.1	0.9	1.1	0.7
Glaziers-----	0.4	0.3	0.3	0.3	0.4	0.3	0.4	0.3	0.5	0.3
Lathers-----	2.9	2.2	2.9	2.1	2.5	1.9	2.1	1.8	5.9	3.7
Operating engineers-----	1.8	1.4	2.2	1.7	1.8	1.4	1.7	1.5	1.6	1.0
Ornamental iron workers--	0.7	0.5	0.7	0.5	1.1	0.8	0.4	0.3	0.4	0.3
Painters-----	2.6	2.0	2.3	1.7	2.6	2.0	2.9	2.4	2.9	1.8
Plasterers-----	3.2	2.5	2.9	2.2	2.9	2.3	3.1	2.7	4.8	3.0
Plumbers-----	15.6	11.9	15.2	11.3	17.9	13.9	13.7	11.6	15.5	9.7
Reinforcing iron workers-	1.6	1.2	2.1	1.6	1.3	1.0	1.3	1.1	1.6	1.0
Roofers-----	0.6	0.5	0.6	0.4	0.5	0.4	0.7	0.6	0.6	0.4
Sheet metal workers-----	5.5	4.2	4.5	3.3	7.2	5.6	3.9	3.3	7.4	4.6
Soft floor layers-----	0.4	0.3	0.3	0.2	0.3	0.3	0.5	0.4	0.7	0.5
Structural iron workers--	0.8	0.6	0.7	0.5	0.7	0.5	0.6	0.5	1.7	1.1
Terrazzo workers-----	0.5	0.3	0.9	0.7	0.3	0.2	0.1	0.1	0.7	0.5
Tile setters-----	1.1	0.9	0.9	0.6	1.2	0.9	1.5	1.2	0.8	0.5
Other building trades----	0.4	0.3	0.5	0.3	0.6	0.5	0.2	0.2	0.3	0.2
Truck drivers-----	0.5	0.4	0.5	0.4	0.4	0.3	0.5	0.4	0.9	0.5
Helpers and tenders-----	6.3	4.8	4.4	3.3	6.0	4.6	8.0	6.7	6.8	4.3
Laborers-----	19.4	14.8	19.5	14.5	17.4	13.5	25.5	21.6	10.4	6.5
Custodial workers	0.2	0.1	0.3	0.2	---	---	0.3	0.2	---	---
Superintendents and general foremen-----	2.3	1.7	2.3	1.7	2.1	1.6	2.3	1.9	2.7	1.7
Professional and tech- nical employees-----	0.6	0.5	0.4	0.3	0.2	0.2	0.5	0.4	2.3	1.4
Clerical employees-----	0.3	0.3	0.4	0.3	0.1	0.1	0.4	0.3	0.5	0.3

NOTE: Because of rounding, sums of individual items may not add to totals.

Table 6. Apprentices as a percent of employment, by occupation and region

Occupation	Hospitals					Nursing homes
	United States	Northeast	North Central	South	West	United States
All workers-----	4.7	3.9	4.0	5.1	7.2	5.5
Skilled trades-----	6.7	5.4	5.4	8.1	9.5	8.1
Asbestos workers-----	2.0	0.0	0.0	7.3	0.0	0.0
Bricklayers-----	4.0	5.7	2.6	4.2	3.2	1.9
Carpenters-----	4.6	1.8	3.9	5.6	9.4	4.8
Cement finishers-----	1.5	0.6	0.5	3.7	0.6	0.0
Electricians-----	12.0	9.7	9.5	16.0	13.7	12.2
Glaziers-----	4.9	3.8	5.6	1.4	10.7	4.5
Lathers-----	9.2	7.5	2.1	8.5	18.3	5.0
Ornamental iron workers---	4.1	1.3	5.8	5.4	0.4	0.0
Painters-----	3.4	1.2	0.3	2.8	14.4	5.2
Plasterers-----	5.5	8.4	1.3	6.7	6.3	0.7
Plumbers-----	8.7	8.2	7.5	9.8	10.5	18.6
Reinforcing iron workers---	1.2	0.4	1.3	1.7	1.7	9.5
Roofers-----	7.6	0.0	7.8	11.9	10.7	26.6
Sheet-metal workers-----	8.1	5.1	8.8	10.0	7.6	9.2
Soft floor layers-----	6.7	2.5	3.5	3.1	19.1	3.4
Structural iron workers---	2.4	3.8	0.8	1.2	3.8	3.4
Terrazzo workers-----	7.5	15.0	0.0	0.0	0.0	0.0
Tile setters-----	12.0	14.3	11.2	12.7	7.3	1.7

Table 7. Percent of total man-hour requirements, by type of contractor and region

Type of contractor	Hospitals					Nursing homes
	United States	Northeast	North Central	South	West	United States
Total-----	100.0	100.0	100.0	100.0	100.0	100.0
General-----	36.5	40.4	34.0	38.4	30.8	37.0
Street, etc.-----	0.4	0.3	0.5	0.6	0.2	0.6
Plumbing and heating-----	24.7	21.3	29.7	22.5	24.7	21.3
Painting, etc.-----	2.5	2.3	2.5	2.5	2.9	4.7
Electrical-----	10.1	10.1	10.9	9.6	9.6	8.7
Masonry-----	2.1	2.5	0.8	3.7	1.0	4.7
Plastering and lathing-----	8.5	7.6	7.4	8.0	13.7	7.5
Terrazzo and tile work-----	3.1	2.9	2.7	3.7	3.3	3.9
Carpentry and millwork-----	0.2	0.2	0.5	0.0	0.0	0.1
Flooring-----	0.8	0.7	0.8	0.7	0.8	0.9
Roofing and sheet metal-----	1.1	1.0	0.9	1.3	1.3	2.3
Concrete work-----	0.5	0.6	0.5	0.3	0.5	0.5
Structural steel erections-----	1.5	1.9	1.4	0.6	3.1	1.5
Ornamental metal work-----	0.7	0.7	1.1	0.4	0.4	0.3
Glazing-----	0.5	0.4	0.5	0.5	0.6	0.7
Excavation, etc.-----	1.3	1.6	1.2	1.1	1.0	1.0
Demolition-----	0.1	0.1	0.1	0.0	0.1	0.0
Installed building equipment---	1.9	1.5	1.6	2.4	2.6	0.8
All other types-----	3.5	4.0	3.0	3.6	3.6	3.5

NOTE: Because of rounding, sums of individual items may not add to totals.

Table 8. Wages as a percent of contract costs

	Hospitals	Nursing homes
Under 20.0-----	0.0	0.0
20.1 - 22.5-----	9.0	41.7
22.6 - 25.0-----	12.3	10.4
25.1 - 27.5-----	22.0	24.0
27.6 - 30.0-----	18.7	24.0
30.1 - 32.5-----	17.5	0.0
32.6 and over-----	20.5	0.0

Table 9. Average onsite hourly earnings, by selected characteristics and regions

Characteristics	Hospitals										Nursing homes	
	United States		Northeast		North Central		South		West		United States	
	Average hourly wage	Wages as percent of contract	Average hourly wage	Wages as percent of contract	Average hourly wage	Wages as percent of contract	Average hourly wage	Wages as percent of contract	Average hourly wage	Wages as percent of contract	Average hourly wage	Wages as percent of contract
All projects-----	\$3.89	29.6	\$ 4.20	31.2	\$ 4.04	31.3	\$ 3.22	27.3	\$ 4.46	27.8	\$ 3.48	25.6
New-----	3.75	28.0	4.52	30.4	3.82	29.3	3.20	27.2	4.68	26.9	3.48	25.6
Additions-----	3.99	30.8	4.17	31.3	4.18	32.6	3.25	27.4	4.18	29.2	-----	-----
In a metropolitan area-----	4.10	30.5	4.27	31.6	4.35	33.5	3.42	28.3	4.53	27.5	3.53	26.5
Not in a metropolitan area-----	3.39	27.2	3.94	29.6	3.49	27.3	2.87	25.3	4.13	29.1	3.43	24.9
Type of framing:												
Steel-----	4.04	27.1	4.27	29.9	(1/)	(1/)	3.09	23.5	4.67	27.1	3.68	25.3
Reinforced concrete-----	3.85	30.7	4.19	32.1	4.10	32.0	3.26	28.5	4.17	28.4	(1/)	(1/)
Combination-----	(1/)	(1/)	(1/)	(1/)	-----	-----	(1/)	(1/)	-----	-----	(1/)	(1/)
Load-bearing masonry-----	3.74	30.8	-----	-----	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	3.09	24.1
1 story-----	3.28	25.0	(1/)	(1/)	(1/)	(1/)	3.06	23.8	(1/)	(1/)	3.22	24.7
2-4 stories-----	3.75	29.1	4.14	30.8	3.95	29.8	3.08	26.8	(1/)	(1/)	(1/)	(1/)
5 or more stories-----	4.06	30.5	4.26	31.9	4.26	33.7	3.36	28.5	4.53	27.6	-----	-----
Elevator-----	3.93	29.9	4.22	31.3	4.13	31.9	3.24	27.7	4.52	27.5	4.04	27.1
No elevator-----	3.31	25.0	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	2.92	23.9
Air conditioned:												
Full-----	3.86	29.4	4.26	30.8	4.04	31.6	3.18	26.9	4.56	27.2	3.35	25.2
Partial-----	4.03	30.8	4.10	32.1	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)
Not air conditioned-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	(1/)	(1/)
Full or partial basement-----	3.93	29.7	4.10	29.5	4.13	32.1	3.26	28.0	4.48	27.7	3.39	26.5
No basement-----	3.73	29.4	4.36	33.9	(1/)	(1/)	3.10	25.2	(1/)	(1/)	3.53	25.1
Masonry-----	3.83	29.7	4.20	31.2	4.04	31.2	3.12	26.8	4.28	28.4	3.48	25.6
Curtain wall-----	(1/)	(1/)	-----	-----	-----	-----	(1/)	(1/)	-----	-----	-----	-----
Other-----	4.33	28.4	-----	-----	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	-----	-----

1/ Insufficient coverage to warrant presentation.

Table 10. Man-hour requirements per 100 square feet of construction

	Hospitals			Nursing homes 1965-66
	1965-66	1959-60	Percent change	
All sectors-----	507	544	- 6.8	375
Construction				
Onsite construction-----	217	230	- 5.7	154
Offsite construction-----	29	28	+ 3.6	18
Agriculture-----	5	7	- 28.6	5
Mining-----	6	9	- 33.3	5
Manufacturing-----	183	203	- 9.9	139
Lumber products-----	10	11	- 9.1	14
Furniture-----	4	2	+100.0	3
Paper-----	3	4	- 25.0	3
Printing-----	3	3	0.0	2
Chemical-----	4	4	0.0	3
Stone, clay, and glass products----	28	32	- 12.5	22
Primary metals-----	26	31	- 16.1	18
Fabricated metal products-----	39	47	- 17.0	33
Machinery-----	25	25	0.0	15
Electrical products-----	25	26	- 3.8	14
Instruments-----	7	8	- 12.5	4
Other-----	9	10	- 10.0	7
Transportation-----	18	22	- 18.2	14
Trade (excluding retail)-----	19	15	+ 26.7	16
Services-----	14	13	+ 7.7	11
Other-----	15	17	- 11.8	12

NOTE: Because of rounding, sums of individual items may not add to totals.

Table 11. Average number of weeks for hospital construction

Cost	Northeast	North Central	South	West	United States
Under \$500,000-----	(<u>1</u> /)	(<u>1</u> /)	51	(<u>1</u> /)	50
\$500,000 - \$999,999-----	(<u>1</u> /)	(<u>1</u> /)	(<u>1</u> /)	--	67
\$1,000,000 - \$1,999,999-----	121	(<u>1</u> /)	99	(<u>1</u> /)	105
Over \$2,000,000-----	132	131	121	117	127
All classes-----	105	106	80	75	91

1/ Insufficient coverage to warrant presentation.

Table 13. Total cost of materials per 100 square feet of hospital construction, 1965-66

Selected products and product groups	All hospital projects	New hospital projects	Hospital addition projects
All products-----	\$1474.26	\$1445.37	\$1496.02
Metal products (except plumbing and heating)---	337.33	337.19	337.42
Fabricated structural metal products-----	217.09	221.84	213.51
Reinforcing bars and joists-----	66.70	56.87	74.11
Structural steel-----	45.64	54.90	38.65
Fabricated sheet metal-----	39.81	38.87	40.52
Metal windows-----	21.10	22.67	19.91
Metal doors-----	14.77	14.45	15.02
Registers, grills and diffusers-----	6.79	9.35	4.86
Ornamental metal-----	4.84	5.82	4.11
Other-----	17.44	18.91	16.33
Other fabricated metal products-----	36.73	33.64	39.04
Builder's hardware-----	29.64	25.86	32.49
Other-----	7.09	7.78	6.55
Other metal products-----	83.51	81.71	84.87
Metal casework-----	35.21	30.44	38.80
Galvanized sheet metal-----	23.71	25.23	22.56
Aluminum sheet metal-----	7.90	9.54	6.66
Partitions, lockers, and shelves-----	6.41	6.13	6.62
Lead-----	5.56	5.32	5.75
Copper products-----	1.78	2.01	1.61
Other-----	2.94	3.04	2.87
Stone, clay, and glass products-----	267.01	244.14	284.26
Cement, concrete and gypsum products-----	147.49	139.71	153.35
Ready-mix concrete-----	81.47	76.53	85.19
Precast concrete products-----	19.97	20.90	19.27
Concrete block and brick-----	18.76	12.42	23.54
Gypsum products-----	16.29	18.12	14.92
Cement-----	8.31	8.66	8.04
Lime-----	1.76	1.61	1.87
Concrete pipe-----	0.93	1.47	0.52
Structural clay products-----	51.18	42.59	57.66
Brick and structural tile-----	28.92	21.55	34.48
Ceramic tile-----	18.44	16.23	20.10
Clay sewer pipe-----	1.86	2.78	1.17
Other-----	1.96	2.03	1.91

Table 13. Total cost of materials per 100 square feet of hospital construction, 1965-66--continued

Selected products and product groups	All hospital projects	New hospital projects	Hospital addition projects
Other stone, clay and glass products-----	\$ 68.34	\$ 61.84	\$ 73.25
Fiberglas products-----	20.53	18.90	21.76
Vinyl tile (including vinyl-asbestos)-----	12.67	9.78	14.86
Cut stone-----	10.85	8.07	12.95
Sand and gravel-----	7.56	7.63	7.50
Window glass-----	7.47	8.36	6.79
Asbestos insulation-----	2.02	1.63	2.31
Other-----	7.24	7.47	7.08
Fixed hospital equipment-----	237.98	224.98	247.78
Elevators, moving stairways and dumb waiters-----	67.33	57.48	74.75
X-ray and related equipment-----	43.84	26.03	57.26
Kitchen equipment-----	42.00	43.91	40.56
Sterilizers and autoclaves-----	24.82	29.44	21.34
Laundry equipment-----	13.49	11.66	14.87
Pneumatic tube system-----	9.73	7.43	11.46
Compressed air and oxygen systems-----	6.48	5.26	7.40
Refrigerators, walk-in coolers and ice stations-----	6.13	8.81	4.12
Laboratory equipment-----	4.13	9.21	0.30
Tray conveyors-----	3.73	6.69	1.50
Incinerators-----	2.89	3.87	2.15
Other-----	13.41	15.19	12.07
Electrical equipment, fixtures and wire-----	180.23	181.13	179.54
Lighting fixtures-----	44.51	39.98	47.93
Intercom and fire alarm system-----	30.65	31.10	30.31
Switchboards and panelboards-----	28.69	22.75	33.16
Noncurrent-carrying devices-----	25.42	28.66	22.97
Wire and cable-----	15.61	14.31	16.59
Electric generating units-----	11.46	14.05	9.50
Current carrying wiring devices-----	10.92	16.15	6.98
T.V. systems-----	3.60	5.30	2.32
Clock and program systems-----	3.25	3.11	3.34
Transformers-----	3.04	2.57	3.39
Other-----	3.08	3.15	3.05

Table 13. Total cost of materials per 100 square feet of hospital construction, 1965-66--continued

Selected products and product groups	All hospital projects	New hospital projects	Hospital addition projects
Heating, ventilating, and air conditioning equipment-----	\$ 143.79	\$ 145.71	\$ 142.33
Air conditioning equipment-----	54.02	55.65	52.79
Radiators, convectors, and boilers-----	29.50	32.49	27.24
Temperature controls-----	21.83	21.40	22.15
Pumps, compressors-----	13.50	13.30	13.65
Blowers, exhaust, and fans-----	13.22	11.04	14.87
Oil burners-----	4.97	2.75	6.64
Unit heaters and ventilators-----	4.08	5.58	2.95
Other-----	2.67	3.50	2.04
Plumbing products-----	152.26	163.65	143.70
Plumbing fixtures-----	36.72	36.77	36.69
Steel and galvanized pipe-----	35.95	47.15	27.50
Valves and specialties-----	28.35	24.97	30.91
Cast iron pipe and fittings-----	22.15	24.69	20.24
Copper pipes-----	20.85	23.20	19.07
Water treatment equipment-----	2.10	1.78	2.35
Other-----	6.14	5.09	6.94
Lumber and lumber products-----	68.62	60.75	74.57
Millwork-----	42.38	43.88	41.26
Rough and dressed lumber-----	22.88	12.87	30.43
Plywood-----	2.87	3.25	2.58
Other-----	0.49	0.75	0.30
Petroleum products-----	11.78	13.35	10.61
Asphalt paving-----	4.45	5.24	3.86
Asphalt and tar pitches-----	3.14	3.45	2.90
Asphalt felts-----	2.81	3.54	2.27
Other-----	1.38	1.12	1.58
Paint and other chemical compounds-----	11.42	11.36	11.45
Paint-----	7.10	6.49	7.55
Other-----	4.32	4.87	3.90
All other-----	63.84	63.11	64.36
Construction equipment-----	36.87	35.84	37.65
Other accoustical tile and board-----	11.80	9.69	13.38
Vinyl wall covering-----	4.25	3.16	5.06
Wood fiber board-----	2.21	4.51	0.48
Laminated plastic panels-----	2.18	2.67	1.82
Other-----	6.53	7.24	5.97

NOTE: Group totals include products not shown separately. Because of rounding, sums of components may not equal totals.

Table 14. Total cost of materials per 100 square feet of hospital construction contract, 1959-60

Selected products and product groups	All hospital projects	New hospital projects	Hospital addition projects
All products-----	\$ 1410.99	\$ 1428.90	\$ 1367.16
Metal products (except plumbing and heating)---	371.89	375.83	362.17
Fabricated structural metal products-----	249.70	260.45	223.41
Reinforcing bars and joists-----	95.38	100.62	82.56
Structural steel-----	56.01	61.23	43.25
Fabricated sheet metal-----	37.11	37.96	35.02
Metal windows-----	30.51	29.16	33.80
Metal doors-----	20.22	20.39	19.81
Ornamental metal-----	10.32	10.94	8.82
Other-----	0.15	0.15	0.15
Other fabricated metal products-----	29.32	26.84	35.40
Builder's hardware-----	27.43	25.40	32.39
Other-----	1.89	1.44	3.01
Other metal products-----	92.87	88.54	103.36
Metal casework-----	35.18	35.31	34.86
Copper sheet metal and pipe-----	21.52	21.27	22.12
Galvanized sheet metal-----	12.88	10.76	18.06
Partitions, lockers, and shelves-----	9.77	8.63	12.54
Aluminum sheet metal-----	4.86	4.28	6.26
Insulation shields-----	4.13	4.71	2.71
Lead-----	1.29	1.41	0.99
Other-----	3.24	2.17	5.82
Stone, clay, and glass products-----	273.33	265.18	293.26
Cement, concrete, and gypsum products-----	134.29	133.31	136.67
Ready mix concrete-----	72.62	67.91	84.13
Gypsum products-----	22.84	21.86	25.23
Concrete block and brick-----	15.93	17.76	11.45
Cement-----	10.06	9.77	10.79
Precast concrete products-----	9.11	12.07	1.88
Lime-----	1.94	1.68	2.56
Concrete pipe-----	1.79	2.26	0.63
Structural clay products-----	56.77	50.35	72.46
Brick and structural tile-----	31.59	26.77	43.36
Ceramic tile-----	21.05	18.52	27.23
Clay sewer pipe-----	2.88	3.48	1.42
Other-----	1.25	1.58	0.45

Table 14. Total cost of materials per 100 square feet of hospital construction contract, 1959-60--continued

Selected products and product groups	All hospital projects	New hospital projects	Hospital addition projects
Other stone, clay, and glass products-----	\$ 82.27	\$ 81.52	\$ 84.13
Fiberglas products-----	24.87	24.14	26.66
Cut stone-----	18.00	18.92	15.75
Vinyl tile-----	14.19	12.77	17.66
Window glass-----	8.27	7.75	9.54
Sand and gravel-----	5.98	5.26	7.76
Asphalt tile-----	4.01	4.88	1.90
Asbestos insulation-----	2.49	2.94	1.37
Other-----	4.46	4.86	3.49
Fixed hospital equipment-----	229.38	240.90	201.29
Elevators-----	58.65	50.97	77.40
X-ray and related equipment-----	33.29	39.00	19.35
Sterilizers and autoclaves-----	31.63	34.01	25.82
Kitchen equipment-----	27.59	34.67	10.32
Refrigerators-----	17.43	16.75	19.08
Laundry equipment-----	15.55	16.96	12.12
Electric generator units-----	14.94	16.47	11.19
Laboratory equipment-----	7.66	7.14	8.94
Pneumatic tube system-----	5.41	6.91	1.77
Compressed air and oxygen systems-----	3.45	3.14	4.21
Incinerators-----	1.54	1.63	1.31
Other-----	12.24	13.25	9.78
Electrical equipment, fixtures, and wire-----	154.75	158.84	144.75
Lighting fixtures-----	39.90	40.69	37.97
Noncurrent-carrying devices-----	28.10	27.96	28.45
Switchboards and panelboards-----	27.67	29.07	24.26
Intercom and fire alarm system-----	15.50	14.57	17.77
Wire and cable-----	13.26	13.37	12.98
Transformers-----	8.45	9.99	4.66
Current-carrying wiring devices-----	7.44	6.89	8.81
Program systems-----	5.13	7.10	0.30
Electric clock, telephone and T.V. system---	4.90	4.95	4.80
Other-----	4.40	4.25	4.75

Table 14. Total cost of materials per 100 square feet of hospital construction contract, 1959-60 --continued

Selected products and product groups	All Hospital projects	New Hospital projects	Hospital addition projects
Heating, ventilating, and air conditioning equipment-----	\$ 138.53	\$ 147.53	\$ 116.58
Radiators, convectors, and boilers-----	38.88	42.03	31.18
Air conditioning equipment-----	38.05	42.27	27.73
Temperature controls-----	26.96	29.33	21.18
Blowers, exhaust, and fans-----	12.45	11.41	15.01
Pumps and compressors-----	8.56	8.07	9.75
Unit heaters and ventilators-----	6.18	7.15	3.80
Storage tanks-----	4.59	5.25	2.99
Oil burners-----	2.06	1.38	3.72
Other-----	0.80	0.64	1.22
Plumbing products-----	122.88	121.42	126.46
Plumbing fixtures-----	40.07	41.24	37.23
Steel and galvanized pipe-----	37.87	33.71	48.05
Valves and specialties-----	25.82	25.29	27.13
Cast iron pipe and fittings-----	15.03	16.73	10.88
Other-----	4.09	4.45	3.17
Lumber and lumber products-----	59.51	55.05	70.38
Millwork-----	42.17	37.93	52.51
Rough and dressed lumber-----	14.03	13.06	16.39
Plywood-----	2.59	3.10	1.34
Other-----	0.72	0.96	0.14
Petroleum products-----	12.63	13.97	9.36
Asphalt paving-----	3.78	4.85	1.17
Asphalt and tar pitches-----	3.31	3.31	3.32
Asphalt felts-----	2.36	2.20	2.74
Other-----	3.18	3.61	2.13
Paint and other chemical compounds-----	11.35	11.50	10.98
Paint-----	6.51	6.56	6.36
Other-----	4.84	4.94	4.62
All other-----	36.74	38.68	31.93
Construction equipment-----	30.19	31.07	28.05
Insulating board-----	1.28	1.49	0.74
Laminated plastic panels-----	1.50	1.94	0.43
Other-----	3.77	4.18	2.71

NOTE: Group totals include products not shown separately. Because of rounding, sums of components may not equal totals.

Table 15. Total cost of material components for each \$1,000 of hospital construction contract, 1965-66

Selected products and product groups	All hospital projects	New hospital projects	Hospital addition projects
All products-----	\$ 516.99	\$ 523.84	\$ 512.11
Metal products (except plumbing and heating)---	118.28	122.24	115.51
Fabricated structural metal products-----	76.13	80.42	73.09
Reinforcing bars and joists-----	23.39	20.61	25.37
Structural steel-----	16.00	19.90	13.23
Fabricated sheet metal-----	13.96	14.09	13.87
Metal windows-----	7.40	8.22	6.81
Metal doors-----	5.18	5.24	5.14
Registers, grills and diffusers-----	2.38	3.39	1.67
Ornamental metal-----	1.70	2.11	1.41
Other-----	6.12	6.86	5.59
Other fabricated metal products-----	12.86	12.20	13.37
Builder's hardware-----	10.39	9.37	11.12
Other-----	2.47	2.83	2.25
Other metal products-----	29.29	29.62	29.05
Metal casework-----	12.35	11.04	13.28
Galvanized sheet metal-----	8.31	9.15	7.72
Aluminum sheet metal-----	2.77	3.46	2.28
Partitions, lockers and shelves-----	2.25	2.22	2.27
Lead-----	1.95	1.93	1.97
Copper products-----	0.63	0.73	0.55
Other-----	1.03	1.09	0.98
Stone, clay, and glass products-----	93.64	88.48	97.31
Cement, concrete, and gypsum products-----	51.72	50.64	52.50
Ready-mix concrete-----	28.57	27.74	29.16
Precast concrete products-----	7.00	7.58	6.60
Concrete block and brick-----	6.58	4.50	8.06
Gypsum products-----	5.71	6.57	5.11
Cement-----	2.91	3.14	2.75
Lime-----	0.62	0.58	0.64
Concrete pipe-----	0.33	0.53	0.18
Structural clay products-----	17.95	15.43	19.75
Brick and structural tile-----	10.14	7.81	11.81
Ceramic tile-----	6.47	5.88	6.88
Clay sewer pipe-----	0.65	1.01	0.40
Other-----	0.69	0.73	0.66

Table 15. Total cost of material components for each \$1,000 of hospital construction contract, 1965-66 --continued

Selected products and product groups	All hospital projects	New hospital projects	Hospital addition projects
Other stone, clay, and glass products-----	\$ 23.97	\$ 22.41	\$ 25.06
Fiberglas products-----	7.20	6.85	7.45
Vinyl tile (including vinyl-asbestos)-----	4.45	3.54	5.09
Cut stone-----	3.81	2.92	4.43
Sand and gravel-----	2.65	2.77	2.57
Window glass-----	2.62	3.03	2.32
Asbestos insulation-----	0.71	0.59	0.79
Other-----	2.53	2.71	2.41
Fixed hospital equipment-----	83.45	81.51	84.82
Elevators, moving stairways and dumb waiters-----	23.61	20.83	25.59
X-ray and related equipment-----	15.37	9.43	19.60
Kitchen equipment-----	14.73	15.92	13.89
Sterilizers and autoclaves-----	8.70	10.67	7.30
Laundry equipment-----	4.73	4.23	5.09
Pneumatic tube system-----	3.41	2.69	3.92
Compressed air and oxygen systems-----	2.27	1.91	2.53
Refrigerators, walk-in coolers and ice stations-----	2.15	3.19	1.41
Laboratory equipment-----	1.45	3.34	0.10
Tray conveyors-----	1.31	2.42	0.51
Incinerators-----	1.01	1.40	0.74
Other-----	4.71	5.48	4.14
Electrical equipment, fixtures and wire-----	63.21	65.65	61.46
Lighting fixtures-----	15.61	14.49	16.41
Intercom and fire alarm system-----	10.75	11.27	10.38
Switchboards and panelboards-----	10.06	8.25	11.35
Noncurrent-carrying devices-----	8.91	10.39	7.86
Wire and cable-----	5.47	5.19	5.68
Electric generating units-----	4.02	5.09	3.25
Current-carrying wiring devices-----	3.83	5.85	2.39
T.V. systems-----	1.26	1.92	0.79
Clock and program systems-----	1.14	1.13	1.15
Transformers-----	1.07	0.93	1.16
Other-----	1.09	1.14	1.04

Table 15. Total cost of material components for each \$1,000 of hospital construction contract, 1965-66--continued

Selected products and product groups	All hospital projects	New hospital projects	Hospital addition projects
Heating, ventilating, and air conditioning equipment-----	\$ 50.42	\$ 52.82	\$ 48.72
Air conditioning equipment-----	18.94	20.17	18.07
Radiators, convectors, and boilers-----	10.34	11.78	9.33
Temperature controls-----	7.66	7.76	7.58
Pumps, compressors-----	4.73	4.82	4.67
Blowers, exhausts, and fans-----	4.64	4.00	5.09
Oil burners-----	1.74	1.00	2.27
Unit heaters and ventilators-----	1.43	2.02	1.01
Other-----	0.94	1.27	0.70
Plumbing products-----	53.39	59.31	49.18
Plumbing fixtures-----	12.88	13.33	12.56
Steel and galvanized pipe-----	12.61	17.09	9.41
Valves and specialties-----	9.94	9.05	10.58
Cast iron pipe and fittings-----	7.77	8.95	6.93
Copper pipes-----	7.31	8.41	6.53
Water treatment equipment-----	0.74	0.64	0.80
Other-----	2.14	1.84	2.37
Lumber and lumber products-----	24.07	22.01	25.52
Millwork-----	14.87	15.90	14.12
Rough and dressed lumber-----	8.02	4.66	10.42
Plywood-----	1.01	1.18	0.88
Other-----	0.17	0.27	0.10
Petroleum products-----	4.13	4.83	3.64
Asphalt paving-----	1.56	1.90	1.32
Asphalt and tar pitches-----	1.10	1.25	1.00
Asphalt felts-----	0.99	1.28	0.78
Other-----	0.48	0.40	0.54
Paint and other chemical compounds-----	4.00	4.11	3.92
Paint-----	2.49	2.35	2.59
Other-----	1.51	1.76	1.33
All other-----	22.40	22.88	22.03
Construction equipment-----	12.92	12.99	12.90
Other accoustical tile and board-----	4.14	3.51	4.58
Vinyl wall covering-----	1.49	1.15	1.73
Wood fiber board-----	0.78	1.64	0.16
Laminated plastic panels-----	0.77	0.97	0.62
Other-----	2.30	2.62	2.04

NOTE: Group totals include products not shown separately. Because of rounding, sums of components may not equal totals.

Table 16. Total cost of material components for each \$1,000 of hospital construction contract, 1959-60

Selected products and product groups	All hospital projects	New hospital projects	Hospital addition projects
All products-----	\$ 544.23	\$ 560.63	\$ 506.39
Metal products (except plumbing and heating)---	143.43	147.45	134.16
Fabricated structural metal products-----	96.31	102.18	82.75
Reinforcing bars and joists-----	36.79	39.48	30.58
Structural steel-----	21.60	24.02	16.02
Fabricated sheet metal products-----	14.31	14.89	12.97
Metal windows-----	11.77	11.44	12.52
Metal doors-----	7.80	8.00	7.34
Ornamental metal-----	3.98	4.29	3.27
Other-----	0.06	0.06	0.05
Other fabricated metal products-----	11.31	10.52	13.12
Builder's hardware-----	10.58	9.96	12.00
Other-----	0.73	0.56	1.12
Other metal products-----	35.81	34.75	38.29
Metal casework-----	13.57	13.85	12.91
Copper sheet metal and pipe-----	8.30	8.35	8.19
Galvanized sheet metal-----	4.97	4.22	6.69
Partitions, lockers, and shelves-----	3.77	3.39	4.65
Aluminum sheet metal-----	1.87	1.69	2.33
Insulation shields-----	1.59	1.85	1.00
Lead-----	0.50	0.55	0.37
Other-----	1.24	0.85	2.15
Stone, clay and glass products-----	105.41	104.05	108.59
Cement, concrete, and gypsum products-----	51.79	52.30	50.62
Ready-mix concrete-----	28.01	26.64	31.16
Gypsum products-----	8.81	8.58	9.35
Concrete block and brick-----	6.14	6.97	4.24
Cement-----	3.88	3.83	3.99
Precast concrete products-----	3.51	4.73	0.70
Lime-----	0.75	0.66	0.95
Concrete pipe-----	0.69	0.89	0.23
Structural clay products-----	21.90	19.76	26.84
Brick and structural tile-----	12.19	10.50	16.06
Ceramic tile-----	8.12	7.27	10.08
Clay sewer pipe-----	1.11	1.37	0.53
Other-----	0.48	0.62	0.17

Table 16. Total cost of material components for each \$1,000 of hospital construction contract, 1959-60--continued

Selected products and product groups	All hospital projects	New hospital projects	Hospital addition projects
Other stone, clay and glass products-----	\$ 31.72	\$ 31.99	\$ 31.13
Fiberglas products-----	9.59	9.47	9.87
Cut stone-----	6.94	7.42	5.82
Vinyl tile-----	5.47	5.01	6.54
Window glass-----	3.19	3.04	3.53
Sand and gravel-----	2.31	2.06	2.87
Asphalt tile-----	1.55	1.92	0.70
Asbestos insulation-----	0.96	1.16	0.51
Other-----	1.71	1.91	1.29
Fixed hospital equipment-----	88.49	94.49	74.55
Elevators-----	22.62	20.00	28.67
X-ray and related equipment-----	12.84	15.30	7.17
Sterilizers and autoclaves-----	12.20	13.34	9.56
Kitchen equipment-----	10.65	13.60	3.82
Refrigerators-----	6.72	6.57	7.07
Laundry equipment-----	6.00	6.65	4.49
Electric generator units-----	5.76	6.46	4.15
Laboratory equipment-----	2.96	2.80	3.31
Pneumatic tube system-----	2.09	2.71	0.66
Compressed air and oxygen systems-----	1.33	1.23	1.56
Incinerators-----	0.59	0.64	0.48
Other-----	4.73	5.19	3.61
Electrical equipment, fixtures, and wire-----	59.68	62.31	53.62
Lighting fixtures-----	15.39	15.97	14.06
Noncurrent-carrying devices-----	10.84	10.97	10.54
Switchboards and panelboards-----	10.67	11.40	8.99
Intercom and fire alarm system-----	5.98	5.72	6.58
Wire and cable-----	5.11	5.25	4.81
Transformers-----	3.26	3.92	1.73
Current-carrying wiring devices-----	2.87	2.70	3.26
Program systems-----	1.98	2.79	0.11
Electric clock, telephone and T.V.-----	1.89	1.94	1.78
Other-----	1.69	1.65	1.76

Table 16. Total cost of material components for each \$1,000 of hospital construction contract, 1959-60--continued

Selected products and product groups	All hospital projects	New hospital projects	Hospital addition projects
Heating, ventilating, and air conditioning equipment-----	\$ 53.43	\$ 57.89	\$ 43.19
Radiators, convectors, and boilers-----	14.99	16.49	11.55
Air conditioning equipment-----	14.68	16.58	10.27
Temperature controls-----	10.40	11.51	7.85
Blowers, exhaust and fans-----	4.80	4.48	5.56
Pumps and compressors-----	3.31	3.17	3.61
Unit heaters and ventilators-----	2.38	2.81	1.41
Storage tanks-----	1.77	2.06	1.11
Oil burners-----	0.80	0.54	1.38
Other-----	0.30	0.25	0.45
Plumbing products-----	47.41	47.65	46.86
Plumbing fixtures-----	15.46	16.18	13.79
Steel and galvanized pipe-----	14.61	13.23	17.80
Valves and specialties-----	9.96	9.92	10.05
Cast iron pipe and fittings-----	5.80	6.57	4.03
Other-----	1.58	1.75	1.19
Lumber and lumber products-----	22.94	21.60	26.07
Millwork-----	16.26	14.88	19.45
Rough and dressed lumber-----	5.41	5.12	6.07
Plywood-----	1.00	1.22	0.50
Other-----	0.27	0.38	0.05
Petroleum products-----	4.89	5.48	3.46
Asphalt paving-----	1.46	1.90	0.43
Asphalt and tar pitches-----	1.28	1.30	1.23
Asphalt felts-----	0.91	0.86	1.01
Other-----	1.24	1.42	0.79
Paint and other chemical compounds-----	4.39	4.53	4.07
Paint-----	2.51	2.58	2.36
Other-----	1.88	1.95	1.71
All other-----	14.16	15.18	11.82
Construction equipment-----	11.65	12.18	10.39
Laminated plastic panels-----	0.58	0.76	0.16
Insulating board-----	0.49	0.59	0.27
Other-----	1.44	1.65	1.00

NOTE: Group totals include products not shown separately. Because of rounding, sums of components may not equal totals.

Table 17. Total cost of materials per 100 square feet of nursing home construction, 1965-66

Selected products and product groups	New
All products-----	\$1146.24
Metal products (except plumbing and heating)-----	261.19
Fabricated structural metal products-----	190.52
Structural steel-----	52.14
Reinforcing bars and joists-----	44.82
Fabricated sheet metal-----	30.20
Metal doors-----	22.51
Metal windows-----	12.49
Ornamental metal-----	7.01
Registers, grills, and diffusers-----	4.43
Other-----	16.92
Other fabricated metal products-----	26.88
Builder's hardware-----	22.44
Other-----	4.44
Other metal products-----	43.79
Metal casework-----	15.35
Galvanized sheet metal-----	10.34
Aluminum sheet metal-----	9.03
Partitions, lockers, and shelves-----	3.13
Copper products-----	2.76
Other-----	3.18
Stone, clay, and glass products-----	219.16
Cement, concrete and gypsum products-----	109.55
Ready-mix concrete-----	50.72
Concrete block and brick-----	22.77
Gypsum products-----	17.91
Precast concrete products-----	9.28
Cement-----	6.65
Lime-----	1.77
Other-----	0.45
Structural clay products-----	46.84
Brick and structural tile-----	26.07
Ceramic tile-----	17.83
Clay sewer pipe-----	2.22
Other-----	0.72

Table 17. Total cost of materials per 100 square feet of nursing home construction, 1965-66--continued

Selected products and product groups	New
Other stone, clay and glass products-----	\$ 62.77
Fiberglas insulation-----	17.56
Vinyl tile (including vinyl-asbestos)-----	13.00
Window glass-----	9.15
Sand and gravel-----	6.05
Asbestos insulation-----	3.73
Cut stone-----	3.27
Other-----	10.01
Fixed hospital equipment-----	120.96
Kitchen equipment-----	65.50
Elevators, moving stairways and dumb waiters-----	26.15
Sterilizers and autoclaves-----	4.03
Compressed air and oxygen system-----	2.02
Refrigerators, walk-in coolers and ice stations-----	1.66
Incinerators-----	1.40
Other-----	20.20
Electrical equipment, fixtures and wire-----	121.55
Lighting fixtures-----	33.20
Noncurrent-carrying devices-----	18.09
Intercom and fire alarm system-----	18.01
Wire and cable-----	16.76
Switchboards and panelboards-----	14.67
Electric generating units-----	7.98
Current-carrying wiring devices-----	6.83
Transformers-----	2.59
Clock and program systems-----	0.56
Other-----	2.86
Heating, ventilating, and air conditioning equipment--	118.44
Air conditioning equipment-----	45.03
Radiators, convectors, and boilers-----	31.28
Temperature controls-----	20.57
Blowers, exhaust, and fans-----	10.30
Pumps, compressors-----	6.12
Oil burners-----	2.32
Unit heaters and ventilators-----	0.94
Other-----	1.88

Table 17. Total cost of materials per 100 square feet of nursing home construction, 1965-66--continued

Selected products and product groups	New
Plumbing products-----	\$109.71
Plumbing fixtures-----	44.61
Steel and galvanized pipe-----	17.13
Copper pipes-----	14.70
Cast iron pipe and fittings-----	14.23
Valves and specialties-----	11.55
Other-----	7.49
Lumber and lumber products-----	101.87
Millwork-----	56.84
Rough and dressed lumber-----	31.82
Plywood-----	9.30
Other-----	3.91
Petroleum products-----	20.80
Asphalt paving-----	8.87
Asphalt felts-----	7.07
Asphalt and tar pitches-----	3.99
Other-----	0.87
Paint and other chemical compounds-----	14.28
Paint-----	8.85
Other-----	5.43
All other-----	58.28
Construction equipment-----	24.61
Other accoustical tile and boards-----	17.99
Wood fiber board-----	5.70
Vinyl wall covering-----	3.92
Laminated plastic panels-----	2.04
Other-----	4.02

NOTE: Group totals include products not shown separately. Because of rounding, sums of components may not equal totals.

Table 18. Total cost of material components for each \$1,000 of nursing home construction contract, 1965-66

Selected products and product groups	New
All products-----	\$548.74
Metal products (except plumbing and heating)-----	125.04
Fabricated structural metal products-----	91.21
Structural steel-----	24.96
Reinforcing bars and joists-----	21.46
Fabricated sheet metal-----	14.46
Metal doors-----	10.77
Metal windows-----	5.98
Ornamental metal-----	3.36
Registers, grills and diffusers-----	2.12
Other-----	8.10
Other fabricated metal products-----	12.86
Builder's hardware-----	10.74
Other-----	2.12
Other metal products-----	20.97
Metal casework-----	7.35
Galvanized sheet metal-----	4.95
Aluminum sheet metal-----	4.32
Partitions, lockers, and shelves-----	1.50
Copper products-----	1.32
Other-----	1.53
Stone, clay, and glass products-----	104.92
Cement, concrete and gypsum products-----	52.44
Ready-mix concrete-----	24.28
Concrete block and brick-----	10.90
Gypsum products-----	8.58
Precast concrete products-----	4.44
Cement-----	3.18
Lime-----	0.85
Other-----	0.21
Structural clay products-----	22.43
Brick and structural tile-----	12.48
Ceramic tile-----	8.54
Clay sewer pipe-----	1.06
Other-----	0.35

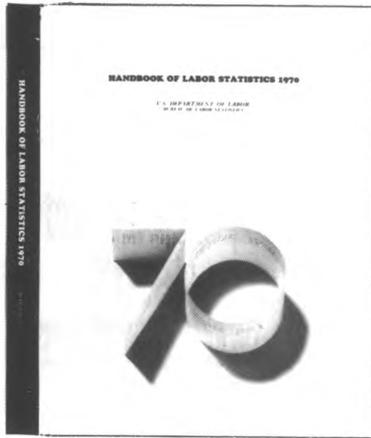
Table 18. Total cost of material components for each \$1,000 of nursing home construction contract, 1965-66--continued

Selected products and product groups	New
Other stone, clay, and glass products-----	\$ 30.05
Fiberglas insulation-----	8.40
Vinyl tile (including vinyl-asbestos)-----	6.23
Window glass-----	4.38
Sand and gravel-----	2.90
Asbestos insulation-----	1.79
Cut stone-----	1.56
Other-----	4.79
Fixed hospital equipment-----	57.89
Kitchen equipment-----	31.36
Elevators, moving stairways and dumb waiters-----	12.52
Sterilizers and autoclaves-----	1.93
Compressed air and oxygen system-----	0.97
Refrigerators, walk-in coolers and ice stations-----	0.79
Incinerators-----	0.67
Other-----	9.65
Electrical equipment, fixtures and wire-----	58.19
Lighting fixtures-----	15.89
Noncurrent-carrying devices-----	8.66
Intercom and fire alarm system-----	8.62
Wire and cable-----	8.02
Switchboards and panelboards-----	7.02
Electric generating units-----	3.82
Current-carrying wiring devices-----	3.27
Transformers-----	1.24
Clock and program systems-----	0.27
Other-----	1.38
Heating, ventilating, and air conditioning equipment--	56.70
Air conditioning equipment-----	21.56
Radiators, convectors, and boilers-----	14.97
Temperature controls-----	9.85
Blowers, exhaust, and fans-----	4.93
Pumps, compressors-----	2.93
Oil burners-----	1.11
Unit heaters and ventilators-----	0.45
Other-----	0.90

Table 18. Total cost of material components for each \$1,000 of nursing home construction contract, 1965-66--continued

Selected products and product groups	New
Plumbing products-----	\$ 52.53
Plumbing fixtures-----	21.36
Steel and galvanized pipe-----	8.20
Copper pipes-----	7.04
Cast iron pipe and fittings-----	6.81
Valves and specialties-----	5.53
Other-----	3.59
Lumber and lumber products-----	48.76
Millwork-----	27.21
Rough and dressed lumber-----	15.23
Plywood-----	4.45
Other-----	1.87
Petroleum products-----	9.96
Asphalt paving-----	4.25
Asphalt felts-----	3.38
Asphalt and tar pitches-----	1.91
Other-----	0.42
Paint and other chemical compounds-----	6.83
Paint-----	4.24
Other-----	2.59
All other-----	27.92
Construction equipment-----	11.79
Other accoustical tile and boards-----	8.61
Wood fiber board-----	2.73
Vinyl wall covering-----	1.88
Laminated plastic panels-----	0.98
Other-----	1.93

NOTE: Group totals include products not shown separately. Because of rounding, sums of components may not equal totals.



The U.S. Department of Labor,
Bureau of Labor Statistics
Announces the 1970 Edition of the

HANDBOOK OF LABOR STATISTICS

The latest compendium on Labor Statistics.

Questions:

1. Who works?
2. How long?
3. What is their output?
4. How much are they paid?
5. How are their earnings spent?
6. Are these workers organized?
7. How do answers to the questions above for the United States compare with other countries?
8. How safe are you on your job?

*For the answer
see section on --*

- Labor force
- Employment
- Unemployment
- Hours
- Productivity and unit labor costs
- Compensation
- Prices and living conditions
- General economic data
- Unions and industrial relations

- Foreign labor statistics
- Industrial injuries

Get the answers to these and many other questions from the 400-page Handbook of Labor Statistics, 1970, BLS Bulletin 1666.

ORDER FORM

Send order form to any of the regional offices listed below, or to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. *(Please make check or money order payable to the Superintendent of Documents.)*

1603-A Federal Bldg. Boston, Mass. 02203	341 Ninth Ave. New York, N.Y. 10001	1317 Filbert St. Philadelphia, Pa. 19107	1371 Peachtree St., NE. Atlanta, Ga. 30309
219 S. Dearborn St. Chicago, Ill. 60604	911 Walnut St. Kansas City, Mo. 64106	411 N. Akard St. Dallas, Tex. 75201	450 Golden Gate Ave., Box 36017 San Francisco, Calif. 94102

FOR USE OF SUPT. DOCS
Enclosed
To be mailed later
Subscription
Refund
Coupon refund
Postage

Enclosed is \$_____. Please send me _____ copies of HANDBOOK OF LABOR STATISTICS 1970 BLS Bulletin 1666) at \$3.50 a copy.

Name _____
Street _____
City, State, ZIP Code _____

FOR PROMPT SHIPMENT, PLEASE PRINT OR TYPE ADDRESS ON LABEL BELOW INCLUDING YOUR ZIP CODE

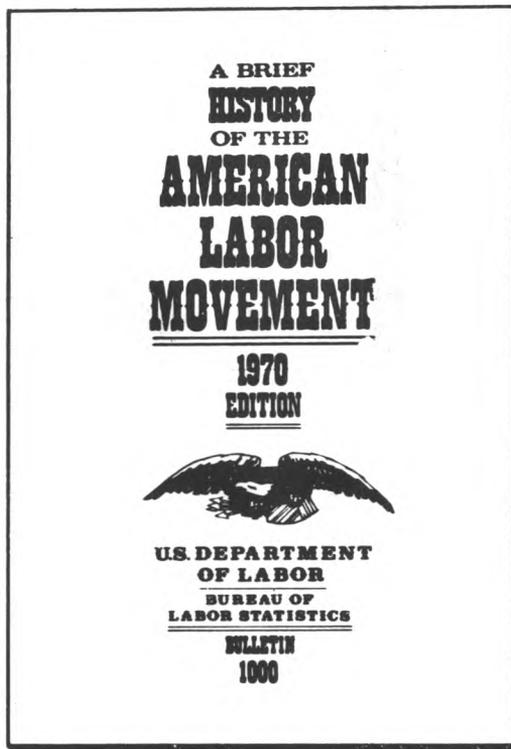
U.S. GOVERNMENT PRINTING OFFICE
DIVISION OF PUBLIC DOCUMENTS
WASHINGTON, D.C. 20402

POSTAGE AND FEES PAID
U.S. GOVERNMENT PRINTING OFFICE

OFFICIAL BUSINESS

Name _____
Street address _____
City and State _____ ZIP Code _____

The new 1970 edition of



The widely read, authoritative account of trade unionism in the United States, with a chronology of major events in labor history

For use by—

- students of social sciences and economics
- worker education and management training classes
- civic groups and others interested in the development of trade unionism in America

Available from any of these regional offices of the Bureau of Labor Statistics, U.S. Department of Labor, or from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402. (Make check or money order payable to the Superintendent of Documents.)

1603-A Federal Bldg. Boston, Mass. 02203	341 Ninth Ave. New York, N.Y. 10001	1317 Filbert St. Philadelphia, Pa. 19107	1371 Peachtree St., NE. Atlanta, Ga. 30309
219 S. Dearborn St. Chicago, Ill. 60604	911 Walnut St. Kansas City, Mo. 64106	411 N. Akard St. Dallas, Tex. 75201	450 Golden Gate Ave., Box 36017 San Francisco, Calif. 94102

Please send me _____ copies of A Brief History of the American Labor Movement @ \$1.00 each.
Payment enclosed: \$ _____.

Please charge this order to my Deposit Account No. _____

Name _____
Street address _____
City and State _____ ZIP Code _____

FOR USE OF SUPT. DOCS
Enclosed _____
To be mailed later _____
Subscription _____
Refund _____
Coupon refund _____
Postage _____

FOR PROMPT SHIPMENT, PLEASE PRINT OR TYPE ADDRESS ON LABEL BELOW INCLUDING YOUR ZIP CODE

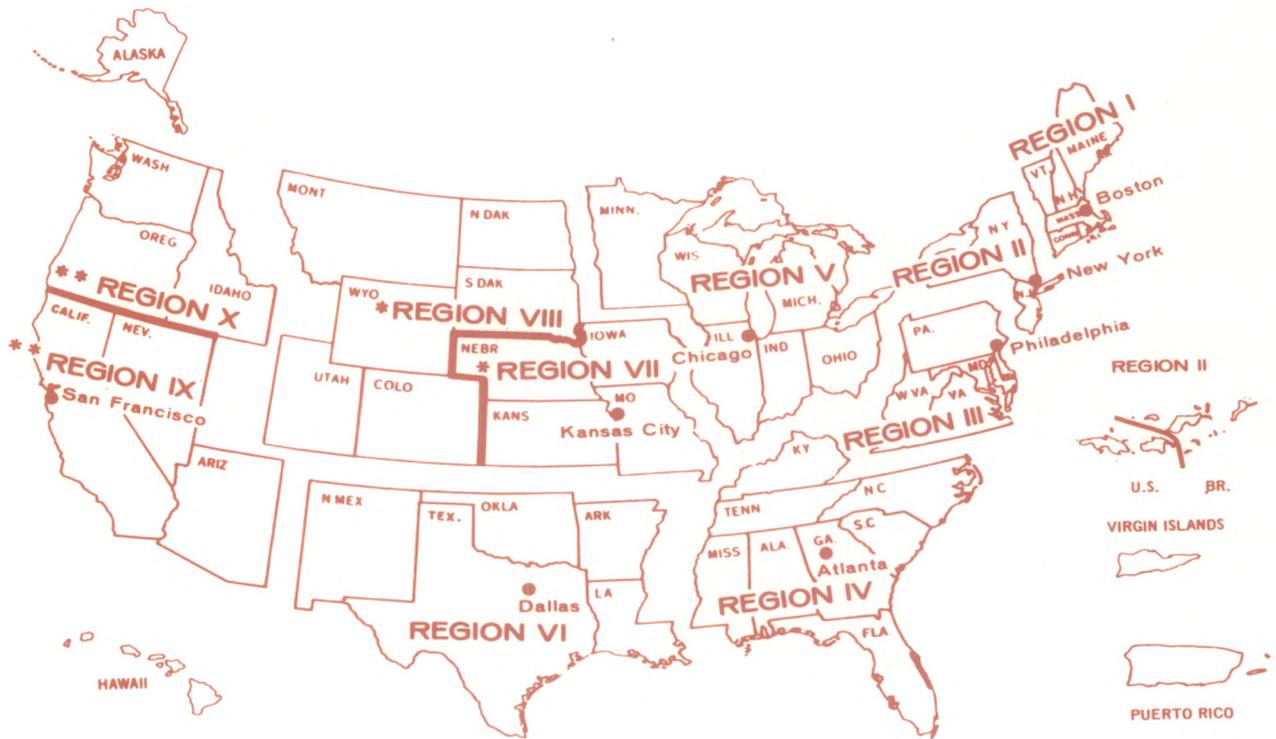
U.S. GOVERNMENT PRINTING OFFICE
DIVISION OF PUBLIC DOCUMENTS
WASHINGTON, D.C. 20402

POSTAGE AND FEES PAID
U.S. GOVERNMENT PRINTING OFFICE

OFFICIAL BUSINESS
RETURN AFTER 5 DAYS

Name _____
Street address _____
City and State _____ ZIP Code _____

**BUREAU OF LABOR STATISTICS
REGIONAL OFFICES**



Region I
1603-B Federal Building
Government Center
Boston, Mass. 02203
Phone: 223-6762 (Area Code 617)

Region II
341 Ninth Ave.
New York, N.Y. 10001
Phone: 971-5405 (Area Code 212)

Region III
406 Penn Square Building
1317 Filbert St.
Philadelphia, Pa. 19107
Phone: 597-7796 (Area Code 215)

Region IV
Suite 540
1371 Peachtree St. NE.
Atlanta, Ga. 30309
Phone: 526-5418 (Area Code 404)

Region V
219 South Dearborn St.
Chicago, Ill. 60604
Phone: 353-7230 (Area Code 312)

Region VI
337 Mayflower Building
411 North Akard St.
Dallas, Tex. 75201
Phone: 749-3516 (Area Code 214)

Regions VII and VIII
Federal Office Building
911 Walnut St., 10th Floor
Kansas City, Mo. 64106
Phone: 374-2481 (Area Code 816)

Regions IX and X
450 Golden Gate Ave.
Box 36017
San Francisco, Calif. 94102
Phone: 556-4678 (Area Code 415)

- * Regions VII and VIII will be serviced by Kansas City.
- ** Regions IX and X will be serviced by San Francisco.

**U.S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS
WASHINGTON, D.C. 20212**

**OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300**



**POSTAGE AND FEES PAID
U.S. DEPARTMENT OF LABOR**

THIRD CLASS MAIL