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ABSTRACT

Using a variety of published and unpublished data, the Bureau of Labor Statistics identified the manpower problems confronting the construction industry. The purpose of the bulletin is to increase understanding about the problems confronting the industry, to present a basis for developing new policies and programs, and to encourage additional research in the field. To study employment fluctuations, over 80 data tables are provided on details of construction activities, worker mobility, income, weather conditions, and employment distributions by age, race, skill, occupation, and sex. One conclusion of the report is that wage differentials favoring construction workers are due to less favorable working conditions, specifically irregular employment, hazardous work, greater mobility requirements, and lower fringe benefits. (BH)

SEASONALITY AND MANPOWER IN CONSTRUCTION

BULLETIN 1642

U.S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

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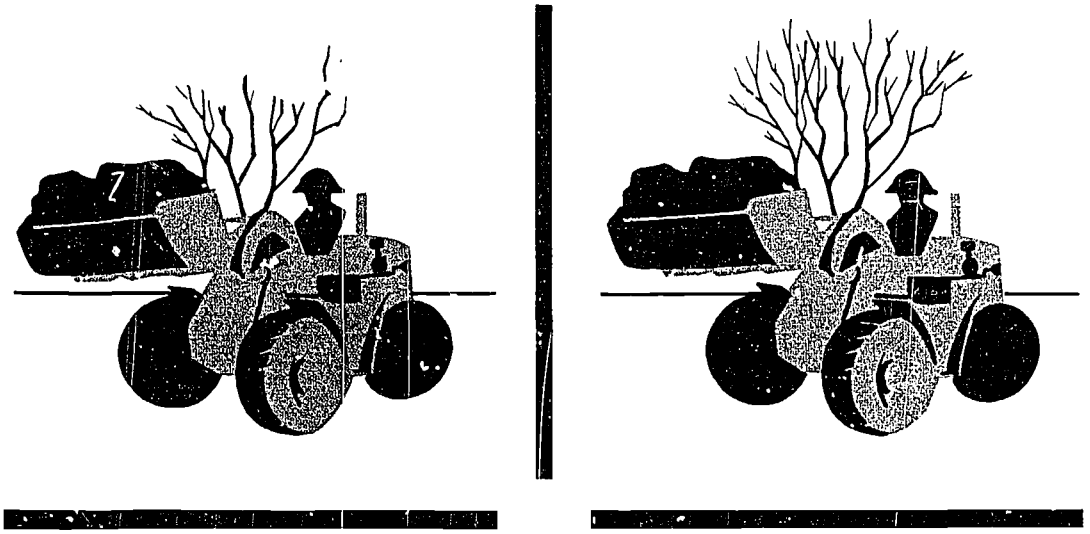

SEASONALITY AND MANPOWER IN CONSTRUCTION

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U.S. DEPARTMENT OF LABOR
George P. Shultz, Secretary

BUREAU OF LABOR STATISTICS
Geoffrey H. Moore, Commissioner

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PREFACE

The Bureau of Labor Statistics has prepared this bulletin on construction manpower problems based on a study of available data, both published and unpublished. Available data concerning employment and unemployment, wages, and annual earnings, and mobility of workers in construction are seldom collected, analyzed, and reported in a single study. The purpose of this bulletin is to increase understanding about the problems confronting the industry, to present a basis for developing new policies and programs, and to encourage additional research in the field.

Statistical data were drawn from a variety of sources for this report. The Bureau of Labor Statistics establishment and household surveys provided the data on employment and unemployment—some of which have not been presented before. To get a more intimate look at the manpower problems confronting the construction industry, data covering various construction occupations were obtained from the records of private health, welfare, and pension funds and from the records of the Social Security Administration. To study the relation between weather conditions and fluctuations in employment, data were obtained from the records of the U. S. Weather Bureau. These data are presented for one city in this report to illustrate what type of information can be developed from these records. To better understand seasonality in construction studying the weather data for a greater number of cities may prove advantageous, since construction is local in nature.

Additional data from the records of the Social Security Administration were not received in time to be included in this report, but will be released later. These data will provide additional information about the pattern of geographic and industrial mobility of construction workers.

Seasonality and Manpower in Construction was prepared in cooperation with the Construction Industry Joint Conference (CIJC). Professor John T. Dunlop, of Harvard University, former Impartial Chairman of the CIJC, assisted the Bureau in acquiring data from private health, welfare and pension funds for this study. The study was prepared in the Bureau of Labor Statistics, Office of Manpower and Employment Statistics by Joe L. Russell with assistance from Professor Daniel Quinn Mills of the Massachusetts Institute of Technology and Michael J. Pilot and David P. Lafayette of the Bureau's Division of Manpower and Occupational Outlook.

CONTENTS

CONTENTS—Continued

CONTENTS—Continued

CONTENTS—Continued

Page

Tables—Continued

CONTENTS—Continued

CHAPTER I. INTRODUCTION AND SUMMARY

Construction manpower problems have perplexed national policy makers for years. Unemployment rates for construction workers are relatively high. From 1960 to 1968, for example, the unemployment rate for private wage and salary workers in construction averaged 11.1 percent, compared with a rate of 5.2 percent for all private wage and salary workers. Even at its seasonal low the unemployment rate for the industry usually is much higher than the rate for other industries. Paradoxically, each summer brings complaints of labor shortages from contractors, and the volume of complaints increases as the pace of aggregate economic activity quickens. A surplus of contruction manpower often exists in one locality, while a shortage is apparent in another. Unlike a manufacturing concern that can locate in an area with available manpower, a contractor must either bring his workers to the building site or find new workers in the area. Shortages of construction labor often are found in an area where there have been relatively few opportunities for these workers in the recent past. When construction activity decreases in a locality, construction workers move to other localities or take jobs in other local industries.

Collective agreements in construction are said to be pacesetters for wage settlements throughout the country. Arguments for an hourly wage differential for construction workers are based on the fact that construction workers generally experience higher rates of unemployment than workers in most other industries. These high rates of unemployment are due to the seasonal nature of the work and other characteristics of the industry. The regional mobility required of construction workers presents an additional hardship to the industry's labor force. The argument is that the wage differential is necessary to insure that a construction labor force will be available with the right skills at the right time and in the right place.

Construction plays a vital role in the American economy:

—Construction activity, including maintenance and repair activity, made up nearly 14 percent of gross national product in 1968.

—Construction represents at least two-thirds of the market for five industries and at least one-sixth of the market for 12 additional industries.

—In the post-World War II period, construction as a portion of GNP has declined slowly.

—Public construction activity has grown faster than private construction activity.

The following information points out the size and changing composition of construction employment.

Annual average employment in construction was 4.6 million in 1968, more than 25 percent above the level of 3.6 million in 1950. After rising rapidly in the early 1950's, employment has remained on a narrow plateau between 1964 and 1968 (4.5 and 4.6 million).

—Private wage and salary workers have remained at about 70 percent of total employment in construction since 1950.

—Government workers as a proportion of total construction employment increased between 1950 and 1968 from 10 to 13 percent, while the proportion of self-employed and unpaid family workers fell from 20 to 15 percent.

—Woman, primarily office workers, make up a very small but stable proportion of employment in construction—about 5 percent.

—Blue-collar workers (craftsmen, operatives, and laborers) account for about four-fifths of construction employment. Operatives as a proportion of total employment have increased slightly, and laborers have declined.

—The median age of male employees in construction was approximately the same as for all employed male workers in 1960—40.8 and 40.6, respectively. Seven of eleven building trades for which comparable data were available experienced an increase in median age between 1950 and 1960, while the median age for all workers remained virtually unchanged.

—Of all workers employed in contract construction, almost one-half are employed by special trades contractors, about one-third by building construction general contractors, and the remainder by heavy construction general contractors.

—The proportion of employment in contract construction accounted for by heavy and special trades contractors grew between 1947 and 1968 from almost 62 to nearly 70 percent, while the proportion employed by general building trades contractors fell from about 38 to 30 percent.

—The proportion of employment in contract construction in the Northeastern and North Central States has declined steadily, while the proportion has grown in the Southern and far Western States. In 1939, about 57 percent of employment (measured by annual average) was located in States north of the Mason-Dixon line and east of the Mountain States; by 1968, the proportion had dropped to 49 percent. During the same period, employment in the South Atlantic States (notably Florida) increased from 15.3 percent of the national total to 17.8 percent. Employment in the Mountain and Pacific States rose from 12.5 to 15.9 percent. These shifts are similar to those of the population shifts during the same period.

—The majority of construction firms are small. About 55 percent of the firms in contract construction have three or fewer employees, only about 3 percent have 50 employees or more.

The unemployment rate for the construction work force is normally the highest of any major industry division:

—Although the unemployment rate for construction dropped in the 1960's, it averaged 6.9 percent in 1968, nearly twice the rate for all nonagricultural industries.

—In 1968, 24 percent of the workers in construction experienced some unemployment, in comparison with 13 percent of the workers in manufacturing and 12 percent in nonagricultural industries as a whole.

—Construction workers are more likely to experience repeated spells of unemployment than workers in other industries. A 3-time higher proportion of construction workers had two spells or more of unemployment in 1968 than nonagricultural workers in general.

—The rate of work losses lasting 15 weeks or more was about 2½ times as great in construction as in manufacturing in 1968.

—The male teenage (16-19 year-olds) unemployment rate is higher in construction than in all industries as a group. In the summer of 1968, the unemployment rate for male teenagers in construction was 10.6 percent, compared with 8.5 percent for such workers in all other industries.

—However, the contribution of teenagers to the construction unemployment rate is often less than in other industries, even during the summer months. In the summer of 1968, 4.6 percent of the male construction work force was unemployed; excluding teenagers, the rate was 3.9 percent. For the same period, the unemployment rate for all other industries as a group was 2.7 percent; 2.2 percent without teenagers.

—Workers other than white (primarily Negroes) experience significantly higher unemployment rates in construction. This is mainly because Negroes that experience a high unemployment rate are concentrated in the lowskill jobs.

—Laborers face the most serious unemployment problem in construction, as in other industries, and they make up a higher proportion of employment in construction than in any other major industry. In 1968, for example, the unemployment rate for construction laborers was 11.4 percent, compared with 5.6 percent for all males in construction.

The unemployment problem in construction is aggravated by continuing shifts in the composition and the geographic location of construction activity.

—When residential construction activity declines, for example, workers in certain occupations are released in large numbers but many of them have difficulty obtaining work in nonresidential construction. On the other hand, for some occupations, enough workers may not be released to meet growing requirements in nonresidential construction, largely because of the different occupational patterns in residential compared with nonresidential construction activity. This difference contributes, along with changing levels of construction activity, to the coexistence of geographic pockets of unemployment and labor shortages.

An estimated one-third or more of total unemployment in construction during a year can be considered seasonal unemployment.

—Unemployment in construction will not be eliminated by eliminating seasonal unemployment mainly because of the work time lost by workers as one job ends and another begins.

Seasonal fluctuations of both unemployment and employment in construction are large.

—Employment increases about 30 percent from winter lows to summer highs, while unemployment typically declines 50 percent or more. In 1965, a year of rising construction activity, wage and salary employment rose by 1 million (from 3.3 to 4.3 million) between February and August, while unemployment dropped from about 650,000 to 250,000.

Seasonal fluctuations are a major characteristic of contract construction employment.

—In the 1960's, employment of workers in contract construction (private wage and salary workers only) has averaged about 30 percent higher in August (the month of highest employment) than in February (the month of lowest employment).

—Annual average employment in contract construction has varied relatively little compared with seasonal employment fluctuations. The year-to-year change in contract construction employment has not exceeded 5 percent since 1960.

—Seasonal employment fluctuations vary considerably by type of contractor. It is greatest for highway and street contractors, least for special trades contractors.

—The extent of seasonal fluctuations in employment tend to be less in large construction firms than in small firms. It also varies by type of construction and geographic location. This pattern has shown little or no change since 1960.

—Construction laborers experience a greater degree of seasonal unemployment than craftsmen. Unemployment rates for construction laborers are much higher than for craftsmen in winter and decline at a slower rate through the spring and summer. To a very large degree, construction unemployment in the peak building period is a problem of the unskilled.

—The unemployment rate for Negroes generally has exhibited a lesser seasonal swing than that for whites, because they are concentrated mainly in occupations such as laborers, that have high unemployment rates thorughout the year.

—The amplitude of the seasonal swing in employment is generally less in the South and West, presumably because of less severe weather conditions. However, construction workers in the South and West appear to have a weaker attachment to the industry in the course of a year—a greater tendency to work in construction less than four quarters—than those located in other areas of the country.

—A substantial reduction in seasonal employment took place prior to World War II. In 1929, the range in contract construction employment between February and August as a percent of annual average employment in the industry was about 55 percentage points. By 1939 and 1940, this range had declined to about 34 percentage points. Since 1947, the spread has fluctuated between 18 and 33 percentage points.

The absence of any observable significant change in seasonality of construction employment since 1947 is particularly surprising because a number of factors have been working to reduce seasonality such as the following:

—Shift in regional distribution of employment in favor of regions with less severe seasonal fluctuations.

—Shift in the composition of construction activity in favor of less seasonal components (e.g., increasing proportion of electrical and mechanical work).

—Trend towards a higher proportion of workers in contract construction, including professional and clerical workers, who are not directly engaged in building and construction operations.

—Continuing flow of technological developments that facilitate winter building.

—Increased capacity for planning as firms have grown larger (in terms of the value of work undertaken).

—Diminishing importance of social and institutional practices that encourage seasonal fluctuations in employment. For example, the greater geographic mobility of the population, which takes place year round, has reduced the importance of the renting season. Also, the use of special permits to overcome code restrictions that limit work in cold weather has increased.

Factors, however, that tend to increase seasonality are:

—The use of planning techniques to complete more work during favorable weather periods, rather than as a tool to neutralize the effects of harsh weather.

—Increasing seasonal fluctuations in the value of contracts let.

—Changes in institutional practices that may inhibit winter work; e.g., penalty pay provisions covering employees who fail to receive a minimum number of hours of work each week may tend to induce contractors to suspend work for a longer period than otherwise.

A special analysis of weather and construction activity in Chicago between 1958 and 1964 indicates that the industry's expectation of normal seasonal weather conditions has more influence on activity and employment than the actual weather conditions for a particular period of time.

—The industry appears to anticipate bad weather and schedules less work. Yet, when unusually severe weather appears, the construction activity curtailed is less than would be expected.

Hourly wage rates for construction workers are high in comparison with workers in other industries. However, while some workers in contract construction earn high annual incomes, average annual earnings in contract construction are below those of workers in many of the high-wage manufacturing industries.

Average hourly wage differentials between construction and production workers in some high-wage industries have been increasing in recent years. However, little change has occurred in the wage differentials between some craft occupations in contract construction and the same crafts in some other high-wage industries.

—Average hourly earnings of construction workers in contract construction were 8 percent higher than those of production workers in basic steel in 1948 and 17 percent higher in 1968. Most of this increased differential has occurred since 1964.

—On the other hand, comparisons of union basic hourly rates in contract construction and basic steel (national averages) for each of seven crafts 1948-68, indicate little change in the size of the differentials in hourly rates.

Although some construction workers earn high annual incomes, the average annual earnings in contract construction are below those of workers in many of the high-wage manufacturing industries.

—In 1964, the estimated average annual earnings (total earnings of workers employed in all four quarters of the year, by industry of major source of income) of wage and salary workers employed in contract construction were $6,945, compared with $7,814 for wage and salary workers employed in the motor vehicles and equipment industry and $8,447 for wage and salary workers employed in petroleum refining and related industries.

—High earnings tend to be associated with year-round work. Of all workers who earned most of their income from general contractors in 1964, 45 percent earned less than $3,000, and 9 percent earned $9,000 or more. For those workers who earned most of their income in construction and were employed in all four quarters during the year, only 19 percent earned less than $3,000 and 15 percent earned $9,000 or more.

—Construction operations, in which seasonality plays an important role, tend to have a lower proportion of workers with high earnings. Eight percent of the workers who received most of their income from masonry contractors in 1964 earned $9,000 or more, compared with 19 percent of those employed by plumbing, heating and air-conditioning contractors. (The average hourly union wage scale for bricklayers and plumbers on July 1, 1964, were $4.72 and $4.70, respectively.) [1]

Crafts workers in construction generally have higher average hourly earnings than the same craft workers in maintenance activities. However, wage differentials vary greatly by area.

—The average hourly union scales of carpenters in construction were 73 percent higher than average hourly earnings of maintenance carpenters in New York City, and only 11 percent higher in Richmond, Va., in 1965-66.

The basic wage differential in favor of construction workers appears to reflect in part the less favorable working conditions in the industry and their effects on the supply and demand of workers. Working conditions in construction include:

—Large amounts of seasonal and intermittent employment.

—More hazardous working conditions.

—Greater mobility requirements.

—Lower fringe benefits, especially of a noncompensation nature (for example, job security provisions).

The seasonal nature of the construction industry, together with the inherently intermittent nature of construction activity, has helped produce a labor force of which a large portion shifts frequently.

[1] *Union Wages and Hours: Building Trades, July 1, 1964, and Trend 1907-64.* BLS Bulletin 1432, February 1965, p. 9.

Construction workers have higher industry and employer mobility than most other workers. Construction workers are:

—Twice as likely to work in more than one major industry in the course of a year than workers in manufacturing as a whole.

—About one-quarter more likely to have changed industries over a 3-year period than workers in all other nonagricultural industries (according to data for 1957-60).

—Most of the workers who entered contract construction from other industries over the 3-year period 1957-60 came from manufacturing. Similarly, most of the workers who left contract construction over the same period moved into manufacturing employment.

—Almost twice as likely to work for more than one employer in the course of the year.

Construction draws substantial numbers of workers from outside the labor force when construction activity increases, and many construction workers move to other industries when construction jobs decline.

—As construction employment rises on average by 700,000 to 850,000 from winter to summer, unemployment typically declines about by 200,000 to 300,000. The 400,000 to 650,000 net increase in the construction labor force is made up of workers from other industries, youth who work during school vacations, and other persons from outside the labor force.

Seasonality and intermittency have been important factors limiting the annual hours of work of construction workers.

A special analysis of data obtained from private health, welfare, and pension funds covering workers in 13 construction occupations in Omaha, Milwaukee, Detroit, and southern California provides the following information on the work patterns of construction workers. The data reflect experience in areas of both severe and mild winter weather. However, this is not a description of the total work experience of these construction craftsmen since these data refer only to work done under the jurisdiction of collective bargaining agreements.

The average annual number of hours of work reported was low for all construction occupations in all areas.

—The majority of workers in all the individual construction occupations had fewer than 1,300 hours or work reported during the 12-month period.

—The majority of workers in most of the construction occupations worked fewer than 1,200 hours in the 12-month period reported; operating engineers were an exception in both California and Detroit. Laborers in Milwaukee, on the average, had the fewest hours reported (590), while operating engineers in southern California had the most hours (1,284). However, in none of the four areas did more than 15 percent of all the laborers or 36 percent of all the operating engineers work more than 1,800 hours in the 12-month period reported.

—"Short-hours" workers made up at least 25 percent of all the workers in each of the occupations in the four areas for which data were obtained, and the proportion was as high as 68 percent for some occupations in two areas. (For discussion purposes only, short-hour workers in this analysis arbitrarily were considered to be those who worked fewer than 700 hours in the 12-month period reported.)

—Short-hours workers were a major factor in the low average number of hours of work reported. The median number of hours of work reported for all workers in all occupations was 998. By excluding short-hours workers (those working fewer than 700 hours) the median number of hours reported rose to 1,535, which was still below that of a full work year of 2,000 hours.

—Workers between the ages of 30 and 44 generally have a greater likelihood for a full year's work than younger or older workers. In Detroit, for example, 27 percent of the bricklayers between the ages of 30 and 44 reported more than 1,800 hours of work during the 12-month period. Only 11 percent of the bricklayers less than 30 years old and 18 percent of those 45 years old or older reported 1,800 hours of work.

CHAPTER II. GENERAL CHARACTERISTICS OF THE CONSTRUCTION INDUSTRY

While construction is one of the most important industries in the country, it exhibits characteristics that are not typically associated with large industry. The role of the contractor in designing his product to meet market needs is unlike that of most enterpreneurs in other industries, in that it is the buyer who comes to the contractor and specifies what he wants produced.

The industry is fragmented; a large number of firms operate in local markets. Only a few large firms, primarily in highway and heavy construction, are found operating over large geographic areas. The labor market is also local in nature, with a variety of distinct crafts supplying workers. Small scale production units and a locally-oriented labor force are significant elements of the manpower situation in construction.

Construction supports a wide variety of raw materials, manufacturing, transportation, and distribution industries. The industry utilizes great amounts of earthmoving machinery and equipment in road and other types of heavy construction. Lumber and other wood products are utilized extensively, particularly in residential construction. A wide range of metal products is used in all types of construction, as well as great quantities of a variety of natural products; such as stone, sand, and gravel.

The location of construction work is constantly changing. Because the location changes, the project has a limited life, and employment is temporary. The relationship between employer and employee is often casual and a general understanding exists that employment can be terminated by either party at any time. A worker's job security is usually competence in a recognized trade, not seniority or other preferential status.

Finding a job in construction is a relatively simple matter when construction activity is high. Some projects usually are starting as others are finishing, and some contractors are hiring as others are laying off. Time off for the worker between jobs may be long or short depending upon the amount of construction in the area. Seasonal unemployment, however, is ever present in certain trades, even in years of high construction activity. As the rate of activity declines between November and March, workers are being hired for new projects at a slower rate than other workers are being laid off from projects approaching completion. From late fall until early spring, lost time between layoffs and new jobs may be considerable even when activity in an area is high.

Workers ordinarily are hired by a foreman who selects applicants either at the job site or by contacting the office of union locals who represent the needed crafts. The worker is subject to being laid off at any time either permanently (as the work for which he was hired approaches completion) or temporarily, with instructions to return at a stated time. The workman, of course, is also free to quit his job at any time for any reason—for example, to take a job closer to home, a job likely to continue for several months, a job expected to provide more weekly hours of work, greater overtime, or better protection from weather.

For many construction workers all work is done outdoors. For almost all trades, much work is in unfinished buildings or other structures. Workers may be exposed to all kinds of weather, including freezing temperatures, snow, hail, and sleet. Workers usually are paid on an hourly basis, with no pay for time off because of sickness or personal business. Lost time because of bad weather or other reasons beyond the workers' control also means loss of pay.

A construction worker may migrate to an area with better long-term employment prospects. For a union member, such a move involves transfer of membership. Like other unions, building trades unions are organized

through chapters known as locals, each having jurisdiction over a designated geographical area. A member moving elsewhere usually can exchange his membership card for a card in a local at his new location. Thereafter, he is a member in the new local; should he return to his previous place of work, he must obtain another transfer.

A construction worker usually leaves an area as a matter of choice, although there are exceptions. When a construction project is undertaken in a distant community or an isolated locality, comparatively few of the needed workers may live within reasonable commuting distance. When general construction activity is high, employers have difficulty in manning isolated construction projects. When general construction activity is fair or poor, men with family responsibilities must choose between the prospect of intermittent unemployment at home or perhaps a steady job in a distant or isolated community.

Thus, the work environment of a construction worker is unique in many ways. It is an environment of change. Construction work is accepted as temporary. A worker's security is based on his personal competence and the amount of construction activity in the area. For the most part he must work in harsh weather and at sites that continually change. He is subject to sudden layoff on a temporary or permanent basis, with all the attendant effects of loss of income. He may face the prospects of having to dissolve community relationships and leave an area to seek opportunity elsewhere.

The construction industry is an important American industry. A measure of the industry's contribution to the Nation's economic well-being can be illustrated in several different ways: Its proportion of gross national product; its relation to a host of secondary industries; and the effect that shifts in the composition of construction have on manpower requirements.

New construction put in place accounts for a considerable share of the market value of the goods and services produced in this country eacy year. In 1968, it amounted to nearly $85 billion[2] or 9.8 percent of the gross national product (GNP). (See table 1 and appendix table G-1.)

The ratio of construction expenditures to GNP has shown some tendency to fluctuate in the post-war period, with a high of 11.7 percent in 1955. Since 1955, however, the proportion of the GNP devoted to construction [3] has declined slowly. The decline has taken place in the private construction sector, which at 6.4 percent of GNP in current dollars in 1967 was at its lowest level in the post-war era. Public construction generally maintained its share of the Nation's total output of goods and services. (See table 1.)

In 1947, private construction accounted for 83 percent of total new construction activity (table 2). By 1967, the relative share of private construction had fallen to 66 percent all new construction activity.

Changes in the composition of construction also have taken place within the private construction sector. Residential construction expanded through the early post-World War II period to a peak in 1955, but declined sharply through 1957; another short period of expansion peaked in 1959, and a third, in 1963. Residential construction as a proportion of all private construction dropped from a high of 68 percent in 1950 to less than 50 percent in 1966 and 1967, but rebounded in 1968. These movements in residential construction reflect the housing booms of the late 1940's and early 1950's, and the subsequent slowdown in housing construction. Private nonresidential and public construction expenditures have more than offset declines in private residential activity, thus providing the underlying stability of the industry in the post-war economy. (See table 3 and appendix table G-1.)

Examination of the public sector's share of new construction put in place also shows the shifting relative importance of expenditures by the different government sectors——Federal, State, and local. Direct Federal government outlays as a percent of new public construction increased from 25 percent in 1947 to almost 40 percent in

[2] However, the value of total construction activity——new work and maintenance and repair——is estimated at $110 billion for 1968. Expenditures for maintenance and repair have increased from $10.4 billion in 1947 to $20.5 billion in 1963 and are estimated for 1968 at about $25 billion.

[3] The decline has been greater when measured in constant dollar terms, indicating a somewhat more rapid escalation of prices in construction than in other sectors of the economy.

1952. (See table 4.) This rapid rise can be attributed to a tremendous surge in the construction of federally owned industrial buildings and related facilities during the Korean War, and to a suddent increase in expenditures for new military facilities after 1950.[4] Since 1952, however, the portion of the total value of new construction put in place that is federally owned ebbed to a low of about 13 percent in 1968. State and local governments, on the other hand, accounted for more than 87 percent of new public construction in 1967——up from 75 percent in 1947 and 61 percent in 1952 (table 4). New educational buildings and highway construction have been the major factors in the State and local governments' growth in construction expenditures. (See appendix table G-1.)

The changing composition of construction activity over the post-World War II period has been accompanied by important shifts in the geographic location and craft requirements of construction. When residential construction activity declines, for example, workers in certain occupations are released in large numbers, and many of these workers have difficulty obtaining work in nonresidential construction. However, enough workers may not be released in some occupations to meet the requirements in nonresidential construction if this activity is growing, largely because of the different occupational patterns in residential compared with nonresidential construction activity.[5]

The changing pattern of construction demand also has produced geographic pockets of unemployment and corresponding areas with manpower shortages. Since neither contractors nor workers are perfectly mobile[6] and since neither skills nor equipment are perfectly transferable from one activity to another, adjustment difficulties have been persistent. When construction activity has declined, workers have experienced more frequent and longer periods of unemployment. Under these circumstances, training authorities often are reluctant to expand apprenticeship opportunities, and pension and welfare funds have been plagued with financial difficulties. Conversely, rapid expansions in building activity have left contractors unable to fill job crews. Furthermore, the continual shifts from boom to bust has burdened management with the costs of repeatedly establishing and dismantling organizations.

Construction activity influences the output of many other industries because of its need for a wide variety of products and services. In 1958, new construction and maintenance and repair construction expenditures combined accounted for between two-thirds and four-fifths of the total output of the following industries: Stone and clay mining and quarrying (73.4); lumber and wood products, except containers (66.0); paints and allied products (66.0); stone and clay products (75.2); and heating, plumbing and structural metal products (79.0). Between one-sixth and one-half of the output of 12 additional industries could be attributed to construction activity in 1958. (See table 5.)

The kinds and relative amounts of materials and services used vary widely by type of construction. For example, in 1958, the primary iron and steel manufacturing industry——a major supplier to construction——supplied 53 cents worth of materials for every dollar of new gas and petroleum pipe lines construction, and 7 cents worth of materials for every dollar of construction of one- to four-family dwellings. The requirements for lumber and wood products were 19 cents per dollar spent for one- to four-family dwellings; 9 cents for heating, plumbing, and structural metal products; 15 cents for wholesale and retail trade; and 11 cents for stone and clay products.[7]

The slump in housing and commercial building in 1966 illustrates well the impact of construction activity on other industries. From the first to the third quarter of 1966, the seasonally adjusted annual rate of expenditures for private nonfarm residential construction declined 17 percent (in constant dollar terms); similarly, the annual rate for

[4] In 1950, direct Federal outlays, in current dollar terms, for new industrial construction amounted to $225 million. Such expenditures averaged almost $1.5 billion over the 1951-54 period, but dropped to $720 million in 1955 and to about $400 million in 1967. Federal expenditures for new construction of military facilities jumped from more than $175 million in 1950 to nearly $1.4 billion in 1952, remaining above $1 billion in current dollar terms until 1964. In 1967, such expenditures totaled about $720 million.

[5] Hournstine, E. Jay, *Compensatory Public Works Programmes and Full Employment*, Geneva: International Labour Office, 1956, pp. 4-8.

[6] The mobility of construction craftsmen involves not only a geographic dimension, but also craft, contractor (and branch of the industry), intracraft and union--nonunion dimensions as well. Geographic mobility includes movement within a metropolitan area, as well as larger geographic areas. Increasing home ownership, among other things, may have caused the interarea mobility of construction workers to decline in recent years. The increased number of automobiles and super-highways have, on the other hand, increased intraarea mobility.

[7] The data for discussion in this paragraph and the following paragraph are taken from an article by Norman Frumkin, "Construction Activity in the 1958 Input-Output Study," *Survey of Current Business*, May 1965, pp. 13-24.

commercial building dropped 20 percent. Commercial building activity accounted for slightly more than 40 percent of total construction activity. Over the same period, the output of the lumber and wood products industry dropped about 5 percent. Six other industries whose output declined by more than 1 percent were stone, clay, and glass products (3.5), fabricated metal products (2.2), stone and earth minerals (1.9), iron and steel (1.4), metal mining (1.4), and nonferrous metal products (1.2.) (See table 6.)

The manpower generating effects of construction activity also are substantial and differ by type of construction. About 115 workers were employed for 1 year for every $1 million of expenditures for new construction activity in 1962. [8] The construction industry itself accounted for slightly less than half the jobs; the remainder were generated in other industries such as manufacturing, mining, and transportation. In 1962, the value of total new construction put in place was nearly 60 billion in current dollars, accounting for about 7 million jobs (onsite and offsite), or one-tenth of total employment in the economy. Labor requirements by type of construction activity ranged from a high of 236 man-hours of employment for each $1000 of public housing construction to a low of 204 man-hours of employment for each $1000 of private one-family housing construction.[9] (See table 7.)

[8] Claiborne M. Ball, "Employment Effects of Construction Expenditures," *Monthly Labor Review*, February 1965. To provide data on the employment-generating effects of construction expenditures, the Bureau of Labor Statistics has a continuing study program of labor and material requirements for various types of construction. Mr. Ball's article compares the labor requirements for the various types of construction activity studied.

[9] The lower man-hour requirements for private one-family housing are for the most part attributed to the large portion of total costs for overhead and profits. Also, because private housing data refers to construction price (which includes selling and other speculative costs) rather than construction contract cost, it may not be entirely comparable with the $1,000 of construction contract cost used for measuring the cost of other types of construction. The slight variations that exist between the various types of construction man-hour requirements are attributable mainly to architectural or engineering design, materials and equipment used; onsite distribution of skills; price and wage levels; and the amount of overhead and profits. Average hourly earnings of construction workers increased by 13 percent from 1959, when the earliest surveys used in table 7 were made, to 1962, when the latest was made.

Table 1. Gross national product (GNP) and new construction put in place as a percent of GNP, by type of ownership, 1947–68

Year	GNP (in billions)	New construction put in place as percent of GNP				
		Total	Private	Public		
				Total	Ownership	
					Federal	State and local
1947	$231.3	8.7	7.2	1.4	0.4	1.1
1948	257.6	10.1	8.3	1.8	.5	1.4
1949	256.5	10.4	8.0	2.4	.6	1.9
1950	284.8	11.8	9.4	2.4	.6	1.8
1951	328.4	10.8	8.0	2.8	.9	1.9
1952	345.5	10.7	7.5	3.1	1.2	1.9
1953	364.6	10.7	7.7	3.1	1.1	1.9
1954	364.8	11.3	8.1	3.2	.9	2.3
1955	398.0	11.7	8.7	2.9	.7	2.2
1956	419.2	11.4	8.3	3.0	.7	2.4
1957	441.1	11.1	8.0	3.2	.7	2.5
1958	447.3	11.2	7.8	3.5	.8	2.7
1959	483.7	11.4	8.1	3.3	.8	2.6
1960	503.7	10.7	7.6	3.2	.7	2.4
1961	520.1	10.7	7.4	3.3	.7	2.6
1962	560.3	10.6	7.5	3.2	.7	2.5
1963	590.5	10.7	7.5	3.3	.7	2.6
1964	632.4	10.5	7.2	3.2	.6	2.6
1965	684.9	10.6	7.3	3.2	.6	2.6
1966	747.6	10.0	6.8	3.2	.5	2.7
1967	789.7	9.6	6.4	3.3	.4	2.8
1968	860.7	9.8	6.6	3.2	.4	2.8

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

SOURCE: U.S. Department of Commerce.

Table 2. Private and public construction as a percent of total new construction, 1947–68

Year	Private	Public
1947	83.4	16.6
1948	82.0	18.0
1949	76.5	23.5
1950	79.6	20.4
1951	73.9	26.1
1952	70.7	29.3
1953	71.3	28.7
1954	71.7	28.3
1955	74.8	25.2
1956	73.3	26.7
1957	71.4	28.6
1958	69.2	30.8
1959	70.9	29.1
1960	70.6	29.4
1961	69.1	30.9
1962	70.0	30.0
1963	69.5	30.5
1964	69.2	30.8
1965	69.5	30.5
1966	68.1	31.9
1967	66.4	33.6
1968	67.3	32.7

SOURCE: U.S. Department of Commerce.

Table 3. Residential and nonresidential buildings construction as a percent of total private expenditures on new construction, 1947–68

Year	Residential	Non-residential
1947	58.9	19.4
1948	61.4	17.6
1949	60.8	16.5
1950	67.9	14.6
1951	60.7	20.2
1952	60.7	19.2
1953	59.5	20.4
1954	61.3	21.1
1955	62.9	21.9
1956	57.9	25.3
1957	54.2	27.2
1958	57.0	25.0
1959	61.8	22.6
1960	57.0	26.7
1961	56.6	28.0
1962	58.1	27.8
1963	59.4	26.4
1964	57.3	28.3
1965	52.3	33.0
1966	46.9	36.4
1967	46.9	35.8
1968	50.6	33.0

SOURCE: U.S. Department of Commerce.

Table 4. Percent distribution of new public construction put in place, by type of ownership, 1947–68

Year	Federal	State and local
1947	25.3	74.7
1948	25.0	75.0
1949	23.7	76.3
1950	23.7	76.3
1951	32.2	67.8
1952	38.8	61.2
1953	36.8	63.2
1954	29.3	70.7
1955	23.6	76.4
1956	21.4	78.6
1957	21.2	78.8
1958	21.9	78.1
1959	23.2	76.8
1960	22.8	77.2
1961	22.6	77.4
1962	21.9	78.1
1963	20.7	79.3
1964	19.2	80.8
1965	18.2	81.8
1966	16.5	83.5
1967	13.7	86.3
1968	12.5	87.5

SOURCE: U.S. Department of Commerce.

Table 5. Percent of total, direct, and indirect output of selected industries attributable to new construction and maintenance and repair construction, 1958

Number[1]	Industry	New construction and maintenance and repair construction			New construction			Maintenance and repair construction		
		Total	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect
3	Forestry and fishery products	36.7	0	36.7	32.4	0	32.4	4.3	0	4.3
5	Iron and ferroalloy ores mining	32.9	0	32.9	28.5	0	28.5	4.4	0	4.4
6	Nonferrous metal ores mining	26.3	0	26.3	21.2	0	21.2	5.1	0	5.1
9	Stone and clay mining and quarrying	73.4	46.6	26.8	61.8	38.5	23.3	11.6	8.1	3.5
20	Lumber and wood products, except containers	66.0	43.9	22.1	58.4	38.9	19.5	7.6	5.0	2.6
23	Other furniture and fixtures	16.6	14.8	1.8	15.3	13.7	1.6	1.3	1.1	.2
30	Paints and allied products	66.0	57.4	8.6	17.7	10.5	7.2	48.3	46.9	1.4
36	Stone and clay products	75.2	60.9	14.3	66.0	53.7	12.3	9.2	7.2	2.0
37	Primary iron and steel manufacturing	34.4	12.9	21.5	30.0	11.5	18.5	4.4	1.4	3.0
38	Primary nonferrous metal manufacturing	31.8	11.4	20.4	25.6	8.6	17.0	6.2	2.8	3.4
40	Heating, plumbing, and structural metal products	79.0	75.4	3.6	67.6	64.5	3.1	11.4	10.9	.5
42	Other fabricated metal products	26.5	14.1	12.4	24.0	13.3	10.7	2.5	.8	1.7
46	Materials handling machinery and equipment	28.8	23.6	5.2	27.4	22.8	4.6	1.4	.8	.6
53	Electric industry equipment and apparatus	17.3	9.7	7.6	14.7	8.2	6.5	2.6	1.5	1.1
55	Electric lighting and wiring equipment	47.1	40.0	7.1	40.7	34.6	6.1	6.4	5.4	1.0
67	Radio and television broadcasting	16.9	0	16.9	15.6	0	15.6	1.3	0	1.3
73	Business services	17.2	10.7	6.5	15.9	10.5	5.4	1.3	.2	1.1

[1] Input-output code number.

SOURCE: Norman Frumkin, Construction Activity in the 1958 Input Output Study, Survey of Current Business, May 1965, pp. 13-24.

Table 6. Impact of decline in private nonfarm residential new housing units and commercial construction expenditures on selected industry output, first to third quarter, 1966

Number[1]	Industry	Percent of 1st quarter industry output attributable to 1st quarter expenditures	Percent decline in industry output attributable to 1st to 3d quarter decline in expenditures
	Manufacturing	3.6	-0.6
	Durable manufacturing	5.5	-1.0
20,21	Lumber and wood products	26.3	-4.8
22,23	Furniture and fixtures	3.6	-.7
35,36	Stone, clay, and glass products	19.0	-3.5
37	Iron and steel	7.5	-1.4
38	Nonferrous metals and products	6.2	-1.2
39-42	Fabricated metal products	11.8	-2.2
43-52	Nonelectrical machinery	2.2	-.4
53-58	Electrical machinery	2.9	-.6
	Nondurable manufacturing	1.5	-.3
24-25	Paper and allied products	3.8	-.7
26	Printing and publishing	2.9	-.6
27-30	Chemicals and products	2.1	-.5
31	Petroleum refining and related products	3.4	-.6
32	Rubber and miscellanous plastics products	2.9	-.6
	Mining	5.1	-1.0
5,6	Metal	7.2	-1.4
7	Coal	4.3	-.8
8	Crude oil and natural gas	3.6	-.7
9,10	Stone and earth minerals	9.9	-1.9

[1] Input-output code number. See Survey of Current Business, September 1965, for definitions.

NOTE: Calculations are based on seasonally adjusted data.

SOURCE: Industrial Impact of the 1966 Housing and Commercial Building Decline, Survey of Current Business, November 1966, pp. 11-12.

Table 7. Distribution of man-hours per $1,000 of contract cost, by major types of construction, industry, and occupation, 1959–62

Industry	1962	1961		1960		1959			
	Private 1-family housing	College housing	Highways	Civil works: Land operations	Civil works: Dredging	Schools	Federal office buildings	Hospitals	Public housing
Total	204.0	227.0	224.0	208.0	224.0	223.0	227.0	223.0	236.0
Construction industry	84.0	105.0	96.0	89.0	144.0	96.0	107.0	100.0	126.0
Onsite	72.0	94.0	91.0	85.0	134.0	86.0	97.0	89.0	114.0
Administrative and supervisory	2.1	3.2	9.3	9.3	8.6	3.3	5.8	3.5	4.5
Construction trades	52.9	59.8	54.5	42.9	62.7	55.1	58.7	60.7	72.5
Bricklayers	3.9	9.4	[1]	-	-	7.8	5.0	4.8	8.6
Carpenters	24.9	15.8	[1]	5.4	-	15.7	12.2	11.7	21.8
Electricians	2.0	6.2	[1]	.1	-	6.0	8.8	7.8	4.7
Ironworkers	-	3.6	[1]	2.6	-	2.3	4.1	3.1	2.3
Operating engineers	1.0	1.6	[1]	20.4	1.5	1.6	2.3	1.4	3.1
Painters	6.9	3.3	[1]	.1	-	2.8	2.0	2.5	5.0
Plasterers	1.7	3.2	[1]	-	-	2.3	3.8	5.6	7.7
Plumbers	3.8	9.0	[1]	.1	-	7.9	8.5	12.7	8.9
Unskilled and others	17.1	30.6	27.2	32.5	62.6	25.6	32.6	24.6	36.7
Offsite	12.0	11.0	5.0	4.0	10.0	10.0	10.0	11.0	12.0
Other industries	120.0	122.0	128.0	119.0	80.0	127.0	120.0	123.0	110.0
Manufacturing	58.0	73.0	66.0	53.0	47.0	75.0	73.0	75.0	64.0
Trade and transportation and services	49.0	32.0	44.0	47.0	24.0	41.0	37.0	38.0	36.0
Mining and all others	13.0	17.0	[2] 18.0	[2] 19.0	9.0	11.0	10.0	10.0	10.0

[1] Data not available.
[2] Man-hours for mining available separately for highways (10), land operations (13), and dredging (6) only.

SOURCE: Claiborne M. Ball. Employment Effects of Construction Expenditures, Monthly Labor Review, February, 1965, pp. 154-158. These data are from special surveys made in the years cited in the table.

CHAPTER III. CONSTRUCTION EMPLOYMENT

Total employment in construction

Employment in construction [10] rose from 3.6 million workers in 1950 to 4.6 million in 1968, an increase of 29 percent. (See table 8.) Most of this gain occurred between 1950 and 1952 when employment reached 4.2 million persons. However, employment fell to 3.8 million in 1954, dropping below 4.0 million for the last time. By 1965, employment had reached a high of 4.6 million persons and in early 1966 all indications were that employment would go even higher. However, in mid-1966, residential construction activity had a serious decline and employment did not rise above the 1965 level. This depressed residential sector resulted in a level of employment in 1967 that was lower than that of 1966 and only equal to the 1964 level. The rebound of residential construction in 1968 pushed employment to an all-time high of more than 4.6 million.

Employment by class of worker

Between 1950 and 1968 the proportion of private wage and salary workers to total employment in construction remained at about 70 percent. (See footnote 10 and table 8.) The proportion of self-employed and unpaid family workers in construction has declined.

[10] Two different conceptual definitions of construction employment are used in this report. These differences result from the nature of systems for collecting employment information. The schema presented below illustrates the relationship between the measures of employment in construction. All components of construction listed under a major conceptual definition *(italic)* are included within the major category.

Construction:	*Contract construction:*
Wage and salary workers	Private wage and salary workers
Private	General building contractors
Government	Heavy construction contractors
Self-employed workers	Special trade contractors
Unpaid family workers	

Construction, as defined in the household survey (Current Population Survey) (CPS) conducted for the Bureau of Labor Statistics by the Bureau of the Census, includes wage and salary workers in private establishments and in government agencies engaged in construction activities such as highway maintenance and land reclamation. It also includes self-employed and unpaid family workers performing primarily construction work. *Contract construction* (SIC 15-17), on the other hand, is the concept used in the establishment payroll survey conducted by BLS and cooperative State agencies and includes only wage and salary workers in private establishments performing construction activities, including both new construction and maintenance and repair, done on a contract basis. Employment in establishments classified as *operative builders* (SIC 656) are not included in either of these definitions of construction, and neither is employment in *force account construction.*

Operative builders are engaged primarily in construction for sale on their own account rather than as contractors. These include mainly residential construction builders, including condominium and cooperative apartment developers. Force account construction is construction work performed by an establishment primarily engaged in some business other than construction, for its own account and use, and by its own employees. A chemical plant, for example, may maintain a construction work force for its own account and use. Although force account employees are not included in the construction employment data on an industry basis they are included in those estimates of employment by occupation available from Census and Current Population Survey data, which refer to all workers in an occupation.

CPS data are useful as a measure of the total number of persons engaged in construction activity; and provides data on employment by age, sex, and color, on occupations, and on unemployment. Payroll data are useful in providing sector detail on the types of contract construction firms, and geographic detail by States and metropolitan areas.

Employment by major occupation group

In 1968, blue-collar workers—craftsmen, operatives, and laborers—accounted for about four-fifths of construction employment. (See table 9.) Construction craftsmen maintained a relatively consistent 50-percent share of employment between 1958 and 1968. [11] During this same period of time operatives have increased slightly as a proportion of total construction employment, and laborers have declined somewhat. In the white-collar group, a proportional increase in professional and technical workers and clerical workers almost offset a proportional decline in managers, officials, and proprietors during the 1958-68 period.

Employment by selected craft occupation

The changing mix of construction activity and new construction materials and techniques has been reflected in changes in the relative importance of craft occupations. (See table 10.) Between 1950 and 1960, employment of carpenters in construction declined significantly—by nearly 70,000. Employment of paperhangers and plasterers also dropped. On the other hand, employment of excavating, grading, and road machinery operators was more than twice as high in 1960 as in 1950. Other significant employment increases were experienced by cement and concrete finishers, electricians, and structural metalworkers. These trends have, for the most part, continued into the 1960's.

Employment by type of contractor

In 1968, almost one-half of the workers in the contract construction industry were employed by special trades contractors, about 30 percent were employed by general building construction contractors, and the remainder worked for heavy construction contractors.

Since 1947, the relative importance of employment by the different types of contractors has shifted. The proportion of average annual employment accounted for by general building contractors has declined relative to heavy and special trades contractors. Between 1947 and 1968 employment by general building contractors as a percentage of total contract construction fell from 38.4 percent to 30.2 percent. Concurrently, employment by heavy contractors rose from 18.3 percent to 20.8 percent, and by special trades contractors, from 43.2 percent to 49.0 percent. (See table 11.)

The rising share of employment held by special trades contractors reflects the increasing amount of electrical, plumbing, air conditioning, and other work performed by these contractors. Highway construction increased over 400 percent (in constant dollar terms) between 1947 and 1968, and together with increases in construction of sewer and water systems, airports, bridges, dams, and similar projects accounted for the rising proportion of employment by heavy construction contractors. [12]

Employment by operative builders has fluctuated between 38,000 and 47,000 workers since 1958, mainly in response to shifts in the volume of residential construction. [13]

Contract construction employment by type of worker

The proportion of "white-collar" workers in the contract construction industry has increased in recent years. This development is shown by the monthly reports to the Bureau of Labor Statistics, which provide separate data on "construction workers" and other workers in the industry.

11 The 1950 and 1960 Censuses of Population indicate that the proportion of craftsmen in construction declined somewhat between these years. However, these census data are not directly comparable with the CPS data because the Census of Population data are for March or April only, seasonally low months for construction. The census data are also not comparable with data based on establishment surveys.

12 For a discussion of how employment in contract construction is determined by type of contractor see footnote 1, table 13.

13 Employment in the operative builders industry should not be interpreted as a measure of employment in homebuilding. Much residential construction work is done on a contract basis by firms classified as special trades contractors in the contract construction industry. Also, firms building homes on contract may be classified as general building contractors.

The employment of "construction workers" [14] accounted for 84.3 percent of total employment in 1968, and the proportion of these workers by type of contractor ranged from a low of 79.9 percent for electrical work to a high of 90.3 for masonry, stonework, and plastering. (See table 13.)

"Construction workers" as a proportion of total wage and salary employment in contract construction have declined slowly since 1947, from nearly 89 percent to 84 percent. The decline in the relative position of "construction workers" has taken place in nearly all segments of the industry. The exception to this general trend was in electrical work, where the proportion of "construction workers" actually increased, and in plumbing, heating, and air-conditioning work and masonry, stonework, and plastering where the proportion remained virtually unchanged between 1958 and 1968. (See table 14.)

Employment of "other workers" [15] in contract construction has increased more than twice as fast as "construction workers" over the past two decades. (See table 15.) Even during periods when employment of "construction workers" has declined, employment of "other workers" has not decreased. The rapid increase in employment of other workers reflects the general shifts toward larger professional and clerical staffs in the industry. However, the increase since 1947 in the relative position of other workers in contract construction is not as great as the increase in the proportion of nonproducation workers in manufacturing over the same period, in large part because of the high onsite labor requirements in contract construction.

Employment by age

In 1960, the median age of male employees in construction (40.8 years) was approximately the same as for all employed male workers in the United States. (See table 16.) The only major difference was a relatively lower proportion of construction workers employed in the very young group—14-19 years of age, which is probably due to State laws prohibiting employment of very young workers in many construction occupations.

Data are not available on the age distribution of building trades workers in construction; however, they are available for total employment in selected building trades. (Approximately 70 percent of all building trades workers, on the average, are employed in construction.) Table 17 presents the proportion of workers in each occupation 45 years of age and over.

Seven of the eleven selected building trades for which comparable data are available experienced an increase in median age between 1950 and 1960, while the median age for all employed males in construction remained virtually unchanged. Only two—brickmasons and operating engineers—had a change of 2 years or more. The data in table 17 do not necessarily imply a long-range trend toward an older work force. The difference between the 2 years may be largely the result of the slightly more depressed construction market of 1960. In general, the median age of employed males in construction was highest in occupations growing slowest or declining because of the relatively slight influx of young workers. The three occupations with the highest median age in both 1950 and 1960—paperhangers, painters, carpenters—recorded employment declines during the 10-year period.

Employment of women

Women make up a very small but stable proportion of employment in the contract construction industry. In 1968, approximately 5 percent of the industry's employment—156,000 persons—were women, most of whom worked in clerical occupations. [16]

[14] In contract construction employment establishment statistics, "construction workers" include the following employees of contractors: Working foremen, journeymen, mechanics, apprentices, laborers, etc., whether working at the site of construction or in shops or yards at jobs (such as precutting and preassembling) ordinarily performed by members of the construction trades. Other workers include all other persons on payrolls who receive pay for any part of the pay period, such as office, professional workers, and salesmen.

[15] See footnote 14 for definition.

[16] According to the 1960 Census of Population, three-quarters of all women employed in construction were in clerical occupations.

Employment by size of contractor

The contract construction division consisted of more than 300,000 reporting units in 1967. [17] The great majority were small in terms of number of workers; for example, 54.4 percent of the firms had three employees or less. Only about 3 percent of the firms had 50 employees or more.

Between 1951 and 1962, the average number of employees per reporting firm declined from 9.5 to 8.2. By 1967, the average had risen to slightly higher than the level of 1951, indicating that over the long run there has been little or no change in the average size of construction firm in terms of employment.

However, the size of firms differs substantially by number of employees within the contract construction division. General contractors, other than building, had about twice as many employees on the average as general building contractors in 1967. (See tables 18 and 19.)

Location of employment

Growth in contract construction has been accompanied by a change in the geographic distribution of employment. (See table 20.) The proportion of total employment in contract construction located in the Northeastern and North Central States has declined steadily, while the proportion has risen in the Southern and Far Western States. In 1939, 57 percent of contract construction employment (measured by annual average) was located in the States north of the Mason-Dixon line and east of the Mountain States. By 1968, that percentage had declined to 49 percent. During that period employment in the South Atlantic States (notably Florida) increased from 15.3 percent of the national total to 17.8 percent. Employment in the Mountain and Pacific States rose from 12.5 percent to 15.9 percent. These shifts are similar to the population shifts during the same period.

[17] The statistics in County Business Patterns are tabulated in terms of "reporting units." However, the reporting unit as used for manufacturing industries differs from that for nonmanufacturing industries. Each manufacturing location of a company is counted as a separate reporting unit. In manufacturing industries, reporting units, therefore, are conceptually the same as "establishments" in Census Bureau terminology. In nonmanufacturing industries, employers (i.e., separate legal entities) are counted once in each county for each industry in which they operate, regardless of the number of establishments operated. This results in the number of nonmanufacturing reporting units being fewer than the number of nonmanufacturing establishments and larger in size, but does not affect the employment and taxable payroll figures.

Table 8. Percent distribution of employment in construction, by class of workers, 1950–68

Year	Total		Wage and salary workers		Self-employed and unpaid family workers
	Number (in thousands)	Percent	Private	Government	
1950	3,582	100.0	70.7	9.7	19.7
1951	3,910	100.0	72.7	9.3	18.0
1952	4,192	100.0	72.7	10.6	16.7
1953	4,013	100.0	73.4	9.9	16.6
1954	3,843	100.0	69.1	12.2	18.7
1955	4,045	100.0	68.9	12.7	18.4
1956	4,079	100.0	70.0	11.9	18.1
1957	4,116	100.0	69.6	12.1	18.3
1958	4,186	100.0	69.6	12.0	18.4
1959	4,321	100.0	70.0	11.6	18.4
1960	4,263	100.0	69.7	12.0	18.3
1961	4,198	100.0	69.8	12.3	17.9
1962	4,285	100.0	69.8	12.5	17.7
1963	4,312	100.0	69.1	12.9	18.0
1964	4,470	100.0	69.4	12.8	17.8
1965	4,598	100.0	70.7	12.7	16.6
1966	4,607	100.0	71.3	13.0	15 8
1967	4,524	100.0	71.6	13.7	14.8
1968	4,620	100.0	72.2	12.7	15.0

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

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table 9. Percent distribution of employed persons, by major occupation group in construction, 1958–68

Occupation group	1968	1967	1966	1965	1964	1963	1962	1961	1960	1959	1958
All occupations:											
Number in millions	4.6	4.5	4.6	4.6	4.5	4.3	4.3	4.2	4.3	4.3	4,2
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Workers, except blue-collar	22.7	22.3	21.6	22.2	22.5	23.0	23.6	22.5	22.3	21.6	21.7
Professional and technical	4.8	5.2	4.8	5.1	4.5	4.5	4.4	4.9	4.7	4.4	4.5
Managers, officials, and proprietors	11.7	11.0	10.7	11.1	12.4	12.9	13.2	12.3	12.2	11.9	12.1
Clerical workers	5.5	5.4	5.4	5.3	4.9	4.9	5.3	4.7	4.6	4.5	4.3
Salesworkers	.2	.2	.2	.2	.2	.2	.2	.2	.3	.4	.3
Service workers	.5	.5	.5	.5	.5	.5	.5	.4	.5	.4	.5
Blue-collar workers	77.3	77.8	78.3	77.8	77.5	77.0	76.3	77.4	77.8	78.4	78.1
Craftsmen and foremen	51.5	51.7	52.1	50.4	50.0	50.8	49.7	51.0	50.4	50.3	49.8
Operatives	9.7	9.9	10.5	9.9	9.9	9.3	9.2	8.5	8.7	8.7	8.9
Laborers	16.1	16.2	15.7	17.5	17.6	16.9	17.4	17.9	18.7	19.4	19.4

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

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table 10. Employment by selected craft occupation in construction, 1950 and 1960

(In thousands)

Occupation	1950	1960	1950–60 Percent change
Total selected occupations	1,698	1,723	1.5
Bricklayers, stonemasons, and marble and tile setters	145	162	11.7
Carpenters	737	648	-12.1
Cement and concrete finishers[1]	27	40	48.1
Electricians	98	131	33.7
Excavating, grading, and road machinery operators	74	151	104.1
Painters	298	269	-9.7
Paperhangers	19	9	-52.6
Plasterers	57	43	-24.6
Plumbers and pipefitters	173	191	10.4
Roofers and slaters	41	45	9.8
Structural-metal workers	29	34	17.2

[1] Includes terrazzo workers.

SOURCE: Bureau of the Census, 1950 and 1960 Census of Population.

Table 11. Employment by type of contractor as a percent of total contract construction employment, 1945–68

Year	Contract construction	General building	Heavy construction	Special trades
1945	100.0	35.1	19.7	45.3
1946	100.0	39.9	17.1	43.0
1947	100.0	38.4	18.3	43.2
1948	100.0	38.6	17.9	43.5
1949	100.0	37.4	18.5	44.1
1950	100.0	37.5	18.0	44.5
1951	100.0	38.1	17.7	44.2
1952	100.0	37.3	18.3	44.4
1953	100.0	37.0	18.3	44.8
1954	100.0	35.9	18.0	46.1
1955	100.0	35.6	17.3	47.1
1956	100.0	35.8	18.6	45.6
1957	100.0	33.8	19.7	46.5
1958	100.0	32.2	20.3	47.5
1959	100.0	32.4	19.8	47.8
1960	100.0	31.5	20.3	48.2
1961	100.0	31.1	20.7	48.2
1962	100.0	30.4	20.4	49.2
1963	100.0	30.9	20.2	48.9
1964	100.0	31.1	20.1	48.8
1965	100.0	31.2	20.4	48.4
1966	100.0	31.5	20.6	48.0
1967	100.0	30.7	20.7	48.6
1968	100.0	30.2	20.8	49.0

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

SOURCE: BLS, current employment statistics based on establishment reports.

Table 12. Wage and salary employment in the operative builders industry, 1958–68

(In thousands)

Year	Employment
1958	38.4
1959	44.7
1960	40.7
1961	42.8
1962	46.1
1963	47.2
1964	46.2
1965	45.8
1966	41.5
1967	39.6
1968	43.2

SOURCE: BLS, current employment statistics based on establishment reports.

Table 13. Wage and salary employment in contract construction by type of contractor [1] and worker, 1968

(In thousands)

Industry	Total employment [2]		Construction workers [3]		Other workers [4]		Percent distribution of employment by type of worker		
	Number	Percent	Number	Percent	Number	Percent	Total	Construction	Other
Contract construction division	3,267.0	100.0	2,754.0	100.0	513.0	100.0	100.0	84.3	15.7
General building contractors	986.4	30.2	836.7	30.4	149.7	29.2	100.0	84.8	15.2
Heavy construction	680.2	20.8	584.4	21.2	95.8	18.7	100.0	85.9	14.1
Highway and street construction	315.9	9.7	279.7	10.2	36.2	7.1	100.0	88.5	11.5
Other heavy construction	364.3	11.2	304.7	11.1	59.6	11.6	100.0	83.6	16.4
Special trade contractors	1,600.6	49.0	1,333.3	48.4	267.3	52.1	100.0	83.3	16.7
Plumbing, heating, and air conditioning	387.9	11.9	313.0	11.4	74.9	14.6	100.0	80.7	19.3
Painting, paperhanging, and decorating	131.0	4.0	115.1	4.2	15.9	3.1	100.0	87.9	12.1
Electrical work	265.8	8.1	212.5	7.7	53.3	10.4	100.0	79.9	20.1
Masonry, stonework, and plastering	227.3	7.0	205.2	7.5	22.1	4.3	100.0	90.3	9.7
Roofing and sheet-metal work	111.5	3.4	90.9	3.3	20.6	4.0	100.0	81.5	18.5

[1] Establishments are classified into industries on the basis of their principal activity determined from information on annual sales volume. This information is collected each year. For an establishment engaging in more than 1 activity, the entire employment of the establishment is included under the industry indicated by the most important activity. The industries are classified in accordance with the Standard Industrial Classification Manual, Bureau of the Budget, 1957, as amended by the 1963 Supplement.

[2] Total employment data refer to all persons on establishment payrolls who receive pay for any part of the pay period which includes the 12th of the month. The data exclude proprietors, the self-employed, unpaid volunteers, or family workers. Salaried officers of corporations are included. Persons on establishment payrolls who are on paid sick leave or on paid vacation (when pay is received directly from the firm) are counted as employed. However, many employees in the construction industry do not receive paid sick leave or paid vacations directly from a firm but from a fund to which all the firms have made contributions. Payments from these funds are based on the number of hours worked or amount of the workers' earnings.

[3] Construction workers include the following employees in the contract construction division: Working foremen, journeymen, mechanics, apprentices, laborers, etc., whether working at the site of construction or in shops or yards, at jobs (such as precutting and preassembling) ordinarily performed by members of the construction trades.

[4] Total employment minus construction worker employment.

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

SOURCE: BLS, current employment statistics based on establishment reports.

Table 14. Construction workers as a percent of total employment, by type of contractor, 1947–68

Year	Total contract construction	General building	Heavy construction contractors			Special trades contractors					
			Total heavy	Highway and street	Other heavy	Total special trades	Plumbing, heating and air-conditioning	Painting, paper-hanging, decorating	Electrical work	Masonry, stonework, and plastering	Roofing and sheet-metal work
1947	88.7	90.4	88.4	-	-	87.4	-	-	-	-	-
1948	88.7	90.3	88.2	-	-	87.4	-	-	-	-	-
1949	88.6	90.4	88.3	-	-	87.3	-	-	-	-	-
1950	88.7	90.4	88.3	-	-	87.4	-	-	-	-	-
1951	88.7	90.4	88.2	-	-	87.4	-	-	-	-	-
1952	88.2	89.7	88.0	-	-	87.1	-	-	-	-	-
1953	87.9	89.1	88.9	-	-	86.5	-	-	-	-	-
1954	87.3	88.8	88.9	-	-	85.6	-	-	-	-	-
1955	87.1	88.3	88.8	-	-	85.6	-	-	-	-	-
1956	87.1	88.4	88.6	-	-	85.5	-	-	-	-	-
1957	86.8	87.8	89.0	-	-	85.1	-	-	-	-	-
1958	85.8	86.8	88.2	89.6	86.8	80.7	80.7	90.9	78.5	90.9	82.6
1959	85.7	87.0	88.1	90.1	85.9	83.9	80.6	91.1	78.0	91.3	81.8
1960	85.2	86.5	87.3	89.5	85.2	83.6	80.4	91.4	78.1	91.0	81.1
1961	84.9	86.0	86.7	89.6	83.8	83.3	80.5	91.2	77.5	90.6	81.3
1962	84.8	85.7	86.8	89.8	83.7	83.5	80.4	90.6	78.1	90.9	81.5
1963	85.2	86.1	87.2	89.8	84.4	83.8	80.7	90.3	78.4	90.8	81.3
1964	85.1	86.1	86.3	89.1	83.3	84.1	80.8	90.1	79.6	91.3	80.9
1965	85.1	85.8	86.4	89.1	83.6	84.0	81.4	89.7	80.3	91.1	81.3
1966	85.0	86.1	88.7	88.7	83.8	83.7	81.1	89.0	80.3	90.9	80.9
1967	84.4	85.4	85.9	88.3	83.8	83.2	80.7	88.8	80.1	90.9	81.0
1968	84.3	84.8	85.9	88.5	83.6	83.3	80.7	87.9	79.9	90.3	81.5

SOURCE: BLS, current employment statistics based on establishment reports.

Table 15. Employment of wage and salary workers in contract construction, by type of worker and percent change, 1947–68

(In thousands)

Year	Construction workers	Other workers
1947	1,759	223
1948	1,924	245
1949	1,919	246
1950	2,069	264
1951	2,308	295
1952	2,324	310
1953	2,305	318
1954	2,281	331
1955	2,440	362
1956	2,613	386
1957	2,537	386
1958	2,384	394
1959	2,538	422
1960	2,459	426
1961	2,390	426
1962	2,462	440
1963	2,523	440
1964	2,597	453
1965	2,710	476
1966	2,784	491
1967	2,708	500
1968	2,754	513
Percent change 1947–68	56.6	130.0

SOURCE: BLS, current employment statistics based on establishment reports.

Table 16. Percent distribution of age and median age of all employed males and males employed in construction, 1950 and 1960

Age	1960		1950	
	All employed males	Employed in construction	All employed males	Employed in construction
Total	100.0	100.0	100.0	100.0
14 to 19	5.7	3.2	4.9	2.9
20 to 24	8.4	8.4	9.7	9.3
25 to 29	10.4	10.5	12.2	12.3
30 to 34	12.0	12.7	12.2	12.2
35 to 44	24.2	26.2	23.5	24.6
45 to 54	20.7	21.7	18.8	20.1
55 to 64	13.8	13.4	13.0	13.5
65 and over	4.8	3.9	5.6	5.1
Median age (years)	40.6	40.8	39.7	40.4

SOURCE: Bureau of the Census, 1950 and 1960 Census of Population.

Table 17. Percent distribution of median age and proportion of employed males, 45 years of age and over, selected building trades, 1950 and 1960

Occupation	Median age		Change in median age	Proportion 45 years of age and over	
	1950	1960	1950–60	1950	1960
Brickmasons, stonemasons, and tile setters	40.4	37.7	-2.7	39.8	30.4
Carpenters	43.4	43.3	-.1	46.2	45.5
Cement and concrete finishers	41.7	40.0	-1.7	41.6	34.9
Electricians	39.2	40.8	+1.6	34.2	37.9
Excavating, grading, and road machinery operators	37.8	39.8	+2.0	25.6	34.3
Painters	43.6	45.4	+1.8	46.4	50.9
Paperhangers	49.2	50.9	+1.7	57.6	65.6
Plasterers	41.0	40.1	-.9	41.1	36.5
Plumbers and pipefitters	40.9	42.2	+1.3	38.6	41.9
Roofers and slaters	36.3	37.0	+.7	28.3	30.2
Structural-metal workers	39.2	41.0	+1.8	33.9	37.1

SOURCE: Bureau of the Census, 1950 and 1960 Census of Population.

Table 18. Average number of employees[1] per reporting unit, selected years

Industry	1967	1966	1965	1964	1962	1959	1956	1953	1951
Contract construction	9.7	9.5	8.8	8.4	8.2	8.3	8.6	9.0	9.5
General contractors, building	10.3	10.1	9.1	8.6	8.4	8.7	9.6	10.3	11.9
General contractors, except buildings	19.4	18.9	18.1	17.7	19.4	21.1	23.5	26.0	26.0
Highway and street construction	17.6	17.3	17.7	17.8	17.9	19.3	[2]	[2]	[2]
Heavy construction, n.e.c.	20.6	19.9	18.4	17.7	20.4	22.9	[2]	[2]	[2]
Special trade contractors	7.8	7.7	7.3	7.0	6.6	6.5	6.4	6.5	6.6
Plumbing, heating, and air-conditioning	8.3	8.0	7.6	7.2	6.7	6.6	6.6	6.6	[2]
Painting, paperhanging	4.8	4.7	4.5	4.3	4.2	4.2	4.3	4.4	[2]
Electrical work	10.4	9.8	9.3	8.5	8.4	8.0	7.9	8.4	[2]
Masonry, stonework, and plastering	7.4	7.6	7.4	7.3	6.8	7.2	7.0	6.8	[2]
Carpentering and wood flooring	4.5	4.7	4.5	4.5	4.2	4.4	4.3	4.2	[2]
Roofing and sheet-metal work	8.7	8.5	8.0	7.5	7.3	7.3	7.0	6.8	[2]
Concrete work	8.1	8.3	8.0	8.2	8.8	8.2	8.2	7.6	[2]
Water well drilling	3.8	3.7	3.6	3.5	3.4	3.5	[2]	[2]	[2]
Miscellaneous special trade contractors	11.2	11.2	10.6	10.1	8.7	8.4	[2]	[2]	[2]
Administrative and auxiliary	45.3	49.4	52.6	45.2	33.1	25.5	[2]	[2]	[2]

[1] The number of employees for the mid-March pay period divided by the total number of reporting units during the first quarter.
[2] Not available.

SOURCE: Bureau of the Census, County Business Patterns.

Table 19. Percent distribution of firms by number of employees in contract construction, selected years

Year	1-3[1] employees	4-7 employees	8-19 employees	20-49 employees	Total less 50 employees
	Contract construction				
1951	53.1	23.6	14.6	5.8	97.1
1953	55.6	22.4	13.6	5.5	97.1
1956	56.2	20.9	14.6	5.7	97.4
1959	57.0	20.3	14.6	5.6	97.5
1962	57.9	20.0	14.0	5.6	97.5
1964	56.6	20.2	14.6	5.9	97.3
1965	55.9	20.3	14.9	6.0	97.1
1966	54.0	20.8	15.6	6.4	96.9
1967	54.4	20.4	15.5	6.4	96.7
	General contractors, building				
1951	46.6	25.8	16.8	6.7	95.9
1953	51.7	24.4	14.5	6.0	96.6
1956	52.8	22.4	15.4	6.2	96.8
1959	55.2	21.4	14.9	5.6	97.1
1962	56.9	21.1	13.9	5.5	97.4
1964	56.2	21.0	14.4	5.7	97.3
1965	55.6	21.0	14.6	5.7	96.9
1966	53.3	21.7	15.2	6.2	96.5
1967	54.2	21.1	15.0	6.1	96.3
	General contractors, except building				
1951	34.1	20.4	20.3	13.4	88.2
1953	36.4	19.0	19.8	13.8	89.0
1956	36.5	18.0	20.7	14.2	89.4
1959	38.6	18.4	20.6	13.2	90.8
1962	42.6	18.3	19.1	11.5	91.5
1964	43.0	18.4	19.0	11.7	92.1
1965	42.4	18.3	19.4	11.4	91.5
1966	42.0	18.3	19.6	11.8	91.7
1967	41.7	18.5	19.7	11.5	91.5
	Special trades contractors				
1951	58.1	22.8	13.0	4.5	98.4
1953	59.7	21.9	12.5	4.3	98.4
1956	60.0	20.5	13.5	4.5	98.5
1959	50.1	20.0	13.7	4.7	98.5
1962	60.5	19.8	13.3	4.8	98.4
1964	58.8	20.2	14.1	5.2	98.3
1965	58.1	20.2	14.4	5.3	98.0
1966	56.2	20.8	15.2	5.7	97.9
1967	56.6	20.3	15.1	5.8	97.8

[1] Includes reporting units having payroll during the first quarter but no employees during the mid-March pay period.

SOURCE: Bureau of the Census, County Business Patterns.

Table 20. Percent distribution of employment in contract construction and manufacturing, by region and State, selected years

Region and State	Contract construction				Manufacturing			
	1968	1960	1950	1939	1968	1960	1950	1939
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
New England	5.9	5.8	6.1	6.9	7.9	8.7	9.6	11.5
Maine	.4	.5	.4	.6	.6	.6	.7	.9
New Hampshire	.4	.3	.3	.5	.5	.5	.5	.7
Vermont	.3	.2	.2	.3	.2	.2	.2	.3
Massachusetts	2.7	2.8	3.1	2.9	3.6	4.2	4.7	5.6
Rhode Island	.5	.4	.5	.7	.6	.7	1.0	1.2
Connecticut [1]	1.6	1.6	1.6	1.9	2.4	2.4	2.5	2.8
Middle Atlantic	17.2	18.2	20.1	22.8	21.9	24.6	27.2	29.3
New York	8.0	9.2	9.8	12.4	9.5	11.2	12.5	13.2
New Jersey	3.4	3.5	3.5	3.6	4.5	4.8	5.0	5.7
Pennsylvania	5.8	5.5	6.8	6.8	7.9	8.6	9.7	10.4
East North Central	18.5	18.6	19.3	18.6	26.4	26.8	29.5	27.4
Ohio	5.1	5.1	5.4	5.1	7.3	7.5	8.0	7.5
Indiana	2.6	2.3	2.3	2.3	3.6	3.5	3.8	3.4
Illinois	5.7	5.9	5.8	5.3	7.1	7.2	7.9	7.9
Michigan	3.1	3.4	3.7	3.8	5.8	5.8	7.0	6.1
Wisconsin	2.0	2.0	2.1	2.1	2.6	2.7	2.8	2.5
West North Central	7.5	8.4	8.4	8.8	6.3	6.0	5.7	5.2
Minnesota	1.9	2.0	1.9	2.2	1.6	1.4	1.3	1.1
Iowa	1.2	1.5	1.4	1.8	1.1	1.1	1.0	.9
Missouri	2.2	2.3	2.3	2.4	2.4	2.3	2.3	2.3
North Dakota	.2	.3	.3	.3	(2)	(2)	(2)	(2)
South Dakota	.2	.4	.4	.3	.1	.1	.1	.1
Nebraska	.7	.9	.8	.8	.4	.4	.4	.3
Kansas	1.1	1.2	1.3	1.0	.7	.7	.6	.5
South Atlantic	17.8	16.0	14.4	15.3	13.3	12.2	11.0	11.8
Delaware	.4	.4	.5	.4	.4	.4	.3	.3
Maryland	2.4	2.2	2.4	2.0	1.4	1.5	1.5	1.7
District of Columbia	.6	.7	.9	1.6	.1	.1	.1	.2
Virginia	2.7	2.4	2.2	2.4	1.8	1.6	1.5	1.7
West Virginia	.8	.6	.8	1.0	.7	.7	.9	.9
North Carolina	2.7	2.3	2.0	2.1	3.4	3.0	2.7	3.1
South Carolina	1.5	1.2	1.0	1.2	1.6	1.5	1.4	1.4
Georgia	2.4	1.9	1.7	2.3	2.3	2.0	1.9	1.8
Florida	4.3	4.3	2.9	2.3	1.6	1.2	.7	.7
East South Central	6.0	5.2	5.1	5.7	5.9	5.0	4.5	4.4
Kentucky	1.5	1.3	1.2	1.6	1.2	1.0	.9	.8
Tennessee	2.0	1.6	2.0	1.4	2.3	1.9	1.6	1.6
Alabama	1.6	1.5	1.2	1.5	1.5	1.4	1.4	1.4
Mississippi	.9	.8	.7	1.2	.9	.7	.6	.6
West South Central	11.2	9.5	10.0	9.4	5.9	4.9	4.3	3.7
Arkansas	.9	.7	.8	.8	.8	.6	.5	.5
Louisiana	2.8	1.9	2.0	1.7	.9	.8	1.0	1.0
Oklahoma	1.0	1.2	1.3	1.1	.6	.5	.4	.4
Texas	6.5	5.7	5.9	5.8	3.6	2.9	2.4	1.8
Mountain	3.9	4.9	4.0	3.5	1.7	1.6	1.1	1.0
Montana	.4	.4	.4	.5	.1	.1	.1	.1
Idaho	.3	.3	.4	.3	.2	.2	.1	.2
Wyoming	.2	.4	.3	.3	(2)	.1	(2)	(2)
Colorado	1.0	1.2	1.0	1.1	.6	.5	.4	.4
New Mexico	.5	.7	.7	.3	.1	.1	.1	(2)
Arizona	.8	1.1	.5	.4	.4	.3	.2	.1
Utah	.4	.5	.5	.4	.3	.3	.2	.2
Nevada	.3	.3	.2	.2	(2)	(2)	(2)	(2)
Pacific	12.0	13.4	12.6	9.0	10.7	10.2	7.1	5.7
Washington	1.8	1.6	1.8	1.8	1.4	1.3	1.2	1.2
Oregon	.9	.9	1.1	.7	.9	.9	.9	.8
California	9.5	10.1	9.7	6.6	8.3	7.9	5.0	3.7
Alaska	.2	.2	-	-	(2)	(2)	-	-
Hawaii	.6	.6	-	-	.1	.2	-	-

[1] Mining combined with construction.
[2] Less than 0.05 percent.

SOURCE: BLS, current employment statistics based on establishment reports.

CHAPTER IV. SEASONAL EMPLOYMENT

Seasonality of employment in construction

Seasonal fluctuations are an outstanding feature of employment in construction. Wage and salary workers in contract construction experience greater seasonal variations in employment than such workers in any other nonagricultural industry division. (See appendix table G-6.) From its low to its peak, contract construction has added more than three-quarters of a million workers each year, on the average, over the past decade. Seasonal employment fluctuations far exceed the variation in annual average employment that have occurred. (See table 22.) In addition, the seasonal pattern in employment is more pronounced for construction workers than for other workers in the industry. (See table 26.)

Seasonality of employment in contract construction has not changed markedly since World War II as measured by the extent to which employment in February and August varies from average annual employment. (See table 21.) There has been a decline during the last 5 years as well as during the early 1950's—both periods of low unemployment.

Seasonality in construction employment [18] is clearly related to economic conditions, as measured by the overall unemployment rate. (See chart 1.) As unemployment rises, seasonality increases, and conversely. For the month of February, for example, for every percentage point change in the overall unemployment rate, there is a corresponding 1 percentage point change in seasonal amplitude, on the average. For months of the year other than February (the low point), the relationship of economic conditions to seasonality may be quantitatively different, but limited evidence indicates that the direction of the relationship is the same as in February.

Use of a related measure, the trend in BLS seasonal adjustment factors [19] also shows no observable significant change in seasonality occurring since 1947. (See table 21 and appendix table G-7.)

A reduction in the amplitude of seasonal fluctuations in construction employment took place before World War II. In 1929 and 1935, the range in contract construction employment between February and August as a percent of the annual average was about 55 percentage points. [20] By 1939 and 1940, just prior

[18] Measured by the ratio of the actual level of employment to the corresponding trend-cycle level of employment for the same month. This factor must be taken into account in a review of trends in seasonality during the postwar years. That portion of the seasonality associated with economic conditions must be removed in some way in order to determine whether the remaining seasonality contains any observable trend related to other influences present in the construction industry.

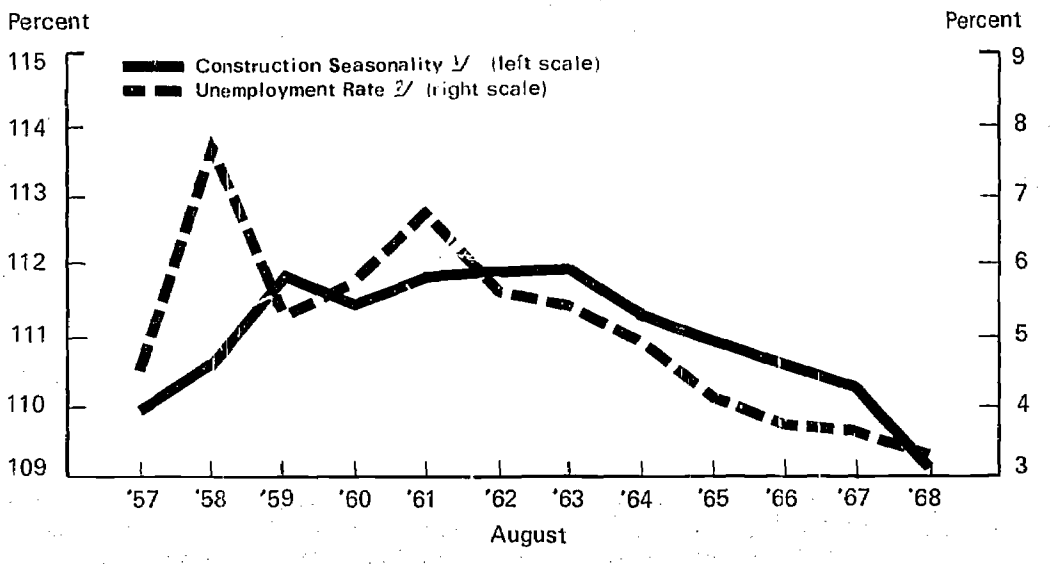
[19] Seasonal adjustment is a statistical process for removing the effects of seasonal influences from the data for the individual months of the year. Seasonal factors express the ratio between the original level of activity for a month and the seasonally adjusted level for the same month. A factor of 110 means that the level in that month is typically 10 percent higher than it would have been in the absence of seasonal influences. A factor of 90 means that the level in that month is typically 10 percent less because of seasonality. When the actual level for a given month is divided by the factor for that month, the resulting number is called the seasonally adjusted level. After a time series has been seasonally adjusted, the figure for any month may be compared directly with that for any other month.

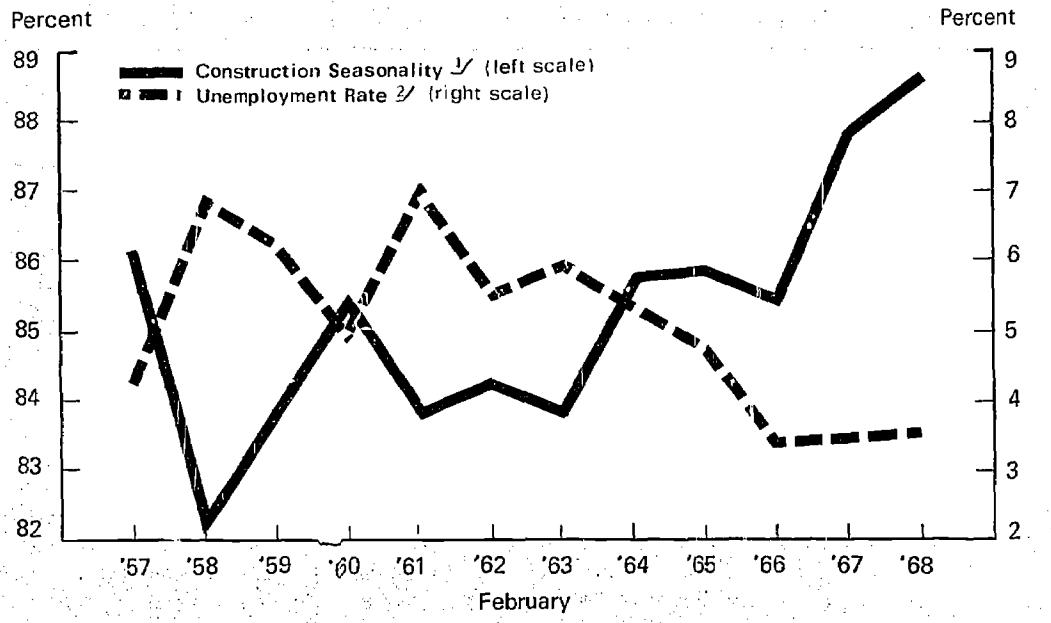
Month-to-month change in a seasonally adjusted series should then reflect nonseasonal factors such as changing economic conditions or short term factors such as floods, storms, or strikes. It does not reflect normal seasonal variations since it is precisely these which are removed in the adjustment process. In this report, the seasonal factors will be used as a measure of seasonal influences whenever possible. However, in some instances, the simple method of taking the month as a percentage of the annual average will be utilized. In addition, the ratio of the seasonal low to the seasonal high month, usually February to August, also will be used.

[20] BLS employment data on a monthly basis is not available for years prior to 1939. See table 24 for sources and note concerning 1929 and 1935 data.

Chart 1.

Construction Seasonality and Unemployment Rate, 1957-68





1/ Ratio of actual level of contract construction employment to corresponding trend cycle level.

2/ Unemployment rate of total wage and salary workers, seasonally adjusted.

to World War II, this range had declined to about 34 percentage points. (See table 25.) Since 1947, the spread has fluctuated between 18 and 33 percent. (See tables 21 and 25.) The same pattern as above persisted for the various geographic areas of the Nation. (See table 23.)

The fact that no marked change in the seasonality of employment has occurred in contract construction over the postwar period is particularly surprising because a number of factors seem to be working to reduce seasonality. First, the regional distribution of employment in the industry has shifted toward the South Atlantic and Pacific States—areas of generally less seasonal fluctuation. Second, a shift of employment has occurred within the industry in favor of special trades contractors and more mechanical work such as electrical, plumbing, etc. Employment in the special trades is considerably less seasonal than work by general contractors. Third, the proportion of total employment in the industry that construction workers constitute has decreased. Since construction workers are subject to considerably greater seasonality of employment than office workers in the industry, this circumstance would tend to mitigate seasonal employment fluctuations. Fourth, technological developments that increase the ease of winter building have continued to appear. Suppliers to the industry continue to provide innovations directed at year-round construction work. Plastic shelters for closing in a job against unfavorable weather and improved space heaters have been marketed. Fifth, the size of contractors in terms of the value of work undertaken has continued to increase (although, in terms of employees there has not been any increase in size). With greater size, the planning necessary to successfully undertake off-season work is possible.

The fact that seasonality in construction has shown little long-run alteration in face of these changes indicates that other factors are at work to increase seasonality that are able to balance the factors that reduce seasonality.

The increasingly seasonal pattern of contracts let may have a positive effect upon the seasonality of employment. In the late 1940's and early 1950's, monthly series of the value of contract awards had a rather random pattern. If anything, the value peaked late in the year and troughs were random. By 1954, however, the value of contracts let began to take on a more seasonal pattern. A peak is now reached in April, May, or June—leading employment by about 3 months—and a trough occurs in December or January—leading the employment trough by about 1 month.[21] Construction jobs often require a large amount of advance planning and development. When the day arrives to start a job, the contractor must have assembled men, materials, and machines. If construction is let on a seasonal basis all other aspects of work planning, organization, and commencement also follow a more seasonal movement.

Another factor that may emphasize the seasonality of employment in construction is the increased amount of formal planning by contractors. The general belief is that contractors are planning in an attempt to perform more winter work. In anticipation of poor winter weather, however, contractors may use formal planning to accomplish more work during spring, summer, and fall months, thereby heightening the seasonal employment peak. Analysis of weather and employment information for Chicago has indicated a certain amount of anticipatory reaction by contractors that has an effect on the amount of work performed in winter months, regardless of the actual weather conditions in these months. (See appendix C for a discussion of this topic.)

Seasonal employment by type of contractor

Seasonal variations in employment are more pronounced in some types of construction activities than in others. Employment by special trades contractors in 1968, for example, rose about 18 percent from seasonal low to high, while employment in heavy construction rose by 56 percent. (See table 24.) In addition, seasonal variations in employment within certain segments of heavy and special trades contractors also are considerable. Thus, employment in heavy construction, except highways, increased by more than one-quarter from seasonal low to high, and employment by highway contractors nearly doubled. Among the special trades

[21] Robert E. Lipsey and Doris Preston, *Source Book of Statistics Relating to Construction,* New York: National Bureau of Economic Research, 1966, p. 57.

contractors, the mechanical trades, such as plumbing, heating and air conditioning, and electrical work, are the least seasonal. The seasonal rise in employment from low to high months for these mechanical trades contractors was less than 10 percent, compared with 21 percent for masonry contractors, 23 percent for roofing contractors, and 42 percent for painting contractors.

The sectors of contract construction have experienced varied changes in seasonal employment patterns since 1929. The seasonal amplitude of the swing in employment in highway construction has shown the most significant improvement, although it continues to be the sector of the industry with the widest seasonal fluctuations in employment. (See table 25.)

Seasonal employment by type and class of worker

Just as substantial variations in the seasonal patterns of employment take place by type of construction activity, available data indicate that considerable variation occurs by construction occupation and by class of construction worker. The number of laborers employed in the peak month of August 1968 was 24 percent greater than the annual average; for carpenters it was only 10 percent higher than the annual average in the peak month of September. Conversely, the employment of construction laborers in January was about one-fourth less than the annual average compared with 15 percent less for carpenters. (See table 26.)

In 1968, the seasonal fluctuation in employment of "construction workers" in contract construction was about one-third between February and August, in contrast to a fluctuation of about 3 percent for other workers (white-collar, etc.), (See table 27.)

There are substantial variations in the seasonal employment patterns of construction workers by class of worker. In 1968, employment of private wage and salary workers in construction increased by about 25 percent between the first and third quarters, compared with a 7-percent rise for government wage and salary workers engaged in construction activities. [22] The number of self-employed and unpaid family workers combined in construction increased 12 percent during this period. (See table 28.) Construction workers employed in construction experience greater seasonal employment swings than building trades workers employed in other industries. (See table 29.)

Seasonal employment by size and location of construction firm

Seasonal employment patterns of large construction firms have less amplitude than those of smaller firms. Large firms may be better able to take advantage of cold weather materials and equipment and, therefore, tend to maintain their work forces during off-season periods.

Data available for several sectors of contract construction in four areas in 1968 indicate that seasonal employment swings for large firms were consistently less than for small firms, [23] but varied by type of contractor and area. (See table 30.) Generally, the variation was greatest for large and small firms engaged in highway and street construction and those classified in several "outdoor" special trades contractor industries, such as roofing and sheet-metal work and masonry, stonework, and plastering. Painting, paperhanging, and decorating is the only indoor work that had substantial seasonal swings, because winter months appear to be unpopular for such work. Within the industries shown in table 30, the seasonal fluctuations of employment are greater in the warmer regions of the country.

[22] The employees of public agencies engaged in construction and related activities, such as highway maintenance and land reclamation.

[23] The classification of firms into size categories was based on type of construction activity and location of establishments. Generally, establishments in General Building Construction and Highway and Street Construction were classified as "large" if they employed 100 employees or more. Those in the Special Trades were classified as "large" if they employed 20 employees or more.

Historical data indicate that little or no change in seasonal employment fluctuations results from type, size, and location of construction firms since 1960. The employment of small general building contractors in the South Atlantic and East South Central States is becoming less seasonal, and employment in both large and small masonry, stonework, and plastering firms in the South Central and South Atlantic States is becoming more seasonal. (See appendix table G-19.)

Significant variations occur in seasonal fluctuations by State. Nationally, the seasonal adjustment factor for employment in contract construction in February 1968 was 87 and the August factor was 110. Excluding Alaska and Hawaii, February factors range from 66 for North Dakota to 98 for Florida and those for August range from 103 to 133, for these two States. (See table 31.)

Seasonality and the attachment of workers to contract construction [24]

Workers in construction have fewer quarters of work during the year than workers in most other industries. In each of the three major construction industry groups, for example, employees with work in only one calendar quarter made up at least 30 percent of all workers who had some earnings in the industry, compared with less than 20 percent of the workers with some earnings in manufacturing, mining, and utilities. (See table 32.) Similarly, when employees are reported in the industry from which they received the major portion of their earnings, fewer quarters of work are evidenced for construction workers than most other workers.

Construction workers in the South and West (where seasonal patterns are less severe) appear to have a weaker attachment to the industry than those in the rest of the country. Only about 28 percent of the workers who reported some earnings from general building construction in the South and West were employed in the industry at least part of four quarters in 1964, compared with about 35 percent in the northern regions. (See table 33.) Moreover, a considerably larger proportion of the workers in the South and West were employed only one quarter in 1964. This weaker attachment in a section of the country in which construction employment is less seasonal may reflect a shifting from farm to construction work and back.

Construction workers under 25 years of age appear to have less year-round work in the industry in the course of a year than those in the older age groups. In 1964, more than one-half of the construction workers in the 25 to 65 age group who had most of their earnings reported from contractors in the general building sector had four quarters of work. This proportion contrasts markedly with the 8 percent for those under 20 years of age (many of whom are in school and seek employment during their vacations) and the 31 percent for those between 20 and 24 years of age. For those workers over 65, the proportion receiving four quarters of work was substantially less than for the prime working age groups. (See table 34.)

White workers appear to receive more quarters of work than Negro workers. (See table 35.) This may in large part be a result of Negroes' concentration in the trades more susceptible to seasonal layoffs.

Factors that influence seasonality

Seasonal employment movements in construction are the result of inclement weather and traditional management practices and custom. The actual amount of work that could be performed in winter with precautions against bad weather is unknown, but indications are that it is more than is currently performed. In 1924, the Hoover Committee reported, "For most types of construction is now possible to build the year-round in all parts of the United States."[25] This statement remains true. Materials and techniques for performing construction work during harsh weather have been available for some time, and have steadily improved. Careful scheduling and protection of materials and workers can permit work to proceed even in periods of bad

[24] Source: OASDI 1-percent continuous work history sample. Special tabulations made by the Bureau of Labor Statistics' Office of Wages and Industrial Relations. (See appendix F.)

[25] The President's Conference on Unemployment, *Seasonal Operation in The Construction Industries: The Facts and Remedies*, (New York, McGraw-Hill Book Company, 1924).

weather. The Canadians, for instance, have poured concrete at 40 degrees below zero, and some of this Nation's large contractors have accomplished similar feats. Highway building has been carried directly through winter months in Washington, D.C., and in cities farther north.

An analysis of the weather and construction activity in Chicago between 1958 and 1964 indicates that construction activity is sensitive to temperature, but much less so to precipitation, wind, and other factors, (See appendix C.) The industry appears to anticipate normal seasonal weather in winter months and schedules less work. Thus, a situation appears to exist in which the industry's expectation of normal seasonal weather has more direct influence on construction activity and employment than actual weather conditions for a particular period of time.

The Hoover Report on seasonal operations in the building industry laid heavy stress on the roles of renting seasons, building codes, and owner's preferences for summer work, in contributing to the seasonality of employment. "Bad weather," wrote the Hoover Commission in 1924, is not the principal cause of seasonal idleness. Customs which become fixed when builders had not yet learned how to cope with adverse weather conditions have not yet been changed to meet improvements in building materials, the development of new equipment, and innovations in management methods."

Institutional influences have not disappeared, but their importance has been diminished. Renting seasons are much less important today because of the increased mobility of workers in the economy. Many of the larger corporations move their workers about the country at all times of the year. Military personnel are transferred at all times of the year and they make up a larger proportion of the Nation's population than in 1924. Code restrictions against undertaking certain types of work, such as pouring concrete, are often overcome through special permits. Reduced prices in the off-season for installing air-conditioning systems in homes is another example of the attack on institutional factors that tend to emphasize the seasonality of construction work. Also, the diffusion of information on technological advances has improved as the number of trade journals and other sources of information for contractors has increased.

Contractual agreements also have attacked institutional practices. An example of such a provision is a cents-per-hour penalty clause guaranteeing an employee a minimum number of hours of work during a week. The purpose of this contract provision is to induce the contractor to provide a full week's work, schedule his work, and prepare the site that rain or snow will not halt work. The effect, as often as not, is to cause the contractor to suspend operations when weather conditions appear unfavorable.

A showup time provision in contracts may have the same effect. Showup provisions require an employer to pay each worker for at least so many hours' work if he has men report to his job. Again, if the contractor is in doubt about weather conditions, and under no particular pressure to complete the job, he is apt to be cautious and not work that day. The amount of time lost through cancellation of work due to early morning weather conditions can be remarkably large. A review of a number of contracts indicates that some contractual arrangements facilitate work during periods of inclement weather—suspension of call-in pay in event of inclement weather. However, the relative incidence of these different types of provisions is presently unknown.

Additional cost of winter work

As yet only fragmentary information has been gathered about the extra costs that might be associated with winter work, using presently known techniques of working under cover. The costs obviously will vary with circumstances and types of construction. One study of these costs in the construction of a large motel and department store in a northern city puts the differential at no more than 1 percent. [26] Other judgments obtained from cautious but knowledgeable officials put these costs in the case of building structures at not more than 5 percent.

[26] *Cold Weather Construction Techniques*, a report prepared by the Structural Clay Products Institute, Washington, D.C., 1967.

Additional costs in residential construction are illustrated by the following experience: A brick home in Canton, Ohio, was started the first week of February 1966, and workers encountered all kinds of weather such as snow, sleet, rain and subzero temperatures.[27] The price of this house was not given in the report but was reported to be in the $35,000 range. The additional cost incurred for winterizing this job was $276.65, which can be broken down as follows:

Polyethylene	$33.65
Framing lumber	20.00
Labor	198.00
Electricity [1]	25.00
Total	$276.65

[1] Infrared lamps were borrowed at no cost.

The home was a pilot program and no credit was given for errors. The people responsible for the project believe that a cost of about $200 would be more than adequate on future projects.

Canadian experience suggests that very little additional costs should be added to a job for winter building.[28] Some support for this estimate has been provided by their Winter House Building Incentive Program. The purchaser of a house substantially completed in winter received a cash payment of $500 from the Dominion. The number of dwelling units approved under this bonus scheme averaged about 28,500 during the winters of 1963, 1964, and 1965. The program had a very significant effect on the starting dates with a marked shift from the spring to the fall, which was the effect that was desired. It can be inferred that this bonus covered the additional cost for winter building.

A long standing dispute exists among persons knowledgeable about the industry concerning the net addition to project costs of winter building. Allowing for the additional costs required by job protection and materials treatment, some agree that offsetting savings occur in materials and labor in the winter season. Better labor at possible lower cost per hour (due to the absence of summer scarcity bonuses), prompt delivery of materials from supplier, less frequency of strikes, and greater use of equipment, may generate offseason savings to the contractor.[29] In addition, the earlier completion date of buildings on which construction continued through winter would result in savings to the contractor and additional earnings to the owner if it is income producing property.[30]

[27] *Cold Weather Construction with Brick*, a report prepared by Region 4—Structural Clay Products Institute, Canton, Ohio, 1967.

[28] C. R. Crocker and D. C. Tibbetts, *Winter Construction* (Better Building Bulletin 6), Division of Building Research of the National Research Council, Canada (December 1960). Also, C. R. Crocker, "Advances in Winter Construction Methods Extend Building Season," *The Constructor*, January 1966.

[29] For winter savings position, see especially the Hoover Committee Report, chap. VIII; William Haber, *Industrial Relations in the Building Industry*, pp. 113-124; and more recently, William Roark, "Winterizing of Construction Jobs Will Confer Big Benefits," *The Bricklayer, Mason, and Plasterer*, November 1963, pp. 250,-251.

[30] Otto L. Nelson statement. United States House of Representatives, Committee on Education and Labor, Select Committee on Labor: *Hearings: Seasonal Unemployment in the Construction Industry*. Washington, D.C., Government Printing Office, 1968.

Table 21. Measures of seasonality in contract construction, 1947–68

Year	February and August employment as a percent of annual average employment			Seasonal adjustment factors for February and August		
	February	August	Difference	February	August	Difference
1947	84.8	110.7	25.9	88.9	109.2	20.3
1948	82.7	110.1	27.4	88.3	109.3	21.0
1949	89.2	108.6	19.4	87.9	109.4	21.5
1950	80.2	113.5	33.3	87.5	109.5	22.0
1951	86.2	109.6	23.4	87.2	109.5	22.3
1952	89.7	109.6	19.9	87.1	109.6	22.5
1953	90.0	107.9	17.9	87.0	109.8	22.8
1954	87.9	109.2	21.3	86.8	109.8	23.0
1955	83.7	111.2	27.5	86.7	109.9	23.2
1956	84.3	112.1	27.8	86.4	110.2	23.8
1957	88.4	109.4	21.0	86.2	110.5	24.3
1958	82.6	110.2	27.6	85.5	110.8	25.3
1959	83.0	112.3	29.3	85.1	111.2	26.1
1960	87.3	111.8	24.5	84.6	111.4	29.8
1961	83.1	112.1	29.0	84.5	111.6	27.1
1962	83.3	113.2	29.9	84.7	111.7	27.0
1963	82.3	113.2	30.9	84.8	111.5	26.7
1964	84.7	112.1	27.4	85.1	111.3	26.2
1965	84.5	111.3	26.8	85.6	111.0	25.4
1966	86.2	110.8	24.6	86.2	110.7	24.5
1967	88.0	109.9	21.9	86.7	110.5	23.8
1968	89.0	109.9	19.9	87.1	110.3	23.2

SOURCE: BLS, current employment statistics based on establishment reports.

Table 22. Cyclical and seasonal employment change in contract construction, all employees and construction workers, 1947–68

Year	All employees		Construction workers	
	Percent change in annual average employment[1]	Percent change, February to August	Percent change in annual average employment[1]	Percent change, February to August
1947	19.3	30.5	([2])	33.1
1948	9.4	33.2	9.1	36.2
1949	-.2	21.8	-.3	24.3
1950	7.8	41.6	7.8	44.4
1951	11.6	27.1	11.6	29.7
1952	1.2	22.2	.7	24.1
1953	-.4	19.8	-.8	22.3
195	-.4	24.2	-1.0	26.3
195	7.3	32.8	7.0	37.3
1956	7.0	32.9	7.1	37.1
1957	-2.5	23.8	-2.9	26.8
1958	-5.0	33.4	-6.0	38.9
1959	6.6	35.3	6.5	41.5
1960	-2.5	28.0	-3.1	33.3
1961	-2.4	35.0	-2.8	41.4
1962	3.1	35.8	3.0	42.3
1963	2.1	37.6	2.5	45.2
1964	2.9	32.3	2.9	37.9
1965	4.5	31.8	4.4	37.1
1966	2.8	28.6	2.7	33.6
1967	-2.0	24.9	-2.7	29.3
1968	1.8	22.3	1.7	26.5

[1] Refers to the change from the previous year.
[2] Not available.

SOURCE: BLS, current employment statistics based on establishment reports.

Table 23. Contract construction[1] employment in February and August as a percent of the annual average, by region, selected years

Region	1967		1966		1965		1964		1960		1955		1939		1935		1929	
	Feb.	Aug.	Feb.	Aug.	Feb.	Aug.	Feb.	Aug.	Feb.	Aug.	Feb.	Aug.	Feb.	Aug.	Feb.	Aug.	Feb.	Aug.
Total	86.5	110.6	85.2	110.9	83.5	111.4	84.0	112.0	85.2	112.5	83.0	111.3	76.3	116.6	68.1	121.9	70.0	124.5
New England	79.4	115.2	80.0	112.8	75.6	115.0	75.5	116.1	78.7	115.7	75.3	112.9	69.9	118.5	61.0	119.6	66.3	126.7
Middle Atlantic	82.8	111.2	81.9	111.2	80.4	111.7	81.8	112.6	84.2	111.4	80.5	110.0	77.9	112.6	70.9	117.9	72.3	120.6
East North Central	83.0	114.0	81.9	114.0	78.9	113.9	78.3	115.9	80.9	117.0	80.4	113.0	86.1	125.8	60.1	128.7	67.4	127.0
West North Central	78.3	117.0	76.6	117.7	73.2	119.6	75.3	118.7	74.0	123.8	74.0	118.6	57.3	128.2	57.0	134.6	54.2	138.3
South Atlantic	92.3	106.2	89.8	107.3	87.6	108.3	86.4	109.1	92.4	107.7	85.9	107.8	81.2	121.9	76.9	113.3	72.7	124.8
East South Central	86.7	109.9	80.8	113.0	82.8	111.5	80.7	112.8	81.6	114.3	87.5	112.7	79.9	121.4	70.1	120.6	75.3	122.2
West South Central	94.5	105.3	88.4	108.6	88.5	108.1	90.2	108.6	91.3	108.8	89.9	107.6	93.7	109.5	72.4	125.6	80.0	117.1
Mountain	81.7	114.9	84.0	113.5	81.6	111.7	84.5	114.0	85.5	112.6	79.6	114.0	62.6	130.9	62.7	127.9	53.9	141.0
Pacific	90.9	109.1	94.2	107.1	91.8	109.2	94.3	107.4	90.1	108.0	90.4	110.4	90.8	107.1	81.4	111.6	80.5	116.5

[1] Data for 1935 includes operative builders.

NOTE: The noncomparability of data for 1929 and 1935 with data since 1939 should not significantly affect the accuracy of the analysis since the data pertain to the relative fluctuations in employment seasonally, rather than absolute levels of employment.

SOURCE: U.S. Department of Commerce, Bureau of the Census. 1929—Fifteenth Census of the United States: 1930. Construction Industry. Summary for the United States. 1935—Census of Business: 1935 Construction Industry.
U.S. Department of Labor, Bureau of Employment Security. 1939–67 Employment and Wages of Workers Covered by State Unemployment Insurance Laws and Unemployment Compensation for Federal Employees.

Table 24. Seasonal adjustment factors for wage and salary workers, February and August, and percent change, by type of contractor, 1968

Industry	Seasonal adjustment factors		Percent by which high seasonal factors exceeded low seasonal factors
	February	August	
Total contract construction	87.0	110.3	26.8
General building contractors	88.2	109.4	24.0
Heavy construction	76.2	118.8	55.9
Highway and street construction	64.5	128.0	98.4
Other heavy construction	86.8	110.5	27.3
Special trade contractors	90.9	107.2	17.9
Plumbing, heating, and air-conditioning	95.8	103.9	8.5
Painting, paperhanging, and decorating	82.3	116.6	41.7
Electrical work	96.0	105.1	9.5
Masonry, plastering, stone, and tile work	89.7	108.8	21.3
Roofing and sheet-metal work	87.5	107.4	22.7
Operative builders	93.1	106.6	14.5

SOURCE: BLS, current employment statistics based on establishment reports.

Table 25. Employment in contract construction as a percent of the annual average employment, February and August, selected years

Year	Contract construction		General building[1]		Heavy construction		Highway construction		Special trades	
	February	August	February	August	February	August	February	August	February	August
1929	70.0	124.5	72.3	121.4	67.8	123.2	45.7	151.7	83.2	111.9
1935	68.1	121.9	62.8	126.8	72.3	114.2	48.4	140.5	78.5	112.0
1939	79.7	114.1	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
1940	71.9	106.0	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
1945	84.7	108.8	84.9	107.3	83.4	114.3	(2)	(2)	85.0	107.4
1947	84.8	110.6	87.5	109.1	72.7	121.8	(2)	(2)	87.5	107.4
1948	82.6	110.1	83.4	109.6	71.0	118.5	(2)	(2)	86.8	107.1
1950	80.2	113.5	79.7	113.8	69.2	123.2	(2)	(2)	85.0	109.3
1955	83.7	111.2	83.7	111.8	73.2	118.3	(2)	(2)	87.5	108.1
1960	87.3	111.8	88.5	111.3	74.3	121.8	63.9	130.4	91.9	107.8
1965	84.5	111.3	85.7	110.7	70.2	121.6	60.1	129.7	89.6	107.4
1966	86.2	110.8	88.2	109.4	72.2	119.0	62.3	126.7	90.8	108.1
1967	88.0	109.9	90.5	108.4	78.6	118.1	66.7	128.2	90.4	107.4
1968	89.0	108.9	92.4	107.5	75.5	117.6	64.3	127.1	92.7	106.0

[1] Data for 1935 includes operative builders.
[2] Not available.

NOTE: The noncomparability of data for 1929 and 1935 with data since 1939 should not significantly affect the accuracy of the analysis since the data pertain to the relative fluctuations in employment seasonally, rather than absolute levels of employment.

SOURCE: U.S. Department of Commerce, Bureau of the Census. 1929—Fifteenth Census of the United States: 1930. Construction Industry. Summary for the United States. 1935—Census of Business: 1935 Construction Industry.
1939–68 - BLS, current employment statistics based on establishment reports.

Table 26. Index of seasonal variation in monthly employment in construction and for carpenters, construction craftsmen (except carpenters), and construction laborers, 1960 and 1968

Month	Construction		Carpenters		Construction craftsmen, (except carpenters)		Construction laborers	
	1968	1960	1968	1960	1968	1960	1968	1960
January	87.9	90.1	85.2	96.4	94.6	92.9	73.9	83.8
February	90.3	87.1	89.6	92.1	96.6	86.9	79.5	78.3
March	91.1	85.8	88.4	93.4	95.1	87.1	80.1	72.3
April	96.6	94.7	94.5	100.0	93.1	97.0	99.6	90.8
May	99.7	102.1	101.2	102.2	98.9	101.2	106.2	110.0
June	105.1	108.1	102.4	107.1	100.8	106.8	118.5	120.8
July	107.6	111.6	105.5	104.7	106.9	112.0	123.2	129.6
August	110.4	110.2	107.8	105.4	108.8	114.3	124.1	121.6
September	104.9	104.3	110.2	103.0	103.8	106.4	100.5	99.5
October	102.9	107.1	107.8	103.5	103.1	102.8	95.4	104.4
November	120.0	102.4	105.1	98.4	99.1	101.3	98.2	96.4
December	101.3	96.5	102 2	93.4	99.1	91.2	100.7	93.0

SOURCE: Current population survey conducted for the BLS by the Bureau of the Census.

Table 27. Seasonal adjustment factors for wage and salary workers, by class of workers in contract construction, February and August, 1948–68

Year	Construction workers		Other workers	
	February	August	February	August
1948	85.9	110.5	96.4	103.4
1949	85.9	110.5	96.4	103.2
1950	85.9	110.5	96.6	103.2
1951	85.9	110.5	96.7	103.1
1952	85.7	110.5	96.8	103.0
1953	85.6	110.8	97.1	102.8
1954	85.4	110.8	97.2	102.5
1955	85.3	111.0	97.5	102.3
1956	85.0	111.4	97.8	102.2
1957	84.6	111.8	97.9	102.0
1958	83.6	112.3	98.1	101.8
1959	83.1	112.7	98.2	101.8
1960	82.4	113.1	98.3	101.8
1961	82.1	113.4	98.4	101.7
1962	82.3	113.4	98.4	101.7
1963	82.4	113.2	98.5	101.6
1964	82.8	113.0	98.5	101.5
1965	83.4	112.7	98.5	101.4
1966	84.2	112.4	98.6	101.3
1967	84.8	112.1	98.6	101.2
1968	85.3	111.9	98.6	101.2

SOURCE: BLS, current employment statistics based on establishment reports.

Table 28. Employment in construction by class of worker, percent change from first quarter (January, February, March) to third quarter (July, August, September), 1962–68

Year	Total	Wage and salary workers			Self-employed and unpaid family workers
		Total	Private	Government	
1962	23.6	27.7	34.2	-1.6	6.6
1963	27.2	30.1	36.9	.2	15.4
1964	24.6	27.3	32.6	2.6	13.2
1965	22.9	25.6	30.1	4.3	9.8
1966	16.5	18.7	21.2	6.3	5.6
1967	19.4	20.1	23.7	4.1	14.7
1968	19.8	21.3	24.2	6.5	12.0

SOURCE: Current population survey conducted for the BLS by the Bureau of the Census.

Table 29. Employment in construction by selected occupational group, percent change from first quarter (January, February, March) to third quarter (July, August, September), 1962–66[1]

Year	Carpenters		Construction craftmen (excluding carpenters)	
	In construction industry	In other industries	In construction industry	In other industries
1962	19.3	-5.4	33.5	12.4
1963	32.0	6.3	34.6	8.4
1964	35.6	-7.5	33.5	9.5
1965	10.6	-1.1	19.9	15.6
1966	4.6	3.1	27.2	11.0

[1] Last year for which data is available.

SOURCE: Current population survey conducted for the BLS by the Bureau of the Census.

Table 30. Seasonal adjustment factors for contract construction employment by type and size of contractor and region, February and August, 1968

Type of contractor and region	Small contractor			Large contractor		
	February	August	August as a percent of February	February	August	August as a percent of February
General building:						
South	90.6	107.9	119.1	93.9	104.2	110.0
Highway and street:						
North Central	34.8	157.1	451.4	47.5	143.0	301.1
West	71.1	124.4	175.0	81.4	115.9	142.4
Plumbing, heating, and air-conditioning:						
Northeast	96.9	103.0	106.3	95.3	103.3	108.5
North Central	94.2	105.7	112.2	95.5	103.7	108.6
West	93.6	106.1	113.4	95.4	103.7	108.7
Printing, paperhanging, and decorating:						
Northeast	70.3	120.0	170.7	81.9	116.2	141.9
North Central	79.7	117.6	147.6	84.0	116.9	139.2
South	87.5	114.8	131.2	87.4	110.9	126.9
West	86.6	117.9	136.1	89.1	112.0	125.7
Electrical work:						
Northeast	95.3	103.4	108.5	96.3	102.6	106.5
North Central	95.4	105.9	111.0	97.0	102.3	105.5
South	96.7	106.7	110.3	97.2	103.8	106.8
West	94.0	105.3	112.0	96.7	102.9	106.4
Masonry, stonework, and plastering:						
Northeast	84.9	109.7	129.2	87.2	103.1	118.2
North Central	83.7	111.2	132.9	91.7	110.6	120.6
South	91.1	107.7	118.2	91.3	109.7	120.2
West	94.6	107.8	114.0	95.0	105.8	111.4
Roofing and sheet-metal work:						
Northeast	76.1	112.6	148.0	87.3	105.7	121.1
North Central	83.6	114.5	137.0	90.3	106.6	118.1
South	93.3	104.7	112.2	93.3	104.4	111.9
West	91.5	107.5	117.5	99.5	100.0	100.5
Special trades, other:						
Northeast	82.1	111.4	135.7	90.9	104.6	115.1

SOURCE: BLS, current employment statistics based on establishment reports.

Table 31. Seasonal adjustment factors for employment in the contract construction industry, by State, February and August, selected years

State	1968		1962		1958		1952		1948		1934	
	February	August	February	August	February	August	February	August	February	August	February	August
United States	87.1	110.3	84.7	111.7	85.5	110.8	87.1	109.6	88.3	109.3	92.4	109.8
Alabama	88.3	108.1	38.8	109.2	89.6	109.2	90.4	111.0	90.4	111.7	93.2	106.2
Arizona	93.7	104.2	95.6	103.6	96.7	102.2	99.4	99.9	97.8	102.3	92.0	104.5
Alaska	52.8	150.8	46.0	162.6								
Arkansas	85.5	113.9	84.9	113.8	84.8	113.8	84.9	114.2	86.6	114.7	95.8	103.1
California	93.0	105.8	92.0	106.0	92.3	105.8	91.4	105.0	95.0	104.2	96.0	103.8
Colorado	86.9	113.0	87.0	111.5	86.5	111.4	84.8	112.6	82.2	116.6	80.3	126.4
Connecticut	81.4	112.0	80.2	112.9	81.7	111.6	85.3	109.5	85.0	109.2	82.4	110.9
Delaware	81.3	111.3	80.3	110.7	82.9	109.2	86.1	109.9	83.5	110.0	83.5	112.4
District of Columbia	89.7	107.0	89.6	108.1	91.3	107.1	93.4	104.3				
Florida	97.7	102.9	96.8	103.2	97.0	103.1	97.1	102.5	95.4	103.6	98.3	108.5
Georgia	91.5	107.0	90.9	107.8	92.2	107.4	93.2	108.5	92.3	110.0	97.7	101.5
Hawaii	98.3	102.3	98.5	102.9	98.3	103.5						
Idaho	75.8	120.2	72.7	121.7	70.1	122.6	70.7	121.5	74.0	117.5	59.6	130.8
Illinois	83.0	112.5	82.2	112.7	83.5	111.7	85.3	110.5	85.7	110.1	86.7	109.7
Indiana	84.9	111.6	82.7	113.1	82.7	112.6	85.4	112.9	85.6	111.4	78.7	118.1
Iowa	78.6	117.1	76.4	119.5	74.1	121.5	74.8	119.3	78.6	116.1	78.9	116.2
Kansas	85.1	111.2	83.6	113.0	80.6	113.3	82.9	114.8	86.2	112.2	95.2	112.0
Kentucky	81.8	112.0	78.4	116.5	79.6	116.3	82.3	111.5	82.2	112.6	88.8	119.3
Louisiana	92.7	105.0	92.0	106.7	91.5	106.7	92.3	107.7	94.0	108.3	93.6	103.6
Maine	77.8	119.4	75.3	121.0	74.2	120.5	74.2	119.1	74.4	119.0	76.3	116.2
Maryland	82.8	110.6	82.3	110.3	85.5	109.1	87.4	108.2	87.2	107.7	91.9	99.9
Massachusetts	79.8	112.4	77.7	113.8	78.6	112.5	81.4	110.8	83.4	109.8	90.1	108.1
Michigan	82.9	113.8	78.9	116.7	79.5	114.8	84.2	111.3	84.2	110.3	87.9	108.7
Minnesota	75.2	120.7	73.2	121.6	72.4	123.0	73.6	120.5	78.6	116.3	76.5	113.0
Mississippi	82.6	113.0	83.1	115.5	83.7	114.8	84.6	114.3	84.2	115.7	83.4	128.4
Missouri	85.1	110.9	83.1	112.2	84.4	111.6	87.3	110.1	87.8	108.7	91.1	102.7
Montana	66.4	127.7	66.0	127.9	63.4	129.8	64.6	126.1	69.2	122.4	69.9	124.9
Nebraska	81.2	113.0	78.4	114.9	77.5	115.7	75.3	118.4	74.5	118.8	65.6	125.4
Nevada	89.4	104.4	89.1	106.8	86.7	109.6	89.9	110.1	86.1	110.9	85.2	113.0
New Hampshire	78.4	115.5	74.6	117.4	74.6	118.0	76.9	114.2	77.5	113.0	80.5	118.0
New Jersey	83.5	109.2	83.1	109.6	84.7	108.8	87.0	107.1	87.5	105.8	91.7	103.7
New Mexico	85.4	111.6	88.7	108.2	91.8	106.6	90.0	107.6	89.2	112.7	85.8	125.1
New York	83.2	111.0	82.5	110.8	83.1	110.3	84.6	109.3	85.5	109.0	85.6	108.7
North Carolina	92.3	105.4	90.7	107.3	90.5	107.1	93.8	106.1	93.6	106.3	95.8	102.5
North Dakota	65.5	133.4	59.7	136.3	53.9	139.1	53.9	139.7	61.2	135.5	61.5	149.4
Ohio	81.8	112.4	78.2	116.0	79.0	115.4	81.6	113.4	82.3	111.6	82.4	112.1
Oklahoma	92.2	108.0	90.9	108.0	90.6	108.8	92.4	107.7	92.6	108.3	95.6	110.5
Oregon	85.9	114.2	[illegible]	117.2	80.3	119.0	80.7	120.8	85.0	117.1	88.1	115.5
Pennsylvania	79.3	112.9	78.5	114.9	80.3	113.5	84.7	110.8	85.5	110.0	87.3	109.4
Rhode Island	78.9	112.7	75.5	113.7	76.9	113.2	79.0	110.6	80.8	110.9	91.5	116.6
South Carolina	94.8	104.6	92.9	106.1	92.4	106.1	93.0	108.7	92.2	111.6	90.5	114.4
South Dakota	71.8	123.5	68.0	124.8	64.9	127.9	64.8	127.2	68.5	126.5	62.2	134.6
Tennessee	86.1	109.8	84.7	111.9	86.1	111.1	88.8	110.3	87.4	109.4	94.3	106.7
Texas	95.1	104.7	94.6	105.7	94.9	104.9	95.3	105.3	94.5	105.2	95.1	108.0
Utah	74.6	119.4	76.2	117.5	76.5	118.4	75.1	118.9	75.7	116.0	87.0	110.0
Vermont	73.2	119.7	68.1	125.0	68.4	123.9	72.9	120.4	73.6	119.4	69.2	123.9
Virginia	87.1	109.3	86.2	110.1	87.8	109.2	90.1	108.6	89.4	108.7	94.3	104.4
Washington	87.2	112.4	85.1	113.2	82.5	114.1	83.6	112.1	86.8	111.5	81.5	111.2
West Virginia	76.9	113.9	77.7	115.1	81.7	114.2	83.7	113.1	83.7	111.5	84.2	112.8
Wisconsin	83.1	114.5	81.8	114.8	83.0	114.4	84.2	112.9	86.1	110.8	84.9	110.1
Wyoming	70.7	128.1	73.1	125.3	69.4	127.8	67.7	127.6	66.6	126.6	64.8	126.7

SOURCE: BLS, current employment statistics based on establishment reports.

Table 32. Percent distribution of employees by estimated quarters of work[1] for selected industries, 1964

Industry	Employees with some earnings from the industry,[2] classified by the estimated number of quarters they worked in the industry					Employees with major proportion of earnings from the industry,[3] classified by the estimated number of quarters they worked in the industry				
	Any quarter	1 quarter	2 quarters	3 quarters	4 quarters	Any quarter	1 quarter	2 quarters	3 quarters	4 quarters
Contract construction:										
General building contractors	100	34	23	14	30	100	14	19	19	48
Heavy construction	100	34	23	16	27	100	13	20	23	45
Special trades contractors	100	30	20	13	37	100	12	15	16	57
Mining:										
Bituminous coal	100	12	10	9	69	100	6	8	9	78
Manufacturing:										
Textile mill products	100	15	12	9	64	100	7	9	10	74
Printing and publishing	100	18	13	9	60	100	8	10	9	72
Petroleum refining	100	12	9	7	73	100	4	6	7	83
Primary metals	100	12	9	7	73	100	4	7	7	82
Transportation equipment	100	12	10	7	71	100	4	7	7	81
Transportation and public utilities:										
Water transportation	100	22	14	12	52	100	8	10	14	68
Utilities, electric and gas	100	9	8	5	77	100	3	6	5	85
Wholesale and retail trade:										
General merchandise stores	100	35	17	10	38	100	23	15	12	51

[1] Workers were classified by the number of calendar quarters in which they were estimated to have had earnings from the industry.
[2] Workers employed in more than 1 industry during the year were counted in each industry in which they were employed.
[3] Workers employed in more than 1 industry during the year were reported in the industry from which they received the major portion of their earnings.

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

SOURCE: Social Security Administration's 1-percent continuous work history sample.

Table 33. Percent distribution of employees of general building contractors by quarters[1] of work, by region, 1964

Region	Employees with some earnings from the industry[2]					Employees with major proportion of earnings from the industry[3]				
	Any quarter	1 quarter	2 quarters	3 quarters	4 quarters	Any quarter	1 quarter	2 quarters	3 quarters	4 quarters
All regions	100.0	33.8	22.5	14.3	29.5	100.0	14.0	19.3	18.7	48.1
Northeast	100.0	26.1	20.9	15.9	37.1	100.0	9.5	16.5	19.7	54.3
Middle Atlantic	100.0	28.6	20.9	16.3	34.2	100.0	10.9	16.2	19.7	52.5
Border States	100.0	34.0	25.0	13.2	27.7	100.0	14.1	21.1	17.9	46.9
Southeast	100.0	39.0	23.7	13.4	23.8	100.0	18.8	21.0	18.4	41.9
Great Lakes	100.0	29.6	21.9	14.0	34.4	100.0	10.6	18.5	18.0	52.8
Middle West	100.0	33.1	25.4	15.0	26.5	100.0	14.1	23.7	20.4	41.8
Southwest	100.0	40.0	23.0	12.8	24.2	100.0	16.9	20.6	17.7	44.8
Mountain	100.0	40.8	20.1	12.6	26.5	100.0	18.5	17.9	16.8	46.7
Pacific	100.0	31.9	20.8	14.8	32.5	100.0	12.8	17.2	18.2	51.7

[1] Workers were classified by the number of calendar quarters in which they performed some work.
[2] Workers employed in more than 1 industry during the year were counted in each industry in which they were employed.
[3] Workers employed in more than 1 industry during the year were reported in the industry from which they received the major portion of their earnings.

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

SOURCE: Social Security Administration's 1-percent continuous work history sample.

Table 34. Percent distribution of employees of general building contractors, by estimated quarters[1] of work, by age, 1964

Quarters	All ages	Age									
		Under 20	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-65	Over 65
	Employees with some earnings from the industry[2] and estimated quarters worked in the industry											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1 quarter	34.0	51.9	46.1	36.9	32.8	32.6	27.5	26.1	26.6	24.9	23.3	28.6
2 quarters	24.9	32.9	26.9	22.0	21.0	19.5	19.9	21.3	18.3	20.0	21.5	24.3
3 quarters	20.9	10.2	12.3	14.8	14.1	13.1	15.4	14.7	16.9	16.7	15.8	15.6
4 quarters	20.0	4.7	14.5	26.2	31.9	34.7	37.0	37.8	38.0	38.2	39.2	31.2
	Employees with major proportion of earnings from the industry[3] and estimated quarters worked in the industry											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1 quarter	13.9	36.6	17.7	11.9	11.1	10.6	10.3	9.7	11.3	10.2	11.5	22.4
2 quarters	19.2	40.2	29.5	16.7	16.6	15.5	14.2	16.1	13.5	14.4	17.5	23.2
3 quarters	18.6	15.1	21.7	21.9	18.4	16.2	18.3	17.3	19.8	19.8	17.5	16.8
4 quarters	48.1	7.9	30.8	49.3	53.6	57.5	57.0	56.7	55.2	55.4	53.4	37.3

[1] Workers were classified by the number of calendar quarters in which they were estimated to have had earnings from the industry.
[2] Workers employed in more than 1 industry during the year were counted in each industry in which they were employed.
[3] Workers employed in more than 1 industry during the year were reported in the industry from which they received the major portion of their earnings.

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

SOURCE: Social Security Administration's 1-percent continuous work history sample.

Table 35. Percent distribution of employees of general building contractors, by estimated quarters of work,[1] by race, 1964

Quarters	Employees with some earnings from the industry,[2] classified by estimated number of quarters they worked in the industry			Employees with major proportion of earnings from the industry,[3] classified by the estimated number of quarters worked in the industry		
	All workers	Race		All workers	Race	
		Negro	Other		Negro	Other
Total	100.0	100.0	100.0	100.0	100.0	100.0
1 quarter	33.7	40.7	32.4	13.9	17.6	13.4
2 quarters	22.4	23.2	22.3	19.2	21.4	18.8
3 quarters	14.2	14.5	14.2	18.6	20.9	18.3
4 quarters	29.4	21.4	30.9	48.1	39.9	49.3

[1] Workers were classified by the number of calendar quarters in which they were estimated to have had earnings from the industry.
[2] Workers employed in more than 1 industry during the year were counted in each industry in which they were employed.
[3] Workers employed in more than 1 industry during the year were reported in the industry from which they received the major portion of their earnings.

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

SOURCE: Social Security Administration's 1-percent continuous work history sample.

CHAPTER V. UNEMPLOYMENT IN CONSTRUCTION

The unemployment rate[31] for construction is normally the highest of any major industry division. Even at its seasonal low, the rate is significantly higher for construction than for other industries. The average unemployment rate between 1948 and 1968 was about 11 percent for construction and about 5 percent for workers in nonagricultural industries as a whole. (See table 36.) In 1968, the average construction unemployment rate of 6.9 percent was nearly double the rate for total nonagricultural industries, 3.6 percent.

During the Korean War, 1951 through 1953, the average construction unemployment rate was 6.2 percent due to high levels of construction activity and the tight labor situation during this period, especially the relative absence of young workers. Between 1958 and 1962, the unemployment rate for construction workers was particularly high; it reached a peak of over 15 percent in 1961. Since 1961, the rate has more than halved, but remains significantly higher than for all other major industries. A substantial factor in this reduction has been not only the relatively high levels of construction employment, but also the availability of jobs in other industries.

A higher proportion of construction workers experience unemployment than workers in any other major nonagricultural industry group. In 1968, 24 percent of all construction workers were unemployed at some time during the year (computed on the basis of industry of longest job); this ratio reflects a decline from 43.9 percent in 1961. (See table 37 and appendix table G-22.) In comparison, only 13 percent of workers in manufacturing, and 12 percent of all the workers in nonagricultural industries as a whole, experienced unemployment during 1968.

There are several factors that contribute to the high unemployment rate for construction workers. Construction is a seasonal industry, especially in areas where temperature, precipitation, and other factors usually result in the curtailing of construction. In 1968, for example, the seasonal adjustment factors for unemployed private wage and salary workers in construction ranged from 157 in February to 66 in August. (See table 54.) Construction workers must change employers or move from project to project more frequently than workers in other industries because each construction project has a limited life (table 37); the completion of the project or the changing occupational requirements on a particular job may create unemployment for construction workers. Finally, construction activity is more cyclical than many other types of employment, and even without general construction cycles, changes in the level and composition of building activity in particular localties create periods of unemployment for construction workers. In Southern California in 1966 and 1967, a dramatic drop occurred in residential construction, which resulted in a decline of more than one-quarter in the hours of work for carpenters.[32]

Duration of unemployment by spell of unemployment

Unemployment in construction is likely to be of relatively short duration, at least for any given spell.[33] Between 1960 and 1968, the average duration of each incident of unemployment for workers in construction

[31] The unemployment rates cited here refer to private wage and salary workers only. Construction unemployment mostly affects private wage and salary workers—they account for about 70 percent of employment, but about 90 percent of the industry's unemployment. Unemployment data in this report for 1967 and 1968 refer to persons 16 years of age and over; data for prior years include persons 14 and 15 years old. The comparability of the rates should not be affected since 14 and 15 year olds represented only 0.4 percent of the industry's total employment.

[32] From data supplied to the Bureau of Labor Statistics by the Administrators of Private Health, Welfare, and Pension Funds covering construction workers in Southern California.

[33] In the monthly Current Population Survey, duration of unemployment represents the length of time (through the current survey week) during which persons classified as unemployed had been *continuously* looking for work.

was slightly shorter than for unemployed workers in manufacturing and (with the exception of 1967) in nonagricultural industries as a whole. (See table 39.)

Since 1961, not only has the unemployment rate dropped throughout the country, but also the average duration of spells of unemployment. Unemployed workers in nonagricultural industries as a whole, manufacturing, and construction experienced a steady reduction in the average duration of each spell of unemployment for each person employed.

The proportion of unemployment in construction of less than 5 weeks' duration and 5 to 14 weeks' duration varies greatly over the course of the year. The percent of unemployment of short-term duration (less than 5 weeks) is higher during the peak construction activity months of June through September, reflecting the high rate of frictional unemployment associated with construction. The high rate of short-term joblessness continues into November and December as construction activity declines. By January, the inability of many construction workers to find other jobs in the industry, because of the seasonal decline in activity, results in an increase in unemployment of 5 to 14 weeks' duration. Unemployment of 15 to 26 weeks duration, due to the accumulation of winter layoffs, reaches a high point in spring—generally constituting one-third of total reported unemployment by April. It remains high until construction activity picks up again in early summer. (See table 40 and appendix table G-21.)

Incidences of unemployment and full extent of time lost

Construction workers are more likely than those in any other industry group, except agriculture, to experience repeated spells of unemployment. Nearly half of the 1.1 million workers in construction who experienced unemployment during 1968 had two spells or more of unemployment. (See table 41.) This number amounted to 11.8 percent of the total wage and salary workers whose longest job during the year was in the construction industry.[34] (See table 38.) In contrast, only about 30 percent of the jobless workers in manufacturing and in all nonagricultural industries experienced more than one incident of unemployment during the year—only 3.5 percent and 3.6 percent, respectively, of the total number reporting work experience. (See tables 38 and 41.) Similarly, the proportion of construction workers having three or more spells of unemployment (6.5 percent) is more than three and one-half times greater than workers in both manufacturing (1.7 percent) or nonagricultural industries as a whole (1.8 percent).

These recurrent spells of joblessness add up to extended unemployment for construction workers.[35] Counting all periods of unemployment during 1968, the rate of work losses in construction totaling 15 weeks or more was 6.6 percent or about two and one-half times as great as in manufacturing and in nonagricultural industries as a whole. (See table 38.)

Unemployment by age groups

As in other industries, teenagers in construction have a higher unemployment rate than older workers. (See table 42.) In 1968, persons between the ages of 16 and 19 made up 12.7 percent of unemployed workers in construction, but only 5.7 percent of employed workers in construction. The age group in construction which experienced a proportionately lower share of unemployment than employment from 1963 through 1968 were workers between 25 and 44 years of age.

[34] Unlike the monthly surveys that classify workers according to industry of last employment, the annual surveys of work experience classify workers by industry of longest job.

[35] By reflecting all spells of unemployment and the cumulative time lost over the course of an entire year, the work experience data shows a much smaller proportion with unemployment of less than 5 weeks and a much larger proportion with 15 weeks or more. Data for a single month (or an average of monthly data) discussed in the section on Duration of Unemployment by Spell of Unemployment do not reflect the full extent of the unemployment problem in construction, because the current duration of unemployment, as measured in the monthly Current Population Survey, is not necessarily the final duration for any given spell of unemployment. Current duration and final duration are the same only for those workers who actually find employment or withdraw from the labor force immediately after the survey week. A further limitation is that the data represent only the most recent continuous or unbroken spell of unemployment.

Teenagers make up a smaller portion of the unemployed in construction than in the economy as a whole. (See table 43.) In 1968, they made up about 13 percent of construction unemployment compared with about 22 percent of the unemployment in all industries combined. Even in summer months when teenagers flow heavily into construction, their proportion of the unemployed has been consistently lower than in all industries combined.

The suggestion often has been made that teenagers, especially during summer months, may be the cause of the high unemployment rate in construction. The exclusion of teenagers, however, has only a small impact on the overall unemployment rate; for example, 6.3 percent of the construction workforce was unemployed in 1968; excluding teenagers, the rate was 5.9 percent. (See table 44.) The removal of teenagers from the computation for the summer months (June, July, and August), however, does reduce the ratio somewhat. In the summer of 1968, for example, the overall unemployment rate for construction was 4.6 percent including teenagers, and 3.9 percent excluding teenagers. For the same period, the unemployment rate for all other industries as a group was 2.7 percent, 2.2 percent without teenagers.

The influx of teenagers into construction in the summer months appears to be an important source of workers. In 1968, the average number of teenagers employed in construction in the summer months (June, July, and August) averaged 370,000 compared with only 120,000 in the winter months (January, February, and March) of the same year. The total number of unemployed male wage and salary workers in construction averaged 195,000 workers in the summer months, indicating that if teenagers were not available the pressure on the construction labor force would have been more severe.

Unemployment by race [36]

The unemployment rate for Negro workers in construction was significantly higher than for white workers between 1963 and 1968, (See table 45.) However, the Negro unemployment rate dropped considerably faster over this period than the rate for white workers. The following tabulation demonstrates the substantial drop in the ratio of the Negro to the white unemployment rate in construction from 1963 through 1968, with the contrasting stability in the rates for all white and males of all other races in the economy.

Year	Total males	Males in construction
1963	2.26	2.08
1964	2.17	1.96
1965	2.11	1.96
1966	2.28	1.74
1967	2.22	1.46
1968	2.15	1.65

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

The differentials in unemployment rates between Negro and white carpenters and laborers have narrowed also over the 1963–68 period. In fact, the unemployment rates for Negro carpenters and construction laborers were lower than those of whites in 1968.

The improved work experience of the Negro worker in construction may be attributed to sustained national economic growth as well as to greater employment opportunities in the construction industry. While high demand for construction manpower has benefited Negro workers in the industry, rapid expansion throughout the economy has siphoned off a portion of the Negro construction labor force that otherwise would be unemployed.

[36] Statistics for workers other than whites are used here to measure the unemployment of Negro workers. Negroes constitute about 92 percent of all such workers in the United States.

The plight of the Negro in construction, as elsewhere, derives from his low position on the occupational ladder. (See tables 46 and 48.) In 1968, for example, 4.4 percent of all males other than whites were employed as construction laborers compared with only 1.2 percent of white males. In addition, the following tabulation shows that while the ratio of white craftsmen to laborers is about 4 to 1, the ratio of Negro skilled workers to unskilled workers is about 1 to 1.

Year	Number of construction craftsmen per construction laborer	
	White	All other races
1963	4.16	.72
1964	3.95	.79
1965	3.99	.76
1966	4.73	.95
1967	4.43	.99
1968	4.42	.95

SOURCE: Current Population Survey conducted for the BLS by the Bureau of Census

Unemployment in construction and the Nation's labor force

The unemployment rate in construction is highly sensitive to changes in job opportunities elsewhere in the country, particularly in winter months. When employment conditions in other industries are improving, the number of unemployed workers in construction falls. Similarly, when the level of activity in construction rises rapidly, either seasonally or secularly, the construction work force often can be augmented substantially in a very short period. The absolute changes in employment and unemployment of male wage and salary workers in construction are presented in the following tabulation. The data, shown in thousands, indicate that a large portion of the potential construction workers is employed in other industries or is outside the labor force at any given time during a year.

Year	Increase in employment between			Decline in unemployment between		
	January and June	February and July	March and August	January and June	February and July	March and August
	(In thousands)			(In thousands)		
1964	851	956	865	−334	−355	−220
1965	775	991	829	−299	−339	−312
1966	674	791	724	−299	−252	−203
1967	560	822	703	−175	−237	−179
1968	701	722	846	−215	−242	−223
Average:						
1964–68	712	856	792	−250	−285	−227

As employment rises on average by 700,000 to 850,000 from winter to summer, the number of unemployed declines by about 200,000 to 300,000. The 400,000 to 650,000 net increase in the construction labor force from winter to summer results from the entrance of workers from outside construction—youths who work during their school vacation and men who are in other industries or not in the labor force during the winter months.

The ability of workers employed in other industries to enter construction is faciliated by the fact that many members of skilled construction crafts are employed in maintenance, repair, and force account con-

struction in other industries. Of the 854,000 carpenters employed, on the average in 1966. 202,000, or about one-fourth, worked in nonconstruction sectors. (See table 47.) Also, of the 1,980,000 construction craftsmen (other than carpenters) employed in 1966, 661,000 or about one-third, were employed outside construction.

Many construction workers also work at other occupations during periods of low construction activity. These workers provide a reservior of potential construction labor. In 1961, about three of every ten job shifts by carpenters were to nonconstruction occupations.[37] Similarily, about one of every four job shifts by other construction craftsmen was to nonconstruction occupations. With regard to workers shifting into construction occupations, one of every four workers moving into the carpenter occupation was previously working at a nonconstruction occupation. A similar situation existed for construction craft occupations, except carpenters.

The high elasticity of the construction labor force has several manpower implications: First, some workers are willing to leave nonconstruction industries at particular times of the year or phases of the business cycle to accept generally higher paying but less secure jobs in construction. Second, because of the movement of workers from nonconstruction industries, worker shortages in particular localities at peak construction times may be considerably less than they would otherwise be. Third, their earnings in construction are not the sole criterion upon which the economic welfare of these workers should be judged.

Unemployment by skill

The unemployment rate for all construction workers has declined steadily in recent years. For carpenters, the rate of decline has been the most dramatic, from an average of 12.3 percent in the recession year of 1961, to a low of 4.7 percent in 1968. Almost comparable rates of decline have been experienced by other construction craftsmen (10.7 percent to 4.4 percent), and construction laborers (21.7 percent to 11.4 percent). Even with this rapid decline, however, the unemployment rate for construction craftsmen was still about twice as high as for all craftsmen in 1968. (See table 49.)

The unskilled worker in construction faces the most serious unemployment problem. Unemployment rates for construction laborers are generally about twice as high as for construction craftsmen. (See table 49.) The annual average unemployment rate for construction laborers in 1968 was 11.4 percent; for carpenters, 4.7 percent; and for other construction craftsmen, 4.4 percent.

Construction laborers experience fewer spells of unemployment each year than workers in other occupations associated with construction, but these spells usually last for longer periods. (See table 50.) In 1968, 52 percent of the unemployed construction laborers had two or more spells of unemployment, compared with 56 percent of the carpenters, and 48 percent of the construction craftsmen, except carpenters. However, a somewhat higher proportion of the unemployed laborers was out of work 15 weeks or longer (30 percent), compared with carpenters (28 percent) and construction craftsmen, except carpenters (25 percent). A still higher proportion of unemployed construction laborers experienced periods of unemployment lasting 27 weeks or more (10.3 percent), compared with unemployed carpenters (4.8 percent), and other construction craftsmen (5.6 percent). The more favorable occupational and industry mobility of construction craftsmen makes them better able to take advantage of opportunities for employment in other industries when construction activity declines.

The unemployment experience of construction craftsmen varies considerably by craft. Workers in crafts whose operations are more susceptible to weather conditions experience considerably more unemployment than journeymen in other crafts. In 1959,[38] only a third or less of all brickmasons, cement and concrete finishers, plasterers, and roofers; and about two-fifths of all carpenters, painters, and structural metal workers, reported 50 weeks or more of employment. (See table 52.) On the other hand, for trades that are primarily performed indoors, about 7 of every 10 electricians and glaziers and 6 of every 10 plumbers and pipefitters, reported at least 50 weeks of employment.

[37] Getrude Bancraft and Stuart Garfinkle, "Job Mobility in 1961," *Monthly Labor Review*, August 1963.
[38] The most recent year for which data are available.

Seasonal unemployment in construction

Although the seasonal movements of both employment and unemployment in construction are particularly great, the seasonal pattern of unemployment is more pronounced; while employment varies about 30 percent from winter lows to summer highs, unemployment typically varies over 100 percent. In 1964, when average unemployment in construction was 391,000 persons, unemployment ranged from a peak of 643,000 in the winter to a low of 262,000 in the late summer and early fall. (See table 53.) Unemployment hit its lowest levels in 15 years in 1968, ranging from 443,000 in January to 127,000 in September.

The monthly seasonal pattern of unemployment in construction has shifted since 1948.[39] (See table 54.) Declines in seasonal adjustment factors of unemployment have been experienced in March, April, and November and a corresponding increase in December. Several reasons could account for these shifts. Contractors may be performing relatively more work in the early spring and fall, and less in the winter. Alternative job opportunities for construction workers in nonconstruction industries may be increasing also and reducing the potential construction labor force. Some combination of these effects is likely. In addition, the shift in the seasonality of unemployment is perhaps somewhat related to the changing mix and geographic location of construction activity. Better planning by contractors to finish projects before the onslaught of winter also may contribute to this phenomena.

An estimated one-third of total unemployment in construction during the year can be considered seasonal unemployment. (See appendix B for a discussion of the methods used in preparing this estimate.) Further estimates are that private wage and salary workers in construction made up 15.5 percent of the Nation's total seasonal employment in 1968.[40]

Seasonal unemployment by skill

Carpenters and other construction craftsmen experience considerably wider swings in seasonal unemployment than construction laborers.[41] Unemployment rates for construction laborers are much higher in winter and decline at a slower rate through the spring and summer. In other words, the construction laborers have less favorable work experience throughout the year than craftsmen. Laborers rise as a percentage of total unemployment from winter lows to a peak in mid-summer. (See table 55.) As the seasonal decline in employment for craftsmen begins in the fall, laborers decline as a percentage of all unemployment. To a large degree, construction unemployment in the peak building season is a problem of the unskilled.

Seasonal unemployment by race

White workers generally have experienced considerably sharper seasonal swings in unemployment than Negro workers because Negroes are employed mainly in occupations, such as laborers that have high unemployment rates throughout the year. As shown in the following tabulation, unemployment of white workers in construction dropped an average of about 60 percent from first quarter to third quarter each year between 1962 and 1968. Since 1964, there has been a great percentage decline in unemployment of Negro workers. This decline, as shown below, reflects the high demand for construction manpower. Also, as mentioned earlier, the rapid expansion of the economy has enabled other industries to absorb a portion of the Negro work force that otherwise would be unemployed.

[39] This is based on seasonal adjustment factors, derived in a manner which effectively limits the impact of year to year changes in aggregate conditions of demand in construction and other sectors.

[40] In 1968, these workers constituted 8.8 percent of the country's total unemployment and only 4.4 percent of total employment.

[41] The following usually occurs in the unemployment levels between February and August: Carpenters and construction craftsmen, except carpenters, decline by two-thirds or more and construction laborers decline by less than one-half.

First to third quarter of—	Whites	All other races
1962	64.9	34.7
1963	62.1	55.1
1964	56.1	43.5
1965	59.1	45.6
1966	56.2	47.1
1967	61.0	55.8
1968	62.2	62.3

Seasonal unemployment by age

Unemployment among teenagers rises in summer months, when many enter the labor force, and declines during the fall and winter months, when many return to school. Between 1963 and 1968, teenagers in construction made up about 5 to 6 percent of employment and between 7 and 13 percent of unemployment on the annual average. (See table 43.) In the peak summer months of June, July, and August, however, they made up between 8 and 10 percent of employment and 9 to 23 percent of unemployment.

Frictional unemployment

The rate of frictional unemployment in construction is probably high compared to other industries.[42] The frequency of job shifts contributes greatly to the high level of frictional unemployment in construction. Many construction workers are skilled craftsmen whose attachment is more commonly to crafts than to particular employers. They follow the source of work, are employed by several firms during the year, and experience unemployment while shifting jobs. The seasonal nature of work in construction also contributes to frictional unemployment. Many construction workers laid off for seasonal reasons experience unemployment while searching for alternative construction employment before accepting jobs in nonconstruction industries. Workers also are unemployed for brief periods while waiting for jobs of acceptable duration.

Other circumstances also contribute to the high rate of frictional unemployment in construction. Most workers prefer to work near their homes. Shifting employment opportunities, however, may demand a high degree of geographic mobility. Workers with strong family and community ties may accept unemployment for a short duration in hope of finding work close to home. Worker mobility also may be somewhat retarded by the fact that most health, welfare, and pension funds are not vested.

About two-thirds of the men who left their construction jobs in 1961 did so because of loss of job, compared with about 40 percent in manufacturing and nonagricultural industries as a whole. (See table 56.) Proportionally few construction workers left their job for any other reason in that year, compared with the other two industry groups.

These data suggest that frictional unemployment, since it is strongly associated with job termination, may not be particularly reduced in size by a high level of aggregate demand. A higher level of building activity should be expected to increase terminations, perhaps proportionately and should not greatly affect frictional unemployment, although some reduction would probably occur because of the increased availability of alternative construction jobs.

Programs with the greatest payoff for reducing frictional unemployment should focus on improving the system of disseminating information on current and anticipated job vacancies both in construction and in industries that provide alternative job opportunities. The job placement and referral functions of union hiring halls and the public employment service might be improved. Advance notice of job termination and job va-

[42] D. Quinn Mills, *Factors Determining Patterns of Employment and Unemployment in the Construction Industry of the United States*, has estimated that from about 15 to 24 percent of the annual unemployment in construction between 1960 and 1966 was frictional (Harvard University, unpublished thesis, 1967).

cancies, including information about work conditions in upcoming vacancies, may quicken the worker-job-matching process and greatly reduce frictional unemployment. Information on individual contractors planning could be made available through a central computer hookup, and provide advanced job termination and vacancy information. This information could be updated daily or weekly as a byproduct of the updating of the management networks.

Part-time employment

Construction workers are represented as disproportionately among part-time workers[43] as among the unemployed. In 1968, an average of 4.3 percent of the wage and salary workers in construction worked part time for economic reasons, in comparison with only 2.2 percent in manufacturing. (See table 57.) More than two-thirds of the construction workers on part-time for economic reasons at the time of the survey usually worked full time, but for reasons of seasonal slack and the start or termination of jobs were working less than 35 hours a week. The remainder worked part-time mainly because full-time work was not available.

Negro workers experience considerably more part-time employment than white workers. An average of nearly 9 percent of all male Negro wage and salary workers in construction reported involuntary part-time work in 1968, more than twice the rate for white workers, 3.8 percent. (See table 58.) The high proportion of Negro workers working involuntary part-time largely reflected their concentration in the ranks of the unskilled.

[43] Workers employed part-time for economic reasons, such as slack work, material shortages, repairs to plant or equipment, start or termination of job during the week, and inability to find full-time work.

Table 36. Unemployment rates of private wage and salary workers, nonagricultural industries as a whole and construction, February and August, 1964–68 and annual average, 1948–68

Month and year	Nonagricultural industries	Construction	Ratio
February 1968	4.6	12.5	2.72
February 1967	4.5	13.0	2.89
February 1966	4.6	13.1	2.85
February 1965	6.2	19.2	3.10
February 1964	8.9	19.1	2.15
August 1968	3.3	4.2	1.27
August 1967	3.6	4.3	1.19
August 1966	3.5	4.9	1.40
August 1965	4.0	6.0	1.50
August 1964	4.7	7.4	1.57
Annual average:			
1968	3.6	6.9	1.92
1967	3.9	7.3	1.87
1966	3.8	8.1	2.13
1965	4.6	10.1	2.20
1964	5.4	11.2	2.07
1963	6.1	13.3	2.18
1962	6.1	13.5	2.21
1961	7.5	15.7	2.09
1960	6.2	13.5	2.18
1959	6.2	13.4	2.16
1958	8.0	15.2	1.90
1957	4.9	10.9	2.22
1956	4.7	10.0	2.13
1955	5.1	10.9	2.14
1954	6.7	12.9	1.93
1953	2.8	6.2	2.21
1952	3.0	6.0	2.00
1951	3.4	6.5	1.91
1950	5.8	11.5	1.98
1949	6.7	12.9	1.93
1948	3.9	7.8	2.00

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table 37. Employment and unemployment of male job changers, by industry of longest job, 1961

Employment and unemployment	Nonagricultural wage and salary workers		
	Total	Construction	Manufacturing
Worked (in thousands)	38,821	3,893	13,209
Job changers:			
Number (thousands)	4,778	972	1,280
Percent of persons who worked	12.3	25.0	9.7
Total job changers (percent)	100.0	100.0	100.0
Worked for only 2 employers	63.5	45.3	71.3
Lost no time between jobs	31.4	19.3	36.7
Lost some time between jobs	32.1	25.9	34.6
Did not look for work	5.6	2.8	3.5
Looked for work	26.6	23.1	31.1
1 to 4 weeks	14.1	13.3	17.3
5 weeks or more	12.5	9.8	13.8
Worked for more than 2 employers	36.5	54.7	28.7
Lost no time between jobs	8.2	12.2	6.2
Lost some time between jobs	24.2	28.8	22.0
Did not look for work	1.6	1.0	1.3
Looked for work	22.7	27.8	20.6
1 to 4 weeks	9.9	11.9	8.4
5 weeks or more	12.8	15.9	12.3
Many employers, same occupation	4.0	13.7	.5

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

SOURCE: BLS, Special Labor Force Report 35, Job Mobility in 1961.

Table 38. Incidence, recurrent spells, and extent of unemployment of nonagricultural wage and salary workers as a percent of total wage and salary workers having work experience, by industry of longest job, 1968

Status	Nonagricultural industries	Construction	Manufacturing
With unemployment	12.0	24.2	13.1
With more than 1 spell of unemployment	3.6	11.8	3.5
With 3 or more spells of unemployment	1.8	6.5	1.7
Jobless 15 weeks or more during year	2.5	6.6	2.7

SOURCE: BLS, Work Experience of the Population in 1968.

Table 39. Average duration of each spell of unemployment for male wage and salary workers by weeks, selected industries, 1960–68

Year	Nonagricultural industries	Construction	Manufacturing
1960	14.3	12.3	14.9
1961	17.8	14.0	19.3
1962	17.0	12.8	19.1
1963	16.1	12.6	17.4
1964	15.1	11.4	12.1
1965	13.3	10.8	13.8
1966	12.1	9.7	12.4
1967	9.9	10.1	10.2
1968	9.6	9.1	9.9

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table 40. Percent distribution of unemployed male wage and salary workers in construction by duration of unemployment, by month, 1968

Month	Total		Less than 5 weeks	5-14 weeks	15-26 weeks	Over 26 weeks
	Number (in thousands)	Percent				
January	445	100.0	46.4	42.8	7.4	3.4
February	433	100.0	36.5	50.1	10.9	2.5
March	387	100.0	37.6	37.8	19.7	4.9
April	222	100.0	36.2	32.1	23.1	8.6
May	184	100.0	48.1	24.9	21.6	5.4
June	230	100.0	63.5	21.6	6.9	8.1
July	191	100.0	57.8	27.2	5.2	9.8
August	164	100.0	61.0	20.1	4.3	11.6
September	138	100.0	74.1	17.3	3.6	5.0
October	167	100.0	67.3	21.7	3.6	7.4
November	224	100.0	73.7	17.4	3.6	5.4
December	242	100.0	54.1	37.6	2.1	6.2

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table 41. Work experience and extent of unemployment of nonagricultural wage and salary workers 16 years and older, by industry of longest job, 1968

Status	Nonagricultural industries	Construction	Manufacturing
Persons with work experience:			
Number (in thousands)	78,737	4,675	22,819
Percent	100.0	100.0	100.0
Worked at full-time jobs:			
50 to 52 weeks	58.7	55.2	69.5
27 to 50 weeks	12.8	23.9	15.1
1 to 26 weeks	11.5	12.4	11.0
Worked at part-time jobs	17.1	8.5	4.4
Persons with unemployment:			
Number (thousands)	9,437	1,133	2,998
Percent	100.0	100.0	100.0
1 to 2 weeks (year-round workers)	12.4	10.7	16.0
Part-year workers:			
1 to 4 weeks	36.7	25.0	33.2
5 to 10 weeks	19.9	22.4	21.2
11 to 14 weeks	10.2	14.8	9.2
15 to 26 weeks	13.8	19.9	13.7
27 weeks or more	7.1	7.2	6.7
Percent of unemployed with:			
2 spells of unemployment	14.5	22.0	13.4
3 spells or more	15.4	26.7	13.0

SOURCE: BLS, Work Experience of the Population in 1968.

Table 42. Percent distribution of employed and experienced unemployed male wage and salary workers in construction, by age, [1] annual averages, 1963–68

Period	Number (in thousands)	Total	Age			
			16-19	20-24	25-44	45 and over
1963:						
Employed	3,381	100.0	5.1	11.2	48.2	35.6
Unemployed	466	100.0	7.7	12.9	41.6	37.8
1964:						
Employed	3,508	100.0	5.3	11.5	48.9	34.3
Unemployed	394	100.0	7.1	15.7	36.8	40.1
1965:						
Employed	3,655	100.0	5.3	11.6	47.6	35.5
Unemployed	366	100.0	8.7	12.8	39.6	39.1
1966:						
Employed	3,697	100.0	6.2	10.6	46.0	37.1
Unemployed	289	100.0	10.4	8.7	41.2	39.4
1967:						
Employed	3,672	100.0	5.3	10.2	46.7	37.9
Unemployed	264	100.0	12.9	11.0	36.7	39.8
1968:						
Employed	3,736	100.0	5.7	11.5	46.6	36.2
Unemployed	252	100.0	12.7	13.5	37.3	36.9

[1] Persons 14 years and over for 1963–66, 16 years and over for 1967–68.

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

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table 43. Male teenagers [1] as a percent of employed and experienced unemployed wage and salary workers, all industries [2] and construction, by selected time periods, 1963–68

Period	Employed		Experienced unemployed	
	All industries	Construction	All industries	Construction
1963:				
Annual average	6.9	5.1	13.8	7.7
June, July, and August	8.9	7.6	18.4	14.6
1964:				
Annual average	7.2	5.3	15.2	7.1
June, July, and August	9.4	8.2	18.7	8.9
1965:				
Annual average	7.9	5.3	17.1	8.7
June, July, and August	10.3	8.9	22.1	12.8
1966:				
Annual average	8.7	6.2	20.9	10.4
June, July, and August	11.5	10.3	26.0	19.5
1967:				
Annual average	6.9	5.3	22.2	12.9
June, July, and August	8.6	8.9	25.7	19.7
1968:				
Annual average	6.8	5.7	22.3	12.7
June, July, and August	8.5	9.1	27.9	22.6

[1] Persons 14–19 years old for 1963–66, 16–19 years old for 1967–68.
[2] Excluding agriculture and private household services for 1967–68.

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table 44. Unemployment rates of male wage and salary workers [1] all industries [2] and construction, by selected time periods, 1963–68

Period	Total		Excluding teenagers		Teenagers	
	All industries	Construction	All industries	Construction	All industries	Construction
1963:						
Annual average	5.3	12.1	4.9	11.8	10.1	17.4
June, July, and August	4.7	8.2	4.3	7.6	9.3	14.6
1964:						
Annual average	4.6	10.1	4.3	9.9	9.2	13.1
June, July, and August	4.2	7.0	3.8	7.0	8.1	7.6
1965:						
Annual average	3.9	9.1	3.5	8.8	8.0	14.1
June, July, and August	3.5	6.5	3.1	6.2	7.3	9.1
1966:						
Annual average	3.1	7.3	2.7	7.0	7.2	13.0
June, July, and August	3.0	4.6	2.5	4.1	6.5	8.3
1967:						
Annual average	3.0	6.7	2.5	6.2	9.0	14.8
June, July, and August	2.9	4.7	2.4	4.2	8.1	10.0
1968:						
Annual average	2.7	6.3	2.3	5.9	8.5	13.1
June, July, and August	2.7	4.6	2.2	3.9	8.5	10.6

[1] Persons 14 years and over for 1963–66, 16 years and over for 1967–68.
[2] Excluding agriculture and private household services for 1967–68.

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table 45. Unemployment rates of males by race and selected occupations, annual averages, 1963–68

Year	Total males	Males in construction	Carpenters	Construction craftsmen, except carpenters	Construction laborers	Total males	Males in construction	Carpenters	Construction craftsmen, except carpenters	Construction laborers	Total males	Males in construction	Carpenters	Construction craftsmen, except carpenters	Construction laborers
	Total					White					All other races				
1963	5.3	10.7	9.6	8.7	20.5	4.7	9.6	9.2	8.5	18.4	10.6	20.0	16.1	11.3	25.5
1964	4.7	9.0	8.4	7.0	16.5	4.2	8.1	8.3	6.5	15.8	9.1	15.9	10.2	12.6	18.1
1965	4.0	8.2	7.4	6.6	14.5	3.6	7.5	7.1	6.3	13.4	7.6	14.7	12.5	10.3	17.0
1966	3.3	6.6	6.4	5.2	11.9	2.9	6.1	6.2	5.2	11.3	6.6	10.6	9.3	5.8	13.5
1967	3.1	6.0	5.1	4.6	11.7	2.7	5.7	5.1	4.5	11.7	6.0	8.3	5.5	5.4	11.7
1968	2.9	5.6	4.7	4.4	11.4	2.6	5.2	4.8	4.2	11.4	5.6	8.6	4.0	6.5	11.2
Percent decline— 1963–68	45.3	47.7	51.1	49.4	44.4	44.7	45.8	47.8	50.6	37.5	47.2	57.0	75.2	42.5	56.1

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table 46. Distribution of employed and experienced unemployed males, by race and selected occupation, 1968

Occupation	Employed		Unemployed	
	White	All other races	White	All other races
Total:				
Number (in thousands)	43,411	4,702	1,016	243
Percent	100.0	100.0	100.0	100.0
Craftsmen, foremen, and kindred workers	20.9	13.4	20.7	8.6
Carpenters	1.9	1.0	4.0	.8
Construction craftsmen, except carpenters	4.0	3.3	7.4	4.5
Construction laborers	1.2	4.4	6.8	10.7

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table 47. Number of carpenters and construction craftsmen (except carpenters) employed in construction and in all other industries, annual averages, 1963-66

(In thousands)

Year	Construction	All other industries
	Carpenters	
1963	637	177
1964	640	180
1965	675	175
1966	652	202
	Construction craftsmen, except carpenters	
1963	1,169	623
1964	1,218	578
1965	1,220	619
1966	1,319	661

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table 48. Percent distribution of Negro males as a proportion of total males in construction and selected occupation, by employment status, 1963–68

Year	Construction	Carpenters	Construction craftsmen, except carpenters	Construction laborers
Employed:				
1963	9.8	5.8	7.0	28.1
1964	10.7	6.5	8.1	29.9
1965	9.8	4.9	7.6	27.8
1966	10.2	5.7	8.2	28.2
1967	10.1	6.2	8.1	26.9
1968	10.1	5.5	8.4	27.8
Unemployed:				
1963	20.4	10.5	9.3	37.2
1964	20.4	8.0	15.6	33.3
1965	18.9	8.8	12.2	33.8
1966	17.2	8.6	9.2	32.7
1967	14.4	6.7	9.8	26.8
1968	16.2	4.7	12.5	27.4
Labor force:				
1963	10.9	6.2	7.2	30.0
1964	11.6	6.6	8.7	30.4
1965	10.5	5.2	7.9	28.7
1966	10.7	5.9	8.2	28.7
1967	10.4	6.2	8.2	26.9
1968	10.5	5.5	8.6	27.7

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table 49. Unemployment rates for selected occupations, February and August, 1964–68, and annual averages, 1957–68

Month and year	All craftsmen and foremen	Carpenters	Construction craftsmen, except carpenters	All nonfarm laborers	Construction laborers
February 1968	3.7	10.1	7.5	10.1	18.9
February 1967	3.6	9.5	8.2	9.5	20.3
February 1966	4.6	11.1	10.2	10.2	17.6
February 1965	5.8	13.2	12.1	14.2	25.7
February 1964	6.5	15.5	13.7	15.9	25.5
August 1968	1.9	4.2	2.2	5.7	6.9
August 1967	1.8	1.7	2.7	5.9	7.6
August 1966	2.0	3.0	3.1	5.8	8.0
August 1965	2.6	4.0	4.3	5.2	8.2
August 1964	3.1	4.3	4.4	8.4	11.5
Annual average:					
1968	2.4	4.7	4.4	7.2	11.4
1967	2.5	5.1	4.6	7.6	11.7
1966	2.8	6.4	5.2	7.3	11.9
1965	3.6	7.4	6.6	8.4	14.5
1964	4.2	8.4	7.0	10.6	16.5
1963	4.8	9.6	8.7	12.1	20.5
1962	5.1	9.4	8.8	12.4	20.4
1961	6.3	12.3	10.7	14.5	21.7
1960	5.3	10.1	8.9	12.5	19.3
1959	5.3	9.4	8.9	12.4	19.0
1958	6.8	11.7	9.7	14.9	21.3
1957	3.8	8.1	6.4	9.4	12.6

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table 50. Work experience and extent of unemployment of persons 16 years of age and over, by selected occupation of longest job, 1968

Status	Craftsmen, foremen, kindred workers	Carpenters	Construction craftsmen, except carpenters	Laborers, except farm or mine	Construction laborers	Manufacturing laborers
Persons with work experience:						
Number (in thousands)	10,911	989	2,135	4,520	1,056	1,227
Percent	100.0	100.0	100.0	100.0	100.0	100.0
Worked at full-time jobs:						
50 to 52 weeks	73.8	51.8	62.1	39.1	34.2	50.2
27 to 50 weeks	15.1	28.8	25.0	16.4	25.2	21.5
1 to 26 weeks	5.9	9.6	7.5	18.5	24.4	19.8
Worked at part-time jobs	5.2	9.8	7.4	26.0	16.2	8.5
Persons with unemployment:						
Number (in thousands)	1,342	230	429	1,028	349	285
Percent	100.0	100.0	100.0	100.0	100.0	100.0
1 to 2 weeks (year-round) workers	18.4	7.4	14.7	9.5	9.7	11.9
Part-year workers:						
1 to 4 weeks	25.5	27.0	21.4	30.4	25.5	31.2
5 to 10 weeks	22.4	23.0	24.9	20.0	22.6	18.9
11 to 14 weeks	11.9	14.8	14.0	12.8	12.0	11.9
15 to 26 weeks	17.2	23.0	19.3	18.4	19.8	18.9
27 weeks or more	4.6	4.8	5.6	8.8	10.3	7.0
Percent of unemployed with:						
2 spells of unemployment	15.9	20.9	19.1	17.3	22.3	13.0
3 spells or more	20.3	35.2	28.7	25.5	30.1	19.6

SOURCE: BLS, Work Experience of the Population in 1968.

Table 51. Incidence, recurrent spells, and extent of unemployment of persons 16 years of age and over as a percent of total with experience by selected occupation of longest job, 1968

Status	Craftsmen, foremen, kindred workers	Carpenters	Construction craftsmen, excluding carpenters	Laborers, excluding farm or mine	Construction laborers	Manufacturing laborers
With unemployment	12.3	23.3	20.2	23.8	33.4	25.2
Jobless 15 weeks or more during year	2.7	6.5	5.0	6.5	10.1	6.5
With 3 spells or more of unemployment	2.5	8.2	5.8	6.1	10.1	4.9

SOURCE: BLS. Work Experience of the Population in 1968.

Table 52. Percent distribution of weeks worked by male wage and salary workers in the experienced civilian labor force, by selected occupation, 1959

Occupations	Total	Weeks						
		At least 40	50-52	40-49	27-39	14-26	1-13	None
Skilled construction:								
Boilermakers	100.0	70.5	51.9	18.6	17.7	7.2	3.1	1.6
Brickmasons, stonemasons, and tilesetters	100.0	68.1	29.8	38.3	20.5	6.9	3.0	1.4
Carpenters	100.0	72.3	40.4	31.9	15.0	7.6	3.9	1.2
Cement and concrete finishers	100.0	66.4	27.8	38.6	20.9	8.4	3.3	1.2
Crane, derrickmen, and hoistmen	100.0	72.6	52.6	20.0	21.6	3.9	1.2	.7
Electricians	100.0	87.9	69.6	18.3	7.4	2.8	1.3	.6
Excavating, grading, and road machinery operators	100.0	78.4	53.2	25.2	14.1	5.3	1.7	.6
Foremen, construction	100.0	89.1	70.5	18.6	6.3	2.8	1.2	.6
Glaziers	100.0	89.5	71.9	17.6	4.8	3.6	1.1	1.0
Mechanics and repairmen construction	100.0	83.2	65.8	17.4	8.2	4.8	2.7	1.1
Painters, construction and maintenance	100.0	67.9	41.1	26.8	15.2	9.0	6.0	2.0
Plasterers	100.0	71.8	32.3	39.5	15.3	8.2	3.3	1.6
Plumbers and pipefitters	100.0	83.1	61.1	22.0	9.5	4.4	2.2	.8
Roofers and slaters	100.0	65.2	33.3	31.9	18.4	9.5	5.0	1.8
Stone cutters and stone carvers	100.0	84.9	58.6	26.3	8.5	3.3	2.6	.7
Structural metal workers	100.0	74.8	45.2	29.8	15.3	6.2	2.7	.9
Skilled nonconstruction:								
Foremen, manufacturing	100.0	96.9	90.3	6.6	1.6	.7	.4	.3
Machinists	100.0	89.7	75.0	14.7	5.9	2.4	1.3	.7
Mechanics and repairmen:								
Automobile	100.0	87.2	72.6	14.6	5.5	3.8	2.5	1.2
Manufacturing	100.0	88.6	74.4	14.2	6.6	2.7	1.3	.8
Pattern and model makers, except paper	100.0	91.5	74.9	16.6	4.8	1.9	1.0	.8
Stationary engineers	100.0	92.6	85.0	7.6	3.6	2.3	1.0	.6
Toolmakers, diemakers, and setters	100.0	92.9	76.7	16.2	4.2	1.7	.8	.5
Unskilled:								
Laborers:								
Construction	100.0	58.9	33.2	25.7	17.7	11.7	8.5	3.3
Manufacturing	100.0	68.9	48.2	20.7	15.4	8.1	5.0	2.5

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

SOURCE: Bureau of the Census. U.S. Census of Population: 1960. Subject Reports. Occupational Characteristics. Final Report PC(2)-7A.

Table 53. Experienced unemployed private wage and salary workers in construction, monthly and annual averages, 1948–68

(In thousands)

Year	January	February	March	April	May	June	July	August	September	October	November	December	Annual average
1948	292	320	304	239	158	146	137	164	173	158	177	216	207
1949	385	425	485	344	318	295	366	304	267	276	301	456	352
1950	625	597	523	418	264	255	232	207	236	147	200	240	329
1951	359	361	266	162	116	156	165	148	140	134	148	196	196
1952	308	326	292	238	168	162	162	140	124	104	116	187	194
1953	308	282	256	212	150	160	168	136	161	116	146	244	195
1954	447	546	494	562	361	328	344	275	322	296	305	426	387
1955	549	590	494	409	274	276	239	248	190	220	292	386	338
1956	492	500	443	286	266	256	246	210	192	176	295	396	313
1957	510	508	426	388	280	270	258	262	239	219	347	498	350
1958	670	748	724	600	447	480	467	433	369	345	430	588	524
1959	742	827	735	465	396	335	338	296	327	309	390	462	469
1960	655	613	725	498	384	332	353	346	283	316	451	611	464
1961	826	861	723	650	548	465	490	365	353	303	407	549	545
1962	702	738	695	534	424	370	366	259	255	283	396	578	467
1963	752	828	641	512	365	332	335	376	257	286	400	503	457
1964	643	625	506	396	314	326	283	288	262	292	270	482	391
1965	599	638	540	394	305	305	320	237	237	221	270	317	365
1966	439	445	386	320	224	208	195	187	190	206	278	364	287
1967	411	419	341	304	213	233	200	161	122	170	236	268	257
1968	443	421	382	220	185	229	189	163	127	148	220	232	247

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table 54. Seasonal adjustment factors for experienced unemployed private wage and salary workers in construction, by month, 1948–68

Year	January	February	March	April	May	June	July	August	September	October	November	December
1948	0	0	0	118.4	83.1	77.6	83.4	74.8	72.7	65.3	74.3	97.1
1949	153.0	157.7	142.5	118.1	83.2	78.5	83.3	74.8	71.9	64.2	73.4	99.4
1950	155.0	158.0	142.0	117.7	83.0	79.6	83.9	73.7	72.3	62.9	73.0	99.0
1951	154.6	158.6	140.7	118.1	83.7	79.6	82.9	72.7	72.3	62.7	72.9	100.4
1952	154.3	156.9	140.9	119.0	84.1	81.0	81.6	72.0	71.7	61.6	73.8	103.2
1953	153.6	156.6	139.4	120.6	84.0	81.8	80.7	71.3	71.1	60.3	75.5	105.0
1954	152.7	155.6	138.3	120.6	84.8	81.9	80.0	71.2	69.7	60.0	77.4	107.9
1955	151.3	154.4	140.0	119.6	84.4	82.4	79.4	71.1	68.4	59.4	79.0	110.6
1956	150.2	154.4	140.4	118.4	84.8	81.9	78.7	70.4	67.6	60.2	81.7	111.2
1957	148.8	153.4	140.7	118.0	85.7	80.8	78.0	71.5	65.0	61.3	83.1	113.8
1958	149.2	153.1	140.3	115.4	86.3	80.7	78.9	71.4	63.8	61.2	84.8	114.9
1959	149.1	154.6	140.1	113.3	87.0	79.5	79.6	70.9	63.1	61.6	85.3	116.2
1960	150.1	155.9	139.1	112.7	86.6	78.4	79.4	70.1	62.6	63.0	85.8	116.3
1961	150.9	156.9	138.5	110.6	86.2	78.6	79.6	69.1	62.1	64.6	86.1	116.7
1962	151.5	158.0	137.4	109.0	85.6	78.2	80.0	67.7	62.4	65.7	87.8	116.6
1963	152.6	157.5	135.5	109.5	84.2	78.0	79.1	67.3	62.9	66.4	89.2	117.8
1964	152.3	158.4	134.5	108.9	82.7	79.7	78.7	65.9	63.7	67.5	90.7	116.9
1965	153.4	158.1	135.5	108.6	80.2	81.0	77.6	66.3	62.6	68.4	91.8	116.6
1966	153.9	158.2	134.3	108.4	78.9	81.9	77.2	66.3	63.1	69.2	93.1	115.3
1967	154.3	157.2	134.6	108.4	78.3	83.3	76.9	66.4	63.4	69.6	93.1	114.4
1968	154.2	156.8	135.4	109.6	77.2	83.4	77.3	66.0	63.3	-	-	-

NOTE: Dashes indicate that data were not available.

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table 55. Unemployed construction laborers as a percent of all unemployed wage and salary workers in construction, 1958–68

Year	January	February	March	April	May	June	July	August	September	October	November	December	Annual average
1958	36.8	38.8	36.5	36.5	39.7	38.6	44.2	44.2	44.5	39.8	46.3	41.7	40.1
1959	38.3	37.1	38.2	36.2	39.1	43.6	56.0	52.5	36.2	36.0	43.5	40.1	40.9
1960	39.6	38.5	38.8	35.3	40.5	43.7	46.7	42.6	43.5	37.8	33.1	39.3	39.4
1961	36.2	31.3	33.1	36.9	37.8	40.7	36.6	44.0	41.4	37.4	37.0	36.9	36.7
1962	39.2	34.7	35.6	37.7	35.5	45.6	42.6	38.8	43.2	46.3	41.3	43.8	39.5
1963	37.5	34.4	36.0	40.7	45.0	47.9	45.2	39.5	45.6	42.2	42.7	34.2	39.5
1964	39.0	32.8	37.4	35.3	40.9	42.2	43.9	40.9	43.8	39.3	41.0	35.8	38.5
1965	34.2	34.9	38.0	36.0	34.0	39.4	34.8	35.6	41.0	37.3	34.2	35.6	35.9
1966	27.3	30.8	32.9	27.7	37.9	40.0	33.3	38.4	40.9	35.8	32.8	29.8	32.9
1967	33.2	31.7	34.4	31.0	33.6	43.2	38.7	40.6	43.7	39.2	35.4	36.3	35.8
1968	33.1	31.0	35.6	30.1	36.3	43.9	47.0	39.5	46.8	40.2	39.6	34.3	36.7

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table 56. Percent distribution of males by reason for leaving jobs, by industry group, 1955 and 1961

Reason for leaving job	Nonagricultural wage and salary workers					
	Total		Construction		Manufacturing	
	1961	1955	1961	1955	1961	1955
Number of jobs left (in thousands)	7,846	7,980	1,909	1,746	1,897	2,382
Percent	100.0	100.0	100.0	100.0	100.0	100.0
Job loss	39.3	27.9	66.0	37.0	41.9	32.3
Improvement in status	34.8	41.0	17.4	23.5	36.8	42.9
Termination of temporary job	7.5	13.6	4.6	25.4	3.7	5.7
Illness or disability	2.4	3.2	2.2	2.5	2.6	4.0
Household responsibilities	.5	.1	.3	-	.3	.1
School responsibilities	4.9	4.2	2.3	3.0	5.3	4.1
Other reasons	9.2	7.9	5.6	5.2	8.3	7.5
Not reported	1.5	2.1	1.6	3.4	1.1	1.4

SOURCE: Bureau of the Census, Current Population Reports—Labor Force, Job Mobility of Workers in 1955 and BLS Special Labor Force Report 35, Job Mobility in 1961.

Table 57. Percent distribution of nonagricultural wage and salary workers, by full- or part-time status, by industry, 1968

Industry	Total at work	Full-time schedules	Part-time schedules		
			Economic reasons		Other reasons
			Usually work full time	Usually work part time	Usually work part time
Total[1]	100.0	85.4	1.3	1.2	12.1
Construction	100.0	92.0	3.0	1.3	3.8
Manufacturing	100.0	95.1	1.8	.4	2.8
Durable goods	100.0	97.0	1.1	.2	1.7
Nondurable goods	100.0	92.2	2.7	.7	4.3
Transportation and public utilities	100.0	93.3	1.1	.6	5.0
Wholesale and retail trade	100.0	75.1	1.1	1.8	22.1
Finance, insurance, and real estate	100.0	90.2	.5	.3	9.0
Service industries	100.0	73.7	.9	2.3	23.1

[1] Includes mining and public administration, not shown separately.

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table 58. Percent distribution of male wage and salary workers, by race, full- or part-time status, 1968

Industry	Total at work	Full-time schedules	Part-time schedules		
			Economic reasons		Other reasons
			Usually work full time	Usually work part time	Usually work part time
White					
All nonagricultural industries	100.0	92.0	1.0	0.6	6.4
Construction	100.0	93.2	2.8	1.0	3.0
Manufacturing	100.0	97.0	.9	.2	1.9
All other					
All nonagricultural industries	100.0	90.2	2.3	2.0	5.5
Construction	100.0	88.9	4.9	3.9	2.3
Manufacturing	100.0	95.5	2.6	.7	1.2

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

CHAPTER VI. EARNINGS

Wage comparisons

Hourly wage rates for construction workers are high in comparison with those of workers in other industries. The average hourly earnings of construction workers in the contract construction industry in 1968 were 38 percent higher than for production workers in manufacturing durable goods industries. (See table 60.) In spite of the high hourly wages for construction workers, however, production workers in several industries had higher levels of average weekly earnings, because they averaged more hours of work each week. (See table 61.)

Several factors in addition to seasonality contribute to the high average hourly wages for construction workers. The skill level of construction workers is high compared with that of many production workers in other industries. In 1968, about two-thirds of the blue-collar workers in construction were craftsmen, foremen, and kindred workers comparing with about one-fourth in manufacturing. The industry usually has relatively low fringe benefits and hazardous working conditions. Also, the wage differential may be necessarily higher to attract a sufficient supply of workers.

Construction workers increased their wage differential over production workers in durable goods manufacturing industries between 1947 and 1968; the differential rose from 21 percent to 38 percent. (See table 60.) In comparison with average hourly earnings in basic steel, workers in contract construction lost ground in terms of wage differentials between 1947 and 1959, but by 1964 they had regained the 1947 relative position and, in 1968, construction workers in contract construction had average hourly earnings 17 percent above those for production workers in basic steel. Hourly earnings in 1968 were 13 percent higher for construction workers than for production workers in the motor vehicles industry.

Examination of hourly union wage scales by craft in contract construction and manufacturing indicate substantial differentials in favor of crafts in the construction industry. A comparison of basic union hourly wage rates for seven crafts in contract construction (national average) and basic steel between 1947 and 1968 indicates that the construction union scale for carpenters was 50 percent above the average rate for carpenters in basic steel, on July 1, 1968. (See table 62.) In general, these differentials did not widen significantly over the 1947–68 period.

A recently published study [44] that compares union wage scales for carpenters, electricians, and painters in construction and the straight-time average hourly earnings for these workers in maintenance jobs in manufacturing in late 1965 or early 1966, indicates that differentials in 50 metropolitan areas reported invariably favored those in construction. However, the differentials varied widely by area. The differential for carpenters ranged from 73 percent in New York City to 11 percent in Richmond, Va.; electricians, from 63 percent in Little Rock–North Little Rock to 18 percent in Houston; and painters from 54 percent in Washington, D.C. to 3 percent in Charleston, W. Va. (See table 63.) In general, differentials were highest in the Northeast, somewhat lower in the West, and lowest in the South. In most localities, the wage differential in favor of construction appears to have widened in recent years. (See table 64.)

Wage differentials in favor of construction workers reflect a basic difference in working conditions between construction and other industries. Factors such as the frequency of seasonal and intermittent unem-

[44] Lily Mary David and T. P. Kanninen, "Workers' Wages in Construction and Maintenance," *Monthly Labor Review*, January 1968.

ployment, relatively low fringe benefits, and more hazardous working conditions in construction contribute to the earnings differential in favor of construction workers. Although workers in the building trades are covered by old age and survivors insurance, unemployment compensation, and workmen's compensation, as are workers in manufacturing, they are at a disadvantage with respect to private benefits financed wholly or in part by employers. Paid vacations and holidays for many building trades workers are uncommon; in manufacturing 8 or 9 paid holidays each year is the usual practice. Estimates are that the value of fringe benefits in the basic steel industry was $0.71 an hour in 1965, and in the unionized sector of construction only $0.54 an hour in 1968. [45] The high injury-frequency rate in construction—more than twice as high as in manufacturing—makes construction work a generally less desirable activity, as does the relatively high proportion of outdoor work in unfinished buildings during inclement weather. The requirement that construction workers must move frequently to new work sites also contributes to the relatively less desirable work conditions in the industry.

The collective bargaining relationships between contractors and unions is another factor which helps maintain the wage differential for construction workers. Unlike a manufacturer, contractors cannot threaten to or actually relocate because of wage demands. The products of the construction industry do not compete with products produced in other parts of the country or overseas, as do the product of manufacturers. Moreover, all unionized competitors in a region are bound by the outcome of a major collective bargaining agreement so that there is little inducement to maintain a rigid stance in wage negotiations. Contractors are generally small companies, and even when they are represented by an association of contractors, pressure to remain firm on wages is generally much less than in the case of manufacturing firms.

Annual income [46]

Despite the relatively high hourly earnings received by wage and salary workers in construction, they have reported earnings over a 12-month period that are somewhat less than workers in several manufacturing industries. The following tabulation shows the annual earnings of wage and salary workers who were employed in contract construction and selected manufacturing industries at least part of the time in each of the four quarters in 1964.

Industry	Average annual reported earnings from specified industry	Average annual reported earnings from all covered employment
Contract construction:		
General building	$6,250	$6,579
Heavy construction	7,116	7,377
Special trades	6,677	6,879
Chemical and allied products	7,638	7,717
Petroleum refining	8,325	8,447
Primary metals	7,272	7,352
Machinery, except electrical	7,167	7,253
Motor vehicles and equipment	7,725	7,814

SOURCE: BLS Social Security Administration's 1-percent continuous work history sample.

The tabulation indicates that workers who were strongly attached to the contract construction industry (i.e., those who had some earnings in each of four quarters) derived practically all of their income from the industry (about 96 percent), as did workers in manufacturing industries (about 99 percent).

[45] Bureau of Labor Statistics, *Employees Compensation and Payroll Hours, Basic Steel, 1965*, Report 335-4; *Union Wages and Hours: Building Trades, July 1, 1968*, Bulletin 1621.

[46] The wage data on annual earnings, some of which are from the forthcoming bulletin, *Compensation in the Construction Industry*, were developed by the Office of Wages and Industrial Relations of the Bureau of Labor Statistics.

Average annual earnings, however, tend to obscure the relative position of the typical worker in contract construction. The distribution of annual earnings of construction workers is skewed. While some workers make high annual incomes, others earn much less. High earnings tend to be associated with year-round work. Of the workers who earned most of their income from general construction contractors in 1964, 45 percent earned less than $3,000 from all industries in which they worked, whereas about 9 percent made $9,000 or more. Of workers who were employed in all four quarters of the year, only 19 percent earned less than $3,000 from all industries in which they worked, while about 15 percent made $9,000 or more. (See table 65.) Generally, the skewness of the distribution of income is toward the low side for workers who were employed by masonry, plastering, stone and tile contractors, and roofing and sheet metal contractors—work that tends to be more seasonal. For workers employed by plumbing, heating, and air-conditioning, and electrical contractors, the skewness of the distribution of total annual earnings is toward the high side. For highway contractors and general contractors, the skewness tends only slightly to the low side.

The conclusion to be drawn from these data is that the relatively high hourly wage rates for construction workers generally are not translated into high annual earnings. Moreover, an assessment of the fringe benefits available to contract construction workers indicates an even less desirable employment situation for these workers. Unemployment benefit payments to construction workers, however, are not included in these average annual earnings figures. An estimated 425 million dollars were paid out in benefits in 1964. This would tend to increase slightly the amount of money received by construction workers during the year. The annual earnings figures also may be slightly understated to the extent that workers drawing social security benefits can readily find employment and work until they reached the maximum earnings limit permitted.

Hourly rates and annual earnings by area

Wage rates for construction crafts vary considerably by area. In 1965–1966 union hourly wage scales in building construction for carpenters in 50 areas ranged from $5.80 in New York City to $3.45 in Richmond, Va. (See table 68.) For electricians, the range was from $5.50 an hour in San Diego, Calif., to $4.05 in Richmond, Va.; for painters, from $4.82 an hour in San Diego, to $2.50 an hour in Portland, Maine. In general, union wage scales were highest in the Northeast and West, slightly lower in the North Central States, and considerably lower in the South.

Construction workers in areas with the highest union hourly wage scales generally had the highest annual income. In 1964, workers in the Northeast and West who had most of their annual reported earnings from contract construction tended to have higher annual incomes than those in other areas. (See table 66.) The range of annual income was quite broad. For example, workers in heavy construction had average annual incomes ranging from $6,485 in the Pacific States to $3,313 in the Southeast States.

Table 59. Average weekly earnings and wage relatives [1] of construction and production workers in contract construction and selected industries, 1947–68

Year	Average weekly earnings				Weekly wage relatives		
	Contract construction	Blast furnaces and basic steel products	Motor vehicle and equipment	Manufacturing, durable goods	Blast furnaces and basic steel products	Motor vehicle and equipment	Manufacturing, durable goods
1947	$ 58.87	$ 56.51	$58.63	$51.76	1.04	1.00	1.14
1948	65.27	62.84	63.15	56.36	1.04	1.03	1.16
1949	67.56	63.34	67.33	57.25	1.07	1.00	1.18
1950	69.68	67.95	74.85	62.43	1.03	.93	1.12
1951	76.96	77.71	77.16	68.48	.99	1.00	1.12
1952	82.86	80.00	84.87	72.63	1.04	.98	1.14
1953	86.41	88.29	89.88	76.63	.98	.96	1.13
1954	88.91	83.92	91.30	76.19	1.06	.97	1.17
1955	90.90	96.80	99.84	82.19	.94	.91	1.11
1956	96.38	102.87	96.82	85.28	.94	1.00	1.13
1957	100.27	105.57	100.61	88.26	.95	1.00	1.14
1958	103.78	108.00	101.24	89.27	.96	1.03	1.16
1959	108.41	122.71	111.38	96.05	.88	.97	1.13
1960	113.04	116.13	115.21	97.44	.97	.98	1.16
1961	118.08	122.92	114.69	100.35	.96	1.03	1.18
1962	122.47	127.40	127.67	104.70	.96	.96	1.17
1963	127.19	133.06	132.68	108.09	.96	.96	1.18
1964	132.06	138.43	138.03	112.19	.95	.96	1.18
1965	138.38	143.90	147.63	117.18	.98	.94	1.18
1966	146.26	144.73	147.23	122.09	1.01	.99	1.20
1967	154.95	143.51	144.84	123.60	1.08	1.07	1.25
1968	164.56	154.16	167.66	132.07	1.07	.98	1.25

[1] The rate for contract construction divided by the rate for the other industries.

SOURCE: BLS, current employment statistics based on establishment reports.

Table 60. Average hourly earnings and wage relatives [1] of construction and production workers in contract construction and selected industries, 1947–68

Year	Average hourly earnings				Hourly wage relatives		
	Contract construction	Blast furnaces and basic steel products	Motor vehicle and equipment	Manufacturing, durable goods	Blast furnaces and basic steel products	Motor vehicle and equipment	Manufacturing, durable goods
1947	$1.541	$1.449	$1.473	$1.278	1.06	1.05	1.21
1948	1.713	1.591	1.611	1.395	1.08	1.06	1.23
1949	1.792	1.658	1.696	1.453	1.08	1.06	1.23
1950	1.863	1.703	1.778	1.519	1.09	1.05	1.23
1951	2.02	1.90	1.91	1.65	1.06	1.06	1.22
1952	2.13	2.00	2.05	1.75	1.07	1.04	1.22
1953	2.28	2.18	2.14	1.86	1.05	1.07	1.23
1954	2.39	2.22	2.20	1.90	1.08	1.09	1.26
1955	2.45	2.39	2.29	1.99	1.03	1.07	1.23
1956	2.57	2.54	2.35	2.08	1.01	1.09	1.24
1957	2.71	2.70	2.46	2.19	1.00	1.10	1.24
1958	2.82	2.88	2.55	2.26	.98	1.11	1.25
1959	2.93	3.06	2.71	2.36	.96	1.08	1.24
1960	3.08	3.04	2.81	2.43	1.01	1.10	1.27
1961	3.20	3.16	2.86	2.49	1.01	1.12	1.29
1962	3.31	3.25	2.99	2.56	1.02	1.11	1.29
1963	3.41	3.31	3.10	2.63	1.03	1.10	1.30
1964	3.55	3.36	3.21	2.71	1.06	1.11	1.31
1965	3.70	3.42	3.34	2.79	1.08	1.11	1.33
1966	3.89	3.53	3.44	2.90	1.10	1.13	1.34
1967	4.11	3.57	3.55	3.00	1.15	1.16	1.37
1968	4.40	3.76	3.89	3.19	1.17	1.13	1.38

[1] The rate for contract construction divided by the rate for the other industries.

SOURCE: BLS, current employment statistics, based on establishment reports.

Table 61. Gross earnings and hours of production workers,[1] by selected industry, 1968

Industry	Average weekly earnings	Average hourly earnings	Average weekly hours
	Major industry		
Mining	$143.05	$3.35	42.7
Contract construction	164.56	4.40	37.4
Manufacturing	122.51	3.01	40.7
Durable goods	132.07	3.19	41.4
Nondurable goods	109.05	2.74	39.8
Transportation and public utilities:			
Railroad transportation[2]	151.02	3.44	43.9
Local and suburban	123.77	2.94	42.1
Intercity and rural bus lines	152.21	3.65	41.7
Motor freight transportation and storage	142.96	3.42	41.8
Communication	123.16	3.11	39.6
Electric, gas, and sanitary services	150.28	3.63	41.4
Wholesale trade	122.31	3.05	40.1
Retail trade	74.95	2.16	34.7
Finance, insurance, and real estate	108.54	2.91	37.3
	Industry with highest earnings		
Special dies, tools, jigs, and fixtures	$178.42	$3.93	45.4
Motor vehicles and equipment	167.66	3.89	43.1
Motor vehicles	172.77	3.99	43.3
Passenger car bodies	178.90	4.18	42.8
Motor vehicle parts and accessories	168.44	3.89	43.3
Malt liquors	170.56	4.16	41.0
Petroleum refining	166.27	3.91	42.2
Tires and inner tubes	179.69	4.02	44.7
Pipeline transportation	167.26	4.04	41.4
Communication, line construction employees	168.45	3.76	44.8
Security, commodity brokers, and services	168.52	4.40	38.3

[1] For mining and manufacturing, data refer to production and related workers; for contract construction, to construction workers; and for all other industries, to nonsupervisory workers.
[2] Class I railroads.

SOURCE: BLS, current employment statistics based on establishment reports.

Table 62. Wage relatives[1] for selected building crafts in contract construction and basic steel (basic union hourly wage rates), July 1 of each year, 1947–68

Year	Boilermakers	Bricklayers	Carpenters	Electricians	Painters	Pipefitters	Sheet-metal workers
1947	1.23	1.37	1.26	1.23	1.30	1.34	1.18
1948	1.38	1.56	1.39	1.34	1.41	1.47	1.33
1949	1.32	1.49	1.30	1.33	1.35	1.40	1.24
1950	1.38	1.54	1.36	1.37	1.39	1.46	1.30
1951	1.31	1.45	1.31	1.33	1.34	1.40	1.24
1952	1.27	1.44	1.27	1.28	1.30	1.35	1.22
1953	1.31	1.43	1.28	1.28	1.31	1.36	1.23
1954	1.33	1.44	1.30	1.29	1.32	1.40	1.26
1955	1.27	1.37	1.25	1.22	1.27	1.33	1.21
1956	1.33	1.43	1.30	1.29	1.33	1.39	1.26
1957	1.28	1.36	1.23	1.22	1.25	1.47	1.19
1958	1.25	1.30	1.20	1.20	1.22	1.30	1.18
1959	1.30	1.35	1.26	1.24	1.26	1.35	1.23
1960	1.36	1.39	1.31	1.31	1.31	1.40	1.29
1961	1.37	1.40	1.32	1.32	1.32	1.41	1.29
1962	1.37	1.40	1.33	1.34	1.32	1.41	1.30
1963	1.42	1.44	1.32	1.38	1.37	1.46	1.36
1964	1.48	1.48	1.42	1.43	1.41	1.52	1.41
1965	1.53	1.52	1.49	1.47	1.47	1.58	1.46
1966	1.39	1.38	1.35	1.33	1.32	1.44	1.33
1967	1.44	1.44	1.42	1.40	1.40	1.52	1.41
1968[2]	-	1.52	1.50	1.49	1.48	1.61	-

[1] The construction rate divided by the steel rate.
1968 contract construction wage levels are preliminary.

SOURCE: 1947–66: Factors Determining Patterns of Employment and Unemployment in the Construction Industry of the United States. A doctoral thesis by Daniel Quinn Mills of Harvard University, September, 1967, pp. 175–6; 1967–68: Updated from data provided by Dr. Mills.

Table 63. Straight-time average hourly earnings in maintenance work and union scales in building construction, 3 trades in 50 areas, 1965–66

Region, metropolitan area, and date of survey	Carpenters				Electricians				Painters			
	Average hourly earnings in maintenance	Union scales in building construction	Construction rate higher by—		Average hourly earnings in maintenance	Union scales in building construction	Construction rate higher by—		Average hourly earnings in maintenance	Union scales in building construction	Construction rate higher by—	
			Dollars per hour	Percent			Dollars per hour	Percent			Dollars per hour	Percent
Northeast:												
Boston, Oct. 1965	$3.13	$4.50	$1.37	44	$3.24	$5.25	$2.01	62	$2.88	$4.20	$1.32	46
Buffalo, Dec. 1965	3.17	4.315	1.145	36	3.49	5.11	1.62	46	3.19	4.125	.935	29
New Haven, Jan. 1966	2.79	4.50	1.71	61	3.04	4.75	1.71	56	2.88	4.25	1.37	48
New York, Apr. 1966	3.35	5.80	2.45	73	3.46	5.20	1.74	50	3.16	4.80	1.64	52
Philadelphia, Nov. 1965	3.38	4.45	1.07	32	3.33	5.25	1.92	58	3.03	3.975	.945	31
Pittsburgh, Jan. 1966	3.34	5.075	1.735	52	3.45	5.25	1.80	52	3.14	4.425	1.285	41
Portland, Nov. 1965	2.52	3.70	1.18	47	2.75	3.95	1.20	44	2.33	2.50	.17	7
Providence–Pawtucket, May 1966	2.66	3.95	1.29	48	2.97	4.55	1.58	53	2.68	3.60	.92	34
Trenton, Dec. 1965	3.68	4.80	1.72	56	3.30	5.30	2.00	61	3.09	4.375	1.285	42
York, Feb. 1966	2.62	3.55	.93	35	2.94	4.40	1.46	50	2.59	3.05	.46	18
South:												
Atlanta, May 1966	2.97	4.00	1.03	35	3.46	4.30	.84	24	2.82	4.25	1.43	51
Baltimore, Nov. 1965	3.11	4.09	.98	32	3.23	4.70	1.47	46	2.98	4.05	1.07	36
Birmingham, Apr. 1966	3.31	3.90	.59	18	3.67	4.35	.68	19	3.06	4.00	.94	31
Charleston, Apr. 1966	3.58	4.475	.895	25	3.58	4.45	.87	24	3.53	3.65	.12	3
Chattanooga, Sept. 1965	2.45	3.85	1.40	57	2.91	4.25	1.34	46	2.78	3.75	.97	35
Dallas, Nov. 1965	2.95	4.15	1.20	41	3.18	4.275	1.095	34	2.81	3.913	1.103	39
Houston, June 1966	3.61	4.32	.71	20	3.69	4.355	.665	18	3.51	4.035	.525	15
Jacksonville, Jan. 1966	2.82	3.75	.93	33	3.18	4.40	1.22	38	2.67	3.50	.83	31
Little Rock–N. Little Rock, Aug. 1965	2.47	3.65	1.18	48	2.67	4.35	1.68	63	-	-	-	-
Louisville, Feb. 1966	3.40	4.125	.725	21	3.57	4.545	.975	27	3.25	3.82	.57	18
Memphis, Jan. 1966	2.62	4.00	1.38	53	3.22	4.525	1.305	41	2.71	3.80	1.09	40
Miami, Dec. 1965	2.85	3.90	1.05	37	3.05	4.55	1.50	49	2.52	3.57	1.05	45
New Orleans, Feb. 1966	3.09	3.90	.81	26	3.30	4.40	1.10	33	2.99	3.375	.385	13
Richmond, Nov. 1965	3.11	3.45	.34	11	3.30	4.05	.75	23	3.09	2.75	-.34	-11
Savannah, May 1966	3.14	3.80	.66	21	3.35	4.35	1.00	30	3.07	3.375	.305	10
Washington, D.C.–Md–Va., Oct. 1965	3.19	4.10	.91	29	3.30	4.90	1.60	48	2.84	4.37	1.53	54
North Central:												
Chicago, Apr. 1966	3.66	4.85	1.19	33	3.67	4.95	1.28	35	3.86	4.60	.74	19
Cincinnati, Mar. 1965	3.26	4.40	1.14	35	3.35	4.75	1.40	42	3.20	4.00	.80	25
Cleveland, Sept. 1965	3.36	4.75	1.39	41	3.46	4.89	1.43	41	3.22	4.56	1.34	42
Columbus, Oct. 1965	3.22	4.14	.92	29	3.37	4.60	1.23	36	3.13	3.65	.52	17
Davenport–Rock Island–Moline, Oct. 1965	3.33	4.12	.79	24	3.67	4.56	.89	24	3.21	3.77	.56	17
Dayton, Jan. 1966	3.53	4.38	.85	24	3.52	4.64	1.12	32	3.34	4.00	.66	20
Des Moines, Feb. 1966	3.46	4.20	.74	21	3.54	4.60	1.06	30	3.37	3.90	.53	16
Detroit, Jan. 1966	3.51	4.43	.92	26	3.73	5.00	1.27	34	3.40	4.00	.60	18
Indianapolis, Dec. 1965	3.39	4.40	1.01	30	3.53	4.625	1.095	31	3.34	4.10	.76	23
Kansas City, Nov. 1965	3.49	4.15	.66	19	3.63	4.85	1.22	34	3.49	4.075	.585	17
Milwaukee, Apr. 1966	3.40	4.26	.86	25	3.70	4.60	.90	24	3.45	4.01	.56	16
Omaha, Oct. 1965	3.11	4.10	.99	32	3.42	4.60	1.18	35	3.29	3.825	.535	16
St. Louis, Oct. 1965	3.34	4.675	1.335	40	3.63	5.15	1.52	42	3.35	4.34	.99	30
South Bend, Mar. 1966	3.39	4.15	.76	22	3.41	4.50	1.09	32	3.51	3.80	.29	8
Toledo, Feb. 1966	3.49	4.495	1.005	29	3.44	4.75	1.31	38	3.28	4.165	.885	27
Wichita, Oct. 1965	2.95	3.825	.875	30	3.14	4.65	1.51	48	2.93	3.50	.57	19
Youngstown–Warren, Nov. 1965	3.38	4.50	1.12	33	3.61	4.625	1.015	28	3.20	4.14	.94	29
West:												
Denver, Dec. 1965	3.22	4.415	1.195	37	3.41	4.62	1.21	35	3.35	3.85	.50	15
Los Angeles–Long Beach, Mar. 1966	3.39	4.64	1.25	37	3.68	5.46	1.78	48	3.37	4.76	1.39	41
Phoenix, Mar. 1966	3.35	4.505	1.155	34	3.56	5.00	1.44	40	3.05	4.05	1.00	33
Portland, May 1966	3.39	4.68	1.29	38	3.61	5.00	1.39	39	3.49	4.05	.56	16
Salt Lake City, Dec. 1965	3.25	4.10	.85	26	3.30	4.60	1.30	39	3.24	3.85	.61	19
San Diego, Nov. 1965	3.32	4.75	1.43	43	3.83	5.50	1.67	44	3.24	4.82	1.58	49
Spokane, June 1966	3.53	4.45	.92	26	3.60	4.538	.938	26	3.43	4.38	.95	28

SOURCE: Lily Mary David and T. P. Kanninen, "Workers' Wages in Construction and Maintenance," Monthly Labor Review, January 1968.

Table 64. Differences between union construction scales and straight-time average hourly earnings of maintenance workers, 3 trades in selected metropolitan areas, 1955 and 1966

Region and metropolitan area	Excess of construction rates over maintenance straight-time average hourly earnings for—											
	Carpenters				Electricians				Painters			
	1955	1966	Percent excess		1955	1966	Percent excess		1955	1966	Percent excess	
			1955	1966			1955	1966			1955	1966
Northeast:												
Boston	$0.83	$1.37	41	44	$0.88	$2.01	42	62	$0.70	$1.32	39	46
Buffalo	.795	1.145	36	36	.87	1.62	38	46	.73	.935	36	29
New York City	1.21	2.45	55	73	1.05	1.75	47	50	.97	1.64	47	52
Philadelphia	.91	1.07	40	32	1.25	1.92	56	58	.55	.945	27	31
South:												
Atlanta	.68	1.03	35	35	.77	.84	35	24	.67	1.43	35	51
Baltimore	.69	.98	33	32	.795	1.47	36	46	.43	1.07	22	36
Dallas	.77	1.20	39	41	.90	1.095	43	34	.735	1.103	39	39
Memphis	.535	1.38	29	53	.83	1.305	39	41	.513	1.09	29	40
Middle West:												
Chicago	.69	1.19	27	33	.84	1.28	34	35	.575	.74	23	19
Cleveland	1.055	1.39	48	41	.955	1.43	41	41	.82	1.34	38	42
St. Louis	.78	1.335	34	40	.90	1.52	38	42	.66	.99	29	30
Far West:												
Denver	.60	1.195	32	37	.86	1.21	40	35	.57	.50	28	15
Los Angeles	.475	1.25	21	37	.78	1.78	32	48	.51	1.39	23	41
Portland	.27	1.79	11	38	.57	1.39	24	39	.23	.56	10	16

SOURCE: Lily Mary David and T. P. Kanninen, "Workers' Wages in Construction and Maintenance," Monthly Labor Review, January, 1968.

Table 65. Cumulative percent distributions of total reported earnings of employees reporting most of their income in 1964 from selected construction industries, by selected earnings intervals

Type of contractor	Percent earnings less than—						
	$600	$1,200	$2,400	$3,000	$5,000	$7,000	$9,000
General							
Any quarter	15.4	24.7	38.3	44.5	64.0	79.6	90.8
4 quarters (this industry)	.5	2.1	8.1	13.2	36.3	62.1	82.4
4 quarters (any industry)	.9	3.6	12.5	18.7	43.3	67.5	85.3
Heavy:							
Any quarter	11.3	19.4	32.3	38.6	59.3	75.3	87.3
4 quarters (this industry)	.3	1.2	5.0	9.4	30.3	55.7	74.6
4 quarters (any industry)	.6	2.6	9.6	15.3	38.9	61.6	79.8
Highway:							
Any quarter	11.7	20.9	34.9	41.5	63.0	78.9	91.0
4 quarters (this industry)	.2	1.2	5.1	9.6	31.9	56.8	80.1
4 quarters (any industry)	.6	3.2	11.1	17.4	42.3	65.6	84.6
Other heavy:							
Any quarter	10.9	18.2	30.3	36.3	56.4	72.5	84.4
4 quarters (this industry)	.3	1.2	4.6	8.7	28.2	50.1	69.6
4 quarters (any industry)	.6	2.1	8.5	13.9	36.6	58.8	76.4
Special trades:							
Any quarter	12.9	21.4	33.4	38.9	58.0	73.3	86.8
4 quarters (this industry)	.5	2.3	7.4	11.4	32.6	55.4	77.3
4 quarters (any industry)	.7	3.4	11.0	16.1	38.7	60.4	80.3
Plumbing, heating, and air-conditioning:							
Any quarter	10.5	17.6	27.4	31.7	49.8	65.8	81.5
4 quarters (this industry)	.5	2.2	5.6	8.5	27.6	49.0	71.6
4 quarters (any industry)	.6	3.0	8.9	12.6	32.9	53.6	74.9
Electrical:							
Any quarter	8.4	14.4	22.7	26.2	43.9	58.5	74.6
4 quarters (this industry)	.5	1.6	4.2	6.3	23.5	41.5	63.6
4 quarters (any industry)	.6	2.1	6.4	9.6	28.2	46.2	66.9
Masonry, plastering, stone, and tile:							
Any quarter	14.4	24.4	38.0	44.2	63.7	79.1	91.8
4 quarters (this industry)	.3	1.9	8.7	14.1	36.5	61.4	84.5
4 quarters (any industry)	.6	3.8	13.8	20.2	43.5	67.2	87.0
Roofing and sheet-metal:							
Any quarter	16.4	26.2	39.9	46.2	64.0	80.1	91.7
4 quarters (this industry)	.8	3.0	8.6	14.9	38.6	65.9	84.8
4 quarters (any industry)	1.1	5.8	15.8	22.7	46.1	70.1	87.5

SOURCE: Social Security Administration's 1-percent continuous work history sample.

Table 66. Estimated[1] total average (mean) annual earnings of workers with any earnings reported and of those workers with most of their earnings reported from selected construction industries, by region, 1964

Region	Employees with some earnings from industry[2]					Employees with major proportion of earnings from industry[3]				
	General building	Heavy	Highway	Other heavy	Special trades	General building	Heavy	Highway	Other heavy	Special trades
All regions	$4,285	$4,842	$4,425	$5,170	$4,790	$4,008	$4,366	$4,032	$4,718	$4,389
Northeast	4,985	5,152	5,075	5,313	4,746	4,658	4,758	4,670	5,322	4,547
Middle Atlantic	5,324	6,066	5,150	6,689	5,520	5,150	5,637	5,180	6,240	5,235
Border States	3,642	4,180	3,921	4,397	3,975	3,428	3,688	3,448	3,928	3,591
Southeast	2,895	3,313	3,196	3,411	3,284	2,711	2,900	2,730	3,108	2,995
Great Lakes	4,950	5,311	4,693	5,771	5,416	4,766	5,057	4,516	5,473	5,147
Middle West	3,908	4,267	4,263	4,275	4,379	3,741	3,817	3,776	3,918	4,020
Southwest	3,386	3,786	3,412	4,073	3,537	3,159	3,358	2,918	3,705	3,146
Mountain	4,273	4,987	4,797	5,149	4,966	3,939	4,594	4,451	4,814	4,376
Pacific	5,373	6,485	6,305	6,602	6,014	4,999	5,886	5,751	5,985	5,449

[1] Earnings of workers above the maximum taxable wage were estimated by assuming that their earnings during the quarter in which they reach the social security tax cut off ($4,800 in 1964) and in subsequent quarters continued at the same level as during the preceding quarters.

[2] Workers employed in more than 1 industry during the year were counted in each industry and their industry earnings were reported in the industry in which they were earned.

[3] Workers employed in more than 1 industry during the year have all of their earnings shown as total earnings in the industry from which they received the major portion of their earnings.

SOURCE: Social Security Administration's 1-percent continuous work history sample.

CHAPTER VII. ATTACHMENT OF WORKERS TO THE CONTRACT CONSTRUCTION INDUSTRY AND INTERINDUSTRY MOBILITY [47]

The seasonal nature of the construction industry, together with the inherently intermittent nature of construction activity, has helped to produce a labor force a large portion of which shifts frequently between construction and other industries.

Workers who are employed in the contract construction industry group tend to work in more industries in a given period than workers in other industry groups. Males employed in contract construction at some time during 1962 averaged employment in 1.204 industry divisions. During the same period, males in manufacturing averaged employment in only 1.090 industry divisions.

The attachment of male workers to the contract construction industry is considerably weaker than that of workers in all industries combined. [48] (See table 68.) The attachment of contract construction workers was much weaker than that of workers in manufacturing, transportation, communications, and public utilities, but slightly stronger than that of workers in agriculture, mining, and wholesale and retail trade. Strong attachment of workers to an industry could indicate relatively favorable wages and working conditions, or a lack of alternative job opportunities. Other factors that influence the attachment of workers to an industry include levels of unemployment among industries, as well as the age and race composition of workers in an industry.

Data on the industry origin of wage and salary workers employed in contract construction in 1960 but not in 1957 indicate a net inflow into construction of about 3 percent, or 82,000 workers. [49] More than one-third of this inflow came from manufacturing—with about three-quarters of these workers coming from the durable goods sector. The next largest proportion of workers came from the trade sector.

Just as most of the contract construction workers came from manufacturing, most of the "movers" from contract construction tended to find employment in manufacturing (29.6 percent). Other industries with strong attraction for construction workers were trade (23.7 percent) and services (13.8 percent). (See table 71.)

Contract construction workers tend to work for more employers in the course of a year than workers in other industries. In 1962, more than half the workers in contract construction were employed by more than one employer compared with about a quarter of workers in manufacturing. (See table 70.) Similarly, data for 1964 indicate that a larger proportion of workers in contract construction were employed by more than one employer in the same industry than workers in any other industry, except water transportation. (See table 75.) Approximately one of every four contract construction workers worked for more than one employer in the same industry in 1964. [50] In most other industries, the ratio was less than 1 to 10.

Between 1957 and 1960, the attachment of young workers (under 24 years old) to contract construction was about half that for older workers. (See table 72.) Generally, young workers in construction had

[47] See also appendix F.

[48] These tentative conclusions are drawn from Social Security data for 1957 and 1960. The strength of worker attachment to an industry was measured by comparing the percent of workers who had the major proportion of their earnings reported in the same industry both in 1957 and 1960.

[49] Further information on the flow of workers into the contract construction industry over a 1-year period is currently being developed by the BLS from the Social Security Administration's 1-percent sample.

[50] The effect on this ratio of the propensity of contractors to form a new corporation for each project is not known.

about the same relative attachment to the industry during this period as young workers in other industries. In other words, young workers did not shift disproportionately out of construction to other industries. The attachment of white workers to all industries, except agriculture, was greater than for Negroes.

The contract construction labor force is basically a floating work force in terms of employer relationship. The job tenure of a contract construction worker is tenuous. The employer-employee relationship usually is terminated when a project is completed and may be terminated when the need for a particular type of labor has ended. However, a contract construction worker who changes employers is somewhat less likely to have made an industry change than workers in other industries. (See table 74.) More than 80 percent of all male workers who changed employers also changed industries. For construction workers, a somewhat smaller proportion changed industries when changing employers.

Workers with a strong attachment to the contract construction industry work for more employers during the year than other workers. In 1964, at least 3 out of 10 four-quarter workers in each of the contract construction industries were employed by more than one employer during the year, compared with about 1 out of 4 in the all worker category. (See table 75.) About 10 percent of the general building and special trades and 5 percent of the heavy construction four-quarter employees worked for four or more employers. In nonconstruction industries, however, there were only minor differences between all and four-quarter workers.

A smaller proportion of contract construction workers work in all four-quarters of a year than workers in most other industries.[51] Equally important, only about 7 of every 10 workers reporting earnings in construction in 1957 (the latest year for which these data are available) reported the major share of their earnings from that industry. (See table 76.) Only the services industry had a lower proportion of such workers.

51 Based on data from the *Handbook of Old Age, Survivors and Disability Insurance Statistics, Employment, Earnings and Insurance Status of Workers In Covered Employment*, Social Security Administration, 1957.

Table 67. Average number[1] of 2-digit industry groups in which male wage and salary workers were employed in specific industry division, 1962

Industry	Number of industries
Agriculture, forestry, and fisheries	1.002
Mining	1.008
Contract construction	1.204
Manufacturing	1.090
Transportation, communic tion, and public utilities	1.027
Wholesale and retail trade	1.114
Finance, insurance, and real estate	1.029
Services	1.082

[1] The sum of the number of workers employed in each of the 2-digit industry groups in the industry division divided by the number of workers employed in the division during the year.

SOURCE: Measures of Labor Mobility and OASDHI data, Social Security Bulletin, April 1966, p. 42; and Social Security Administration's 1-percent continuous work history sample.

Table 68. Percent of male wage and salary workers who had a different industry of major job in 1960 than in 1957, by industry, of major job in 1957

Industry	Different industry in 1960
Total	24.1
Agriculture, forestry, and fisheries	38.1
Mining	32.1
Contract construction	30.2
Manufacturing	16.9
Transportation, communication, and public utilities	20.4
Wholesale and retail trade	30.9
Finance, insurance, and real estate	21.7
Services, except domestic	31.2
Domestic service	28.0
Government	24.3

SOURCE: Measures of Labor Mobility and OASDHI data, Social Security Bulletin, April 1966, p. 40; and Social Security Administration's 1-percent continuous work history sample.

Table 69. Percent distribution of male wage and salary workers in contract construction in 1960 who were employed in other industries in 1957, by industry of major job in 1957

Industry	Total	White	Negro
Total	100.0	100.0	100.0
Agriculture	6.0	5.5	8.7
Mining	4.9	5.6	1.2
Manufacturing	33.6	33.9	31.6
Durable goods	23.1	23.6	20.1
Nondurable goods	10.5	10.3	11.5
Transportation, communication, and public utilities	6.2	5.9	7.9
Wholesale and retail trade	27.0	26.8	28.1
Finance, insurance, and real estate	3.9	3.9	4.3
Services	9.6	9.3	11.0
Government	3.5	3.8	1.8
Unknown	5.2	5.2	5.4

SOURCE: Computed from data contained in Measures of Labor Mobility in the United States, 1957 to 1960, Research Report, No. 18 Social Security Administration, 1967; and Social Security Administration's 1-percent continuous work history sample.

Table 70. Percent of male wage and salary workers who worked for more than 1 employer in 1962, by industry of major job

Industry	Multiemployer workers
Total	32.0
Agriculture, forestry, and fisheries	38.6
Mining	33.4
Contract construction	55.2
Manufacturing	26.7
Transportation, communication, and public utilities	31.2
Wholesale and retail trade	34.0
Finance, insurance, and real estate	31.2
Services	34.7

SOURCE: Measures of Labor Mobility and OASDHI data, Social Security Bulletin, April 1966, p. 39; and Social Security Administration's 1-percent continuous work history sample.

Table 71. Percent distribution of male wage and salary workers with major job in a different industry in 1960 and 1957, by industry

Industry of major job in 1957	Industry of major job in 1960											
	Total	Agriculture forestry, and fisheries	Mining	Contract construction	Manufacturing	Transportation, communication, and public utilities	Wholesale retail trade	Finance, insurance, and real estate	Services, excluding domestic	Domestic services	Government	Unknown
Total	100.0	3.8	2.1	11.8	24.0	6.8	23.1	4.9	14.1	0.4	6.1	2.0
Agriculture, forestry, and fisheries	100.0	-	1.9	16.1	29.9	5.3	25.6	2.0	1.0	0.7	6.6	1.2
Mining	100.0	4.0	-	19.1	33.6	6.6	18.3	2.1	0	.1	5.7	1.6
Contract construction	100.0	5.4	3.7	-	29.6	7.1	23.7	6.3		.3	6.8	3.0
Manufacturing	100.0	4.3	2.2	14.7	-	8.0	39.5	4.7	17..	..	6.9	2.2
Transportation, communication, and public utilities	100.0	3.7	3.1	12.3	25.1	-	27.9	3.5	14.0	.2	6.4	2.9
Wholesale and retail trade	100.0	3.8	1.6	12.1	41.2	7.8	-	5.5	19.3	.3	6.4	1.8
Finance, insurance, and real estate	100.0	1.9	1.1	14.8	20.2	4.3	27.9	-	20.2	.4	7.1	2.0
Services, except domestic	100.0	3.2	1.3	9.4	28.4	7.2	33.5	6.3	-	.6	8.7	1.4
Domestic services	100.0	5.6	1.5	8.7	12.8	4.1	20.9	9.7	29.1		5.1	2.6
Government [1]	100.0	5.1	1.6	10.7	22.0	6.9	22.3	5.7	24.2	.3	-	1.2
Unknown	100.0	3.1	4.2	15.9	35.3	4.1	22.3	3.3	9.2	.3	2.4	-

[1] Regular government functions—executive, legislative, and judicial—on the State and local government level.

SOURCE: Measures of Labor Mobility and OASDHI data, Social Security Bulletin, April 1966, p. 41; and Social Security Administration's 1-percent continuous work history sample.

Table 72. Percent of male wage and salary workers who were employed in the same industry in 1957 and 1960, by age in 1960, race, and industry of major job

Industry	Total	Under 20	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65 and over
	Total											
Agriculture	61.9	35.5	34.7	51.6	61.7	63.2	69.0	72.3	76.4	76.2	78.1	81.1
Mining	67.9	29.4	42.6	49.9	61.1	68.8	72.8	75.6	72.3	77.1	79.9	75.4
Contract construction	69.8	38.4	43.6	59.2	69.4	72.7	75.1	75.1	76.2	76.7	77.3	79.3
Manufacturing	83.1	52.2	64.7	73.4	80.8	83.7	86.5	87.8	88.7	89.7	90.6	86.3
Transportation, communication, and public utilities	79.6	23.6	43.7	67.6	78.0	81.2	82.7	85.1	86.9	88.1	88.5	80.2
Wholesale and retail trade	69.1	49.8	46.2	59.2	68.5	72.7	74.7	77.5	77.8	79.3	80.8	83.1
Finance, insurance, and real estate	78.3	22.5	41.9	61.6	75.6	77.1	80.0	82.9	86.6	86.5	87.2	89.2
Services	69.2	26.4	37.4	55.9	67.7	71.4	72.3	76.1	79.7	82.1	84.4	85.9
Government	75.7	28.2	33.2	52.7	68.8	76.8	80.4	83.0	86.9	88.3	90.4	89.8
Unknown	2.4	1.1	2.3	2.2	.9	2.3	1.9	3.1	2.3	3.3	4.0	4.5
	White											
Agriculture	61.0	34.0	32.8	51.9	60.7	63.9	67.9	71.3	76.5	75.4	78.0	79.8
Mining	68.1	29.4	43.7	49.9	61.2	69.1	73.3	75.8	72.4	76.8	79.9	75.5
Contract construction	70.4	38.9	44.7	59.7	69.9	73.5	75.9	75.7	76.3	77.2	77.4	78.7
Manufacturing	83.6	53.9	65.2	73.8	81.4	84.0	86.9	88.3	89.0	90.0	90.6	86.2
Transportation, communication, and public utilities	80.5	25.0	45.2	68.6	78.9	82.4	83.6	86.1	87.6	88.7	89.2	79.6
Wholesale and retail trade	69.7	49.4	45.6	59.4	69.4	73.4	75.4	78.2	78.6	79.6	81.3	83.3
Finance, insurance, and real estate	79.3	23.9	42.8	62.7	77.4	78.1	81.6	84.6	87.7	87.2	87.4	89.9
Services	69.3	25.2	36.2	56.6	68.2	71.6	72.4	76.3	79.3	81.2	83.9	39.5
Government	76.5	28.0	32.9	53.8	69.9	77.8	81.5	83.6	87.1	88.5	90.8	90.0
Unknown	2.3	-	2.8	2.2	1.0	2.4	1.2	3.2	2.5	2.3	4.2	4.8
	Negro											
Agriculture	66.3	48.0	44.9	50.0	66.5	60.0	73.8	77.2	75.9	79.8	78.8	89.2
Mining	63.3	-	16.7	50.0	59.0	60.6	60.5	70.0	71.9	85.7	80.0	71.4
Contract construction	66.2	31.3	34.9	55.2	65.6	67.0	70.2	71.5	75.3	73.5	76.9	86.9
Manufacturing	78.7	30.8	59.6	69.7	75.2	80.2	82.4	82.3	86.3	86.5	90.6	88.6
Transportation, communication, and public utilities	69.1	12.5	29.7	55.1	66.5	68.7	73.6	75.0	79.4	80.5	78.2	86.3
Wholesale and retail trade	63.9	53.6	50.7	58.1	61.5	66.3	67.3	71.6	69.0	75.9	75.0	81.2
Finance, insurance, and real estate	63.8	-	28.1	43.3	42.1	56.3	61.1	63.2	74.0	77.8	84.9	81.0
Services	68.7	38.5	43.4	52.5	64.4	69.7	71.9	74.5	82.3	85.2	88.4	86.8
Government	66.0	33.3	36.3	43.2	59.3	66.4	69.3	75.0	84.2	84.8	82.4	86.1
Unknown	2.9	16.7	-	2.6	-	1.8	6.1	2.6	-	14.3	-	-

SOURCE: Interindustry Labor Mobility in the United States 1957 to 1960, February 1967, Research Report No. 18, Social Security Administration; and Social Security Administration's 1-percent continuous work history sample.

Table 73. Percent of male wage and salary workers employed in contract construction in 1960, by industry of major job in 1957, age in 1960, and race

Industry of major job in 1957	Age											
	Total	Under 20	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65 and over
	Total											
Agriculture	6.1	10.9	.7	.8	7.5	7.8	5.5	4.8	4.6	2.1	3.0	1.7
Mining	6.1	17.6	.7	8.7	7.6	5.9	5.5	5.3	6.2	3.0	4.6	3.0
Contract construction	69.8	38.4	56.6	59.2	69.4	72.7	75.1	75.1	76.2	76.7	77.3	79.3
Manufacturing	2.5	7.1	3.6	3.9	2.9	2.7	2.2	1.9	1.5	1.4	1.0	1.0
Transportation, communication, and public utilities	2.5	1.4	5.6	4.2	2.7	2.6	2.3	2.0	1.9	1.7	.6	1.8
Wholesale and retail trade	3.7	6.6	6.1	4.6	4.0	3.6	3.2	2.8	3.0	2.5	2.0	1.4
Finance, insurance, and real estate	3.2	4.2	5.	3.4	3.3	3.3	3.7	3.8	3.3	2.3	3.1	1.5
Services	2.9	7.1	4.	4.0	2.9	2.6	3.	2.6	1.8	1.8	2.1	.9
Government	2.6	7.1	5.5	4.3	3.5	3.0	3.5	2.0	1.4	1.1	1.3	.6
Unknown	15.6	5.4	13.2	10.3	18.7	18.1	19.4	16.9	15.9	13.8	17.2	11.6
	White											
Agriculture	5.8	11.3	8.7	6.6	7.4	7.4	4.1	4.2	4.4	2.2	2.8	1.8
Mining	6.1	17.6	9.7	8.4	7.8	5.8	5.4	5.4	6.4	3.1	4.9	3.1
Contract construction	70.4	38.9	44.7	59.7	69.9	73.5	75.9	75.7	76.3	77.2	77.4	78.7
Manufacturing	2.3	7.0	5.4	3.8	2.7	2.4	2.1	1.7	1.3	1.2	1.0	.9
Transportation, communication, and public utilities	2.2	1.6	5.4	3.8	2.4	2.4	1.8	1.6	1.8	1.5	.5	1.8
Wholesale and retail trade	3.5	6.7	6.2	4.3	3.6	3.2	2.9	2.6	2.8	2.4	2.0	1.4
Finance, insurance, and real estate	2.9	4.5	5.2	3.2	2.9	3.1	3.0	3.3	2.8	2.2	3.0	1.4
Services	2.8	7.3	4.8	3.6	2.6	2.7	3.3	2.3	1.8	1.9	1.9	1.0
Government	2.6	7.3	5.8	4.4	3.7	3.1	3.4	2.1	1.4	1.0	1.0	.6
Unknown	14.9	5.8	11.8	9.1	18.6	17.4	18.0	15.9	15.4	15.1	16.1	11.7
	Negro											
Agriculture	7.8	8.0	8.3	13.3	8.4	9.4	11.3	7.4	5.5	1.6	4.5	1.2
Mining	5.8	-	11.1	20.0	2.6	9.1	9.3	2.5	3.1	-	-	-
Contract construction	66.2	31.3	34.9	55.2	65.6	67.0	70.2	71.5	75.3	73.5	76.9	86.9
Manufacturing	3.9	7.7	7.1	4.7	5.0	3.9	3.6	3.2	3.1	2.8	.6	1.2
Transportation, communication, and public utilities	5.6	-	6.9	8.6	5.8	3.6	7.7	6.3	3.5	4.7	2.6	2.0
Wholesale and retail trade	5.7	5.7	5.6	6.5	7.1	7.0	5.6	5.1	5.3	3.2	1.7	2.2
Finance, insurance, and real estate	7.4	-	9.4	6.7	10.5	7.0	12.6	9.5	8.3	3.7	4.1	2.4
Services	3.7	5.2	5.6	6.3	5.1	1.7	4.4	4.0	2.1	1.0	2.9	.5
Government	2.6	-	2.5	3.6	2.2	2.4	4.7	1.1	1.0	1.5	5.9	-
Unknown	21.1	-	20.8	18.4	20.0	22.8	28.6	25.6	20.7	-	37.5	10.0

SOURCE: Interindustry Labor Mobility in the United States 1957 to 1960, February 1967, Research Report No. 18, Social Security Administration; and Social Security Administration's 1-percent continuous work history sample.

Table 74. Proportion of multiemployer male wage and salary workers who were multi-industry workers, by industry of major job in 1962

Industry	Proportion who were multi-industry workers
Total	81.6
Agriculture, forestry, and fisheries	69.5
Mining	69.1
Contract construction	76.6
Manufacturing	86.6
Transportation, communication, and public utilities	80.3
Wholesale and retail trade	79.4
Finance, insurance, and real estate	82.3
Services	80.9

SOURCE: Measures of Labor Mobility and OASDHI data, Social Security Bulletin, April 1966, p. 40; and Social Security Administration's 1-percent continuous work history sample.

Table 75. Percent distribution of all and 4-quarter workers,[1] by number of employers, selected industries, 1964

Industry	All workers					4-quarter workers				
	Number of employers									
	Any	1	2	3	4	Any	1	2	3	4
	Employees with some earnings from the industry[2]									
Contract construction:										
General building contractors	100	76	15	5	5	100	67	17	8	9
Heavy construction	100	78	15	5	3	100	70	18	7	5
Special trades contractors	100	74	15	6	6	100	65	16	8	11
Mining:										
Bituminous coal	100	87	9	3	1	100	86	9	3	2
Manufacturing:										
Textile mill products	100	93	6	1	(3)	100	93	6	1	(3)
Printing and publishing	100	92	6	1	1	100	90	7	2	2
Petroleum refining	100	99	1	-	-	100	99	1	2	-
Primary metals	100	98	2	(3)	(3)	100	98	2	-	(3)
Transportation equipment	100	96	4	(3)	(3)	100	96	4	(3)	(3)
Transportation and public utilities:										
Water transportation	100	67	13	6	14	100	60	12	7	21
Utilities, electric and gas	100	99	1	(3)	(3)	100	99	1	(3)	(3)
Wholesale and retail trade:										
General merchandise stores	100	95	5	(3)	(3)	100	95	5	(3)	(3)
	Employees with a major proportion of earnings from the industry[4]									
Contract construction:										
General building contractors	100	73	16	6	5	100	68	17	8	8
Heavy construction	100	74	18	6	3	100	71	18	7	4
Special trades contractors	100	70	16	6	7	100	66	16	8	10
Mining:										
Bituminous coal	100	86	9	3	2	100	86	9	3	2
Manufacturing:										
Textile mill products	100	93	6	1	(3)	100	93	6	1	(3)
Printing and publishing	100	91	6	2	1	100	90	7	2	2
Petroleum refining	100	99	1	-	-	100	99	1	-	-
Primary metals	100	98	2	(3)	(3)	100	98	2	(3)	(3)
Transportation equipment	100	96	4	(3)	(3)	100	96	4	(3)	(3)
Transportation and public utilities:										
Water transportation	100	65	13	7	15	100	62	12	7	19
Utilities, electric and gas	100	99	1	(3)	(3)	100	99	1	(3)	(3)
Wholesale and retail trade:										
General merchandise stores	100	94	5	(3)	(3)	100	95	5	(3)	(3)

[1] All workers are those with some employment in any calendar quarter; 4-quarter workers are those with some employment in each calendar quarter.

[2] Workers employed in more than 1 industry during the year were counted in each industry in which they were employed.

[3] Less than 1 percent.

[4] Workers employed in more than 1 industry during the year were reported in the industry from which they received the major portion of their earnings.

NOTE: Dash (-) indicates there were no employees reported. Because of rounding, sums of individual items may not equal total.

SOURCE: Social Security Administration's 1-percent continuous work history sample.

Table 76. Proportion of all workers reporting earnings in selected industries who reported the major share of their earnings in the selected industries, 1957

Industry	Percent
Mining	80.3
Contract construction	72.3
General contractors, building	57.5
General contractors, other	57.9
Special trades	60.7
Manufacturing	89.0
Public utilities	76.3
Wholesale and retail trade	74.3
Finance, insurance, and real estate	73.3
Services	66.5

SOURCE: Handbook of Old Age, Survivors and Disability Insurance Statistics, Employment, Earnings and Insurance Status of Workers In Covered Employment, Social Security Administration, 1957, pp. 34-5 and 42-3.

CHAPTER VIII. WORK EXPERIENCE OF INDIVIDUAL CONSTRUCTION WORKERS OVER A 12-MONTH PERIOD

This chapter presents the results of an analysis of manpower utilization in construction occupations (craftsmen and laborers), based on special tabulations of hours-worked data from pension fund records. To get new and deeper insights into work patterns of construction workers, data on hours of work of individual workers reported over a 12-month period were obtained for 13 occupations in four areas: Omaha, Milwaukee, Detroit, and Southern California. [52] The time periods covered for each area are as follows:

Detroit	November 1966 - October 1967
Milwaukee	December 1965 - November 1966
Omaha	July 1966 - June 1967
Southern California—	
Carpenters, cement finishers, and teamsters	January - December 1966
Operating engineers, and iron workers	June 1966 - May 1967

The data were obtained from the records of health and welfare funds established under provisions of collective bargaining agreements. These provisions generally require contractors to make a cents-per-hour payment to the fund for each hour worked within the jurisdiction of the local agreement. Administrators keep current records of reported hourly contributions by contractors to the fund.

The advantage of these data is that they relate specifically to the occupation and locality of work and show the work experience of individual workers in terms of hours worked in each month. They are therefore more precise than Social Security data, which give only quarters of coverage in the industry and no information by occupation. This feature provides an insight into the intensity of utilization of a construction worker. An additional advantage is that the data are based on records and are more precise than work experience data from the Current Population Survey, which is a survey that relies on the memory of the respondent.

Unfortunately, the pension fund data include cross-classifications of employees only by age. Excluded are many characteristics which would be of interest in analyzing work experience, e.g., nature of training, specific skills (within the occupation), length of experience, [53] permanent residence, etc. Lacking such detailed information, certain suppositions must go untested—for example, that journeymen trained through apprenticeship obtain more steady work than others. In addition, a description of the total work experience of the construction craftsmen surveyed cannot be made from this information because the data refer only to work done in the jurisdiction of the collective bargaining agreement. Thus, work within the occupation but outside the jurisdiction is not measured; neither is work in other industries or occupations or in the same occupation but not under the authority of the pension fund (e.g., self-employed or construction work not covered by union contract). No attempt to link the data directly to other sources of information (such as Social Security data)

52 In no case were the data on hours worked affected by substantial work stoppages. In Omaha, however, the month of June 1967 contained 22 days of rain—introducing a distortion into the seasonal pattern of the data. Also the data for two occupations—laborers and teamsters—in Omaha covers only those hours of work reported in commerial building and excludes those on heavy and highway construction.

53 The data from these funds do not show length of experience. The Bureau of Labor Statistics was able to obtain such data in a 1965 Study of Operating Engineers in New Jersey. For these workers, no significant relationship appeared to exist between the length of experience and the amount of work received.

has yet been made.[54] Also, the data are subject to irregularities that may exist in the system of employer compliance with the provisions of the agreements that established these funds. An effort was made, however, to obtain data from well-established funds with rather complete contractor compliance. In addition to the substantive finding, this information provides an insight into the type of data available from pension fund records and perhaps will serve to initiate additional scholarly research in this area.

Hours of work

The average number of hours worked during the 12-month period differed by occupation, but was low for all occupations. Workers in most occupations in all areas for which data were obtained worked less than 1,200 hours in the periods covered; the exceptions were operating engineers in both Detroit and California. (See table 77.) Generally, the less skilled occupations reported a higher proportion of workers with 1,400 hours or less. Approximately 80 percent of the laborers in Omaha, Detroit, and Milwaukee reported fewer than 1,400 hours of work. (See table 80.) The proportion of workers in occupations reporting fewer than 700 hours (about 18 full weeks of work) also differed greatly by occupation and area. Only 26 percent of the operating engineers but about 47 percent of the carpenters in Southern California reported fewer than 700 hours. On the other hand, in Omaha, about 43 percent of the operating engineers and only 30 percent of the carpenters reported fewer than 700 hours of work. Wide differences in hours of work were reported for workers in the same occupation in the four areas. About 37 percent of the cement masons in Omaha and 55 percent in Detroit worked fewer than 700 hours during the 12-month period. (See table 80.) A large number of factors contribute to these differences in employment experience by occupation and area. The level and composition of construction activity, weather conditions, customary seasonal patterns of employment, and labor market conditions all influence the hours reported by occupation over a particular period.

In order to determine whether "short-hours" workers and those workers not firmly attached to the industry were responsible for the low average number of hours of work reported, two techniques were used to exclude these workers from consideration. In this section, and for discussion purposes only, short-hours workers are considered to be those workers who worked fewer than 700 hours in the 12-month period. A worker was not considered to be firmly attached to the industry if he did not have hours of work reported to the fund in January—the assumption being that if a worker was employed in January, a seasonally low month, his attachment to the industry was strong.

When short-hours workers were excluded from consideration, the average annual hours reported for the remaining workers was considerably higher but was *still substantially below that of a 2,000-hour full work year.* (See table 78.) Not counting workers with fewer than 700 hours of work, the median number of hours of work reported for all crafts in all areas covered was 1,535.[55] All operating engineers in Southern California reported an average of 1,284 hours of work; for those operating engineers with 700 or more hours of work reported the average was 1,633 hours. All laborers had an average of 626 hours of work in Omaha, but those laborers with 700 or more hours reported had an average of 1,467 hours of work.

When those workers not firmly attached to the industry were excluded from consideration, the average annual hours reported for the remaining workers was considerably higher than that for all workers, but still substantially below a full work year. (See tables 77 and 78.) Construction teamsters in Omaha with hours reported in January had an average of about 1,530 hours in the 12-month period, whereas, construction teamsters without hours in January had only about 415; the average for all teamsters in Omaha was 730 hours of work. A similar pattern existed for each of the crafts in each of the areas surveyed.

[54] In the study of operating engineers in 1965, fund data and Social Security data were cross-classified. This study revealed that those persons with between 700 and 1,299 hours reported to the fund drew less than one-fourth of their earnings from industries where operating engineers would not usually be employed.

[55] The median number of hours for all workers was less than 1,000 (998.5).

Several conclusions may be drawn from these data. A considerable number of short-hours workers are in all the trades. Moreover, the industry's work force appears to be underutilized in all the crafts in all areas for which data were obtained. More importantly, these data give a quantitative measure of the degree of utilization of the work force in specific areas in the construction industry by occupation. Undoubtedly, many of the workers reporting relatively few hours of work in construction have additional income from work in other occupations or as construction workers either outside the authority of the pension fund or on their own (self-employed).

For individual construction workers, the hours of work situation can be considerably less favorable than the averages for occupations suggest. For the four areas and 13 occupations for which data were collected, the proportion of workers with fewer than 400 hours of work reported was on the average two and one-half times greater than those with 1,800 hours or more. (See table 79.) Work in the industry appears to be uncertain for the individual worker. Although the average hours worked is not high, he cannot be confident of achieving even the average, for most workers receive far less than the average. Only a small proportion report a fairly large number of hours of work.

Age and hours reported

For those workers for which age data were available from the pension funds, workers between the ages of 30 and 44 generally received more hours of work than older or younger workers. In Detroit, 27 percent of the bricklayers between the ages of 30 and 44 reported more than 1,800 hours of work during the 12-month period reported. (See table 81.) On the other hand, only 11 percent of the bricklayers less than 30 years old and 18 percent of those over 44 years old reported 1,800 hours of work.

The tables presented in this chapter summarize the data contained in appendix A.

Table 77. Average number of hours worked in 12-month period for workers who worked in January and for those who did not work in January, by selected construction occupation in 3 cities

Occupation	Detroit		Omaha		Milwaukee	
	Worked in January	Did not work in January	Worked in January	Did not work in January	Worked in January	Did not work in January
Asphalt pavers	-	-	-	-	889	482
Bricklayers and masons	1,245	734	1,356	834	1,346	858
Carpenters	1,342	768	1,455	983	-	-
Cement finishers and cement masons	1,203	567	1,291	805	1,236	704
Ironworkers and/or reinforced steel workers	1,316	613	1,442	753	-	-
Laborers	1,255	527	1,067	447	1,015	479
Lathers	-	-	1,029	1,158	1,461	978
Operating engineers	1,626	1,003	1,315	776	1,186	862
Plasterers	-	-	1,566	851	1,526	832
Plaster laborers	-	-	1,067	447	1,477	761
Teamsters	-	-	1,529	416	-	-
Terrazzo mechanics	-	-	-	-	1,827	1,007
Terrazzo skilled helpers	-	-	-	-	1,444	1,014

Table 78. Average number of hours worked in a 12-month period for all workers and those with 700 hours or more of work, by selected construction occupation in 4 areas

Occupation	Detroit		Omaha		Milwaukee		Southern California	
	All workers	Workers with 700 hours or more	All workers	Workers with 700 hours or more	All workers	Workers with 700 hours or more	All workers	Workers with 700 hours or more
Asphalt pavers	-	-	-	-	626	1,040	-	-
Bricklayers and masons	934	1,470	1,042	1,471	1,031	1,486	-	-
Carpenters	1,015	1,542	1,162	1,530	-	-	864	1,430
Cement finishers and cement masons	777	1,510	1,024	1,474	880	1,450	932	1,503
Ironworkers and/or reinforced steel workers	888	1,524	1,010	1,590	-	-	1,044	1,572
Laborers	765	1,540	626	1,467	590	1,416	-	-
Lathers	-	-	1,130	1,772	1044	1,637	-	-
Operating engineers	1,260	1,754	987	1,525	932	1,474	1,284	1,633
Plasterers	-	-	1,032	1,756	1,055	1,611	-	-
Plaster laborers	-	-	-	-	919	1,662	-	-
Teamsters	-	-	728	1,778	-	-	961	1,647
Terrazzo mechanics	-	-	-	-	1,105	1,780	-	-
Terrazzo skilled helpers	-	-	-	-	1,063	1,550	-	-

Table 79. Percent of employees reporting fewer than 400 and more than 1,800 hours in a 12-month period by selected construction occupation in 4 areas

Occupation	Detroit		Omaha		Milwaukee		Southern California	
	Fewer than 400	More than 1,800	Fewer than 400	More than 1,800	Fewer than 400	More than 1,800	Fewer than 400	More than 1,800
Asphalt pavers	-	-	-	-	38.3	0.7	-	-
Bricklayers and masons	34.2	11.7	24.6	15.6	26.1	8.6	-	-
Carpenters	31.9	16.0	19.7	24.7	-	-	36.5	12.5
Cement finishers and cement masons	46.7	14.4	29.0	17.1	35.1	15.8	34.8	16.3
Ironworkers and/or reinforced steel workers	39.0	14.3	34.9	21.0	-	-	31.1	20.9
Laborers	47.6	14.4	54.5	10.0	55.5	8.9	-	-
Lathers	-	-	31.3	45.4	31.5	27.9	-	-
Operating engineers	24.6	35.4	31.6	16.6	33.0	17.9	17.4	31.0
Plasterers	-	-	-	-	26.4	23.1	-	-
Plaster laborers	-	-	39.7	30.1	41.0	22.0	-	-
Teamsters	-	-	57.3	18.2	-	-	36.0	23.2
Terrazzo mechanics	-	-	-	-	32.0	36.0	-	-
Terrazzo skilled helpers	-	-	-	-	27.4	19.3	-	-

Table 80. Percentage of construction workers with hours of work reported for a 12-month period, by selected construction occupation and hours intervals in 4 areas.

Occupation	Detroit	Omaha	Milwaukee	Southern California	Detroit	Omaha	Milwaukee	Southern California
	Fewer than 700 hours				Fewer than 800 hours			
Asphalt pavers	-	-	50.7	-	-	-	56.3	-
Bricklayers and masons	43.0	35.8	36.6	-	45.9	39.5	28.7	-
Carpenters	39.5	30.0	-	47.4	41.7	33.6	-	50.9
Cement finishers and cement masons	54.7	36.7	45.9	43.8	57.0	40.8	49.4	46.7
Ironworkers and/or reinforced steel workers	47.7	42.0	-	38.3	49.6	44.7	-	40.4
Laborers	58.3	67.8	69.1	-	61.0	70.0	70.7	-
Lathers	-	42.2	41.7	-	-	46.9	43.4	-
Operating enginners	33.0	42.9	44.3	26.0	35.3	45.5	47.5	29.0
Plasterers	-	47.6	41.1	-	-	49.2	41.7	-
Plaster laborers	-	-	51.5	-	-	-	52.1	-
Teamsters	-	64.6	-	49.3	-	67.0	-	51.9
Terrazzo mechanics	-	-	44.0	-	-	-	44.0	-
Terrazzo skilled helpers	-	-	37.1	-	-	-	38.7	-
	Fewer than 1,200 hours				Fewer than 1,400 hours			
Asphalt pavers	-	-	88.9	-	-	-	95.8	-
Bricklayers and masons	57.7	54.6	48.9	-	66.3	61.8	57.2	-
Carpenters	52.4	48.6	-	65.0	60.5	56.3	-	72.4
Cement finishers and cement masons	69.4	56.9	64.4	59.4	75.5	64.2	71.8	65.8
Ironworkers and/or reinforced steel workers	61.0	53.2	-	50.8	67.4	59.0	-	57.4
Laborers	70.6	78.8	80.0	-	75.0	83.6	83.4	-
Lathers	-	50.0	51.8	-	-	53.1	56.0	-
Operating engineers	46.8	58.3	61.8	42.2	56.2	65.9	69.3	49.4
Plasterers	-	55.5	50.6	-	-	57.1	55.9	-
Plaster laborers	-	-	59.5	-	-	-	62.0	-
Teamsters	-	71.9	-	61.2	-	71.9	-	65.9
Terrazzo mechanics	-	-	44.0	-	-	-	48.0	-
Terrazzo skilled helpers	-	-	48.3	-	-	-	54.8	-
	Fewer than 1,600 hours				Fewer than 1,800 hours			
Asphalt pavers	-	-	93.3	-	-	-	99.3	-
Bricklayers and masons	76.9	72.3	75.1	-	88.3	84.6	91.4	-
Carpenters	71.7	65.2	-	79.9	84.0	75.3	-	87.6
Cement finishers and cement masons	80.1	72.2	77.1	74.3	85.6	82.7	84.1	83.6
Ironworkers and/or reinforced steel workers	74.8	67.0	-	66.4	85.7	79.0	-	79.0
Laborers	80.0	86.6	86.9	-	85.6	90.1	91.1	-
Lathers	-	54.7	63.7	-	-	54.7	72.0	-
Operating engineers	57.8	75.8	75.3	57.9	64.6	83.4	82.1	69.1
Plasterers	-	58.7	65.9	-	-	69.8	77.0	-
Plaster laborers	-	-	66.3	-	-	-	78.0	-
Teamsters	-	74.3	-	70.7	-	81.6	-	76.8
Terrazzo mechanics	-	-	56.0	-	-	-	64.0	-
Terrazzo skilled helpers	-	-	70.9	-	-	-	80.6	-

Table 81. Percent of employees reporting more than 1,000, 1,400, and 1,800 hours of work in a 12-month period in southern California, and Detroit, by selected occupation and age intervals

Area and occupation	Age								
	20-29			30-44			45-64		
	Percentage reporting more than—								
	1,000 hours	1,400 hours	1,800 hours	1,000 hours	1,400 hours	1,800 hours	1,000 hours	1,400 hours	1,800 hours
Southern California:									
Ironworkers	71.0	53.4	23.0	78.8	64.3	34.1	73.4	55.9	27.2
Cement masons	60.5	44.6	19.4	67.6	52.7	28.3	64.2	44.5	21.1
Carpenters	48.6	29.4	11.7	57.2	39.1	18.4	58.5	38.7	17.3
Operating engineers	68.5	51.6	29.2	76.5	62.5	39.6	71.3	54.3	33.1
Detroit:									
Bricklayers	57.1	34.3	11.4	79.1	63.6	27.0	78.6	57.9	18.2
Carpenters	65.8	45.1	18.5	78.3	62.9	30.4	82.1	65.0	27.9
Cement masons	33.3	22.2	11.1	57.5	45.2	31.5	73.8	54.4	30.1
Ironworkers	55.3	36.2	12.8	77.8	45.7	19.8	61.1	44.4	16.7
Laborers	48.9	37.9	21.6	68.4	56.5	35.1	72.3	59.2	36.8
Operating engineers	68.4	57.9	31.6	73.7	62.4	48.8	75.3	64.3	47.0

APPENDIX A. SPECIAL SURVEY OF MANPOWER UTILIZATION

This appendix includes the detailed tables developed by the Bureau of Labor Statistics from data supplied by the various private health, welfare, and pension funds covering construction workers in four geographic areas (See p. for a more detailed discussion of these data.)

APPENDIX A TABLES

APPENDIX A TABLES—Continued

Table A-1. Average number of hours of work reported for workers in construction occupations in Omaha by month

Month	Year	Average number of hours
January	1967	105.0
February	1967	110.2
March	1967	117.5
April	1967	112.6
May	1967	127.5
June	1967	112.0
July	1966	119.5
August	1966	117.7
September	1966	125.4
October	1966	114.8
November	1966	125.8
December	1966	120.9
Annual average	-	117.4
Weighted average	-	116.9

Table A-2. Average number of hours of work reported for workers in selected construction occupations in Detroit by month

Month	Year	Carpenters	Bricklayers	Operating engineers	Laborers	Cement masons	Reinforced steel workers
January	1967	117.3	88.9	137.2	77.2	60.5	85.5
February	1967	132.1	86.3	131.8	87.6	65.7	85.1
March	1967	150.6	103.2	142.3	79.2	62.2	87.1
April	1967	151.4	108.4	142.6	71.5	65.3	84.6
May	1967	126.8	105.5	146.2	54.8	81.9	80.4
June	1967	124.8	105.7	151.2	59.9	58.9	82.0
July	1967	120.9	103.9	140.1	83.1	65.8	84.8
August	1967	111.3	103.4	165.5	55.7	67.4	86.3
September	1967	122.5	103.2	150.1	97.7	59.0	83.6
October	1967	114.0	102.4	143.3	68.9	63.7	75.3
November	1966	120.1	100.6	142.4	109.2	66.3	72.5
December	1966	104.6	91.1	140.9	102.6	57.7	79.3
Annual average	-	124.7	100.2	144.6	79.0	64.5	82.2
Weighted average	-	123.9	101.1	144.9	78.1	64.3	81.9

Table A-3. Average number of hours of work reported for workers in selected construction occupations in Milwaukee by month

Month	Year	Asphalt pavers	Laborers	Plasterers' laborers	Bricklayers	Lathers	Cement finishers	Plasterers	Operating engineers	Terrazzo mechanics	Terrazzo skilled helpers
January	1966	47.8	74.7	110.6	89.8	110.0	90.5	83.2	92.1	137.9	143.9
February	1966	51.3	82.9	107.9	90.2	103.6	85.2	95.6	99.2	97.1	104.8
March	1966	73.9	91.2	118.4	100.2	116.3	97.7	121.1	114.3	109.9	162.3
April	1966	81.5	95.5	121.9	116.0	119.6	98.7	122.0	120.7	141.2	130.1
May	1966	58.5	85.4	103.4	105.7	104.2	97.2	80.7	116.3	85.5	110.3
June	1966	81.8	89.5	114.5	57.6	122.6	102.2	110.2	123.2	142.6	145.7
July	1966	85.7	97.8	93.3	76.4	99.7	101.8	107.0	135.4	134.4	143.7
August	1966	68.0	98.3	116.1	101.2	110.6	97.1	109.4	125.0	96.8	107.9
September	1966	67.1	83.8	122.5	116.0	118.2	99.5	100.7	121.9	101.4	155.6
October	1966	80.2	104.5	94.3	119.8	111.3	89.5	84.3	137.4	141.8	133.5
November	1966	72.1	79.0	99.7	82.4	98.1	64.5	59.7	104.3	90.2	96.2
December	1965	54.5	82.3	124.2	114.1	117.2	94.7	106.2	92.3	148.2	166.2
Annual average	-	68.5	88.7	110.6	97.4	111.0	93.2	98.3	115.2	118.9	133.3
Weighted average	-	72.6	89.2	110.1	98.4	111.0	91.4	96.0	115.9	115.0	131.9

Table A-4. Average number of hours of work reported for workers in selected construction occupations in southern California by month

Month	Carpenters [1]	Operating engineers [2]	Ironworkers [2]	Cement masons [1]	Teamsters [1]
January	108.3	131.7	102.9	77.6	127.8
February	107.8	130.7	104.1	78.0	135.4
March	103.1	132.1	100.9	79.0	124.4
April	112.3	146.4	110.5	86.0	149.5
May	113.1	121.4	100.3	82.0	145.5
June	102.6	143.3	109.5	72.6	130.0
July	112.7	138.2	106.8	79.2	148.7
August	108.0	133.8	106.4	80.3	142.3
September	114.8	147.7	106.3	79.8	151.7
October	110.5	141.7	102.9	68.9	141.6
November	113.3	147.3	109.6	80.7	142.6
December	109.3	131.5	103.3	76.3	129.2
Annual average	109.7	137.2	105.3	78.4	139.0
Weighted average	109.6	137.4	105.4	78.3	139.0

[1] Calendar year 1966.
[2] Fiscal year running from June 1966 to May 1967.

Table A-5. Average number of hours of work reported per worker in construction occupations in Omaha by month as a percent of annual average monthly hours of work per worker

Month	Year	Average number of hours
January	1967	89.4
February	1967	93.9
March	1967	100.1
April	1967	95.9
May	1969	108.6
June	1967	95.4
July	1966	101.8
August	1966	100.3
September	1966	106.8
October	1966	97.8
November	1966	107.2
December	1966	103.0

Table A-6. Average number of hours of work reported per worker in selected construction occupations in Detroit by month as a percent of annual average monthly hours of work per worker

Month	Year	Carpenters	Bricklayers	Operating engineers	Laborers	Cement masons	Reinforced steel workers
January	1967	94.1	88.7	94.9	97.7	93.8	104.0
February	1967	105.9	86.1	91.1	110.9	101.9	103.5
March	1967	120.8	103.0	98.4	100.3	96.4	106.0
April	1967	121.4	108.2	98.6	90.5	101.2	102.9
May	1967	101.7	105.3	102.5	69.4	127.0	97.8
June	1967	100.1	105.5	104.6	75.8	91.3	99.8
July	1967	97.0	103.7	96.9	105.2	102.0	103.2
August	1967	89.3	103.2	114.5	70.5	104.5	105.0
September	1967	98.2	103.0	103.8	123.7	91.5	101.7
October	1967	91.4	102.2	99.1	87.2	98.8	91.6
November	1966	96.3	100.4	98.5	138.2	102.8	88.2
December	1966	83.9	90.9	97.4	129.9	89.5	96.5

Table A-7. Average number of hours of work reported per worker in selected construction occupations in Milwaukee by month as a percent of annual average monthly hours of work per worker

Month	Year	Asphalt pavers	Laborers	Plasterers' laborers	Bricklayers	Lathers	Cement finishers	Plasterers	Operating engineers	Terrazzo mechanics	Terrazzo skilled helpers
January	1966	69.8	84.2	100.0	92.2	99.1	97.1	84.6	79.9	116.0	108.0
February	1966	74.9	93.5	97.6	92.6	93.3	91.4	97.3	85.9	81.2	78.6
March	1966	107.9	102.8	107.1	102.9	104.8	104.8	123.2	99.2	92.4	121.8
April	1966	119.0	107.7	110.2	119.1	107.7	105.9	124.1	104.8	118.8	97.6
May	1966	85.4	96.3	93.5	108.5	93.9	104.3	82.1	101.0	71.9	82.7
June	1966	119.4	100.9	103.5	59.1	110.5	109.7	112.1	106.9	119.9	109.3
July	1966	125.1	110.3	84.4	77.4	89.8	109.2	108.9	117.5	113.0	107.8
August	1966	99.3	110.8	105.0	103.9	99.6	104.2	111.3	108.5	81.4	80.9
September	1966	98.0	94.5	110.8	119.1	106.5	106.8	102.4	105.8	85.3	116.7
October	1966	117.1	117.8	85.3	123.0	100.3	96.0	85.8	119.3	119.3	100.2
November	1966	105.3	89.1	90.1	84.6	88.4	69.2	60.7	90.5	75.9	72.2
December	1965	79.6	92.8	112.3	117.1	105.6	101.6	108.0	80.1	124.6	124.6

Table A-8. Average number of hours of work reported per worker in selected construction occupations in southern California by month as a percent of annual average monthly hours of work per worker

Month	Carpenters [1]	Operating engineers [2]	Ironworkers [2]	Cement masons [1]	Teamsters [1]
January	98.7	96.0	97.7	99.0	91.9
February	98.3	95.3	98.9	99.5	97.4
March	94.0	96.3	95.8	100.8	89.5
April	102.4	106.7	104.9	109.7	107.3
May	103.1	88.5	95.3	104.6	104.7
June	93.5	104.4	104.0	92.6	93.5
July	102.7	100.7	101.4	101.0	107.0
August	98.5	97.5	101.0	102.4	102.4
September	104.6	107.7	100.9	101.8	109.1
October	100.7	103.3	97.7	87.9	101.9
November	103.3	107.4	104.1	102.9	102.6
December	99.6	95.8	98.1	97.3	92.9

[1] Calendar year 1966.
[2] Fiscal year running from June 1966 to May 1967.

Table A-9. Aggregate monthly hours of work reported for workers in construction occupations in Omaha as a percent of the annual monthly average of aggregate hours of work reported

Month	Year	Percent
January	1967	70.6
February	1967	73.2
March	1967	66.7
April	1967	88.2
May	1967	99.9
June	1967	112.9
July	1966	103.2
August	1966	131.6
September	1966	128.2
October	1966	105.3
November	1966	111.3
December	1966	108.8

Table A-10. Aggregate monthly hours of work reported for workers in selected construction occupations in Detroit as a percent of the annual monthly average of aggregate hours of work reported

Month	Year	Carpenters	Bricklayers	Operating engineers	Laborers	Cement masons	Reinforced steel workers
January	1967	95.8	75.1	90.3	90.0	68.9	83.7
February	1967	104.1	61.2	82.3	95.7	63.1	67.8
March	1967	101.8	88.8	88.4	88.3	62.3	85.6
April	1967	113.6	105.2	96.2	88.6	86.7	91.8
May	1967	99.6	113.5	101.2	68.7	108.7	107.9
June	1967	99.9	114.1	103.3	80.9	119.9	111.9
July	1967	105.4	105.5	112.6	121.4	138.7	112.8
August	1967	99.3	129.2	119.8	84.3	119.7	132.2
September	1967	99.6	118.8	108.2	139.6	122.8	105.2
October	1967	107.9	120.1	119.2	103.0	130.2	123.1
November	1966	92.1	89.1	90.9	126.5	104.3	91.3
December	1966	80.9	69.4	87.7	113.0	74.6	86.7

Table A-11. Aggregate monthly hours of work reported for workers in selected construction occupations in Milwaukee as a percent of the annual monthly average of aggregate hours of work reported.

Month	Year	Asphalt pavers	Laborers	Plasterers' laborers	Bricklayers	Lathers	Cement finishers	Plasterers	Operating engineers	Terrazzo mechanics	Terrazzo skilled helpers
January	1966	12.2	65.0	97.7	80.2	86.3	59.2	100.7	73.0	91.6	93.3
February	1966	10.4	66.9	93.5	92.5	90.2	63.7	86.3	64.9	105.9	91.2
March	1966	14.9	80.2	115.4	100.5	126.1	75.0	106.3	74.0	119.8	114.3
April	1966	56.0	99.2	109.6	111.7	106.6	91.8	110.2	90.8	87.1	106.1
May	1966	86.0	100.1	93.9	116.6	96.6	97.5	93.7	96.8	85.2	100.1
June	1966	142.2	105.5	99.2	40.3	105.8	106.9	99.5	110.9	108.2	107.9
July	1966	117.9	121.0	96.3	65.8	86.8	109.3	100.0	130.7	95.6	95.8
August	1966	187.0	129.8	104.4	116.4	112.8	116.0	118.0	117.8	91.7	95.9
September	1966	167.4	116.4	98.9	124.5	100.3	128.7	96.0	113.4	115.4	109.5
October	1966	217.4	124.5	95.9	123.5	96.1	141.7	98.4	134.0	87.4	79.1
November	1966	90.4	97.7	85.5	114.3	90.3	123.7	83.9	108.1	85.5	71.3
December	1965	38.2	93.8	109.7	113.7	102.0	86.4	107.2	85.5	126.5	135.4

Table A-12. Aggregate monthly hours of work reported for workers in selected construction occupations in southern California as a percent of the annual monthly average of aggregate hours of work reported

Month	Carpenters [1]	Operating engineers [2]	Ironworkers [2]	Cement masons [1]	Teamsters [1]
January	99.6	91.7	94.2	88.6	93.3
February	97.1	86.7	90.2	95.1	99.4
March	98.6	89.3	85.7	96.5	97.5
April	120.1	97.4	100.6	119.2	125.4
May	106.2	79.0	82.3	107.9	101.0
June	103.9	114.8	106.7	103.8	96.6
July	106.1	106.2	106.8	107.2	106.2
August	102.2	111.7	108.6	101.5	96.9
September	106.5	116.4	110.4	106.5	103.5
October	93.0	108.4	108.7	95.2	98.6
November	85.8	106.2	105.7	94.2	97.3
December	80.7	92.2	100.0	84.2	84.4

[1] Calendar year 1966.
[2] Fiscal year running from June 1966 to May 1967.

Table A-13. Number of workers in construction occupations in Omaha by month as a percent of annual monthly employment

Month	Year	Percent
January	1967	78.7
February	1967	77.7
March	1967	66.3
April	1967	91.6
May	1967	100.3
June	1967	117.9
July	1966	101.0
August	1966	130.7
September	1966	119.6
October	1966	107.3
November	1966	103.5
December	1966	105.2

Table A-14. Number of workers in selected construction occupations in Detroit by month as a percent of annual average monthly employment

Month	Year	Carpenters	Bricklayers	Operating engineers	Laborers	Cement masons	Reinforced steel workers
January	1967	101.2	85.4	95.4	91.0	73.2	80.1
February	1967	97.7	71.7	90.5	85.3	61.7	65.2
March	1967	83.8	87.0	89.6	87.1	64.4	80.4
April	1967	93.0	98.1	97.7	96.8	85.3	88.9
May	1967	97.4	108.7	98.9	98.0	85.3	110.0
June	1967	99.2	109.1	99.0	105.4	131.0	111.7
July	1967	108.0	102.7	116.4	114.0	135.4	109.0
August	1967	110.6	136.0	104.9	118.0	114.2	125.5
September	1967	100.8	116.3	104.4	111.5	133.7	103.0
October	1967	117.4	118.5	120.6	116.7	131.4	133.9
November	1966	90.0	90.0	92.5	90.4	101.1	103.1
December	1966	95.9	76.9	90.2	86.0	83.2	89.5

Table A-15. Number of workers in selected construction occupations in Milwaukee by month as a percent of annual average monthly employment

Month	Year	Asphalt pavers	Laborers	Plasterers' laborers	Bricklayers	Lathers	Cement finishers	Plasterers	Operating engineers	Terrazzo mechanics	Terrazzo skilled helpers
January	1966	16.6	77.6	97.2	87.3	87.3	59.7	116.3	91.9	77.8	85.4
February	1966	14.7	72.0	95.4	100.9	96.8	68.4	86.7	75.9	127.8	114.6
March	1966	14.7	78.4	107.3	98.7	120.6	70.2	84.3	75.0	127.8	92.7
April	1966	50.0	92.6	99.1	94.8	99.2	85.1	86.7	87.2	72.2	107.3
May	1966	106.9	104.5	100.0	108.5	103.2	91.8	111.4	96.5	116.7	119.5
June	1966	126.5	105.1	95.4	68.9	96.0	95.7	86.7	104.3	88.9	97.6
July	1966	151.0	110.3	113.8	85.8	96.8	98.2	89.8	111.9	83.3	87.8
August	1966	200.0	117.7	99.1	113.1	113.1	109.3	103.6	109.2	111.1	117.1
September	1966	181.4	123.3	89.0	105.7	94.4	118.3	91.6	107.8	133.3	92.7
October	1966	197.1	106.3	111.9	101.4	96.0	144.8	112.0	113.0	72.2	78.0
November	1966	91.2	110.2	94.5	136.4	102.4	175.3	134.9	120.0	111.1	97.6
December	1965	51.0	101.6	97.2	98.0	96.8	83.5	97.0	107.4	100.0	107.3

Table A-16. Number of workers in selected construction occupations in southern California by month as a percent of annual average monthly employment

Month	Carpenters [1]	Operating engineers [2]	Ironworkers [2]	Cement masons [1]	Teamsters [1]
January	100.8	95.7	96.5	89.4	101.4
February	98.7	91.9	91.4	95.5	102.1
March	104.8	92.9	89.6	95.7	108.9
April	117.2	91.4	95.9	108.6	116.9
May	102.9	89.4	86.5	103.0	96.5
June	111.0	110.2	102.7	112.0	103.3
July	103.2	105.7	105.4	106.0	99.3
August	103.6	114.7	107.6	99.0	94.6
September	101.6	108.3	109.5	104.5	94.8
October	92.2	105.1	111.3	108.3	96.8
November	82.9	99.1	101.6	91.4	94.8
December	81.0	96.3	102.0	86.5	90.8

[1] Calendar year 1966.
[2] Fiscal year running from June 1966 to May 1967.

Table A-17. Average number of hours of work for workers in selected construction occupations in Omaha by selected hours interval for the 12-month period, July 1966–June 1967

Selected group of hours	All workers	Bricklayers	Carpenters	Cement finishers	Ironworkers	Laborers	Lathers	Operating engineers	Plasterers	Teamsters
All employees	951	1,042	1,162	1,024	1,010	626	1,130	987	1,032	728
Employees who did not have hours reported in January	743	834	983	805	753	447	1,158	776	851	416
Employees who had hours reported in January	1,323	1,356	1,455	1,291	1,442	1,067	1,029	1,315	1,566	1,529
Employees excluded with less than—										
700 hours	1,525	1,471	1,530	1,474	1,590	1,467	1,772	1,525	1,756	1,778
600 hours	1,480	1,432	1,488	1,444	1,572	1,390	1,715	1,482	1,661	1,778
500 hours	1,426	1,396	1,448	1,403	1,536	1,289	1,715	1,420	1,631	1,738
400 hours	1,362	1,332	1,404	1,375	1,471	1,193	1,573	1,362	1,599	1,550
300 hours	1,288	1,288	1,362	1,317	1,379	1,065	1,520	1,297	1,481	1,399
200 hours	1,199	1,262	1,308	1,230	1,308	946	1,416	1,370	1,370	1,248
100 hours	1,080	1,130	1,240	1,122	1,186	796	1,304	1,069	1,155	1,049
Employees with less than—										
700 hours	251	275	301	248	209	227	249	271	237	155
600 hours	223	236	257	219	198	205	216	244	194	155
500 hours	193	208	216	186	181	178	216	213	181	146
400 hours	161	159	172	166	150	152	156	179	171	117
300 hours	127	126	136	138	111	117	133	151	143	90
200 hours	91	99	96	96	84	84	107	106	104	64
100 hours	48	53	54	46	46	46	67	53	50	39
Employees with between—										
600 and 700 hours	646	663	642	655	633	646	663	646	626	-
500 and 600 hours	546	538	551	551	531	549	-	541	534	578
400 and 500 hours	449	444	453	451	443	446	459	451	431	422
300 and 400 hours	349	355	353	332	349	350	357	341	361	345
200 and 300 hours	248	247	249	253	247	250	226	247	264	243
100 and 200 hours	145	140	146	147	151	144	18	147	141	131

Table A-18. Average number of hours of work for workers in selected construction occupations in Detroit by selected hours interval for the 12-month period, November 1966–October 1967

Selected group of hours	Carpenters	Bricklayers	Operating engineers	Laborers	Cement masons	Reinforced steel workers
All employees	1,015	934	1,260	765	777	888
Employees who did not have hours reported in January	768	734	1,003	527	567	613
Employees who had hours reported in January	1,342	1,245	1,626	1,255	1,203	1,316
Employees excluded with less than—						
700 hours	1,542	1,470	1,754	1,540	1,510	1,524
600 hours	1,510	1,436	1,707	1,479	1,469	1,478
500 hours	1,472	1,395	1,667	1,413	1,413	1,435
400 hours	1,429	1,347	1,620	1,335	1,363	1,385
300 hours	1,376	1,292	1,558	1,236	1,283	1,324
200 hours	1,309	1,216	1,486	1,126	1,205	1,237
100 hours	1,183	1,083	1,383	973	1,063	1,144
Employees with less than—						
700 hours	210	223	256	210	171	190
600 hours	184	196	218	186	150	160
500 hours	157	169	188	162	126	135
400 hours	131	142	158	137	107	111
300 hours	104	116	121	108	80	85
200 hours	78	89	86	78	60	65
100 hours	36	43	36	41	30	36
Employees with between—						
600 and 700 hours	647	651	646	649	648	653
500 and 600 hours	550	552	549	547	550	545
400 and 500 hours	448	451	449	448	441	448
300 and 400 hours	348	342	351	348	351	346
200 and 300 hours	244	244	246	245	243	248
100 and 200 hours	144	150	151	147	144	146

Table A-19. Average number of hours of work for workers in selected construction occupations in Milwaukee by selected hours interval for the 12-month period, December 1965–November 1966

Selected group of hours	Asphalt pavers	Plasterers	Plasterers laborers	Masons	Cement finishers	Lathers	Terrazzo mechanics	Terrazzo skilled helpers	Operating engineers	Laborers
All employees	626	1,055	919	1,031	880	1,044	1,105	1,063	932	590
Employees who did not have hours reported	482	832	761	858	704	978	1,007	1,014	862	479
Employees who had hours reported in January	889	1,526	1,477	1,346	1,236	1,461	1,827	1,444	1,186	1,015
Employees excluded with less than—										
700 hours	1,040	1,611	1,662	1,486	1,450	1,637	1,780	1,550	1,474	1,416
600 hours	1,005	1,594	1,624	1,462	1,414	1,599	1,780	1,506	1,430	1,346
500 hours	961	1,567	1,562	1,427	1,387	1,578	1,780	1,462	1,377	1,279
400 hours	944	1,382	1,457	1,346	1,295	1,469	1,543	1,417	1,317	1,165
300 hours	914	1,353	1,371	1,311	1,268	1,431	1,478	1,370	1,247	1,068
200 hours	874	1,274	1,273	1,266	1,206	1,356	1,350	1,370	1,175	957
100 hours	778	1,187	1,064	1,154	1,057	1,228	1,148	1,149	1,064	799
Employees with less than—										
700 hours	224	256	220	242	208	213	62	237	249	202
600 hours	180	246	205	221	181	186	62	197	218	180
500 hours	130	233	183	195	165	175	62	160	185	161
400 hours	112	137	148	136	114	121	44	127	150	129
300 hours	86	119	122	112	100	103	37	99	144	103
200 hours	63	83	95	89	78	76	32	99	81	76
100 hours	26	40	39	44	31	39	20	30	32	40
Employees with between—										
600 and 700 hours	647	644	628	633	656	658	-	648	650	650
500 and 600 hours	539	562	543	546	553	546	-	556	554	545
400 and 500 hours	456	441	439	445	445	436	440	440	447	447
300 and 400 hours	371	345	344	348	366	339	360	332	343	349
200 and 300 hours	254	233	252	244	246	243	200	-	245	245
100 and 200 hours	136	156	145	146	148	139	139	160	147	146

Table A-20. Average number of hours of work of workers in selected construction occupations in southern California for 12-month period

Selected group of hours	Carpenters [1]	Operating engineers [2]	Cement masons [1]	Ironworkers [2]	Teamsters [1]
All employees	864	1,284	932	1,044	961
Employees excluded with less than—					
700 hours	1,430	1,633	1,503	1,572	1,647
600 hours	1,382	1,596	1,458	1,539	1,598
500 hours	1,332	1,558	1,416	1,507	1,508
400 hours	1,278	1,520	1,371	1,464	1,414
300 hours	1,209	1,481	1,316	1,420	1,330
200 hours	1,333	1,436	1,256	1,362	1,249
100 hours	1,021	1,367	1,174	1,262	1,103
Employees with less than—					
700 hours	237	291	200	194	255
600 hours	204	246	166	165	233
500 hours	174	203	136	141	196
400 hours	145	161	109	113	155
300 hours	112	125	80	90	120
200 hours	81	91	56	67	92
100 hours	42	44	30	37	41
Employees with between—					
600 and 700 hours	649	650	648	650	648
500 and 600 hours	549	548	548	549	543
400 and 500 hours	450	451	450	447	452
300 and 400 hours	345	346	351	349	349
200 and 300 hours	247	246	246	244	244
100 and 200 hours	147	149	146	145	153

[1] Calendar year 1966.
[2] Fiscal year running from June 1966 to May 1967.

Table A-21. Percent distribution of workers in selected construction occupations in Omaha by selected hours interval for the 12-month period, July 1966–July 1967

Selected group of hours	All workers	Bricklayers	Carpenters	Cement finishers	Ironworkers	Laborers	Lathers	Operating engineers	Plasterers	Teamsters
All groups	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
More than 700 hours	55.0	64.2	70.0	63.3	58.0	32.2	57.8	57.1	52.4	35.4
Less than 700 hours	45.0	35.8	30.0	36.7	42.0	67.8	42.2	42.9	47.6	64.6
Less than 600 hours	42.1	32.6	26.5	34.3	40.9	64.5	39.1	40.0	42.9	64.6
Less than 500 hours	38.5	29.8	23.2	31.1	38.9	59.7	39.1	36.1	41.3	63.4
Less than 400 hours	34.2	24.7	19.7	29.0	34.9	54.5	31.3	31.7	39.7	57.3
Less than 300 hours	29.0	21.2	16.3	24.8	29.1	46.3	28.1	27.0	33.3	51.2
Less than 200 hours	22.4	17.2	12.1	18.2	24.4	37.2	21.9	18.4	27.0	43.9
Less than 100 hours	12.5	8.1	6.6	9.1	15.5	22.7	14.1	8.0	11.1	31.7
Between 600 and 700 hours	3.0	3.3	3.5	2.4	1.1	3.3	3.1	2.9	4.8	-
Between 500 and 600 hours	3.5	2.8	3.3	3.1	2.0	4.8	-	3.8	1.6	1.2
Between 400 and 500 hours	4.3	5.1	3.6	2.1	4.0	5.2	7.8	4.5	1.6	6.1
Between 300 and 400 hours	5.2	3.5	3.3	4.2	4.8	8.2	3.1	4.7	6.3	6.1
Between 200 and 300 hours	6.6	4.0	4.3	6.6	4.7	9.1	6.3	8.6	6.3	7.3
Between 100 and 200 hours	9.8	9.1	5.5	9.1	8.9	14.4	7.8	10.4	15.9	12.2
With hours in January	35.9	40.0	37.9	45.1	37.3	28.9	21.9	39.2	25.4	28.0

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

Table A-22. Percent distribution of workers in selected construction occupations in Detroit by selected hours interval for the 12-month period, November 1966–October 1967

Selected group of hours	Carpenters	Bricklayers	Operating engineers	Laborers	Cement masons	Reinforced steel workers
All groups	100.0	100.0	100.0	100.0	100.0	100.0
More than 700 hours	60.5	57.0	67.0	41.7	45.3	52.3
Less than 700 hours	39.5	43.0	33.0	58.3	54.7	47.7
Less than 600 hours	37.3	40.5	30.0	55.3	52.5	44.8
Less than 500 hours	34.8	37.6	27.5	51.8	49.4	42.1
Less than 400 hours	31.9	34.2	24. ,	47.6	46.7	39.0
Less than 300 hours	28.4	30.4	20.7	41.8	42.1	35.2
Less than 200 hours	23.9	25.0	16.1	34.5	37.4	31.3
Less than 100 hours	14.6	14.3	9.2	22.4	27.7	23.1
Between 600 and 700 hours	2.2	2.5	2.9	3.0	2.2	2.9
Between 500 and 600 hours	2.6	2.9	2.5	3.4	3.1	2.7
Between 400 and 500 hours	2.8	3.4	2.9	4.2	2.8	3.0
Between 300 and 400 hours	3.5	3.8	3.9	5.8	4.6	3.8
Between 200 and 300 hours	4.5	5.4	4.6	7.3	4.7	3.8
Between 100 and 200 hours	9.3	10.7	7.0	12.1	9.7	8.2
With hours in January	43.0	39.1	58.7	67.3	67.1	60.9

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

Table A-23. Percent distribution of workers in selected construction occupations in Milwaukee by selected hours interval for the 12-month period, December 1965–November 1966

Selected group of hours	Asphalt pavers	Plasterers	Plasterers' laborers	Masons	Cement finishers	Lathers	Terrazzo mechanics	Terrazzo skilled helpers	Operating engineers	Laborers
All groups	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
More than 700 hours	49.3	58.9	48.5	63.4	54.1	58.3	56.0	62.9	55.7	31.9
Less than 700 hours	50.7	41.1	51.5	36.6	45.9	41.7	44.0	37.1	44.3	68.1
Less than 600 hours	45.8	40.0	49.7	34.8	43.3	39.3	44.0	33.9	41.1	64.8
Less than 500 hours	40.3	38.4	46.6	32.2	41.5	38.1	44.0	30.6	37.4	61.6
Less than 400 hours	38.2	26.3	41.1	26.0	35.1	31.5	32.0	27.4	33.0	55.5
Less than 300 hours	34.7	24.2	36.2	23.4	33.2	29.2	28.0	24.2	27.8	49.5
Less than 200 hours	30.6	18.4	30.1	20.0	28.9	24.4	20.0	24.2	22.2	41.6
Less than 100 hours	20.1	11.6	14.1	11.1	17.3	15.5	4.0	11.3	12.8	27.6
Between 600 and 700 hours	4.9	1.1	1.8	1.8	2.6	2.4	-	3.2	3.2	3.2
Between 500 and 600 hours	5.6	1.6	3.1	2.6	1.8	1.2	-	3.2	3.7	3.2
Between 400 and 500 hours	2.1	12.1	5.5	6.1	6.4	6.5	12.0	3.2	4.4	6.1
Between 300 and 400 hours	3.5	2.1	4.9	2.7	1.9	2.4	4.0	3.2	5.2	6.0
Between 200 and 300 hours	4.2	5.8	6.1	3.4	4.3	4.8	8.0	-	5.6	7.9
Between 100 and 200 hours	10.4	6.8	16.0	8.9	11.7	8.9	16.0	12.9	9.4	14.1
With hours in January	35.4	32.1	22.1	35.4	33.1	13.7	12.0	11.3	21.5	20.7

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

Table A-24. Percent distribution of workers in selected construction occupations in southern California by selected hours interval for a 12-month period

Selected group of hours	Carpenters [1]	Operating engineers [2]	Cement masons [1]	Iron-workers [2]	Teamsters [1]
All groups	100.0	100.0	100.0	100.0	100.0
More than 700 hours	52.6	74.0	56.2	61.7	50.7
Less than 700 hours	47.4	26.0	43.8	38.3	49.3
Less than 600 hours	44.0	23.1	40.7	36.1	46.7
Less than 500 hours	40.4	20.2	37.8	33.9	41.7
Less than 400 hours	36.5	17.4	34.8	31.1	36.0
Less than 300 hours	31.5	14.5	31.1	28.3	30.5
Less than 200 hours	25.5	11.3	27.0	24.6	24.9
Less than 100 hours	16.0	6.3	21.1	17.8	13.4
Between 600 and 700 hours	3.4	2.9	3.1	2.3	2.6
Between 500 and 600 hours	3.6	2.9	2.9	2.2	5.0
Between 400 and 500 hours	3.9	2.9	3.0	2.8	5.7
Between 300 and 400 hours	5.0	2.9	3.7	2.8	5.5
Between 200 and 300 hours	5.9	3.2	4.1	3.7	5.6
Between 100 and 200 hours	9.5	5.0	5.9	6.8	11.5

[1] Calendar year 1966.
[2] Fiscal year running from June 1966 to May 1967.

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

Table A-25. Percent distribution of total hours of work reported by workers in selected construction occupations in Omaha for the 12-month period, July 1966–1967

Selected group of hours	Construction workers	Bricklayers	Carpenters	Cement finishers	Iron-workers	Laborers	Lathers	Operating engineers	Plasterers	Teamsters
All employees	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Employees with hours in January	49.9	52.0	47.5	57.0	53.2	49.2	19.9	52.2	36.5	58.9
Employees without hours in January	50.1	48.0	52.5	43.0	46.8	50.8	80.1	47.8	61.5	41.1
Employees with—										
More than 700 hours	88.1	90.6	92.2	91.1	91.3	75.4	90.7	88.2	89.1	86.3
Less than 700 hours	11.9	9.4	7.8	8.9	8.7	24.6	9.3	11.8	10.9	13.7
More than 600 hours	90.2	92.6	94.1	92.7	92.0	78.8	92.5	90.1	92.0	86.3
Less than 600 hours	9.8	7.4	5.9	7.3	8.0	21.2	7.5	9.9	8.0	13.7
More than 500 hours	92.2	94.1	95.7	94.4	93.0	83.1	92.5	92.2	92.8	87.3
Less than 500 hours	7.8	5.9	4.3	6.5	7.0	16.9	7.5	7.8	7.2	12.7
More than 400 hours	94.2	96.2	97.1	95.3	94.8	86.8	95.7	94.3	93.4	90.8
Less than 400 hours	5.8	3.8	2.9	4.7	5.2	13.2	4.3	5.7	6.6	9.2
More than 300 hours	96.1	97.4	98.1	96.6	96.8	91.4	96.7	95.9	95.7	93.7
Less than 300 hours	3.9	2.6	1.9	3.4	3.2	8.6	3.3	4.1	4.3	6.3
More than 200 hours	97.9	98.4	99.0	98.3	98.0	95.0	97.9	98.0	97.3	96.1
Less than 200 hours	2.1	1.6	1.0	1.7	2.0	5.0	2.1	2.0	2.7	3.9
More than 100 hours	99.4	99.6	99.7	99.6	99.3	98.3	99.2	99.6	99.5	98.3
Less than 100 hours	.6	.4	.3	.4	.7	1.7	.8	.4	.5	1.7

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

Table A-26. Percent distribution of total hours of work reported by workers in selected construction occupations in Detroit for the 12-month period, November 1966–October 1967

Selected group of hours	Carpenters	Bricklayers	Operating engineers	Laborers	Cement masons	Reinforced steel workers
All employees	100.0	100.0	100.0	100.0	100.0	100.0
Employees with hours in January	56.8	52.2	53.3	53.6	51.0	58.0
Employees without hours in January	43.2	47.8	46.7	46.4	49.0	42.0
Employees with—						
More than 700 hours	91.8	89.7	93.3	84.0	88.0	89.8
Less than 700 hours	8.2	10.3	6.7	16.0	12.0	10.2
More than 600 hours	93.2	91.5	94.8	86.5	89.8	91.9
Less than 600 hours	6.8	8.5	5.2	13.5	10.2	8.1
More than 500 hours	94.6	93.2	95.9	89.0	92.0	93.6
Less than 500 hours	5.4	6.8	4.1	11.0	8.0	6.4
More than 400 hours	95.9	94.8	96.9	91.5	93.6	95.1
Less than 400 hours	4.1	5.2	3.1	8.5	6.4	4.9
More than 300 hours	97.1	96.2	98.0	94.1	95.7	96.6
Less than 300 hours	2.9	3.8	2.0	5.9	4.3	3.4
More than 200 hours	98.2	97.6	98.9	96.5	97.1	97.7
Less than 200 hours	1.8	2.4	1.1	3.5	2.9	2.3
More than 100 hours	99.5	99.3	99.7	98.8	98.9	99.1
Less than 100 hours	.5	.7	.3	1.2	1.1	.9

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

Table A-27. Percent distribution of total hours of work reported by workers in selected construction occupations in Milwaukee for the 12-month period, December 1965–November 1966

Selected group of hours	Asphalt pavers	Plasterers	Plasterers' laborers	Masons	Cement finishers	Lathers	Terrazzo mechanics	Terrazzo skilled helpers	Operating engineers	Laborers
All employees	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Employees with hours in January	50.3	46.4	35.5	46.2	46.5	19.2	19.8	15.3	27.4	35.6
Employees without hours in January	49.7	53.6	64.5	53.8	53.5	80.8	80.2	84.7	72.6	64.4
Employees with—										
More than 700 hours	81.8	90.0	87.7	91.4	89.1	91.5	90.2	91.7	88.2	76.7
Less than 700 hours	18.2	10.0	12.3	8.5	10.9	8.5	9.8	8.3	11.8	23.3
More than 600 hours	86.9	90.7	88.9	92.5	91.2	93.0	90.2	93.7	90.4	80.2
Less than 600 hours	13.1	9.3	11.1	7.5	8.9	7.0	9.8	6.3	9.6	19.8
More than 500 hours	91.6	91.5	90.7	93.9	92.2	93.6	90.2	95.4	92.6	83.2
Less than 500 hours	8.4	8.5	9.3	6.1	7.8	6.4	9.8	4.6	7.4	16.8
More than 400 hours	93.2	96.6	93.4	96.6	95.4	96.3	95.0	96.7	94.7	87.8
Less than 400 hours	6.8	3.4	6.6	3.4	4.6	3.7	5.0	3.3	5.3	12.2
More than 300 hours	95.2	97.3	95.2	97.5	96.2	97.1	96.3	97.7	96.6	90.5
Less than 300 hours	4.8	2.7	4.8	2.5	3.8	2.9	3.7	2.3	3.4	8.6
More than 200 hours	96.9	98.5	96.9	98.3	97.4	98.2	97.7	97.7	98.1	94.6
Less than 200 hours	3.1	1.5	3.1	1.7	2.6	1.8	2.3	2.3	1.9	5.4
More than 100 hours	99.2	99.6	99.4	99.5	99.4	99.4	99.7	99.7	99.6	98.1
Less than 100 hours	.8	.4	.6	.5	.6	.6	.3	.3	.4	1.9

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

Table A-28. Percent distribution of total hours of work reported by workers in selected construction occupations in southern California for a 12-month period

Selected group of hours	Carpenters[1]	Operating engineers[2]	Cement masons[1]	Ironworkers[2]	Teamsters[1]
All employees	100.0	100.0	100.0	100.0	100.0
Employees with—					
More than 700 hours	87.0	94.1	90.6	92.9	86.9
Less than 700 hours	13.0	5.9	9.4	7.1	13.1
More than 600 hours	89.6	95.6	92.8	94.3	88.7
Less than 600 hours	10.4	4.4	7.2	5.7	11.3
More than 500 hours	91.9	96.8	94.5	95.4	91.5
Less than 500 hours	8.1	3.2	5.5	4.6	8.5
More than 400 hours	93.9	97.8	95.9	96.6	94.2
Less than 400 hours	6.1	2.2	4.1	3.4	5.8
More than 300 hours	95.9	98.6	97.3	97.6	96.2
Less than 300 hours	4.2	1.4	2.7	2.4	3.8
More than 200 hours	97.6	99.2	98.4	98.4	97.6
Less than 200 hours	2.4	0.8	1.6	1.6	2.4
More than 100 hours	99.2	99.8	99.3	99.4	99.4
Less than 100 hours	.8	.2	.7	.6	.6

[1] Calendar year 1966.
[2] Fiscal year running from June 1966 to May 1967.

NOTE: Due to rounding, sums of individual items may not equal totals.

Table A-29. Percent distribution of workers in selected construction occupations in Omaha by number of hours of work reported for the 12-month period, July 1966–June 1967

Selected group of hours	Construction workers	Bricklayers	Carpenters	Cement finishers	Ironworkers	Laborers	Lathers	Operating engineers	Plasterers	Teamsters
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1-199 hours	22.3	17.2	12.1	18.2	24.4	37.2	21.9	18.3	27.0	43.9
200-399 hours	11.9	7.4	7.6	10.8	10.5	17.3	9.4	13.3	12.7	13.4
400-599 hours	7.8	7.9	6.8	5.2	6.0	10.0	7.8	8.3	3.2	7.3
600-799 hours	5.8	7.0	7.1	6.6	3.8	5.5	7.8	5.6	6.3	2.4
800-999 hours	5.9	5.1	8.2	6.3	3.8	5.0	-	6.0	-	4.9
1,000-1,199 hours	6.1	10.0	6.8	9.8	4.7	3.8	3.1	6.8	6.3	-
1,200-1,399 hours	6.5	7.2	7.7	7.3	5.8	4.8	3.1	7.6	1.6	-
1,400-1,599 hours	7.4	10.5	8.9	8.0	8.0	3.0	1.6	9.9	1.6	2.4
1,600-1,799 hours	8.1	12.3	10.1	10.5	12.0	3.5	-	7.6	11.1	7.3
1,800-1,999 hours	9.7	13.0	14.4	9.1	12.2	4.2	26.6	7.1	19.0	2.6
2,000-2,199 hours	6.5	2.1	9.0	7.0	7.5	5.0	18.8	5.3	9.5	6.1
2,200-2,399 hours	1.3	.5	1.1	.7	1.3	.6	-	2.7	-	7.3
2,400 hours or more	.5	-	.2	.3	-	.2	-	1.5	1.6	2.4

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

Table A-30. Percent distribution of workers in selected construction occupations in Detroit by number of hours of work reported for the 12-month period, November 1966–October 1967

Selected group of hours	Carpenters	Bricklayers	Operating engineers	Laborers	Reinforced steel workers	Cement masons
Total	100.0	100.0	100.0	100.0	100.0	100.0
1-199 hours	23.5	25.0	16.0	34.5	31.3	37.4
200-399 hours	8.1	9.2	8.5	13.1	7.7	9.3
400-599 hours	5.4	6.2	5.4	7.7	5.8	5.8
600-799 hours	4.4	5.4	5.2	5.8	4.8	4.5
800-999 hours	4.7	5.9	5.8	4.9	4.9	4.6
1,000-1,199 hours	6.0	6.0	5.8	4.7	6.5	7.9
1,200-1,399 hours	8.1	8.6	5.3	4.4	6.4	6.1
1,400-1,599 hours	11.2	10.6	5.7	5.0	7.4	4.7
1,600-1,799 hours	12.4	11.4	6.8	5.6	10.9	5.4
1,800-1,999 hours	8.9	6.7	9.4	6.4	7.8	5.8
2,000-2,199 hours	4.4	4.1	12.4	5.2	5.4	5.5
2,200-2,399 hours	1.8	.7	6.9	1.6	.9	2.2
2,400 hours or more	.9	.5	6.7	1.3	.3	.9

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

Table A-31. Percent distribution of workers in selected construction occupations in Milwaukee by number of hours of work reported for the 12-month period, December 1965–November 1966

Selected group of hours	Asphalt pavers	Laborers	Plasterers' laborers	Masons bricklayers	Lathers	Cement finishers	Plasterers	Operating engineers	Terrazzo machanics	Terrazzo skilled helpers
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1-199 hours	30.0	40.2	28.8	19.0	22.6	28.4	17.4	20.6	20.0	17.7
200-399 hours	7.6	13.9	11.0	6.1	7.1	6.2	7.9	10.7	12.0	3.2
400-599 hours	7.6	9.3	8.6	8.7	7.7	8.2	13.7	8.1	12.0	6.5
600-799 hours	10.4	5.9	2.5	3.9	4.2	6.1	1.6	6.4	-	4.8
800-999 hours	21.5	4.9	3.1	5.0	3.6	7.1	4.2	6.9	-	4.8
1,000-1,199 hours	11.1	4.4	4.3	5.2	4.8	7.9	4.7	7.4	-	4.8
1,200-1,399 hours	6.9	3.4	2.5	8.3	4.2	7.4	5.3	7.5	4.0	6.5
1,400-1,599 hours	3.5	3.5	4.3	15.9	7.7	5.3	10.0	6.0	8.0	16.1
1,600-1,799 hours	-	4.2	11.7	18.3	8.3	7.0	11.1	6.8	8.0	9.7
1,800-1,999 hours	.7	6.9	15.3	6.2	21.4	9.2	18.4	11.3	32.0	17.7
2,000-2,199 hours	-	2.0	6.7	2.3	6.5	6.2	4.7	6.5	4.0	1.6
2,200-2,399 hours	-	-	-	.1	-	.4	-	-	-	-
2,400 hours or more	-	-	-	-	-	-	-	-	-	-

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

Table A-32. Percent distribution of workers in selected construction occupations in southern California by number of hours of work reported for a 12-month period

Selected group of hours	Carpenters [1]	Operating engineers [2]	Cement masons [1]	Ironworkers [2]	Teamsters [1]
Total	100.0	100.0	100.0	100.0	100.0
1-199 hours	25.5	11.3	27.0	24.6	24.9
200-399 hours	11.0	6.1	7.8	6.5	11.1
400-599 hours	7.5	5.8	5.9	4.9	10.7
600-799 hours	6.9	5.8	6.0	4.4	5.2
800-999 hours	7.0	5.9	5.8	4.7	4.6
1,000-1,199 hours	7.1	7.3	6.9	5.7	4.7
1,200-1,399 hours	7.4	7.2	6.4	6.6	4.7
1,400-1,599 hours	7.5	8.5	8.5	9.0	4.8
1,600-1,799 hours	7.7	11.2	9.3	12.6	6.1
1,800-1,999 hours	7.8	13.3	9.4	14.0	8.2
2,000-2,199 hours	4.2	11.7	5.7	5.8	9.0
2,200-2,399 hours	.4	3.7	.9	.9	4.3
2,400 hours or more	.1	2.3	.3	.2	1.7

[1] Calendar year 1966.
[2] Fiscal year running from June 1966 to May 1967.

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

Table A-33. Percent distribution of bricklayers in Detroit by age and hours of work for the 12-month period, November 1966–October 1967

Age interval	Total	Hours interval: 1 to 199	200 to 399	400 to 599	600 to 799	800 to 999	1,000 to 1,199	1,200 to 1,399	1,400 to 1,599	1,600 to 1,799	1,800 to 1,999	2,000+	2,000 to 2,199	2,200 to 2,399	2,400+
	By hours														
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than 20 years	0.1	-	2.2	-	-	-	-	-	-	-	-	-	-	-	-
14-17 years	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18-19 years	.1	-	2.2	-	-	-	-	-	-	-	-	-	-	-	-
20-24 years	1.1	-	-	5.0	2.9	1.9	1.5	2.4	1.7	-	-	-	-	-	-
25-29 years	2.3	4.4	2.2	5.0	2.9	7.7	1.5	2.4	.6	2.0	1.5	2.2	1.4	7.7	-
30-34 years	8.0	8.7	17.8	7.5	5.9	5.8	3.0	7.1	8.4	8.3	6.5	10.8	12.3	-	14.3
35-39 years	16.6	13.0	28.9	7.5	17.7	11.5	13.6	15.0	12.4	17.1	19.6	26.9	24.7	46.2	14.3
40-44 years	26.0	23.2	17.8	20.0	20.6	25.0	19.7	23.6	26.4	28.3	29.0	34.4	37.0	23.1	28.6
45-49 years	16.6	15.9	8.9	25.0	26.5	13.5	12.1	12.6	18.5	20.0	19.6	8.6	6.9	7.7	28.6
50-54 years	8.2	8.7	4.4	10.0	8.8	9.6	13.6	7.1	7.3	8.3	9.4	5.4	2.7	15.4	14.3
55-59 years	7.8	11.6	2.2	10.0	2.9	13.5	13.6	7.1	7.9	6.8	7.3	5.4	6.9	-	-
60-64 years	3.3	4.4	6.7	2.5	2.9	7.7	16.7	15.8	14.6	7.8	6.5	3.2	4.1	-	-
65 years and over	4.0	10.2	8.9	7.5	8.8	3.9	4.6	7.1	2.3	14.7	.7	3.2	-	-	-
65-69 years	3.4	5.8	8.9	7.5	8.8	3.9	4.6	6.3	2.3	.5	.7	3.2	4.1	-	-
70 years and over	.6	4.4	-	-	-	-	-	.8	-	1.0	-	-	4.1	-	-
	By age														
Total	100.0	6.6	4.3	3.8	3.3	5.0	6.3	12.1	17.0	19.6	13.2	8.9	7.0	1.2	0.7
Less than 20 years	100.0	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-
14-17 years	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18-19 years	100.0	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-
20-24 years	100.0	-	-	18.2	9.1	9.1	9.1	27.3	27.3	-	-	-	-	-	-
25-29 years	100.0	12.5	4.2	8.3	4.2	16.7	4.2	12.5	8.2	16.7	8.3	8.3	4.2	4.2	-
30-34 years	100.0	7.1	9.5	3.6	2.4	3.6	2.4	10.7	17.9	20.2	10.7	11.9	10.7	-	1.2
35-39 years	100.0	5.2	7.5	1.7	3.5	3.5	5.2	10.9	12.6	20.1	15.5	14.4	10.3	3.5	.6
40-44 years	100.0	5.9	2.9	2.9	2.6	4.8	4.8	11.0	17.3	21.3	14.7	11.8	9.9	1.1	.7
45-49 years	100.0	6.3	2.3	5.8	5.2	4.0	4.6	9.2	19.0	23.6	15.5	4.6	2.9	.6	1.2
50-54 years	100.0	7.0	2.3	4.7	3.5	5.8	10.5	10.5	15.1	19.8	15.1	5.8	2.3	2.3	1.2
55-59 years	100.0	9.8	1.2	4.9	1.2	8.5	11.0	11.0	17.1	17.1	12.2	6.1	6.1	-	-
60-64 years	100.0	3.1	3.1	1.0	1.0	4.1	11.3	20.6	26.8	16.5	9.3	3.1	3.1	-	-
65 years and over	100.0	61.1	11.1	8.3	8.3	5.6	8.3	38.9	11.1	36.1	2.8	7.1	8.3	-	-
65-69 years	100.0	11.1	11.1	8.3	8.3	5.6	8.3	22.2	11.1	2.8	2.8	8.3	8.3	-	-
70 years and over	100.0	50.0	-	-	-	-	-	16.7	-	33.3	-	7.1	-	-	-

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

Table A-34. Percent distribution of carpenters in Detroit by age and hours of work for the 12-month period, November 1966–October 1967

Age interval	Total	Hours interval: 1 to 199	200 to 399	400 to 599	600 to 799	800 to 999	1,000 to 1,199	1,200 to 1,399	1,400 to 1,599	1,600 to 1,799	1,800 to 1,999	2,000+	2,000 to 2,199	2,200 to 2,399	2,400+
	By hours														
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than 20 years	1.2	0.9	3.5	6.7	1.3	2.4	1.4	0.4	1.1	0.3	0.5	0.2	0.2	0.4	-
14-17 years	.1	.3	.3	-	-	-	-	-	.2	-	.1	-	-	-	-
18-19 years	1.1	.6	3.2	6.7	1.3	2.4	1.4	.4	.9	.3	.4	.2	.2	.4	-
20-24 years	7.0	11.6	10.7	13.5	9.4	8.3	9.1	8.7	6.4	4.9	3.5	4.9	5.6	3.8	4.3
25-29 years	8.1	7.5	11.3	9.4	15.4	11.8	9.1	10.1	6.9	6.4	5.3	7.4	6.0	8.4	12.0
30-34 years	8.7	9.0	10.7	7.7	11.0	8.3	9.3	8.6	9.0	6.5	8.7	10.1	7.9	13.9	12.0
35-39 years	12.6	12.5	9.9	9.8	12.0	11.6	10.1	13.0	11.6	13.9	13.6	15.1	15.2	15.1	14.5
40-44 years	16.8	17.9	16.5	11.5	14.1	11.6	13.0	15.4	15.8	18.4	22.0	17.8	17.5	18.1	18.8
45-49 years	16.1	13.1	12.5	11.5	10.0	11.6	15.0	12.7	17.2	19.4	19.2	17.8	19.0	16.4	15.4
50-54 years	11.6	8.4	8.4	6.4	6.0	11.3	11.5	13.3	12.4	12.5	13.8	12.0	11.7	12.2	12.8
55-59 years	8.1	3.0	3.5	5.7	7.0	7.5	9.3	7.8	11.3	9.8	6.9	8.2	9.6	6.3	6.0
60-64 years	6.4	6.3	3.8	7.4	7.0	7.8	8.1	8.4	6.3	6.6	5.3	5.5	6.4	4.2	4.3
65 years and over	3.4	9.9	9.3	10.5	7.1	7.8	4.0	1.5	2.1	1.4	1.2	.9	1.0	1.2	-
65-69 years	2.6	7.2	7.0	8.1	4.4	6.5	2.4	1.3	1.7	1.1	1.1	.8	.8	.8	-
70 years and over	.8	2.7	2.3	2.4	2.7	1.3	1.6	.2	.4	.3	.1	.1	.2	.4	-
	By age														
Total	100.0	4.8	5.0	4.3	4.3	5.3	7.1	9.7	15.1	17.8	14.0	12.6	7.5	3.4	1.7
Less than 20 years	-	22.7	34.7	26.7	5.3	12.0	9.3	4.0	52.0	5.3	25.3	-	1.3	1.3	-
14-17 years	100.0	20.0	20.0	-	-	-	-	-	40.0	-	20.0	-	-	-	-
18-19 years	100.0	2.7	14.7	26.7	5.3	12.0	9.3	4.0	12.0	5.3	5.3	2.5	1.3	1.3	-
20-24 years	100.0	8.0	7.6	8.3	5.8	6.4	9.3	12.2	13.8	12.4	7.0	8.9	6.0	1.9	1.0
25-29 years	100.0	4.4	6.9	5.0	8.2	7.8	8.0	12.1	12.9	14.0	9.2	11.5	5.5	3.6	2.5
30-34 years	100.0	4.9	6.1	3.8	5.4	5.1	7.6	9.6	15.7	13.2	14.0	14.5	6.8	5.4	2.3
35-39 years	100.0	4.8	3.9	3.3	4.1	4.9	5.7	10.0	13.9	19.6	15.0	15.0	9.0	4.1	1.9
40-44 years	100.0	5.1	4.9	2.9	3.6	3.7	5.5	8.9	14.2	19.5	18.3	13.3	7.8	3.7	1.9
45-49 years	100.0	3.9	3.8	3.0	2.7	3.8	6.6	7.7	16.2	21.5	16.7	13.9	8.9	3.5	1.6
50-54 years	100.0	3.5	3.6	2.4	2.2	5.2	7.1	11.2	16.1	19.1	16.6	13.0	7.6	3.6	1.9
55-59 years	100.0	1.8	2.1	3.0	3.5	5.0	8.1	9.4	21.0	21.4	11.8	12.7	6.8	3.7	1.2
60-64 years	100.0	4.7	2.9	4.9	4.7	6.4	8.9	12.7	14.7	18.0	11.6	10.7	7.3	2.2	1.1
65 years and over	100.0	29.2	27.4	25.7	21.3	22.2	20.7	6.8	17.1	14.8	8.0	3.4	4.0	2.9	-
65-69 years	100.0	13.4	13.4	13.4	7.3	13.4	6.7	5.0	10.1	7.8	6.2	3.3	2.2	1.1	-
70 years and over	100.0	15.8	14.0	12.3	14.0	8.8	14.0	1.8	7.0	7.0	1.8	3.6	1.8	1.8	-

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

Table A-35. Percent distribution of laborers in Detroit by age and hours of work for the 12-month period, November 1966–October 1967

Age interval	Hours interval														
	Total	1 to 199	200 to 399	400 to 599	600 to 799	800 to 999	1,000 to 1,199	1,200 to 1,399	1,400 to 1,599	1,600 to 1,799	1,800 to 1,999	2,000+	2,000 to 2,199	2,200 to 2,399	2,400+
	By hours														
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than 20 years	0.1	-	-	-	-	-	-	0.7	-	-	0.3	0.3	0.4	-	-
14-17 years	.1	-	-	-	-	-	-	-	-	-	.3	-	.4	-	-
18-19 years	.1	-	-	-	-	-	-	.7	-	-	-	-	-	-	-
20-24 years	4.9	11.7	12.0	16.5	6.6	1.6	5.0	3.5	3.2	2.2	3.2	.8	1.1	-	-
25-29 years	7.6	6.6	16.5	10.1	8.2	9.6	7.4	6.3	7.3	6.5	5.7	6.6	4.5	11.0	11.5
30-34 years	8.9	13.3	10.5	7.3	7.4	12.8	9.9	11.1	5.9	9.1	5.7	9.0	8.7	9.6	9.6
35-39 years	12.9	13.8	9.0	10.1	10.7	16.0	10.7	10.4	15.5	13.0	12.0	15.1	13.5	21.9	13.5
40-44 years	15.4	14.3	15.0	11.9	16.4	8.8	13.2	14.6	15.5	15.7	17.0	18.2	19.2	16.4	15.4
45-49 years	16.1	11.7	13.5	12.8	13.9	15.2	13.2	16.0	16.9	16.1	18.0	20.2	18.8	24.7	21.2
50-54 years	13.7	10.7	12.0	9.2	9.8	14.4	15.7	16.0	12.8	14.4	16.1	14.6	15.0	9.6	19.2
55-59 years	10.2	8.2	3.8	9.2	11.5	10.4	10.7	6.3	11.9	12.2	13.9	9.2	10.9	2.7	9.6
60-64 years	7.0	5.6	5.3	7.3	10.7	7.2	9.1	11.1	6.4	7.8	6.9	4.6	5.6	4.1	-
65 years and over	3.2	4.1	2.3	5.5	4.9	4.0	5.0	4.2	4.6	3.1	1.3	1.5	2.3	-	-
65-69 years	2.7	3.1	2.3	5.5	4.1	3.2	3.3	3.5	4.6	2.2	1.3	1.9	1.9	-	-
70 years and over	.5	1.0	-	-	.8	.8	1.7	.7	-	.9	-	.4	.4	-	-
	By age														
Total	100.0	9.3	6.3	5.2	5.8	5.9	5.7	6.8	10.4	10.9	15.1	18.6	12.6	3.5	2.5
Less than 20	-	-	-	-	-	-	-	-	-	-	50.0	-	50.0	-	-
14-17 years	100.0	-	-	-	-	-	-	-	-	-	50.0	-	50.0	-	-
18-19 years	100.0	-	-	-	-	-	-	100.0	-	-	-	3.3	-	-	-
20-24 years	100.0	22.3	15.5	17.5	7.8	1.9	5.8	4.9	6.8	4.9	9.7	2.9	2.9	-	-
25-29 years	100.0	8.1	13.7	6.8	6.2	7.5	5.6	5.6	9.9	9.3	11.2	16.2	7.5	5.0	3.7
30-34 years	100.0	13.8	7.5	4.3	4.8	8.5	6.4	8.5	6.9	11.2	9.6	18.6	12.2	3.7	2.7
35-39 years	100.0	9.9	4.4	4.0	4.8	7.4	4.8	5.5	12.5	11.0	14.0	21.7	13.2	5.9	2.8
40-44 years	100.0	8.6	6.2	4.0	6.2	3.4	4.9	6.5	10.5	11.1	16.7	21.9	15.7	3.7	2.5
45-49 years	100.0	6.8	5.3	4.1	5.0	5.6	4.7	6.8	10.9	10.9	16.8	23.2	14.7	5.3	3.2
50-54 years	100.0	7.3	5.6	3.5	4.2	6.3	6.6	8.0	9.7	11.5	17.7	19.8	13.9	2.4	3.5
55-59 years	100.0	7.5	2.3	4.7	6.5	6.1	6.1	4.2	12.2	13.1	20.6	16.8	13.6	.9	2.3
60-64 years	100.0	7.5	4.8	5.4	8.8	6.1	7.5	10.9	9.5	12.2	15.0	12.2	10.2	2.0	-
65 years and over	100.0	30.5	5.3	10.5	18.8	17.0	9.0	18.8	17.5	28.8	7.0	10.0	18.8	-	-
65-69 years	100.0	10.5	5.3	10.5	8.8	7.0	7.0	8.8	17.5	8.8	7.0	8.8	8.8	-	-
70 years and over	100.0	20.0	-	-	10.0	10.0	20.0	10.0	-	20.0	-	10.0	10.0	-	-

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

Table A-36. Percent distribution of reinforced steel workers in Detroit by age and hours of work for the 12-month period, November 1966–October 1967

Age interval	Hours interval														
	Total	1 to 199	200 to 399	400 to 599	600 to 799	800 to 999	1,000 to 1,199	1,200 to 1,399	1,400 to 1,599	1,600 to 1,799	1,800 to 1,999	2,000+	2,000 to 2,199	2,200 to 2,399	2,400+
	By hours														
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than 20 years	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14-17 years	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18-19 years	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20-24 years	29.9	76.2	54.6	50.0	-	41.7	4.8	25.9	21.1	13.8	10.5	41.7	42.9	40.0	-
25-29 years	18.6	9.5	-	6.3	28.6	16.7	19.1	22.2	26.3	31.0	21.1	8.3	-	20.0	-
30-34 years	14.4	-	27.3	6.3	14.3	-	19.1	7.4	15.8	20.7	31.6	16.7	14.3	20.0	-
35-39 years	15.0	4.8	9.1	25.0	14.3	8.3	19.1	18.5	21.1	13.8	10.5	16.7	14.3	20.0	-
40-44 years	12.4	4.8	-	6.3	14.3	16.7	23.8	22.2	5.3	10.3	15.8	8.3	14.3	-	-
45-49 years	4.1	4.8	-	-	14.3	8.3	-	3.7	10.5	6.9	-	-	-	-	-
50-54 years	2.6	-	9.1	6.3	-	-	-	-	-	-	10.5	8.3	14.3	-	-
55-59 years	1.0	-	-	-	-	-	9.5	-	-	-	-	-	-	-	-
60-64 years	1.6	-	-	-	14.3	8.3	-	-	-	3.5	-	-	-	-	-
65 years and over	.5	-	-	-	-	-	4.8	-	-	-	-	-	-	-	-
65-69 years	.5	-	-	-	-	-	4.8	-	-	-	-	-	-	-	-
70 years and over	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	By age														
Total	100.0	10.8	5.7	8.3	3.6	6.2	10.8	13.9	9.8	15.0	9.8	6.2	3.6	2.6	-
Less than 20 years	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14-17 years	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18-19 years	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20-24 years	100.0	27.6	10.3	13.8	-	8.6	1.7	12.1	6.9	6.9	3.5	8.6	5.2	3.5	-
25-29 years	100.0	5.6	-	2.8	5.6	5.6	11.1	16.7	13.9	25.0	11.0	2.8	-	2.8	-
30-34 years	100.0	-	10.7	3.6	3.6	-	14.3	7.1	10.7	21.4	21.4	7.1	3.6	3.6	-
35-39 years	100.0	3.5	3.5	13.8	3.5	3.5	13.8	17.2	13.8	13.8	6.9	6.9	3.5	3.5	-
40-44 years	100.0	4.2	-	4.2	4.2	8.3	20.8	25.0	4.2	12.5	12.5	4.2	4.2	-	-
45-49 years	100.0	12.5	-	-	12.5	12.5	-	12.5	25.0	25.0	-	-	-	-	-
50-54 years	100.0	-	20.0	20.0	-	-	-	-	-	-	40.0	20.0	20.0	-	-
55-59 years	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-
60-64 years	100.0	-	-	-	33.3	33.3	-	-	-	33.3	-	-	-	-	-
65 years and over	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-
65-69 years	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-
70 years and over	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

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

Table A-37. Percent distribution of cement masons in Detroit by age and hours of work for the 12-month period, November 1966–October 1967

Age interval	Hours interval														
	Total	1 to 199	200 to 399	400 to 599	600 to 799	800 to 999	1,000 to 1,199	1,200 to 1,399	1,400 to 1,599	1,600 to 1,799	1,800 to 1,999	2,000+	2,000 to 2,199	2,200 to 2,399	2,400+
	By hours														
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than 20 years	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14-17 years	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18-19 years	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20-24 years	1.5	3.3	12.5	7.1	-	-	-	-	-	-	-	-	-	-	-
25-29 years	2.9	3.3	-	7.1	10.0	-	-	6.7	4.6	-	3.9	-	-	-	-
30-34 years	7.4	16.7	-	7.1	10.0	20.0	5.3	6.7	-	5.9	3.9	6.1	5.3	-	25.0
35-39 years	11.3	20.0	12.5	14.3	10.0	10.0	10.5	6.7	9.1	5.9	7.7	12.1	5.3	30.0	-
40-44 years	17.2	13.3	37.5	21.4	-	10.0	10.5	13.3	18.2	11.8	26.9	21.2	10.5	50.0	-
45-49 years	19.6	16.7	-	7.1	10.0	10.0	31.6	6.7	27.3	23.5	15.4	33.3	42.1	10.0	50.0
50-54 years	10.8	10.0	-	14.3	10.0	-	21.1	6.7	9.1	17.7	11.5	9.1	10.5	-	25.0
55-59 years	14.2	6.7	-	21.4	40.0	10.0	10.5	20.0	22.7	17.7	11.5	9.1	10.5	10.0	-
60-64 years	5.9	-	12.5	-	10.0	10.0	5.3	13.3	4.6	5.9	11.5	3.0	5.3	-	-
65 years and over	9.3	10.0	25.0	-	-	30.0	5.3	20.0	4.6	11.8	7.7	6.1	10.6	-	-
65-69 years	6.4	3.3	12.5	-	-	20.0	5.3	13.3	4.6	11.8	7.7	3.0	5.3	-	-
70 years and over	2.9	6.7	12.5	-	-	10.0	-	6.7	-	-	-	3.0	5.3	-	-
	By age														
Total	100.0	14.7	3.9	6.9	4.9	4.9	9.3	7.4	10.8	8.3	12.8	16.2	9.3	4.9	2.0
Less than 20 years	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14-17 years	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18-19 years	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20-24 years	100.0	33.3	33.3	33.3	-	-	-	-	-	-	-	-	-	-	-
25-29 years	100.0	16.7	-	16.7	16.7	-	-	16.7	16.7	-	16.7	-	-	-	-
30-34 years	100.0	33.3	-	6.7	6.7	13.3	6.7	6.7	-	6.7	6.7	13.3	6.7	-	6.7
35-39 years	100.0	26.1	4.4	8.7	4.4	4.4	8.7	4.4	8.7	4.4	8.7	17.4	4.4	13.0	-
40-44 years	100.0	11.4	8.6	8.6	-	2.9	5.7	5.7	11.4	5.7	20.0	20.0	5.7	14.3	-
45-49 years	100.0	12.5	-	2.5	2.5	2.5	15.0	2.5	15.0	10.0	10.0	27.5	20.0	2.5	5.0
50-54 years	100.0	13.6	-	9.1	4.6	-	18.2	4.6	9.1	13.6	-	-	9.1	-	4.6
55-59 years	100.0	6.9	-	10.3	13.8	3.5	6.9	10.3	17.2	10.3	10.3	10.3	6.9	3.5	-
60-64 years	100.0	-	8.3	-	8.3	8.3	8.3	16.7	8.3	8.3	25.0	8.3	8.3	-	-
65 years and over	100.0	41.0	24.4	-	-	32.1	7.7	32.1	7.7	15.4	15.4	10.5	24.4	-	-
65-69 years	100.0	7.7	7.7	-	-	15.4	7.7	15.4	7.7	15.4	15.4	7.7	7.7	-	-
70 years and over	100.0	33.3	16.7	-	-	16.7	-	16.7	-	-	-	16.7	16.7	-	-

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

Table A-38. Percent distribution of operating engineers in Detroit by age and hours of work for the 12-month period, November 1966–October 1967

Age interval	Hours interval														
	Total	1 to 199	200 to 399	400 to 599	600 to 799	800 to 999	1,000 to 1,199	1,200 to 1,399	1,400 to 1,599	1,600 to 1,799	1,800 to 1,999	2,000+	2,000 to 2,199	2,200 to 2,399	2,400+
	By hours														
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than 20 years	0.1	-	-	-	-	-	-	-	-	-	-	0.4	-	1.3	-
14-17 years	.1	-	-	-	-	-	-	-	-	-	-	.4	-	1.3	-
18-19 years	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20-24 years	.9	1.5	-	-	-	-	2.1	2.5	-	-	1.2	1.1	0.9	1.3	1.4
25-29 years	4.2	4.4	3.3	6.1	6.9	9.7	2.1	2.5	6.8	10.3	4.7	1.5	-	2.6	2.7
30-34 years	10.1	14.5	10.0	6.1	20.7	12.9	4.2	2.5	5.1	17.2	11.6	9.2	9.7	4.0	13.7
35-39 years	14.2	23.2	6.7	15.2	10.3	6.5	16.7	17.5	10.2	8.6	12.8	15.6	15.0	11.8	20.6
40-44 years	22.2	14.5	30.0	21.2	13.8	25.8	25.0	22.5	18.6	20.7	19.8	25.2	24.8	34.2	16.4
45-49 years	16.0	10.1	16.7	12.1	20.7	12.9	10.4	12.5	22.0	15.5	17.4	17.6	21.2	13.2	16.4
50-54 years	12.0	11.6	6.7	6.1	6.9	12.9	12.5	12.5	15.3	10.3	10.5	13.7	15.0	13.2	12.3
55-59 years	10.2	13.0	20.0	24.2	3.5	3.2	10.4	12.5	10.2	10.3	7.0	8.8	6.2	9..	4.1
60-64 years	7.0	5.8	6.7	3.0	10.3	12.9	4.2	10.0	10.2	5.2	11.6	5.0	4.4	6.6	4.1
65 years and over	3.2	1.5	-	6.1	7.0	3.2	12.6	5.0	1.7	1.7	3.5	1.9	2.7	2.6	-
65-69 years	2.7	1.5	-	6.1	3.5	3.2	6.3	5.0	1.7	1.7	3.5	1.9	2.7	2.6	-
70 years and over	.5	-	-	-	3.5	-	6.3	-	-	-	-	-	-	-	-
	By age														
Total	100.0	9.3	4.0	4.4	3.9	4.2	6.4	5.4	7.9	7.8	11.5	35.2	15.2	10.2	9.8
Less than 20 years	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-
14-17 years	100.0	-	-	-	-	-	-	-	-	-	-	100.0	-	100.0	-
18-19 years	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20-24 years	100.0	14.3	-	-	-	-	14.3	14.3	-	-	14.3	42.9	14.3	14.3	14.3
25-29 years	100.0	9.7	3.2	6.5	6.5	9.7	3.2	3.2	12.9	19.4	12.9	12.9	-	6.5	6.5
30-34 years	100.0	13.3	4.0	2.7	8.0	5.3	2.7	1.3	4.0	13.3	13.3	32.0	14.7	4.0	13.3
35-39 years	100.0	15.1	1.9	4.7	2.8	1.9	7.6	6.6	5.7	4.7	10.4	38.7	16.0	8.5	14.2
40-44 years	100.0	6.1	5.5	4.2	2.4	4.9	7.3	5.5	6.7	7.3	10.3	40.0	17.0	15.8	7.3
45-49 years	100.0	5.9	4.2	3.4	5.0	3.4	4.2	4.2	10.9	7.6	12.6	38.7	20.2	8.4	10.1
50-54 years	100.0	9.0	2.3	2.3	2.3	4.5	6.7	5.6	10.1	6.7	10.1	40.4	19.1	11.2	10.1
55-59 years	100.0	11.8	7.9	10.5	1.3	1.3	6.6	6.6	7.9	7.9	7.9	30.3	9.2	9.2	11.8
60-64 years	100.0	7.7	3.9	1.9	5.8	7.7	3.9	7.7	11.5	5.8	19.2	25.0	9.6	9.6	5.8
65 years and over	100.0	5.0	3.9	10.0	30.0	5.0	90.0	10.0	5.0	5.0	15.0	-	15.0	10.0	25.0
65-69 years	100.0	5.0	-	10.0	5.0	5.0	15.0	10.0	5.0	5.0	15.0	-	15.0	10.0	25.0
70 years and over	100.0	-	-	-	25.0	-	75.0	-	-	-	-	-	-	-	-

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

Table A-39. Percent distribution of carpenters in southern California by age and hours of work, calendar year 1966

Age interval	Total	Hours interval: 1 to 199	200 to 399	400 to 599	600 to 799	800 to 999	1,000 to 1,199	1,200 to 1,399	1,400 to 1,599	1,600 to 1,799	1,800 to 1,999	2,000+	2,000 to 2,199	2,200 to 2,399	2,400+
	By hours														
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than 20 years	0.7	1.5	1.8	1.5	1.0	0.7	0.4	0.3	0.1	0.1	0.1	-	-	-	-
14-17 years	(1)	.1	.1	.1	-	.1	-	-	-	-	-	-	-	-	-
18-19 years	.6	1.3	1.6	1.4	1.0	.6	.4	.3	.1	.1	.1	-	-	-	-
20-24 years	6.8	8.7	9.8	8.5	7.7	7.9	6.6	6.2	5.8	5.6	4.7	2.4	2.4	2.4	2.1
25-29 years	13.1	15.2	12.9	14.2	14.7	14.9	13.4	14.3	12.0	11.7	11.4	9.0	8.8	11.4	6.4
30-34 years	12.8	14.7	13.4	13.0	12.9	11.9	13.3	12.1	12.5	12.4	12.4	12.5	12.4	12.0	19.1
35-39 years	12.3	12.6	11.3	11.1	12.1	12.0	11.0	12.2	12.3	13.6	12.5	15.1	14.7	18.0	19.1
40-44 years	13.9	11.4	12.6	12.2	11.9	13.0	12.8	13.8	14.3	15.4	16.0	21.0	21.0	21.0	19.1
45-49 years	13.7	10.6	11.5	11.7	12.3	12.2	13.7	14.0	15.7	15.1	16.8	17.0	17.2	15.0	19.1
50-54 years	11.0	8.7	8.9	10.0	10.7	10.3	11.3	11.7	11.8	12.1	13.1	11.7	11.9	10.2	8.5
55-59 years	8.5	7.1	7.8	9.4	8.7	8.8	10.0	9.0	9.1	8.8	8.0	6.3	6.4	6.0	2.1
60-64 years	5.4	5.7	6.1	5.9	5.8	6.5	5.8	5.3	5.2	4.4	4.0	4.0	4.1	3.0	4.3
65 years and over	1.9	3.9	4.0	2.6	2.2	1.8	1.4	.9	1.0	.7	1.1	1.1	1.1	1.2	-
65-69 years	1.5	3.1	3.3	2.0	1.7	1.4	1.2	.9	.9	.6	1.0	.9	.9	1.2	-
70 years and over	.3	.8	.6	.6	.5	.4	.2	.1	.1	.1	.1	.1	.2	-	-
	By age														
Total	100.0	10.0	8.9	8.5	8.5	9.0	9.2	9.6	9.9	10.1	10.2	6.1	5.5	0.5	0.1
Less than 20 years	100.0	21.6	22.8	19.0	12.9	9.1	6.0	4.3	2.2	0.9	1.3	-	-	-	-
14-17 years	100.0	38.5	30.8	15.4	-	15.4	-	-	-	-	-	-	-	-	-
18-19 years	100.0	20.5	22.4	19.2	13.7	8.7	6.4	4.6	2.3	.9	1.4	-	-	-	-
20-24 years	100.0	12.7	12.8	10.7	9.5	10.3	9.2	8.8	8.5	8.4	7.0	2.2	1.9	0.2	(1)
25-29 years	100.0	11.5	8.7	9.2	9.5	10.2	9.4	10.5	9.1	9.0	8.8	4.2	3.7	.4	.1
30-34 years	100.0	11.4	9.3	8.7	8.5	8.3	9.5	9.1	9.6	9.8	9.9	6.0	5.3	.5	.2
35-39 years	100.0	10.2	8.1	7.7	8.3	8.6	8.2	9.6	9.9	11.2	10.4	7.5	6.6	.7	.2
40-44 years	100.0	8.2	8.1	7.5	7.2	8.4	8.5	9.6	10.2	11.3	11.8	9.3	8.3	.7	.2
45-49 years	100.0	7.7	7.5	7.3	7.6	8.0	9.2	9.9	11.3	11.2	12.5	7.7	6.9	.5	.2
50-54 years	100.0	7.9	7.3	7.8	8.3	8.4	9.5	10.3	10.7	11.2	12.2	6.6	6.0	.5	.1
55-59 years	100.0	8.3	8.2	9.5	8.6	9.3	10.8	10.2	10.5	10.5	9.6	4.5	4.2	.3	(1)
60-64 years	100.0	10.6	10.1	9.5	9.2	10.9	9.9	9.6	9.6	8.3	7.7	4.6	4.2	.3	.1
65 years and over	100.0	20.7	18.8	11.8	10.0	8.5	7.1	4.7	5.2	3.8	6.0	3.5	3.1	.3	-
65-69 years	100.0	20.0	19.2	11.2	9.3	8.0	7.4	5.3	5.7	3.8	6.3	3.6	3.2	.4	-
70 years and over	100.0	24.1	17.0	14.3	13.4	10.7	5.4	1.8	2.7	3.6	4.5	2.7	2.7	-	-

[1] Less than 0.05 percent.

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

Table A-40. Percent distribution of cement masons in southern California by age and hours of work, calendar year 1966

Age interval	Total	Hours interval: 1 to 199	200 to 399	400 to 599	600 to 799	800 to 999	1,000 to 1,199	1,200 to 1,399	1,400 to 1,599	1,600 to 1,799	1,800 to 1,999	2,000+	2,000 to 2,199	2,200 to 2,399	2,400+
	By hours														
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than 20 years	0.5	1.3	1.6	1.8	0.5	-	0.8	-	0.3	-	-	-	-	-	-
14-17 years	(1)	.4	-	-	-	-	-	-	-	-	-	-	-	-	-
18-19 years	.4	.8	1.6	1.8	.5	-	.8	-	.3	-	-	-	-	-	-
20-24 years	3.5	4.6	4.8	5.9	4.2	4.5	2.5	2.3	3.0	4.2	2.5	1.9	2.3	-	-
25-29 years	10.4	13.5	9.1	10.1	9.5	9.7	10.6	10.6	12.8	9.7	11.2	6.5	6.8	6.1	-
30-34 years	13.0	11.4	16.1	11.8	11.1	9.1	11.9	11.0	12.8	16.6	12.5	16.0	15.9	15.2	20.0
35-39 years	16.3	12.2	9.1	14.8	20.5	17.6	14.0	17.0	12.1	16.9	21.3	21.3	21.8	18.2	20.0
40-44 years	16.2	13.9	16.1	10.7	14.7	18.2	12.3	14.2	17.7	17.2	19.9	19.0	16.8	27.3	40.0
45-49 years	13.2	12.2	10.8	11.8	10.0	13.6	11.0	15.1	12.5	14.8	12.8	18.3	18.6	18.2	10.0
50-54 years	9.9	6.3	8.1	14.2	8.9	8.0	11.4	11.0	11.8	9.0	10.4	9.5	10.0	9.1	-
55-59 years	8.0	8.4	7.5	11.8	8.9	6.2	11.9	11.9	8.9	5.7	6.3	3.8	4.1	3.0	-
60-64 years	5.7	9.3	7.0	4.7	7.9	9.1	8.9	4.1	5.6	4.5	2.2	3.4	3.2	3.0	10.0
65 years and over	3.2	6.8	9.7	2.4	3.7	4.0	4.7	2.8	2.6	1.5	1.1	.4	.5	-	-
65-69 years	2.6	5.1	7.0	2.4	3.2	3.4	3.8	2.3	2.3	1.2	.8	-	-	-	-
70 years and over	.7	1.7	2.7	-	.5	.6	.8	.5	.3	.3	.3	.4	.5	-	-
	By age														
Total	100.0	8.8	6.9	6.3	7.1	6.6	8.8	8.1	11.4	12.4	13.7	9.8	8.2	1.2	0.4
Less than 20 years	100.0	23.1	23.1	23.1	7.7	-	15.4	-	7.7	-	-	-	-	-	-
14-17 years	100.0	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-
18-19 years	100.0	16.7	25.0	25.0	8.3	-	16.7	-	8.3	-	-	-	-	-	-
20-24 years	100.0	11.7	9.6	10.6	8.5	8.5	6.4	5.3	9.6	14.9	9.6	5.3	5.3	-	-
25-29 years	100.0	11.5	6.1	6.1	6.5	6.1	9.0	8.3	14.0	11.5	14.7	6.1	5.4	0.7	-
30-34 years	100.0	7.8	8.6	5.7	6.0	4.6	8.0	6.9	11.2	15.8	13.2	12.1	10.1	1.4	0.6
35-39 years	100.0	6.6	3.9	5.7	8.9	7.1	7.5	8.4	8.4	12.8	17.8	12.8	11.0	1.4	.5
40-44 years	100.0	7.6	6.9	4.1	6.4	7.4	6.7	7.1	12.4	13.1	16.8	11.5	8.5	2.1	.9
45-49 years	100.0	8.2	5.7	5.7	5.4	6.8	7.4	9.3	10.8	13.9	13.3	13.6	11.6	1.7	.3
50-54 years	100.0	5.7	5.7	9.1	6.4	5.3	10.2	9.1	13.6	11.3	14.3	9.4	8.3	1.1	-
55-59 years	100.0	9.3	6.5	9.3	7.9	5.1	13.0	12.1	12.6	8.8	10.7	4.7	4.2	.5	-
60-64 years	100.0	14.4	8.5	5.2	9.8	10.5	13.7	5.9	11.1	9.8	5.2	5.9	4.6	.7	.7
65 years and over	100.0	18.4	20.7	4.6	8.0	8.0	12.6	6.9	9.2	5.7	4.6	1.1	1.1	-	-
65-69 years	100.0	17.4	18.8	5.8	8.7	8.7	13.0	7.2	10.1	5.8	4.3	-	-	-	-
70 years and over	100.0	22.2	27.8	-	5.6	5.6	11.1	5.6	5.6	5.6	5.6	5.6	5.6	-	-

[1] Less than 0.05 percent.

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

Table A-41. Percent distribution of ironworkers in southern California by age and hours of work, for the 12-month period, June 1966–May 1967

Age interval	Total	Hours interval: 1 to 199	200 to 399	400 to 599	600 to 799	800 to 999	1,000 to 1,199	1,200 to 1,399	1,400 to 1,599	1,600 to 1,799	1,800 to 1,999	2,000+	2,000 to 2,199	2,200 to 2,399	2,400+
By hours															
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than 20 years	1.7	5.1	8.1	4.6	4.2	2.3	2.5	1.1	0.8	0.4	0.2	-	-	-	-
14-17 years	.1	1.0	1.5	-	-	-	-	-	-	-	-	-	-	-	-
18-19 years	1.6	4.1	6.6	4.6	4.2	2.3	2.5	1.1	.8	.4	.2	-	-	-	-
20-24 years	9.6	10.6	15.4	15.3	10.4	12.2	12.9	10.9	10.2	8.9	7.2	2.8	3.0	1.7	-
25-29 years	13.7	14.0	12.4	12.6	14.7	12.2	12.2	14.3	13.1	16.1	14.0	11.4	11.9	8.5	9.7
30-34 years	13.3	11.8	10.1	9.6	10.4	9.1	12.1	13.3	14.6	14.9	16.0	13.1	12.9	15.4	9.7
35-39 years	12.9	9.4	10.5	9.0	9.6	12.1	12.2	10.3	11.0	14.7	15.5	17.6	18.4	12.8	16.1
40-44 years	13.5	12.0	11.1	12.2	13.1	11.5	9.9	12.7	13.7	12.7	15.8	17.9	17.4	22.2	12.9
45-49 years	11.2	10.0	10.9	9.2	9.6	11.9	10.1	10.8	11.2	10.0	11.8	15.7	15.5	13.7	29.0
50-54 years	10.9	11.8	8.8	11.3	12.4	10.8	11.1	11.2	11.4	11.3	9.1	12.0	11.8	15.4	6.5
55-59 years	7.9	6.3	5.1	8.8	9.2	9.3	10.7	9.4	8.5	7.1	7.2	6.6	6.3	6.8	12.9
60-64 years	4.2	5.9	5.1	5.5	4.2	7.0	4.9	5.3	4.8	3.4	2.5	2.5	2.4	3.4	3.2
65 years and over	1.1	3.0	2.4	1.9	2.4	1.6	1.5	.7	.8	.4	.7	.3	.4	-	-
65-69 years	.9	2.2	1.9	1.7	2.2	1.2	1.1	.6	.6	.4	.6	.3	.4	-	-
70 years and over	.2	.8	.4	.2	.2	.3	.4	.1	.2	.1	.1	-	-	-	-
By age															
Total	100.0	5.2	4.8	4.9	5.2	5.9	7.5	8.8	12.1	17.1	19.1	9.3	7.8	1.2	0.3
Less than 20 years	100.0	15.7	22.9	13.3	12.7	7.8	10.8	5.4	5.4	4.2	1.8	-	-	-	-
14-17 years	100.0	41.7	58.3	-	-	-	-	-	-	-	-	-	-	-	-
18-19 years	100.0	13.6	20.1	14.3	13.6	8.4	11.7	5.8	5.8	4.5	1.9	-	-	-	-
20-24 years	100.0	5.8	7.7	7.8	5.6	7.5	10.1	10.0	12.8	15.8	14.2	2.7	2.5	0.2	-
25-29 years	100.0	5.4	4.4	4.5	5.6	5.3	6.7	9.2	11.5	20.1	19.5	7.8	6.8	.8	0.2
30-34 years	100.0	4.6	3.6	3.6	4.0	4.0	6.8	8.8	13.2	19.1	22.9	9.2	7.6	1.4	.2
35-39 years	100.0	3.8	3.9	3.4	3.8	5.5	7.1	7.0	10.3	19.5	22.8	12.7	11.1	1.2	.4
40-44 years	100.0	4.7	4.0	4.4	5.0	5.0	5.5	8.3	12.2	16.1	22.3	12.4	10.1	2.0	.3
45-49 years	100.0	4.7	4.7	4.1	4.4	6.3	6.8	8.5	12.1	15.3	20.1	13.1	10.8	1.5	.8
50-54 years	100.0	5.7	3.9	5.1	5.9	5.9	7.7	9.0	12.6	17.9	16.0	10.4	8.5	1.7	.2
55-59 years	100.0	4.2	3.1	5.5	6.0	6.9	10.2	10.5	13.0	15.3	17.4	7.9	6.3	1.0	.5
60-64 years	100.0	7.4	5.9	6.4	5.2	9.9	8.9	11.1	13.8	14.1	11.6	5.7	4.4	1.0	.2
65 years and over	100.0	14.4	10.6	8.7	11.5	8.7	10.6	5.8	8.7	6.7	11.5	2.9	2.9	-	-
65-69 years	100.0	12.8	10.5	9.3	12.8	8.1	9.3	5.8	8.1	7.0	12.8	3.5	3.5	-	-
70 years and over	100.0	22.2	11.1	5.6	5.6	11.1	16.7	5.6	11.1	5.6	5.6	-	-	-	-

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

Table A-42. Percent distribution of operating engineers in southern California by age and hours of work for the 12-month period, June 1966–May 1967

Age interval	Total	Hours interval: 1 to 199	200 to 399	400 to 599	600 to 799	800 to 999	1,000 to 1,199	1,200 to 1,399	1,400 to 1,599	1,600 to 1,799	1,800 to 1,999	2,000+	2,000 to 2,199	2,200 to 2,399	2,400+
By hours															
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than 20 years	0.2	-	0.9	0.4	0.4	-	0.1	0.3	-	(1)	0.2	0.1	(1)	0.1	-
14-17 years	(1)	-	.3	-	-	-	-	-	-	-	-	-	-	-	-
18-19 years	.2	-	.6	.4	.4	-	.1	.3	-	(1)	.2	.1	(1)	.1	-
20-24 years	2.9	4.7	3.9	4.0	3.8	3.6	3.1	4.0	3.2	2.6	2.0	1.6	1.6	1.0	2.3
25-29 years	8.7	9.8	7.4	10.8	9.7	9.2	9.5	8.3	9.0	9.0	8.0	7.7	7.1	8.8	8.8
30-34 years	11.8	10.3	10.7	10.1	10.1	8.8	10.2	10.5	11.7	14.4	13.8	12.5	12.2	14.3	10.9
35-39 years	15.1	11.2	12.4	14.4	13.4	13.9	14.2	12.7	15.2	15.7	17.4	16.9	17.0	15.3	19.3
40-44 years	16.2	14.1	13.6	14.1	14.4	14.4	13.9	15.6	15.2	17.3	17.0	19.5	19.2	20.9	18.6
45-49 years	14.6	13.8	15.6	12.3	12.4	13.7	13.8	14.3	15.4	14.3	14.6	16.4	16.1	15.9	18.8
50-54 years	13.7	12.4	14.4	11.0	14.4	16.9	15.4	15.3	13.6	12.6	13.1	13.0	13.4	11.6	13.2
55-59 years	9.5	10.6	9.9	11.9	11.0	10.3	10.6	11.4	9.6	8.3	8.5	7.9	8.3	8.4	5.1
60-64 years	5.6	8.0	7.5	7.7	7.5	7.4	7.2	5.9	5.7	4.7	4.4	3.7	4.1	3.4	2.1
65 years and over	1.7	5.0	3.8	3.3	2.9	1.8	2.0	1.7	1.5	1.0	.9	.7	.8	.3	.9
65-69 years	1.4	4.2	3.0	2.1	2.3	1.4	1.9	1.5	1.3	1.0	.8	.6	.6	.3	.9
70 years and over	.3	.8	.8	1.2	.6	.4	.2	.2	.3	(1)	.1	.1	.1	-	-
By age															
Total	100.0	5.0	4.8	5.5	5.8	6.1	7.8	7.9	9.5	12.5	15.1	20.1	13.2	4.2	2.6
Less than 20 years	100.0	-	25.9	14.8	14.8	-	3.7	14.8	-	3.7	14.8	7.4	3.7	3.7	-
14-17 years	100.0	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-
18-19 years	100.0	-	20.0	16.0	16.0	-	4.0	16.0	-	4.0	16.0	8.0	4.0	4.0	-
20-24 years	100.0	8.1	6.5	7.5	7.7	7.5	8.4	11.1	10.4	11.1	10.6	11.1	7.5	1.5	2.1
25-29 years	100.0	5.7	4.1	6.8	6.5	6.5	8.5	7.6	9.8	13.0	13.9	17.8	10.8	4.3	2.6
30-34 years	100.0	4.4	4.3	4.7	4.9	4.5	6.7	7.0	9.3	15.2	17.6	21.2	13.7	5.1	2.4
35-39 years	100.0	3.7	3.9	5.2	5.1	5.6	7.3	6.7	9.5	13.0	17.4	22.5	14.9	4.3	3.3
40-44 years	100.0	4.4	4.0	4.7	5.2	5.4	6.6	7.6	8.9	13.3	15.8	23.0	15.6	5.5	3.0
45-49 years	100.0	4.7	5.1	4.6	4.9	5.7	7.3	7.8	9.9	12.3	15.1	22.5	14.6	4.6	3.3
50-54 years	100.0	4.6	5.1	4.4	6.1	7.5	8.7	8.9	9.4	11.6	14.5	19.1	13.0	3.6	2.5
55-59 years	100.0	5.7	5.0	6.9	6.7	6.6	8.7	9.6	9.5	11.0	13.5	16.8	11.6	3.7	1.4
60-64 years	100.0	7.2	6.4	7.5	7.7	8.0	9.9	8.3	9.5	10.5	11.8	13.2	9.7	2.6	1.0
65 years and over	100.0	14.6	10.4	10.4	9.7	6.2	9.0	8.0	8.3	7.3	8.0	8.0	5.9	.7	1.4
65-69 years	100.0	14.6	10.0	7.9	9.2	5.9	10.0	8.4	8.4	8.4	8.8	8.4	5.9	.8	1.7
70 years and over	100.0	14.3	12.2	22.4	12.2	8.2	4.1	6.1	8.2	2.0	4.1	6.1	6.1	-	-

[1] Less than 0.05 percent.

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

Table A-43. Percent distribution of workers in selected construction occupations in Omaha by month and by hours of work reported or the 12-month period, July 1966–June 1967

Hours	January	February	March	April	May	June	July	August	September	October	November	December
	Teamsters											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	56.1	53.7	50.0	62.2	61.0	58.5	59.8	67.1	58.5	62.2	40.2	40.2
1-19 hours	4.9	-	6.1	1.2	1.2	4.9	2.4	1.2	1.2	-	9.8	11.0
20-39 hours	2.4	-	7.3	2.4	2.4	6.1	2.4	1.2	-	1.2	6.1	4.9
40-59 hours	2.4	6.1	1.2	-	4.9	2.4	1.2	1.2	2.4	-	-	3.7
60-79 hours	3.7	2.4	-	1.2	1.2	3.7	4.9	-	2.4	1.2	3.7	1.2
80-99 hours	2.4	1.2	1.2	2.4	-	-	-	1.2	3.7	1.2	3.7	8.5
100-119 hours	1.2	2.4	4.9	1.2	3.7	1.2	2.4	-	-	1.2	2.4	2.4
120-139 hours	1.2	7.3	1.2	3.7	-	1.2	-	2.4	1.2	2.4	1.2	-
140-159 hours	13.4	-	-	4.9	2.4	2.4	4.9	-	11.0	3.7	6.1	4.9
160-179 hours	8.5	14.6	9.8	12.2	12.2	9.8	-	18.3	7.3	12.2	9.8	7.3
180 hours or more	3.7	12.2	18.3	8.5	11.0	9.8	22.0	7.3	12.2	14.6	17.1	15.9
	Plasterers											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	44.4	47.6	42.9	41.3	39.7	33.3	28.6	34.9	42.9	46.0	42.9	42.9
1-19 hours	-	4.8	1.6	1.6	-	1.6	-	-	-	-	-	3.2
20-39 hours	-	4.8	-	3.2	-	-	-	-	1.6	4.8	4.8	-
40-59 hours	1.6	3.2	4.8	-	1.6	3.2	3.2	-	3.2	-	1.6	1.6
60-79 hours	3.2	-	-	-	-	-	1.6	3.2	1.6	-	1.6	1.6
80-99 hours	3.2	3.2	4.8	3.2	-	3.2	1.6	11.1	3.2	4.8	4.8	1.6
100-119 hours	7.9	1.6	6.3	-	1.6	4.8	3.2	6.3	3.2	3.2	4.8	3.2
120-139 hours	4.8	3.2	4.8	3.2	4.8	4.8	4.8	7.9	6.3	11.1	9.5	1.6
140-159 hours	23.8	9.5	4.8	3.2	17.5	20.6	7.9	20.6	20.6	3.2	19.0	9.5
160-179 hours	7.9	19.0	19.0	27.0	31.7	6.3	4.8	14.3	4.8	12.7	6.3	6.3
180 hours or more	3.2	3.2	11.1	17.5	3.2	22.2	44.4	1.6	12.7	14.3	4.8	28.6
	Operating engineers											
Totals	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	65.8	67.7	54.4	41.2	38.7	48.3	33.4	32.7	33.8	34.5	40.4	50.4
1-19 hours	2.3	1.3	2.8	1.7	1.5	2.3	.9	1.1	1.1	1.4	1.1	1.7
20-39 hours	1.6	1.9	3.0	2.4	1.9	2.4	1.5	1.6	1.6	1.5	2.2	3.5
40-59 hours	2.7	1.9	4.5	2.8	2.4	3.5	1.3	2.1	1.8	1.9	2.1	2.5
60-79 hours	2.0	1.8	3.1	1.8	2.4	4.9	1.9	1.5	1.8	1.9	2.6	2.4
80-99 hours	3.6	2.1	3.5	3.2	3.7	5.7	2.5	1.9	1.9	2.5	3.2	3.3
100-119 hours	3.2	3.2	2.8	5.7	2.2	4.9	2.8	2.8	3.3	2.8	3.2	3.0
120-139 hours	4.2	4.9	3.2	7.1	3.6	5.3	6.2	5.6	5.8	4.5	5.6	5.8
140-159 hours	4.9	4.6	2.8	11.1	10.4	5.2	10.0	6.6	8.8	3.8	8.7	5.2
160-179 hours	5.3	7.8	6.1	9.6	15.1	6.9	13.1	13.1	13.2	9.9	11.3	8.3
180 hours or more	4.5	2.9	13.9	13.5	18.2	10.9	26.3	31.0	26.9	35.3	19.6	14.0
	Lathers											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	34.4	39.1	29.7	28.1	34.4	37.5	46.9	45.3	45.3	39.1	39.1	35.9
1-19 hours	-	-	-	-	-	1.6	-	3.1	-	-	4.7	-
20-39 hours	1.6	-	3.1	-	1.6	1.6	-	-	-	1.6	4.7	-
40-59 hours	1.6	-	-	1.6	-	-	-	1.6	-	1.6	-	-
60-79 hours	4.7	3.1	4.7	3.1	4.7	-	-	-	1.6	6.3	-	1.6
80-99 hours	1.6	1.6	1.6	3.1	1.6	3.1	-	1.6	1.6	1.6	1.6	-
100-119 hours	4.7	3.1	3.1	3.1	1.6	4.7	3.1	7.8	1.6	-	1.6	1.6
120-139 hours	7.8	3.1	3.1	3.1	3.1	4.7	1.6	10.9	4.7	3.1	15.6	9.4
140-159 hours	40.6	20.3	9.4	9.4	20.3	14.1	4.7	15.6	15.6	20.3	25.0	4.7
160-179 hours	3.1	29.7	14.1	26.6	32.8	12.5	1.6	14.1	3.1	9.4	6.3	9.4
180 hours or more	-	-	31.3	21.9	-	20.3	42.2	-	26.6	17.2	1.6	37.5
	Laborers											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	67.4	69.5	60.5	60.7	55.6	58.8	52.3	51.0	54.9	58.1	59.5	62.4
1-10 hours	1.7	1.8	2.8	2.6	3.9	3.2	1.5	2.4	2.3	1.9	2.4	1.6
20-39 hours	2.5	1.8	2.8	4.3	3.8	3.7	1.9	2.0	2.3	1.5	2.2	2.8
40-59 hours	2.7	2.1	2.8	3.0	2.6	3.7	1.5	1.9	3.0	1.9	1.9	2.6
60-79 hours	1.6	1.5	2.4	1.7	1.9	2.2	2.5	2.8	3.2	2.0	2.3	1.5
80-99 hours	2.3	2.0	2.1	2.8	2.6	2.6	3.0	3.2	3.0	1.8	2.3	1.7
100-119 hours	3.5	3.5	1.8	2.4	3.0	3.0	3.1	3.2	3.0	2.7	2.5	2.9
120-139 hours	5.1	4.1	2.8	5.7	4.4	3.2	4.1	3.9	3.7	2.7	3.7	3.5
140-159 hours	8.0	4.6	4.5	8.0	7.7	7.3	7.5	6.8	12.1	7.7	8.8	6.7
160-179 hours	3.2	6.1	6.8	5.9	7.3	5.2	4.8	11.0	6.1	9.2	5.7	6.9
180 hours or more	2.0	3.0	10.6	3.0	7.2	7.0	17.7	11.7	6.3	10.6	8.6	7.4

Table A-43. Percent distribution of workers in selected construction occupations in Omaha by month and by hours of work reported for the 12-month period, July 1966–June 1967—Continued

Hours	January	February	March	April	May	June	July	August	September	October	November	December
	Ironworkers											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	46.4	49.3	44.7	43.3	36.2	36.5	32.2	32.5	34.2	37.3	38.5	41.1
1-19 hours	1.6	2.4	1.5	1.6	2.7	3.5	1.3	1.1	3.1	1.1	.9	.9
20-39 hours	2.0	1.8	.9	2.7	3.1	3.8	1.8	1.5	.7	1.5	.9	2.2
40-59 hours	4.5	2.9	2.2	1.6	3.6	2.0	2.7	1.5	2.0	1.1	1.5	2.7
60-79 hours	4.0	1.5	2.7	1.5	1.5	2.9	3.6	2.0	1.6	1.8	2.4	2.0
80-99 hours	5.6	6.7	3.6	5.6	4.0	7.3	2.9	3.5	4.0	2.2	3.5	2.9
100-119 hours	9.3	6.9	3.5	3.1	4.0	5.3	3.8	3.6	3.5	2.7	4.9	7.8
120-139 hours	10.9	10.0	4.5	15.1	7.6	6.9	5.3	6.4	6.5	3.8	8.2	5.6
140-159 hours	8.7	8.9	6.7	10.4	20.4	10.9	17.6	15.1	17.1	14.0	17.8	11.8
160-179 hours	4.2	7.8	6.5	8.7	9.3	8.9	10.9	16.9	8.2	13.5	12.2	12.9
180 hours or more	2.7	1.8	23.1	6.4	7.6	12.0	17.8	16.0	19.1	20.7	9.3	10.0
	Cement finishers											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	63.3	62.6	53.8	37.1	33.2	46.2	30.1	23.4	27.6	26.2	28.3	37.4
1-19 hours	4.2	4.2	1.7	3.8	3.1	3.8	2.4	2.8	1.4	.7	2.1	6.3
20-39 hours	3.5	3.8	3.8	2.4	1.0	4.5	2.1	3.8	1.4	2.4	2.1	5.2
40-59 hours	5.2	3.5	3.5	2.1	2.4	3.8	2.1	.7	1.0	.7	3.1	3.1
60-79 hours	2.4	3.5	2.8	4.5	1.0	5.9	1.7	1.4	2.8	.3	2.4	6.3
80-99 hours	2.8	3.1	1.4	3.5	3.8	4.5	2.8	3.1	.7	2.1	3.8	4.9
100-119	2.8	4.5	3.1	7.3	5.9	4.9	3.8	4.9	3.1	4.2	3.8	7.7
120-139 hours	3.8	4.2	4.2	9.4	7.3	4.5	6.3	4.5	7.7	3.1	7.7	6.6
140-159 hours	5.9	4.9	4.2	11.9	9.8	6.3	15.7	11.2	9.8	11.5	13.3	7.0
160-179 hours	3.1	4.2	5.6	11.2	14.7	6.6	13.6	13.6	12.6	15.4	11.5	5.2
180 hours or more	2.8	1.4	15.7	6.6	17.5	8.7	19.2	30.4	31.8	33.2	21.7	10.1
	Carpenters											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	38.1	40.0	37.5	36.7	37.1	42.3	24.9	23.0	22.1	25.1	28.9	32.0
1-19 hours	1.8	2.1	2.7	2.4	1.3	1.1	1.0	.8	1.6	1.6	1.3	2.1
20-39 hours	1.9	2.7	2.3	3.3	1.8	1.7	1.4	1.3	2.0	1.4	1.9	2.6
40-59 hours	2.6	2.6	2.5	2.1	2.3	2.7	2.0	2.1	2.9	3.3	3.3	2.5
60-79 hours	2.7	2.8	2.3	1.4	1.6	2.3	2.8	3.0	2.3	2.4	2.2	3.4
80-99 hours	4.0	3.9	4.7	3.4	2.8	3.8	3.7	3.4	3.5	1.8	2.4	2.7
100-119 hours	6.4	4.6	3.0	4.4	2.9	3.7	4.1	3.4	4.3	3.5	3.7	3.2
120-139 hours	10.4	7.5	4.1	9.8	4.6	6.1	7.3	5.7	7.3	7.3	5.3	6.5
140-159 hours	20.1	11.9	7.0	13.4	16.0	9.6	20.0	12.1	22.4	15.6	19.9	16.5
160-179 hours	7.3	16.7	13.1	17.7	16.0	13.8	14.8	23.0	12.9	22.4	13.6	12.4
180 hours or more	4.7	5.2	22.7	5.3	13.6	12.9	18.0	22.2	18.7	15.6	17.4	16.1
	Bricklayers											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	43.0	44.0	41.2	38.4	35.3	49.3	22.1	21.4	25.6	28.6	30.0	35.1
1-19 hours	2.8	1.4	1.9	1.6	1.9	1.4	.5	.9	.7	1.2	1.2	1.2
20-39 hours	4.7	2.1	1.6	2.3	2.8	1.9	1.9	2.1	2.6	1.4	2.1	2.3
40-59 hours	4.0	7.0	3.0	3.0	2.8	1.6	2.1	1.4	2.3	.7	1.9	2.6
60-79 hours	6.3	5.6	4.2	1.4	1.6	3.5	3.7	3.7	3.5	2.1	3.7	3.7
80-99 hours	4.4	8.1	2.8	3.0	2.6	3.7	4.7	2.8	4.7	2.6	4.9	9.8
100-119 hours	7.0	5.8	4.7	7.9	6.0	6.0	7.9	4.4	3.0	6.5	6.0	10.2
120-139 hours	11.9	8.8	6.7	16.3	8.4	4.7	10.7	7.2	9.3	6.3	12.6	9.5
140-159 hours	10.7	6.7	14.2	10.7	18.6	8.8	21.4	22.8	24.7	21.4	18.6	10.7
160-179 hours	3.3	6.5	7.0	9.5	11.9	6.3	10.9	15.3	9.3	16.0	9.8	5.8
180 hours or more	2.1	4.0	12.8	5.8	8.1	12.8	14.2	17.9	14.4	13.3	9.3	9.1
	Total of all selected construction crafts											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	54.1	55.9	48.8	44.8	42.1	48.0	35.2	34.0	35.6	37.4	40.5	45.3
1-19 hours	2.1	1.9	2.5	2.2	2.2	2.3	1.2	1.4	1.7	1.5	1.7	2.0
20-39 hours	2.3	2.2	2.5	3.1	2.5	2.7	1.7	1.7	1.8	1.5	2.1	2.9
40-59 hours	3.0	2.8	3.0	2.4	2.6	3.0	1.8	1.8	2.4	2.0	2.3	2.6
60-79 hours	2.7	2.3	2.7	1.7	1.8	3.1	2.6	2.4	2.5	2.0	2.4	2.7
80-99 hours	3.6	3.5	2.7	3.4	3.0	4.2	3.1	3.0	3.0	2.1	2.9	3.3
100-119 hours	5.0	4.2	2.9	4.3	3.2	4.2	3.8	3.4	3.4	3.2	3.6	4.2
120-139 hours	7.3	6.2	3.8	8.9	5.0	5.0	6.1	5.4	6.1	4.8	6.0	5.6
140-159 hours	11.5	7.4	5.7	10.7	12.8	8.0	13.8	10.6	15.6	10.9	13.9	9.9
160-179 hours	5.1	10.1	8.6	11.4	12.9	8.7	10.8	16.0	10.3	14.3	10.4	9.2
180 hours or more	3.4	3.6	16.6	7.1	11.9	10.8	20.1	20.2	17.6	19.7	14.2	12.4

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

Table A-44. Percent distribution of workers in selected construction occupations in Detroit by month and by hours of work reported for the 12-month period, November 1966–October 1967

Hours	January	February	March	April	May	June	July	August	September	October	November	December
Carpenters												
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	37.4	39.3	39.7	37.6	36.4	34.8	34.2	33.3	33.4	40.3	37.3	36.1
1-19 hours	1.3	2.3	1.4	1.4	1.0	1.9	1.5	1.1	1.6	1.2	1.5	1.6
20-39 hours	1.7	2.7	1.9	1.9	1.7	2.1	1.9	1.8	2.5	2.0	2.6	2.1
40-59 hours	2.1	2.9	2.0	1.9	1.5	2.2	2.1	1.6	2.4	1.7	3.2	2.1
60-79 hours	2.8	3.7	2.3	2.4	2.0	2.0	3.5	2.2	2.8	2.3	5.3	2.7
80-99 hours	4.3	5.7	3.5	4.2	3.7	4.3	6.6	3.5	4.5	3.8	8.6	5.3
100-119 hours	8.1	8.7	5.7	5.8	5.5	5.6	12.2	4.6	7.0	6.5	10.1	9.8
120-139 hours	12.2	9.6	9.0	11.7	9.6	13.6	17.0	7.8	16.9	9.0	8.3	12.8
140-159 hours	11.8	13.8	12.0	16.5	13.7	13.7	8.5	12.1	11.7	13.4	7.5	10.3
160-179 hours	9.8	7.4	9.1	8.3	14.2	11.1	6.4	16.5	8.9	10.6	6.9	8.7
180 hours or more	8.5	3.9	13.4	8.2	10.7	8.7	6.0	15.5	8.5	9.3	8.8	8.4
Operating engineers												
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	37.4	39.0	37.9	35.2	32.4	32.8	31.2	31.0	35.8	41.5	36.1	36.8
1-19 hours	1.7	1.6	1.6	1.9	1.2	1.2	1.3	1.2	1.6	1.4	1.1	1.6
20-39 hours	2.1	2.3	1.4	1.7	1.4	1.4	1.4	1.3	1.5	1.3	2.0	1.9
40-59 hours	1.9	2.1	1.7	2.1	1.8	1.7	1.7	1.1	1.6	1.5	2.4	2.0
60-79 hours	2.0	2.0	2.0	2.0	1.4	1.5	2.0	1.1	1.6	1.6	2.0	2.0
80-99 hours	2.7	3.5	3.0	3.0	3.1	2.8	3.2	2.0	2.3	2.3	3.4	3.0
100-119 hours	4.8	4.2	2.5	2.3	1.8	2.5	3.2	2.1	2.0	2.0	5.2	4.3
120-139 hours	5.8	5.6	3.9	3.2	3.6	3.5	4.8	2.9	3.0	4.4	7.4	5.9
140-159 hours	10.0	8.3	6.4	6.1	5.7	7.9	9.8	5.4	7.7	7.4	8.7	9.0
160-179 hours	12.8	17.1	14.5	14.3	14.5	16.8	13.2	13.1	13.9	13.6	12.6	13.3
180 hours or more	18.8	14.4	25.0	28.2	33.2	27.8	28.2	38.9	29.3	23.1	19.1	20.4
Bricklayers												
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	48.1	49.0	42.2	38.2	33.8	31.5	34.0	33.6	35.2	43.2	41.4	44.9
1-19 hours	1.8	2.6	2.0	1.6	1.9	1.4	1.6	1.6	1.8	1.3	1.8	3.0
20-39 hours	3.2	4.9	2.5	2.1	1.9	1.9	1.8	1.9	1.5	1.4	2.4	4.4
40-59 hours	4.3	6.2	2.3	1.9	2.7	2.6	2.2	1.5	2.3	2.0	2.7	4.2
60-79 hours	5.5	6.1	3.0	2.3	2.2	3.0	2.9	2.2	2.5	2.6	4.2	6.0
80-99 hours	7.6	8.1	5.4	4.3	3.2	4.4	5.0	2.7	4.4	3.7	6.3	9.4
100-119 hours	8.1	6.7	6.9	4.8	3.3	4.5	9.6	3.2	4.5	6.4	8.7	8.1
120-139 hours	5.9	5.0	9.2	9.1	7.3	8.0	16.4	4.9	11.3	11.3	11.0	6.1
140-159 hours	5.5	3.8	8.5	16.5	12.0	18.7	13.7	9.0	15.3	11.5	6.5	5.5
160-179 hours	6.0	6.2	8.5	13.1	14.8	13.7	8.6	11.2	11.1	9.2	7.1	5.1
180 hours or more	4.0	1.2	9.5	6.2	16.8	10.1	4.1	28.1	10.0	7.3	8.0	3.3
Laborers												
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	58.0	59.7	57.0	53.2	50.5	48.3	47.3	46.6	49.3	57.3	54.9	55.5
1-19 hours	2.2	2.2	2.0	2.3	2.1	2.2	2.2	2.1	2.3	1.8	1.8	2.4
20-39 hours	2.3	2.6	2.2	2.5	2.1	2.2	2.1	2.0	2.6	1.7	2.3	2.5
40-59 hours	2.1	2.9	2.1	2.4	2.1	2.3	2.4	2.2	2.6	1.8	2.4	2.7
60-79 hours	2.4	2.6	1.7	2.1	1.8	2.3	2.5	1.8	2.3	1.8	2.5	2.7
80-99 hours	3.0	3.6	3.0	2.9	2.5	3.1	3.7	2.6	2.9	2.5	3.4	3.7
100-119 hours	3.9	4.4	3.1	2.6	2.6	3.2	5.1	2.3	3.2	3.0	5.3	4.8
120-139 hours	5.1	5.3	4.6	4.5	3.8	5.0	9.5	3.4	4.9	5.5	6.5	6.4
140-159 hours	6.6	5.9	6.8	8.5	6.7	10.2	9.8	5.1	9.9	7.3	6.1	7.8
160-179 hours	6.1	7.1	7.4	9.9	8.8	10.5	6.8	9.0	8.4	7.8	6.5	5.4
180 hours or more	8.3	3.7	10.1	9.1	17.2	10.7	8.6	23.0	11.7	9.5	8.4	6.2
Cement masons												
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	57.7	56.7	56.3	47.2	43.3	38.4	39.9	44.3	45.1	50.0	48.2	53.3
1-19 hours	5.1	5.7	4.1	3.8	4.1	5.0	5.6	2.6	3.9	2.9	5.6	5.0
20-39 hours	4.3	3.9	4.9	3.5	3.4	2.6	3.6	1.5	2.6	2.6	3.1	3.9
40-59 hours	2.7	3.8	4.0	3.7	1.6	3.3	2.0	2.2	1.8	1.6	3.5	3.3
60-79 hours	3.0	4.1	2.3	2.8	1.7	3.8	3.3	2.0	2.2	1.5	2.4	4.8
80-99 hours	2.2	3.3	4.4	5.1	2.9	2.6	5.0	3.9	3.1	3.1	4.7	3.4
100-119 hours	4.0	3.4	2.4	2.9	3.3	3.8	5.0	3.4	3.9	3.5	5.8	5.0
120-139 hours	4.9	5.0	4.4	5.6	4.4	6.0	11.1	2.9	4.8	6.4	4.4	4.8
140-159 hours	4.7	5.1	5.1	6.2	5.2	9.6	8.3	4.1	9.9	7.7	7.4	6.8
160-179 hours	4.6	5.8	5.2	9.7	9.4	13.1	9.8	8.8	9.4	9.2	7.5	4.7
180 hours or more	6.9	3.0	6.8	9.6	20.8	12.0	6.5	24.2	13.4	11.6	7.2	5.0
Reinforced steel workers												
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	50.1	53.2	50.9	45.9	39.3	32.3	33.7	31.7	35.7	45.8	45.4	46.3
1-19 hours	1.7	2.0	2.3	2.5	2.5	3.6	3.2	2.4	3.3	2.6	3.0	2.7
20-39 hours	1.5	1.9	2.3	2.0	2.5	3.2	2.5	1.4	2.7	2.9	3.8	2.6
40-59 hours	2.7	2.6	2.8	3.2	3.2	4.4	2.1	2.2	2.7	2.3	2.8	4.4
60-79 hours	3.6	4.8	2.6	1.6	2.3	3.4	3.6	3.3	3.2	2.1	3.9	3.8
80-99 hours	4.1	6.6	3.2	3.8	3.5	4.0	4.8	3.5	4.4	3.6	6.2	6.7
100-119 hours	6.0	7.8	4.4	3.6	3.4	5.3	8.5	3.7	5.0	3.8	6.1	7.9
120-139 hours	8.7	6.2	6.7	7.0	6.4	7.0	12.5	6.4	8.1	9.1	7.4	8.8
140-159 hours	7.0	5.0	9.7	11.9	8.4	16.8	13.6	10.4	13.4	10.9	7.5	7.2
160-179 hours	6.2	6.6	8.9	11.3	10.2	12.5	7.5	10.5	12.6	8.5	6.1	5.3
180 hours or more	8.4	3.3	6.2	7.3	18.2	7.5	7.8	24.6	8.9	8.3	7.7	4.2

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

Table A-45. Percent distribution of workers in selected construction occupations in Milwaukee by month and by hours of work reported for the 12-month period, December 1965–November 1966

Hours	January	February	March	April	May	June	July	August	September	October	November	December
Asphalt pavers												
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	82.6	88.9	90.3	76.4	41.7	39.2	31.9	31.2	31.2	29.9	48.6	63.2
1-19 hours	2.1	.7	.7	1.4	7.6	2.1	2.8	2.8	2.1	5.6	3.5	9.0
20-39 hours	1.4	-	-	4.9	2.8	2.1	4.2	2.1	2.8	.7	2.8	7.6
40-59 hours	1.4	1.4	.7	4.2	4.2	-	2.8	-	2.8	4.2	2.1	2.1
60-79 hours	-	-	-	4.2	6.2	2.1	2.8	2.8	5.6	1.4	8.3	6.9
80-99 hours	9.0	7.6	6.2	4.2	6.9	2.8	2.1	1.4	2.8	3.5	9.7	4.9
100-119 hours	.7	-	-	1.4	5.6	12.6	5.6	5.6	2.1	3.5	15.3	1.4
120-139 hours	-	-	.7	-	5.6	8.3	8.3	8.3	9.0	9.7	3.5	.7
140-159 hours	1.4	-	-	.7	12.5	17.4	9.7	28.5	31.9	10.4	1.4	2.8
160-179 hours	1.4	1.4	1.4	1.4	6.2	11.8	13.2	12.5	3.5	13.9	4.9	1.4
180 hours or more	-	-	-	1.4	.7	2.8	16.7	4.9	6.2	17.8	-	-
Terrazzo skilled helpers												
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	37.1	41.9	33.9	37.1	40.3	35.5	37.1	29.0	38.7	41.9	46.8	30.6
1-19 hours	-	1.6	1.6	-	-	-	-	-	-	1.6	-	-
20-39 hours	-	-	3.2	-	1.6	-	1.6	-	-	1.6	1.6	-
40-59 hours	4.8	4.8	3.2	3.2	1.6	4.8	6.5	11.3	8.1	8.1	6.5	4.8
60-79 hours	1.6	1.6	-	-	1.6	-	-	-	-	-	-	1.6
80-99 hours	6.5	1.6	1.6	1.6	1.6	3.2	3.2	8.1	-	3.2	3.2	3.2
100-119 hours	-	1.6	1.6	1.6	-	1.6	4.8	4.8	3.2	1.6	1.6	3.2
120-139 hours	6.5	3.2	1.6	8.1	4.8	1.6	6.5	14.5	3.2	4.8	6.5	-
140-159 hours	19.4	17.7	14.5	16.1	30.6	24.2	27.4	14.5	3.2	9.7	30.6	6.5
160-179 hours	22.6	25.8	9.7	21.0	17.7	4.8	11.3	17.7	6.5	27.4	3.2	11.3
180 hours or more	1.6	-	29.0	11.3	-	24.2	1.6	-	37.1	-	-	38.7
Masons												
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	33.8	34.5	33.0	30.3	35.5	37.3	35.3	30.4	30.2	31.2	33.0	31.9
1-19 hours	1.2	1.0	.6	.7	.8	20.0	.9	.6	.2	.7	.9	.4
20-39 hours	3.7	1.7	1.1	1.2	.9	3.4	5.8	.6	1.1	1.1	1.3	.6
40-59 hours	9.6	6.4	6.0	5.3	1.2	11.0	9.6	5.7	5.6	5.7	5.3	5.1
60-79 hours	6.3	4.7	2.0	1.6	1.0	3.4	13.2	1.1	1.2	1.0	1.4	1.2
80-99 hours	8.6	7.9	3.6	2.6	2.9	5.2	8.3	3.1	2.7	2.9	2.9	3.0
100-119 hours	8.0	10.7	4.1	2.8	2.7	3.7	3.8	2.7	2.7	2.5	5.9	3.6
120-139 hours	6.1	12.0	10.6	5.6	13.3	4.0	4.7	4.4	5.4	5.0	13.5	6.4
140-159 hours	9.1	12.5	16.0	14.2	24.9	4.2	6.8	16.4	28.9	16.6	19.7	17.0
160-179 hours	6.8	8.3	10.8	14.5	13.6	4.3	5.2	20.7	7.9	12.3	8.9	14.4
180 hours or more	6.7	.2	12.2	21.1	3.2	3.5	6.2	14.3	14.0	20.9	7.2	16.4
Lathers												
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	37.5	34.5	28.0	30.4	39.9	31.0	32.7	32.1	36.9	38.1	38.7	32.1
1-19 hours	-	.6	1.2	-	.6	.6	.6	.6	-	.6	-	1.2
20-39 hours	1.2	1.2	1.8	1.2	.6	.6	2.4	.6	.6	1.2	1.2	1.8
40-59 hours	8.3	8.9	8.9	8.3	1.8	8.3	8.9	8.9	8.9	9.5	9.5	10.7
60-79 hours	4.8	1.8	1.2	3.0	1.8	1.8	4.2	.6	1.8	1.8	.6	4.8
80-99 hours	4.8	6.0	4.2	4.2	6.0	5.4	8.3	6.0	4.8	8.9	3.6	4.8
100-119 hours	5.4	6.0	4.8	-	3.0	3.6	6.5	4.2	3.6	1.2	2.4	3.0
120-139 hours	7.7	4.8	1.8	4.2	3.0	1.8	5.4	6.0	6.5	3.6	4.2	7.1
140-159 hours	13.7	16.7	6.5	13.1	10.1	19.6	15.5	10.1	17.3	8.9	25.0	8.3
160-179 hours	13.7	14.3	11.9	25.6	26.8	7.7	4.8	16.1	3.0	19.0	8.3	5.4
180 hours or more	3.0	5.4	29.8	10.1	6.5	19.6	10.7	14.9	16.7	7.1	6.5	20.8
Cement finishers												
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	59.4	60.3	53.6	46.6	43.5	37.7	37.7	37.6	37.7	38.5	41.2	52.5
1-19 hours	1.6	1.9	1.3	2.2	2.1	1.9	2.5	1.9	1.6	1.7	1.9	1.3
20-39 hours	1.9	1.6	.6	3.0	1.0	2.2	1.7	1.4	.8	1.3	2.1	2.2
40-59 hours	6.6	5.6	5.3	5.8	1.4	5.8	5.7	4.5	4.8	5.4	6.6	5.7
60-79 hours	2.5	2.2	2.3	2.6	1.6	1.2	1.6	1.3	1.7	.8	2.7	2.2
80-99 hours	6.1	5.3	3.6	2.9	3.2	3.5	2.5	2.2	1.3	1.4	3.0	3.4
100-119 hours	2.1	3.4	2.7	1.6	6.7	2.5	2.5	1.9	2.7	1.4	4.4	1.8
120-139 hours	3.8	5.6	4.2	4.8	8.6	7.7	5.7	4.8	5.2	4.2	6.6	3.8
140-159 hours	6.2	8.0	10.9	6.6	15.7	17.3	8.6	11.5	16.5	9.2	8.9	10.4
160-179 hours	5.3	6.1	10.9	9.1	12.5	9.9	11.5	18.0	13.4	12.7	10.5	7.4
180 hours or more	4.5	-	4.5	14.9	3.8	10.4	20.1	14.7	14.4	23.3	11.9	9.3

Table A-45. Percent distribution of workers in selected construction occupations in Milwaukee by month and by hours of work reported for the 12-month period, December 1965–November 1966—Continued

Hours	January	February	March	April	May	June	July	August	September	October	November	December
	Terrazzo mechanics											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	24.0	24.0	24.0	28.0	44.0	24.0	32.0	28.0	28.0	32.0	32.0	28.0
1-19 hours	4.0	-	-	-	-	-	-	-	-	4.0	-	-
20-39 hours	-	-	-	-	-	-	-	-	-	-	4.0	-
40-59 hours	20.0	20.0	20.0	16.0	-	24.0	16.0	16.0	16.0	16.0	20.0	16.0
60-79 hours	-	-	-	4.0	4.0	-	-	-	4.0	-	-	-
80-99 hours	4.0	-	-	-	4.0	-	-	4.0	-	-	-	-
100-119 hours	-	-	-	4.0	4.0	-	-	8.0	-	-	-	4.0
120-139 hours	8.0	-	4.0	-	8.0	8.0	4.0	12.0	4.0	8.0	-	-
140-159 hours	12.0	8.0	-	16.0	20.0	8.0	28.0	8.0	4.0	4.0	32.0	-
160-179 hours	28.0	48.0	12.0	24.0	16.0	-	16.0	24.0	8.0	36.0	4.0	12.0
180 hours or more	-	-	40.0	8.0	-	36.0	4.0	-	36.0	-	8.0	40.0
	Plasterers											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	29.5	31.1	31.6	30.0	37.8	27.4	28.9	28.4	31.6	33.7	37.9	30.5
1-19 hours	4.2	2.1	.5	.5	1.1	-	1.1	.5	.5	.5	1.1	.5
20-39 hours	1.1	.5	1.1	1.1	.5	3.7	.5	.5	.5	.5	.5	2.6
40-59 hours	11.6	12.1	10.0	10.5	.5	12.6	12.1	12.1	11.6	16.3	12.1	10.0
60-79 hours	1.6	3.7	-	1.1	1.6	2.1	2.1	2.1	1.1	2.6	2.1	-
80-99 hours	7.9	5.8	3.7	3.7	3.2	3.7	4.7	4.7	5.3	7.4	3.7	4.2
100-119 hours	8.4	5.3	3.7	1.6	2.1	4.2	3.2	1.6	1.6	2.1	4.7	1.6
120-139 hours	8.4	8.9	6.3	1.6	5.3	2.6	3.7	8.4	7.9	4.2	7.4	5.8
140-159 hours	10.0	14.7	15.3	12.6	18.9	18.9	18.9	16.8	19.5	8.4	22.1	14.2
160-179 hours	11.6	15.8	10.0	17.4	26.3	12.6	6.3	14.7	7.9	16.3	7.9	12.6
180 hours or more	5.8	-	17.0	20.0	2.6	12.1	18.4	10.0	12.6	7.9	.5	17.9
	Operating engineers											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	56.2	59.1	55.7	48.6	42.2	39.9	36.3	36.1	35.7	33.9	41.9	49.4
1-19 hours	1.2	.8	.7	1.7	1.2	1.5	1.7	1.2	1.6	1.6	1.1	.9
20-39 hours	1.9	.9	1.1	2.4	1.1	1.1	1.0	1.1	1.3	1.2	1.8	1.4
40-59 hours	4.5	2.9	3.5	2.9	2.1	3.1	2.6	3.6	3.0	3.5	3.8	3.6
60-79 hours	1.5	1.3	1.1	1.5	1.8	1.1	1.4	.9	1.2	1.3	1.6	1.7
80-99 hours	5.3	5.7	4.7	4.4	2.9	2.1	1.6	2.5	2.6	1.9	2.9	3.3
100-119 hours	2.8	1.9	1.9	1.9	4.1	2.4	2.3	1.6	2.5	2.0	5.0	3.6
120-139 hours	4.6	4.0	3.5	2.8	7.7	6.1	3.6	4.3	3.7	4.7	11.8	5.5
140-159 hours	5.5	8.7	6.9	5.1	15.8	20.5	8.3	13.0	24.5	10.1	13.7	10.5
160-179 hours	9.3	14.4	14.3	11.2	17.8	12.0	13.8	28.4	16.7	13.1	11.6	9.5
180 hours or more	7.1	.2	6.7	17.5	3.4	10.1	27.4	7.2	26.9	5.0	5.0	10.7
	Plasterer laborers											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	39.3	38.7	36.8	42.3	46.0	41.7	41.7	45.4	48.5	47.2	47.9	42.9
1-19 hours	3.1	1.2	.6	1.8	1.2	.6	.6	1.2	.6	2.5	1.8	1.2
20-39 hours	.6	2.5	.6	1.2	.6	3.1	1.2	-	-	1.2	.6	.6
40-59 hours	7.4	6.7	6.1	6.1	1.8	8.0	7.4	6.7	6.1	7.4	6.7	4.9
60-79 hours	.6	3.1	.6	1.2	.6	1.2	1.2	1.2	1.2	.6	1.2	-
80-99 hours	6.7	5.5	4.3	2.5	4.3	3.1	3.1	3.7	.6	3.1	4.3	1.8
100-119 hours	6.1	5.5	9.2	.6	5.5	1.8	4.9	-	1.2	.6	1.2	1.2
120-139 hours	8.0	7.4	1.8	3.1	3.1	1.8	3.1	4.3	3.7	4.3	4.3	4.3
140-159 hours	11.0	10.4	8.0	4.9	11.0	15.3	14.1	9.8	16.0	9.8	20.2	14.1
160-179 hours	12.9	19.0	12.9	21.5	23.9	11.7	8.6	19.0	5.5	17.2	9.2	8.0
180 hours or more	4.3	-	19.0	14.7	1.8	11.7	14.1	8.6	16.6	6.1	2.5	20.9
	Laborers											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	70.9	71.7	68.8	61.5	57.2	53.7	52.8	51.2	51.0	55.2	59.7	64.4
1-19 hours	1.2	1.2	1.1	2.1	2.5	2.8	2.3	1.9	2.7	2.1	2.1	1.5
20-39 hours	1.5	1.2	1.6	2.4	2.4	2.9	2.7	2.2	3.2	2.2	2.1	1.6
40-59 hours	3.2	2.2	2.7	3.3	2.4	4.3	4.0	3.3	4.6	3.4	3.3	2.9
60-79 hours	2.2	1.3	1.4	2.1	2.4	2.5	3.0	1.9	3.0	1.7	1.9	1.6
80-99 hours	3.9	3.2	2.3	2.6	2.9	2.9	2.7	2.4	3.0	2.1	2.6	2.3
100-119 hours	2.7	3.2	1.7	2.0	3.4	3.7	3.3	3.2	3.6	2.1	4.0	1.9
120-139 hours	3.0	4.4	3.2	2.3	7.0	6.9	3.8	5.4	4.7	3.4	7.6	3.1
140-159 hours	4.7	6.6	6.2	5.8	11.8	12.8	8.8	12.2	17.1	7.5	10.8	8.2
160-179 hours	3.6	5.0	6.3	5.9	6.4	2.7	6.9	11.6	2.1	7.7	3.1	5.2
180 hours or more	3.1	-	4.6	9.9	1.6	4.7	9.9	4.7	5.0	12.5	2.8	7.3

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

Table A-46. Percent distribution of workers in selected construction occupations in southern California by month and by hours of work reported for a 12-month period

Hours	January	February	March	April	May	June	July	August	September	October	November	December
	Ironworkers [1]											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	37.8	38.8	38.0	40.5	48.0	31.3	31.3	29.4	30.4	32.0	33.5	36.2
1-19 hours	2.0	2.1	1.8	2.2	2.1	2.6	2.3	2.8	2.3	1.9	2.3	2.4
20-39 hours	2.5	2.6	2.3	2.7	2.5	2.4	2.6	2.6	2.6	2.4	2.2	2.6
40-59 hours	2.6	3.1	2.7	3.1	2.6	2.8	2.9	2.8	2.9	2.6	2.9	2.9
60-79 hours	3.0	3.1	2.8	3.5	2.4	2.8	2.8	2.8	2.7	2.3	3.1	2.9
80-99 hours	4.2	4.2	3.0	5.2	3.2	3.6	3.8	3.7	3.5	3.5	4.3	4.6
100-119 hours	6.4	4.9	3.8	7.9	3.1	4.3	4.7	3.9	4.7	4.1	5.8	5.7
120-139 hours	10.8	8.2	6.0	11.5	4.1	6.9	6.9	6.4	8.8	6.8	11.8	10.8
140-159 hours	15.3	16.5	10.1	10.0	7.5	15.7	17.2	9.8	18.8	13.1	13.6	13.7
160-179 hours	8.4	13.8	11.2	8.8	11.9	11.2	8.6	17.2	9.1	18.5	11.2	10.0
180 hours or more	6.9	2.6	18.4	4.6	12.5	16.2	17.0	18.6	14.1	12.7	9.3	8.1
	Operating engineers [1]											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	30.8	31.3	31.0	33.1	43.7	19.9	21.4	22.2	23.0	24.9	27.4	29.3
1-19 hours	1.6	1.8	1.6	2.3	1.5	1.4	1.7	1.6	1.5	1.6	1.6	1.8
20-39 hours	2.2	2.4	2.1	3.4	1.6	1.8	2.1	1.9	2.0	1.9	2.3	2.3
40-59 hours	2.9	2.7	2.4	4.0	2.1	2.2	2.6	2.5	3.0	2.5	2.8	2.8
60-79 hours	3.3	2.5	2.4	4.5	1.8	2.7	2.9	2.3	2.7	2.2	3.4	3.1
80-99 hours	4.1	3.6	3.2	6.2	2.1	3.1	3.7	3.6	3.2	3.3	4.3	4.1
100-119 hours	6.4	4.6	3.4	7.4	2.3	4.0	4.5	3.5	3.7	3.4	6.6	6.5
120-139 hours	10.4	6.4	5.1	9.2	3.1	5.5	7.0	5.4	5.7	4.8	10.7	10.1
140-159 hours	13.2	11.2	8.6	8.4	5.6	11.1	11.7	7.1	15.0	8.9	13.4	11.9
160-179 hours	12.3	22.3	13.7	10.6	15.8	14.7	16.7	20.1	16.6	20.5	13.9	13.0
180 hours or more	12.8	11.1	26.5	10.9	20.5	33.5	25.7	29.9	23.5	26.2	13.6	15.4
	Teamsters [2]											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	40.9	41.6	37.6	47.0	46.6	46.9	48.3	47.7	48.2	48.6	50.9	53.9
1-19 hours	1.9	2.3	2.1	1.6	1.7	1.7	1.5	1.3	1.2	1.2	1.5	1.7
20-39 hours	2.1	2.1	2.1	1.5	1.4	1.8	1.4	1.2	1.6	1.6	1.6	1.9
40-59 hours	2.8	2.7	1.9	1.7	1.8	2.0	1.6	1.8	1.5	1.6	2.5	2.2
60-79 hours	1.8	3.2	1.9	1.8	2.0	1.6	2.0	1.3	1.5	1.6	2.7	2.0
80-99 hours	2.8	4.5	2.3	1.8	2.2	1.9	2.4	2.1	2.4	2.0	3.1	3.1
100-119 hours	3.3	5.0	2.4	1.9	2.7	2.3	3.1	2.2	2.3	2.3	3.8	4.3
120-139 hours	5.9	6.9	3.7	3.0	4.1	3.1	4.0	3.4	4.1	4.0	7.1	5.9
140-159 hours	9.0	9.9	6.0	5.7	7.6	6.6	10.2	4.9	11.0	7.3	8.1	8.8
160-179 hours	15.8	15.1	11.0	13.3	16.4	9.0	10.5	10.7	11.4	13.8	8.3	7.3
180 hours or more	13.8	6.8	29.0	20.8	13.5	23.2	15.0	23.3	14.7	15.8	10.3	9.0
	Carpenters [2]											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	41.3	40.6	38.4	39.5	40.6	39.5	41.3	42.2	45.8	49.5	52.7	55.4
1-19 hours	2.4	2.5	2.3	2.2	2.0	2.2	2.2	2.1	2.2	2.0	2.0	1.8
20-39 hours	3.2	3.3	2.9	3.0	2.9	3.0	2.9	2.7	3.2	2.8	2.7	2.6
40-59 hours	3.7	4.0	3.3	3.4	3.5	3.5	3.6	3.6	3.6	3.3	3.3	3.0
60-79 hours	3.7	3.5	3.9	3.2	3.4	3.4	3.5	3.2	3.0	2.9	2.9	2.6
80-99 hours	4.5	4.6	3.7	3.7	3.9	3.8	4.3	4.1	3.8	3.8	3.4	3.4
100-119 hours	4.6	5.0	3.6	3.9	4.2	4.3	4.8	3.7	3.8	3.4	4.0	4.3
120-139 hours	7.3	8.2	5.2	5.3	6.6	5.4	6.3	5.3	5.8	4.7	7.8	7.4
140-159 hours	11.2	11.8	7.3	8.2	11.8	11.2	16.5	6.1	14.3	8.8	7.1	6.9
160-179 hours	13.2	14.7	11.0	15.8	15.5	11.1	6.7	11.7	6.3	13.2	8.2	7.2
180 hours or more	4.9	1.8	19.4	11.8	5.7	12.7	7.9	15.4	8.1	5.7	5.9	5.2
	Cement masons [2]											
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0 hours	35.0	34.1	33.1	34.0	35.2	35.1	36.7	35.5	37.7	39.5	42.7	44.7
1-19 hours	5.7	4.7	4.5	4.4	3.7	4.1	4.1	3.8	4.3	4.4	5.0	5.0
20-39 hours	3.4	4.1	3.1	3.5	3.4	3.2	3.3	3.4	3.3	3.0	3.7	4.1
40-59 hours	4.1	4.8	3.3	3.5	3.5	4.0	3.6	3.7	3.8	4.1	4.7	4.8
60-79 hours	4.4	4.6	3.2	3.1	3.4	2.7	3.7	3.8	3.3	3.1	4.4	4.2
80-99 hours	4.7	5.9	3.3	3.7	4.5	4.7	4.5	4.4	4.8	4.2	5.2	5.1
100-119 hours	6.2	7.8	4.3	4.7	5.2	5.3	5.1	4.6	5.7	4.6	5.8	5.6
120-139 hours	8.5	8.7	5.3	5.3	7.8	6.6	7.2	6.3	7.5	6.4	8.8	8.3
140-159 hours	10.7	10.5	7.8	8.5	11.4	9.6	13.8	7.4	13.3	9.6	7.3	7.5
160-179 hours	11.4	10.9	10.2	13.4	17.2	10.4	8.9	11.3	7.5	12.7	6.8	5.8
180 hours or more	5.9	3.9	21.8	15.9	4.9	14.2	9.1	15.8	8.7	8.5	5.5	5.1

[1] Fiscal year running from June 1966 to May 1967.
[2] Calendar year 1966.

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

APPENDIX B. THE MEASUREMENT OF SEASONAL UNEMPLOYMENT IN 1968

In this bulletin the procedure for estimating the proportion of seasonal to total unemployment in contract construction was as follows: [1]

1. The difference between the original and seasonally adjusted unemployment series was computed for each month of 1968 for each of these groups:

Private wage and salary workers last employed in—
- Mining
- Construction
- Durable goods manufacturing
- Nondurable goods manufacturing
- Transportation and public utilities
- Wholesale and retail trade
- Finance, insurance, and real estate
- Service industries (including domestic services)

Agricultural wage and salary workers
All other classes of workers (workers in government and self-employed and unpaid family workers)
Persons with no previous work experience

The result gives a measure of seasonal unemployment (in absolute numbers) in relation to the annual average unemployment.

2. The month of minimum seasonal unemployment according to the seasonal adjustment factors was identified (August for the construction industry).

3. The deviation of the seasonal unemployment in other months from that of the lowest month (defined equal to zero) is considered the amount of seasonal unemployment in that month. (See table B-1.)

4. The sum of the seasonal unemployment in each month over a 12-month period as a proportion of total unemployment over the same period provides a measure of the percentage of total employment accounted for by seasonality.

These computations show that 36.1 percent of all construction unemployment in 1968 could be termed seasonal. [2] Table B-2 presents these calculations for the construction industry for 1948–68.

1 Method is that described and utilized in *Unemployment: Terminology, Measurement, and Analysis* (prepared for the Joint Economic Committee by BLS, Nov. 28, 1961), pp. 81-84. An earlier description may be found in "The Extent and Nature of Frictional Unemployment" Study Paper No. 6, prepared for the Joint Economic Committee, *Study of Employment Growth, and Price Levels* (BLS, Nov. 19, 1959).

2 The extent of seasonal unemployment in construction also was measured by using a 6-month (May to October) average difference in lieu of the single month concept as outlined in step 3. This technique resulted in a somewhat lower proportion of unemployment (27.7 percent) that could be considered seasonal. (See table B-1.)

To obtain the estimated amount of seasonal unemployment for the entire labor force, the separate estimates for each group listed in step 1 were cumulated. This figure is divided by the cumulation of the number of unemployed in each of the 12 months. Table B-4 shows that 20.4 percent of the Nation's total unemployment in 1968 could be considered seasonal; private wage and salary workers in construction were responsible for 15.5 percent, of this. [3] (See table B-2.)

[3] Because of definitional changes, the addition of later data, and revisions in the basic seasonal adjustment procedures, these figures are not directly comparable with those of earlier studies. Seasonal unemployment as a percent of the Nation's total unemployment was estimated in 1960 and 1957 at 21 and 16 percent, respectively. Of this, the portion attributed to construction was 23 percent in 1960 and 19 percent in 1957.

APPENDIX B TABLES

Table B-1. Measurement of seasonal unemployment in construction, 1968 [1]

(Thousands of workers)

Procedure	January	February	March	April	May	June	July	August	September	October	November	December
1. Original series	443	421	382	220	185	229	189	163	127	148	220	232
2. Seasonal adjusted series	287	268	282	201	240	275	245	247	201	213	236	203
3. Difference (1-2)	156	153	100	19	-55	-46	-56	-84	-74	-65	-16	29
4. Deviations:												
a. From month of minimum difference	240	237	184	103	29	38	28	0	10	19	68	113
b. From 6-month (May to October) average difference	219	216	163	82	0	0	0	0	0	0	47	92
5. Total seasonal unemployment:												
Sums of row 4a	1,069											
Sums of row 4b	819											
6. Seasonal unemployment as a percent of total unemployment:												
a. Based on single month:	1,069÷2,959 [2]=36.1											
b. Based on 6-month average:	819÷2,959 [2]=27.7											

[1] Experienced private wage and salary workers.
[2] Sum of line 1.

SOURCE: Current Population Survey conducted for the BLS by the Bureau of Census.

Table B-2. Seasonal unemployment as a percentage of total reported experienced unemployment: Private wage and salary workers in construction, 1948–68

Year	Percent
1948	39.5
1949	39.0
1950	31.6
1951	41.7
1952	35.2
1953	38.2
1954	47.5
1955	44.7
1956	37.5
1957	38.4
1958	39.5
1959	42.3
1960	39.5
1961	39.2
1962	34.4
1963	35.4
1964	37.9
1965	39.6
1966	38.9
1967	32.7
1968	36.1

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table B-3. Distribution of seasonal and nonseasonal unemployment by industry of last full-time job, 1968

Industry	Seasonal	Non-seasonal
All workers		
Total	100.0	100.0
Experienced private wage and salary workers	62.6	75.4
Construction	15.5	7.0
Manufacturing:		
Durable goods	7.8	14.4
Nondurable goods	6.2	12.8
Transportation and public utilities	3.9	2.9
Wholesale and retail trade	14.8	19.1
Finance, insurance, and real estate	2.1	2.8
Other industries [1]	12.4	16.4
Agricultural wage and salary workers	5.6	2.4
All other classes of workers	10.2	9.5
No previous work experience	21.7	12.6
Experienced private wage and salary workers		
Total	100.0	100.0
Construction	24.7	9.3
Manufacturing:		
Durable goods	12.5	19.1
Nondurable goods	9.8	17.0
Transportation and public utilities	6.2	3.8
Wholesale and retail trade	23.7	25.3
Finance, insurance and real estate	3.4	3.7
Other industries [1]	19.7	21.8

[1] Includes mining, service industries, forestry, fisheries, and domestics.

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

Table B-4. Seasonal unemployment as a percent of total unemployment, by industry of last full-time job, 1968

Industry	Percent
Total	20.4
Experienced private wage and salary workers	17.6
Construction	36.1
Manufacturing:	
Durable	12.2
Nondurable	11.0
Transportation and public utilities	25.6
Wholesale and retail trade	16.7
Finance, insurance, and real estate	16.3
Other industries [1]	16.2
Agricultural wage and salary workers	37.3
All other classes of workers	21.5
No previous work experience	30.6

[1] Includes mining, service industries, forestry, fisheries, and domestics.

SOURCE: Current Population Survey conducted for the BLS by the Bureau of the Census.

APPENDIX C. MEASURING THE EFFECT OF WEATHER ON EMPLOYMENT IN CONTRACT CONSTRUCTION

Problem

In an effort to determine the effects of weather conditions on employment, weather data for Chicago were correlated with employment data for the same city in the same time period.

Data regarding temperature, rainfall, snowfall, snow accumulation, and peak wind gusts for the city of Chicago, daily, 1958–64, were obtained from the Weather Bureau, Environmental Science Administration. Contract construction employment and unemployment data were from the Current Population Survey and Establishment Survey of the Bureau of Labor Statistics. Data reflecting construction demand in Chicago were obtained from the Bell Savings and Loan Institution, Chicago, Ill. Various multiple regression equations using these data were then tested and evaluated. [1]

Procedure

Testing began with the simple correlation of several independent variables and contract construction employment. (See table C-1.) Next, several hypotheses concerning the relationship of weather conditions and employment in Chicago were tested using multiple regression analysis, and the coefficients were examined for significance in terms of Student's t–distribution. [2] Following are a few of the hypotheses that were tested:

A. Does the level of employment depend on and vary with each type of weather condition? Repeated tests indicated that temperature was a significant variable in explaining changes in employment levels. When dummy variables specific to the seasons were included in the regressions, no weather variable, excluding temperature was significant. Thus, it did not appear that the level of employment was strongly associated with specific weather conditions other than temperature. (See table C-2, equation 1 and 2.)

B. Do specific weather conditions help to explain that variance of employment which is not explained by demand factors? (See table C-2, equation 3.) A linear time trend was fitted to the data and deviations from the trend obtained. These deviations were regressed on variables representing weather conditions. (See table C-2, equation 4.) Temperature, peak gusts, and the chill factor (the product of peak gusts and temperature) showed significant coefficients. In this test, the variation of employment around the trend was affected by specific weather conditions.

C. If specific weather conditions explicitly are accounted for, as well as changes in secular demand, and national employment conditions, are there indications that employment in construction is related to institu-

[1] The ideal weather test would have been to correlate hours of work recorded each day with daily weather data. Payroll data, however, relate only to the week including the 12th of each month. For purposes of comparability, this necessitated constructing weekly weather series that measured conditions in the week of the employment survey. Additional insight might have been gained using the same technique for several cities to determine the variations among them.

[2] Some interest also is attached to the general explanatory value of the equations estimated, as represented in the multiple correlation coefficient. The employment data are strongly autocorrelated, as may be expected in monthly series, and the problem of serial correlation is pervasive in these studies. (See the Durbin–Watson statistics, table C-2.) Briefly, equations in which the error terms are serially correlated may be expected to contain unbiased estimates of regression coefficients, but to overestimate the precision of the standard errors of the coefficients. Hence, significant tests are open to some error. In essence, there is danger of accepting the significance of a coefficient that is actually insignificant. Essentially the study has made no attempt to utilize estimation procedures designed to improve the efficiency of the t–test in the serial correlation situation.

tional practices regarding winter building as well as weather conditions? The deviation of contractors' employment from a linear time trend was fitted to an equation involving the following variables: Precipitation, snow accumulation, temperature, chill factor, value of building permits issued in Chicago, the national unemployment rate for experienced construction wage and salary workers, and seasonal dummies representing December–January–February, March–April–May, and June–July–August. In this equation temperature, the unemployment rate, and the winter and spring dummy variables showed significant coefficients. (See table C-2, equation 5.) Thus, quite independently of actual weather and demand conditions a seasonal pattern emerged. The expectations of contractors and owners regarding winter construction seem to result in a reduction in employment in winter below that which would have been anticipated as a result of actual weather and demand conditions.

D. Is there a threshold range in the response of employment to temperature? Apparently employment responds to temperature increases within a favorable range but is nonresponsive below that range. Deviations in employment from a time trend were fitted to an equation including truncated temperature variables. One variable included all temperatures above 40 degrees. The other variables represented temperatures below 40 degrees, with zeros in observations for which the temperature exceeds 40 degrees. In a multiple regression framework involving other weather conditions and demand variables, and seasonal dummy variables, four variables were significant: Temperature above 40 degrees, the construction unemployment rate nationally, and seasonal dummy variables for the winter and spring. Thus, the hypothesis of a threshold in temperature that affects contractors' reactions to weather conditions was not rejected. (See table C-2, equation 6.)

APPENDIX C TABLES

Table C-1. Simple correlation coefficients—dependent (employment) and independent (weather and other) variables

Variables	Simple correlation coefficient with	
	Employment in contract construction Chicago, monthly, 1958–64	Deviation of employment from a linear time trend, monthly, 1958–64
Temperature	0.79358	0.86626
Temperature above 40°	.80604	.89293
Temperature below 40°	-.69200	-.78503
Precipitation	.15476	.19436
Snow accumulation	-.52150	-.60932
Peak gusts	-.29598	-.32178
Peak gusts X temperature	.66491	.72611
Time	-.37251	0
Value of building permits, Chicago	.52390	.55364
Construction unemployment rate, U.S.A	-.72838	-.88407
Dummy: December-January-February	-.65142	-.71627
Dummy: March-April-May	-.16865	-.20563
Dummy: June-July-August	.50475	.54868

SOURCE: Bureau of Labor Statistics.

Table C-2. Equations used in correlation analysis for Chicago, 1958-64

Equation	R^2 [1]	Durbin-Watson	Regression coefficient	t-value	Partial correlation coefficient
Equation 1	0.7824	0.9704			
Dependent variable					
Employment in contract construction					
Independent variables					
Mean temperature [2]			0.4504	[3]11.4184	0.7891
Precipitation [2]			-1.3134	-.6663	-.0748
Snowfall [2]			-1.3958	-1.1764	-.1312
Time (linear trend)			-.1850	[3]-7.6390	-.6518
Constant (intercept)			92.2978		
Equation 2	.6742	.6985			
Dependent variable					
Employment in contract construction					
Independent variables					
Mean temperature			.2980	[3]2.7790	.3074
Precipitation			-2.7853	-1.1191	-.1290
Snow accumulation			.0400	.0513	.0060
Chill factor (peak gusts X temperature)			.0011	.2822	.0328
Value of permits issued in Chicago			.0001	1.5029	.1721
Unemployment rate in construction, USA			1.0007	1.0916	.1259
Dummy: December-January-February			-9.1737	[3]-2.8783	-.3173
Dummy: March-April-May			-9.0462	[3]-3.7991	-.4040
Dummy: June-July-August			-2.2559	-.9038	-.1045
Constant (intercept)			85.2388		
Equation 3	.8012	.9647			
Dependent variable					
Employment in contract construction					
Independent variables					
Temperature			.9344	[3]5.2792	.5180
Precipitation			5.5056	.5109	.0585
Snow accumulation			-.8962	[4]-1.4491	-.1640
Peak gusts			1.0065	2.6122	.2870
Chill factor			-.0217	[3]-2.9073	-.3164
Time			-.1877	[3]-7.9869	-.6755
Precipitation X temperature			-.0915	-.5786	-.0662
Constant (intercept)			69.0573		
Equation 4	.7692	.9648			
Dependent variable					
Deviation of employment from a Linear time trend					
Independent variables					
Temperature			.9341	[3]5.2775	.5179
Precipitation			5.4952	.5099	.0584
Snow accumulation			-.8960	-1.4488	-.1639
Peak gusts			1.0058	[4]2.6105	.2869
Chill factor			-.0217	[3]-2.9056	-.3162
Time			-.0133	-.5659	-.0648
Precipitation X temperature			-.0913	-.5776	-.0661
Constant			44.9621		
Equation 5	.8450	1.082			
Dependent variable					
Deviation of employment from a Linear time trend					
Independent variables					
Temperature			.2642	[3]3.8497	.4085
Precipitation			-.9153	-.5746	-.0666
Snow accumulation			-.5429	-1.0879	-.1255
Chill factor			-.0001	-.0395	-.0046
Permit value			0	1.6598	.1895
Construction unemployment rate, USA			-1.3855	[4]-2.3616	-.2647
Dummy: December-January-February			-7.8640	[3]-3.8550	-.4090
Dummy: March-April-May			-7.5741	[4]-4.9701	-.5003
Dummy: June-July-August			.2321	.1453	.0169
Constant			[4]3.2822		
Equation 6	.8657	.9841			
Dependent variable					
Deviation of employment from a Linear time trend					
Independent variables					
Temperature greater than 40°			.1884	[3]3.6215	.3880
Temperature less than 40°			.0183	.2110	.0245
Precipitation			-.4555	-.3098	-.0360
Snow accumulation			-.9230	-1.9545	-.2216
Permit value			.0300	1.4153	.1623
Unemployment rate in construction, USA			-1.2830	[4]-2.2844	-.2567
Dummy: December-January-February			-5.8213	[3]-2.9184	-.3213
Dummy: March-April-May			-6.0757	[3]-4.4131	-.4565
Dummy: June-July-August			1.1161	.7463	.0864

[1] Corrected for degrees of freedom.
[2] All weather variables are measured for the week of the month in which the employment survey were conducted.
[3] Significant at 1 percent level.
[4] Significant at 5 percent level.

SOURCE: BLS, weather employment tests.

APPENDIX D. THE EFFECT OF WEATHER ON CONSTRUCTION OPERATIONS [1]

In order to get a greater understanding of the relationship of the seasons and the weather to construction activity, examination of the specific effects of weather on each of the various types of construction work is necessary. This appendix describes what construction operations are technologically feasible given specific types of bad weather.

Workers perform the work or cause the work to be performed. A construction operation that may be technologically feasible given certain weather conditions may not be performed because workers are unable or unwilling to work under the required circumstances.

Additionally, combinations of weather factors can affect construction workers much more seriously than any single factor. Wind and temperature together can have a much greater effect on building activities than wind or temperature alone. If the temperature were zero with no wind, a worker may not be as uncomfortable as if the temperature were 40 degrees and the wind 10 miles an hour. Called the wind-chill factor, combinations of temperature and wind influence the rate at which the body will lose heat under given conditions. (See chart 2.) Chart 4 indicates how the factor varies through the year at selected places in the United States. Wind chill usually is greatest in January, although in Washington, D.C., it is greatest in February. In most places it is least in July, but in San Francisco it is least in October. Washington, D.C., has a moderate wind-chill factor throughout the year, comparable to the factor at Salt Lake City. Caribou, Maine has the most severe shown—it has a higher wind-chill in midsummer than Miami in midwinter. Chart 3 shows that the wind-chill factor through the course of a usual summer and winter day. The rhythmic warming during the daylight hours and cooling at night is apparent.

The discussion that follows refers mostly to the relationship between weather and the technological feasibility of various construction operations. Some general comments about the various weather conditions are in order:

Rain

The effect of rain is a function of the amount and is not equally significant for all operations. Rain so light that it is only a mist will stop structural steel work while a moderate rain will not stop forming (outside carpentry) in some cases.

Snow and sleet

Snow usually is accompanied by other elements that are adverse to construction operations. With snow the worker efficiency usually is not affected unless snowfall is moderate to heavy. However, in some cases, such as concrete work, all the forms have to be cleaned before work can commence.

Freezing rain

Where the intensity of freezing rain is great, outdoor construction is nearly impossible and even indoor work may be difficult to schedule because of delivery problems.

Chart 2.

Chill Factor for Selected Wind Speeds

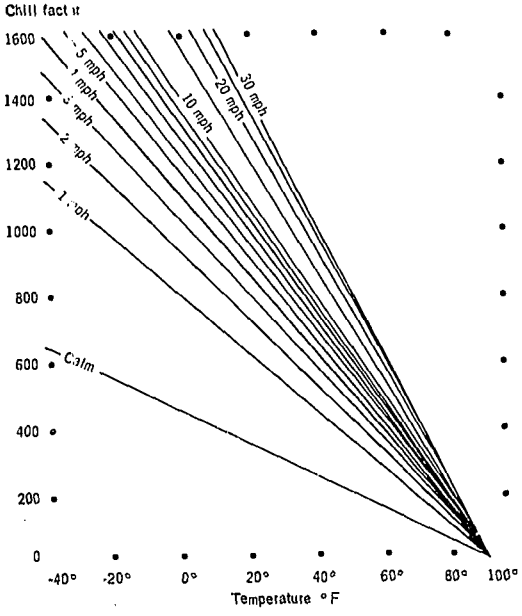


Chart 3.

Wind Chill - Diurnal Variation

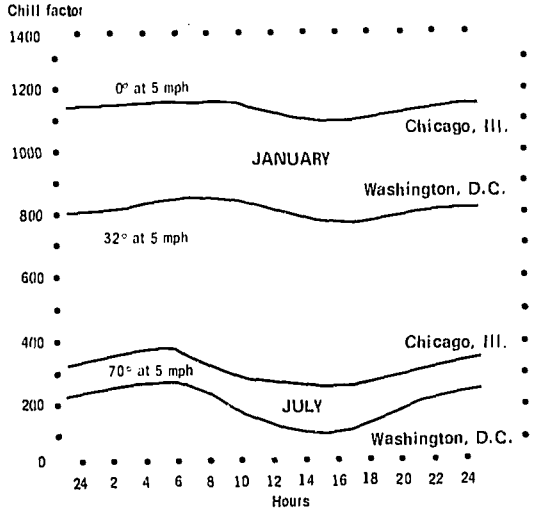
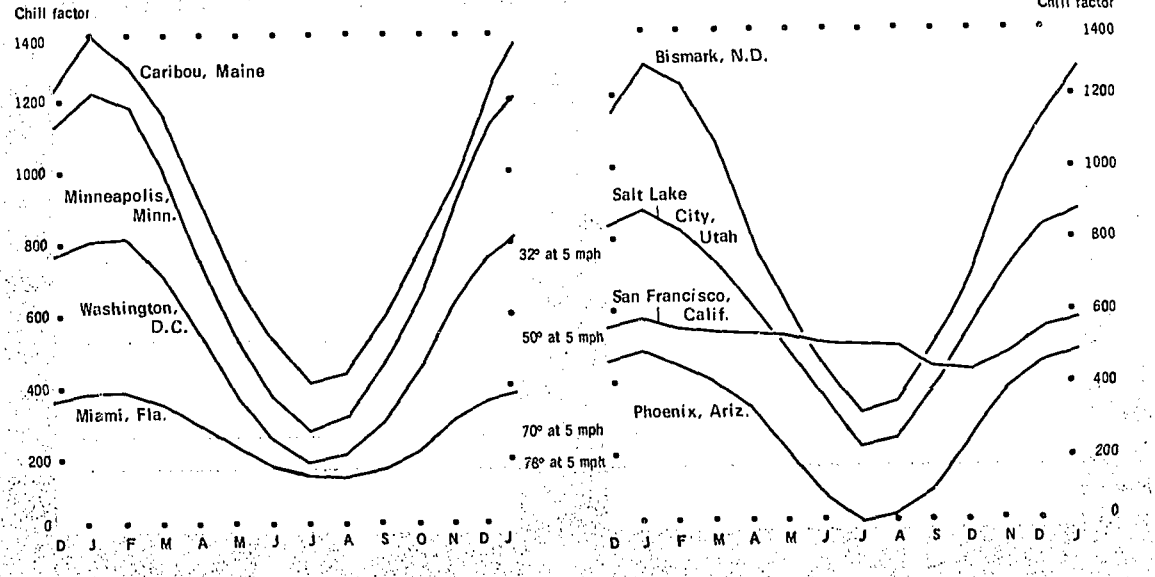


Chart 4.

Annual March of Wind Chill

Selected Cities



Source: "How Cold Is It?", an article by G. C. Bristow, of the Climatological Services Division, U.S. Weather Bureau and published in the Weekly Weather and Crop Bulletin, Volume XLII, No. 48, November 28, 1955, pages 6-8.

Low temperature

Where protection is not provided, extreme cold may adversely affect almost every element of construction. This extreme "cold" varies from below freezing (32 degrees F.) to 50 degrees F. Exterior painting requires temperature no lower than 45 degrees F. Concrete cannot be poured without protection (such as shelter) or some other protection measure (such as additives) if the temperature during setting and initial curing will drop below freezing (32 degrees F.).

High temperature

High temperatures adversely affect only a few operations such as surveying, in which the equipment is sensitive to heat and concrete work where the cure will be too fast.

Wind

All outdoor construction is affected by strong winds; the most sensitive is structural steel and roofing. In addition, wind accentuates the action of the cold.

Fog

Fog has an impact on delivery of materials and on excavation work as well as work on dredging and cofferdams.

Ground freeze

Ground freeze is a major factor of concern in concrete work in most areas of the United States. In some sections of Alaska frozen ground is a requirement for some projects in order to get equipment into place.

Effects of climate on construction operations

1. *Surveying.* Although sometimes performed in light rain or drizzle, normally such a situation is avoided. The efficiency of the surveyor is reduced and damage to the equipment is possible even in light rain. The same situation would occur with any other form of precipitation and even fog would hinder this operation.

2. *Demolition and clearing* (also see 6 and 7). Depending on the site involved and on the construction to be undertaken, demolition and clearing may range from a minor operation such as the removal of fencing and bushes to the complicated and dangerous demolition of a tall building in a congested urban area.

While the minor activities would be almost independent of weather, building demolition involving the use of cranes and special equipment and the presence of hazardous conditions of work would be highly sensitive to any form of precipitation, particularly freezing rain, high winds, low temperatures, and fog.

3. *Temporary work on site.* Temporary work on site may range from the erection of a workers' shack to the construction of a whole prototype building section. Usually it will involve the construction of shacks, offices, drafting accommodations, material stores, security facilities, and the erection of fencing. Some important temporary work may be required to ensure adequate facility for the delivery of material. Most of these operations will be affected by precipitation in all forms and low temperatures.

4. *Delivery of materials.* Most materials delivered at a construction site arrive by some form of road transport.

Any form of road transport is subject to limitation by weather elements, particularly frozen or freezing precipitation, fog, and drying conditions. If drying is such that muddy conditions develop at a construction site, delivery may be seriously hampered, even though these conditions may exist over a relatively small area. In some areas of Alaska the roads are useable only when they are frozen.

Many materials must arrive on site at a fairly closely scheduled time, either to avoid difficult or hazardous storage or to fit in with some critical condition for progress. Thus, trafficability of the area and its approaches are most important.

5. *Material stockpiling.* While to some extent material is stockpiled in each of the four major categories of construction, it is only considered a major operation in industrial building construction. In residential building, for example, most of the materials are delivered on the day they are to be used and are not left exposed to the weather for long durations. In the building of industrial establishments, on the other hand, material is stockpiled for long periods, often requiring temporary protection.

The major considerations in the stockpiling operation are whether or not the product is *perishable* and worker efficiency during the actual operation.

6. and 7. *Site grading and excavation—including earth clearing (part of 2), and backfilling (19).* Earthwork within the construction industry is extremely weather sensitive. Precipitation and low temperature are the elements most likely to interfere with earthwork.

8. *Piledriving.* Piledriving may be required in any category of construction but it is unlikely in the building of residential homes.

Piledriving requires the use of heavy crane-like equipment which is likely to be affected by high winds, freezing precipitation and wet ground. Ground conditions are important both for positioning equipment and for the quality of the work produced. Any severe storm will make this operation hazardous.

9. *Dredging.* Although an important operation, dredging is likely to be required only in the category of heavy and specialized construction. The main influence of weather on this operation is likely to be the effect on worker efficiency. In addition to the chill factor, workers are subject to very wet conditions as the dredger carries out excavation under water. Severe storms, flooding, and abnormal tides will interfere with this operation. Fog is most likely in this environment and may prevent work.

10. *Erection of cofferdams.* Usually associated with heavy and specialized construction or with highways and bridging, the erection of cofferdams is necessary to retain water away from an area in which construction is taking place. The construction and utility of a cofferdam will depend on a knowledge of local tides, which may overflow the dam if unusually high. Severe storms and heavy precipitation may damage the dam and the work it is protecting. The predictable low water levels that occur in the winter months in the northern regions of the United States may facilitate these operations.

11. *Forming.* Forming is relatively rough carpentry which frequently is performed outdoors and is not affected seriously by light rain. Weather effects on this operation are limited mostly to direct influence on worker efficiency. Where possible, and when construction is somewhat standardized, forms may be prefabricated so that exposed outdoor work may be kept to a minimum.

12. *Emplacing reinforcing steel.* Before pouring of concrete the steel must be completely free of any frozen precipitation so that protection is necessary and drainage must be assured. Weather effects are likely to be confined mostly to worker efficiency.

13. *Quarrying.* Quarrying consists of extraction of stone from the soil, either by excavation, hand digging, or blasting.

Heavy machinery is used to crush the stone, after which it is washed and machine-grated into the desired size ranges.

Heavy precipitation or freezing rain will affect the quarrying operation. Temperatures below freezing may cause trouble in the washing processes. If blasting is carried out under conditions of inversion at low level, serious damange may be caused to surrounding property. Weather influence on worker efficiency and the effects of low temperatures are likely to be the most significant factors in quarrying.

14. *Delivery of premixed concrete.* Delivery of concrete is extremely weather-sensitive in that the scheduling of drivers is a highly complex decision process which must be related both to future weather and to the requirement for concrete.

Fog may so delay a delivery as to create problems on the amount of mixing which is normally timed to completion on arrival at site. In addition, drying conditions and precipitation may cause considerable difficulty at sites which have difficult access even under dry conditions.

15. *Pouring concrete foundation and walls.* Concrete pouring is among the most sensitive construction operations. Low temperature is the major factor of concern as pouring cannot take place on frozen ground or at temperatures below freezing without protection and the application of heat.

Protection also is needed against any precipitation, particularly snow or freezing rain. Since most concrete pouring can be satisfactorily performed during periods of light rain or drizzle, scheduling is not throught to be significantly affected until rainfall reaches the moderate to heavy ranges. However, in some instances contractors cancel their orders when any rain is falling to avoid the consequences of a possible heavier fall. Scheduling is highly dependent on the current weather conditions.

Concrete is most susceptible to rain damage in the first 4 hours after pouring. One heavy shower has more damaging power than a full day of continuous light rain. Walls and thin sections of concrete are least vulnerable and usually are readily protected, but it is possible, at increased cost, to protect slabs and decks from moderate to heavy rain by covering them with portable panels.

16. *Stripping and curing concrete.* When concrete has set and hardened somewhat, the wooden forms which serve to confine and shape the structure may be removed. This process may involve partial destruction of the forms; however, arrangements usually are made so that whole sections will be removeable as required.

Two weather factors which may interfere with stripping are a chill factor which seriously reduces worker efficiency or freezing conditions which make it extremely difficult to detach the wood from the concrete.

During the curing process concrete must be maintained in a relatively moist atmosphere while hydration is completed within the structure. Too rapid drying will lead to an inferior product but may be avoided by covering the structure to restrict evaporation. Under freezing conditions concrete also must be protected and possibly heated during curing.

17. and 29. *Installing underground plumbing and trenching and installing pipe.* Outdoor plumbing activities involve work which is weather sensitive from the point of view of worker efficiency. In addition the movement of equipment and materials may be hindered by wet ground conditions.

18. *Waterproofing.* Waterproofing involves the positioning of an impervious layer so as to prevent the ingress of moisture into a structure. It may take the form of a plastic sheet or of bitumen mastic which is painted, spread, or troweled into position.

Low temperatures will adversely affect both worker efficiency and the working characteristics of the material which hardens and tends to lose its adhesive properties while becoming difficult to apply.

19. *Backfilling* (see 6 and 7).

20. *Erecting structural steel.* Worker safety is the primary factor for consideration in the erection of steelwork so that high winds, low temperatures, or any precipitation causing slippery conditions will affect the operation.

Protection is usually difficult or impossible to provide.

Although the low temperature limit is related entirely to worker efficiency it must be higher than that associated with operations of a less hazardous nature.

21. *Exterior carpentry; exterior cladding (23); installing metal siding; (24), and installing windows and doors and glazing (31).* In each of these operations worker efficiency is the important factor and any condition which affects this is significant.

Any rain can have an effect on finished outdoor carpentry. During even light precipitation, tools and lumber become wet, work becomes difficult and efficiency is low. Thus, although carpenters will work during light rain, it is concluded that there is an effect during all rain intensities.

The temperature limitations which can interfere are those indicated by a chill factor of more than 1000 or a temperature/humidity index of more than 77.

22. *Exterior masonry.* The operation of exterior masonry work is very sensitive to weather, both from the standpoint of worker efficiency and the quality of product.

Precipitation and low temperatures are the weather elements most significant. In general, masonry work cannot be continued if it is exposed to any precipitation. Either shelter must be provided or work must cease. Brick must be covered to avoid the danger of freezing after being wetted by freezing or frozen precipitation. The construction of masonry structures is even more sensitive to low temperatures than is the construction of concrete structures, largely because it is laid in thinner structures.

23. and 24. *Exterior cladding and installing metal siding* (see 21).

25. *Fireproofing.* Fireproofing consists of the application to building structures of material which both is noninflammable and will not support burning. Fireproofing may be applied in the form of sheet material in interior partitioning, asbestos/cement or asbestos/gypsum plasterboard, or as a plastic cement applied directly onto structural steel or lumber, in which case the material may be troweled or sprayed on. Both precipitation and low temperature will interfere if the work is exposed, but only worker efficiency considerations will apply when the work is carried out under protection (building at least partially closed in).

26. *Flooring and other indoor work* including *interior carpentry (32), interior masonry (33), plastering (34), tile work (35), interior plumbing, electrical work, etc., (36), and interior painting and decorating (37).*

Generally, indoor construction operations are not significantly affected by weather. However, the general reduction in outdoor work due to winter weather does have an indirect effect on all indoor work. In general, insufficient indoor work is maintained to last the entire winter season, especially when cold conditions persist for 3 months or more.

Indoor masonry, painting, and decorating require temperatures above freezing, but the overall requirement is that conditions shall not reduce worker efficiency. Only temperature and humidity are of significance and it is possible to maintain these at satisfactory conditions by heating or cooling the building.

27. *Roofing.* Roofing is very sensitive to weather conditions because of the use of perishable asphalt material and constant exposure of the workers. The operation is highly sensitive to precipitation of any type or intensity. For builtup roofing, dry weather for 2 to 3 days is necessary. Freezing or frozen precipitation

necessitates additional operations and increased cost in order to complete the operation satisfactorily. Strong winds and icy conditions are also major deterimental factors.

28. *Cutting concrete pavement.* The operation of cutting concrete pavement is usually outdoor work and involves not only the cutting but the removal of the concrete, so it is similar to demolition (2), site grading (6), and excavation (7). Precipitation and extreme cold are the weather factors that will interfere with this operation.

29. *Trenching and installing pipe* (see 17).

30. *Bituminous concrete pouring* (see 42).

31. *Installing windows and doors, glazing* (see 21).

32, 33, 34, 35, 36, and 37. *Interior carpentry, masonry, plastering, tile work, plumbing, heating, electrical and painting* (see 26).

38. *Exterior painting.* The main factors affected by weather in exterior painting are the perishable product, the quality of the work, and worker efficiency. Any precipitation or dense fog will halt an exterior painting operation. Shelter or protection must be provided during both the painting and drying periods. Painting is generally not attempted at temperatures below 45 degrees to 50 degrees F. because the quality of the work is significantly reduced below this temperature. Generally, outdoor painting is not attempted during questionable weather conditions. The painter usually has enough indoor work to keep him busy some of the time when inclement weather occurs.

39. *Installation of culverts and incidental drainage.* The installation of culverts and drainage is in most instances performed out of doors and is seriously hindered by rain, cold, and flooding.

40. *Landscaping.* Landscaping includes site grading and shaping, as well as seeding and planting trees and bushes. This operation generally can be performed during periods of light rain or drizzle as long as accumulations do not create muddy conditions. However, moderate to heavy rain is considered the limit for practical landscaping performance; workers become inefficient and seeds are washed away under these conditions.

Any snow creates a hindrance to the landscaping operation. Ground visibility is restricted by any snow cover and the usually accompanying frozen ground makes landscaping operations inefficient.

Excessive drying may give rise to dusty conditions which will interfere with work.

42. *Paving including bituminous concrete pouring (30).* Paving may consist of concrete or asphalt as is usual with residential homes, or of bituminous concrete which is usual in the construction industry.

Bituminous concrete is sensitive to precipitation in any form or intensity. Any precipitation can cause cracking and permanent damage to the pavement. The material usually sets faster than portland cement concrete but is still sensitive to precipitation for generally 1 to 3 hours after pouring, according to drying conditions.

The quality of the pavement is reduced greatly by pouring at temperatures below about 45 degrees F. Work usually is not carried out when the temperature is likely to approach this limit.

43. *Fencing, installing lights signs, etc., and traffic protection (41).* The operations of fencing, installing light signs, and traffic protection are very similar and are common to all categories of construction, but they are relatively unimportant to home building.

Moderate precipitation of either rain or snow will interfere and even light freezing rain may halt work. Dense fog becomes a factor of concern when the operation is taking place in connection with highway construction.

Effects of temperature and humidity are limited to the maintenance of worker efficiency.

APPENDIX D TABLES

Table D-1. Composite list of operations which are important in the industry [1]

Item	Operation	Construction category			
		Heavy and specialized	Highways	General buildings	Residential homes
1	Surveying	x	x	x	x
2	Demolition and clearing	x	x	x	x
3	Temporary work on site	x	x	x	-
4	Delivery of materials	x	x	x	x
5	Material stockpiling	x	x	x	-
6	Site grading	x	x	x	x
7	Excavation	x	x	x	x
8	Pile driving	x	x	x	-
9	Dredging	x	-	-	-
10	Erection of coffer dams	x	-	-	-
11	Forming	x	x	x	x
12	Emplacing reinforcing steel	x	x	x	-
13	Quarrying	-	x	-	-
14	Delivery of premixed concrete	x	x	x	x
15	Pouring concrete foundations and walls	x	x	x	x
16	Stripping and curing concrete	x	x	x	x
17	Installing underground plumbing, etc	-	x	x	x
18	Waterproofing	-	-	x	x
19	Backfilling	x	x	x	x
20	Erecting structural steel	-	-	x	-
21	Exterior carpentry	-	-	-	x
22	Exterior masonry	-	-	x	x
23	Exterior cladding	-	-	-	x
24	Installing metal siding	-	-	x	x
25	Fireproofing	-	-	x	-
26	Flooring	-	-	x	x
27	Roofing	-	-	x	x
28	Cutting concrete pavement	x	-	-	-
29	Trenching and installing pipe	x	-	-	-
30	Bituminous concrete pouring	x	x	-	-
31	Installing windows and doors and glazing	-	-	x	x
32	Interior carpentry	-	-	x	x
33	Interior masonry	-	-	x	x
34	Interior plastering	-	-	x	x
35	Interior tile work (ceramic, vinyl, asbestos, and acoustic)	-	-	x	x
36	Interior plumbing, ventilating, heating, and electrical work	-	-	x	x
37	Interior painting and decorating	-	-	x	x
38	Exterior painting	-	-	x	x
39	Installing culverts and incidental drainage	x	x	-	-
40	Landscaping	x	x	x	x
41	Traffic protection	x	x	x	-
42	Paving	x	x	x	x
43	Fencing, installing lights, signs, etc	x	x	x	-

[1] The operations are given in the approximate order in which they would be carried out. In all subsequent tables, the operations are identified by the numbers they have here.

SOURCE: The Operational and Economic Impact of Weather on the Construction Industry of the United States, U.S. Weather Bureau Contract CWb-10948, the Travelers Research Center, Inc., 250 Constitutional Plaza, Hartford, Connecticut, March 1965.

Table D-2. Critical limits of weather elements having significant influence on construction operations

Item	Operation	Rain	Snow and sleet	Freezing rain	Low temperatures (F.°)	High wind (m.p.h.)	Dense fog	Ground freeze	Drying conditions	Temperature inversion	Flooding and abnormal tides
1	Surveying	[1]L	L	L	0— -10	25	[2]x	-	-	-	-
2	Demolition and clearing	M	M	L	0— -10	15—35	x	x	-	x	-
3	Temporary work on site	M	M	L	0— -10	20	x	x	-	-	-
4	Delivery of materials	M	M	L	0— -10	25	x	-	-	-	-
5	Material stockpiling	L	L	L	0— -10	15	x	-	-	-	-
6	Site grading	M	M	L	20—32	15—25	x	x	x	-	-
7	Excavation	M	M	L	20—32	35	x	x	x	x	-
8	Pile driving	M	M	L	0— -10	20	x	x	-	-	x
9	Dredging	M	M	L	0— -10	20	x	[3]x	-	-	x
10	Erection of coffer dams	M	L	L	32	25	x	x	x	-	x
11	Forming	M	M	L	0— -10	25	-	x	-	-	-
12	Emplacing reinforcing steel	M	M	L	0— -10	20	-	x	-	-	-
13	Quarrying	M	M	L	32	25—35	x	x	x	x	-
14	Delivery of premixed concrete	M	L	L	32	35	x	x	-	-	-
15	Pouring concrete foundation and walls	M	L	L	32	35	-	x	x	-	-
16	Stripping and curing concrete	M	M	L	32	25	-	x	x	-	-
17	Installing underground plumbing, etc	M	M	L	32	25	-	x	x	-	-
18	Waterproofing	M	M	L	32	25	-	x	-	-	-
19	Backfilling	M	M	L	20—32	35	x	x	x	-	-
20	Erecting structural steel	L	L	L	10	10—15	x	-	-	-	-
21	Exterior carpentry	L	L	L	0— -10	15	-	-	-	-	-
22	Exterior masonry	L	L	L	32	20	-	x	x	-	-
23	External cladding	L	L	L	0— -10	15	-	-	-	-	-
24	Installing metal siding	L	L	L	0— -10	15	-	-	-	-	-
25	Fireproofing	L	L	L	0— -10	35	-	-	-	-	-
26	Flooring										
27	Roofing	L	L	L	45	10—20	-	-	x	-	-
28	Cutting concrete pavement	M	M	L	0— -10	35	-	x	-	-	-
29	Trenching, installing pipe	M	M	L	20—32	25	-	x	x	-	-
30	Bituminous concrete pouring	L	L	L	45	35	x	x	x	-	-
31	Installing windows and doors, glazing	L	L	L	0— -10	20—20	-	-	-	-	-
32	Interior carpentry										
33	Interior masonry										
34	Plastering										
35	Interior tile work (ceramic, vinyl, asbestos, and acoustics)										
36	Interior plumbing, ventilating, heating and electrical work										
37	Interior painting and decorating										
38	Exterior painting	L	L	L	45—50	15	x	-	x	-	-
39	Installing culverts and incidental drainage	M	L	L	32	25	-	x	x	-	x
40	Landscaping	M	L	L	20—32	15	x	x	x	-	-
41	Traffic protections	M	M	L	0— -10	15—20	x	x	-	-	-
42	Paving	L	L	L	32—45	35	x	x	x	-	-
43	Fencing, installing lights, signs, etc	M	M	L	0— -10	20	x	x	-	-	-

[1] L indicates light; M indicates moderate.
[2] Indicates operation is affected by this condition.
[3] Water freeze. xxxx These operations are carried out in the interior of the building and are not directly exposed to external weather conditions.

SOURCE: The Operational and Economic Impact of Weather on the Construction Industry of the United States, U.S. Weather Bureau Contract CWb-10948, the Travelers Research Center, Inc., 250 Constitutional Plaza, Hartford, Connecticut, March 1965.

Table D-3. Critical limits of weather elements having significant influence on construction of residential homes

Item	Operation	Rain	Snow and sleet	Freezing rain	Low temperatures (F.°)	High wind (m.p.h.)	Dense fog	Ground freeze	Drying conditions	Temperature inversion	Flooding and abnormal tides
1	Surveying	[1] L	L	L	0— -10	25	[2] x	-	-	-	-
2	Demolition and clearing	M	M	L	0— -10	15–35	x	x	x	-	-
4	Delivery of materials	M	M	L	0— -10	25	x	-	-	-	-
6	Site grading	M	M	L	20—32	15–25	x	x	x	-	-
7	Excavation	M	M	L	20—32	35	x	x	x	x	-
11	Forming	M	M	L	0— -10	25	-	x	-	-	-
14	Delivery of premixed concrete	M	L	L	32	35	x	x	-	-	-
15	Pouring concrete foundation and walls	M	L	L	32	35	-	x	x	-	-
16	Stripping and curing concrete	M	M	L	32	25	-	x	x	-	-
18	Waterproofing	M	M	L	32	25	-	x	-	-	-
19	Backfilling	M	M	L	20—32	35	x	x	x	-	-
21	Exterior carpentry	L	L	L	0— -10	15	-	-	-	-	-
22	Exterior masonry	L	L	L	32	20	-	x	x	-	-
23	External cladding	L	L	L	0— -10	15	-	-	-	-	-
24	Installing metal siding	L	L	L	0— -10	15	-	-	-	-	-
27	Roofing	L	L	L	45	10–20	-	-	x	-	-
31	Installing windows and doors, glazing	L	L	L	0— -10	10–20	-	-	-	-	-
38	Exterior painting	L	L	L	45—50	15	x	-	x	-	-
40	Landscaping	M	L	L	20—32	15	x	x	x	-	-
42	Paving	L	L	L	32—45	35	x	x	x	-	-

[1] L indicates light; M indicates moderate.
[2] Indicates operation is affected by this condition.

SOURCE: The Operational and Economic Impact of Weather on the Construction Industry of the United States, U.S. Weather Bureau Contract CWb-10948, the Travelers Research Center, Inc., 250 Constitutional Plaza, Hartford, Connecticut, March 1965.

Table D-4. Critical limits of weather elements having significant influence on construction of highways

Item	Operation	Rain	Snow and sleet	Freezing rain	Low temperatures (F.°)	High wind (m.p.h.)	Dense fog	Ground freeze	Drying conditions	Temperature inversion	Flooding and abnormal tides
1	Surveying	[1] L	L	L	0— -10	[2]	-	-	-	-	-
2	Demolition and clearing	M	M	L	0— -10	15–35	x	x	-	x	-
3	Temporary work on site	M	M	L	0— -10	20	x	x	-	-	-
4	Delivery of materials	M	M	L	0— -10	25	x	-	-	-	-
5	Material stockpiling	L	L	L	0— -10	15	x	-	-	-	-
6	Site grading	M	M	L	20—32	15–25	x	x	x	-	-
7	Excavation	M	M	L	20—32	35	x	x	x	x	-
8	Pile driving	M	M	L	0— -10	20	x	x	-	-	x
11	Forming	M	M	L	0— -10	25	-	x	-	-	-
12	Emplacing reinforcing steel	M	M	L	0— -10	20	-	x	-	-	-
13	Quarrying	M	M	L	32	25–35	x	x	x	x	-
14	Delivery of premixed concrete	M	L	L	32	35	x	x	-	-	-
15	Pouring concrete foundation and walls	M	L	L	32	35	-	x	x	-	-
16	Stripping and curing concrete	M	M	L	32	25	-	x	x	-	-
17	Installing underground plumbing, etc	M	M	L	32	25	-	x	x	-	-
19	Backfilling	M	M	L	20—32	35	x	x	x	-	-
30	Bituminous concrete pouring	L	L	L	45	35	x	x	x	-	-
39	Installing culverts and incidental drainage	M	L	L	32	25	-	x	x	-	x
40	Landscaping	M	L	L	20—32	15	x	x	x	-	-
41	Traffic protection	M	M	L	0—10	15–20	x	x	-	-	-
42	Paving	L	L	L	32—45	35	x	x	x	-	-
43	Fencing, installing lights, signs, etc	M	M	L	0—10	20	x	x	-	-	-

[1] L indicates light; M indicates moderate.
[2] Indicates operation is affected by this condition.

SOURCE: The Operational and Economic Impact of Weather on the Construction Industry of the United States, U.S. Weather Bureau Contract CWb-10948, the Travelers Research Center, Inc., 250 Constitutional Plaza, Hartford, Connecticut, March 1965.

Table D-5. Critical limits of weather elements having significant influence on heavy and specialized construction

Item	Operation	Rain	Snow and sleet	Freezing rain	Low temperatures (F.°)	High wind (m.p.h.)	Dense fog	Ground freeze	Drying conditions	Temperature inversion	Flooding and abnormal tides
1	Surveying	[1]L	L	L	0— -10	25	[2]x	-	-	-	-
2	Demolition and clearning	M	M	L	0— -10	15—35	x	x	-	x	-
3	Temporary work on site	M	M	L	0— -10	20	x	x	-	-	-
4	Delivery of materials	M	M	L	0— -10	25	x	-	-	-	-
5	Materials stockpiling	L	L	L	0— -10	15	x	-	-	-	-
6	Site grading	M	M	L	20—32	15—35	x	x	x	-	-
7	Excavation	M	M	L	20—32	35	x	x	x	x	-
8	Pile driving	M	M	L	0— -10	20	x	x	-	-	-
9	Dredging	M	M	L	0— -10	20	x	[3]x	-	-	-
10	Erection of coffer dams	M	L	L	32	25	x	x	-	-	-
11	Forming	M	M	L	0— -10	25	-	x	-	-	-
12	Emplacing reinforcing steel	M	M	L	0— -10	20	-	x	-	-	-
14	Delivery of premixed concrete	M	L	L	32	35	x	x	-	-	-
15	Pouring concrete foundation and walls	M	L	L	32	35	-	x	x	-	-
16	Stripping and curing concrete	M	M	L	32	25	-	x	x	-	-
19	Backfilling	M	M	L	20—32	35	x	x	x	-	-
28	Cutting concrete pavement	M	M	L	0— -10	35	-	x	-	-	-
29	Trenching, installing pipe	M	M	L	20—32	25	-	x	x	-	-
30	Bituminous concrete pouring	L	L	L	45	35	x	x	x	-	-
39	Installing culverts and incidental drainage	M	L	L	32	25	-	x	x	-	-
40	Landscaping	M	L	L	20—32	15	x	x	x	-	-
41	Traffic protection	M	M	L	0— -10	15—20	x	x	-	-	-
42	Paving	L	L	L	32—45	35	x	x	x	-	-
43	Fencing, installing lights, signs, etc	M	M	L	0— -10	20	x	x	-	-	-

[1] L indicates light; M indicates moderate.
[2] Indicates operation is affected by this condition.
[3] Water freeze.

SOURCE: The Operational and Economic Impact of Weather on the Construction Industry of the United States. U.S. Weather Bureau Contract CWb-10948, the Travelers Research Center, Inc., 250 Constitutional Plaza, Hartford, Connecticut, March 1965.

Table D-6. Critical limits of weather elements having significant influence on construction of general buildings

Item	Operation	Rain	Snow and sleet	Freezing rain	Low temperatures (F.°)	High wind (m.p.h.)	Dense fog	Ground freeze	Drying conditions	Temperature inversion	Flooding and abnormal tides
1	Surveying	[1]L	L	L	0— -10	25	[2]x	-	-	-	-
2	Demolition and clearing	M	M	L	0— -10	15—35	x	x	-	x	-
3	Temporary work on site	M	M	L	0— -10	20	x	x	-	-	-
4	Delivery of materials	M	M	L	0— -10	15	x	-	-	-	-
5	Material stockpiling	L	L	L	0— -10	15	x	-	-	-	-
6	Site grading	M	M	L	20—32	15—25	x	x	x	-	-
7	Excavation	M	M	L	20—32	35	x	x	x	x	-
8	Pile driving	M	M	L	0— -10	20	x	x	-	-	x
11	Forming	M	M	L	0— -10	25	-	x	-	-	-
12	Emplacing reinforcing steel	M	M	L	0— -10	20	-	x	-	-	-
14	Delivery of premixed concrete	M	L	L	32	35	x	x	-	-	-
15	Pouring concrete foundation and walls	M	L	L	32	35	-	x	x	-	-
16	Stripping and curing concrete	M	M	L	32	25	-	x	x	-	-
17	Installing underground plumbing, etc	M	M	L	32	25	-	x	x	-	-
18	Waterproofing	M	M	L	32	25	-	x	-	-	-
19	Backfilling	M	M	L	20—32	35	x	x	x	-	-
20	Erecting structural steel	L	L	L	10	10—15	x	-	-	-	-
22	Exterior masonry	L	L	L	32	20	-	x	x	-	-
24	Installing metal siding	L	L	L	0— -10	15	-	-	-	-	-
25	Fireproofing	L	L	L	0— -10	35	-	-	-	-	-
27	Roofing	L	L	L	45	10—20	-	-	x	-	-
31	Installing windows and doors, glazing	L	L	L	0— -10	10—20	-	-	-	-	-
38	Exterior painting	L	L	L	45—50	15	x	-	x	-	-
40	Landscaping	M	L	L	20—32	15	x	x	x	-	-
41	Traffic protection	M	M	L	0— -10	15—20	x	x	-	-	-
42	Paving	L	L	L	32—45	35	x	x	x	-	-
43	Fencing, installing lights, signs, etc	M	M	L	0— -10	20	x	x	-	-	-

[1] L indicates light, M indicates moderate.
[2] Indicates operation is affected by this condition.

SOURCE: The Operational and Economic Impact of Weather on the Construction Industry of the United States, U.S. Weather Bureau Contract CWb-10948, the Travelers Research Center, Inc., 250 Constitutional Plaza, Hartford, Connecticut, March 1965.

APPENDIX E. WEATHER RECORDS

How much does weather affect construction? The answer varies according to climate, whether the season is extreme or not, and the type of construction being undertaken, as well as the particular operation. Additional insight into the problem of seasonality in the construction industry can be gained through a study of historical weather data. The records maintained by the United States Weather Bureau are well adapted for comparisons between cities and between different years. The tables in this appendix were developed for one city (Chicago, Ill.) for 1 year (1960) to present what could be done with these records.

An attempt was made to determine the number of days over a 12-month period that construction operations could, under current practice, be carried out in a particular area (Chicago). First, a number of contractors were asked what types of weather conditions would terminate construction operations. The weather data was then used to compute the actual number of days, by month, that construction operations could have taken place, given the opinions of the contractors. The following tabulation summarizes the actual number of days available for work in Chicago in 1960, based on the parameters given in table E-7.

Number of working days available and unavailable for construction work in Chicago, 1960

	Total days, number	Available days, number	Unavailable days, number	Percent distribution
Total	255	222	33	100.0
January	20	14	6	18.1
February	21	14	7	21.2
March	23	21	2	6.1
April	21	19	2	6.1
May	21	17	4	12.1
June	22	20	2	6.1
July	20	20	-	-
August	23	22	1	3.0
September	21	21	-	-
October	21	20	1	3.0
November	21	18	3	9.1
December	21	16	5	15.2

NOTE: For a description of the parameters see the footnotes on table E-7, p.

SOURCE: Tabulations made by the BLS from the Weather Records of the U.S. Weather Bureau.

These data indicate that almost two-thirds of all the days that fall into the unavailable category are in 4 months. Even though March has fewer unavailable days than May, the conditions are probably not so favorable due to the effects of frost leaving the ground.

Interestingly, weather records for Chicago for 1968 provided a similar pattern of unavailable days even when different parameters were used. The following tabulation shows that there were 38.5 days in 1968 unavailable for construction work compared with 33 days in 1960.

Number of working days available and unavailable for construction work in Chicago, 1968

Months	Available days	Nonworking days		Net working days
		Temperature	Precipitation	
Total	260	26	12.5	221.5
January	22	11	1	10
February	21	9	0	12
March	21	0	0	21
April	22	0	2	20
May	22	0	1	21
June	22	0	2.5	19.5
July	22	0	1.5	20.5
August	23	0	.5	22.5
September	21	0	1	20
October	23	0	0	23
November	20	0	2	18
December	21	6	1	14

SOURCE: Robert G. Beebe, Special Assistant, Industrial Meteorology, Environmental Science Services Administration, Weather Bureau U.S. Department of Commerce.

The parameters used in the above tabulation are:

1. Temperature below 32 degrees F. all day
2. 3 inches of snow the previous day
3. 1 inch of rain the previous day
4. 1 inch of snow during working hours, beginning by 7:00 a.m.
5. 0.50 inch of rain during working hours, beginning by 7:00 a.m.

These guides used above in defining a nonworking day were developed by Mr. Beebe in his work with general contractors over a number of years.

As has been stated previously in this report, it is possible to carry out most construction operations under the most adverse conditions. However, the usual practice of the industry today is to reduce the amount of work done in the winter months. This may be the practice because of the tremendous amount of detail that must go into planning, scheduling, and protection of the existing work. Whatever the reason, employment is most seasonal in those months that have the greatest number of days unavailable for outdoor construction work.

Measures of seasonality for contract construction for Chicago, 1960

Month	Deviation of monthly employment from annual average	Seasonal adjustment factors
January	-13.0	87.5
February	-15.8	85.6
March	-17.0	88.4
April	-4.6	97.5
May	3.1	103.4
June	6.3	106.8
July	11.9	109.0
August	13.7	110.4
September	10.7	108.5
October	8.8	106.4
November	3.3	102.5
December	7.4	94.0

SOURCE: BLS, Current Employment Statistics based on establishment reports.

The preceeding tabulation indicates that in only 1 month—May—do we find a situation that is difficult to explain by the distribution of unavailable days.

However, a combination of factors result in seasonality. The days lost in May were all a result of rainfall and the other climatic conditions were more favorable for construction activities. The contractors had time in the month of April to get substantial amounts of work started and establish their organization by May for the construction year. Thus, if the contractor knows that the climatic conditions very shortly will be more conducive to construction operations, he will find keeping these men on the payroll less expensive than releasing them.

Included on the following pages are a number of tables taken from the historical data maintained by the U.S. Weather Bureau. These tables were prepared to show the prevalence of days by month on which certain weather conditions occurred. Precipitation occurred on 94 working days in Chicago; however, 51 of these had less than a .10 of an inch and only 2 days has an inch or more. Not all the precipitation occurred during working time; on only 53 working days precipitation occurred during working hours, and 35 of these days had less than a .10 of an inch. (See tables E-2 and E-3.)

Temperature is another important factor that influenced construction in Chicago. The temperature fell below 18 degrees F. 34 days. On 14 of these days the temperature did not rise above 24 degrees F. (See table E-6.) As has been shown previously in the report, low temperatures alone are not too uncomfortable, but if this variable is combined with wind, the discomfort increases substantially. It is not necessary to discuss wind-chill measure for Chicago since it has received the nickname "Windy City" honestly.

Other climatic conditions such as snow accumulation influence the number of days that would be available for construction. In Chicago, in 1960, 1 inch of snow or more fell on 46 working days—16 of these had less than 3 inches and 11 had 6 inches or more. (See table E-5.)

On the basis of the weather data obtained for Chicago, it would appear that if weather records were developed for several different cities, [1] dispersed throughout the United States with respect to both their geographic location and importance as a construction center, the contractor, the union, and the researcher would be better able to anticipate the pattern of weather conditions in a given area.

[1] Weather records are available from the Weather Bureau for most major cities.

APPENDIX E TABLES

Table E-1. Number of working days, holidays, Saturdays, and Sundays in contract construction by month, Chicago, 1960

Class of day	January	February	March	April	May	June	July	August	September	October	November	December	Total
Total	31	29	31	30	31	30	31	31	30	31	30	31	366
Holidays (HOL)	1	-	-	-	1	-	1	-	1	-	1	1	6
Saturdays (SAT)	5	4	4	5	4	4	5	4	4	5	4	5	53
Sundays (SUN)	5	4	4	4	5	4	5	4	4	5	4	4	52
Working days (WD)	20	21	23	21	21	22	20	23	21	21	21	21	255

NOTE: Included in these tabulations are 6 holidays and they are: (1) New Year's Day; (2) Memorial Day; (3) Independence Day; (4) Labor Day; (5) Thanksgiving Day; and (6) Christmas Day. If the holiday fell on Saturday, Friday was a holiday and if on Sunday, then Monday was a holiday.

Table E-2. Number of days on which various amounts of precipitation occurred in Chicago, by month and category of day, 1960

Amount in inches	January				February				March				April				May				June				July			
	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD
Total[1]	1	1	-	8	2	2	-	10	-	1	-	9	2	1	-	8	2	4	-	8	3	2	-	12	1	2	-	6
0.01-0.09	1	1	-	3	2	1	-	4	-	1	-	7	-	-	-	5	1	3	-	3	1	1	-	6	-	1	-	4
0.10-.24	-	-	-	3	-	-	-	3	-	-	-	1	-	-	-	2	1	-	-	3	1	-	-	4	-	-	-	-
0.25-.49	-	-	-	1	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	2	-	1	-	1	-	1	-	1
0.50-.99	-	-	-	-	-	-	-	3	-	-	-	1	1	-	-	1	-	-	-	-	1	-	-	-	-	-	-	1
1.00 or more	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	1	1	-	-	-

Amount in inches	August				September				October				November				December				Total			
	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD
Total[1]	1	1	-	6	-	3	-	5	-	1	-	6	-	1	-	8	1	-	-	8	13	19	-	94
0.01-0.09	1	-	-	3	-	2	-	3	-	-	-	3	-	-	-	5	1	-	-	5	7	10	-	51
0.10-.24	-	1	-	2	-	-	-	2	-	-	-	1	-	1	-	2	-	-	-	1	2	2	-	24
0.25-.49	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	4	-	8
0.50-.99	-	-	-	-	-	1	-	-	-	1	-	1	-	-	-	1	-	-	-	1	2	2	-	9
1.00 or more	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	2

[1] These are the total number of days on which there was a measurable amount of precipitation, defined as being any amount equal to 0.01 of an inch or more.

SOURCE: Computation made by the Bureau of Labor Statistics from weather records of the U.S. Weather Bureau, Environmental Sciences Services Administration.

Table E-3. Number of days on which various amounts of precipitation occurred during working hours[1] in Chicago, by month and category of day, 1960

Amount in inches	January				February				March				April				May				June				July			
	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD
Total[2]	-	-	-	5	-	2	-	6	-	-	-	6	2	1	-	4	1	1	-	7	2	1	-	6	-	2	-	1
0.01-0.09	-	-	-	4	-	1	-	3	-	-	-	5	-	1	-	2	-	1	-	3	2	1	-	4	-	2	-	1
0.10-.24	-	-	-	-	-	1	-	1	-	-	-	1	-	-	-	2	1	-	-	2	-	-	-	2	-	-	-	-
0.25-.49	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
0.50-.99	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.00 or more	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Amount in inches	August				September				October				November				December				Total			
	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD
Total[2]	1	1	-	3	-	1	-	3	-	1	-	3	-	1	-	7	-	-	-	2	6	11	-	53
0.01-0.09	1	1	-	2	-	1	-	3	-	-	-	3	-	1	-	4	-	-	-	1	3	9	-	35
0.10-.24	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	1	1	-	11
0.25-.49	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	1	2	1	-	5
0.50-.99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
1.00 or more	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1

[1] Working hours are between 7:01 a.m. and 4:59 p.m.

[2] These are the total number of days on which there was a measurable amount of precipitation, during working hours, defined as being any amount equal to 0.01 of an inch or more.

SOURCE: Computation made by the Bureau of Labor Statistics from weather records of the U.S. Weather Bureau, Environmental Sciences Services Administration.

Table E-4. Number of afternoons[1] on which various amounts of precipitation occurred in Chicago, by month and category of day, 1960

Amount in inches	January				February				March				April				May				June				July			
	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD
Total	-	-	-	3	-	-	-	4	1	-	-	1	-	1	-	1	1	1	-	3	1	-	-	4	-	-	-	-
0.01-0.09	-	-	-	3	-	-	-	2	1	-	-	1	-	1	-	1	-	1	-	3	1	-	-	3	-	-	-	-
0.10-0.24	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-
0.25 or more	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Amount in inches	August				September				October				November				December				Total			
	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SUN	HOL	WD	
Total	1	-	-	1	-	-	-	1	-	-	-	1	-	1	-	6	-	-	-	1	4	3	-	26
0.01-0.09	1	-	-	1	-	-	-	1	-	-	-	1	-	1	-	6	-	-	-	1	3	3	-	23
0.10-0.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	3
0.25 or more	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[1] The number of afternoons on which there was a measurable amount of precipitation, defined as being any amount equal to 0.01 of an inch or more, between the hours of 12:01 p.m. and 4:59 p.m.

NOTE: These are days which would not be included in the working day concept used in other tables.

SOURCE: Computation made by the Bureau of Labor Statistics from weather records of the U.S. Weather Bureau, Environmental Sciences Services Administration.

Table E-5. Number of days on which the snow depth was 1 inch or more in Chicago, by selected depths, 1960

Amount in inches	January				February				March				April			
	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD
Total	1	1	-	7	3	3	-	14	4	3	-	16	-	-	-	-
1.0-2.9	1	1	-	7	-	-	-	-	1	2	-	4	-	-	-	-
3.0-5.9	-	-	-	-	3	3	-	8	3	1	-	9	-	-	-	-
6.0 or more	-	-	-	-	-	-	-	6	-	-	-	3	-	-	-	-

Amount in inches	October				November				December				Total			
	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD
Total	-	-	-	-	-	-	-	-	2	1	1	9	10	8	1	46
1.0-2.9	-	-	-	-	-	-	-	-	1	1	1	5	3	4	1	16
3.0-5.9	-	-	-	-	-	-	-	-	1	-	-	2	7	4	-	19
6.0 or more	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	11

SOURCE: Computation made by the Bureau of Labor Statistics from weather records of the U.S. Weather Bureau, Environmental Sciences Services Administration.

Table E-6. Number of working days in Chicago, by selected temperature ranges, 1960

Class of day	January				February				March				April				May				June				July			
	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD
Total	5	5	1	20	4	4	-	21	4	4	-	23	5	4	-	21	4	5	1	21	4	4	-	22	5	5	1	20
Class I[1]	1	1	-	5	-	-	-	4	1	1	-	1	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
Class II[2]	-	1	-	3	3	1	-	1	2	-	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Class III[3]	1	1	-	2	-	2	-	8	1	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Class IV[4]	3	2	1	6	1	1	-	7	-	-	-	2	1	1	-	4	-	-	-	-	-		-	-	-	-	-	-
Class V[5]	-	-	-	4	-	-	-	1	-	1	-	3	4	3	-	17	4	5	1	21	4	4	-	22	5	5	1	20

Class of day	August				September				October				November				December				Total			
	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SAT	SUN	HOL	WD	SUN	HOL	WD	
Total	4	4	-	23	4	4	1	21	5	5	-	21	4	4	1	21	5	4	1	21	53	52	6	255
Class I[1]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	4	3	2	-	14
Class II[2]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	7	5	3	-	20
Class III[3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	1	8	4	7	1	28
Class IV[4]	-	-	-	-	-	-	-	-	-	-	-	4	1	-	1	9	2	-	-	1	8	4	2	33
Class V[5]	4	4	-	23	4	4	1	21	5	5	-	17	3	4	-	10	-	1	-	1	33	36	3	160

[1] Days on which the temperature fell below 18°F and did not rise above 24°F.
[2] Days on which the temperature fell below 18°F and reached or exceeded 25°F.
[3] Days on which the minimum temperature was not below 18°F, nor above 24°F, and the maximum temperature was 19°F or above.
[4] Days on which the minimum temperature was between 25°F and 32°F.
[5] Days on which the minimum temperature was not below 33°F.

SOURCE: Computation made by the Bureau of Labor Statistics from weather records of the U.S. Weather Bureau, Environmental Sciences Services Administration.

Table E-7. Number of available and unavailable working days in Chicago, by type of climatic conditions, 1960

Days	January			February			March			April		
	Total	Available	Unavailable	Total	Available	Unavailable	Total	Available	Unavailable	Total	Available	Unavailable
Total number of days	20	14	6	21	14	7	23	21	2	21	19	2
Total available days	14	14	-	14	14	-	21	21	-	19	19	-
Total unavailable days	6	-	6	7	-	7	2	-	2	2	-	2
Class I:[1]												
Total number of days	5	-	5	4	-	4	1	-	1	-	-	-
Number of days with precipitation[2]	-	-	-	-	-	-	-	-	-	-	-	-
Number of days without precipitation	5	-	5	4	-	4	1	-	1	-	-	-
Class II:[3]												
Total number of days	3	3	-	1	1	-	9	9	-	-	-	-
Number of days with precipitation[2]	-	-	-	-	-	-	-	-	-	-	-	-
Number of days without precipitation	3	3	-	1	1	-	9	9	-	-	-	-
Class III:[4]												
Total number of days	2	2	-	8	7	1	8	7	1	-	-	-
Number of days with precipitation[5]	-	-	-	1	-	1	1	-	1	-	-	-
Number of days without precipitation	2	2	-	7	7	-	7	7	-	-	-	-
Class IV:[6]												
Total number of days	6	6	-	7	6	1	2	2	-	4	4	-
Number of days with precipitation[5]	-	-	-	1	-	1	-	-	-	-	-	-
Number of days without precipitation	6	6	-	6	6	-	2	2	-	4	4	-
Class V:[7]												
Total number of days	4	3	1	1	-	1	3	3	-	17	15	2
Number of days with precipitation[8]	1	-	1	1	-	1	-	-	-	2	-	2
Number of days without precipitation	3	3	-	-	-	-	3	3	-	15	15	-

Days	May			June			July			August		
	Total	Available	Unavailable	Total	Available	Unavailable	Total	Available	Unavailable	Total	Available	Unavailable
Total number of days	21	17	4	22	20	2	20	20	-	23	22	1
Total available days	17	17	-	20	20	-	20	20	-	22	22	-
Total unavailable days	4	-	4	2	-	2	-	-	-	1	-	1
Class I:[1]												
Total number of days	-	-	-	-	-	-	-	-	-	-	-	-
Number of days with precipitation[2]	-	-	-	-	-	-	-	-	-	-	-	-
Number of days without precipitation	-	-	-	-	-	-	-	-	-	-	-	-
Class II:[3]												
Total number of days	-	-	-	-	-	-	-	-	-	-	-	-
Number of days with precipitation[2]	-	-	-	-	-	-	-	-	-	-	-	-
Number of days without precipitation	-	-	-	-	-	-	-	-	-	-	-	-
Class III:[4]												
Total number of days	-	-	-	-	-	-	-	-	-	-	-	-
Number of days with precipitation[5]	-	-	-	-	-	-	-	-	-	-	-	-
Number of days without precipitation	-	-	-	-	-	-	-	-	-	-	-	-
Class IV:[6]												
Total number of days	-	-	-	-	-	-	-	-	-	-	-	-
Number of days with precipitation[5]	-	-	-	-	-	-	-	-	-	-	-	-
Number of days without precipitation	-	-	-	-	-	-	-	-	-	-	-	-
Class V:[7]												
Total number of days	21	17	4	22	20	2	20	20	-	23	22	1
Number of days with precipitation[8]	4	-	4	2	-	2	-	-	-	1	-	1
Number of days without precipitation	17	17	-	20	20	-	20	20	-	22	22	-

See footnotes at end of table.

Table E-7. Number of available and unavailable working days in Chicago, by type of climatic conditions, 1960—Continued

Days	September			October			November			December			Total		
	Total	Available	Unavailable	Total	Available	Unavailable	Total	Available	Unavailable	Total	Available	Unavailable	Total	Available	Unavailable
Total number of days	21	21	-	21	20	1	21	18	3	21	16	5	255	222	33
Total available days	21	21	-	20	20	-	18	18	-	16	16	-	222	222	-
Total unavailable days	-	-	-	1	-	1	3	-	3	5	-	5	33	-	33
Class I:[1]															
Total number of days	-	-	-	-	-	-	-	-	-	4	-	4	14	-	14
Number of days with precipitation[2]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Number of days without precipitation	-	-	-	-	-	-	-	-	-	4	-	4	14	-	14
Class II:[3]															
Total number of days	-	-	-	-	-	-	-	-	-	7	6	1	20	19	1
Number of days with precipitation[2]	-	-	-	-	-	-	-	-	-	1	-	1	1	-	1
Number of days without precipitation	-	-	-	-	-	-	-	-	-	6	6	-	19	19	-
Class III:[4]															
Total number of days	-	-	-	-	-	-	2	2	-	8	8	-	28	26	2
Number of days with precipitation[5]	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2
Number of days without precipitation	-	-	-	-	-	-	2	2	-	8	8	-	26	26	-
Class IV:[6]															
Total number of days	-	-	-	4	4	-	9	8	1	1	1	-	33	31	2
Number of days with precipitation[5]	-	-	-	-	-	-	1	-	1	-	-	-	2	-	2
Number of days without precipitation	-	-	-	4	4	-	8	8	-	1	1	-	31	31	-
Class V:[7]															
Total number of days	21	21	-	17	16	1	10	8	2	1	1	-	160	146	14
Number of days with precipitation[8]	-	-	-	1	-	1	2	-	2	-	-	-	14	-	14
Number of days without precipitation	21	21	-	16	16	-	8	8	-	1	1	-	146	146	-

[1] Days on which the temperature fell below 18° F and did not rise above 24° F.
[2] These are class I and class II days on which any amount of precipitation occurred during normal working hours.
[3] Days on which the temperature fell below 18° F and reached or exceeded 25° F.
[4] Days on which the minimum temperature was not below 18° F, nor above 24° F, and the maximum temperature was 19° F or above.
[5] These are class III and class IV days on which precipitation of one-tenth of an inch or more occurred during working hours.
[6] Days on which the minimum temperature was between 25° F and 32° F.
[7] Days on which the minimum temperature was not below 35° F.
[8] These are class V days on which precipitation occurred between 5 a.m. and 7 a.m. and continued throughout the day (4 hours out of the normal working day which is from 7:01 a.m. to 4:59 p.m.) and accumulates to one-tenth of an inch or more.

NOTE: All class I days are classified as being unavailable. Class II through class V are classified as being unavailable if they meet the criteria assigned for the precipitation test.

SOURCE: Computation made by the Bureau of Labor Statistics from weather records of the U.S. Weather Bureau, Environmental Sciences Services Administration.

APPENDIX F. DESCRIPTION OF SOCIAL SECURITY DATA AND METHOD OF ESTIMATING WAGES

Data used in chapter VI and parts of VII and VIII of this report were developed from information contained in the Social Security Administrations' 1-percent continuous work history sample. The sample, which includes 1-percent of all social security account numbers, was selected by the Social Security Administration on the basis of a multistaged systematic cluster sampling procedure. Once an individual is selected for the sample he remains in it permanently. [1]

Information about each individual included in the continuous work history sample is provided by the individual and by each covered employer from whom he receives wages and salaries: The individual provides demographic information (race, sex, and year of birth) when he applies for a social security account number. Each covered employer from whom the individual received any wages or salaries during a calendar quarter reports the amount of the wage payment in the quarter and the industry and geographic area in which the wages or salaries were earned. [2] The employer, however, ceases to report wage and salary earnings for an individual after the workers' annual taxable earnings limit ($4,800 in 1964) is reached in that employment situation.

Method of estimation

The following section of this appendix presents a discussion on the methods of estimation for annual earnings, quarters of work, major earner, any earnings, and four quarter workers.

Annual earnings

Each covered employer is required to provide information about the earnings of each employee up to the maximum amount ($4,800 in 1964) subject to the social security tax. Hence, reported earnings may be substantially below the workers' total earnings. The Social Security Administration, however, has devised a procedure to estimate total wages of individuals. In this estimation procedure, the quarter in which the taxable limit is reached ("limit quarter") is first determined. Then the wages in the prior quarter that are equal to or greater than the limit quarter wages are substituted for the limit quarter and all subsequent quarters. Limit quarter earnings, however, are used in estimating earnings in the limit and subsequent quarters if limit quarter earnings were higher than earnings in previous quarters. The summation of the quarterly wages after substitution then becomes the estimated annual total. An exception to this is made when the taxable limit is reached in the first quarter; then $32,000 for men and $25,000 for women was used as the estimated total for 1964.

Tables F-1, 2, and 3 show the exact reported earnings of 27 individuals as well as the estimate of their annual earnings which were made by using the social security estimating technique.

[1] For a detailed explanation of the sampling procedure, reporting criteria, and social security coverage, see U.S. Social Security Administration, *Workers Under Social Security 1960* (Washington, D.C., 1968 and their Social Security Handbook (3rd edition) Washington, D.C., 1966).

[2] If the worker is employed by a contractor in New York State but is working at a job in New Jersey he will be counted as employed in New York State unless the contractor creates a new "firm" and files the social security reports from New Jersey.

Examples 1, 6, 10, and 11 in table F-1, illustrate records where earnings probably would be overestimated. In table F-2, attention is called to examples 1, 5, 6, 7, 8, and 9. Table F-3, contains the records of individuals who worked for more than one employer in 1964 and earned more than $4,800 from at least one of them. There are several examples here where the income would be overestimated.

The estimates of annual earnings, developed using the social security technique are believed to be entirely acceptable for the purposes of this report. They may be slightly overstated, one reason being that fourth quarter earnings may be less than third quarter earnings due to seasonal problems. However, since a much larger proportion of workers are employed by more than one employer in construction than in other industries, construction is perhaps one of the best industries to work with when using these data. Comparing the estimates developed for this report with other sources of data on annual income indicates that the estimates are reasonable.

Quarters of work. A quarter of work, for purposes of this study, is defined as any quarter in which the worker received any wages in covered employment. Workers whose maximum taxable earnings limits in a single employment situation are reached before the fourth quarter of the year (and thus, the employer does not further report information about their earnings) are considered to have worked in each quarter.

Workers with a major proportion of earnings in an industry. Workers who earned more of their annual wages or salaries in the specified industry than from any other industry. For example, an individual who earned 40 percent of his total wages and salaries in industry A and 30 percent of his annual wages and salaries in each of the other industries is considered to be a major earner in industry A.

Workers with some earnings in an industry. This classification counts each individual who had any earnings in an industry during the course of the year as having had some attachment to the industry. A worker who earned 40 percent of his annual earnings in industry A, 30 percent in industry B, and 30 percent in industry C is counted in each of the industries. (Because a worker is counted in each industry in which he had any earnings, the aggregate count of workers with some earnings in each industry is greater than the total number in covered employment.)

Earnings in the industry of greatest earnings. A worker's earnings in the industry of greatest earnings are limited to the amount of wage and salary remuneration received from employers in the specified industry. Earnings in all employment are the sum of the worker earnings in the industry of greatest earnings and earnings in all other industries. Thus, a worker who received 40 percent of his annual earnings from employment in industry A, 30 percent from industry B, 30 percent from industry C, would have 40 percent of his total annual earnings counted as earnings in the industry of greatest earnings and 100 percent of the earnings (from industries A, B, and C) in the earnings statistics for all wage and salary employment.

These concepts, including the quarters of major industry employment concept used in this study, are presented in the following illustration of a single worker's employment and earnings experience.

Industry	Earnings by quarter				
	Total (any quarter)	January – March	April – June	July – September	October – December
Total	$425	$110	$110	$120	$85
A	150	-	60	90	-
B	130	10	50	-	70
C	145	100	-	30	15

This worker had greater earnings in industry A than in any other industry. Therefore, industry A is his industry of greatest earnings.

He worked in industry A during each of two quarters. Therefore, even though he was also employed in other industries in each of the other two quarters, he is categorized in this report as a worker with two quarters of major industry employment.

APPENDIX F TABLES

Table F-1. Examples of 1964 estimated annual income of construction workers made by the Social Security Administration for persons who achieved maximum earnings before the fourth quarter

Quarter	(1)		(2)		(3)	
	Reported wages	Estimated wages	Reported wages	Estimated wages	Reported wages	Estimated wages
Total	$4,800.00	$9,587.30	$4,800.00	$8,429.00	$4,800.00	$13,999.60
First	$2,273.00	$2,273.00	$2,515.40	$2,515.40	$3,499.90	$3,499.90
Second	2,438.10	2,438.10	1,971.20	1,971.20	1,300.00	3,499.90
Third	88.80	2,438.10	313.30	1,971.20	-	3,499.90
Fourth	-	2,438.10	-	1,971.20	-	3,499.90
	(4)		(5)		(6)	
Total	$4,800.00	$9,015.60	$4,800.00	$6,777.00	$4,800.00	$9,143.50
First	$2,215.20	$2,215.20	$1,724.10	$1,724.10	$1,823.50	$1,823.50
Second	2,266.80	2,266.80	1,684.30	1,684.30	2,440.00	2,440.00
Third	318.00	2,266.80	1,391.50	1,684.30	536.50	2,550.00
Fourth	-	2,266.80	-	1,684.30	-	2,440.00
	(7)		(8)		(9)	
Total	$4,800.00	$9,100.00	$4,800.00	$8,828.70	$14,800.00	$32,000.00
First	$2,275.00	$2,275.00	$2,675.70	$2,675.70	$4,800.00	-
Second	2,275.00	2,275.00	2,051.00	2,051.00	-	-
Third	250.00	2,275.00	73.20	2,051.00	-	-
Fourth	-	2,275.00	-	2,051.00	-	-
			(10)		(11)	
Total			$5,106.00	$7,044.30	$4,800.00	$8,070.10
First			$1,551.60	$1,551.60	$691.60	$691.60
Second			1,830.90	1,830.90	2,459.50	2,459.50
Third			1,723.40	1,830.90	1,648.80	2,459.50
Fourth			-	1,830.90	-	2,459.50

Table F-2. Examples of 1964 estimated annual income of construction workers made by the Social Security Administration for persons who achieved maximum earnings in the fourth quarter

Quarter	(1)		(2)		(3)	
	Reported wages	Estimated wages	Reported wages	Estimated wages	Reported wages	Estimated wages
Total	$4,800.00	$5,040.80	$4,800.00	$5,003.30	$4,800.00	$5,261.00
First	$964.70	$964.70	$1,311.90	$1,311.90	$1,209.00	$1,209.00
Second	1,561.70	1,561.70	1,175.60	1,175.60	1,338.00	1,338.00
Third	952.70	952.70	1,257.90	1,257.90	1,357.00	1,357.00
Fourth	1,320.70	1,561.70	1,054.60	1,257.90	896.00	1,357.00
	(4)		(5)		(6)	
Total	$4,800.00	$5,694.30	$5,526.00	$5,776.20	$4,800.00	$7,624.90
First	$1,329.30	$1,329.30	$860.20	$860.20	-	-
Second	1,751.70	1,751.70	1,481.20	1,481.20	1,583.70	1,583.70
Third	1,306.50	1,306.50	1,717.40	1,717.40	3,020.60	3,020.60
Fourth	412.20	1,306.50	1,467.20	1,717.40	195.60	3,020.60
	(7)		(8)		(9)	
Total	$4,800.00	$5,603.30	$4,800.00	$6,003.00	$4,800.00	$7,050.20
First	$743.30	$743.30	$845.00	$845.00	$59.20	$59.20
Second	1,660.10	1,660.10	1,989.30	1,989.30	2,229.80	2,229.80
Third	1,599.90	1,599.90	1,584.30	1,584.30	2,380.50	2,380.50
Fourth	796.50	1,599.90	381.20	1,584.30	130.30	2,380.50

Table F-3. Examples of 1964 estimated annual income of construction workers made by the Social Security Administration for persons who achieved maximum earnings and had more than one employer

Quarter	(1)				
	Reported wages, employer number				Estimated wages, employer number
	1	2	3	4	2
Total	$609.90	$4,823.40	$222.00	$1,836.50	$6,772.40
First	-	$23.40	$184.20	$1,067.30	$23.40
Second	-	1,500.40	37.80	769.20	1,500.40
Third	-	2,624.20	-	-	2,624.20
Fourth	-	675.20	-	-	2,624.20

Quarter	(2)				(3)		
	Reported wages, employer number		Estimated wages, employer number		Reported wages, employer number		Estimated wages, employer number
	1	2	1	2	1	2	1
Total	$4,800.00	$4,800.00	$15,600.00	$14,400.00	$4,900.00	$376.00	$5,839.10
First	$3,900.00	-	$3,900.00	-	$300.10	$312.00	$300.10
Second	900.00	$4,800.00	3,900.00	$4,800.00	1,816.40	-	1,816.60
Third	-	-	3,900.00	4,800.00	1,861.20	-	1,861.20
Fourth	-	-	3,900.00	4,800.00	922.10	64.00	1,861.20

Quarter	(4)			(5)			
	Reported wages, employer number		Estimated wages, employer number	Reported wages, employer number		Estimated wages, employer number	
	1	2	2	1	2	1	2
Total	$2,534.40	$4,800.00	$8,783.20	$4,800.00	$4,878.00	$7,000.00	$9,100.00
First	-	$2,193.30	$2,193.30	$1,000.00	$2,350.00	$1,000.00	$2,350.00
Second	-	2,196.60	2,196.60	3,000.00	2,250.00	3,000.00	2,250.00
Third	$593.60	409.90	2,196.60	-	278.00	-	2,250.00
Fourth	1,940.80	-	2,196.60	800.00	-	3,000.00	2,250.00

Quarter	(6)			(7)		
	Reported wages, employer number		Estimated wages, employer number	Reported wages, employer number		Estimated wages, employer number
	1	2	2	1	2	2
Total	$2,842.00	$4,800.00	$9,129.80	$121.40	$4,800.00	$5,285.10
First	-	$1,730.60	$1,730.60	-	$1,041.40	$1,041.40
Second	-	2,466.40	2,466.60	-	1,230.90	1,230.90
Third	$1,001.30	602.90	2,466.60	-	1,506.40	1,506.40
Fourth	1,841.30	-	2,466.60	$121.40	1,021.10	1,506.40

APPENDIX G.

Tables showing greater detail than those covering comparable data in the text of this study.

APPENDIX G TABLES

Table G-1. Value of construction put in place in the United States, [1] by type, 1947–68

(Millions of dollars)

Type of construction	1947	1948	1949	1950	1951	1952	1953
Total construction activity	$30,415	$37,879	$38,688	$45,630	$48,751	$50,968	$53,549
Total new construction	$20,041	$26,078	$26,722	$33,575	$35,435	$36,828	$39,136
Private construction	16,722	21,374	20,453	26,709	26,180	26,049	27,894
Residential buildings	9,850	13,128	12,428	18,126	15,881	15,803	16,594
Nonresidential buildings	3,243	3,765	3,383	3,904	5,279	5,014	5,680
Farm construction	1,434	1,640	1,570	1,522	1,599	1,614	1,527
Public utilities	2,126	2,776	2,994	3,045	3,357	3,533	3,973
All other private	69	65	78	112	64	85	120
Public construction	3,319	4,704	6,269	6,866	9,255	10,779	11,242
By type of ownership:							
Federally owned	840	1,177	1,488	1,624	2,981	4,185	4,139
State and locally owned	2,479	3,527	4,781	5,242	6,274	6,594	7,103
Residential buildings	200	156	359	345	595	654	556
Nonresidential buildings	591	1,291	2,049	2,387	3,476	4,158	4,350
Educational buildings	287	618	934	1,133	1,513	1,619	1,714
Highways and streets	1,344	1,661	2,015	2,134	2,355	2,677	3,021
Military facilities	204	158	137	177	887	1,387	1,290
Conservation and development	424	670	852	942	912	900	892
Sewer systems	188	300	354	383	425	435	520
Water supply facilities	163	235	265	276	350	355	363
All other public	205	233	238	222	235	213	250
Maintenance and repair	10,374	11,801	11,966	12,055	13,316	14,140	14,413

Type of construction	1954	1955	1956	1957	1958	1959	1960
Total construction activity	$56,088	$62,377	$64,579	$67,059	$67,738	$74,289	$73,178
Total new construction	$41,380	$46,519	$47,601	$49,139	$50,153	$55,305	$53,941
Private construction	29,668	34,804	34,869	35,080	34,696	39,235	38,078
Residential buildings	18,187	21,877	20,178	19,006	19,789	24,251	21,706
Nonresidential buildings	6,250	7,611	8,818	9,556	8,675	8,859	10,149
Farm construction	1,425	1,385	1,392	1,411	1,355	1,397	1,321
Public utilities	3,685	3,770	4,361	4,908	4,688	4,521	4,621
All other private	121	161	120	199	189	207	281
Public construction	11,712	11,715	12,732	14,059	15,457	16,070	15,863
By type of ownership:							
Federally owned	3,428	2,769	2,726	2,974	3,387	3,724	3,622
State and locally owned	8,284	8,946	10,006	11,085	12,070	12,346	12,241
Residential buildings	336	266	292	506	846	962	716
Nonresidential buildings	4,609	4,196	4,076	4,507	4,653	4,514	4,795
Educational buildings	1,506	2,442	2,556	2,825	2,875	2,656	2,818
Highways and streets	3,714	3,852	4,415	4,934	5,545	5,761	5,437
Military facilities	1,003	1,287	1,360	1,287	1,402	1,465	1,366
Conservation and development	773	701	826	971	1,019	1,121	1,175
Sewer systems	568	615	701	781	836	906	882
Water supply facilities	414	470	574	563	551	561	605
All other public	295	328	488	510	605	780	887
Maintenance and repair	14,708	15,858	16,978	17,920	17,585	18,984	19,237

Type of construction	1961	1962	1963	1964	1965	1966	1967	1968
Total construction activity	$75,224	$79,972	$83,963	(2)	(2)	(2)	(2)	(2)
Total new construction	$55,447	$59,667	$63,423	$66,200	$72,319	$75,120	$76,160	$84,692
Private construction	38,299	41,798	44,057	45,810	50,253	51,120	50,587	56,996
Residential buildings	21,680	24,292	26,187	26,258	26,268	23,971	23,736	28,823
Nonresidential buildings	10,734	11,617	11,646	12,955	16,592	18,595	18,106	18,800
Farm construction	1,300	1,282	1,247	1,228	1,189	1,245	1,324	(2)
Public utilities	4,335	4,330	4,667	5,031	5,788	6,825	6,967	(2)
All other private	250	277	310	338	416	484	454	573
Public construction	17,148	17,869	19,366	20,390	22,066	24,000	25,573	27,696
By type of ownership:								
Federally owned	3,879	3,913	4,010	3,905	4,018	3,957	3,512	3,458
State and locally owned	13,269	13,956	15,356	16,485	18,048	20,043	22,061	24,238
Residential buildings	842	938	531	567	601	655	706	706
Nonresidential buildings	5,169	5,154	6,003	6,609	7,274	8,265	9,268	9,701
Educational buildings	3,052	2,984	3,477	3,790	4,284	5,333	5,987	6,061
Highways and streets	5,854	6,365	7,084	7,133	7,550	8,355	8,538	9,295
Military facilities	1,371	1,266	1,189	938	852	769	721	824
Conservation and development	1,384	1,524	1,690	1,729	2,019	2,195	2,196	2,046
Sewer systems	914	1,072	947	1,325	1,195	1,300	1,058	1,551
Water supply facilities	667	682	882	956	1,266	1,066	1,270	1,514
All other public	947	868	1,040	1,133	1,309	1,395	1,816	2,019
Maintenance and repair	19,777	20,305	20,540	(2)	(2)	(2)	(2)	(2)

[1] Beginning with data for 1959, estimates include Alaska and Hawaii.
[2] Not available.

SOURCE: Bureau of the Census, U.S. Department of Commerce.

Table G-2. Value of construction put in place in the United States [1] in constant 1957–59 dollars by type, 1947–68

(Millions of dollars)

Type of construction	1947	1948	1949	1950	1951	1952	1953
Total construction activity	$44,881	$50,375	$52,996	$59,223	$58,603	$59,347	$61,227
Total new construction	$29,573	$34,681	$36,605	$43,576	$42,596	$42,882	$44,747
Private construction	24,682	28,385	27,779	34,309	31,387	30,334	31,818
Residential buildings	14,044	16,758	16,382	22,447	18,346	17,776	18,350
Nonresidential buildings	4,994	5,210	4,718	5,321	6,641	6,071	6,694
Farm construction	1,939	2,046	2,003	1,909	1,808	1,799	1,679
Public utilities	3,584	4,267	4,556	4,470	4,505	4,577	4,948
All other private	121	104	120	162	87	111	147
Public construction	4,891	6,296	8,826	9,267	11,209	12,548	12,929
Residential buildings	300	199	474	430	687	737	614
Nonresidential buildings	923	1,787	2,861	3,252	4,421	5,034	5,107
Educational buildings	449	859	1,302	1,543	1,943	1,997	2,029
Highways and streets	1,652	1,831	2,684	2,722	2,430	2,681	3,209
Military facilities	293	207	182	234	1,060	1,612	1,483
Conservation and development	737	1,048	1,298	1,351	1,238	1,175	1,109
Sewer systems	329	470	542	550	578	567	645
Water supply facilities	284	368	403	397	476	463	450
All other public	373	386	382	331	139	279	312
Maintenance and repair	15,308	15,694	15,391	15,646	16,007	16,465	16,480

Type of construction	1954	1955	1956	1957	1958	1959	1960
Total construction activity	$63,928	$69,346	$67,880	$68,067	$67,895	$72,834	$70,777
Total new construction	$47,164	$51,717	$50,034	$49,878	$50,270	$54,222	$52,171
Private construction	33,721	38,394	36,651	35,753	34,868	38,218	36,518
Residential buildings	20,256	23,649	20,888	19,319	19,930	23,641	20,824
Nonresidential buildings	7,287	8,668	9,501	9,774	8,679	8,614	9,690
Farm construction	1,587	1,511	1,457	1,434	1,384	1,359	1,270
Public utilities	4,449	4,384	4,673	5,020	4,686	4,407	4,474
All other private	142	182	132	206	189	197	260
Public construction	13,443	13,323	13,383	14,125	15,402	16,004	15,653
Residential buildings	374	288	304	515	852	941	686
Nonresidential buildings	5,366	4,751	4,381	4,631	4,656	4,387	4,551
Educational buildings	2,466	2,742	2,748	2,908	2,879	2,579	2,664
Highways and streets	4,109	4,396	4,443	4,753	5,489	5,933	5,758
Military facilities	1,158	1,467	1,442	1,297	1,398	1,449	1,336
Conservation and development	917	799	896	1,007	1,017	1,073	1,089
Sewer systems	673	702	762	813	835	867	817
Water supply facilities	491	436	625	586	550	536	563
All other public	355	384	530	523	605	758	853
Maintenance and repair	16,764	17,629	17,846	18,189	17,625	18,612	18,606

Type of construction	1961	1962	1963	1964	1965	1966	1967	1968
Total construction activity	$72,021	$74,988	$76,917	(2)	(2)	(2)	(2)	(2)
Total new construction	$53,087	$55,948	$58,102	$59,172	$62,896	$62,941	$61,144	$64,432
Private construction	36,428	39,056	40,309	40,861	43,780	43,208	40,967	43,775
Residential construction	20,725	22,823	24,099	23,510	23,082	20,561	19,413	22,369
Nonresidential construction	10,004	10,558	10,292	11,185	13,959	15,131	14,197	13,837
Farm construction	1,248	1,239	1,194	1,169	1,116	1,121	1,144	(2)
Public utilities	4,226	4,190	4,459	4,719	5,294	6,024	5,882	(2)
All other private	225	246	265	278	329	371	331	393
Public construction	16,659	16,892	17,793	18,311	19,116	19,733	20,177	20,657
Residential construction	803	882	486	507	527	560	581	581
Nonresidential buildings	4,790	4,670	5,267	5,648	6,054	6,542	7,007	6,881
Educational buildings	2,813	2,688	3,035	3,224	3,554	4,199	4,504	4,272
Highways and streets	6,152	6,447	6,998	7,003	7,108	7,365	7,269	7,565
Military facilities	1,320	1,182	1,084	835	733	636	573	623
Conservation and development	1,255	1,345	1,445	1,429	1,605	1,676	1,611	1,406
Sewer systems	827	948	810	1,092	951	993	778	1,065
Water supply facilities	604	601	755	786	1,005	814	931	1,043
All other public	908	817	948	1,011	1,133	1,147	1,427	1,493
Maintenance and repair	18,934	19,040	18,815	(2)	(2)	(2)	(2)	(2)

[1] Beginning with data for 1959, estimates include Alaska and Hawaii.
[2] Not available.

SOURCE: U.S. Department of Commerce.

Table G-3. Employment in contract construction, by major divisions, 1939–68

(In thousands)

Year	Contract construction		General building contractors		Heavy construction		Special trades contractors	
	All employees	Construction workers	All employees	Construction workers	All employees	Construction workers	All employees	Construction workers
1939	1,150	-	-	-	-	-	-	-
1940	1,294	-	-	-	-	-	-	-
1941	1,790	-	-	-	-	-	-	-
1942	2,170	-	-	-	-	-	-	-
1943	1,567	-	-	-	-	-	-	-
1944	1,094	-	-	-	-	-	-	-
1945	1,132	-	397.0	-	223.0	-	513.0	-
1946	1,661	-	663.0	-	284.0	-	714.0	-
1947	1,982	1,759	762.0	689.0	363.0	321.0	857.0	749.0
1948	2,169	1,924	837.0	756.0	389.0	343.0	944.0	825.0
1949	2,165	1,919	809.0	731.0	401.0	354.0	955.0	834.0
1950	2,333	2,069	875.0	791.0	419.0	370.0	1,039.0	908.0
1951	2,603	2,308	991.4	895.8	461.6	407.0	1,149.6	1,005.2
1952	2,634	2,324	983.2	882.3	481.4	423.6	1,168.8	1,018.2
1953	2,623	2,305	969.2	863.3	480.1	426.7	1,174.0	1,015.2
1954	2,612	2,281	937.1	832.0	471.0	418.7	1,203.5	1,030.5
1955	2,802	2,440	997.2	880.1	483.8	429.7	1,320.8	1,130.1
1956	2,999	2,613	1,074.6	950.4	556.7	493.4	1,367.6	1,168.8
1957	2,923	2,537	986.8	866.2	576.0	512.9	1,360.6	1,158.2
1958	2,778	2,384	893.6	775.2	564.6	498.1	1,320.2	1,110.3
1959	2,960	2,538	959.0	834.4	586.5	516.8	1,414.1	1,186.9
1960	2,885	2,459	908.4	763.4	585.7	511.5	1,390.7	1,162.3
1961	2,816	2,390	874.9	752.6	583.3	505.7	1,357.9	1,131.3
1962	2,902	2,462	882.1	755.8	593.1	514.8	1,426.6	1,191.8
1963	2,963	2,523	914.1	787.0	599.2	522.5	1,449.3	1,213.9
1964	3,050	2,597	949.1	817.3	613.9	529.6	1,487.0	1,250.2
1965	3,186	2,710	994.0	852.7	648.5	560.1	1,543.4	1,297.2
1966	3,275	2,784	1,031.5	888.0	673.5	580.4	1,570.6	1,315.2
1967	3,208	2,708	984.5	840.5	663.7	570.0	1,560.3	1,297.6
1968	3,267	2,754	986.4	836.7	680.2	584.4	1,600.6	1,333.3

SOURCE: BLS, current employment statistics based on establishment reports.

Table G-4. Employment in contract construction by type of heavy and special trades contractor, 1958–68

Year	Highway and street construction		Heavy construction		Plumbing, heating, and air conditioning		Painting, paper hanging and decorating	
	All employees	Construction workers	All employees	Construction workers	All employees	Construction workers	All employees	Construction workers
1958	282.5	253.2	282.1	245.0	312.1	251.9	138.1	125.5
1959	310.4	279.7	276.1	237.1	327.9	264.3	152.9	139.3
1960	293.6	262.7	292.1	248.8	323.2	259.8	146.3	133.7
1961	291.5	261.2	291.8	244.5	321.5	258.7	136.5	124.5
1962	299.5	269.0	293.6	245.7	333.0	267.8	140.7	127.5
1963	314.1	282.0	285.1	240.5	343.1	277.0	140.6	127.0
1964	313.7	279.5	300.3	250.1	354.3	286.1	140.4	126.5
1965	324.4	289.2	324.1	270.9	366.2	298.0	143.1	128.4
1966	322.4	286.1	351.1	294.3	373.0	302.5	141.8	126.2
1967	307.2	271.4	356.4	298.6	375.3	303.0	134.6	119.5
1968	315.9	279.7	364.3	304.7	387.9	313.0	131.0	115.1

Year	Electrical work		Masonry, stonework, and plastering		Roofing and sheet metal work	
	All employees	Construction workers	All employees	Construction workers	All employees	Construction workers
1958	188.9	148.3	226.6	205.9	98.5	81.4
1959	194.7	151.9	247.4	225.8	108.2	88.5
1960	200.1	156.2	233.9	212.8	107.7	87.3
1961	195.9	151.8	221.1	200.3	102.0	82.9
1962	205.8	160.7	234.8	213.5	102.6	83.6
1963	211.6	166.0	241.8	219.6	106.2	86.3
1964	218.7	174.0	241.1	220.2	107.5	87.0
1965	233.7	187.6	238.8	217.6	110.2	89.6
1966	248.8	199.9	234.4	213.1	112.0	90.8
1967	258.0	206.7	220.2	198.0	112.7	91.3
1968	265.8	212.5	227.3	205.2	111.5	90.9

SOURCE: BLS, current employment statistics based on establishment reports.

Table G-5. Percent distribution of employment in contract construction by type of heavy and special trades contractor, 1958–68

Year	Heavy construction contractors			Special trade contractors						
	Total (SIC 16)	Highway and street construction (SIC 161)	Heavy construction, n.e.c. (SIC 162)	Total (SIC 17)	Plumbing, heating, and air conditioning (SIC 171)	Paperhanging, decorating (SIC 172)	Electrical work (SIC 173)	Masonry, stonework, and plastering (SIC 174)	Roofing and sheet metal work (SIC 176)	Other special trades (SIC 175 & 179)
1958	100.0	50.0	50.0	100.0	23.6	10.5	14.3	17.2	7.5	26.9
1959	100.0	52.9	47.1	100.0	23.6	10.8	13.8	17.5	7.7	27.0
1960	100.0	50.1	49.9	100.0	23.2	10.5	14.4	16.8	7.7	27.4
1961	100.0	50.0	50.0	100.0	23.7	10.1	14.4	16.3	7.5	28.0
1962	100.0	50.5	49.5	100.0	23.3	9.9	14.4	16.5	7.2	28.7
1963	100.0	52.4	47.6	100.0	23.7	9.7	14.6	16.7	7.3	28.0
1964	100.0	51.1	48.9	100.0	23.8	9.4	14.7	16.2	7.2	28.7
1965	100.0	50.0	50.0	100.0	23.7	9.3	15.1	15.5	7.1	29.3
1966	100.0	47.9	52.1	100.0	23.8	9.0	15.8	14.9	7.1	29.4
1967	100.0	46.3	53.7	100.0	24.1	8.6	16.5	14.1	7.2	29.5
1968	100.0	46.4	53.6	100.0	24.2	8.2	16.6	14.2	7.0	20.8

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

SOURCE: BLS, current employment statistics based on establishment reports.

Table G-6. Seasonal adjustment factors for employees in nonagricultural payrolls by industry division and groups

Industry	January	February	March	April	May	June	July	August	September	October	November	December
Mining	97.6	97.1	97.4	99.2	100.3	102.6	102.6	102.6	101.2	100.2	99.9	99.4
Contract construction	90.6	89.1	71.2	96.8	99.9	03.9	107.2	108.7	107.1	106.0	102.0	97.5
Manufacturing:[1]												
Durable goods:[1]												
Ordnance and accessories	100.5	100.3	99.8	99.4	99.1	99.6	99.8	99.4	100.4	100.4	100.8	100.4
Lumber and wood products	97.0	97.2	97.8	98.3	99.1	102.9	102.8	103.3	101.7	100.9	99.8	99.2
Furniture and fixtures	99.7	99.4	99.4	98.9	98.8	100.1	98.7	100.9	100.8	101.1	101.3	101.1
Stone, clay, and glass products	96.3	96.0	97.4	99.5	100.2	102.2	102.7	103.1	102.2	101.1	100.5	98.8
Primary metal industries	99.3	99.7	100.1	100.8	101.0	102.1	101.4	100.5	99.1	98.2	98.5	99.2
Fabricated metal products	99.7	99.4	99.3	99.4	99.5	100.9	99.0	99.8	100.3	100.8	101.0	100.8
Machinery, except electrical	100.1	100.3	100.6	100.4	100.1	100.8	100.1	99.7	99.5	99.1	99.6	99.7
Electrical equipment and supplies	100.3	100.0	99.5	99.1	98.9	99.8	98.9	99.9	100.4	100.9	101.2	101.2
Transportation equipment	100.8	100.9	100.8	100.4	100.5	100.9	98.0	92.7	100.5	101.2	101.6	101.9
Instruments and related products	99.8	99.8	99.8	99.5	99.3	100.3	100.0	100.5	100.1	100.1	100.3	100.5
Miscellaneous manufacturing industries	94.3	95.8	96.8	97.9	99.0	100.6	97.9	103.0	104.3	105.8	105.1	99.3
Nondurable goods:[1]												
Food and kindred products	96.0	95.0	95.2	95.3	96.2	99.8	102.3	107.5	107.2	104.7	101.4	99.3
Tobacco manufactures	98.8	96.5	91.6	88.4	87.3	88.5	89.0	108.0	117.3	117.4	108.5	108.8
Textile mill products	98.8	99.2	99.7	99.7	99.8	101.1	99.3	100.9	100.6	100.5	100.6	100.0
Apparel, and other textile products	98.1	100.4	100.7	99.0	99.5	100.8	96.7	101.4	101.1	101.3	101.0	99.9
Paper and allied products	99.2	99.0	99.1	99.1	99.1	101.1	100.6	101.2	100.6	100.1	100.4	100.4
Printing and publishing	99.5	99.7	99.9	99.9	99.6	100.2	100.1	100.2	99.9	100.1	100.3	100.6
Chemicals and allied products	99.1	99.3	99.8	100.3	99.9	100.6	101.0	101.2	100.1	99.6	99.5	99.5
Petroleum and coal products	97.5	97.7	98.2	98.7	99.4	101.6	102.9	103.0	102.0	100.7	99.7	98.6
Rubber and plastics products, nec	99.9	99.7	99.4	99.4	100.3	100.3	98.4	100.1	100.5	100.8	101.2	101.0
Leather and leather products	99.6	100.5	99.7	98.3	98.8	100.6	99.6	101.6	100.0	99.9	100.9	100.6
Transportation and public utilities	98.5	98.4	98.8	99.2	99.7	101.0	101.0	101.1	101.1	100.5	100.5	100.2
Wholesale and retail trade:[1]												
Wholesale trade	99.2	98.7	98.7	98.7	98.7	100.5	101.2	101.2	100.5	100.7	100.9	101.0
Retail trade	98.2	97.0	[2]98.2	[2]98.6	99.6	100.3	99.5	99.2	99.7	100.1	102.0	107.6
Finance, insurance, and real estate	98.8	99.0	99.3	99.6	99.8	100.8	101.7	101.7	100.3	99.9	09.6	99.6
Service	98.1	98.4	98.9	100.0	100.6	101.6	101.8	101.2	100.3	100.1	99.7	99.4
Hotels and other lodging places	91.4	92.9	92.9	96.4	99.6	105.4	117.4	117.3	103.1	97.1	93.8	92.6
Personal services	99.0	98.6	99.1	100.1	100.6	101.6	100.6	99.7	99.6	100.3	100.4	100.5
Medical and other health services	99.5	99.8	99.8	99.7	99.5	100.6	101.0	100.6	99.9	99.9	100.0	99.7
Educational services	103.4	104.1	104.3	103.6	103.4	96.4	88.0	86.9	96.5	103.8	105.1	104.4
Government:[1]												
Federal[3]	99.1	99.0	99.2	99.6	99.5	101.5	102.3	101.9	99.4	99.5	99.4	99.5
State and local	100.9	101.6	101.8	101.5	101.2	100.5	95.0	94.1	98.8	101.1	101.8	101.6

[1] Seasonally adjusted data derived by summation of components.
[2] Factors shown are for 1970. The factors used for March and April 1969 were 97.6 and 99.2 respectively.
[3] Based on data which exclude temporary Christmas employees of the Post Office during December.

SOURCE: BLS, current employment statistics based on establishment reports.

Table G-7. Seasonal adjustment factors of wage and salary workers in contract construction (SIC 15-17) by month, 1940–68

Year	January	February	March	April	May	June	July	August	September	October	November	December
1940 [1]	88.5	92.4	92.0	96.9	101.3	104.8	107.5	109.8	108.2	105.1	101.5	91.1
1941	88.5	92.4	92.0	96.7	101.2	105.1	107.7	109.7	108.1	105.0	101.4	91.2
1942	88.9	91.7	92.2	96.8	101.1	105.1	107.6	109.5	107.9	104.9	101.5	92.7
1943	89.5	91.2	92.4	96.8	101.0	105.0	107.4	109.3	107.8	104.9	101.6	93.2
1944	89.7	90.7	92.1	96.5	100.6	105.1	107.5	109.3	108.1	104.9	101.4	94.0
1945	90.0	89.9	91.8	96.2	100.6	105.4	107.3	109.1	107.8	105.0	101.9	95.0
1946	90.5	89.5	91.5	95.8	100.3	105.0	106.9	108.9	107.8	105.5	102.3	96.1
1947	90.7	88.9	90.7	95.1	100.1	104.8	107.0	109.2	108.0	105.0	102.7	96.8
1948	90.6	88.3	90.1	95.0	100.0	104.6	107.0	109.3	108.2	106.5	103.0	97.5
1949	90.7	87.9	89.7	94.7	99.8	104.5	107.0	109.4	108.5	106.8	103.1	98.0
1950	90.4	87.5	89.6	94.8	99.6	104.5	107.1	109.5	108.6	107.2	103.3	97.9
1951	90.4	87.2	89.6	94.9	99.7	104.4	102.2	109.5	108.6	107.2	103.5	97.7
1952	90.1	87.1	89.7	95.0	99.8	104.4	107.3	109.6	108.8	107.3	103.4	97.4
1953	89.8	87.0	89.7	95.2	100.0	104.5	107.5	109.8	108.8	107.2	103.3	97.2
1954	89.6	86.8	89.7	95.2	100.2	104.8	107.6	109.8	108.9	107.2	103.2	97.1
1955	89.3	86.7	89.3	95.1	100.4	105.0	107.8	109.9	109.2	107.2	103.2	96.7
1956	89.0	86.4	89.0	95.1	100.6	105.3	108.0	110.2	109.3	107.3	103.2	96.6
1957	88.6	86.2	88.7	94.8	100.8	105.7	108.4	110.5	109.4	107.5	103.2	96.1
1958	88.4	85.5	88.4	94.7	100.9	106.2	108.7	110.8	109.6	107.8	103.2	95.7
1959	88.3	85.1	88.0	94.7	101.0	106.3	109.1	111.2	109.7	108.0	103.3	95.4
1960	88.2	84.6	87.7	94.8	101.1	106.4	109.4	111.4	109.8	108.3	103.4	94.9
1961	88.1	84.5	87.5	94.8	101.2	106.5	109.7	111.6	109.6	108.2	103.4	94.8
1962	88.1	84.7	87.8	94.8	101.1	106.6	109.7	111.7	109.4	107.9	103.3	95.1
1963	88.3	84.8	88.3	94.9	101.0	106.6	109.8	111.5	109.0	107.6	103.1	95.2
1964	88.8	85.1	88.6	95.1	100.7	106.5	109.6	111.3	108.7	107.1	102.9	95.6
1965	89.1	85.6	89.1	95.4	100.7	106.2	109.4	111.0	108.3	106.7	102.7	96.0
1966	89.2	86.2	89.6	95.4	100.4	106.2	109.2	110.7	108.0	106.4	102.4	96.3
1967	89.6	86.7	89.8	95.5	100.2	106.0	109.0	110.5	107.6	106.1	102.4	96.6
1968	89.6	87.1	90.1	95.8	100.0	105.8	108.8	110.3	107.6	105.9	102.2	96.8

[1] Seasnoal factors for first 3 months are 1941 factors.

SOURCE: BLS, current employment statistics based on establishment reports.

Table G-8. Seasonal adjustment factors of wage and salary workers in general building construction (SIC 15) by month, 1945–68

Year	January	February	March	April	May	June	July	August	September	October	November	December
1945 [1]	92.4	88.7	89.8	94.5	99.8	104.5	106.2	108.1	107.6	105.5	102.9	99.9
1946	92.4	88.7	89.8	94.3	99.6	104.3	106.3	108.3	107.7	105.8	103.1	99.8
1947	92.0	88.3	89.8	94.1	99.4	104.3	106.6	108.6	107.9	106.1	103.4	99.6
1948	91.8	88.0	89.9	94.2	99.4	104.3	106.6	108.8	107.9	106.3	103.3	99.4
1949	91.5	87.8	90.1	94.2	99.1	104.3	106.8	109.1	108.1	106.5	103.5	99.0
1950	91.0	87.5	90.2	94.4	99.0	104.4	107.1	109.3	108.2	106.7	103.5	98.7
1951	90.8	87.1	90.2	94.7	99.2	104.4	107.3	109.5	108.2	106.8	103.5	98.2
1952	90.5	87.0	90.3	94.8	99.3	104.4	107.6	109.7	108.4	106.8	103.4	97.7
1953	90.0	86.9	90.3	95.1	99.5	104.6	107.8	110.0	108.5	106.6	103.2	97.5
1954	89.7	86.8	90.1	95.4	99.7	104.7	108.2	110.1	108.5	106.5	103.0	97.4
1955	89.4	86.8	89.8	95.3	99.9	104.8	108.4	110.2	108.6	106.5	103.1	97.2
1956	89.3	86.3	89.4	95.4	100.2	105.1	108.5	110.4	108.6	106.6	103.0	97.2
1957	89.0	86.0	89.1	95.3	100.5	105.5	108.9	110.6	108.6	106.7	103.1	96.7
1958	89.0	85.6	88.9	95.1	100.5	105.8	109.0	110.8	108.7	106.9	103.1	96.5
1959	89.1	85.4	88.4	95.1	100.6	105.9	109.2	111.0	108.7	107.1	103.2	96.2
1960	89.2	85.0	88.1	95.2	100.7	106.0	109.5	111.1	108.8	107.2	103.4	95.8
1961	89.3	85.1	88.0	95.2	100.5	106.1	109.4	111.3	108.6	107.2	103.6	95.9
1962	89.4	85.3	88.1	95.2	100.3	106.2	109.4	111.4	108.3	106.8	103.4	96.3
1963	89.8	85.7	88.8	95.3	99.8	106.0	109.3	111.1	107.9	106.5	103.3	96.5
1964	90.6	86.1	89.2	95.4	99.4	105.7	108.9	110.8	107.5	106.0	103.1	97.3
1965	91.1	86.6	89.6	95.8	99.1	105.2	108.5	110.4	107.1	105.7	103.0	97.9
1966	91.4	87.3	90.4	95.7	98.8	105.2	108.1	110.0	106.7	105.4	102.8	98.3
1967	91.8	87.8	90.8	95.7	98.5	104.9	107.7	109.6	106.4	105.2	102.8	98.8
1968	91.9	88.3	91.2	96.0	98.3	104.5	107.4	109.4	106.4	105.1	102.5	99.0

[1] Seasonal factors for first 3 months are 1946 factors.

SOURCE: BLS, current employment statistics based on establishment reports.

Table G-9. Seasonal adjustment factors of wage and salary workers in heavy construction (SIC 16) by month, 1945–68

Year	January	February	March	April	May	June	July	August	September	October	November	December
1945 [1]	78.9	75.9	79.4	91.9	101.6	110.5	114.7	119.0	117.4	112.8	104.9	92.9
1946	78.9	75.9	79.4	91.8	101.9	110.4	114.7	119.0	117.5	113.0	105.0	92.7
1947	79.0	75.8	79.2	91.6	101.9	110.5	114.8	119.0	117.3	113.1	105.1	92.7
1948	78.9	75.7	79.3	91.8	102.1	110.6	114.8	118.9	117.1	113.1	105.0	92.7
1949	79.0	75.7	79.6	91.8	102.3	110.7	114.7	118.8	116.9	113.2	104.7	92.5
1950	79.1	75.5	79.8	92.0	102.5	110.6	114.5	118.6	116.7	113.5	104.8	92.3
1951	79.1	75.6	80.2	92.4	102.9	110.5	114.3	118.3	116.4	113 4	105.0	92.0
1952	79.1	76.0	80.5	92.5	103.0	110.4	114.3	118.2	116.4	113.4	104.9	91.5
1953	78.9	76.3	80.7	92.5	103.3	110.5	114.5	118.0	116.2	113.2	104.6	91.4
1954	78.7	76.5	80.7	92.4	103.7	110.6	114.6	117.8	116.3	113.2	104.2	91.2
1955	78.6	76.7	80.4	92.0	103.9	110.9	114.7	117.8	116.7	113.4	104.4	90.5
1956	77.9	76.7	79.8	91.9	104.2	111.4	115.3	118.1	116.7	113.3	104.3	90.2
1957	77.2	76.2	79.5	91.4	104.5	112.2	115.9	118.5	117.0	113.6	104.4	89.7
1958	76.9	75.3	79.0	91.1	104.5	112.9	116.5	118.9	117.4	114.1	104.3	89.0
1959	76.4	74.5	78.4	91.0	104.8	113.4	117.0	119.5	117.7	114.5	104.3	88.4
1960	76.1	73.8	78.0	91.1	104.8	113.7	117.5	120.0	118.0	115.1	104.4	87.8
1961	75.7	73.2	77.6	91.1	104.9	114.1	117.9	120.3	118.0	115.2	104.5	87.4
1962	75.8	73.1	77.7	91.0	105.1	114.4	118.0	120.5	117.6	114.9	104.3	87.5
1963	76.0	73.1	78.0	91.1	104.9	114.6	118.1	120.2	117.3	114.9	104.2	87.4
1964	76.5	73.5	78.4	91.4	104.7	114.3	118.0	120.0	116.9	114.2	104.1	87.8
1965	76.7	74.2	78.9	91.9	104.8	113.8	117.8	119.7	116.4	113.6	103.8	88.4
1966	77.2	75.2	79.5	91.9	104.5	113.6	117.5	119.3	115.9	113.1	103.6	88.7
1967	77.7	75.7	79.7	92.0	104.3	113.4	117.3	119.1	115.5	112.7	103.6	89.1
1968	77.8	76.2	80.1	92.3	104.2	113.0	117.1	118.8	115.4	112.4	103.4	89.3

[1] Seasonal factors for first 3 months are 1946 factors.

SOURCE: BLS, current employment statistics based on establishment reports.

Table G-10. Seasonal adjustment factors of wage and salary workers in highway and street construction (SIC 161) by month, 1958–68

Year	January	February	March	April	May	June	July	August	September	October	November	December
1958 [1]	65.0	61.2	68.7	87.2	108.7	121.2	125.8	129.5	126.4	121.2	105.9	79.1
1959	65.0	61.2	68.7	87.4	108.7	121.1	125.9	129.6	126.4	121.4	105.7	78.9
1960	65.0	61.3	68.4	87.5	108.8	121.2	125.8	129.5	126.4	121.6	105.4	79.1
1961	64.9	61.7	68.4	87.4	108.6	121.2	126.0	129.4	126.1	121.5	105.3	79.4
1962	65.0	61.8	68.5	87.4	108.6	121.3	126.0	129.4	125.6	121.4	105.1	79.7
1963	65.1	62.2	68.5	87.6	108.3	121.6	126.1	129.0	125.2	121.4	105.1	80.0
1964	65.4	62.8	68.7	88.0	107.8	121.1	126.1	128.9	125.0	120.7	104.9	80.5
1965	65.5	63.4	68.8	88.5	107.8	120.6	125.8	128.6	124.6	120.1	104.8	81.2
1966	65.8	64.0	69.3	88.6	107.7	120.5	125.7	128.3	124.2	119.7	104.6	81.6
1967	66.1	64.1	69.5	88.8	107.4	120.3	125.8	128.2	123.9	119.2	104.8	82.0
1968	66.1	64.5	69.7	89.1	107.3	120.0	125.5	128.0	123.8	119.0	104.7	82.2

[1] Seasonal factors for first 3 months are 1959 factors.

SOURCE: BLS, current employment statistics based on establishment reports.

Table G-11. Seasonal adjustment factors of wage and salary workers in heavy construction, except highway (SIC 162) by month, 1958–68

Year	January	February	March	April	May	June	July	August	September	October	November	December
1958 [1]	86.7	82.9	86.4	95.1	101.4	106.9	109.9	111.6	110.7	109.5	104.5	94.7
1959	86.7	82.9	86.4	95.0	101.6	106.9	110.1	111.6	110.6	109.4	104.3	94.5
1960	86.8	83.0	86.3	95.0	101.6	107.1	110.3	111.8	110.5	109.2	104.0	94.5
1961	86.7	83.3	86.4	94.9	101.6	107.2	110.3	111.7	110.3	109.1	104.0	94.5
1962	86.8	83.4	86.6	94.8	101.8	107.6	110.3	111.8	109.9	108.5	103.7	94.6
1963	87.0	83.7	86.9	94.9	101.7	107.7	110.4	111.7	109.7	108.3	103.5	94.6
1964	86.9	84.2	87.5	95.0	101.6	107.6	110.2	111.5	109.3	107.9	103.3	95.0
1965	87.0	84.8	88.1	95.3	101.6	107.2	110.1	111.3	108.8	107.5	103.0	95.3
1966	87.2	85.8	88.6	95.3	101.4	107.1	109.8	111.0	108.4	107.1	102.7	95.5
1967	87.4	86.5	89.1	95.3	101.3	106.9	109.6	110.6	108.1	106.9	102.7	95.6
1968	87.7	86.8	89.5	95.4	101.2	106.6	109.6	110.5	107.9	106.6	102.4	95.7

[1] Seasonal factors for first 3 months are 1959 factors.

SOURCE: BLS, current employment statistics based on establishment reports.

Table G-12. Seasonal adjustment factors of wage and salary workers in special trades construction (SIC 17) by month, 1945–68

Year	January	February	March	April	May	June	July	August	September	October	November	December
1945 [1]	94.8	92.4	92.8	96.4	99.4	102.4	104.0	105.5	105.1	104.1	102.6	100.3
1946	94.8	92.4	92.8	96.2	99.3	102.3	104.0	105.6	105.3	104.4	102.8	100.1
1947	94.8	92.3	92.7	96.1	99.2	102.3	104.1	105.7	105.4	104.6	102.8	100.1
1948	94.7	92.3	92.8	96.1	99.1	102.1	104.1	105.8	105.4	104.7	102.9	100.1
1949	94.6	92.3	92.8	95.9	98.9	102.1	104.2	105.8	105.6	104.8	103.0	100.0
1950	94.4	92.2	92.8	96.0	98.7	102.1	104.2	105.9	105.7	105.0	103.0	99.9
1951	94.4	92.2	92.8	96.0	98.7	102.0	104.3	106.0	105.8	105.0	103.1	99.8
1952	94.0	92.0	92.8	96.1	98.8	102.0	104.3	106.1	106.0	105.1	103.1	99.6
1953	93.7	91.9	92.8	96.2	98.9	102.3	104.4	106.2	106.1	105.1	103.0	99.4
1954	93.5	91.6	92.8	96.2	99.0	102.5	104.4	106.3	106.3	105.2	103.0	99.3
1955	93.1	91.4	92.5	96.1	99.1	102.8	104.6	106.5	106.6	105.3	103.0	99.0
1956	92.8	90.9	92.3	96.1	99.3	103.0	104.8	106.9	106.7	105.4	103.0	98.8
1957	92.6	90.3	92.0	96.0	99.5	103.3	105.0	107.2	106.9	105.6	103.0	98.5
1958	92.5	89.7	91.8	95.9	99.6	103.6	105.4	107.5	107.0	105.9	103.0	98.2
1959	92.4	89.3	91.6	95.9	99.7	103.6	105.6	107.8	107.0	106.0	103.1	98.0
1960	92.3	89.0	91.4	96.1	99.8	103.6	106.0	108.0	107.0	106.0	103.0	97.7
1961	92.3	89.0	91.4	96.1	99.9	103.6	106.3	108.2	106.8	105.9	102.9	97.6
1962	92.3	89.2	91.8	96.1	100.0	103.7	106.3	108.1	106.6	105.6	102.7	97.7
1963	92.4	89.4	92.0	96.2	99.9	103.8	106.5	108.0	106.3	105.4	102.5	97.7
1964	92.7	89.7	92.2	96.4	99.8	103.8	106.5	107.9	105.9	104.9	102.3	98.0
1965	92.9	90.0	92.7	96.6	99.8	103.6	106.4	107.7	105.6	104.5	102.1	98.2
1966	92.9	90.4	93.0	96.7	99.7	103.6	106.4	107.5	105.4	104.2	101.9	98.3
1967	93.1	90.7	93.2	96.8	99.5	103.5	106.3	107.3	105.1	104.0	101.8	98.6
1968	93.1	90.9	93.5	97.0	99.5	103.4	106.2	107.2	105.0	103.8	101.7	98.7

[1] Seasonal factors for first 3 months are 1946 factors.

SOURCE: BLS, current employment statistics based on establishment reports.

Table G-13. Seasonal adjustment factors of wage and salary workers in plumbing, heating, and air conditioning work (SIC 171), by month, 1958–68

Year	January	February	March	April	May	June	July	August	September	October	November	December
1958 [1]	97.3	94.2	93.3	95.6	97.4	100.2	102.9	104.8	105.3	105.0	102.8	101.1
1959	97.3	94.2	93.3	95.7	97.5	100.2	102.9	104.9	105.3	104.9	102.8	100.9
1960	97.4	94.3	93.4	95.7	97.6	100.3	102.9	104.9	105.2	104.7	102.7	100.9
1961	97.3	94.3	93.9	95.7	97.6	100.3	103.0	105.0	105.0	104.5	102.6	100.8
1962	97.5	94.5	94.2	95.8	97.7	100.5	103.0	104.9	104.6	104.2	102.5	100.6
1963	97.5	94.6	95.0	95.9	97.7	100.6	103.1	104.7	104.1	103.9	102.4	100.5
1964	97.7	94.7	95.4	96.2	97.6	100.6	103.2	104.7	103.7	103.5	102.3	100.5
1965	97.7	95.0	95.7	96.4	97.7	100.6	103.2	104.5	103.5	103.5	102.1	100.3
1966	97.7	95.3	96.0	96.6	97.6	100.6	103.3	104.3	104.3	103.1	102.0	100.3
1967	97.7	95.5	96.0	96.9	97.6	100.5	103.3	104.1	103.1	103.1	102.0	100.3
1968	97.6	95.8	96.2	97.0	97.6	100.4	103.2	103.9	103.1	102.9	101.9	100.3

[1] Seasonal factors for first 3 months are 1959 factors.

SOURCE: BLS, current employment statistics based on establishment reports.

Table G-14. Seasonal adjustment factors of wage and salary workers in painting, paperhanging, and decorating (SIC 172), by month, 1958–68

Year	January	February	March	April	May	June	July	August	September	October	November	December
1958 [1]	79.5	78.5	83.7	94.0	102.7	108.7	115.4	118.1	114.1	110.1	103.4	91.9
1959	79.5	78.5	83.7	94.2	102.9	108.7	115.3	117.9	114.4	110.2	103.3	91.6
1960	79.6	78.6	83.7	94.3	103.1	108.6	115.0	117.7	114.5	110.3	103.1	91.4
1961	79.6	78.8	84.1	94.2	103.3	108.7	115.0	117.4	114.4	110.4	103.0	91.4
1962	79.8	79.2	84.4	94.1	103.4	108.7	114.9	117.0	114.3	110.2	102.7	91.5
1963	80.1	79.7	84.8	93.9	103.4	108.4	114.6	116.8	114.1	110.1	102.5	91.6
1964	80.4	80.1	85.2	94.1	103.4	108.3	114.5	116.5	113.5	109.8	102.2	92.0
1965	80.9	80.8	85.6	94.1	103.4	107.9	114.2	116.5	112.8	109.5	101.9	92.4
1966	81.4	81.4	86.0	93.9	103.2	107.7	114.1	116.4	112.3	109.2	101.7	92.7
1967	81.8	81.8	86.4	93.7	102.9	107.7	114.2	116.4	111.8	108.9	101.6	92.9
1968	81.9	82.3	85.6	94.0	102.6	107.4	114.0	116.6	111.8	108.6	101.5	93.0

[1] Seasonal factors for first 3 months are 1959 factors.

SOURCE: BLS, current employment statistics based on establishment reports.

Table G-15. Seasonal adjustment factors of wage and salary workers in electrical work (SIC 173), by month, 1958–68

Year	January	February	March	April	May	June	July	August	September	October	November	December
1958 [1]	97.1	95.1	93.3	95.0	97.4	100.3	103.7	105.2	105.3	104.3	102.5	100.8
1959	97.1	95.1	93.3	95.2	97.5	100.3	103.6	105.4	105.3	104.3	102.3	100.7
1960	97.1	95.1	93.4	95.2	97.5	100.4	103.7	105.5	105.2	104.2	102.2	100.5
1961	97.1	95.1	93.7	95.3	97.6	100.5	103.7	105.5	105.0	104.0	102.1	100.5
1962	97.1	95.2	94.0	95.5	97.6	100.6	103.7	105.7	104.7	103.6	102.0	100.4
1963	97.0	95.2	94.5	95.9	97.5	100.6	103.7	105.7	104.4	103.4	101.8	100.3
1964	97.2	95.4	94.9	96.2	97.6	100.8	103.7	105.5	103.9	103.0	101.6	100.2
1965	97.3	95.6	95.3	96.6	97.6	100.8	103.6	105.5	103.5	102.6	101.5	100.2
1966	97.5	95.8	95.7	96.8	97.5	100.8	103.5	105.3	103.1	102.2	101.4	100.2
1967	97.7	95.9	96.0	97.0	97.5	100.8	103.4	105.2	102.8	102.0	101.4	100.3
1968	97.7	96.0	96.2	97.2	97.5	100.8	103.4	105.1	102.7	101.7	101.3	100.3

[1] Seasonal factors for first 3 months are 1959 factors.

SOURCE: BLS, current employment statistics based on establishment reports.

Table G-16. Seasonal adjustment factors of wage and salary workers in masonry, plastering, stonework, and tile work (SIC 174), by month, 1958–68

Year	January	February	March	April	May	June	July	August	September	October	November	December
1958 [1]	89.2	87.0	92.7	98.5	102.6	106.6	107.9	109.5	106.9	104.9	101.7	92.6
1959	89.2	87.0	92.7	98.6	102.7	106.5	108.1	109.3	106.7	104.8	101.7	92.7
1960	89.4	87.1	92.4	98.5	102.9	106.4	108.3	109.4	106.7	104.6	101.4	92.8
1961	89.5	87.4	92.7	98.4	102.9	106.3	108.5	109.4	106.4	104.3	101.2	93.2
1962	89.4	87.7	93.0	98.1	102.9	106.2	108.4	109.3	106.3	104.1	100.8	93.9
1963	89.5	88.0	93.1	98.0	102.7	106.0	108.7	109.5	106.0	103.7	100.5	94.3
1964	89.6	88.2	93.3	98.2	102.7	105.7	108.6	109.4	105.8	103.4	100.2	94.9
1965	89.5	88.7	93.8	98.4	102.4	105.3	108.4	109.1	105.7	103.4	100.0	95.4
1966	89.6	89.3	94.1	98.2	102.0	105.2	108.2	109.2	105.5	103.3	99.7	95.5
1967	89.6	89.5	94.4	98.3	101.7	105.0	108.0	109.1	105.4	103.3	99.7	96.0
1968	89.7	89.7	94.6	98.5	101.3	105.0	107.6	108.8	105.5	103.5	99.6	96.3

[1] Seasonal factors for first 3 months are 1959 factors.

SOURCE: BLS, current employment statistics based on establishment reports.

Table G-17. Seasonal adjustment factors of wage and salary workers in roofing and sheetmetal work (SIC 176), by month, 1958–68

Year	January	February	March	April	May	June	July	August	September	October	November	December
1958 [1]	92.5	87.7	89.1	94.7	97.2	101.5	105.2	107.9	108.0	110.1	107.3	98.7
1959	92.5	87.7	89.1	94.8	97.2	101.6	105.3	107.9	107.6	109.9	107.3	98.9
1960	92.3	87.4	89.3	95.0	97.5	101.9	105.6	107.9	107.3	109.7	107.3	98.9
1961	92.2	87.3	89.3	95.2	97.8	102.1	105.6	107.8	107.2	109.4	107.0	98.9
1962	92.3	87.4	89.6	95.3	98.1	102.5	105.7	107.7	106.8	108.8	106.5	99.4
1963	92.3	87.1	90.0	95.7	98.3	102.9	105.8	107.5	106.4	108.3	106.2	99.5
1964	92.6	87.0	90.2	96.1	98.4	103.0	105.9	107.6	106.2	107.5	105.6	99.9
1965	92.8	87.1	90.8	96.5	98.4	103.0	105.7	107.6	105.8	106.8	105.2	100.3
1966	92.7	87.2	91.3	96.9	98.5	103.1	105.6	107.4	105.6	106.3	104.9	100.4
1967	93.0	87.5	91.7	97.0	98.4	103.1	105.4	107.4	105.5	105.9	104.4	100.8
1968	92.9	87.5	92.1	97.2	98.2	103.1	105.4	107.4	105.2	105.6	104.2	101.2

[1] Seasonal factors for first 3 months are 1959 factors.

SOURCE: BLS, current employment statistics based on establishment reports.

Table G-18. Seasonal adjustment factors of wage and salary workers employed by operative builders (SIC 656), by month, 1958–68

Year	January	February	March	April	May	June	July	August	September	October	November	December
1958 [1]	89.6	88.3	93.0	99.3	102.1	106.2	107.7	107.8	106.5	104.1	99.2	96.2
1959	89.6	88.3	93.0	99.5	102.3	106.2	107.7	107.6	106.1	104.2	99.3	96.1
1960	90.0	88.6	93.3	99.5	102.4	106.2	107.6	107.6	105.6	104.0	99.2	95.9
1961	90.4	89.1	93.9	99.4	102.3	106.1	107.7	107.3	105.2	103.9	99.2	95.7
1962	90.5	89.7	94.3	99.4	102.3	106.2	107.6	107.1	104.6	103.6	99.1	95.5
1963	91.0	90.4	95.0	99.4	102.5	106.1	107.3	106.9	103.9	103.1	98.9	95.5
1964	91.5	91.2	95.4	99.5	102.3	105.8	107.2	106.7	103.5	102.8	98.8	95.3
1965	91.7	92.1	95.9	99.7	102.2	105.7	106.9	106.6	103.1	102.4	98.5	95.2
1966	91.8	92.4	96.3	99.7	102.0	105.7	106.8	106.6	103.0	101.9	98.3	95.3
1967	91.9	93.0	96.6	99.7	101.8	105.5	106.7	106.5	103.1	101.6	98.2	95.5
1968	92.0	93.1	96.7	99.9	102.0	105.5	106.3	106.6	103.0	101.1	98.0	95.7

[1] Seasonal factors for first 3 months are 1959 factors.

SOURCE: BLS, current employment statistics based on establishment reports.

Table G-19. Seasonal adjustment factors for contract construction employment by type and size of contractor,[1] and by region, selected months, 1960–68

Year	Small						Large					
	January	February	March	July	August	September	January	February	March	July	August	September
		(0-99)			South—General building contractors (SIC 15)						(100+)	
1960	91.1	90.1	92.4	108.0	109.8	106.1	94.0	93.3	94.4	105.4	106.9	102.9
1961	91.2	90.2	92.4	107.9	109.6	105.9	93.8	93.5	94.8	105.5	106.6	102.7
1962	92.0	90.2	92.4	107.8	109.5	105.5	105.5	94.1	95.3	105.2	106.6	102.7
1963	92.4	90.1	92.7	107.6	109.3	105.1	94.3	93.8	95.9	105.0	106.2	102.5
1964	93.2	90.1	93.1	107.5	109.0	104.6	94.6	93.9	95.9	104.3	105.8	102.4
1965	93.8	90.4	93.3	107.5	108.5	104.1	94.7	94.0	96.5	104.2	105.1	102.2
1966	93.9	90.3	93.8	107.2	108.2	103.9	94.7	93.9	97.1	103.8	104.9	102.1
1967	94.1	90.5	94.1	107.1	108.0	103.5	95.2	94.0	97.5	103.2	104.4	102.0
1968	94.1	90.6	94.6	107.1	107.9	103.4	95.0	93.9	97.8	102.5	104.2	101.9
		(0-49)			North Central—Highway and street construction (SIC 161)						(50+)	
1960	35.9	33.8	38.0	154.9	160.7	151.6	49.6	47.5	49.7	142.4	145.6	140.3
1961	35.8	33.7	38.1	152.5	159.8	151.7	49.6	47.2	50.6	142.1	145.4	139.8
1962	35.9	34.0	38.3	155.3	159.8	150.9	49.6	47.0	51.1	141.9	145.1	139.0
1963	36.0	33.9	38.6	154.6	159.3	151.2	49.8	46.7	51.6	141.8	144.9	138.9
1964	36.3	34.1	38.9	154.4	159.8	151.3	49.6	46.8	52.1	141.2	144.6	138.3
1965	36.1	34.3	39.5	153.2	157.4	151.1	49.5	46.9	52.3	140.2	143.6	137.7
1966	36.4	34.2	39.9	153.4	156.9	151.0	49.6	46.9	52.9	139.8	143.4	137.1
1967	36.6	34.5	40.4	153.6	156.9	150.6	49.7	47.1	53.2	139.7	143.1	137.0
1968	36.6	34.8	40.9	152.6	157.1	150.6	49.7	47.5	53.6	139.5	143.0	137.0
		(0-99)			West—Highway and street construction (SIC 161)						(100+)	
1960	76.5	68.1	77.1	120.4	124.4	120.2	87.3	75.2	86.0	109.7	114.8	114.0
1961	76.0	69.1	77.1	120.9	124.7	120.2	86.2	76.9	86.4	110.1	114.7	113.8
1962	75.0	69.8	77.3	121.0	124.6	120.5	85.2	78.2	87.3	110.2	115.4	113.4
1963	74.2	70.1	77.1	121.4	124.2	121.1	84.5	79.0	87.9	110.9	115.3	113.3
1964	73.8	70.9	77.0	121.5	124.7	121.5	84.4	80.7	88.2	111.6	115.5	113.1
1965	72.5	71.1	77.3	121.5	124.9	122.0	83.4	80.9	88.3	112.2	115.9	113.6
1966	71.8	71.1	77.0	121.4	124.8	122.7	82.7	81.0	88.4	112.5	115.6	113.6
1967	71.0	71.6	76.7	121.3	124.6	122.7	82.0	81.6	87.8	112.9	115.7	113.5
1968	70.4	71.1	76.8	120.7	124.4	123.2	81.8	81.4	87.7	113.3	115.9	113.9
		(0-9)			Northeast—Plumbing, heating, and air conditioning (SIC 171)						(10+)	
1960	98.9	95.7	92.8	102.8	104.2	105.1	98.6	95.5	94.1	102.4	102.8	104.3
1961	99.0	95.7	93.0	103.0	104.0	104.7	98.7	95.6	94.4	102.1	102.9	104.1
1962	99.1	95.9	93.3	103.1	103.8	104.3	98.8	95.6	94.7	101.8	103.1	103.9
1963	99.3	96.0	93.7	103.2	103.5	103.9	98.9	95.5	94.9	101.4	103.0	103.7
1964	99.4	96.2	94.3	103.3	103.3	103.2	99.2	95.5	95.4	101.2	103.2	103.6
1965	99.5	96.5	94.7	103.0	103.1	102.6	99.3	95.6	95.5	100.8	103.4	103.5
1966	99.7	96.7	95.2	102.9	103.1	102.2	99.5	95.5	95.8	100.7	103.4	103.2
1967	99.6	96.9	95.7	102.9	103.0	101.8	99.8	95.5	96.0	100.6	103.4	103.0
1968	99.6	96.9	96.1	102.6	103.0	101.7	99.8	95.3	96.1	100.5	103.3	103.0
		(0-19)			North Central—Plumbing, heating, and air conditioning (SIC 171)						(20+)	
1960	96.7	93.3	91.2	104.1	106.0	106.9	95.9	93.1	93.2	103.8	106.4	106.1
1961	96.7	93.2	91.6	104.2	106.0	106.5	96.0	93.5	93.7	103.3	106.3	106.0
1962	96.7	93.3	91.9	104.1	106.1	106.2	96.2	93.8	94.1	103.0	106.0	105.6
1963	96.8	93.3	92.4	104.2	106.1	105.8	96.4	94.0	94.7	102.7	105.8	105.1
1964	97.1	93.4	93.0	104.1	106.1	105.5	96.7	94.6	95.1	102.3	105.3	104.7
1965	97.5	93.6	93.6	104.0	106.0	104.9	97.0	95.0	95.9	102.0	104.7	104.4
1966	97.8	93.7	94.1	103.8	105.8	104.6	97.2	95.1	96.3	101.8	104.4	104.2
1967	98.1	93.9	94.2	103.9	105.9	104.2	97.3	95.5	96.9	101.9	104.2	103.8
1968	98.2	94.2	94.5	103.7	105.7	104.2	97.1	95.5	97.3	102.1	103.7	103.5
		(0-19)			West—Plumbing, heating, and air conditioning (SIC 171)						(20+)	
1960	96.7	94.6	94.1	104.0	106.2	105.5	96.4	95.4	96.9	101.5	103.6	103.8
1961	96.5	94.4	93.9	104.1	106.4	105.6	96.4	95.8	97.0	101.6	103.6	103.7
1962	96.6	94.5	94.0	103.9	106.2	105.5	96.3	95.9	97.2	101.6	103.5	103.7
1963	96.5	94.3	94.1	103.7	106.4	105.6	96.2	95.8	97.3	102.0	103.5	103.8
1964	96.1	94.2	94.1	103.8	106.2	105.6	96.5	95.9	97.1	102.1	103.5	103.6
1965	96.1	93.7	94.3	103.7	106.2	106.0	96.5	95.7	97.0	102.4	103.2	103.7
1966	96.0	93.7	94.4	103.7	106.2	105.9	96.5	95.8	97.1	102.5	103.2	103.7
1967	95.7	93.6	94.2	103.6	106.2	106.0	96.8	95.7	96.9	102.3	103.8	103.8
1968	95.7	93.6	94.5	103.5	106.1	106.0	96.9	95.4	96.6	102.5	103.7	104.0

See footnote at end of table.

Table G-19. Seasonal adjustment factors for contract construction employment by type and size of contractor,[1] and by region, selected months, 1960–68—Continued

Year	Small						Large					
	January	February	March	July	August	September	January	February	March	July	August	September
		(0-9)		Northeast—Painting, paperhanging and decorating (SIC 172)							(10+)	
1960	68.2	67.8	76.2	121.4	122.0	118.5	82.8	80.2	83.5	115.0	117.7	114.3
1961	68.1	67.4	76.0	121.6	122.0	118.2	82.6	80.1	84.3	114.4	117.6	114.4
1962	68.2	67.5	76.0	121.6	121.6	118.6	82.4	80.3	85.0	113.8	117.5	114.4
1963	68.3	68.0	76.2	121.6	121.4	118.3	82.2	80.7	85.6	112.9	117.1	114.5
1964	68.6	68.0	76.3	121.6	121.5	118.8	82.3	80.6	86.5	112.1	117.1	114.1
1965	68.9	68.8	76.6	121.4	120.6	118.5	81.8	81.2	86.8	111.8	116.9	114.2
1966	69.7	69.6	76.9	121.2	120.5	117.8	82.3	81.6	86.8	111.3	116.8	113.9
1967	70.4	69.8	77.3	121.6	120.5	117.7	82.4	81.6	87.0	111.1	116.5	113.6
1968	70.5	70.3	77.7	121.4	120.0	118.1	82.6	81.9	86.8	111.0	116.2	113.4
		(0-19)		North Central—Painting, paperhanging and decorating (SIC 172)							(20+)	
1960	76.6	77.3	82.8	116.0	120.7	116.8	82.2	78.4	79.2	115.3	120.8	116.9
1961	76.5	77.5	83.3	116.1	120.1	116.0	82.0	79.3	80.3	115.5	120.2	116.1
1962	76.5	77.8	83.3	116.2	119.5	115.2	82.2	79.8	81.4	115.5	119.9	115.2
1963	76.9	77.8	83.9	116.6	119.1	114.4	82.2	80.4	82.5	115.4	119.3	114.3
1964	77.0	78.0	84.6	116.7	118.4	113.7	82.5	81.2	84.4	115.2	118.5	113.5
1965	77.2	78.6	85.2	116.7	117.9	113.0	82.8	82.2	85.3	114.7	117.5	112.4
1966	77.5	79.1	86.0	117.1	117.6	112.6	82.9	83.2	86.7	114.0	117.1	111.7
1967	77.5	79.5	86.5	117.3	117.2	112.2	82.8	83.8	87.8	113.6	117.1	111.1
1968	77.7	79.7	86.6	117.1	117.6	112.6	83.1	84.0	88.6	113.0	116.9	110.9
		(0-19)		South—Painting, paperhanging and decorating (SIC 172)							(20+)	
1960	85.9	83.5	88.1	111.5	112.8	108.3	85.6	83.1	84.7	112.3	118.5	106.1
1961	86.4	83.8	88.5	110.8	112.2	107.9	85.6	84.0	85.3	111.8	117.7	106.9
1962	86.8	84.6	89.0	110.7	112.6	107.8	86.6	84.1	86.0	111.1	117.0	107.5
1963	87.4	85.2	89.4	110.2	113.2	107.5	87.8	84.6	86.5	111.1	116.1	108.0
1964	87.3	85.6	89.8	110.1	112.6	107.7	89.4	85.4	87.7	109.9	114.4	108.6
1965	87.3	86.5	89.9	109.9	113.2	107.9	90.4	86.0	88.2	109.0	112.9	109.5
1966	87.5	86.7	89.9	109.9	113.8	108.1	92.0	86.5	88.9	108.0	111.9	109.5
1967	87.4	87.2	89.9	110.3	114.0	108.1	92.9	87.1	89.3	107.5	111.3	110.0
1968	87.2	87.5	89.9	110.9	114.8	108.6	93.1	87.4	89.6	107.4	110.9	109.6
		(0-9)		West—Painting, paperhanging and decorating (SIC 172)							(10+)	
1960	78.9	80.8	83.4	118.9	124.7	119.3	91.5	87.9	92.0	107.5	109.1	108.3
1961	79.2	80.4	83.1	117.8	124.3	119.7	90.8	88.1	92.1	107.9	109.4	108.4
1962	78.9	80.8	83.9	116.5	123.1	119.5	90.4	88.2	91.9	108.1	109.7	108.7
1963	79.2	81.7	84.2	114.6	122.0	120.1	90.3	88.3	91.8	108.7	109.9	109.2
1964	79.3	82.2	84.3	113.7	120.9	119.7	90.2	88.5	91.2	109.0	110.8	109.4
1965	79.6	83.6	85.5	111.9	119.7	118.6	90.0	88.7	91.2	108.9	111.2	109.2
1966	79.6	84.8	85.9	110.8	119.5	117.9	90.0	88.9	91.1	108.9	111.5	109.3
1967	80.1	85.5	86.5	109.3	118.5	118.1	90.1	89.0	90.7	108.3	111.9	109.6
1968	80.0	86.6	87.2	109.4	117.9	117.5	90.4	89.1	90.5	107.9	112.0	109.5
		(10-19)		Northeast—Electrical work (SIC 173)							(20+)	
1960	98.1	94.1	93.4	103.0	105.7	104.4	96.4	96.0	94.8	103.9	103.2	102.1
1961	98.1	94.2	93.7	103.2	105.5	103.9	96.4	95.8	95.2	103.7	103.2	102.1
1962	98.2	94.3	94.0	103.3	105.4	103.5	96.4	95.8	95.6	103.6	103.1	102.1
1963	98.1	94.4	94.4	103.4	105.1	103.0	96.5	95.9	95.8	103.6	102.9	102.0
1964	98.5	94.3	94.9	103.8	104.6	102.5	96.5	96.0	96.3	103.3	102.8	102.0
1965	98.8	94.5	95.5	104.1	104.1	102.0	96.8	95.9	96.7	103.1	102.7	101.8
1966	99.0	94.8	95.8	104.4	103.9	101.8	96.9	95.9	97.1	102.9	102.7	101.7
1967	99.2	95.1	96.0	104.4	103.6	101.6	96.9	96.1	97.4	102.8	102.8	101.5
1968	99.5	95.3	96.1	104.4	103.4	101.6	97.0	96.3	97.6	102.8	102.6	101.3
		(0-49)		North Central—Electrical work (SIC 173)							(50+)	
1960	97.6	93.1	90.9	105.0	108.3	106.7	97.5	95.7	95.1	103.0	104.3	103.6
1961	97.6	93.3	91.3	105.2	108.3	106.4	97.3	96.0	95.5	103.2	104.2	103.4
1962	97.3	93.5	91.9	105.4	108.2	106.1	97.4	96.1	95.9	103.2	104.0	103.2
1963	97.0	93.7	92.4	105.6	108.1	105.7	97.3	96.1	96.3	103.3	103.9	102.8
1964	96.8	94.0	93.3	105.9	107.8	105.2	97.3	96.3	96.9	103.2	103.4	102.3
1965	96.9	94.4	93.9	105.9	107.3	104.8	97.5	96.5	97.5	102.9	103.3	102.0
1966	96.7	94.9	94.7	105.9	106.8	104.5	97.4	96.8	98.1	102.7	102.9	101.7
1967	96.7	95.2	95.1	106.0	106.4	104.1	97.4	97.0	98.4	102.4	102.5	101.5
1968	96.8	95.4	95.4	105.9	105.9	104.1	97.7	97.0	98.4	102.0	102.3	101.3

See footnote at end of table.

Table G-19. Seasonal adjustment factors for contract construction employment by type and size of contractor,[1] and by region, selected months, 1960–68—Continued

Year	Small						Large					
	January	February	March	July	August	September	January	February	March	July	August	September
		(0-19)			South—Electrical work (SIC 173)						(20+)	
1960	95.9	94.6	94.6	104.0	106.7	106.4	99.0	96.1	95.1	101.4	104.8	104.2
1961	95.9	94.8	95.0	104.2	107.0	105.9	99.0	96.2	95.4	101.5	104.6	104.2
1962	96.2	95.0	95.0	104.3	107.0	105.5	98.8	96.5	95.7	101.4	104.7	104.0
1963	96.2	95.3	95.4	104.3	107.2	104.9	98.9	96.6	95.8	101.4	105.0	103.9
1964	96.8	95.4	95.7	104.5	107.2	104.4	98.6	96.8	96.1	101.2	104.7	103.8
1965	96.8	95.7	96.0	104.8	107.2	103.9	98.5	97.0	96.3	101.3	104.2	103.3
1966	97.2	96.2	96.0	104.9	107.1	103.3	98.2	97.1	96.5	101.3	104.0	103.0
1967	97.2	96.5	96.1	105.2	107.1	103.0	98.0	97.1	96.7	101.4	103.8	102.5
1968	97.6	96.7	95.9	105.0	106.7	103.0	98.0	97.2	96.7	101.1	103.8	102.1
		(0-49)			West—Electrical work (SIC 173)						(50+)	
1960	97.7	94.0	93.7	105.6	105.1	105.1	92.0	94.1	92.8	102.7	106.8	108.4
1961	95.7	94.1	93.5	105.6	105.0	105.0	93.0	94.6	93.3	103.1	106.3	107.4
1962	97.3	94.0	93.6	105.2	105.1	105.1	93.6	94.6	93.4	103.2	105.8	106.7
1963	97.2	94.0	93.6	104.6	105.2	105.5	94.4	94.9	93.9	103.5	105.3	106.0
1964	97.2	94.1	93.7	104.2	105.2	105.7	95.7	95.3	94.4	103.2	104.7	105.2
1965	97.3	94.1	93.8	103.4	105.2	106.1	96.4	95.7	94.6	103.4	104.0	104.7
1966	97.4	94.1	93.9	103.2	105.3	106.1	97.2	96.2	95.0	103.2	103.6	104.1
1967	97.5	94.1	94.0	102.6	105.3	106.0	97.8	96.7	95.0	102.8	103.1	103.4
1968	97.7	94.0	94.3	102.1	105.3	106.4	98.1	96.7	94.9	102.5	102.9	104.5
		(0-49)			Northeast—Masonry, stonework and plastering (SIC 174)						(50+)	
1960	83.4	80.6	84.4	110.9	113.7	110.3	90.5	91.5	95.1	106.9	104.4	101.2
1961	83.2	81.6	85.7	110.9	113.6	109.7	89.7	91.4	95.9	107.0	104.5	101.8
1962	83.7	82.2	86.9	110.5	113.5	109.0	89.3	91.2	96.3	107.2	104.2	102.3
1963	83.8	83.0	88.0	110.6	113.0	108.2	88.7	90.8	96.5	106.8	104.3	103.4
1964	84.2	83.7	88.5	110.4	112.6	107.7	87.7	90.3	96.7	107.0	103.6	103.4
1965	84.6	84.0	89.7	110.4	111.5	107.1	87.4	90.4	96.3	107.9	103.8	104.0
1966	85.1	84.5	90.3	110.0	111.1	106.7	87.5	89.2	96.1	108.0	103.5	105.2
1967	85.0	84.9	91.0	109.7	110.7	106.4	87.1	88.4	95.7	108.2	103.2	106.2
1968	85.6	84.9	91.1	109.5	109.7	106.7	87.6	87.2	94.8	108.5	103.1	106.6
		(0-19)			North Central—Masonry, stonework and plastering (SIC 174)						(20+)	
1960	89.7	85.6	88.9	111.4	113.1	109.4	90.4	89.3	90.4	107.3	111.2	108.9
1961	89.5	85.2	90.1	111.7	112.6	109.1	90.5	89.4	90.9	107.2	111.3	108.7
1962	88.0	85.0	91.1	111.8	112.1	109.0	90.7	89.4	91.1	107.1	111.5	108.5
1963	86.9	84.7	92.4	112.0	112.0	108.5	90.6	89.7	91.7	107.2	111.2	108.3
1964	85.9	84.3	93.6	111.9	111.4	108.4	91.0	89.6	92.0	106.8	111.0	108.1
1965	84.4	84.0	95.1	111.6	111.0	108.4	90.6	90.1	92.8	106.3	111.0	108.1
1966	84.2	83.7	96.5	111.9	111.0	108.1	90.5	90.8	93.5	105.9	111.1	108.2
1967	83.6	83.8	96.7	111.5	111.1	108.4	90.2	91.3	94.1	106.0	111.2	108.1
1968	83.5	83.7	97.4	110.9	111.2	108.3	90.2	91.7	94.5	105.2	110.6	108.1
		(0-49)			South—Masonry, stonework and plastering (SIC 174)						(50+)	
1960	90.7	89.9	95.1	109.3	106.2	103.4	93.8	89.6	93.4	104.3	111.8	106.5
1961	90.6	90.0	95.1	109.1	106.6	103.2	93.1	89.5	93.6	104.7	111.4	106.8
1962	90.9	90.2	95.2	108.7	106.8	103.5	92.3	89.7	94.0	104.7	110.6	107.1
1963	91.2	90.3	95.4	108.4	107.4	103.6	91.9	89.5	94.6	105.3	111.0	106.9
1964	91.7	90.5	95.3	107.8	107.7	103.8	91.1	89.3	95.1	105.6	110.5	106.8
1965	92.0	90.7	95.3	107.3	108.0	103.7	90.4	89.7	95.8	105.6	109.7	105.6
1966	92.6	91.0	95.4	107.1	108.2	103.8	90.4	90.2	96.0	106.0	109.7	105.0
1967	93.2	91.0	95.5	106.8	108.0	103.4	89.9	90.9	96.5	105.5	109.6	104.7
1968	93.4	91.1	95.5	106.6	107.7	103.7	90.3	91.3	96.5	105.3	109.7	103.7
		(0-19)			West—Masonry, stonework and plastering (SIC 174)						(20+)	
1960	91.8	94.4	96.9	105.6	106.0	105.7	93.5	94.1	97.0	104.0	104.9	104.1
1961	92.0	94.9	96.5	106.3	106.0	105.2	94.0	94.1	97.1	104.6	105.1	103.6
1962	91.7	95.2	96.6	106.9	106.0	104.9	93.8	94.4	97.0	104.9	105.5	103.8
1963	91.4	95.3	96.8	107.7	106.6	104.3	93.7	94.6	97.1	106.0	105.8	103.3
1964	91.1	95.5	96.9	108.3	107.2	104.1	93.9	95.0	96.8	107.0	105.9	103.5
1965	91.3	95.2	96.9	108.3	107.2	104.2	93.8	95.0	96.4	107.9	105.8	103.7
1966	91.6	95.2	96.7	108.1	107.4	103.8	94.5	94.7	95.8	108.3	105.9	104.0
1967	91.7	95.0	96.5	107.8	107.5	103.6	94.4	94.9	95.0	108.9	106.1	104.1
1968	91.7	94.6	96.7	107.3	107.8	104.2	94.3	95.0	94.5	109.2	105.8	104.8

See footnote at end of table.

Table G-19. Seasonal adjustment factors for contract construction employment by type and size of contractor,[1] and by region, selected months, 1960–68—Continued

Year	Small						Large					
	January	February	March	July	August	September	January	February	March	July	August	September
		(0-9)		Northeast—Roofing and sheet metal work (SIC 176)							(10+)	
1960	83.9	73.2	81.5	110.5	111.5	109.7	94.8	88.1	88.1	104.3	105.1	106.3
1961	83.9	73.7	81.1	110.7	112.0	109.9	94.5	87.9	88.5	104.4	105.4	105.9
1962	83.1	74.4	81.2	111.1	112.2	110.1	94.2	87.8	89.2	104.1	105.4	105.9
1963	82.9	75.0	81.1	111.4	112.2	109.7	94.4	87.3	89.9	104.2	105.3	105.4
1964	82.4	75.2	80.9	112.2	112.5	109.9	94.5	86.6	90.6	104.6	105.8	105.0
1965	82.1	75.6	80.9	112.7	112.8	110.3	94.6	86.6	91.3	104.6	105.7	104.7
1966	81.6	76.1	80.8	112.9	112.8	110.6	94.9	86.8	91.7	104.8	105.8	104.2
1967	81.4	76.0	80.8	113.3	113.1	110.6	94.9	87.2	92.0	105.1	105.9	104.2
1968	81.4	76.1	81.1	113.7	112.6	110.5	95.4	87.3	92.2	105.2	105.7	104.0
		(0-19)		North Central—Roofing and sheet metal work (SIC 176)							(20+)	
1960	87.7	79.1	82.3	112.6	115.5	110.7	92.4	88.6	88.2	106.0	108.6	107.3
1961	87.0	79.2	82.7	112.5	115.0	110.6	92.2	88.7	88.9	106.1	108.1	107.0
1962	86.6	79.9	83.1	112.5	114.6	110.0	92.5	88.9	89.6	106.0	107.6	106.5
1963	86.1	80.1	83.9	112.7	114.1	109.6	92.7	88.7	90.4	105.7	107.0	106.3
1964	85.6	81.1	84.6	112.3	114.1	108.9	93.0	88.9	91.3	105.5	106.9	105.9
1965	85.3	82.4	85.4	111.7	114.0	108.5	93.3	89.1	92.5	105.0	106.8	105.3
1966	84.9	82.9	86.6	111.6	113.8	108.1	92.8	89.6	93.8	104.7	106.5	104.9
1967	84.9	83.5	87.5	111.5	114.1	107.9	92.6	90.1	94.3	104.2	106.4	104.8
1968	84.7	83.6	88.2	111.3	114.5	107.7	92.8	90.3	95.0	103.8	106.6	104.7
		(0-19)		South—Roofing and sheet metal work (SIC 176)							(20+)	
1960	94.3	90.5	94.3	104.3	104.9	106.1	95.2	92.3	93.8	104.3	105.7	103.9
1961	94.3	90.7	94.0	104.6	104.9	107.4	95.1	92.4	94.4	104.0	105.6	103.4
1962	94.7	91.0	94.2	104.6	105.4	106.6	95.4	92.3	94.7	103.8	105.6	103.1
1963	94.8	90.9	94.3	104.8	105.3	105.2	95.5	92.1	95.3	103.6	105.2	102.8
1964	95.2	91.2	10.2	105.2	105.5	104.3	96.0	92.3	95.6	103.2	105.1	102.4
1965	95.3	91.7	94.3	104.7	105.6	103.3	96.2	92.4	96.0	103.3	104.8	102.0
1966	95.9	92.1	94.1	104.3	105.1	103.0	96.7	92.7	96.2	103.1	104.8	101.9
1967	96.0	92.7	93.9	103.8	104.7	102.5	96.9	93.3	96.3	102.7	104.4	101.8
1968	96.0	93.3	94.0	103.5	104.7	102.1	97.3	93.3	96.2	102.8	104.4	101.9
		0-19)		West—Roofing and sheet metal work (SIC 176)							(20+)	
1960	91.4	92.1	91.2	101.4	106.8	111.2	97.0	95.1	95.2	98.6	102.8	105.4
1961	91.4	92.7	90.4	100.6	107.0	111.6	97.0	95.4	95.3	98.6	103.0	105.2
1962	91.9	92.1	90.6	99.9	106.9	111.4	97.7	96.0	95.3	99.0	102.7	104.8
1963	92.1	92.1	90.9	99.6	106.9	111.2	98.5	96.0	95.4	97.1	102.5	104.0
1964	92.4	92.5	90.5	99.6	107.5	110.4	99.6	97.1	95.5	99.4	102.1	103.8
1965	93.3	92.0	90.8	98.8	107.5	110.2	100.6	98.2	95.3	99.8	101.4	102.9
1966	93.7	91.9	90.9	99.1	107.4	110.5	100.8	98.4	95.3	100.4	100.9	102.8
1967	94.3	92.1	91.0	98.4	107.8	111.0	100.8	99.0	95.3	100.8	100.7	103.0
1968	95.1	91.5	91.7	99.0	107.5	110.3	100.7	99.5	95.3	100.8	100.0	102.6
		(0-19)		Northeast—Special trades contractors, other							(20+)	
1960	97.1	79.7	83.5	109.8	111.0	109.2	91.9	90.6	94.1	103.3	103.3	104.4
1961	87.0	80.0	83.3	110.0	111.0	108.8	91.8	90.0	94.5	104.0	104.0	104.1
1962	87.1	80.4	83.3	109.8	111.2	108.8	91.6	89.8	94.5	104.6	104.5	103.7
1963	87.1	80.4	83.6	109.9	111.4	108.7	91.6	89.9	94.7	105.4	104.9	104.0
1964	87.0	80.7	83.9	110.1	111.5	108.4	91.6	89.9	94.3	106.4	105.4	103.3
1965	86.6	81.3	84.2	110.3	111.4	108.6	91.5	89.9	94.8	106.5	105.3	103.4
1966	86.5	81.6	84.5	110.2	111.4	108.7	91.9	89.8	95.1	107.2	105.3	103.0
1967	86.7	82.0	84.8	110.2	111.2	108.5	92.5	90.3	94.9	108.0	105.3	102.5
1968	86.7	82.1	85.2	110.1	111.4	108.8	92.6	90.9	94.6	107.6	104.6	102.9

[1] The definition of "small" and "large" is included in the parentheses for each industry and area and varies by industry and area. The size of employer is based on the number of employees on the employers' payroll for the payroll period nearest March 15 of each year.

SOURCE: BLS, current employment statistics based on establishment reports.

Table G-20. Unemployed male wage and salary workers by duration of unemployment and selected industry group, annual averages 1960–68

Year	Total unemployed (thousands)	Total	Unemployed by duration of unemployment (percent distrubution)				Average duration of unemployment (weeks)
			1-4 weeks	5-14 weeks	15-26 weeks	Over 26 weeks	
	All nonagricultural industries						
1960	2,061	100.0	42.5	30.4	13.7	13.4	14.3
1961	2,486	100.0	34.8	28.6	16.7	19.9	17.8
1962	2,010	100.0	38.9	29.5	14.3	17.4	17.0
1963	1,992	100.0	40.9	29.4	13.6	15.9	16.1
1964	1,752	100.0	42.0	29.9	13.7	14.4	15.1
1965	1,506	100.0	46.5	29.5	12.2	11.8	13.3
1966	1,239	100.0	52.2	26.4	10.8	10.6	12.1
1967	1,222	100.0	52.3	30.4	10.0	7.3	9.9
1968	1,160	100.0	52.4	31.0	9.6	7.0	9.6
	Construction						
1960	475	100.0	44.6	30.9	14.1	10.3	12.3
1961	555	100.0	40.2	29.2	17.1	13.4	14.0
1962	473	100.0	42.3	32.1	15.2	10.4	12.8
1963	466	100.0	43.9	31.5	13.9	10.7	12.6
1964	394	100.0	45.9	32.0	12.9	9.1	11.4
1965	366	100.0	45.5	33.5	14.4	6.5	10.8
1966	289	100.0	53.6	28.4	11.4	6.6	9.7
1967	263	100.0	50.6	31.6	10.6	7.2	10.1
1968	252	100.0	51.2	32.9	9.9	6.0	9.1
	Manfacturing						
1960	694	100.0	40.8	30.3	15.0	14.0	14.9
1961	888	100.0	32.1	27.1	17.6	23.2	19.3
1962	645	100.0	37.4	28.5	14.3	19.8	19.1
1963	623	100.0	39.0	28.4	15.4	17.2	17.4
1964	542	100.0	39.3	30.1	13.7	17.0	17.1
1965	414	100.0	46.4	28.7	11.1	13.8	13.8
1966	360	100.0	53.1	25.8	10.0	11.1	12.4
1967	404	100.0	51.7	30.7	9.9	7.7	10.2
1968	363	100.0	51.9	30.1	10.5	7.7	9.9

SOURCE: Current Population Survey conducted for the BLS. by the Bureau of the Census.

Table G-21. Unemployed male wage and salary workers in construction and manufacturing, by duration of unemployment, annual average and by months, 1960–68

(Percent distribution)

Month	Construction							Manufacturing						
	Total (thousand)	Percent	1–4 weeks	5–14 weeks	15–26 weeks	Over 26	Average duration (weeks)	Total	Percent	1–4 weeks	5–14 weeks	15–26 weeks	Over 26	Average duration (weeks)
	1960							1960						
January	679	100.0	44.9	43.7	6.6	4.7	8.9	717	100.0	40.4	34.8	10.8	14.0	15.3
February	632	100.0	34.1	41.5	16.8	7.6	11.8	596	100.0	37.7	34.7	16.5	11.0	14.3
March	733	100.0	29.0	40.2	23.9	7.0	12.8	729	100.0	36.9	32.1	18.4	12.6	15.9
April	501	100.0	32.9	24.7	31.5	11.0	15.3	696	100.0	37.5	27.3	17.7	17.5	17.1
May	392	100.0	38.2	20.5	24.9	16.4	16.1	599	100.0	42.1	32.4	12.4	13.0	14.0
June	340	100.0	55.7	17.5	14.6	12.2	13.1	655	100.0	48.5	24.9	13.6	13.0	14.1
July	362	100.0	50.8	28.2	8.0	13.0	12.6	702	100.0	41.0	30.5	15.4	13.1	14.8
August	365	100.0	55.9	22.5	9.9	11.8	11.8	710	100.0	42.4	30.5	13.0	14.1	14.8
September	292	100.0	49.3	25.3	5.5	19.9	15.7	672	100.0	46.3	26.7	11.4	15.2	14.8
October	318	100.0	49.8	23.0	10.1	17.0	14.8	667	100.0	37.9	29.9	16.0	17.1	15.7
November	457	100.0	57.2	24.5	7.2	11.1	11.4	723	100.0	38.5	32.4	15.8	13.3	14.5
December	627	100.0	56.3	31.9	4.5	7.3	9.0	865	100.0	41.8	27.7	17.6	13.0	13.4
	1961							1961						
January	834	100.0	43.1	39.7	7.9	9.2	11.4	1,045	100.0	33.6	37.8	12.5	16.1	14.7
February	869	100.0	34.3	44.9	13.7	7.1	11.4	1,213	100.0	35.5	31.0	18.1	15.4	15.3
March	742	100.0	24.8	37.8	30.9	6.5	13.3	1,153	100.0	28.0	33.0	21.4	17.7	16.9
April	677	100.0	26.0	20.4	39.8	13.8	17.2	962	100.0	22.6	24.6	27.5	25.3	22.6
May	569	100.0	29.5	19.9	31.8	18.8	18.1	905	100.0	26.1	21.1	25.1	27.7	21.7
June	485	100.0	46.0	19.8	9.9	24.3	16.7	866	100.0	29.9	24.4	18.4	27.4	20.8
July	493	100.0	44.1	24.2	10.4	21.3	14.8	881	100.0	31.2	23.8	16.0	28.9	21.7
August	363	100.0	45.0	25.4	11.9	17.7	14.6	889	100.0	36.3	21.1	13.2	29.5	21.5
September	360	100.0	49.4	22.5	8.3	19.7	16.4	694	100.0	37.0	22.7	13.4	26.9	20.7
October	302	100.0	53.5	19.1	9.6	17.8	14.5	672	100.0	37.1	23.8	14.3	24.9	20.6
November	410	100.0	58.5	24.4	5.1	12.0	12.0	656	100.0	35.4	29.4	11.6	23.6	19.6
December	555	100.0	54.9	26.8	10.4	7.9	10.2	706	100.0	37.4	27.5	14.2	21.0	18.7
	1962							1962						
January	712	100.0	39.5	46.8	7.2	6.6	10.0	795	100.0	36.4	33.0	9.7	21.0	18.2
February	739	100.0	29.4	45.4	16.4	8.8	13.2	746	100.0	25.5	37.8	17.3	19.4	20.1
March	710	100.0	25.8	37.2	27.5	9.4	14.5	653	100.0	28.6	29.2	17.3	24.8	22.4
April	527	100.0	28.3	25.1	33.5	13.1	17.0	580	100.0	33.1	26.0	15.9	25.0	21.8
May	433	100.0	33.0	23.8	27.5	15.7	16.9	620	100.0	37.4	24.5	16.0	22.1	20.7
June	384	100.0	48.6	24.2	11.7	15.6	13.9	651	100.0	40.1	26.4	12.6	20.9	19.6
July	373	100.0	52.1	25.4	7.2	15.2	12.3	584	100.0	38.3	26.3	13.2	22.2	20.4
August	268	100.0	54.3	29.2	6.7	9.7	10.5	747	100.0	50.1	24.6	8.4	16.8	16.0
September	258	100.0	61.9	22.6	7.4	8.2	9.2	568	100.0	40.1	26.9	14.1	18.8	18.4
October	288	100.0	59.2	22.5	6.9	11.4	12.2	553	100.0	40.7	25.7	15.9	17.7	18.9
November	405	100.0	61.0	26.7	5.4	6.9	9.7	628	100.0	44.6	25.8	16.2	13.4	15.3
December	585	100.0	54.5	27.9	9.2	8.4	11.2	624	100.0	34.3	31.9	16.9	16.9	17.5
	1963							1963						
January	752	100.0	43.2	40.3	10.8	5.7	9.7	684	100.0	36.3	30.4	14.9	18.4	17.5
February	828	100.0	33.1	46.6	14.5	5.9	11.2	762	100.0	34.4	32.5	15.9	17.2	17.1
March	653	100.0	26.7	37.9	21.6	13.8	15.3	718	100.0	29.3	37.9	13.8	19.0	19.1
April	522	100.0	29.3	24.1	31.0	15.5	18.5	612	100.0	31.7	28.9	22.2	17.2	18.3
May	370	100.0	39.7	19.7	23.5	17.0	16.9	546	100.0	33.9	25.1	22.2	18.9	19.9
June	352	100.0	52.8	18.2	11.1	17.9	14.5	639	100.0	44.9	20.5	21.1	13.6	16.1
July	356	100.0	54.5	21.9	5.9	17.7	13.0	594	100.0	41.4	29.8	11.4	17.3	16.4
August	290	100.0	53.3	26.5	7.6	12.7	14.1	614	100.0	43.5	26.1	13.2	17.3	18.1
September	268	100.0	52.8	24.7	11.2	11.2	12.5	516	100.0	47.1	22.9	12.2	17.8	17.8
October	292	100.0	54.5	19.5	12.3	8.6	10.8	581	100.0	44.6	24.4	12.0	18.9	17.3
November	405	100.0	65.7	22.0	4.0	8.4	9.4	603	100.0	46.3	26.7	11.9	15.1	15.0
December	509	100.0	52.8	38.2	5.7	3.3	8.4	610	100.0	38.5	31.8	13.7	16.0	16.5
	1964							1964						
January	655	100.0	43.7	44.0	6.7	5.6	10.1	733	100.0	40.0	32.2	13.3	14.5	16.3
February	639	100.0	24.9	56.1	14.1	4.9	11.8	659	100.0	33.7	37.5	16.7	12.1	15.9
March	509	100.0	25.9	39.1	28.5	6.5	13.4	647	100.0	33.4	36.4	14.9	15.3	17.1
April	405	100.0	30.0	26.0	32.4	11.6	15.5	566	100.0	30.9	32.9	17.8	18.4	17.6
May	314	100.0	46.7	21.3	19.4	12.7	13.6	478	100.0	31.8	27.0	22.4	18.8	20.1
June	321	100.0	55.8	20.2	10.0	14.0	12.1	512	100.0	39.3	27.0	12.1	21.7	18.1
July	284	100.0	57.7	20.4	5.6	16.2	11.8	516	100.0	41.7	26.8	9.9	21.6	18.4
August	289	100.0	61.2	15.9	5.9	17.0	12.7	529	100.0	44.3	25.1	10.6	20.0	17.4
September	260	100.0	55.8	23.1	5.4	15.8	11.6	473	100.0	46.5	25.6	9.7	18.2	16.5
October	289	100.0	62.6	23.9	5.9	7.6	8.4	446	100.0	45.3	24.2	12.8	17.7	17.1
November	274	100.0	56.6	28.1	6.6	8.8	10.8	488	100.0	44.9	26.6	11.5	17.0	17.4
December	489	100.0	66.1	25.2	5.1	3.7	6.7	467	100.0	44.5	32.3	11.8	11.3	13.8

Table G-21. Unemployed male wage and salary workers in construction and manufacturing, by duration of unemployment, annual average and by month, 1960–68—Continued

(Percent distribution)

Month	Construction							Manufacturing						
	Total (thousand)	Percent	1–4 weeks	5–14 weeks	15–26 weeks	Over 26	Average duration (weeks)	Total	Percent	1–4 weeks	5–14 weeks	15–26 weeks	Over 26	Average duration (weeks)
	1965							1965						
January	608	100.0	43.2	45.8	7.2	3.8	8.5	519	100.0	45.9	32.0	11.1	10.6	11.8
February	645	100.0	34.3	46.2	15.5	4.0	10.2	548	100.0	39.0	34.2	13.5	13.3	13.9
March	540	100.0	30.4	42.0	20.9	6.7	12.6	437	100.0	38.7	30.0	16.7	14.6	15.0
April	405	100.0	32.6	25.7	32.3	9.4	15.5	502	100.0	46.7	23.7	16.4	13.2	13.1
May	315	100.0	45.9	27.7	22.3	4.1	10.4	408	100.0	41.7	30.4	10.8	17.2	14.8
June	309	100.0	57.0	21.7	14.6	6.8	10.0	405	100.0	43.2	30.6	8.4	17.8	15.5
July	306	100.0	55.9	26.1	8.5	9.5	10.9	370	100.0	50.0	28.1	8.4	13.5	12.6
August	228	100.0	51.1	27.5	8.7	12.7	12.3	419	100.0	56.8	26.7	7.2	9.3	11.1
September	245	100.0	53.9	25.3	9.8	11.0	11.4	300	100.0	53.0	20.0	5.7	21.3	16.6
October	223	100.0	59.4	26.3	5.8	8.5	10.9	314	100.0	45.4	27.6	8.9	18.1	17.2
November	258	100.0	56.2	29.1	9.3	5.4	9.3	358	100.0	52.9	26.1	9.2	11.8	13.9
December	316	100.0	63.9	23.1	8.9	4.1	7.8	383	100.0	50.0	30.7	12.0	7.3	11.8
	1966							1966						
January	435	100.0	53.3	37.2	5.1	4.4	8.6	416	100.0	43.3	31.0	13.0	12.7	14.1
February	448	100.0	39.6	43.4	12.0	4.9	9.0	432	100.0	41.5	32.3	14.2	12.1	14.9
March	392	100.0	36.1	38.6	21.0	4.3	10.6	405	100.0	44.9	25.2	15.6	14.3	15.6
April	319	100.0	43.8	16.9	33.1	6.3	12.4	289	100.0	45.7	23.2	17.6	13.5	15.5
May	228	100.0	54.6	19.2	17.9	8.3	11.1	293	100.0	51.2	28.0	7.2	13.7	14.9
June	206	100.0	66.3	19.0	4.9	9.8	10.0	408	100.0	69.9	16.4	7.1	6.6	8.2
July	196	100.0	68.4	13.3	7.1	11.2	10.1	394	100.0	59.0	23.9	8.9	8.1	9.4
August	189	100.0	64.0	20.6	6.3	9.0	9.4	405	100.0	59.4	22.0	5.7	12.9	12.5
September	199	100.0	60.8	25.1	3.0	11.1	11.4	329	100.0	60.8	18.2	9.7	11.2	12.0
October	203	100.0	57.1	28.1	6.9	7.9	9.5	278	100.0	43.0	35.0	7.6	14.4	13.2
November	279	100.0	66.3	21.5	6.8	5.8	8.2	319	100.0	56.3	32.2	5.9	5.6	8.8
December	370	100.0	60.5	30.4	4.6	4.6	7.4	353	100.0	60.5	23.0	7.7	8.8	9.7
	1967							1967						
January	412	100.0	50.1	39.2	7.1	3.6	8.5	422	100.0	51.8	29.7	8.6	10.0	11.3
February	426	100.0	41.3	44.8	9.6	4.2	9.5	422	100.0	47.2	35.1	9.7	8.1	11.5
March	351	100.0	35.5	41.8	18.2	4.5	11.3	424	100.0	43.2	37.3	11.3	8.3	12.0
April	307	100.0	41.6	28.9	21.1	8.4	12.1	375	100.0	43.2	34.1	15.7	6.9	11.3
May	227	100.0	44.7	24.8	16.4	14.2	13.5	363	100.0	53.0	30.5	11.8	4.7	9.2
June	237	100.0	64.0	14.8	12.3	8.9	9.4	415	100.0	57.9	25.7	11.1	5.3	8.5
July	189	100.0	57.3	23.8	4.8	14.3	10.0	468	100.0	63.0	24.6	7.7	4.8	7.8
August	172	100.0	61.8	27.1	-	11.2	8.5	455	100.0	57.3	27.5	8.1	7.0	9.0
September	131	100.0	60.6	26.5	5.3	7.6	9.3	374	100.0	55.2	28.0	10.4	6.4	9.1
October	185	100.0	58.9	23.2	5.9	11.9	12.1	368	100.0	47.4	34.3	10.4	7.9	10.6
November	239	100.0	59.8	28.9	6.3	5.0	9.1	364	100.0	49.6	30.6	7.7	12.1	12.4
December	270	100.0	59.4	28.4	7.7	4.4	7.9	389	100.0	50.1	32.6	7.2	10.0	10.8
	1968							1968						
January	445	100.0	46.4	42.8	7.4	3.4	7.9	391	100.0	42.5	38.9	9.5	9.1	11.3
February	433	100.0	36.5	50.1	10.9	2.5	8.6	465	100.0	52.3	30.8	8.2	8.8	10.6
March	387	100.0	37.6	37.8	19.7	4.9	11.2	429	100.0	44.4	34.7	13.3	7.7	11.1
April	222	100.0	36.2	32.1	23.1	8.6	14.1	338	100.0	41.1	33.4	16.3	9.2	12.6
May	184	100.0	48.1	24.9	21.6	5.4	9.9	324	100.0	50.0	24.4	16.0	9.6	11.4
June	230	100.0	63.5	21.6	6.9	8.1	7.8	367	100.0	59.8	16.9	13.1	10.1	10.6
July	191	100.0	57.8	27.2	5.2	9.8	9.6	381	100.0	54.6	26.5	9.3	9.3	9.6
August	164	100.0	64.0	20.1	4.3	11.6	8.3	382	100.0	59.9	25.1	7.1	7.9	9.0
September	138	100.0	74.1	17.3	3.6	5.0	6.5	312	100.0	58.8	24.0	11.8	5.4	8.0
October	167	100.0	67.3	21.7	3.6	7.4	9.1	336	100.0	52.4	37.2	6.3	4.3	7.9
November	224	100.0	73.7	17.4	3.6	5.4	7.2	344	100.0	55.5	34.0	6.7	3.8	7.8
December	242	100.0	54.1	37.6	2.1	6.2	8.5	285	100.0	52.6	35.1	8.1	4.2	8.1

SOURCE: Current Population Survey conducted for the BLS, by the Bureau of the Census.

Table G-22. Proportion of wage and salary workers experiencing unemployment during the year by industry group of longest job, 1959–68

Year	Nonagricultural industries	Construction	Manufacturing
1959	15.8	38.0	19.5
1960	17.7	43.4	21.7
1961	18.7	43.9	22.0
1962	17.9	43.0	20.5
1963	16.5	38.1	19.4
1964	16.1	36.1	18.4
1965	13.9	31.8	15.6
1966	12.5	27.3	13.9
1967	12.4	26.4	14.6
1968	12.0	24.2	13.1

SOURCE: Current Population Survey conducted for the BLS, by the Bureau of the Census.

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