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THE U.S. ECONOMY In 1980

A Summary of
BLS Projections

BULLETIN 1673

U.S. DEPARTMENT OF LABOR
Bureau of Labor Statistics

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U.S. DEPARTMENT OF LABOR

J. D. Hodgson, *Secretary*

BUREAU OF LABOR STATISTICS

Geoffrey H. Moore, *Commissioner*

1970



FOREWORD

Manpower needs are inextricably interwoven with the changing nature of the economy: Will it be growing? How many workers will want jobs? What will be our manpower requirements? Will advancing technology affect the nature of jobs? How will productivity changes affect job requirements? In this bulletin, the Bureau of Labor Statistics looks 10 years ahead at the growth and composition of the economy, its need for workers, and the likely supply of manpower.

The past decade has been a period of rapid economic growth with major improvements in living standards. Yet this record has been tarnished by the inflationary developments of the past few years coupled with the impact of serious social problems including urban congestion, pollution of the environment, and racial discrimination. The economic challenge of the coming decade will be to contain inflation and yet keep output growing fast enough to absorb the 40 million additional workers that seem headed, if our projections materialize, towards the job world. At the same time, the Nation must make progress in meeting current social problems before these begin to affect adversely the Nation's ability to maintain its forward momentum.

Economic projections are only the beginning, not the end, of considering the future. They provide a framework within which economic and social policies, public and private, must be weighed and debated. In effect, they say: In the light of all that is known about current and future economic developments, the 1980 economy will look like this . . . But the future is not immutable. And whether or not projected economic growth and manpower requirements will lead to equality of opportunity, improved job satisfaction, or a richer life depends, not on projections, but on the human will and spirit.

GEOFFREY H. MOORE,
Commissioner Bureau of Labor Statistics

PREFACE

The projections presented in this bulletin represent the work of a number of Bureau personnel. Their individual contributions will be given proper recognition in separate detailed studies to be published later this year. Special mention should be made, however, of the senior economists who had primary responsibility for supervising the staff research underlying the projections and preparing the final detailed reports.

Sophia C. Travis, chief of the Division of Labor Force Studies: labor force, with the assistance of Denis F. Johnston, statistician (demography), Office of Manpower and Employment Analysis, who was specifically responsible for the projection of the educational attainment of the labor force.

Ronald E. Kutscher, chief of the Division of Economic Growth: economic growth, including gross national product, output, output per man-hour, and total employment by industry.

Russell B. Flanders, chief of the Division of Manpower and Occupational Outlook: wage and salary employment by industry and employment by occupation.

The research activities were coordinated in the Office of Productivity Technology and Economic Growth by Jerome Mark, Assistant Commissioner, and Jack Alterman, director of the Bureau's Economic Growth Studies, and in the Office of Manpower and Employment Statistics by Assistant Commissioner Harold Goldstein.

The bulletin was written by Maxine G. Stewart, editor of the *Occupational Outlook Quarterly*.

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The U.S. economy in 1980

WHAT WILL BE the shape of the U.S. economy in 1980—its output of goods and services, its labor force, its employment? New projections by the Bureau of Labor Statistics indicate that:

- ▶ the labor force will have climbed by one-fifth to 100 million workers, and will include a large supply of young workers, age 25–34, totaling 26 million;

- ▶ the educational level of the labor force will have risen substantially;

- ▶ GNP, growing at the rate of 4.3 percent a year through the 1970's, will have reached \$1.4 trillion in 1968 dollars;

- ▶ productivity, advancing steadily if at a slightly slower pace than in the 1960's, will have increased 3 percent a year;

- ▶ hours will have declined to 38 a week, at the very slow pace of 0.1 percent a year through the 1970's;

- ▶ industry employment will have continued to shift toward the service industries, including trade and government; and

- ▶ occupational employment will have continued a long-term shift towards the white-collar occupations and those requiring the most education and training.

By themselves the projections summarized in this report do not represent sharp departures from the broad economic and manpower trends that prevailed during the 1960's. And yet, more people, more growth, more goods and services, even if in line with recent trends, could have cumulative effects that may make the 1970's quite different from the 1960's. Moreover, many crosscurrents within the total may yield some quite dissimilar trends from the 1960's for smaller segments of the economy.

This bulletin presents highlights of the BLS projections and is intended to be an overview, limited for the most part, to the major sectors of the economy. Complete statistical detail covering labor force, output, productivity, and employment in over 250 individual industries and detailed occupations is presented in the appendix tables. Further publications and articles to follow in late spring, will present more refined analysis and more detailed information on the various methodologies followed.

The economy in 1980

BACKGROUND OF THE PROJECTIONS, ASSUMPTIONS, AND TECHNIQUES

FOR THREE DECADES, the Bureau of Labor Statistics has been making economic projections to determine the Nation's manpower requirements. Following the recommendation of a Presidential Advisory Committee on Education in 1938, the Bureau's initial program was set up to conduct studies of projected employment trends and outlook by occupation for the career guidance of young people and for the use of educators responsible for planning programs of vocational education or training. As the decade of the 1970's begins, the Bureau's projections, now used for a wide variety of planning and policy development purposes, represent one of the longest continuous systematic efforts to make economic projections both in and out of Government.

In today's growing and complicated society it is not enough to know simply that the Nation

will need 100 million jobs for 100 million workers by 1980. One must know what kinds of jobs? What skills? What industries? How will job requirements change as a result of technology? What will worker characteristics be—age, sex, educational attainment? Only this kind of information about tomorrow's manpower requirements will equip private and public policy to take the measures to assure a reasonable balance between workers and jobs, between the Nation's demand for and supply of workers.

To meet these needs, the Bureau has developed and refined its projections so that they now encompass several integrated components that permit a comprehensive view of tomorrow's economy and its manpower needs. Specifically, the projections cover labor force, hours of employment, output per man-hour, potential demand (gross national product or GNP), the composition of demand, output and productivity by 82 detailed industry groups, and employment in over 250 industries and in detailed occupations. The projections are interrelated: the growth of GNP, a foundation of the projections, is conditioned upon labor supply, productivity changes, and hours of work. The rate and direction of changes in the major demand components of the GNP, in turn, yield changing requirements for labor by industry and occupation.

In this bulletin on the economy and its manpower requirements in 1980, the projections are often described categorically—"The labor force will expand by x percent by 1980"; "The gross national product will expand by y percent a year." The intent is to show the results emerging from the Bureau's research that seem most likely to occur but in all cases—even though the statements may be stated categorically for ease in presentation—they represent the Bureau's best judgment and are dependent on the realization of the various assumptions on which the projections rest.

Assumptions

The BLS projections about the world of 1980 discussed in this bulletin are based on these specific assumptions:

- ▶ *The international climate* will improve. The

United States will no longer be fighting a war, but, on the other hand, a still guarded relationship between the major powers will permit no major reductions in armaments. This would still permit some reduction from the peak levels of defense expenditures during the Viet Nam conflict.

- ▶ *Armed Forces strength* will drop back to about the same level that prevailed in the pre-Viet Nam escalation period.

- ▶ *The institutional framework of the American economy* will not change radically.

- ▶ *Economic, social, technological, and scientific trends* will continue, including values placed on work, education, income, and leisure.

- ▶ *Fiscal and monetary policies* will be able to achieve a satisfactory balance between low unemployment rates and relative price stability without reducing the long-term economic growth rate.

- ▶ *All levels of government* will join efforts to meet a wide variety of domestic requirements, but Congress will channel more funds to State and local governments.

- ▶ *Efforts to solve the problems posed by air and water pollution and solid waste disposal*, although they may preempt an increasing amount of the Nation's productive resources, will not lead to a significant dampening of our longrun potential rate of growth.

- ▶ *Fertility rates* will be lower than they have been in the recent past.

Projection techniques

Labor force and occupational projections cover the period 1968 to 1980 because 1968 was the most recent year for which complete data were available at the time of the calculations. All other projections—GNP, hours, productivity, aggregate and industry demand, and industry employment—are based from 1965 because the next 3 years (1966 to 1968) were substantially affected by the demands of the Viet Nam war. Since it is assumed that these hostilities will be over by 1980, recent changes related to the impact of the Viet Nam war were considered to be atypical and unlikely to be characteristic of the years ahead.

Growth rates, in most cases, are shown not only for 1965–80, but also for 1968–80 to reflect the impact of the intervening years. Since the

article was written, however, some 1969 data have become available. Because a slackening of growth in the economy occurred during 1969, the GNP would have to grow at the rate of 4.4 percent a year for the period 1969–80, rather than 4.3 percent as shown for the 1968–80 period, to reach the 1980 projected levels. Similarly, productivity would have to grow at 3.2 percent a year rather than the 3.0 percent shown. Projected employment growth remains unchanged at 1.7 percent a year.

The labor force projection, based on the Bureau on the Census projections of population, is developed through separate projections of labor force participation for the various age, sex, and color groups in the population. The detailed participation rates are then applied to the projected levels in each population group.

The economic growth projections are developed in consultation with the Interagency Committee on Economic Growth, which consists of representatives of the U.S. Department of Labor, the U.S. Department of Commerce, the Bureau of the Budget, and the President's Council of Economic Advisors. These projections have benefited from the advice of—and have utilized the research product of—several other government agencies and private research organizations that also participate in the Interagency Growth Studies Program. The input-output tables developed by the U.S. Department of Commerce's Office of Business Economics provide the basic framework for the growth projections.

To explore the implications of alternative growth rates and patterns, two different demand structures of the economy are presented in this article: one is based upon a continuation of the long-term shift toward the purchase of more consumer and public *services*. The other assumes a slower growth in the trend toward services with correspondingly greater emphasis on *durable goods* production: Consumer, producer, and military. Both these demand structures start with approximately the same level of potential output in 1980; the differences lie only in the composition of final demand and its related components. Specific differences are spelled out in later sections of the article.

Within each set of demand projections, two alternative assumptions are outlined regarding the unemployment rate: one assumes a 3-percent unemployment rate by 1980; the other assumes

a somewhat higher rate, 4 percent. Projections at the lower rate are based on the assumption that by 1980 the country will have been able to develop a mix of public and private policies that can assure such a low rate without creating inflationary pressures. Since the same structure of the economy for 1980 has been assumed for both the 3-percent and the 4-percent unemployment projections, the proportionate distribution of employment among major industry and occupational sectors is virtually the same for both projections except that all industries would have a slightly higher level of employment under the 3-percent unemployment assumption. It is recognized that this assumption may be an oversimplification; however, the magnitude of the difference in employment that would result from a more discriminating set of assumptions for pinpointing the employment difference of a 1-percent change in the unemployment level would be quite minor except for relatively few industries or occupations. The discussion in this article will be limited to the 3-percent unemployment assumptions. Tables, however, show industry data for both alternatives.

Industry and occupational employment projections—the end product of labor force and economic growth projections, are arrived at by utilizing two projection techniques. Total industry employment, which includes wage and salary workers, unpaid family workers, and the self-employed, is obtained by calculations involving projected changes in demand, interindustry relationships, and output and productivity. The employment projections are initially developed for about 82 industries or industry groups, covering the entire economy. The employment estimates are also distributed into much greater industry detail (about 250 industries) by using regression analysis to estimate employment in each industry consistent with the basic assumptions of the economic projections. The results of the two methods are carefully analyzed and reconciled for consistency. Finally, the employment projections are converted into estimates of occupational requirements by projecting detailed occupational patterns, industry by industry, which, when combined with the industry employment estimates, yield the final product of the entire sequence of projections—occupational estimates.

(For a discussion of the uses to which the detailed projections of industry and occupational employment are put, see the *Monthly Labor Review*, November 1969, p. 20.)

The economy in 1980

PRODUCTIVITY AND GROSS NATIONAL PRODUCT

BEFORE MAKING projections of economic growth, the anticipated number of people in the Nation and the proportion working or seeking work must be estimated. As consumers, they provide the potential demand for the Nation's goods and services. As workers, they are also an essential element in the production of goods and services.

Expected labor force

By 1980, 100 million Americans will be in the labor force, if Bureau of Labor Statistics projections materialize, one-fifth more (22.4 percent) than the 1968 labor force of 82 million.

The working age population can be projected with more confidence than some of the other variables in economic projections since everyone who will be old enough to work during the 1970's has been born already, and death rates and net immigration are fairly steady. The U.S. Bureau of the Census projects about 167 million people of working age (16 and over) in 1980, and BLS projects the labor force participation rate of these people to increase only slightly between 1968 and 1980. Thus, the decade of the 1970's will see increases in both population and the proportion of work-age people seeking jobs, but by far the largest contributor to labor force growth will be population expansion itself: 94 percent of the growth in the labor force will be attributable to a bigger population, with the remaining 6 percent caused by the expected increase in the participation rate.

Growth, hours, productivity

The most commonly used comprehensive measure of output in the economy is the value of all

final goods and services produced—gross national product (GNP). For purposes of the BLS economic projections, the value of the total national output of goods and services is derived by projecting to 1980 the size of the work force, hours of work, and the dollar value of goods and services produced in each hour worked, referred to as output per man-hour or productivity. Arrived at in this way, BLS projections indicate the potential value of all goods and services produced in 1980 may reach \$1.4 trillion in 1968 dollars. If prices were to rise at the rate of 2.5 percent a year through the 1970's as they did through the 1960's, the potential GNP would be \$1.8 trillion in estimated 1980 dollars rather than \$1.4 trillion in 1968 dollars.

In 1968 the economy produced goods and services valued at \$866 billion. Output of \$1.4 trillion by 1980 implies a growth rate of 4.3 percent a year over the time span from 1968–80. Although very healthy, this potential growth rate allows for some slowdown in the economy from its performance of 4.5 percent growth a year during the 1960–68 period. This apparent slowdown is not due to a reduction in the potential growth rate, which is based on the assumption of the full utilization of labor and industrial resources, but to the actual growth in the 1960's, which was based, in part, on taking up the slack in resource utilization which existed in the early part of the decade.

HOURS OF WORK. Average weekly hours¹ have been declining for several years. From 1957 to 1965, hours declined at a rate of 0.2 percent a year for all private industry. The decline in hours, projected over the 1968–80 period, slows this rate of decline somewhat to 0.1 percent per year.

In the early postwar period, the decline in hours resulted, to a considerable extent, from a reduction in the scheduled workweek. In later years, however, the increasing proportion of part-time employees contributed more to the decline than changes in the scheduled workweek. During the years from 1956 to 1968, for example, when employment was growing by 1.5 percent per year, part-time employment was speeding along at a growth rate of 5.7 percent per year. The significant increase in part-time employment is due to (a) the rapid growth in employment in the service and retail trade industries where part-time employ-

ment is common and (b) a companion increase in the proportion of part-time workers used by these industries and the availability of individuals interested in part-time work. For example, the mushrooming of suburban shopping centers that have many branch stores and mall shops has contributed to the expansion of the part-time work force. These centers are both growing rapidly and using an increasing proportion of part-time sales personnel as they stay open later in the evening. Part-time employees represented 6.8 percent of the total employed labor force in 1956; by 1968, this proportion had increased to 11.1 percent; by 1980, it is expected to be even larger.

This projected decline in average hours assumes that labor and management will not be negotiating major reductions in the nonfarm workweek by 1980. The continuing decline in hours will be caused by the persistent increase in part-time employment plus a continued small reduction of the average workweek on the farm. The trend in hours will differ among farm and nonfarm industries, and government.

On the farm, hours of work are expected to decline to 43.7 a week by 1980, or by 0.2 percent annually, on the average, through the 1970's (1968-80), reflecting a longtime downward trend.

Hours were 44.8 per week in 1968 and 45.7 in 1965, the base year for the projection period, just before the Viet Nam escalation.

Off the farm, excluding government, hours paid for are expected to continue to decline to 37.8 a week by 1980, or by 0.1 percent a year through the 1970's (1968-80). This rate of decline is somewhat less than has occurred since the mid-1950's. All non-farm hours were 38.1 a week in 1968, and 39.0 a week in 1965.

In the goods-producing industries, except agriculture, hours paid for began to climb in 1964 after several steady years. The upward trend was caused primarily by an increase in overtime hours. This trend has now reversed and through the 1970's hours in the goods-producing industries are expected to be relatively stable.

In the service industries, on the other hand, hours paid for declined steadily from the end of World War II to 1968. Trade and services are expected to continue a decline, though at a more modest rate, through the 1970's.

For projection purposes, government hours are held constant.

PRODUCTIVITY IN MAJOR SECTORS. One of the most important elements in making projections, productivity, can be quite different among industries and quite different from year to year.

Productivity patterns have been and are expected to be different in each of the major industry groups through the 1970's (1968-80).

Farm productivity growth will be high at 5.7 percent a year. Productivity gains have been very high in recent decades because of more efficient machinery and improved fertilizers, farming techniques, and management practices.

Traditionally, gains in farm output per man-hour, although fluctuating widely from year to year, have been high. Through the 1970's it may increase, on the average, about 5.7 percent annually, somewhat less than the 6-percent rise annually in recent years. But even at this lower average rate, the increases in farm output per man-hour are expected to remain considerably above that of the nonfarm sector.

Nonfarm productivity will advance steadily at 2.9 percent a year. Even though nonfarm productivity is expected to advance through the 1970's at about its long-term rate, individual industries within the broad nonfarm sector may deviate from their past productivity rates. The average rate projected will permit productivity increases that are greater than recent increases in some industries counterbalanced by productivity change in other industries that will be lower than recent trends would suggest.

Productivity gains for both farm and nonfarm industries combined will drop a little to 3 percent a year through the 1970's (1968-80). The combined effect of these differing rates of gain in productivity for farm and nonfarm workers—5.7 percent and 2.9 percent, respectively—averages out to an overall increase in productivity in the economy of roughly 3 percent annually through the 1970's, a smaller growth rate than the long-term postwar increase of 3.4 percent a year (1947-68).

Government productivity is assumed at a constant level through the 1970's, because of the difficulty of measuring the real output of government.²

Table 1. Gross national product by major component, selected years and projected to 1980

[In billions of 1968 dollars]

Component	1957	1965	1968	1980				Percent distribution		
				Services economy		Durables economy		1957	1965	1968
				3 percent unemployment rate	4 percent unemployment rate	3 percent unemployment rate	4 percent unemployment rate			
Gross national product.....	\$553.8	\$754.3	\$865.7	\$1,427.8	\$1,415.7	\$1,429.6	\$1,417.7	100.0	100.0	100.0
Personal consumption expenditures.....	342.8	472.0	536.6	903.2	895.6	888.9	881.4	61.9	62.6	62.0
Durable goods.....	42.9	68.8	83.3	137.6	136.5	146.8	145.5	7.7	9.1	9.6
Nondurable goods.....	162.4	209.1	230.6	346.5	343.6	335.0	332.2	29.3	27.7	26.6
Services.....	137.5	194.1	222.8	419.1	415.5	407.1	403.7	24.8	25.7	25.7
Gross private domestic investment.....	83.6	118.9	126.3	222.0	220.1	238.9	237.0	15.1	15.8	14.6
Nonresidential.....	56.1	78.0	88.8	152.3	151.0	160.4	159.1	10.1	10.3	10.3
Residential structures.....	26.2	30.9	30.2	53.0	52.5	60.7	60.2	4.7	4.1	3.5
Net inventory change.....	1.3	10.0	7.3	16.7	16.6	17.8	17.7	.2	1.3	.8
Net exports.....	7.7	7.9	2.5	12.9	12.9	12.9	12.9	1.4	1.0	.3
Government purchases.....	119.7	155.5	200.3	289.7	287.1	288.9	286.4	21.6	20.6	23.1
Federal.....	65.2	73.1	99.5	107.3	106.4	125.9	124.9	11.8	9.7	11.5
State and local.....	54.5	82.4	100.7	182.4	180.7	163.0	161.5	9.8	10.9	11.6

This assumption can have a big influence on what happens to average productivity in the coming years. Since government employment is expected to rise substantially, and its productivity, arbitrarily, is held constant, the increase in overall productivity is lower than the projected growth in output per man-hour in the private sector alone. If government employment were to expand beyond the projected levels, this dampening of productivity growth, of course, would be accentuated. (See chart 1.)

1970's. Differences are assumed in the pace of change, however, among the component purchasers of the GNP. These changes are shown in detail in table 1. To simplify this overview of the projections developed by the BLS, the initial discussion will be limited to projections based on the assumption of a continuation in the pace of the shift towards services in an economy with 3-percent unemployment. The extent to which these projections are modified in alternative views of the economy will be summarized at the end of each section.

Purchasers of the GNP

The projected 1980 GNP of \$1.4 trillion will be divided among four major categories of final demand: Consumption, investment, government purchases, and foreign purchases. The changes that lie ahead in the composition of the total GNP may tell a great deal about the kinds of industries—the kinds of production—and ultimately, the kinds of jobs that will be available in 1980.

The mix of demand—as between the services and durable goods economies becomes significant at this point in the level of projection detail. Both BLS structures of the economy—services and durable goods—reflect a continuation of the past trend in aggregate demand through the

PERSONAL CONSUMPTION EXPENDITURES. By far the largest purchasers of the GNP are consumers. In 1980 they are expected to spend close to \$900 billion on goods and services, more than the total value of the GNP in 1968 which was \$866 billion.

Consumer expenditures consist of three major subcategories—durable goods, nondurable goods, and services. By 1980, durable goods and services expenditures will be higher as a proportion of total PCE than at any time in the post-World War period in all projections. In contrast to the upward surge in expenditures for durables and services, the proportionate share of nondurable goods will be smaller than in any recent year; their rate of growth over this period will be the slowest of the three groups and about in line with the historical trend.

Table 1. Continued—Gross national product by major component, selected years and projected to 1980

[In dollars]

Percent distribution				Average annual rates of change, 1965-80				Average annual rates of change, 1968-80				Component
Services economy 1980		Durables economy 1980		Services economy		Durables economy		Services economy		Durables economy		
3 per- cent un- employ- ment rate	4 per- cent un- employ- ment rate											
100.0	100.0	100.0	100.0	4.3	4.3	4.4	4.3	4.3	4.2	4.3	4.2	Gross national product.
63.3	63.3	62.2	62.2	4.4	4.4	4.3	4.3	4.4	4.4	4.3	4.2	Personal consumption expenditures.
9.6	9.6	10.3	10.3	4.7	4.7	5.2	5.1	4.3	4.2	4.8	4.8	Durable goods.
24.3	24.3	23.4	23.4	3.4	3.4	3.2	3.1	3.4	3.4	3.2	3.1	Nondurable goods.
29.4	29.3	28.5	28.5	5.2	5.2	5.1	5.0	5.4	5.3	5.2	5.1	Services.
15.5	15.5	16.7	16.7	4.3	4.2	4.8	4.7	4.8	4.7	5.5	5.4	Gross private domestic investment.
10.7	10.7	11.2	11.2	4.6	4.5	4.9	4.9	4.6	4.5	5.1	5.0	Nonresidential.
3.7	3.7	4.2	4.2	3.7	3.6	4.6	4.5	4.8	4.7	6.0	5.9	Residential structures.
1.2	1.2	1.2	1.2	3.5	3.4	3.9	3.9	7.1	7.1	7.7	7.7	Net inventory change.
.9	.9	.9	.9	3.3	3.3	3.3	3.3	14.7	14.7	14.7	14.7	Net exports.
20.3	20.3	20.2	20.2	4.2	4.2	4.2	4.2	3.1	3.0	3.1	3.0	Government purchases.
7.5	7.5	8.8	8.8	2.6	2.5	3.7	3.6	5.6	6	2.0	1.9	Federal.
12.8	12.8	11.4	11.4	5.4	5.4	4.7	4.6	5.1	5.0	4.1	4.0	State and local.

One of the major causes of the upsurge in the purchase of durables will be increased purchases of furniture and household equipment. Large expenditures for these items will come from the increasing number of new families that will be forming as many of the large number of young people born in the early post-World War II years set up housekeeping. In contrast, nondurable expenditures for food and beverages and clothing and shoes are projected to continue to decline as a proportion of total PCE in line with the longrun historical trend. Higher consumer expenditures for services will reflect the rapid growth of expenditures for medical care, private education, and recreation. Despite varying rates of growth, the dollar value of all categories of personal consumption expenditures will be higher in 1980 than it is today. (See chart 2.)

GOVERNMENT. By 1980, governments are expected to be spending more than they are today to attack domestic problems that defy individual solution. The Federal Government may participate directly in some programs, but more funds are projected to be channeled to State and local governments than at present through grants-in-aid.

Government purchases at all levels under the services economy are expected to rise to about \$289.7 billion in 1980, up from \$200 billion in 1968. Nonetheless, the government proportion of

all GNP expenditures will decline somewhat—to 20.3 percent in 1980 in the services economy, down from 23.1 percent in 1968. These declines are largely a reflection of the projected cut in defense spending; and they mask an accompanying increase in State and local governmental expenditures. In fact, total nondefense purchases, for Federal, State, and local governments combined, are projected to increase more than three-fourths from 1968 to 1980.

Federal purchases by 1980 are expected to be \$107.3 billion in a services economy. They were \$99.5 billion in 1968. If the projected expenditures materialize by 1980, the Federal share of GNP will be 7.5 percent, down from 11.5 percent in 1968. But if these 1980 Federal expenditures are compared with 1965, before the escalation of the Viet Nam war, the decline from 1965 is smaller—from 9.7 percent of GNP—because of lower defense expenditures at that time. Defense expenditures are projected to decline by 1980, reflecting the assumption that the Viet Nam hostilities will be over and the numbers in the Armed Forces will be lower than they are today.

If the Viet Nam hostilities cool off, as is assumed, expenditures to meet domestic needs are expected to grow. Funds may be directed at a greater rate than during the 1960's into housing and community development, educational improvements, and the expansion of social welfare programs.

These expenditures, of course, depend upon a continuation of congressional appropriations for legislation recently enacted and concerned with health, education, conservation, pollution and poverty. The projected Federal spending reflects only direct Federal purchases of goods and services, but many Federal costs show up elsewhere. For example, increased costs of medicare and many of the increased costs of environmental control will show up in the projected increases in consumer expenditures or business investment and increased public education costs will be reflected in increased State and local government expenditures, even though the funds may come from the Federal Government.

State and local governments are expected to benefit from both an increase in the Federal funds

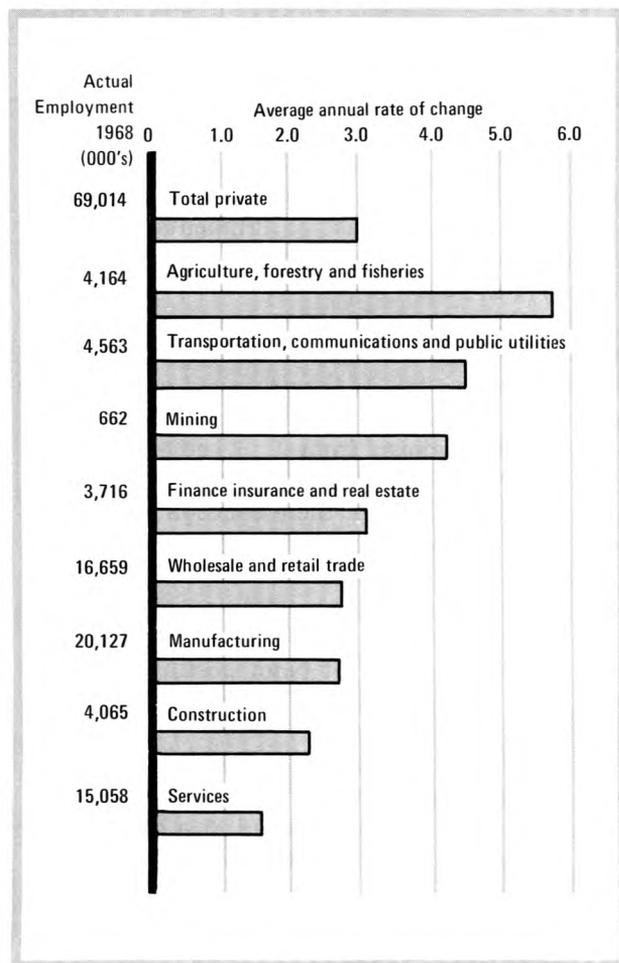
earmarked to help solve domestic problems at the State and local levels and increased revenues from higher tax collections. Reflecting this increased income, purchases are projected to rise in the services economy to the unprecedented height of \$182.4 billion, up from \$100.7 billion spent in 1968 and exceeding projected purchases by the Federal Government by nearly 70 percent. The State and local government share of GNP will rise from 11.6 percent in 1968 to 12.8 percent in the services economy in 1980.

Education takes the lion's share of funds at the State and local levels, and its share will continue about the same in 1980. State governments usually pay for public higher education, and local governmental units pay the major share of public elementary and secondary education costs. Following the strain of rapid increases in the number of students in recent years, elementary school enrollments will begin to decline in the early 1970's, and secondary school enrollments will show a significantly slower expansion. Nonetheless, expenditures will continue to rise as school boards look to quality improvement. Little letup in pressures in higher education enrollment is seen for 1980 in public institutions despite a slowdown in population growth. Compared with the 1960's, a larger proportion of college-age people are expected to attend both community junior colleges and State universities.

Environmental control measures are expected to command a steadily increasing share of State and local expenditures as public concern about ecological health and safety accelerates. Some of the costs of these improvements will be met by higher tax revenues and others will be borne by the consumer through increased prices.

Highway construction and maintenance, which account for about one-fifth of all State and local government expenditures today, are expected to rise steadily in the 1970's. State and local governments together are responsible for ownership and maintenance costs of approximately 96 percent of the highway mileage; the Federal Government, the remainder. The Interstate Highway Program scheduled for completion in the mid-1970's will have added 41,000 miles of highway since the passage of the legislation in 1956. This additional mileage must be maintained by State and local governments.

Chart 1. Projected productivity, by major sector, private economy, 1968-80



Government activities concerned with urban renewal, redevelopment, and rehabilitation associated with the central cities all will require greater expenditures for construction and capital equipment. New low-income housing and urban transit also will require heavy expenditures.

Public health, hospitals, and sanitation may require large additional expenditures. Widespread citizen concern for health care and additional Federal funding undoubtedly will lead to the development of many facilities for health care such as regional health centers, community mental health facilities, nursing homes, and establishments to aid the physically and mentally handicapped.

Conservation and development of natural and agricultural resources, including the operation of parks and recreational activities, are expected to require expanded expenditures in the coming years. Although a relatively small part of total State and local government costs, expenditures on parks and recreation will be among the fastest growing areas in terms of expenditures of all State and local functions.

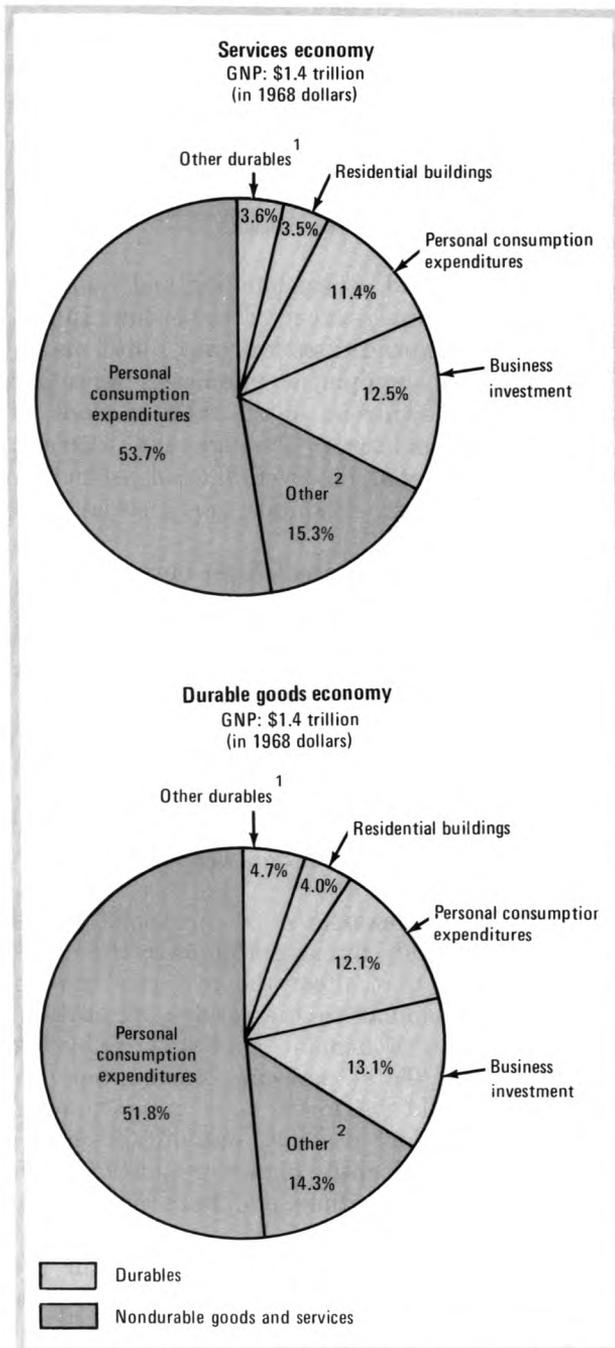
GROSS PRIVATE DOMESTIC INVESTMENT. By 1980, business investment may total \$222.0 billion, up from \$126.3 billion in 1968. This investment would result in a slight increase in the proportionate share of GNP, from 14.6 percent in 1968 to 15.5 percent in 1980 in a services economy.

New housing expenditures are expected to double in value to \$53 billion by 1980, according to the services structure. Housing expenditures were \$30.2 billion in 1968. The need for housing is expected to command a great deal of national attention in the coming decade because of the strong demand arising from the need to improve living conditions in the ghettos, the large and growing numbers of young adults who will need housing—often apartments—for their new families, and the large number of retired persons seeking shelter in multiunit retirement developments.

Plant and equipment expenditures by business may rise to \$152.3 billion by 1980 in the services economy, up from \$88.8 billion in 1968. These expenditures are expected to account for roughly two-thirds or more of all gross private domestic investment in the services economy.

Spending for new plants is expected to grow more slowly than spending for equipment because the rate of construction growth for certain kinds

Chart 2. Differences in demand structure in a services economy and in a durables economy, 1980 (both 3- and 4-percent unemployment levels)



¹ Includes net exports and government purchases.

² Includes government compensation and household services.

Table 2. Distribution of gross product originating,¹ by major sector, 1965, 1968, projected to 1980

[Percent distribution]

Major sector	1965	1968	1980	
			Services economy— 3 percent unemploy- ment ²	Durables economy— 3 percent unemploy- ment ²
Total.....	100.0	100.0	100.0	100.0
Agriculture, forestry, fisheries.....	3.7	3.1	2.9	2.8
Mining.....	1.7	1.6	1.4	1.4
Construction.....	5.1	4.6	4.8	4.9
Manufacturing.....	28.2	28.5	27.8	28.8
Transportation, communications, and public utilities.....	8.2	8.5	9.5	9.5
Wholesale and retail trade.....	16.5	16.5	17.0	17.0
Finance, insurance, and real estate.....	13.4	13.5	14.8	14.5
Services, including household services.....	11.0	11.0	11.4	11.1
Government, including government enterprises.....	12.1	12.4	10.2	9.9

¹ Gross product originating is the value added by each sector to the total product.
² Distribution at 4-percent unemployment is identical.

NOTE: Detail may not add to total.

of institutional and utility building and railroads and farm structures is expected to be slow. Industrial building expenditures will not quite match the increases in equipment purchases, reflecting the historical downtrend in the ratio of plant to equipment expenditures. Through the 1970's a large gain is expected, however, in the construction of office buildings, hospitals, and social and recreational centers.

The net change in inventories—raw materials, semifinish goods, and finished goods—is estimated to total 1.2 percent of the 1980 output of \$16.7 billion in the services economy—well over double the 1968 level of inventories.

NET FOREIGN PURCHASES OF GOODS AND SERVICES. Net exports are expected to increase five-fold by 1980 to about \$13 billion in 1980, according to the projections for a services economy.

COMPONENT PURCHASERS IN A DURABLES GOODS ECONOMY. Although the assumptions in the durables projection that affect the real GNP growth rate are very similar to the services projection, the composition of demand shows the following differences: (1) Total personal consumption expenditures would be lower as a proportion of total gross national product, but durable goods would be a significantly higher proportion than in the services projection, and both nondurable goods and services would be somewhat lower. (2) Gross private domestic investment in the durable goods projection would be a slightly higher proportion of GNP. Each of the subcomponents of fixed investment would also be higher: Non-

residential structures, producers' durable equipment, and residential structures. The residential structures component, however, is proportionately higher than the other components of investment. The level of residential structure assumed in a durables economy is sufficiently high to encompass achievement of the housing goals of 26 million new dwelling units by 1978 and assumes a larger proportion of single family housing units.

Federal Government purchases are higher in a durables economy on the assumption of greater expenditures for military hardware. State and local government expenditures are lower, however, so that the proportion of GNP devoted to Government in the durables projection is similar to that found in the services economy. Even though the State and local government proportion of GNP in the durables economy is lower than in the services economy State and local government in the former would still grow faster than GNP or Federal purchases.

Industry output

After determining the potential size of the GNP and its principal component purchasers, the industrial outlines of 1980's economy emerge through a series of interrelated steps that involves translating the GNP into specific goods and services purchased, such as food, clothing, rent, automobiles, drugs, cosmetics, and medical expenses.

These purchases of specific goods and services are then allocated to 82 producing industries by the application of a variety of techniques and

tools, different for each of the component purchasers of the GNP. The final demand of the 82 producing industries is traced back to all the other industries that contributed either directly or indirectly to this final production through the use of an input-output table; that is, a table used to identify the industry origins of all the goods and services that go into the production of a final product. The great value of this kind of analysis to manpower planners is that it permits detailed analysis of the employment repercussions—or the ripple effect—of changes in demand in one industry on all others. For example, a change in the level of highway or school construction will affect not only employment in the construction industry but also in the steel industry and then in the iron ore industry. To determine both the direct and indirect effects on employment of a change in expenditures for school or highway construction requires knowledge of (a) what each industry in the economy buys from every other industry to produce its products (input-output relationships) and (b) what employment requirements are per dollar of output for each industry (productivity). When each of these elements is projected to the target year, it becomes possible to trace the impact on employment of the projected purchases of final goods and services back along the entire chain of production, transportation, and distribution.

Projections have been developed for the output in 82 industries, but this article will deal with these output projections aggregated into major sectors: Manufacturing, mining, and so on, converted into the value of the gross product originating, or

value added terms, rather than the value of total output to avoid double counting materials and intermediate services.

In general, these industry sector projections continue long-term past trends except for a halt in the downward slide in construction's share of total output. The distribution of sector output over time has shown agriculture, mining, and construction declining steadily in relation to total output; transportation and public utilities, finance, insurance, and real estate gaining in relation to total output; and manufacturing, trade, and services staying roughly the same (chart 3).

Agriculture's share of total output will decline by 1980 to just below 3 percent in both the services and durables projections. It was 3.1 percent in 1968. (See tables 2 and 3.)

Although consumer food purchases through the 1970's are expected to increase—more people, more demand for food—their proportionate share of total personal consumption expenditures (PCE) is declining. As the housewife buys more canned, frozen, or precooked food, which has been processed in some other way, the value added to the product by the manufacturing industry expands while the farm share declines.

Manufacturing's share of total output will continue at roughly 28 percent in 1980; it was 28.5 percent in 1968. Dissimilar trends will prevail, however, for durable goods and nondurable goods. Over the long run, durables—consumer, producer, and military—have been increasing as a share of total demand; nondurables, mainly consumer purchases of food and clothing, have been declining. These trends are projected to extend to 1980

Table 3. Gross product originating: ¹ average annual rate of change, 1968-80 (projected)

Major sector	1968-80 period			
	Services economy		Durables economy	
	3 percent unemployment	4 percent unemployment	3 percent unemployment	4 percent unemployment
Total.....	4.3	4.2	4.3	4.2
Agriculture, forestry, fisheries.....	3.4	3.3	3.2	3.1
Mining.....	3.0	2.9	2.9	2.8
Construction.....	4.7	4.6	4.9	4.8
Manufacturing.....	4.1	4.0	4.4	4.3
Transportation, communications, and public utilities.....	5.3	5.2	5.2	5.2
Wholesale and retail trade.....	4.5	4.5	4.6	4.5
Finance, insurance, and real estate.....	5.1	5.0	4.9	4.8
Services, including household services.....	4.6	4.5	4.3	4.3
Government, including government enterprises.....	2.6	2.5	2.4	2.3

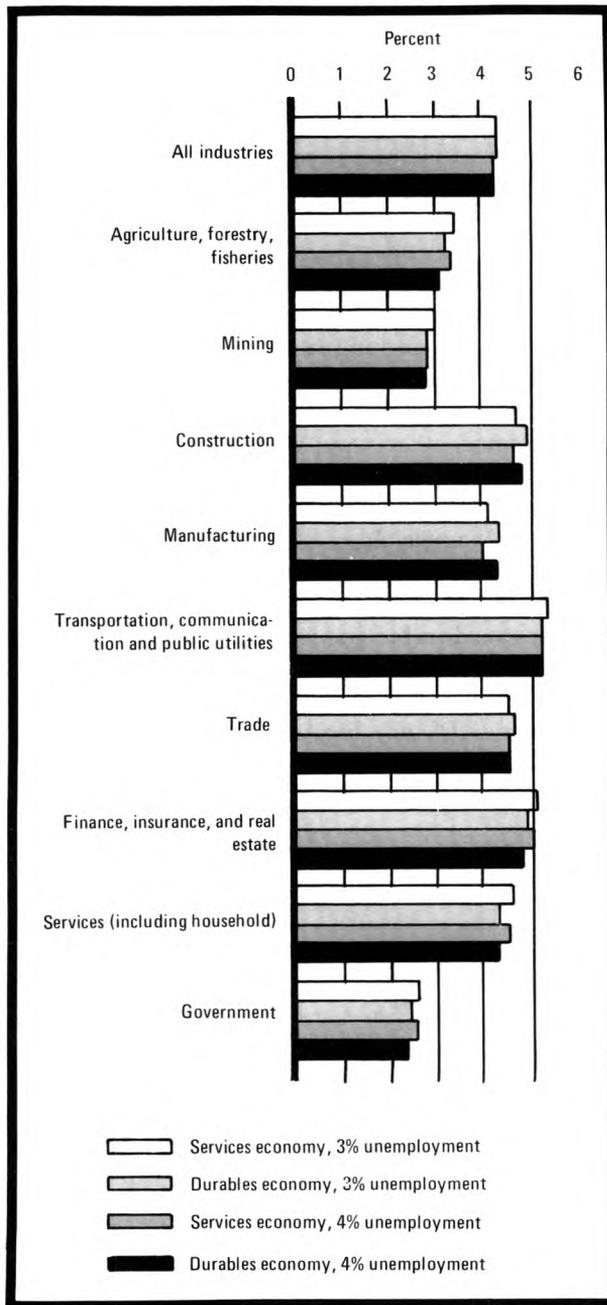
¹ Gross product originating is the value added by each sector to the total product.

NOTE: Detail may not add to total.

in both projections, but in the durable goods economy the upward trend for durables is, of course, accelerated.

Transportation, communications, and public utilities will show a small increase in their share of total output through the 1970's, in all projections,

Chart 3. Average annual rates of growth in value of output, 1968-80 (projected in 1968 dollars)



rising from 8.5 percent in 1968—to about 9.5 percent in 1980.

Finance, insurance, and real estate industries will increase their share of total output in 1980 to close to 14.5 percent, up from 13.5 percent in 1968. This increase will reflect the surge in housing expenditures by consumers, which are reported as purchases from the real estate industry in the form of rent and rental value of owned homes.

Service industries will expand slightly as a proportion of total output by 1980 to close to 11.5 percent. The anticipated increase in consumer expenditures for medical services will contribute to this increased share in the services economy.

Trade will increase a little by 1980, to 17 percent of total output in a service economy. It was 16.5 percent in 1968.

Construction's share of total output will rise slightly to about 5 percent by 1980, up from 4.6 percent in 1968. This modest increase brings to a halt a long run, severe downtrend. The increase in the total value of production, will reflect rising State and local government needs, increasing housing requirements, and expanding investment in plants.

Mining will continue a slow decline in its share of total demand through the 1970's to about 1.4 percent in the services projection. It was 1.6 percent in 1968.

GROWTH IN OUTPUT BY DETAILED INDUSTRY. To project employment by detailed industry, it is necessary to shift emphasis from demand for the final products of industry to the value of all direct and indirect contributions to the final output. The larger value of production—including the direct and indirect contributions to the final product—is called gross duplicated output. This value is eventually translated into employment by industry in the economic model.

Appendix table 11 shows the average annual rate of growth in output for both services and durables economies at 3-percent unemployment. The rates among industries shown in the table range from a small decline to an increase that exceeds 10 percent a year compounded. In this latter case, such an increase would mean a more than doubling of gross duplicated output by 1980. For many industries, the growth rates are quite similar between the two different structures of demand. But, many industries in a durables

economy have a growth rate which deviates from that in the services economy. In a durables oriented economy, the durable goods industries of the manufacturing group will show a faster rate of growth in output than the same industries in a services economy. And the services industries will show a generally lower rate of growth in output. To simplify the text, the discussion of individual differences in growth rates that follows will be confined to the 3-percent, services model. The statistical information that will facilitate the same comparisons between past and future trends for the detailed industries on the durables model are in appendix table 14.

The most rapidly growing industry in the country is the office, computing, and accounting machines industry. Computer production now dominates this industry. In the last 2 years, computer output has grown at the staggering rate of nearly 40 percent a year. Based on past performance, an expected growth of computer use in communications and data transmission and a possible introduction of the computer into the consumer marketplace, the projected rate of growth remains extremely high through 1980.

Other industries that are expected to grow very rapidly during the 1970's are optical, ophthalmic, and photographic equipment supplies (including photocopying equipment); electronic components and supplies; communications; plastics and synthetic materials. Other industries that are also expected to have high growth rates through the 1970's are electric, gas, water, and sanitary services; service industry machines (which include air-conditioning equipment); rubber and miscellaneous plastics products; business services; radio, television, and communications equipment; and chemical and fertilizer mining. All of these industries have experienced consistently high growth rates in the recent past.

Some industries, however, are expected to show a change in their growth rate in the 1970's so that it differs from their recent experiences.

Industries whose rate of growth in output is projected at least 1 percent higher than historical rates: The coal industry is recovering somewhat from a very low rate of growth that has prevailed for many years. Demand from the international market is responsible for much of the improvement in the growth rate in this industry. Nuclear

energy is expected to take some of the coal market in the years to come so that the rate of growth for coal in the latter part of the projected period is expected to be slower than in the earlier part.

New construction is expected to increase in the 1970's because of demand for residential housing, the continued strength of State and local government construction, and strong demand from some segments of nonresidential construction, particularly commercial and office building construction.

The industries that supply construction materials, particularly fabricated structural products, stone and clay building materials, construction machinery, and to some extent, the metals and lumber areas are expected to grow more rapidly through the 1970's than in the recent past. This growth accompanies the expansion in new construction.

The miscellaneous electrical machinery and supplies industry will expand because of the increasing use of batteries for a wide range of industrial and consumer applications.

Transportation will grow faster than it has in the past because of a continuing increase in air travel, air cargo, and trucking.

The amusement industry is projected to grow because of increased leisure, higher consumer incomes, and the modest recovery underway in the movie industry.

Industries whose rate of growth is projected at least 1 percent a year lower than during the 1957-65 period: The synthetic fibres industry will grow more slowly than in the recent past, but this industry still will grow at an annual rate of nearly 7 percent through the 1970's.

The radio, television, and communications machinery industry will decline from its 1957-65 rate of 9 percent a year to a projected rate of just over 6 percent.

The electronic components industry will decline from a 15-percent annual growth rate to between 8 and 9 percent for the 1970's. This reflects the difficulty of sustaining extraordinarily high growth, and the slow growth projected in the purchases of electronics for defense needs. Nonetheless, the market potential remains strong for the products of this industry, including color television receivers and telephone equipment.

Technological change

Volume of production and output per worker are the elements most necessary to the projection of employment in American industry. Since output per worker may be affected by technological changes in industry, these changes must also be taken into account before employment can be projected. The importance to attach to technological advance is a difficult judgment to make. Changes in productivity growth often are loosely attributed to our advancing technology. However, historical evidence suggests that other factors—economies of scale, the shift in employment in the service industries in which productivity is usually low—also are important influences on productivity and must be considered in any model of tomorrow's economy.

The widespread use of the electronic computer in the decade of the 1960's will continue into the 1970's. The computer has greatly facilitated the capacity of our economy to cope with the needs of its rapidly rising population. It is not only directly responsible for many changes in American industry, but it is intertwined in many other, less spectacular, production improvements.

Bureau of Labor Statistics research indicates that the principal technology changes that are likely to affect the nature of work and worker output through the 1970's are as follows:

Computers will double in number by 1980. Numbering about 60,000 in 1969, computers are mushrooming in all branches of industry, business, and government. At least twice as many are expected to be in operation by 1980. They are widely used in most Federal Government offices and in most large establishments in the insurance, banking, aerospace, electrical machinery, and automobile industries. Many small businesses, for whom an installation has so far been uneconomical, will lease computer time from service centers.

Time sharing of computer facilities, a relatively new development, will continue to spread rapidly.

The extent to which computers will take over our working and thinking functions is still uncertain. But, at a minimum in the years ahead, it is still likely that they will be used extensively for large-scale routine data processing operations such as accounting, billing, inventory control, production control and planning; many scientific and engineering functions; printing to speed preparation of control tapes which guide type-

setting machines; storing and retrieving information on crude petroleum and natural gas operations; designing and drafting new car models; scheduling operations in oil exploration and in construction; and numerical control of machine tools.

Process computers are expected to increase significantly. By 1980, nearly 10 times as many installations as in the mid-1960's are expected to be using process computers, and the closed-loop type of computer control is expected to dominate the market. In the mid-1960's, only about 1,700 process computers were in use.

The use of instruments with delicate sensory capabilities will expand during the 1970's. Such instruments will be designed for sensing, measuring, and acquiring data and for controlling temperature, flow, and other industrial processes. Their use will extend human sensory capabilities even further and open new possibilities for scientific advances and industrial automation.

Improvements in machinery that do not involve drastic departures from conventional design will continue to be an important factor in raising productivity in many industries through the 1970's. Faster operation, larger capacity, automatic loading and unloading devices, and automatic lubrication will reduce significantly the amount of labor required per unit of output in some factory operations. The integration of a number of separate operations into one large specialized machine is expected to become more common in industry than it is today.

Greater mechanization is projected for many industries, particularly steel, textiles, meatpacking, printing, tire and tube manufacture, rail transportation, and highway construction.

Faster, better communications will be among the important factors in the growth of the economy over the next decade. Data transmission, via telephone, is expected to become an important adjunct of electronic data processing. Fast copying machines, color television, color printing, video tape recorders, Polaroid color cameras, teaching machines, and new devices for speeding the mail will create many opportunities for new investment and employment growth.

Prospects for high quality international communications via satellites will be spectacular and the rapid growth of overseas telephone service will contribute to a large-scale expansion of international business operations.

Advances in metalworking technology may mean a faster rate of technological change in many sectors of the economy by 1980. For example, metal-cutting and metal-forming tools will be improving constantly. Numerical control and electrochemical and electrical discharge machining will become more widely used. A fairly rapid growth in the use of numerically controlled machines tools is expected over the next 5 to 10 years as its advantages are better understood and as programing is simplified. The amount of labor saved per unit of output in machining operations could be substantial.

Energy and power innovations will develop. New sources of energy, more efficient generation of power, and new ways of transporting energy will continue to be developed to meet the increasing requirements of modern industry and urban society.

Improved long distance transportation systems are in prospect. By 1980, practically all scheduled airlines will use high-speed, medium- and large-size jets. Research will result in improved air-traffic-control systems as will improvements in passenger related ground activities such as ticketing and baggage handling.

More powerful diesel-electric railroad locomotives pulling specialized cars of increased capacity will haul longer trains at higher speeds and with greater loads. New developments in communications plus more widespread use of electronic control systems in classification yards and centralized traffic-control will facilitate rail traffic. Increased attention will be directed toward improving mass transportation in metropolitan areas. Motor trucks with more powerful engines and constructed of light-weight metals probably will increase the capacity of trailer trucks.

In water transportation, faster ships will be built with more automatic controls. In addition, significant changes in ship design will heighten the trend toward use of shipping containers, thereby reducing labor requirements in cargo handling.

The use in construction of prefabricated components and factory manufactured housing will significantly reduce the hours of work on the site. In addition, increased building efficiencies will result from further improvements in earthmoving machinery, new portable and automatic hand tools, advances in paving materials and techniques, further standardization of construction materials and design, and new systematic scheduling

techniques.

The use of mechanical devices for fruit and vegetable harvesting will expand rapidly through the 1970's. Mechanization will be most rapid among those crops which are grown for processing rather than for the fresh market. Research efforts are expected to develop new crop strains that are more easily harvested by mechanical means.

Medical services will benefit from the use of computers and other electronic devices. Computers will aid in diagnostic procedures and record keeping; automatic chemical analyzers will speed diagnosis and patient treatment, and electronic devices such as the heart pacemaker and prosthetics will replace defective body parts.

Pollution control will benefit from more effective control devices, which are needed to eliminate air pollutants from automobiles, airplanes, and industrial plants, to reduce pollution of lakes and rivers, and to handle the mounting debris of urban centers.

Productivity Change

Projected change in output per man-hour in each industry is the final step in determining employment by industry. These projections are constructed on the basis of the estimated levels of industry output in 1980 and its past output and productivity behavior, taking account of the anticipated impact of technological innovations, as well as any structural change occurring within and between industries.

Like the rate of growth in output among industries, the rate of productivity change differs from industry to industry. Technological breakthroughs do not occur simultaneously throughout industry, nor does investment follow a uniform pattern. Furthermore, the effects of both factors are slow to be reflected in productivity increases.

If each industry's projected productivity is compared with its projected output, the areas of employment growth and decline come into focus because of the close relationship between output and productivity change. For instance, two industries with high rates of productivity increase—air transportation and coal mining—have had opposite employment experiences because of their different output situations. Productivity went up an average 8.3 percent a year in both industries between 1957 and 1966. In air transportation, a rapid increase in output accompanied

productivity growth, and employment went up. In contrast, output in coal mining remained stable. In this instance, the increase in productivity reflected greater efficiency in the use of labor as a result of improved technology, and employment dropped.

Clearly, productivity projections by themselves are not sufficient to identify industries where employment will grow or decline. Employment can increase in industries with either high or low productivity if output goes up enough, just as it can decrease in industries with either high or low productivity if output declines enough.

Productivity projections for major industry groups show that the biggest increase in output per man-hour between 1965 and 1980—5.9 percent a year—should take place in agriculture. Since the beginning of the century agricultural employment has been dropping because of improved technology; this trend is expected to continue.

The projected increase in output per man-hour for all nonagricultural industries is 2.8 percent a year. Productivity in manufacturing, transportation, trade, and finance, insurance, and real estate is expected to increase at about this rate.

There are two major nonagricultural industry groups where the rate of output per man-hour increase is expected to be faster than in the other groups—mining, and communications and public utilities. The story in mining is the same as it has been for several years: A large productivity rate of increase accompanies a small increase in output with a drop in employment as the result. In the communications and public utilities group, the rate of productivity increase will be approximately the same as in mining, but the output situation will be radically different. Mining has the lowest projected rate of increase in output among nonagricultural industries; communications and public utilities, the highest. Employment in the communications and public utilities group, nonetheless, will grow as improved technology permits these industries to extend their services to a growing population.

Two other major industry groups have projected increases in output per man-hour that are lower than the average rate for nonagricultural industries—construction and services. In general, industries in both these groups are labor-intensive, and technological change has a more limited influence on productivity.

The construction industry—presently being encouraged to use more innovations in building techniques by Operation Breakthrough, a new program in the Department of Housing and Urban Development—may benefit from more intensive application of existing technology that would increase the output per man-hour. Already, prefabricated panels and shells for houses show promise of more widespread use. In the service industries because output is projected to grow rapidly, the slow rate of productivity growth means that the employment increase in this group will be larger than in any other group.

Moving from major industry groups to specific manufacturing industries, the output per man-hour projections bear out a basic notion of productivity behavior—productivity increases are usually greatest in faster growing industries. Some of the highest rates of increase in output per man-hour are expected in industries making optical and photographic equipment; office machines and computers; radio, television, and communication equipment; and electronic components and accessories.

Plastics and chemicals are also growing industries and their productivity should increase rapidly too. (See appendix table 15.)

Technology plays a big part in all these productivity increases—large output increases bring only small increases in employment. Other industries with high projected rates of productivity growth—textiles and petroleum—anticipate slight declines in employment despite higher than average growth in output. These are older industries where technological improvements are still displacing unskilled and semiskilled labor.

The economy in 1980

PROJECTED EMPLOYMENT BY INDUSTRY AND OCCUPATION

THE KIND AND LEVEL of manpower requirements of the 1970's are intertwined with the nature of the industrial changes that seem likely to occur over the decade.

General trends and growth factors that are expected to affect industry employment in a services economy (with 3-percent unemployment)

through the 1970's are described below for the major industry groups. (See chart 4.)

Service-producing industries

The most dramatic change in industry employment in recent years has been the employment shift towards service-producing industries. Shortly after the turn of this century, only 3 in every 10 workers were in service industries. By 1950, the weight had shifted to just over 5 in every 10 in service industries; by 1968 the proportion had inched to 6 in every 10. In 1980, close to 7 in every 10 workers—or 68 million—are projected to be in service industries. (See table 4.)

TRANSPORTATION, COMMUNICATIONS, AND PUBLIC UTILITIES. Employment in this group of industries is expected to increase to close to 5 million in 1980, up from 4.5 million in 1968. Despite this small employment gain, its share of total employment will decline from 5.6 percent in 1968 to 5 percent.

Transportation employment has been dominated by the long, slow decline in railroad employment during the postwar period. Even though employment in trucking and air transportation has expanded, the decline in railroad employment has been severe enough to cause an overall decline in the average for all transportation industries. But a turn around is expected: trucking and air trans-

portation will increase fast enough to offset whatever further small railroad declines occur; an overall slow gain in employment is projected.

Public utilities and communications are highly productive service industries. Hence, even though the services provided by these industries are expected to expand significantly—output has the highest projected rate of increase through the 1970's among all nonfarm industries—employment will increase only moderately to 1980 and will decline as a proportion of total employment.

TRADE. The largest of the service industries, wholesale and retail trade, is interwoven throughout the economic system in a network of wholesale and retail establishments. Trade employment changes are expected to parallel those of the whole economy and with trade's relative share—one-fifth—of total employment remaining about the same in 1980. Employment, however will rise from 16.6 million in 1968 to 20.5 million, in 1980.

Retail trade employment will expand most rapidly in general merchandise stores and eating and drinking establishments. Technological developments such as vending machines, other self-service gadgets, and electronic computers for inventory control and billing will tend to retard employment growth.

Wholesale trade employment will increase more rapidly than that of retail trade. Employment in motor vehicles, automotive equipment, and

Table 4. Changes in total and wage and salary employment by industry sector, 1965 and 1968 (actual) and 1980 (projected for services and durable goods economies)

[In thousands]

Industry sector	1965		1968		1980							
					Services economy				Durables economy			
					3-percent unemployment		4-percent unemployment		3-percent unemployment		4-percent unemployment	
	Total employment	Wage and salary employment ¹	Total employment ¹	Wage and salary employment ¹	Total employment	Wage and salary employment ¹	Total employment	Wage and salary employment ¹	Total employment	Wage and salary employment ¹	Total employment	Wage and salary employment ¹
GOODS PRODUCING												
Total.....	27,786	26,401	78,975	27,657	31,618	30,115	31,200	22,809	32,515	31,112	32,286	30,795
Manufacturing.....	18,454	18,062	20,125	19,768	22,358	21,935	22,133	21,712	23,240	22,817	23,005	22,584
Agriculture, forestry, and fisheries.....	4,671	4,521	4,154	4,012	3,188	3,030	3,156	3,000	3,192	3,034	3,160	3,004
Construction.....	3,994	3,186	4,050	3,267	5,482	4,600	5,427	4,553	5,595	4,713	5,539	4,665
Mining.....	667	632	646	610	590	550	584	544	588	548	582	542
SERVICE PRODUCING												
Total.....	46,782	41,367	51,813	46,449	67,982	62,085	67,300	61,465	66,785	60,885	66,114	60,279
Services industries.....	13,722	11,501	15,113	12,826	21,080	18,660	20,867	18,474	20,585	18,165	20,376	17,983
Trade.....	15,352	12,716	16,604	14,081	20,487	17,625	20,282	17,450	20,501	17,639	20,296	17,464
Transportation, communications, and public utilities.....	4,250	4,036	4,524	4,313	4,976	4,740	4,926	4,692	4,961	4,725	4,911	4,677
Finance, insurance, and real estate.....	3,367	3,023	3,726	3,383	4,639	4,260	4,593	4,217	4,538	4,159	4,493	4,117
Government.....	10,091	10,091	11,846	11,846	16,800	16,800	16,632	16,632	16,200	16,200	16,038	16,038

¹ Except for agriculture which includes self-employed and unpaid family workers.

machinery equipment and supply will be among the faster growing areas.

FINANCE, INSURANCE, AND REAL ESTATE. Employment in these industries is expected to increase at about the same rate as total employment each year through the 1970's and to account for only a slightly larger share—4.7 percent—of total employment in 1980 than in 1968. Employment, however, will rise from 3.7 million in 1968 to 4.6 million in 1980.

Banking employment is expected to grow at a slower pace than in the last decade as advancing automation eliminates many clerical functions. Electronic data processing equipment also is expected to slow employment growth in the security dealers and exchanges sector, a rapid growth area. Increase in the size of firms may also

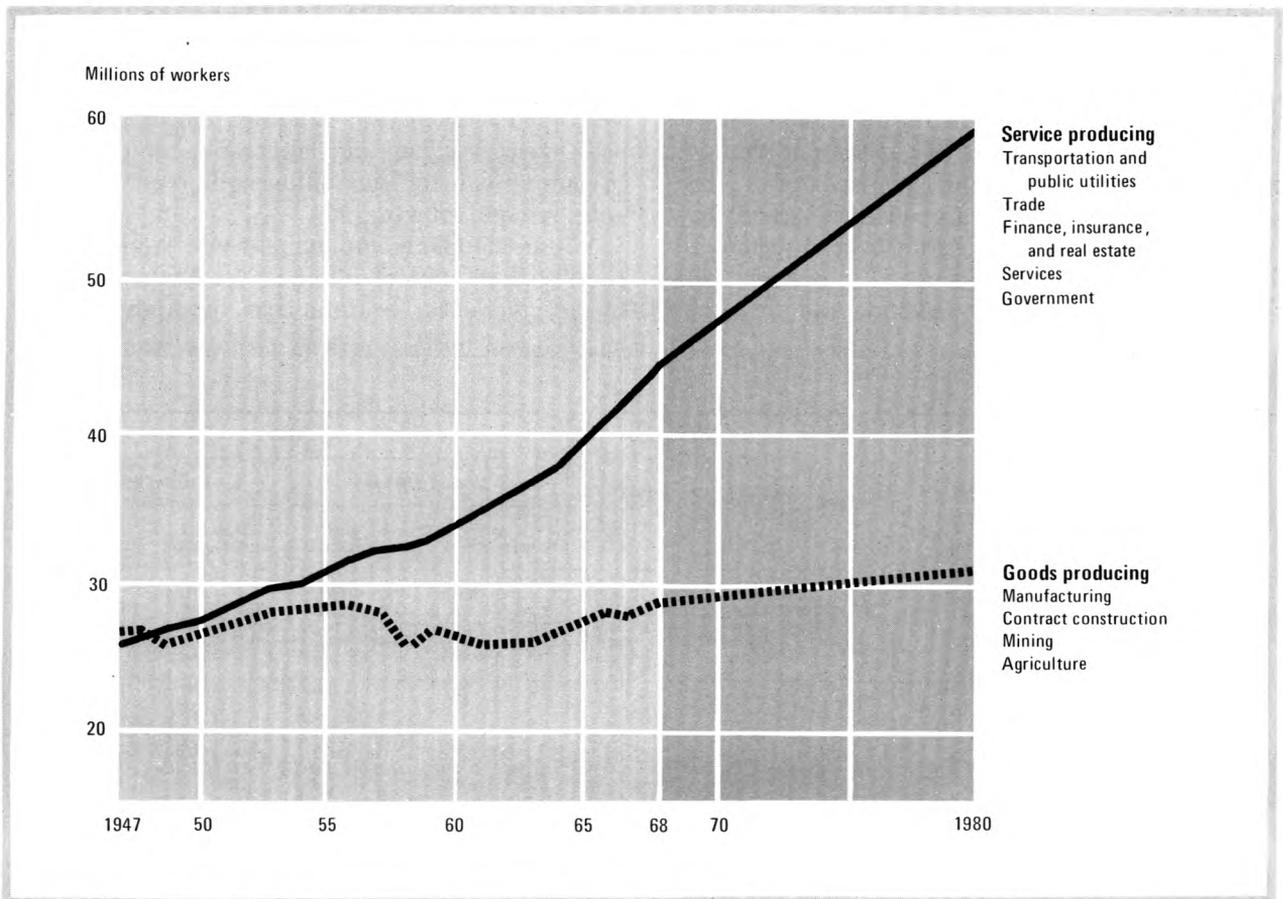
limit employment gains.

Although restrained somewhat by the computerization of recordkeeping functions, insurance employment will continue to grow at about the same pace as during the 1960's because of the steadily rising population.

Real estate employment will grow at a slightly faster pace than in the past decade: it is little affected by technological advances but highly responsive to the rising number of family formations.

SERVICES. These industries, including private household employment, will increase their share of total employment by 1980, rising from 18.7 percent in 1968 to about 21 percent in 1980 and at a faster rate than total employment. Employ-

Chart 4. Employment¹ trends in goods-producing and services-producing industries, 1947-68 (actual) and 1968-80 (projected for a services economy with 3-percent unemployment)



¹ Wage and salary workers only, except in agriculture, which includes self-employed and unpaid family workers.

ment will rise to 21 million in 1980, up from 15 million in 1968.

Employment growth in this heterogeneous group of service industries, which include personal, business, health, and educational services, will be related to a substantial increase in population, a rapid rise in personal disposable income, expanding economic activity, and a growing demand for medical, educational, and other services. The output of these labor-intensive industries is less affected by technological change than many other industries, hence their employment growth is not restrained very much by productivity advances.

Within the services division, employment growth is expected in all major industries between 1968 and 1980, ranging from 14 percent for motion picture employment to almost 100 percent for miscellaneous business services. Growth in business services is expected to be particularly rapid as firms rely increasingly on advertising services to sell their products; on accounting, auditing, bookkeeping, and computing services to handle their recordkeeping; on contract firms to provide maintenance service; and on audit bureaus and collecting agencies to cope with mushrooming consumer credit.

GOVERNMENT. Employment has grown faster in government than in any other sector in the economy. From 1960–68 employment grew at the rate of 4.5 percent a year, nearly 2½ times the rate for total employment. The sharp rise in recent years has been stimulated, however, by the needs of the Viet Nam war as well as by the rapid growth in population, the increasing proportion of young and old persons in the population who require more services, and the general growth in demand for more and better government services. Employment is projected to rise more slowly through the 1970's—at 2.9 percent a year—reaching 16.8 million in 1980, up from 11.8 million in 1968. Employment among Federal Government workers will rise only slightly, but State and local employment will continue to expand rapidly.

Although the rate of increase in State and local government employment will be higher compared with almost any other sector, the growth will be slower than during the 1960's, mainly because of an anticipated easing in the rate of growth for educational services, which account for roughly

half of total employment in State and local governments.

Goods-producing industries

Despite a steadily rising total output of goods to unprecedented levels through the 1970's, the goods-producing industries encompass the only major industries in which employment is expected to decline—mining and agriculture—and one industry—manufacturing—for which employment growth is expected to be slower than during the 1960's. Only one goods producer, construction, is expected to show a quickened pace of employment growth through the 1970's. This modest employment expansion, overall, for goods-producing industries, in the face of an overall healthy increase in output, reflects, of course, their rising productivity.

Altogether, the goods-producing industries employed 29 million workers in 1968 and are expected to increase to 31.6 million by 1980. However, their share of total employment will drop to less than a third by 1980 from about 36 percent in 1968.

AGRICULTURE. Large increases in productivity, small gains in output, and a continuing concentration of employment on large farms will result in further decline, about 1 million, in agricultural employment between 1968–80. The agricultural share of total employment will also decline from 5.1 percent in 1968 to 3.2 percent in 1980.

MINING. Employment has been declining for many years because of above average gains in productivity and decreased demand, particularly for coal. Mining is projected to have the lowest rate of increase in output among all nonfarm industries. Continued employment declines are projected through the 1970's although at a reduced rate because of some resurgence in the demand for coal. Employment will be less than 600,000 by 1980.

Future employment growth will be limited by the increasing use of new and improved labor-saving devices and techniques, such as continuous mining machinery systems and more efficient exploration and recovery techniques in crude oil and natural gas extraction.

CONSTRUCTION. This industry may benefit from intensive application of existing technology that would increase the output per man-hour. Already, prefabricated panels and shells for houses show promise of more widespread use. At the same time the national housing goal for the decade 1968-78 calls for the construction of 20 million new housing units in the private market and the production of 6 million new and rehabilitated units with public assistance in one form or another. This will spur growth in the construction industry, which is expected to grow at 2.5 percent a year in the 1970's, nearly twice its growth rate during the 1960's. Additional demand will come from an expansion in State and local government needs, particularly for highway construction and new and rehabilitated housing units, and from expanding investment in industrial plants. Employment will rise from 4 million in 1968 to nearly 5½ million by 1980.

MANUFACTURING. Still the biggest industry, manufacturing is expected to remain as the largest single source of jobs in the economy. Manpower requirements in manufacturing, however, are expected to increase at a slower pace, at 0.9 percent a year, than that experienced during the 1960's, chiefly because the recent increases in employment in industries heavily oriented toward defense—ordnance, communications equipment, electronic components, aircraft and parts, and shipbuilding—are not expected to continue at the same pace in the 1970's. Employment, however, will rise from 20 million in 1968 to 22.4 million in 1980.

In general, manpower requirements will continue to increase faster in durable goods manufacturing than in nondurable goods industries. Growth in the durable goods sector will be accelerated by the significantly increased demand for building materials for housing construction. As in the past, changes in employment in individual manufacturing industries are expected to vary widely, depending on the impact of technology as well as shifts in demand. The increasing application of technological innovations to manufacturing processes is expected to continue to reduce unit labor requirements in manufacturing. Major technological developments that will continue to limit growth in manufacturing employ-

ment include numerical control of machine tools, new metal processing methods, machinery improvements, improved materials handling (including layout), new and improved raw materials and products, instrumentation and automatic controls, and electronic computers.

How the employment projections differ

Employment projections for a durable goods economy, even though weighted more heavily toward the production of goods, still produce an economy weighted more toward the service sector than the present one. The rate at which employment shifts away from the goods-producing part of the economy, however, is slower in the durable goods projection than in the services projection.

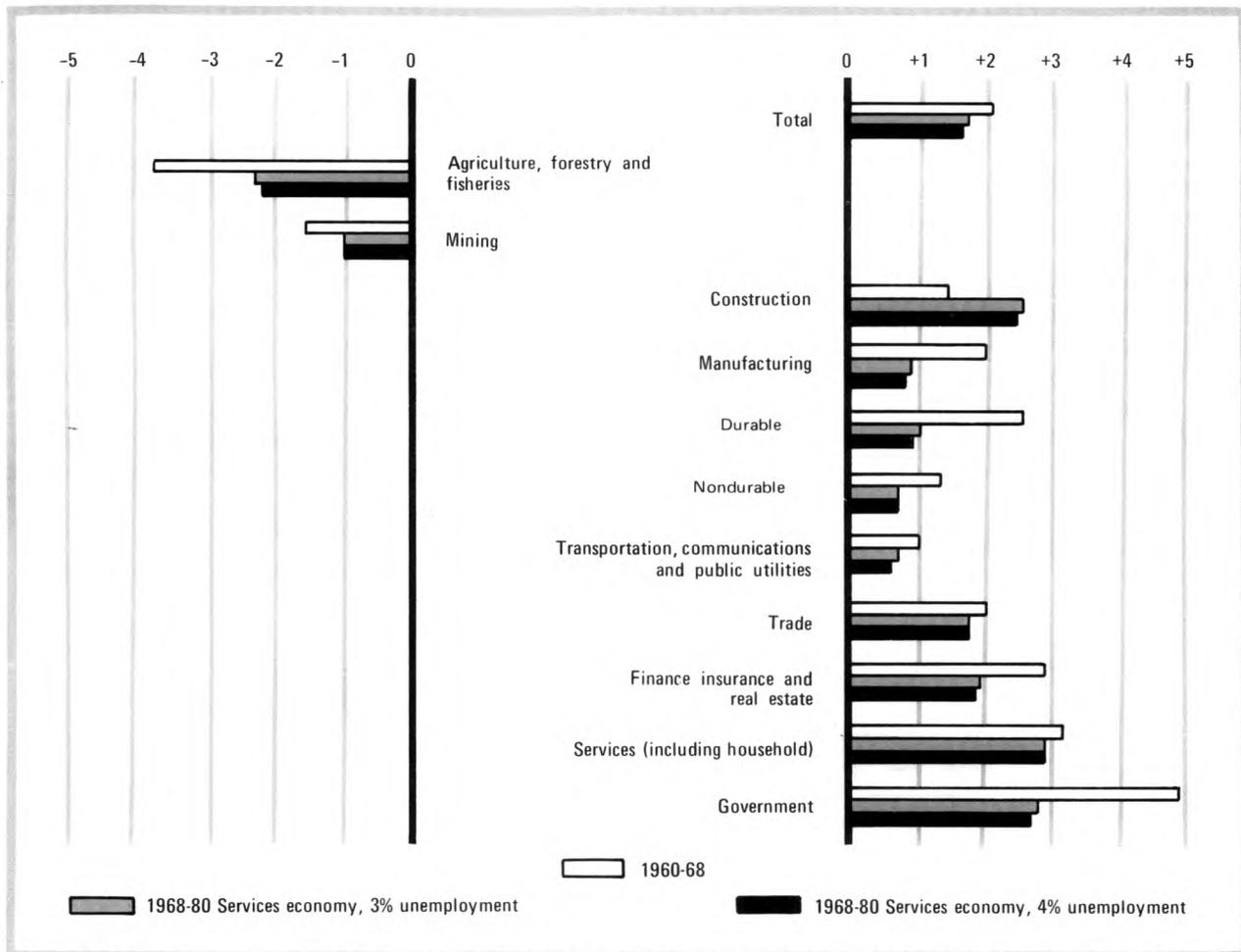
Durable goods manufacturing accounts for about 1 percent more of total employment under the assumptions upon which the durable goods economy projections in 1980 are based than under the assumptions used for the services economy projections. Employment in the nondurable goods industries, however, is only modestly changed between the two structures of the economy. Transportation and trade are both roughly the same; manufacturing is slightly higher; services and government, slightly lower. In both types of economy, manufacturing shows a declining proportion of total employment while services and government show increasing proportions of total employment. (See charts 5 and 6.)

Occupational employment

Industry changes during the 1970's will have a strong influence on occupations—which ones will grow and which will contract. Each industry in the economy requires a specific mix of occupations. As industries react to changes in final demand and in relation to each other, the relative importance of particular occupations also changes.

Beyond the effect of interindustry relationships, industry occupational structures are also affected by internal changes within industries. Just as technological advances that increase worker productivity have significantly affected employment and output, these advances significantly affected the occupational structure of the work force. As a result of technological innovations, new occupations have emerged; others have expanded,

Chart 5. Total employment: average annual rate of change, by major sector, 1960-68 (actual) and 1968-80 (projected for a services economy)



contracted, or even disappeared; and the content and skill requirements of a great many occupations have been altered. But technology and final demand are not the only factors affecting occupational shifts. Changes can occur as a result of revised work rules, new directions in governmental policy, and severe shortages that force substitutions in the kinds of workers hired (table 5).

Several long-term occupational trends are expected to continue:

White-collar occupations, the fastest growing occupational group over the past 50 years, will continue in that mode. This group, which surpassed employment in blue-collar occupations for the first time in 1956, will account for about half of all employed workers (50.8 percent) by 1980.

Employment in these occupations will rise from 35.6 million in 1968 to 48.3 million in 1980.

Blue-collar occupations, a slow growing occupational group, will account for almost one-third (32.7 percent) of the work force by 1980, down from 36.3 percent in 1968. Employment, however, will rise from 27½ million in 1968 to 31.1 million in 1980. Many occupations within the group, particularly in the skilled craft and foremen category, require years of specialized training.

Farm workers will continue to decline—from 4.6 percent of the work force in 1968 to 2.7 percent in 1980—as machines take over many more of the production processes on the farm. Employment will also shrink from 3½ million in 1968 to 2.6 million in 1980.

Service occupations will continue to expand through the 1970's increasing by two-fifths, which is more than one and a half times the expansion for all occupations combined. Employment will rise to 13.1 million in 1980, up from 9.4 million in 1968. (See chart 7.)

Net occupational openings

Projections of occupational requirements, which encompass the total employed civilian work force, indicate that the total openings arising from occupational growth and replacement needs will be about 48 million between 1968-80, or about 4 million jobs to be filled every year throughout the period. Although the inflow to the labor force through the 1970's matches the overall number of

net job openings³—transfers between occupations cancel out—this balance in no way suggests a perfect fit between entry requirements and worker qualifications. Such a match depends on the future education and training of young people, the degree of flexibility workers show in adapting to changing requirements and employers utilize in adapting hiring standards to the available labor force. Average annual openings by detailed occupation may identify those areas where opportunities are numerous and help young people make their career plans based on the best available information. (See chart 8.)

Replacement needs—about 28 million in the 1970's—will be the most significant source of job openings in each of the major occupational areas—white-collar, blue-collar, service, and farm.

Chart 6. Total employment: average annual rate of change, by major sector, 1960-68 (actual) and 1968-80 (projected for a durables economy)

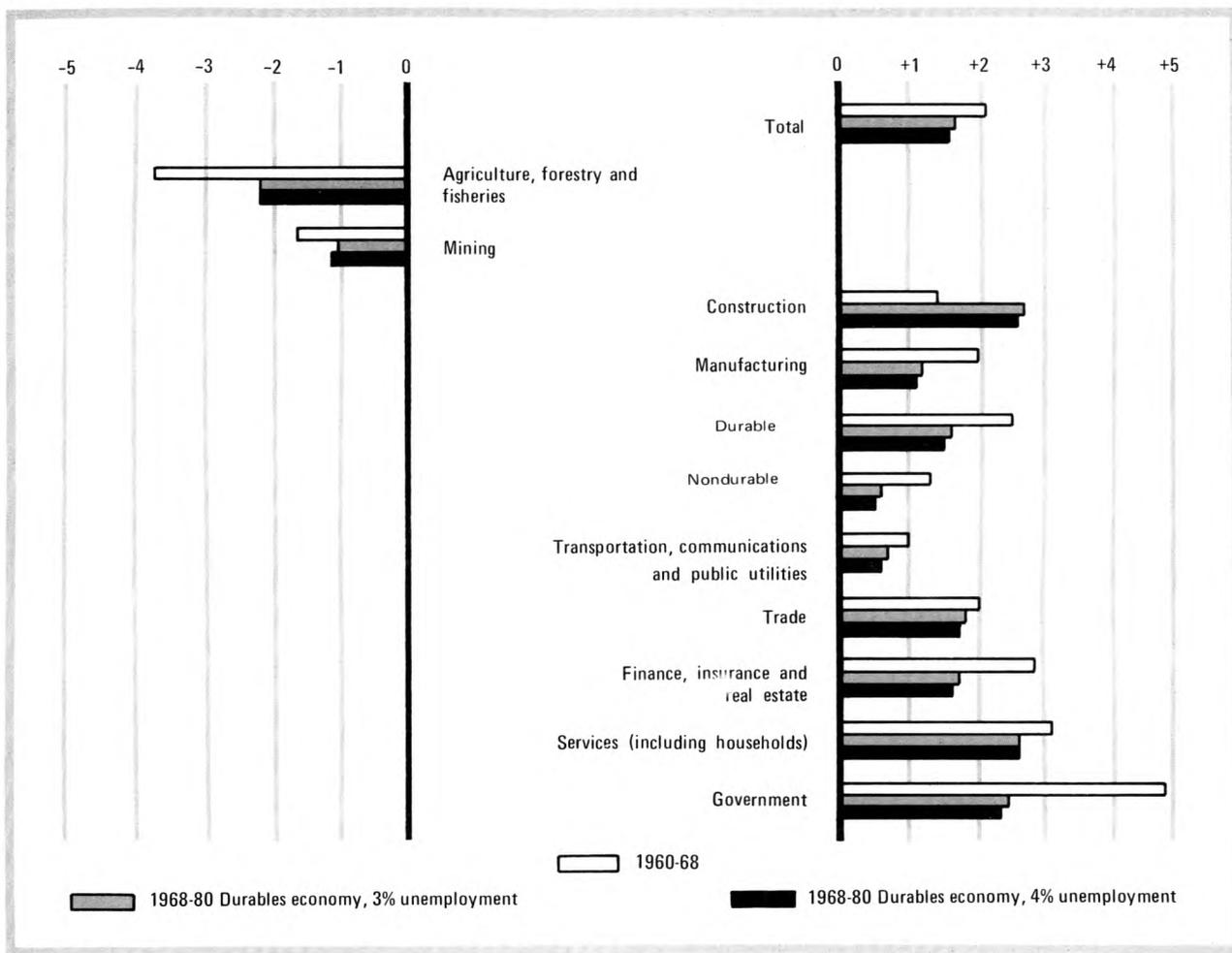


Table 5. Average annual rate of employment change, by major occupational group, 1960-68 (actual) and 1968-80 (Projected for a services economy with 3-percent unemployment)

Occupational group	1960-68	1968-80
Total.....	1.8	1.9
White-collar workers.....	2.8	2.6
Professional, technical, and kindred.....	4.1	3.4
Managers, officials, and proprietors.....	1.2	1.7
Clerical.....	3.5	2.5
Sales.....	1.2	2.2
Blue-collar workers.....	1.7	1.0
Craftsmen and foremen.....	2.0	1.7
Operatives.....	2.0	0.8
Nonfarm laborers.....		-0.1
Service workers.....	2.0	2.8
Farm workers.....	-5.1	-3.4

The need to replace workers who leave the labor force—primarily due to death and/or retirement—will account for 3 in every 5 job openings during the period from 1968-80; occupational growth will account for 2 in every 5 openings.

Replacement needs are likely to exceed the overall in those occupations that (a) employ many women, who frequently leave the labor force to assume family responsibilities, and (b) have a large proportion of older workers who have relatively few years of working life remaining.

Growth needs—about 20 million—reflect industry changes as well as technological changes during the 1970's that, in turn, will determine, in large measure, which occupations will grow, which will contract.

Changes in occupational groups

Employment requirements to 1980 have been projected for the 9 major occupational groups and for about 250 detailed occupations (chart 9).

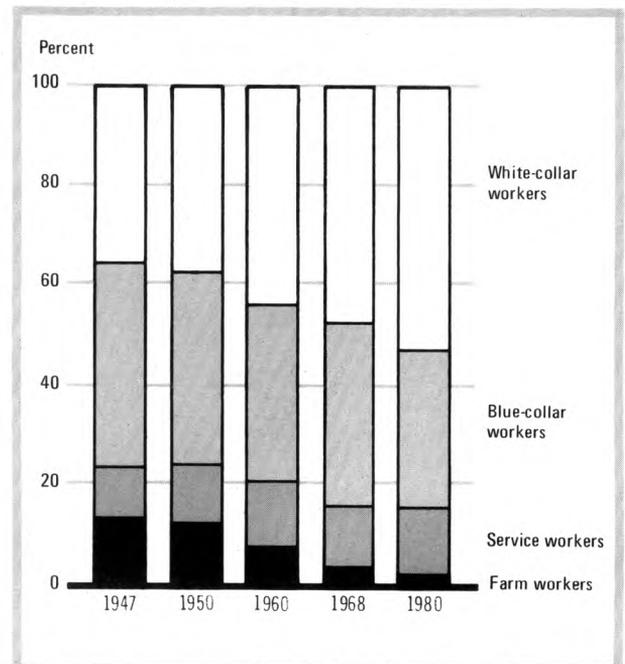
PROFESSIONAL, TECHNICAL, AND KINDRED. Employment growth in these occupations has outdistanced that in all other major occupational groups in recent decades. From less than a million in 1890, the number of these workers has grown to 10.3 million in 1968. And requirements for these occupations will continue to lead other categories between 1968 and 1980, increasing half again in size, which is twice the employment increase among all occupations combined. At 15½ million in 1980, employment in this occupational group will represent 16.3 percent of total employment, up from 13.6 percent in 1968.

The long term rise in demand for goods and services, resulting from population growth and rising business and personal incomes, will account for much of the need for these highly trained workers (as well as for the increases among other groups of workers). The increasing concentration of the population in metropolitan areas also will create new demands for professional and technical personnel to work on environmental protection, urban renewal, and mass transportation systems. In addition, efforts to develop further the Nation's resources and industry and the quest for scientific and technical knowledge will generate new requirements for professional workers.

MANAGERS, OFFICIALS, AND PROPRIETORS. Employment in this occupational group, rising more slowly than total employment, will reach 9½ million in 1980, up from 7.8 million in 1968. Its share of total employment will continue at about 10 percent.

Changes in the scale and type of business organization have had divergent effects upon the various segments of this occupational group. In retailing, for example, the establishment of chain

Chart 7. Employment trends among major occupational categories,¹ 1947-68 (actual) and 1980 (projected for a services economy with 3-percent unemployment)

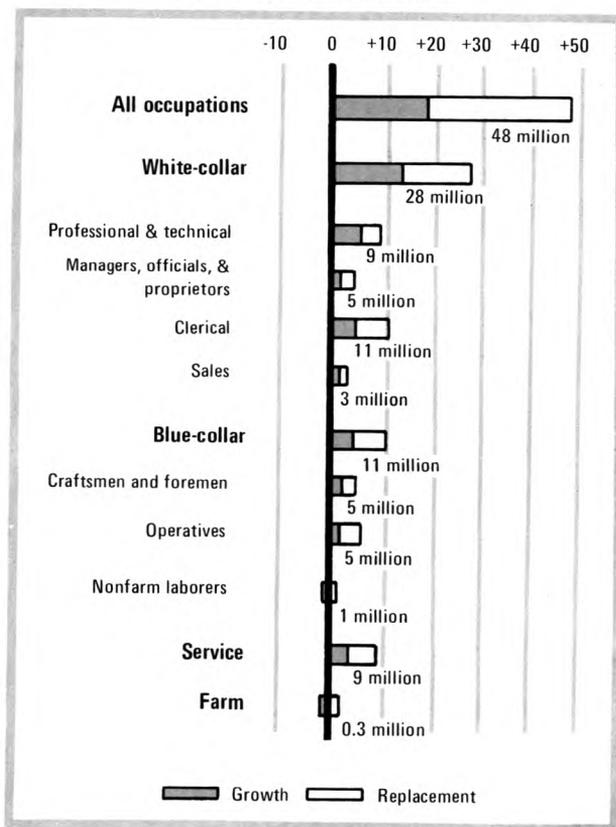


¹ Farm workers include farm managers.

stores such as supermarkets and discount houses has eliminated many small businesses, thus reducing the number of self-employed proprietors. In contrast, the number of salaried managers and officials has increased significantly. The net result of these opposing trends will probably be a slower increase in employment in the manager-proprietor group as a whole than in any other major group of white-collar workers.

Demand for salaried managers and officials is expected to grow rapidly with the increasing dependence of both business and government on trained management specialists. Technological development will contribute further to employment growth of these occupations. For example, an increasing number of technical managers is needed to plan research and development programs and to make decisions on the installation and use of automated machinery and automatic data processing systems.

Chart 8. Net job openings in major occupational categories and groups, 1968-80 (projected for a services economy with 3-percent unemployment)



Proprietors are expected to continue to decline as the trend toward larger firms restricts growth of the total number of firms, and as small grocery and general stores and hand laundries continue to disappear. The expansion of quick service grocery stores, self-service laundries and drycleaning shops, and hamburger and frozen custard drive-ins, however, will slow the rate of decline.

CLERICAL. Employment in clerical jobs is expected to grow considerably faster than total employment rising to 17.3 million in 1980, up from 12.8 million in 1968. This rate of growth, although rapid, is considerably slower than that experienced from 1960-68.

Clerical workers, the largest single category in white-collar employment, will be affected by the rapid technological developments in the fields of computers, office equipment, and communication devices in the 1970's. For some, the effect of these technological improvements will in time retard the growth of employment; for others, the demand for processing the increased information becoming available through these improvements will accentuate growth in their ranks.

Technological developments will limit employment growth for certain types of clerical workers. To illustrate, the use of electronic computers and bookkeeping machines to process routine and repetitive work is expected to reduce the number of clerks in jobs such as filing, payroll, inventory control, and customer billing. On the other hand, laborsaving innovations will be offset to some extent by growing requirements for clerical personnel to prepare computer inputs.

The rapid growth of industries that employ large clerical staffs, particularly those such as finance, insurance, and real estate, is a major factor in the projected level of clerical demand. Clerical employment will increase its share of total employment from 16.9 percent in 1968 to 18.2 percent in 1980.

SALES. The anticipated expansion of trade should increase the demand for sales personnel—particularly for part-time employees—but changing techniques in merchandising may hold down some of the increase. Employment is expected to rise from 4.6 million in 1968 to 6 million in 1980 and at a slightly faster rate of increase than is expected in total employment. Sales share of total

employment will continue a little over 6 percent through the 1970's.

CRAFTSMEN, FOREMEN, AND KINDRED WORKERS. Employment in this highly skilled group of occupations is expected to expand more slowly than total employment, rising from 10 million in 1968 to 12.2 million in 1980. The craft share of total employment will slide downward a little to 12.8 percent by 1980.

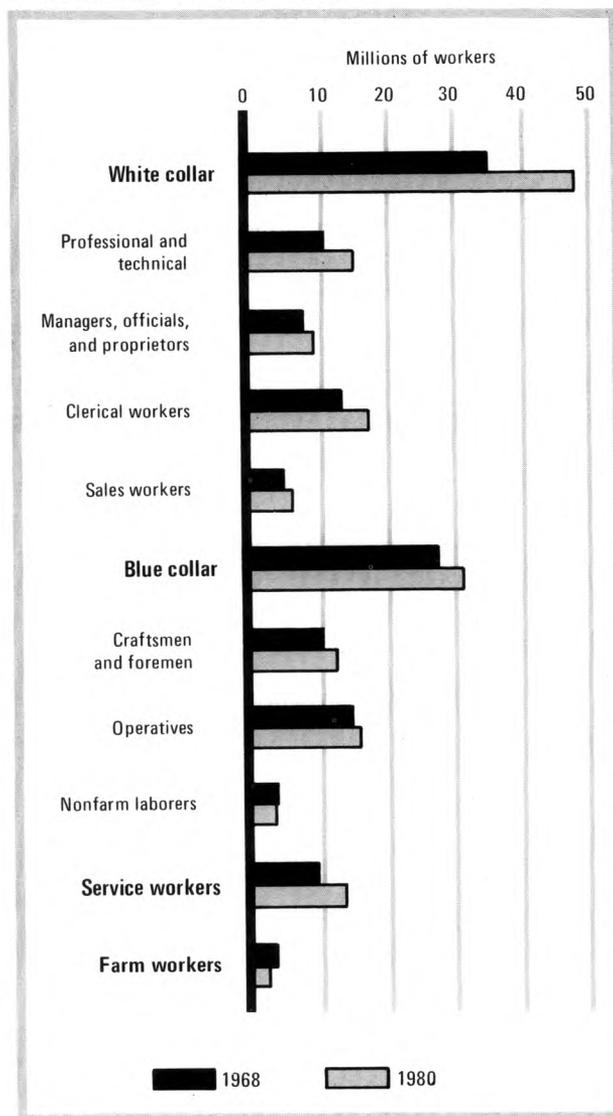
Different industries employ different proportions of craftsmen. Manufacturing employs a greater number than any other industry. In construction, however, these skilled workers are a much higher proportion of employees than in any other industry group—1 out of every 2, compared with 1 in 5 in manufacturing and transportation and fewer than 1 in 10 in other industries.

SEMISKILLED WORKERS. These occupations employ more workers than any other group. Employment in these occupations increased sharply as industry, aided by technological innovations, shifted to mass production processes. But now that these processes are well established, further and more sophisticated technological advances are apt to slow employment growth in these occupations in the years ahead. Employment is projected to rise from 14 million in 1968 to 15.4 million in 1980, at a rate of increase that will be about half the increase projected for total employment; the semiskilled share of total employment will slide downward from 18.4 percent in 1968 to 16.2 percent in 1980.

Three of every 5 semiskilled workers in 1968 were employed as factory operatives in manufacturing industries. Large numbers were assemblers or inspectors, and many worked as operators of material moving equipment such as powered forklift trucks. Among the nonfactory operatives, drivers of trucks, buses, and taxicabs by far made up the largest group.

Employment trends among the individual semiskilled occupations since World War II have reflected different rates of growth in the industries in which the workers were employed as well as the differing impacts of technological innovations on occupations. For example, the rapid decline in employment of spinners and weavers reflected not only the relatively small increase in the demand for textile mill products but also the increased mechanization of spinning and weaving

Chart 9. Employment in major occupational groups, 1968 (actual) and 1980 (projected for a services economy with 3-percent unemployment)



processes. Increases in production and growing motor truck transportation of freight will be major factors in expanding demands for operatives in the 1968-80 period.

NONFARM LABORERS. Employment requirements for these laborers are expected to continue at 3½ million despite the rapid employment rise anticipated in manufacturing and construction, the primary employers of laborers. The nonfarm labor share of total employment, however, will decline from 4.7 percent to 3.7 percent between 1968 and 1980.

Increases in demand are expected to be offset roughly by rising output per worker resulting from the continuing substitution of mechanical equipment for manual labor. For example, power-driven equipment such as forklift trucks, derricks, cranes, hoists, and conveyor belts will take over more and more handling of materials in factories, at freight terminals, and in warehouses. Other power-driven machines will do excavating, ditch digging, and similar work. In addition, integrated systems of processing and handling of materials equipment will be installed in an increasing number of plants.

SERVICE WORKERS. Major factors underlying increased needs for service workers will be a growing population, expanding business activity, increasing leisure time, and higher levels of disposable personal income. This occupational group, a fast growing one, encompasses a wide variety of jobs and a wide range of skill requirements. It includes such diverse jobs as FBI agents, policemen, beauty operators, and janitors.

Employment requirements will rise from 9.4 million in 1968 to 13.1 million in 1980, at a rate of increase that is more than half again as fast as the rate projected for total employment. Private household employment, the slowest growing service area, will expand from 1.7 million to 2.0 million, an increase of about 15 percent between 1968 and 1980. The fastest growing service area will be health service, rising close to 90 percent, from 800,000 to 1.5 million between 1968 and 1980.

FARM WORKERS. These workers will decline one-third, from 3½ million in 1968 to 2.6 million in 1980. The share of total employment also will fall, from 4.6 percent to 2.7 percent in the same period.

Continuing earlier trends, decreasing requirements for farm workers will be related to rising productivity on the farms. Improvements in farm technology, better fertilizers, seeds, and feed will permit farmers to increase production with fewer employees. Improved mechanical harvesters for vegetables and fruits will decrease the need for seasonal or other hired labor. Innovations in live stock and poultry feeding and improved milking systems will allow more efficient handling of a greater volume of productivity. The expected development of automatic packing, inspection,

and sorting systems for fruits, vegetables, and other farm products also will reduce employment requirements for farm workers. The continued trend toward larger and more efficient farms will also limit employment.

Farms and farm managers are expected to continue to be most affected by the decline in the number of small farms, and requirements for these workers are expected to continue to decline faster than that for farm laborers and foremen.

Employment in a durables economy

Under the assumptions embodied in the durables economy, those occupations that predominate in durable goods industries would show different employment levels. Requirements for engineers, for example, would be 1 percent higher in a durables economy; tool and diemakers, carpenters, and cement finishers would each be about 2½ percent higher; manufacturing salesmen would be nearly 3½ percent higher. On the other hand, occupations that predominate in services industries, such as government; finance, insurance, and real estate; and trade would show somewhat lower employment levels, securities and insurance salesmen, about 2½ percent less; and waitresses, about 2 percent less.

The economy in 1980

PROJECTED SHAPE OF THE LABOR FORCE

THE LABOR FORCE is affected by changing labor force participation rates by age groups. Past trends provide clues for predicting how these rates may change. Some past trends suggest that the increase in college enrollments will tend to reduce the labor force activity of the college-age groups as a whole even though many students continue to work part time. As has been the case in recent years, an expanding economy is likely to provide an abundance of jobs that will tend to encourage students, other young people, and women to move into the labor force, often for part-time jobs, in larger numbers than during the 1960's. Birth rates, which have been declining, are likely to continue to do so with the result that

Table 6. Labor force balance sheet, 1960-70, 1970-80

Number in millions	
1960 DECADE (1960-70)	
Total labor force, 16 years and over, 1960.....	72.1
Less withdrawals, 1960 through 1969.....	20.9
1960 total labor force still in labor force in 1970.....	51.2
Plus new entrants, 1960 through 1969.....	26.4
Plus all other entrants, 1960 through 1969 ¹	8.0
Total labor force, 16 years and over, 1970 ²	85.6
1970 DECADE (1970-80)	
Total labor force, 16 years and over, 1970 ²	85.6
Less withdrawals, 1970 through 1979.....	26.3
1970 total labor force still in labor force in 1980.....	59.3
Plus new entrants, 1970 through 1979.....	33.7
Plus all other entrants, 1970 through 1979 ¹	7.7
Total labor force, 16 years and over, 1980.....	100.7

¹ Primarily reentrants plus immigrants.
² Estimated.

more women will enter the labor force. Finally, the level and coverage of retirement benefits will allow more workers to leave the labor force at earlier ages.

Labor force changes

The labor force is constantly changing. Workers enter and leave all the time. The expansion to 100 million by 1980 means that more workers will be coming into the labor force pool (41 million) than will be leaving (26 million). (See chart 10.)

Three kinds of workers will increase the supply of labor by 41 million through the 1970's:

- ▶ 34 million new, young workers looking for their first jobs,
- ▶ nearly 6 million women who either delayed their entry into the labor force or picked up the threads of work again after an absence, most frequently devoted to caring for young children,
- ▶ over 1 million immigrants who will become part of the U.S. work force.

Three kinds of workers will leave the labor force during the 1970's reducing the total by 26 million: workers who die; workers who retire; and workers who decide not to work any longer, although sometimes only temporarily, for a variety of personal reasons including illness and the need to care for family or because of other responsibilities. (See table 6.)

The net effect of this inflow and outflow on the age composition of the labor force through the 1970's (1968-80) will be as follows:

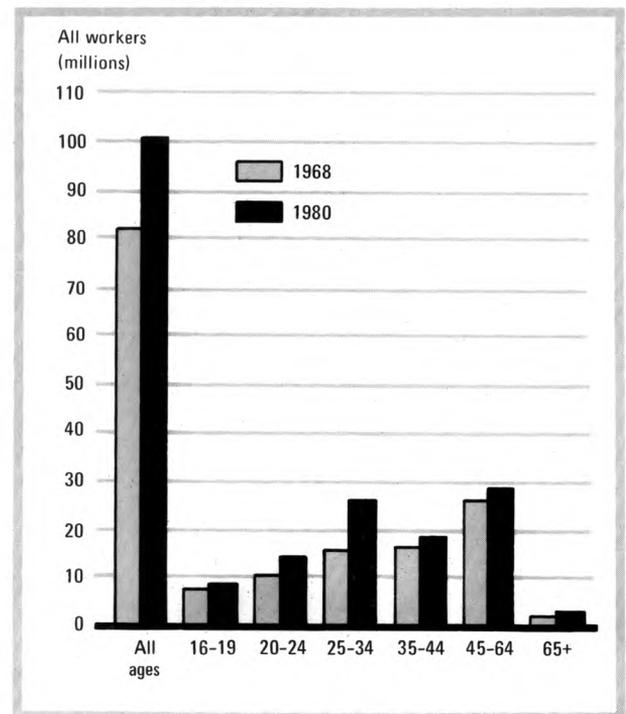
The huge increase of teenagers in the 1960's will taper off. The proportion of the labor force that is composed of teenagers will actually decline a

little—from 8.7 percent to 8.3 percent—as the 1970's advance to 1980, but even so their numbers will continue to rise. In 1960, teenagers in the labor force numbered about 5.2 million. Their average rate of increase through the 1960's (1960-68) was about 3.9 percent per year, resulting in 7.1 million being in the labor force by 1968; by 1980, there will be 8.3 million. Their annual average rate of increase through the 1970's (1968-80) will drop to 1.3 percent, about one-third of the growth rate of the preceding decade.

The rate of increase of 20- to 24-year-olds in the labor force will slow down. Young people, 20 to 24 years old, in the labor force will be increasing in numbers during the 1970's but at a slower rate than during the preceding decade. In contrast with the teenagers, the proportion these young adults constitute of the total labor force will continue to rise from 13.4 percent (11 million) in 1968, to 14.7 percent (almost 15 million) by 1980—a reflection primarily of the increase in population.

Altogether, young people under the age of 25 will account for a little more than a quarter of total labor force expansion of the 1970's, in con-

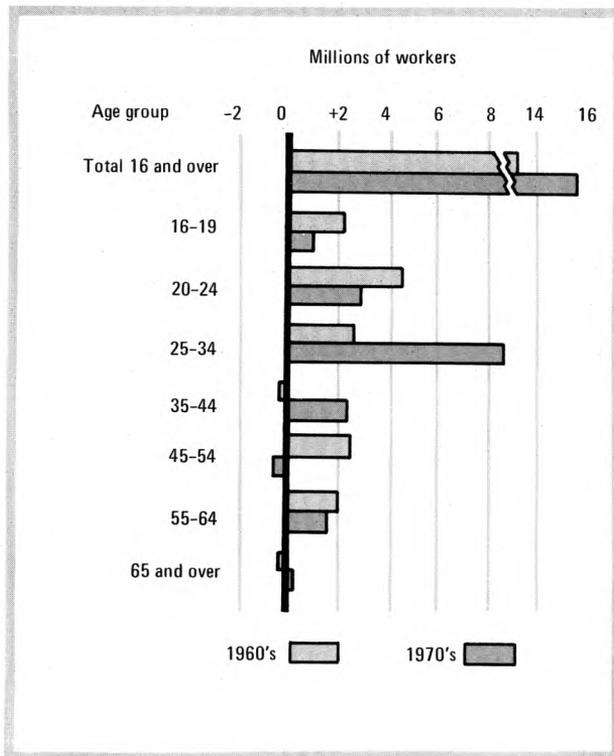
Chart 10. The shape of the labor force, 1968 (actual) and 1980 (projected)



trast with over half (54 percent) of labor force growth from 1960 to 1968.

The number of early career workers, 25 to 34 years old, will increase precipitously. The big labor force news of the 1970's will be the significant increase in the numbers of workers in their late twenties and early thirties—the career development years, from 16½ million in 1968 to over 26 million in 1980, an increase of almost 60 percent. One out of every 4 workers will be in this age group in 1980 in comparison with 1 in every 5 in 1968. For the most part, these workers will have completed their education and training and will be ready to assume full harness in the world of work. The catalyst for the big expansion in young workers is the great upsurge in the fertility rate that occurred following World War II. The annual number of births increased from 2.7 million to 3.8 million between 1946 and 1947 and then moved up to 4.2 million by the late 1950's. Their schooling for the most part completed, these young people born in the early postwar years will provide a large pool of trained, young

Chart 11. Major changes in the labor force, 1960's (estimated) and 1970's (projected)



workers, unprecedented in numbers.

The increasing number of 25- to 34-year-olds in the labor force in the 1970's does not necessarily mean that 800,000 new jobs must be found every year for those moving into this age bracket. A great many of these young workers came into the labor force during the 1960's and found jobs then. During the 1970's, they simply will be moving up the age ladder of the labor force. As they acquire additional training, experience, and maturity in the process of working their way up, they may be able to compensate for the short supply of older workers in the prime career age group where recent labor force expansion has been either slim or nonexistent.

The number of midcareer workers, aged 35 to 44, will show a small increase. Despite growth from 17 million to about 19 million from 1968 to 1980, the supply of these workers in the labor force still will be relatively thin. Their proportion of the total labor force will decline from about 21 percent in 1968 to about 19 percent by 1980. Generally, workers in this age group staff positions of maximum work responsibility and are at the peak of their performance. Their short supply will mean many more midcareer openings will be available for the younger 25- to 34-year-old workers.

A sharp slowdown will occur in the labor force growth rate among older workers, 45 to 64 years of age. These workers, who are normally at the top of their career ladders, will increase in number from 27½ million in 1968 to just over 29 million in 1980. But the increase will be only one-third as great as that between 1960 and 1968. Their proportion of the total labor force will decline sharply from about 33 percent to about 29 percent. This slowdown in the growth rate is related to a sizable decline in population growth in the 45-54 year old group, reflecting the comparatively small number of people born in the depths of the Great Depression when birth rates were low, who are moving into this age class.

There will be no significant change for workers beyond the usual retirement age of 65 who will number just over 3 million through the 1970's. They will represent a declining proportion of the work force. The decreased propensity to work after 65 reflects the improvement in retirement benefits

that reduces the need for older workers to stay on the job to make ends meet; the greater security that comes with the health protection of medicare and medicaid; and the increased assets that may have resulted from full employment. (See chart 11.)

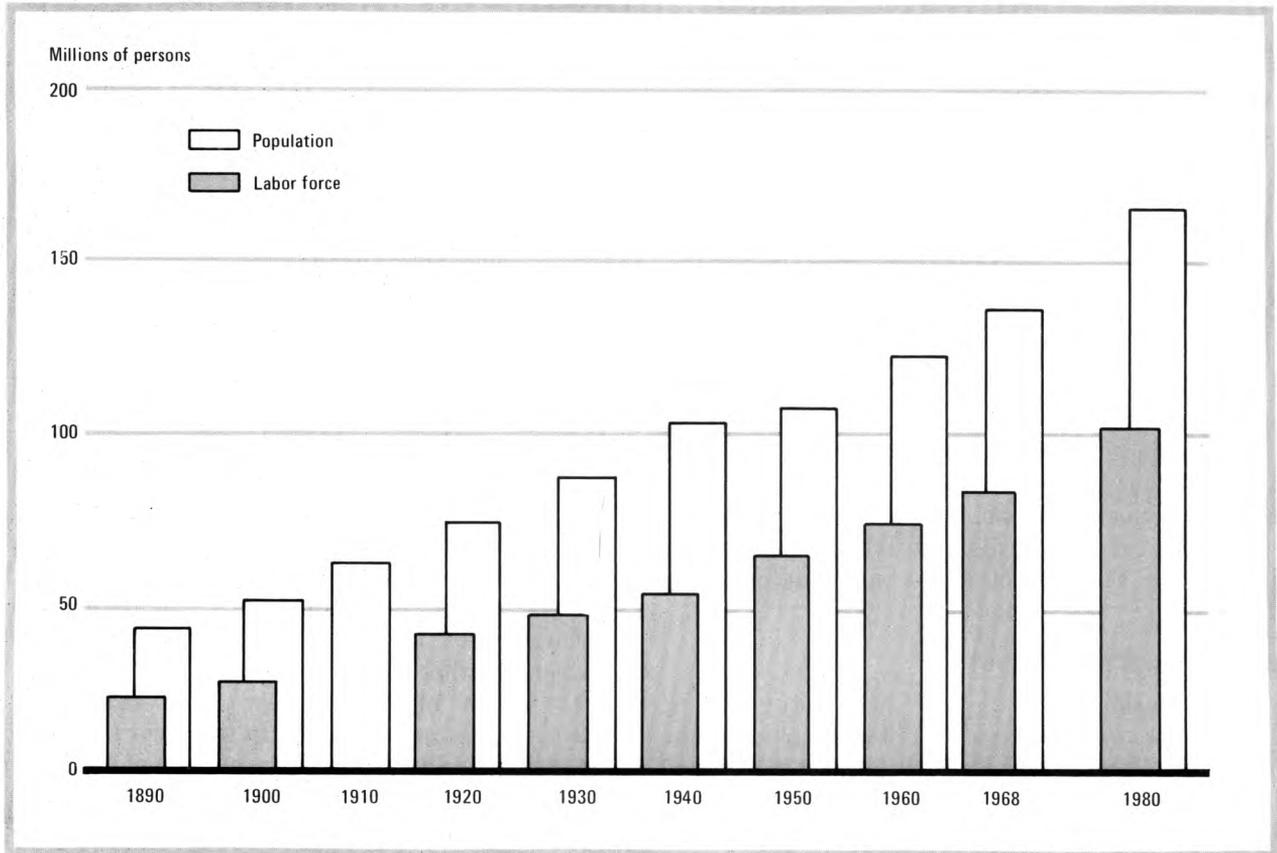
Participation rates

What makes people decide to work? Whatever the incentive for working, 6 in every 10 in the working age group (16 and over) are expected to be either working or seeking work in 1980, about the same as today; in 1890 only 5 in every 10 in the work-age population were workers. The long-run increase in labor force participation reflects primarily the increasing proportion of women who work. (See chart 12.)

WOMEN IN THE LABOR FORCE. Women workers—37 million expected in 1980—will continue to represent an increasing proportion of the working population. By 1980, more than 4 in every 10 women (43 percent) will be working, only slightly more than the proportion today (41.1 percent) but double the proportion (2 in 10) in 1890.

NEGROES IN THE LABOR FORCE. The Negro labor force⁴ is expected to total 12 million in 1980, 3 million more than in 1968. Its annual rate of growth, 2.4 percent, exceeds the comparable growth rate for whites, 1.6 percent, by one half. The difference reflects a more rapid increase in the Negro population of working age than that occurring among whites, particularly among those under 35 years of age.

Chart 12. Labor force and population,¹ 1890 to 1980



¹ Data for 1890-1940 refer to persons 14 years and over. Data for 1950 to 1980 refer to persons 16 years and over. Comparable labor force data not available for 1910.

Sources: U.S. Department of Commerce, Bureau of the Census; U.S. Department of Labor, Bureau of Labor Statistics; John D. Durand, *The Labor Force of the United States, 1890-1960* (New York, N.Y., Gordon & Breach, 1968); Gertrude Bancroft, *The American Labor Force* (New York, N.Y., John Wiley & Sons, 1958).

The pattern of change between 1968 and 1980 for the Negro work force differs only in degree from that of their white counterparts. Workers under 25 years old will account for a large share of the increase for both Negroes and whites but will account for more of the increase among Negroes. For both groups, the most spectacular increase will take place in the group 25–34 years old, but again, a slightly greater relative increase for Negroes. The labor force 35 years old and over will show only a small amount of growth for both Negroes and whites.

The proportion of women who are in the labor force has always been higher for Negro than for white women, an indication of the greater need for many Negro women to contribute to family income. The difference between these labor force participation rates has been getting smaller as paid work outside the home has become more common among white women. In 1968, 49 percent of Negro and 40 percent of white women were workers. By 1980, it is expected that the difference will be reduced further, reflecting an improvement in the economic situation of Negro men, which, in turn, will mean that Negro women will be under less pressure to contribute toward the support of their families. Thus, the rate of participation for all Negro women in 1980 was projected as 47 percent and for white women at 42 percent.

Among Negro men, small increases are projected in the labor force participation rates from 75.9 percent in 1968 to 77.5 percent in 1980, at the same time that the rate for white males is edging down. These increases reflect the anticipated improvement in Negro men's employment opportunities, which will tend to minimize irregular work patterns and reduce withdrawals from the labor force that reflect discouragement over job prospects.

Educational attainment

The Nation's labor force will have higher educational qualifications in 1980 than in 1968: the proportion of workers with at least 4 years of high school will be rising among workers at all ages. By 1980, only 1 in 16 adult workers (25 and over)—about 5 million—will have less than 8 years of schooling; and 7 in every 10 adult workers—about 52 million—will have completed at least 4 years of high school. In contrast, over 1 in 10

adult workers in 1968—nearly 7 million—had completed less than 8 years of schooling while 6 in every 10 adult workers—about 37 million—had completed 4 years of high school or more.

Nearly 1 in 6 workers, 25 years and over—about 13 million—will have completed at least 4 years of college in 1980; in 1968, about 8.5 million, or 1 in 7 workers, 25 years and over, had a similar amount of education. The total number of college-educated workers of all ages in the work force would, of course, exceed 13 million, since a significant number of workers under 25—perhaps as many as 2 to 3 million—will have completed 4 years of college in 1980. Moreover, about 9.2 million adult workers—1 in 8—in 1980 will have had some college training but less than 4 years.

The heavy influx to the labor force of relatively well-educated younger workers, which will occur at the same time that many less educated older workers are leaving the labor force, promises a major change in the educational background of the workers in the early age span. By 1980, about 4 out of 5 young adult workers (25 to 34 years old) will be high school graduates or better, and 1 in 5 will have completed 4 years of college or more; by contrast, in the 1968 work force, 3 in 4 workers in this age group were high school graduates and 1 in 6 were college graduates.

The economy in 1980

SOME IMPLICATIONS OF THE PROJECTIONS

ANY SET of economic projections carries with it certain implications for the future behavior of all aspects of the economy, including government policy. Three major aspects of the projections warrant further consideration:

1. growth of the economy;
2. demographic changes in the labor force; and
3. higher educational attainment of the labor force.

Growth of the economy

When the depression years of the 1930's were still within recent memory, optimistic economic

projections inevitably raised a question about the ability of the economy to reach the projected levels. The sustained high levels of growth during the 1960's, however, have created confidence that the expected levels indicated for the 1970's may be quite reasonable. The projected GNP level for 1980 will be 65 percent above the level in 1968, a growth rate of 4.3 percent per year. Because of the anticipated higher rate of labor force increase, this is somewhat higher than the potential growth rate of the 1960's. However, the 4.3 percent rate is somewhat lower than the rate actually achieved during the 1960's because advances in the early part of the decade resulted from taking up the slack in the economy.

The projections for certain sectors of the economy raise specific questions:

Expenditures for new or renovated housing, reflecting the needs of new family formation, are expected to about double by 1980. This may make possible attainment of the goal of 26 million housing units for the 1968-78 decade set by Congress in the Housing and Urban Development Act of 1968. However, if this goal is to be fulfilled, major advances will be necessary to assure an adequate supply of trained construction workers, to create sufficient sources of reasonably priced financing, and to put into practice the technological improvements necessary to higher output.

Strong demand for new and renovated housing is evident enough, even today, but the current limited availability of mortgage funds together with a high level of interest rates has caused buyers and builders to hesitate to take on long term commitments. If these conditions continue, the expected surge in residential construction activity may be seriously delayed.

In the decade ahead, special emphasis will undoubtedly be placed on developing new methods of training construction workers, expanding opportunities for minority applicants, and reducing seasonality to make more effective use of skilled craftsmen; and to institute new technology that will permit houses to be built faster and cheaper with the manpower available.

Business investment in plant and equipment is projected to at least maintain the high proportion of GNP attained during the last few years of relatively full employment, thus providing a basis

for the continuation of the long-term trend in productivity.

Federal Government expenditures for defense purposes will fall as a proportion of total GNP. *Other public expenditures*—State and local and Federal nondefense—will rise as a share of the GNP. This implies a possible temporary dislocation of people and jobs in defense industries, particularly if the decline in defense expenditures occurs over a short period of time. Some defense industries may suffer loss of their Federal contracts with a companion decline in output; some defense plants will either shut down or curtail their activities; and some regions and localities may experience, at least temporarily, increasing levels of unemployment.

Government programs to meet such dislocation include placement services to workers seeking jobs outside their labor market area and special assistance to enable defense plants hit by cutbacks to diversify production and seek other markets to maintain production levels.

State and local government expenditures between 1986-80 will shift from about half to close to three-fifths of total government expenditures. This shift will occur because of a large increase in State and local expenditures and a relative decline in Federal purchases.

While the 1980 projections do not include revenue estimates, it is clear that a major effort will be necessary to obtain the funds to finance this increase in State and local expenditures. Part of this expenditure increase will represent funds channeled from the Federal Government in the form of grants-in-aid and sharing of Federal revenues. At the same time a considerable effort by State and local governments will be necessary to increase their own revenues. A further difficult task will be to develop the programs and the management skills in State and local government to meet the complex problems that they will be facing.

Expenditures for services by both consumers and governments will account for a larger share of the GNP in 1980 than today. It is likely that the trend toward higher manpower requirements to provide these services may contribute to the goal of economic stability since service employment is normally less subject to layoffs at the onset of declines in economic activity.

Productivity, holding steady at 3.0 percent a

year in the private nonfarm sector and remaining at high levels on the farm (5.7 percent a year), will yield an advance in output per man-hour of 3 percent a year for the entire economy through the 1970's. However, as the service sector expands in importance, it may become increasingly difficult to maintain the high level of productivity gains for the economy that have prevailed since World War II. The service industries are unlikely to experience large increases in output per worker, because they are less subject to mechanization, and many of them depend for their value upon personal or individual attention. Thus, particular attention will be required to find means of applying cost-saving techniques to the service industries if the Nation's productivity is not to fall below the 3-percent level.

Hours of work are expected to decline slightly during the 1970's at a rate of 0.1 percent a year. This relatively small decline reflects in large part the continuing increase in part-time employment and to a lesser degree limited reductions in the scheduled workweek. In addition to this decline, which is based on hours for which payment is received, greater availability of leisure time can be expected as a result of longer paid vacations and an increasing number of paid holidays.

Demographic changes in the labor force

The 100 million labor force of 1980 will exhibit a distinctly different age profile. The rapid growth during the 1960's of teenagers and persons in their early twenties will inexorably be transferred in the coming decade to those in their late twenties and early thirties. In contrast, the 45-64 age group by 1980 will be barely 5 percent higher than a decade earlier.

For the Nation as a whole, the younger work force, averaging 35 years of age, may be a great boon. The large numbers of young workers may provide an abundance of new ideas—the eagerness, imagination, and flexibility of the young may contribute to developing new ways of business organization, production, and marketing.

Differences in the points of view, however, that today seem often to characterize those under and over 30 may, of course, bring some frictions and other problems. Industry's work force may suffer from workers who lack the patience and wisdom

that come with age and experience. The differing viewpoints of young and old may bring forth more grievances, more altercations with management.

Likely implications of these changes on specific demographic groups in the population are as follows:

TEENAGERS. The slowdown in their rate of growth in the labor force may improve job opportunities for teenagers competing in an anticipated expanding economy.

YOUNG WORKERS. Projected changes may mean keen competition among workers in their twenties for entry-level jobs but better opportunities for advancement to higher levels where the number of competent older workers may be stretched thin.

EXPERIENCED MIDCAREER WORKERS. The big increase in the number of young trained workers may mean that the mature worker may be pushed hard to hold his own against the young, many of whom will probably be better educated and trained for tomorrow's jobs.

OLDER WORKERS. The improved supply of young workers may accelerate pressures on older workers to retire sooner than they might otherwise do. In any case, the trend toward earlier retirement is expected to continue and can be expected to lead to greater emphasis on preretirement planning and the development of community service projects for which retired workers could contribute paid or volunteer part-time work.

WOMEN WORKERS. The continuing increase in the labor force participation rates of women, particularly young women in their childbearing years, may mean that more day care centers for children must be provided to assure proper protection of the young children of working mothers; more part-time job opportunities must be made available for women whose home responsibilities do not permit full-time employment; some job requirements may need to be adjusted to meet women's physical characteristics.

As an increasing proportion of married women work, the added family income may serve to change patterns of consumption and living styles, more services may be purchased to replace the

housewife's home services; more precooked foods may be demanded; more expenditures for leisure time recreational activities may be made.

NEGRO WORKERS. The one-third increase expected in the Negro labor force between 1968-80, bringing their total numbers to 12 million workers in 1980, may be accompanied by increased concern for their occupational upgrading during the 1970's. Since upward occupational mobility is conditioned, in part, upon improved job qualifications, the recent steady progress in the educational qualifications of Negroes brings promise of better occupational adjustments to come. The proportion of Negro men 25-29 with 4 years of high school or more rose from 36 percent in 1960 to 60 percent in 1969 while the comparable increase for white males during the same period was from 63 percent to 78 percent. Negro females have made similar, but not so striking gains. A major increase in Negroes attending college also took place during the decade.

These higher levels of educational attainment, together with steady progress toward equal employment opportunities, have combined to produce major changes in the occupational progress of employed Negroes. From 1960 to 1969 Negro employment in the professional and technical occupations has more than doubled—from less than 350,000 to nearly 700,000 while white employment in these occupations increased 40 percent from 7 million to 10 million. Similar improvements have been made in the managerial, clerical, and sales occupations. In the manual occupations, there has been a sharp upgrading of Negro workers with a 70-percent increase in Negro craftsmen compared with a 17-percent increase for whites. At the same time, there has been a drop in Negro nonfarm laborers, private household workers, and farm workers.

Despite these encouraging gains, Negroes are still disproportionately concentrated in occupations such as nonfarm laborers that are expected to continue to decline throughout the 1970's or in occupations such as household workers, which will be increasing only slightly. Moreover, Negro workers in 1969 represented only 6 percent of total employment in professional occupations, 4 percent in sales and 3 percent in managerial occupations.

The prospects for improved Negro employment

in 1980 will depend upon a continuing improvement in education, the relative success of efforts to open employment opportunities that have hitherto remained closed, and the impact of changing occupational patterns. The BLS expects to issue a more detailed study of Negro employment progress and outlook later in the year.

These demographic changes are likely also to affect the country's major job-oriented institutions.

EMPLOYERS. The large increase in the number of new young workers and women in the labor force will produce pressure for employers to provide improved on-the-job training, more effective supervision, and additional safety education. They will have to expect greater turnover and will have to allow for more part-time workers.

UNIONS. In a strong economy, their membership swelled by youthful members, unions may lean more toward emphasizing take-home pay rather than job security, seniority, pensions, and other fringe benefits that are usually of greater interest to older workers. Divergent bargaining objectives between young and older workers may lead to intraunion problems.

SCHOOLS. The large number of young people entering the labor force directly from high school and vocational school will require improved preparation for obtaining the skills and work attitudes needed for success in the work world. Young workers will need better guidance and counseling as they enter the labor force. Young people who do not complete high school may find it harder to get a job as they compete with their peers who have had more schooling.

CHANGES IN THE LABOR MARKET. The projections assume that the 100 million labor force will mesh with the job requirements of the \$1.4 trillion economy. This close match between workers and jobs will not just happen. It will require greater flexibility in the labor market through education, realistic training programs geared to shifts in occupational requirements, improved placement services, removal of arbitrary barriers to occupational entry, and the willingness of employers to maintain flexible hiring requirements.

Educational attainment of the labor force

The continuing rise in educational achievement of the labor force has a number of specific implications for the 1980 labor market.

JOB ENTRY REQUIREMENTS. Faced by a rising supply of more highly educated applicants, some employers may prefer more highly educated job applicants and be reluctant to adjust their educational entry requirements to levels that are consistent with job requirements. Similarly, while job opportunities may open up more readily for disadvantaged workers who improve their educational qualifications, the job outlook for the disadvantaged with limited schooling is likely to remain bleak. These possibilities underscore the importance during the coming decade of encouraging employers to make their educational entry requirements reflect actual job needs rather than simply the availability of a more educated labor supply.

WHITE-COLLAR OCCUPATIONS. By 1980, more workers will be in white-collar jobs than in the blue-collar and service groups combined. The impression may grow that white-collar jobs are only for highly educated workers. Jobs within the white-collar group actually have a wide range of educational requirements: managerial jobs range from the managers of large corporations to managers of hamburger carryout shops; clerical jobs cover executive secretaries and file clerks; and sales occupations include hucksters and peddlers as well as stock brokers.

Since many white-collar jobs do not require even a high school diploma, special means may be needed to keep young people whose education is limited informed of the variety of job openings in this area.

MANUAL OCCUPATIONS. The continuing emphasis on higher education poses a threat to the flow of energetic intelligent manpower to the skilled crafts. This emphasis, together with the generally higher esteem in which white-collar occupations are held, may make it difficult to fill blue-collar and service jobs. Whether or not this materializes would seem to depend on the possibility of:

1. A shift in attitudes toward higher education, at least to the extent that youngsters who may not

be college material will no longer insist on having a "go" at college nor resist taking useful manual and service employment.

2. Adjustments in labor supply through removal of any remaining racial barriers to job entry and modified immigration policies.

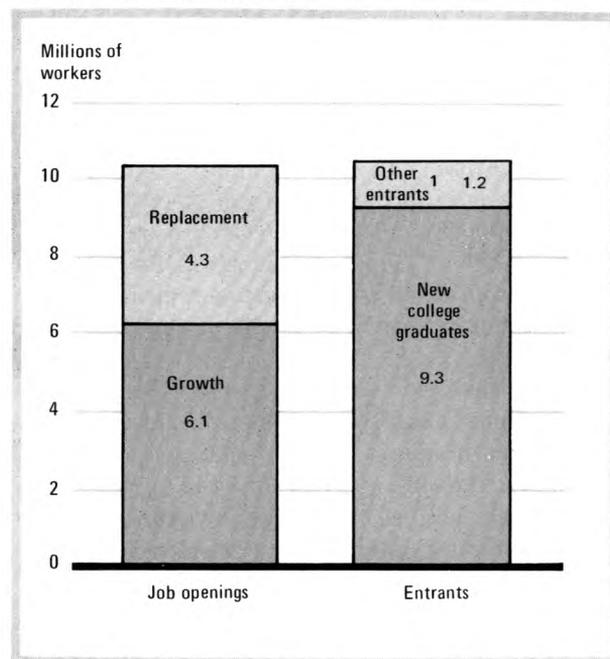
3. Adjustments in pay and working conditions to make such jobs more attractive.

4. Programs to provide greater advancement opportunities for those who enter the manual occupations at the lower level of the job structure.

HIGHLY EDUCATED MANPOWER. The Nation's colleges and universities—principal suppliers of our most highly trained manpower—now are turning out record numbers of graduates and are expected to continue to do so throughout the 1970's. Numbers of persons earning bachelor's degrees will climb by two-thirds, and those earning master's and doctor's degrees will double by 1980. Numerically, 13.3 million degrees are expected to be awarded between 1968 and 1980—10.2 million bachelor's, 2.7 million master's, and 400,000 doctorates.

Using past employment and educational patterns of degree recipients, BLS estimates that between 1968 and 1980 about 9.3 million college-educated persons will enter the civilian labor force

Chart 13. Projected job openings for college graduates and projected entrants, 1968-80



¹ Includes reentrants, delayed entrants, and immigrants.

after receiving their degrees: 8.4 million at the bachelor's level, 900,000 at the master's, and approximately 18,000 at the doctorate level. Presumably, most persons who will receive degrees during this period and who enter the Armed Forces will have returned to the civilian labor force by 1980. Therefore, the effect of the conflict in Viet Nam on labor force entry of college graduates was assumed to be limited.

This supply of new graduates will be augmented by another 1.2 million persons with college level training who will come into the labor force between 1968 and 1980. These additions are expected to consist primarily of women who delayed seeking a job but are expected to become available for work in the 1968-80 period, or who were working in earlier years but withdrew from the labor force. Thus, the new supply of college-educated manpower expected to enter the labor force from 1968-80 will total 10.5 million.

The need for workers stems generally from two sources: employment growth in occupations and the need to replace workers who die, retire, or otherwise leave the labor force. But another factor is relevant in considering the need for college educated manpower: rising job entry requirements that make a college degree necessary for jobs once performed by workers with lower educational attainment.

Assessing these three factors—growth, replacement, and rising entry requirements—it is estimated that 10.4 million new college graduates will be needed between 1968 and 1980: (1) 6.1 million to take care of occupational growth and rising entry requirements, and (2) 4.3 million to replace other workers. (See chart 13.)

Thus, an ample supply of graduates that is roughly in balance with manpower requirements seems in the offing for the 12-year period between 1968 and 1980. The large output of highly educated workers is expected to end many long-time occupational shortages and promises help for other occupations in which shortages may persist because of requirements for highly specialized graduate level training, lack of facilities, or comparatively low salaries. Many professional occupations have suffered from chronic worker shortages for many years, particularly teaching, engineering, physics, oceanography, chemistry, geophysics, and biomedical and health occupations.

Table 7. Distribution of college graduates by major occupational field, 1968 and 1980

Occupational group	1968			1980		
	Total employment ¹ (thousands)	College graduates ² (thousands)	Percent, graduates to total	Total employment ¹ (thousands)	College graduates ² (thousands)	Percent, graduates to total
All occupational groups.....	75, 920	9, 229	12. 3	95, 100	15, 342	16. 1
Professional and technical... Managers, officials, and proprietors.....	10, 325	6, 182	59. 9	15, 500	10, 230	66. 0
Sales.....	7, 776	1, 562	20. 0	9, 500	2, 850	30. 0
Clerical.....	4, 647	463	10. 1	6, 000	780	13. 0
All other.....	12, 803	583	4. 6	17, 300	779	4. 5
	40, 369	439	1. 1	46, 800	703	1. 5

¹ 16 years of age and over.

² Data include persons 18 years of age and over having 4 years of college or more.

An increased supply of graduates offers only the hope that students will elect to enter courses in numbers that match job vacancies by discipline. In an effort to predict how these individual choices will be made, BLS has made projections to 1980 for some of the principal occupations in the professional, technical, and kindred occupational group. (See table 7.)

Specific demand-supply assessments indicate potential sharp differences among occupations. Elementary and secondary school teaching is expected to experience the most dramatic change in supply-demand conditions. Long a shortage occupation, teaching is about to undergo a sharp change in prospects: the aggregate supply is expected to significantly exceed demand if recent entry patterns in the occupation continue. The anticipated surplus of applicants trained for elementary and secondary teaching assignments, the biggest single professional opportunity for women, may mean that many college-educated women will have to look to other professions, some long regarded as the principal province of men, such as engineering, law, medicine, dentistry, pharmacy. If employers in these fields accept women readily, this acceptance may help to reduce further some of the discrimination against women in professional schools that has prevailed in the past.

Professional health occupations should continue to experience shortages. The supply of physicians and dentists, for example, is expected to fall short of requirements because of the limited capacity of medical and dental schools currently in operation and scheduled to be in operation by 1980.

Engineers are also expected to continue to be in short supply. If the number of engineering graduates were to keep pace with the expected growth in total college graduates, the new supply would be adequate to meet projected requirements. Recent trends, however, do not suggest this development as bachelor's degrees in engineering continue to become a smaller proportion of total bachelor's degrees awarded.

In scientific fields, shortages of chemists, geologists, and geophysicists seem likely, but surpluses of mathematicians and life scientists may result if students continue to elect these fields in the same proportion as in the past. However, since transfers occur quite frequently among these occupations, part of the supply-demand imbalances may be remedied by such transfers.

Other areas for which potential shortages are in prospect include counseling, social work, urban planning, and a variety of occupations related to

the planning and administration of local governments.

These 1980 projections do have a rosy glow, inspired no doubt by the steady performance of economic growth during the 1960's. But the past decade has, in fact, left the stage to somewhat mixed notices. While economic growth performed beyond expectations, not all aspects of the economy reached the same heights. The current difficulties of meshing the twin objectives of high employment and price stability and solving such social problems as urban congestion, the lack of equal opportunity, rising crime, the disaffection of the young, and environmental pollution are enough to cast doubt on any optimistic view of the future. The challenge to the Nation during the 1970's will be to solve these pressing problems before they seriously erode the economy's capacity to realize its growth potential. □

—FOOTNOTES—

¹ Two measures of hours are available: hours worked and hours paid for. Hours worked is a measure of hours on the job; hours paid for are hours on the job plus the additional hours which employees spent on paid leave such as vacations, sick leave, or holidays. Since hours worked data are not available in sufficient detail by industry, the discussion of hours in this section represents hours paid for.

² This technique is in accordance with the income accounting conventions of the Office of Business Economics

of the U.S. Department of Commerce.

³ This balance results, of course, from the assumptions underlying these projections, which were that the growth in employment would match that of the labor force, leaving only a level of unemployment (at either 3 or 4 percent) roughly similar to that in 1968.

⁴ Data refer to all races except white. Nationwide, Negroes make up about 92 percent of races other than white.

How projections are used

The final detailed projections of industry and occupational employment to 1980 may be useful for a variety of planning and policy development purposes:

State and city planners of higher education facilities need the best possible estimates of requirements for professionally trained workers in various disciplines to pinpoint educational activities that should be expanded.

Vocational educators need projections of employment in certain occupations to set up high school and post secondary training programs or to promote apprenticeship training to provide trained workers in these occupations.

Manpower and educational planners need manpower projections to develop realistic training programs. In several recent statutes, Congress has required that federally financed education and training programs be set up to meet specific local and regional manpower requirements.

Vocational counselors use projections to provide information that can be made available to young people, their parents, teachers, or counselors on long-range employment trends by occupational field to help them make sound vocational choices.

Industry and government rely on projections in policy planning for recruitment, salary scales, training, scholarship plans, and expansion of research programs.

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Table A-1. Total population by age, color, and sex, July 1, 1960, 1968, and projected 1980

Sex and age	Total			White			Negro and other races		
	1960	1968	1980 ¹	1960	1968	1980 ¹	1960	1968	1980 ¹
Population, all ages.....	180,684	201,166	235,212	160,033	176,663	204,244	20,651	24,503	30,967
BOTH SEXES									
16 years and over.....	121,817	137,659	166,554	109,279	122,889	146,919	12,538	14,770	19,635
16 to 19 years.....	10,673	14,361	16,940	9,393	12,418	14,301	1,280	1,943	2,638
20 to 24 years.....	11,100	15,788	20,997	9,747	13,875	18,014	1,353	1,913	2,983
25 to 34 years.....	22,952	23,966	36,997	20,264	21,125	32,214	2,688	2,840	4,783
35 to 44 years.....	24,226	23,648	25,376	21,692	20,984	22,431	2,534	2,665	2,946
45 to 54 years.....	20,586	22,888	22,147	18,570	20,613	19,711	2,016	2,274	2,437
55 to 64 years.....	15,634	17,879	21,032	14,231	16,250	19,056	1,403	1,631	1,976
65 years and over.....	16,645	19,129	23,063	15,382	17,623	21,195	1,264	1,507	1,869
MALE									
16 years and over.....	59,420	66,538	80,332	53,408	59,527	70,997	6,011	7,010	9,336
16 to 19 years.....	5,398	7,299	8,626	4,763	6,328	7,300	635	971	1,325
20 to 24 years.....	5,553	7,976	10,596	4,905	7,028	9,117	648	948	1,479
25 to 34 years.....	11,347	11,915	18,557	10,092	10,564	16,209	1,255	1,351	2,348
35 to 44 years.....	11,878	11,588	12,576	10,675	10,361	11,179	1,203	1,227	1,397
45 to 54 years.....	10,148	11,073	10,726	9,166	10,008	9,624	982	1,065	1,102
55 to 64 years.....	7,564	8,492	9,745	6,874	7,719	8,855	690	773	890
65 years and over.....	7,530	8,194	9,507	6,933	7,518	8,713	598	676	794
FEMALE									
16 years and over.....	62,397	71,121	86,222	55,871	63,362	75,922	6,527	7,760	10,299
16 to 19 years.....	5,275	7,061	8,314	4,630	6,090	7,001	645	972	1,313
20 to 24 years.....	5,547	7,811	10,401	4,842	6,847	8,897	705	965	1,504
25 to 34 years.....	11,605	12,050	18,440	10,172	10,561	16,005	1,433	1,489	2,435
35 to 44 years.....	12,348	12,060	12,801	11,017	10,623	11,252	1,331	1,438	1,549
45 to 54 years.....	10,438	11,814	11,422	9,404	10,605	10,027	1,034	1,209	1,335
55 to 64 years.....	8,070	9,389	11,287	7,357	8,531	10,201	713	858	1,086
65 years and over.....	9,115	10,936	13,557	8,449	10,105	12,482	666	831	1,075

¹ Series C population projection.

Series P-25: for 1960, no. 241; for 1968, no. 416; for 1980, no. 381 Series C projection.

Source: U.S. Department of Commerce, Bureau of the Census.

Table A-2. Total labor force, by sex and age, annual averages, 1960, 1968, and projected 1980

[Numbers in thousands]

Sex and age	1960 ¹	1968	Projected 1980	Change, 1960 to 1968				Change, 1968 to 1980			
				Total		Annual average		Total		Annual average	
				Number	Percent distribution	Number	Rate ²	Number	Percent distribution	Number	Rate ²
BOTH SEXES											
16 years and over.....	72,104	82,272	100,727	10,168	100.0	1,271	1.6	18,455	100.0	1,538	1.7
16 to 24 years.....	12,720	18,183	23,130	5,463	53.7	683	4.5	4,947	26.8	412	2.0
16 to 19.....	5,223	7,144	8,344	1,921	18.9	240	3.9	1,200	6.5	100	1.3
20 to 24.....	7,497	11,039	14,786	3,542	34.8	443	4.8	3,747	20.3	312	2.4
25 to 34.....	15,099	16,480	26,242	1,381	13.6	173	1.1	9,762	52.9	814	3.9
35 to 44.....	16,779	16,990	18,794	211	2.1	26	0.2	1,804	9.8	150	0.8
45 to 64.....	24,127	27,464	29,293	3,337	32.8	417	1.6	1,829	9.9	152	0.5
46 to 54.....	14,718	16,496	16,341	1,778	17.5	222	1.4	-155	- .8	-13	-0.1
55 to 64.....	9,409	10,968	12,952	1,559	15.3	195	1.9	1,984	10.8	165	1.4
65 years and over.....	3,379	3,154	3,268	-225	-2.2	-28	-0.9	114	.6	10	0.3
MALE											
16 years and over.....	48,933	53,030	63,612	4,097	40.3	512	1.0	10,582	57.3	882	1.5
16 to 24 years.....	8,101	10,984	13,690	2,883	28.4	360	3.8	2,706	14.7	226	1.8
16 to 19.....	3,162	4,196	4,895	1,034	10.2	129	3.5	699	3.8	58	1.3
20 to 24.....	4,939	6,788	8,795	1,849	18.2	231	4.0	2,007	10.9	167	2.2
25 to 34.....	10,940	11,376	17,815	436	4.3	55	0.5	6,439	34.9	537	3.7
35 to 44.....	11,454	11,122	12,086	-332	-3.3	-42	-0.4	964	5.2	80	0.7
45 to 54.....	9,568	10,364	10,082	796	7.8	100	1.0	-282	-1.5	-24	-0.2
55 to 64 years.....	6,445	7,030	7,849	585	5.8	73	1.1	819	4.4	68	0.9
65 years and over.....	2,425	2,154	2,090	-271	-2.7	-34	-1.5	-64	- .3	-5	-0.3
FEMALE											
16 years and over.....	23,171	29,242	37,115	6,071	59.7	759	2.9	7,873	42.7	656	2.0
16 to 24 years.....	4,619	7,198	9,440	2,580	25.4	322	5.5	2,241	12.1	187	2.3
16 to 19.....	2,061	2,948	3,449	887	8.7	111	4.5	501	2.7	42	1.3
20 to 24.....	2,558	4,251	5,991	1,693	16.7	212	6.3	1,740	9.4	145	2.9
25 to 34.....	4,159	5,104	8,427	945	9.3	118	2.6	3,323	18.0	277	4.2
35 to 44.....	5,325	5,869	6,708	544	5.4	68	1.2	839	4.5	70	1.1
45 to 54.....	5,150	6,132	6,259	982	9.7	123	2.2	127	.7	11	0.2
55 to 64.....	2,964	3,938	5,103	974	9.6	122	3.6	1,165	6.3	97	2.2
65 years and over.....	954	999	1,178	45	.4	6	0.6	179	1.0	15	1.4

¹ Based on revised population and therefore differ from published figures for 1960. ² Compounded continuously.

Table A-3. Total labor force by color, sex, and age, 1960, 1968, and projected 1980

[In thousands]

Sex and age	White			Negro and other races		
	1960	1968	1980	1960	1968	1980
BOTH SEXES						
16 years and over.....	64,210	73,166	88,634	7,894	9,106	12,093
16-19 years.....	4,654	6,319	7,128	569	825	1,216
20-24 years.....	6,585	9,684	12,709	912	1,355	2,077
25-34 years.....	13,228	14,419	22,850	1,871	2,060	3,392
35-44 years.....	14,883	15,039	16,637	1,896	1,951	2,157
45-64 years.....	21,747	24,821	26,321	2,380	2,644	2,972
65 years and over.....	3,113	2,883	2,989	266	270	279
MALE						
16 years and over.....	44,119	47,708	56,374	4,814	5,322	7,238
16-19 years.....	2,801	3,707	4,193	361	489	702
20-24 years.....	4,370	5,993	7,599	569	795	1,196
25-34 years.....	9,777	10,150	15,646	1,163	1,225	2,169
35-44 years.....	10,346	10,015	10,791	1,108	1,106	1,295
45-64 years.....	14,582	15,862	16,230	1,431	1,532	1,701
65 years and over.....	2,243	1,980	1,915	182	174	175
FEMALE						
16 years and over.....	20,091	25,457	32,260	3,080	3,784	4,855
16-19 years.....	1,853	2,612	2,935	208	336	514
20-24 years.....	2,215	3,691	5,110	343	560	881
25-34 years.....	3,451	4,269	7,204	708	835	1,223
35-44 years.....	4,537	5,024	5,846	788	845	862
45-64 years.....	7,165	8,959	10,091	949	1,112	1,271
65 years and over.....	870	903	1,074	84	96	104

Table A-4. Labor force participation rates,¹ by color, sex, and age, 1960, 1968, and projected 1980

Sex and age	Total			White			Negro and other races		
	1960	1968	1980	1960	1968	1980	1960	1968	1980
Total 16 years and over.....									
	59.2	59.8	60.5	58.8	59.5	60.3	63.0	61.7	61.6
MALE									
16 years and over.....	82.4	79.7	79.2	82.6	80.1	79.4	80.1	75.9	77.5
16 to 19 years.....	58.6	57.5	56.7	58.8	58.6	57.4	56.8	50.4	53.0
20 to 24 years.....	88.9	85.1	83.0	89.1	85.3	83.3	87.8	83.9	80.9
25 to 34 years.....	96.4	95.5	96.0	96.9	96.1	96.5	92.7	90.7	92.4
35 to 44 years.....	96.4	96.0	96.1	96.9	96.7	96.5	92.1	90.1	92.7
45 to 54 years.....	94.3	93.6	94.0	94.8	94.2	94.3	89.4	87.7	91.1
55 to 64 years.....	85.2	82.8	80.5	85.7	83.3	80.8	80.1	77.4	78.3
65 years and over.....	32.2	26.3	22.0	32.4	26.3	22.0	30.4	25.7	22.0
FEMALE									
16 years and over.....	37.1	41.1	43.0	36.0	40.2	42.5	47.2	48.8	47.1
16 to 19 years.....	39.1	41.7	41.5	40.0	42.9	41.9	32.2	34.6	39.1
20 to 24 years.....	46.1	54.4	57.6	45.7	53.9	57.4	48.7	58.0	58.6
25 to 34 years.....	35.8	42.4	45.7	33.9	40.4	45.0	49.4	56.1	50.2
35 to 44 years.....	43.1	48.7	52.4	41.2	47.3	52.0	59.2	58.8	55.6
45 to 54 years.....	49.3	51.9	54.8	48.2	51.1	54.5	59.8	59.1	57.2
55 to 64 years.....	36.7	41.9	45.2	35.8	41.5	45.0	46.4	46.3	46.8
65 years and over.....	10.5	9.1	8.7	10.3	8.9	8.6	12.6	11.6	9.7

¹ total labor force as percent of total population.

Table A-5. Educational attainment of the civilian labor force 25 years old and over by color, average 1967-69, and projected 1980

Years of school completed	Total		White		Negro and other races	
	1967-69 average	1980	1967-69 average	1980	1967-69 average	1980
Number (thousands of persons 25 years old and over)						
Total	63,618	76,327	56,824	67,631	6,794	8,696
Less than 4 years of high school	24,723	21,846	20,578	18,027	4,145	3,819
Elementary: less than 8 years	6,551	4,366	4,675	3,141	1,876	1,225
8 years	6,967	4,679	6,225	4,099	742	580
High school: 1 to 3 years	11,205	12,801	9,678	10,787	1,527	2,014
4 years of high school or more	38,895	54,481	36,246	49,601	2,649	4,880
High school: 4 years	23,135	32,375	21,452	29,217	1,683	3,158
College: 1 year or more	15,760	22,106	14,794	20,384	966	1,722
1 to 3 years	7,024	9,185	6,548	8,376	476	809
4 years or more	8,736	12,921	8,246	12,008	490	913
Percent distribution						
Total	100.0	100.0	100.0	100.0	100.0	100.0
Less than 4 years of high school	38.9	28.7	36.2	26.8	61.0	44.0
Elementary: less than 8 years	10.3	5.8	8.2	4.7	27.6	14.1
8 years	11.0	6.1	11.0	6.1	10.9	6.7
High school: 1 to 3 years	17.6	16.8	17.0	16.0	22.5	23.2
4 years of high school or more	61.1	71.3	63.8	73.4	39.0	56.1
High school: 4 years	36.4	42.4	37.8	43.2	24.8	36.3
College: 1 year or more	24.7	28.9	26.0	30.2	14.2	19.8
1 to 3 years	11.0	12.0	11.5	12.4	7.0	9.3
4 years or more	13.7	16.9	14.5	17.8	7.2	10.5

Table A-6. Factors determining gross national product 1957, 1965, 1968, and projected 1980

Item	1957	1965	1968	Projected 1980				Average Annual Rate of Change ¹								
				Services economy		Durables economy		1957-65	1965-80				1968-80			
				3-percent unemployment	4-percent unemployment	3-percent unemployment	4-percent unemployment		Services economy		Durables economy		Services economy		Durables economy	
									3-percent unemployment	4-percent unemployment						
Total labor force (thousands)	69,729	77,177	82,272	100,727	100,727	100,727	100,727	1.3	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7
Unemployed	2,859	3,366	2,817	2,940	3,918	2,940	3,918	2.1	-0.9	1.0	-0.9	1.0	0.4	2.4	0.4	2.4
Employment (establishment)	70,953	77,689	84,772	102,896	101,867	102,896	101,867	1.1	1.9	1.8	1.9	1.8	1.6	1.5	1.6	1.5
Government ²	9,756	11,994	14,414	18,500	18,315	18,100	17,918	2.6	2.9	2.8	2.8	2.7	2.1	2.0	1.9	1.8
Federal	4,531	4,569	5,609	4,900	4,851	5,100	5,049	0.1	0.5	0.4	0.7	0.7	-1.1	-0.1	-0.8	-0.9
State and local	5,225	7,425	8,805	13,600	13,464	13,000	12,869	4.5	4.1	4.0	3.8	3.7	3.7	3.6	3.3	3.2
Private	61,197	65,695	70,358	84,396	83,552	84,796	83,949	0.9	1.7	1.6	1.7	1.6	1.5	1.4	1.6	1.5
Hours paid for (annual average) private	2,085	2,052	2,000	1,977	1,977	1,977	1,977	-0.2	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1
Total man-hour (millions) private ³	127,640	134,781	140,542	166,858	165,189	167,642	165,996	0.7	1.4	1.4	1.5	1.4	1.4	1.4	1.5	1.4
GNP per man-hour (1968 dollars) private	3.82	4.99	5.48	7.82	7.82	7.82	7.82	3.4	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total GNP (billions of 1968 dollars)	553.8	754.3	865.7	1,427.8	1,415.7	1,429.6	1,417.7	4.0	4.3	4.3	4.4	4.3	4.3	4.2	4.3	4.2
Government	66.3	81.1	95.3	123.8	122.8	120.9	119.7	2.4	2.8	2.7	2.6	2.6	2.2	2.1	2.0	1.9
Federal	32.3	32.8	39.5	35.4	35.2	36.7	36.4	0.2	0.5	0.5	0.8	0.7	-0.9	-1.0	-0.6	-0.7
State and local	34.0	48.3	55.8	88.4	87.6	84.2	83.3	4.5	4.1	4.0	3.8	3.7	3.9	3.8	3.5	3.4
Private	487.5	673.2	770.4	1,304.0	1,292.9	1,308.7	1,298.0	4.1	4.5	4.4	4.5	4.4	4.5	4.4	4.5	4.4
Agriculture	21.7	25.5	24.5	34.8	34.5	34.8	34.5	1.9	2.1	2.1	2.1	2.1	2.8	2.8	2.8	2.8
Nonagriculture	465.8	647.9	745.5	1,269.2	1,258.4	1,273.9	1,263.5	4.2	4.6	4.5	4.6	4.6	4.5	4.5	4.6	4.5

¹ Compound interest rate between terminal years.

² The government employment to be consistent with the government product is from the National Income Accounts.

³ Man-hours are estimated for the private sector only since the assumption is made of no change in hours of the government sector.

Table A-7. Part-time employment as a percent of total employment, 1956-68

Year	Total employment (labor force)	Nonagricultural part-time work for noneconomic reasons ¹	Part time as a percent of total unemployment	Year	Total employment labor force	Nonagricultural part-time work for noneconomic reasons ¹	Part time as a percent of total employment
	(in thousands)				(in thousands)		
1956	63,802	4,330	6.8	1963	67,762	6,021	8.9
1957	64,071	4,515	7.0	1964	69,305	6,448	9.3
1958	63,036	4,542	7.2	1965	71,088	6,740	9.5
1959	64,630	4,889	7.6	1966	72,895	7,441	10.2
1960	65,778	5,175	7.9	1967	74,372	8,048	10.8
1961	65,746	5,361	8.2	1968	75,920	8,452	11.1
1962	66,702	5,700	8.5				

¹ Noneconomic reason means that these workers are working part-time because they prefer part-time to full-time work; among workers who prefer part-time jobs are women who have home responsibilities; workers who have limited physical capacities; and workers who combine part-time work with their schooling.

Source: Employment and Earnings, Volume 15 No. 8, February 1969, Bureau of Labor Statistics.

Table 8. Personal consumption expenditures by major type of goods and services, 1957, 1965, 1968 and projected to 1980, and average annual rates of change

Major type of goods or services	1957	1965	1968	Projected 1980				1957	1965	1968	Projected 1980				Average annual rate of change, 1965-80				Average annual rate of change, 1968-80				
				Services economy		Durables economy					3-percent unemployment	4-percent unemployment	3-percent unemployment	4-percent unemployment	Services economy		Durables economy		Services economy		Durables economy		
				3-percent unemployment	4-percent unemployment	3-percent unemployment	4-percent unemployment								3-percent unemployment	4-percent unemployment	3-percent unemployment	4-percent unemployment	3-percent unemployment	4-percent unemployment			
				Billions of dollars										Percent distribution									
Total personal consumption expenditures	342.8	472.0	536.6	903.2	895.6	888.9	881.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	4.4	4.4	4.3	4.2	4.4	4.4	4.3	4.2
DURABLE GOODS	42.9	68.8	83.3	137.6	136.5	146.8	145.5	12.5	14.6	15.5	15.2	15.2	16.5	16.5	4.7	4.7	5.2	5.1	4.3	4.2	4.8	4.8	
Automobiles and parts	19.3	31.2	37.0	52.1	51.7	56.3	55.8	5.6	6.6	6.9	5.8	5.8	6.3	6.3	3.4	3.4	4.0	3.9	2.9	2.8	3.6	3.5	
Furniture and household equipment	17.9	28.1	34.2	62.9	62.4	66.5	65.9	5.2	6.0	6.4	7.0	7.0	7.5	7.5	5.5	5.9	5.9	5.8	5.2	5.1	5.7	5.6	
Other	5.7	9.5	12.1	22.6	22.4	24.0	23.8	1.7	2.0	2.3	2.5	2.5	2.7	2.7	5.9	5.9	6.3	6.3	5.3	5.3	5.9	5.8	
NONDURABLE GOODS	162.4	209.1	230.6	346.0	343.2	335.0	332.2	47.4	44.3	43.0	38.3	38.3	37.7	37.7	3.4	3.4	3.2	3.1	3.4	3.4	3.2	3.1	
Food and beverages	89.2	107.7	115.0	172.0	170.4	166.2	164.7	26.0	22.8	21.4	19.0	19.0	18.7	18.7	3.2	3.1	2.9	2.8	3.4	3.3	3.1	3.0	
Clothing and shoes	29.8	40.8	46.3	63.8	63.4	62.0	61.5	8.7	8.6	8.6	7.1	7.1	7.0	7.0	3.0	3.0	2.8	2.7	2.7	2.7	2.5	2.4	
Gasoline and oil	11.9	16.4	19.1	26.0	25.8	25.2	25.1	3.5	3.5	3.6	2.9	2.9	2.8	2.8	3.1	3.1	2.9	2.9	2.6	2.5	2.3	2.3	
Other	31.5	44.2	50.1	84.2	83.6	81.6	80.9	9.2	9.4	9.3	9.3	9.3	9.2	9.2	4.4	4.3	4.2	4.1	4.4	4.4	4.2	4.1	
SERVICES	137.5	194.1	222.8	419.1	415.5	407.1	403.7	40.1	41.1	41.5	46.4	46.4	45.8	45.8	5.2	5.2	5.1	5.0	5.4	5.3	5.2	5.1	
Housing	45.5	67.4	77.4	156.4	155.1	154.1	152.9	13.3	14.3	14.4	17.3	17.3	17.3	17.3	5.8	5.7	5.7	5.6	6.0	6.0	5.9	5.9	
Household operation	19.3	26.8	31.2	55.5	55.0	53.7	53.2	5.6	5.7	5.8	6.1	6.1	6.0	6.0	5.0	4.9	4.7	4.7	4.9	4.8	4.6	4.5	
Transportation	12.1	14.0	16.1	27.9	27.7	26.8	26.5	3.5	3.0	3.0	3.1	3.1	3.0	3.0	4.7	4.6	4.4	4.4	4.7	4.6	4.3	4.3	
Other	60.6	85.9	98.1	179.3	177.7	172.5	171.1	17.7	18.2	18.3	19.9	19.8	19.4	19.4	5.0	4.9	4.7	4.7	5.2	5.1	4.8	4.7	

Table A-9. State and local government purchases of goods and services by function, selected years and projected 1980

Function	1957	1965	1968	1980		Average annual rates of change				
				Services economy		1957-68	1965-80		1968-80	
				3-percent unem- ployment	4-percent unem- ployment		3-percent unem- ployment	4-percent unem- ployment		
(Billions of 1968 dollars)										
Total purchases.....	\$54.9	\$82.6	\$100.7	\$180.7	\$179.2	5.7	5.4	5.3	5.0	4.9
Education.....	22.9	36.3	42.9	68.7	68.1	5.9	4.3	4.3	4.0	3.9
Elementary and secondary.....	19.6	29.6	30.5	41.0	40.6	4.1	2.2	2.1	2.5	2.4
Higher.....	2.7	5.6	9.9	23.5	23.3	12.5	10.0	10.0	7.5	7.4
Other.....	0.6	1.1	2.5	4.2	4.2	13.9	9.3	9.3	4.4	4.4
Noneducation.....	32.0	46.3	57.9	112.0	111.1	5.5	6.1	6.0	5.7	5.6
Highways.....	9.8	13.6	14.9	19.8	19.6	3.9	2.5	2.5	2.4	2.3
Public health and sanitation.....	5.7	7.3	9.7	15.2	15.1	5.0	5.0	5.0	3.8	3.8
Hospitals.....	4.2	5.6	7.4	11.3	11.2	5.3	4.8	4.7	3.6	3.5
Health.....	0.9	1.0	1.4	2.3	2.3	4.1	5.7	5.7	4.2	4.2
Sanitation.....	0.6	0.7	0.9	1.6	1.6	3.8	5.7	5.7	4.9	4.9
Natural resources.....	1.5	1.7	2.3	4.2	4.2	4.0	6.2	6.2	5.1	5.1
Parks and recreation.....	0.9	1.4	1.5	4.6	4.6	4.8	8.3	8.3	9.8	9.8
Enterprises.....	3.6	5.7	6.4	16.7	16.6	5.4	7.4	7.4	8.3	8.3
All other functions.....	10.5	16.6	23.2	51.5	51.0	7.5	7.8	7.8	6.9	6.8

Table A-10. Alternative gross national product annual rate of change, 1965-80

Unemployment rate	1980 projected percent change in annual hours per person	Projected annual change in GNP per man-hour (total economy ¹)		
		2.3 percent	2.6 percent	2.9 percent
		Average annual rate of change in real gross national product 1965-80		
2.5-percent unemployment.....	(-.1) (-.2) (-.3)	4.2 4.1 4.0	4.5 4.4 4.3	4.8 4.7 4.6
3.0-percent unemployment.....	(-.1) (-.2) (-.3)	4.1 4.0 3.9	4.4 4.3 4.2	4.7 4.6 4.5
3.5-percent unemployment.....	(-.1) (-.2) (-.3)	4.1 4.0 3.9	4.4 4.3 4.2	4.7 4.6 4.5
4.0-percent unemployment.....	(-.1) (-.2) (-.3)	4.1 4.0 3.9	4.4 4.3 4.2	4.7 4.6 4.5
4.5-percent unemployment.....	(-.1) (-.2) (-.3)	4.0 3.9 3.8	4.3 4.2 4.1	4.6 4.5 4.4

¹ The GNP per man-hour for the total economy is .3 to .4 lower because the government has been added in with no change in output per man-hour.

Table A-11. Domestic output by detailed industries, selected periods and projected 1965-80

 [Average annual rates of change at producers' value in 1968 dollars ¹]

Industry name and number	1947-65	1947-57	1957-65	1965-80			
				Services economy		Durables economy	
				3-percent unemployment	4-percent unemployment	3-percent unemployment	4-percent unemployment
Agriculture, Forestry and Fisheries.....	1.7	1.4	2.1	2.9	2.9	2.8	2.7
1. Livestock and livestock products.....	1.7	1.7	1.7	2.8	2.8	2.7	2.6
2. Other agricultural products.....	1.7	0.9	2.7	3.0	3.0	2.9	2.9
3. Forestry and fishery products.....	1.8	2.2	1.4	2.0	2.0	2.5	2.4
4. Agricultural, forestry and fishery services.....	1.8	2.2	1.4	1.5	1.5	1.5	1.4
Mining.....	2.2	2.5	1.7	3.4	3.4	3.5	3.4
5. Iron and ferroalloy ores mining.....	2.7	3.1	2.3	2.5	2.5	3.0	2.9
6. Nonferrous metal ores mining.....	1.8	3.1	0.1	4.8	4.8	5.0	4.9
7. Coal mining.....	-1.8	-3.1	0.0	1.8	1.8	1.8	1.7
8. Crude petroleum and natural gas.....	3.3	4.6	1.8	3.4	3.4	3.4	3.3
9. Stone and clay mining and quarrying.....	5.3	6.2	4.2	4.2	4.2	4.5	4.4
10. Chemical and fertilizer mineral mining.....	6.1	6.2	6.1	5.9	5.9	6.0	5.9
Construction.....	4.7	4.9	4.4	4.2	4.2	4.4	4.4
11. New construction.....	4.9	5.5	4.1	4.4	4.4	4.8	4.7
12. Maintenance and repair construction.....	4.2	2.9	5.9	3.2	3.2	3.2	3.1
Manufacturing.....	3.8	3.5	4.1	4.2	4.2	4.5	4.4
13. Ordnance and accessories.....	7.4	14.1	-0.4	3.2	3.2	5.7	5.6
14. Food and kindred products.....	2.4	2.4	2.6	3.3	3.3	3.2	3.1
15. Tobacco manufactures.....	1.3	0.3	2.4	2.3	2.3	2.2	2.1
16. Broad and narrow fabrics, yarn and thread mills.....	2.4	1.3	3.7	3.7	3.7	3.7	3.6
17. Miscellaneous textile goods and floor coverings.....	4.4	2.5	6.9	4.2	4.1	4.3	4.2
18. Apparel.....	3.4	3.4	3.4	3.8	3.7	3.5	3.5
19. Miscellaneous fabricated textile products.....	3.8	3.6	3.9	3.7	3.6	3.6	3.5
20. Lumber and wood products, except containers.....	2.3	1.4	3.3	3.5	3.4	3.7	3.6
21. Wooden containers.....	-2.1	-3.6	-0.2	0.3	0.2	0.4	0.3
22. Household furniture.....	3.5	3.7	3.4	5.0	4.9	5.3	5.2
23. Other furniture and fixtures.....	3.4	2.4	4.6	5.4	5.3	5.4	5.4
24. Paper and allied products, except container.....	3.9	3.6	4.3	4.8	4.7	4.8	4.7
25. Paperboard containers and boxes.....	4.7	4.5	4.9	4.4	4.3	4.4	4.3
26. Printing and publishing.....	3.3	3.0	3.6	4.4	4.3	4.3	4.3
27. Chemicals and selected chemical products.....	6.8	7.5	6.0	5.4	5.3	5.4	5.3
28. Plastics and synthetic materials.....	9.3	9.6	9.0	6.8	6.7	6.8	6.8
29. Drugs, cleaning and toilet preparations.....	7.1	7.1	7.0	6.0	5.9	5.7	5.6
30. Paints and allied products.....	2.6	1.2	4.3	4.3	4.2	4.4	4.3
31. Petroleum refining and related industries.....	3.9	4.8	2.8	3.5	3.4	3.4	3.3
32. Rubber and miscellaneous plastics products.....	4.8	2.9	7.3	6.3	6.2	6.4	6.4
33. Leather tanning and industrial leather products.....	-1.5	-2.2	-0.8	-0.3	-0.3	-0.4	-0.4
34. Footwear and other leather products.....	0.5	0.4	0.6	1.4	1.4	1.2	1.2
35. Glass and glass products.....	3.0	1.9	4.4	3.9	3.8	4.0	3.9
36. Stone and clay products.....	5.0	5.9	3.8	4.6	4.5	4.8	4.8
37. Primary iron and steel manufacturing.....	1.6	1.3	1.9	1.9	1.8	2.2	2.2
38. Primary nonferrous metals manufacturing.....	3.7	3.1	4.3	5.3	5.2	5.7	5.6
39. Metal containers.....	3.1	3.3	2.9	3.3	3.2	3.1	3.0
40. Heating, plumbing and structural metal products.....	3.8	4.7	2.7	4.2	4.1	4.5	4.4
41. Stampings, screw machine products and bolts.....	1.7	1.0	2.7	3.7	3.7	4.1	4.0
42. Other fabricated metal products.....	3.2	2.8	3.8	3.9	3.8	4.1	4.0
43. Engines and turbines.....	3.0	2.4	3.9	4.2	4.1	4.6	4.5
44. Farm machinery and equipment.....	1.7	0.2	3.6	3.4	3.4	3.7	3.7
45. Construction, mining and oil field machinery.....	2.1	1.8	2.4	3.5	3.4	3.8	3.8
46. Materials handling machinery and equipment.....	3.4	3.0	4.1	4.2	4.1	4.5	4.5
47. Metalworking machinery and equipment.....	2.7	3.1	2.3	3.0	2.9	3.6	3.5
48. Special industry machinery and equipment.....	1.1	-1.3	4.2	4.0	3.9	4.4	4.3
49. General industrial machinery and equipment.....	3.4	1.8	5.5	3.4	3.3	3.9	3.9
50. Machine shop products.....	7.2	8.5	5.6	4.9	4.8	5.5	5.4
51. Office, computing and accounting machines.....	8.9	7.7	10.5	10.3	10.2	10.9	10.8
52. Service industry machines.....	4.6	2.6	7.2	6.5	6.4	6.9	6.8
53. Electric industrial equipment and apparatus.....	3.9	4.1	3.6	4.9	4.8	5.5	5.4
54. Household appliances.....	4.5	2.7	6.8	5.1	5.0	5.4	5.3
55. Electric lighting and wiring equipment.....	3.3	2.1	5.0	4.7	4.6	5.0	4.9
56. Radio, television and communication equipment.....	9.1	9.0	9.1	6.2	6.1	7.0	7.0
57. Electronic components and accessories.....	13.4	12.0	15.2	8.4	8.4	9.3	9.2
58. Miscellaneous electrical machinery, equipment and supplies.....	2.2	0.9	3.7	5.5	5.4	5.7	5.6
59. Motor vehicles and equipment.....	5.3	4.5	6.2	2.9	2.8	3.1	3.1
60. Aircraft and parts.....	11.1	20.2	0.7	2.6	2.6	4.6	4.6
61. Other transportation equipment.....	2.5	0.9	4.5	2.9	2.9	3.7	3.7
62. Scientific and controlling instruments.....	4.1	4.0	4.2	5.4	5.4	6.1	6.1
63. Optical, ophthalmic and photographic equipment.....	6.7	6.4	7.1	8.8	8.8	9.0	8.9
64. Miscellaneous manufacturing.....	3.4	2.2	5.0	5.6	5.5	5.6	5.5
65. Transportation and warehousing.....	1.6	0.7	2.8	4.0	3.9	4.0	3.9
Communications and public utilities.....	7.5	8.6	6.0	6.6	6.6	6.6	6.5
66. Communications, excluding radio and TV broadcasting.....	7.4	7.7	7.1	7.0	6.9	6.9	6.9
67. Radio & TV broadcasting.....	7.5	10.3	4.1	2.0	1.9	2.1	2.0
68. Electric, gas, water and sanitary services.....	7.5	9.0	5.7	6.7	6.6	6.6	6.5
69. Wholesale and retail trade.....	3.9	3.6	4.4	4.7	4.6	4.7	4.6
Finance, insurance and real estate.....	5.1	5.0	5.2	4.8	4.8	4.7	4.6
70. Finance and insurance.....	4.4	4.2	4.7	4.4	4.3	4.3	4.2
71. Real estate and rental.....	5.4	5.4	5.4	5.0	4.9	4.8	4.8
Services and miscellaneous.....	4.0	3.5	4.6	5.5	5.5	5.4	5.3

Table A-11. Domestic output by detailed industries, selected periods and projected 1965-80—Continued

[Average annual rates of change at producers' value in 1968 dollars ¹]

Industry name and number	1947-65	1947-57	1957-65	1965-80			
				Services economy		Durables economy	
				3-percent unemployment	4-percent unemployment	3-percent unemployment	4-percent unemployment
72. Hotels, personal and repair services, excluding auto.....	2.8	2.1	3.7	4.6	4.5	4.3	4.3
73. Business services.....	5.2	5.2	5.3	6.3	6.2	6.4	6.3
74. Research and development.....	6.4	5.2	7.8	6.0	5.9	6.7	6.7
75. Automobile repair and service.....	3.0	2.3	3.9	4.8	4.7	4.6	4.6
76. Amusements.....	0.2	-1.5	2.3	4.4	4.3	4.1	4.0
77. Medical, educational services and nonprofit organizations.....	5.0	5.0	5.1	5.5	5.4	5.2	5.1
Government enterprises.....	4.2	3.3	5.3	5.3	5.3	5.2	5.1
78. Federal Government enterprises.....	5.4	4.9	6.1	5.1	5.0	5.0	4.9
79. State and local government enterprises.....	3.4	2.3	4.8	5.5	5.4	5.3	5.3

¹ Output is gross duplicated output in constant 1968 prices.

Note: 1965 total is consistent with estimates of gross national product published in "Survey of Current Business", July 1968.

Source: Historical rates based on data from Office of Business Economics, U.S. Department of Commerce. Projections are by the Bureau of Labor Statistics.

Table A-12. Ten selected industries projected to grow rapidly in real output,¹ 1965-80

Industry name and number	Rank	Average annual rate of growth ²	
		3-percent unemployment	4-percent unemployment
SERVICES ECONOMY			
51. Office, computing and accounting machines.....	1	10.3	10.2
63. Optical, ophthalmic and photographic equipment.....	2	8.8	8.8
57. Electronic components and accessories.....	3	8.4	8.4
66. Communications; except broadcasting.....	4	7.0	6.9
28. Plastics and synthetic materials.....	5	6.8	6.7
68. Electric, gas, water and sanitary services.....	6	6.7	6.6
52. Service industry machines.....	7	6.5	6.4
32. Rubber and miscellaneous plastics.....	8-9	6.3	6.2
73. Business services.....	8-9	6.3	6.2
56. Radio, television and communication equipment.....	10	6.2	6.1
DURABLES ECONOMY			
51. Office, computing and accounting machines.....	1	10.9	10.8
57. Electronic components and accessories.....	2	9.3	9.2
63. Optical, ophthalmic and photographic equipment.....	3	9.0	8.9
56. Radio, television and communication equipment.....	4	7.0	7.0
66. Communications; except broadcasting.....	5-6	6.9	6.9
52. Service industry machines.....	5-6	6.9	6.8
28. Plastics and synthetic materials.....	7	6.8	6.8
74. Research and development.....	8	6.7	6.7
68. Electric, gas, water and sanitary services.....	9	6.6	6.5
32. Rubber and miscellaneous plastics products.....	10-11	6.4	6.4

¹ Output growth is change in real terms of gross duplicated output. This differs from gross output originating in that it counts in the output of each industry its cost of materials as well as the products primary to its output which are made in other sectors as secondary products.

² Average annual rate of change in compound interest between terminal years. Output is the gross duplicated value stated in 1958 prices.

Table A-13. Ten selected industries projected to grow slowly in real output,¹ 1965-80

Industry name and number	Rank	Average annual rate of growth ²	
		3-percent unemployment	4-percent unemployment
SERVICES ECONOMY			
33. Leather tanning and industrial leather products.....	1	-0.3	-0.3
34. Footwear and other leather products.....	2	1.4	1.4
4. Agricultural, forestry, and fishery services.....	3	1.5	1.5
7. Coal mining.....	4	1.8	1.8
37. Primary iron and steel manufacturing.....	5	1.9	1.8
3. Forestry and fishery products.....	6	2.0	2.0
15. Tobacco manufacturers.....	7	2.3	2.3
5. Iron and ferro-alloy ores mining.....	8	2.5	2.5
1. Livestock and livestock products.....	9	2.8	2.8
2. Agricultural products except livestock.....	10	3.0	3.0
DURABLES ECONOMY			
33. Leather tanning and industrial leather products.....	1	-0.4	-0.4
34. Footwear and other leather products.....	2	1.2	1.2
4. Agricultural, forestry and fishery services.....	3	1.5	1.4
7. Coal mining.....	4	1.8	1.7
15. Tobacco manufacturers.....	5	2.2	2.1
37. Primary iron and steel manufacturing.....	6	2.2	2.2
3. Forestry and fishery products.....	7	2.5	2.4
1. Livestock and livestock products.....	8	2.7	2.6
2. Agricultural products except livestock.....	9	2.9	2.9
5. Iron and ferro-alloy ores mining.....	10	3.0	2.9

¹ Output growth is change in real terms of gross duplicated output. This differs from gross output originating in that it counts in the output of each industry its cost of materials as well as the products primary to its output which are made in other sectors as secondary products.

² Average annual rate of change in compound interest between terminal years. Output is the gross duplicated value stated in 1958 prices.

Table A-14. Industries with significant changes in projected output growth rates for the period 1965-80 in relation to 1957-65¹

Projected output growth rates 1.0 percentage points below 1957-65 rates	Projected output growth rates 1.0 percentage point above 1957-65 rates
Industry	Industry
12. Maintenance and repair construction 17. Miscellaneous fabricated textile products 28. Plastics and synthetic materials 29. Drugs, cleaning and toilet preparations 32. Rubber and miscellaneous plastics products 49. General industrial machinery and equipment 54. Household appliances 56. Radio, television and communication equipment 57. Electronic components and accessories 59. Motor vehicles and equipment 61. Other transportation equipment 67. Radio and television broadcasting 74. Research and development	1. Livestock and livestock products 6. Nonferrous metal ores mining 7. Coal mining 8. Crude petroleum and natural gas 13. Ordnance and accessories 22. Household furniture 38. Primary nonferrous metals manufacturing 40. Heating, plumbing and structural metal products 41. Stampings, screw machine products and bolts 45. Construction, mining and oil field machinery 53. Electric industrial equipment and apparatus 58. Miscellaneous electrical machinery and supplies 60. Aircraft and parts 62. Scientific and controlling instruments 63. Optical, ophthalmic and photographic equipment 65. Transportation and warehousing 68. Electric, gas, water and sanitary services 73. Business services 76. Amusements

¹ Industries not shown on this table have projected growth in output for the 1965-80 period that is expected to be less than 1.0 percent per year from their 1957-65 rates.

Table A-15. Rate of change in output per man-hour¹ by detailed industry projected for the period 1965-80

2.5 percent a year or less	2.6 to 3.5 percent a year	3.6 percent a year or more
Industry name and number	Industry name and number	Industry name and number
3. Forestry and fishery products 4. Agricultural, forestry and fishery services 11. New construction 12. Maintenance and repair construction 18. Apparel 19. Miscellaneous fabricated textile products 23. Other furniture and fixtures 33. Leather tanning and industrial leather products 34. Footwear and other leather products 41. Stampings, screw machine products and bolts 44. Farm machinery and equipment 45. Construction, mining and oil field machinery 46. Materials handling machinery and equipment 47. Metal working machinery and equipment 49. General industrial machinery and equipment 55. Electric lighting and wiring equipment 60. Aircraft and parts 61. Other transportation equipment 67. Radio and television broadcasting 70. Finance and insurance 73. Business services 74. Research and development 76. Amusements 77. Medical, educational services and nonprofit organizations	9. Stone and clay mining and quarrying 13. Ordnance and accessories 14. Food and kindred products 22. Household furniture 24. Paper and allied products except containers 25. Paper board containers and boxes 26. Printing and publishing 29. Drugs, cleaning, and toilet preparations 30. Paints and allied products 32. Rubber and miscellaneous plastics products 35. Glass and glass products 36. Stone and clay products 37. Primary iron and steel manufacturing 38. Primary nonferrous metals manufacturing 39. Metal containers 40. Heating, plumbing and structural metal products 42. Other fabricated metal products 43. Engines and turbines 48. Special industry machinery and equipment 50. Machine shop products 52. Services industry machines 53. Electric industrial equipment and apparatus 59. Motor vehicles and equipment 63. Scientific and controlling instruments 65. Transportation and warehousing 69. Wholesale and retail trade 72. Hotels; personal and repair services, excluding auto 75. Automobile repair and services	1. Livestock and livestock products 2. Other agricultural products 5. Iron and ferro-alloy ores mining 6. Nonferrous metal ores mining 7. Coal mining 8. Crude petroleum and natural gas 10. Chemical and fertilizer mineral mining 15. Tobacco manufactures 16. Broad and narrow fabrics, yarn and thread mills 17. Miscellaneous textile goods and floor covering 20. Lumber and wood products, except containers 21. Wood containers 27. Chemicals and selected chemical products 28. Plastics and synthetic materials 31. Petroleum refining and related industries 51. Office, computing and accounting machines 54. Household appliances 56. Radio, television and communication equipment 57. Electronic components and accessories 58. Miscellaneous electrical machinery and supplies 63. Optical, ophthalmic and photographic equipment 64. Miscellaneous manufacturing 66. Communications; except broadcasting 68. Electric, gas, water and sanitary services 71. Real estate and rental

¹ Output per man-hour is the same in both structures of the economy; services and durables are at both levels of unemployment.

Table A-16. Total civilian employment¹ by major industry group, 1960, 1965, 1968, and projected 1980

Sector	1960	1965	1968	1980			
				Services economy		Durables economy	
				3-percent unemployment	4-percent unemployment	3-percent unemployment	4-percent unemployment
Total (in thousands).....	68,868	74,568	80,788	99,600	98,600	99,400	98,400
Goods producing	27,280	27,786	28,975	31,618	31,300	32,615	32,286
Agriculture, forestry and fisheries.....	5,699	4,671	4,154	3,188	3,156	3,192	3,160
Mining.....	750	667	646	590	584	588	582
Construction.....	3,641	3,994	4,050	5,482	5,427	5,595	5,539
Manufacturing.....	17,190	18,454	20,125	22,358	22,133	23,240	23,005
Durable.....	9,697	10,644	11,854	13,274	13,141	14,322	14,176
Nondurable.....	7,493	7,810	8,271	9,084	8,992	8,918	8,829
Service producing	41,588	46,782	51,813	67,982	67,300	66,785	66,114
Transportation, communication and public utilities.....	4,215	4,250	4,524	4,976	4,926	4,961	4,911
Trade.....	14,222	15,352	16,604	20,487	20,282	20,501	20,296
Finance, insurance and real estate.....	2,981	3,367	3,726	4,639	4,593	4,538	4,493
Services, including households.....	11,817	13,722	15,113	21,080	20,867	20,585	20,376
Government.....	8,353	10,091	11,846	16,800	16,632	16,200	16,038
Federal.....	2,270	2,377	2,737	3,000	2,970	3,000	2,970
State and local.....	6,083	7,714	9,109	13,800	13,662	13,200	13,068
Total (percent distribution).....	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Goods producing	39.6	37.3	35.9	31.7	31.7	32.8	32.8
Agriculture, forestry and fisheries.....	8.3	6.3	5.1	3.2	3.2	3.2	3.2
Mining.....	1.0	0.9	0.8	0.6	0.6	0.6	0.6
Construction.....	5.2	5.4	5.0	5.5	5.5	5.6	5.6
Manufacturing.....	25.0	24.7	24.9	22.4	22.4	23.4	23.4
Durable.....	14.1	14.3	14.7	13.3	13.3	14.4	14.4
Nondurable.....	11.0	10.5	10.2	9.1	9.1	9.0	9.0
Service producing	60.4	62.7	69.1	68.4	68.4	67.2	67.2
Transportation, communication and public utilities.....	6.1	5.7	5.6	5.0	5.0	5.0	5.0
Trade.....	20.7	20.6	20.6	20.6	20.6	20.6	20.6
Finance, insurance and real estate.....	4.3	4.5	4.6	4.7	4.7	4.6	4.6
Services, including households.....	17.2	18.4	18.7	21.2	21.2	20.7	20.7
Government.....	12.1	13.5	14.7	16.9	16.9	16.3	16.3
Federal.....	3.3	3.2	3.4	3.0	3.0	3.0	3.0
State and local.....	8.8	10.3	11.7	13.9	13.9	13.3	13.3

Table A-17. Total civilian employment by major industry group, average annual rates of change, 1965-80 and 1968-80

Industry	Average annual rates of change, 1965-80				Average annual rates of change, 1968-80			
	Services economy		Durables economy		Services economy		Durables economy	
	3-percent unemployment	4-percent unemployment	3-percent unemployment	4-percent unemployment	3-percent unemployment	4-percent unemployment	3-percent unemployment	4-percent unemployment
Total.....	1.9	1.9	1.9	1.9	1.8	1.7	1.7	1.7
Agriculture, forestry and fisheries.....	-2.5	-2.5	-2.5	-2.5	-2.2	-2.2	-2.2	-2.2
Mining.....	-0.8	-0.9	-0.8	-0.9	-0.8	-0.8	-0.8	-0.9
Construction.....	2.1	2.1	2.3	2.2	2.6	2.5	2.7	2.6
Manufacturing.....	1.3	1.2	1.5	1.5	0.9	0.8	1.2	1.1
Durable.....	1.5	1.4	2.0	1.9	1.0	0.9	1.6	1.5
Nondurable.....	1.0	0.9	0.9	0.8	0.8	0.7	0.6	0.5
Transportation, communications and public utilities.....	1.1	1.0	1.0	1.0	0.8	0.7	0.8	0.7
Trade.....	1.9	1.9	1.9	1.9	1.8	1.7	1.8	1.7
Finance, insurance and real estate.....	2.2	2.1	2.0	1.9	1.9	1.8	1.7	1.6
Services including households.....	2.9	2.8	2.7	2.7	2.8	2.7	2.6	2.5
Government.....	3.5	3.4	3.2	3.1	3.0	2.9	2.6	2.6
Federal.....	1.6	1.5	1.6	1.5	0.8	0.7	0.8	0.7
State and local.....	4.0	3.9	3.6	3.6	3.5	3.4	3.1	3.1

Table A-18. Total civilian employment ¹ by detailed industries, 1960, 1965, 1968, and projected 1980

In thousands]

Industry name and number	1960	1965	1968	Projected 1980			
				Services economy		Durables economy	
				3 percent unemployment	4 percent unemployment	3 percent unemployment	4 percent unemployment
Total	68,868	74,568	80,788	99,600	98,600	99,400	98,400
Agriculture, Forestry and Fisheries	5,699	4,671	4,154	3,188	3,156	3,192	3,160
1. Livestock and livestock products.....	5,389	4,338	3,811	2,800	2,772	2,800	2,772
2. Other agricultural products.....							
3. Forestry and fishery products.....	310	333	343	388	384	392	388
4. Agricultural, forestry and fishery services.....	750	667	646	590	584	588	582
Mining	38	30	29	26	26	28	28
5. Iron and ferroalloy ores mining.....	58	56	57	61	60	62	61
6. Nonferrous metal ores mining.....	195	149	141	99	98	98	97
7. Coal mining.....	331	308	298	269	266	263	260
8. Crude petroleum and natural gas.....							
9. Stone and clay mining and quarrying.....	128	124	121	135	134	137	136
10. Chemical and fertilizer mineral mining.....							
Construction	3,641	3,994	4,050	5,482	5,427	5,595	5,539
11. New construction.....							
12. Maintenance and repair construction.....	17,190	18,454	20,125	22,358	22,133	23,240	23,005
Manufacturing	220	226	342	250	247	351	347
13. Ordnance and accessories.....	1,835	1,798	1,811	1,799	1,781	1,735	1,718
14. Food and kindred products.....	94	87	84	65	64	63	62
15. Tobacco manufactures.....	604	584	614	551	545	541	536
16. Broad and narrow fabrics, yarn and thread mills.....	109	115	132	121	120	124	123
17. Miscellaneous textile goods and floor coverings.....	1,338	1,450	1,502	1,780	1,762	1,727	1,710
18. Apparel.....	141	162	178	203	201	198	196
19. Miscellaneous fabricated textile products.....	674	660	634	663	656	680	673
20. Lumber and wood products, except containers.....	46	38	42	22	22	22	22
21. Wooden containers.....	285	325	351	432	428	448	444
22. Household furniture.....	119	129	145	208	206	208	206
23. Other furniture and fixtures.....	425	440	471	556	550	551	545
24. Paper and allied products, except containers.....	177	200	222	245	243	244	242
25. Paperboard containers and boxes.....	984	1,057	1,128	1,322	1,309	1,307	1,294
26. Printing and publishing.....	400	411	473	501	496	498	493
27. Chemicals and selected chemical products.....	155	194	216	275	274	277	274
28. Plastics and synthetic materials.....	209	234	265	336	333	321	318
29. Drugs, cleaning and toilet preparation.....	63	66	70	75	74	76	75
30. Paints and allied products.....	212	183	187	155	153	152	150
31. Petroleum refining and related industries.....	382	474	560	763	755	777	769
32. Rubber and miscellaneous plastics products.....	37	35	33	25	25	25	25
33. Leather tanning and industrial leather products.....	328	320	325	312	309	302	299
34. Footwear and other leather products.....	159	172	188	218	216	221	219
35. Glass and glass products.....	462	474	463	591	585	609	603
36. Stone and clay products.....	911	941	931	851	842	891	882
37. Primary iron and steel manufacturing.....	327	367	391	492	487	522	517
38. Primary nonferrous metals manufacturing.....	71	71	78	80	79	78	77
39. Metal containers.....	426	466	507	618	612	641	634
40. Heating, plumbing and structural metal products.....	287	323	363	405	401	425	421
41. Stampings, screw machine products and bolts.....	370	428	469	535	530	553	547
42. Other fabricated metal products.....	86	91	110	120	119	128	127
43. Engines and turbines.....	115	139	145	173	171	180	178
44. Farm machinery and equipment.....	157	177	192	220	218	230	228
45. Construction, mining and oil field machinery.....	64	79	89	125	124	132	131
46. Materials handling machinery and equipment.....	275	318	358	395	391	429	425
47. Metalworking machinery and equipment.....	171	196	201	248	246	262	259
48. Special industry machinery and equipment.....	233	266	285	326	323	353	349
49. General industrial machinery and equipment.....	179	212	249	308	305	333	330
50. Machine shop products.....	146	191	245	400	396	433	428
51. Office, computing and accounting machines.....	100	114	135	180	178	190	188
52. Service industry machines.....	344	362	417	480	475	523	518
53. Electric industrial equipment and apparatus.....	155	165	178	210	208	219	217
54. Household appliances.....	141	177	206	249	247	260	257
55. Electric lighting and wiring equipment.....	489	550	676	760	752	855	846
56. Radio, television and communication equipment.....	234	307	388	505	500	563	557
57. Electronic components and accessories.....	107	101	121	130	129	134	133
58. Miscellaneous electrical machinery, equipment and supplies.....	725	844	871	901	892	933	923
59. Motor vehicles and equipment.....	629	625	852	761	753	1,017	1,006
60. Aircraft and parts.....	220	276	311	352	348	393	389
61. Other transportation equipment.....	246	262	304	373	369	411	407
62. Scientific and controlling instruments.....	110	130	159	180	178	183	181
63. Optical, ophthalmic and photographic equipment.....	414	442	458	513	508	512	507
64. Miscellaneous manufacturing.....	30,681	34,087	37,532	48,382	47,898	47,785	47,306
Services except households	2,743	2,727	2,868	3,117	3,086	3,126	3,095
65. Transportation and warehousing.....	750	776	865	972	962	959	949
66. Communications; exc. radio and TV broadcasting.....	94	110	126	163	161	164	162
67. Radio and TV broadcasting.....	628	637	665	724	717	712	705
68. Electric, gas, water and sanitary services.....	14,222	15,352	16,604	20,487	20,282	20,501	20,296
69. Wholesale and retail trade.....	2,284	2,598	2,916	3,690	3,653	3,607	3,571
70. Finance and insurance.....	697	769	810	949	940	931	922
71. Real estate and rental.....	2,466	2,752	2,880	3,621	3,584	3,509	3,473
72. Hotels; personal and repair services, exc. auto.....							
73. Business services.....	1,761	2,303	2,777	4,539	4,495	4,579	4,534
74. Research and development.....	426	501	536	664	657	652	645
75. Automobile repair and service.....	635	708	768	998	988	956	946
76. Amusements.....							

Table A-18. Total civilian employment ¹ by detailed industries, 1960, 1965, 1968, and projected 1980—Continued

[In thousands]

Industry name and number	1960	1965	1968	Projected 1980			
				Services economy		Durables economy	
				3 percent unemployment	4 percent unemployment	3 percent unemployment	4 percent unemployment
77. Medical, educational svcs. and nonprofit org.....	3,975	4,854	5,717	8,458	8,373	8,089	8,008
Government.....	8,353	10,091	11,846	16,800	16,632	16,200	16,038
Federal government.....	2,270	2,377	2,737	3,000	2,970	3,000	2,970
State and local government.....	6,083	7,714	9,109	13,800	13,662	13,200	13,068
86. Households.....	2,554	2,604	2,435	2,800	2,770	2,800	2,770

¹ Includes wage and salary employees, self employed, and unpaid family workers.

Table A-19. Total civilian employment by detailed industries, average annual rates of change 1965-80 1968-80

Industry name and number	Average annual rates of change 1965-80				Average annual rates of change 1968-80			
	Service economy		Durables economy		Service economy		Durables economy	
	3-percent unemployment	4-percent unemployment	3-percent unemployment	4-percent unemployment	3-percent unemployment	4-percent unemployment	3-percent unemployment	4-percent unemployment
Total.....	1.9	1.9	1.9	1.9	1.8	1.7	1.7	1.7
Agriculture, Forestry and Fisheries.....	-2.5	-2.5	-2.5	-2.5	-2.2	-2.2	-2.2	-2.2
1. Livestock and livestock products.....	-2.9	-2.9	-2.9	-2.9	-2.5	-2.6	-2.5	-2.6
2. Other agricultural products.....	1.0	1.0	1.1	1.0	1.0	0.9	1.1	1.0
3. Forestry and fishery products.....	-0.8	-0.9	-0.8	-0.9	-0.8	-0.8	-0.8	-0.9
4. Agricultural, forestry and fishery services.....	-1.0	-1.0	-0.5	-0.5	-0.9	-0.9	-0.3	-0.3
5. Mining.....	0.6	0.5	0.7	0.6	0.6	0.4	0.7	0.6
6. Iron and ferro-alloy ores mining.....	-2.7	-2.7	-2.7	-2.8	-2.9	-3.0	-3.0	-3.1
7. Nonferrous metal ores mining.....	-0.9	-1.0	-1.1	-1.1	-0.9	-0.9	-1.0	-1.1
8. Coal mining.....	0.6	0.5	0.7	0.6	0.9	0.9	1.0	1.0
9. Crude petroleum and natural gas.....	2.1	2.1	2.3	2.2	2.6	2.5	2.7	2.6
10. Stone and clay mining and quarrying.....	1.3	1.2	1.5	1.5	0.9	0.8	1.2	1.1
11. Chemical and fertilizer mineral mining.....	0.7	0.6	3.0	2.9	-2.5	-2.6	0.2	0.1
12. New construction.....	(¹)	-1.0	-0.2	-0.3	-0.1	-0.1	-0.4	-0.4
13. Maintenance and repair construction.....	-2.0	-2.0	-2.2	-2.2	-2.2	-2.2	-2.3	-2.5
14. Manufacturing.....	-0.4	-0.5	-0.5	-0.6	-0.9	-1.0	-1.1	-1.1
15. Ordnance and accessories.....	0.3	0.3	0.5	0.4	-0.7	-0.8	-0.5	-0.6
16. Food and kindred products.....	1.4	1.3	1.2	1.1	1.4	1.3	1.2	1.1
17. Tobacco manufactures.....	1.5	1.4	1.3	1.3	1.1	1.0	0.9	0.8
18. Broad and narrow fabrics, yarn and thread mills.....	(¹)	(¹)	0.2	0.1	0.4	0.3	0.6	0.5
19. Miscellaneous textile goods and floor coverings.....	-3.6	-3.6	-3.6	-3.6	-5.2	-5.2	-5.2	-5.2
20. Apparel.....	1.9	1.9	2.2	2.1	1.7	1.7	2.1	2.0
21. Miscellaneous fabricated textile products.....	3.2	3.2	3.2	3.2	3.1	3.0	3.1	3.0
22. Lumber and wood products, except containers.....	1.6	1.5	1.5	1.4	1.4	1.3	1.3	1.2
23. Wooden containers.....	1.4	1.3	1.3	1.3	0.8	0.8	0.8	0.7
24. Paper and allied products, except containers.....	1.5	1.4	1.4	1.4	1.3	1.2	1.2	1.1
25. Printing and publishing.....	1.3	1.3	1.3	1.2	0.5	0.4	0.4	0.3
26. Chemicals and selected chemical products.....	2.4	2.3	2.4	2.3	2.0	1.9	2.1	2.0
27. Plastics and synthetic materials.....	2.4	2.4	2.1	2.1	2.0	1.9	1.6	1.5
28. Drugs, cleaning and toilet preparations.....	0.9	0.8	0.9	0.9	0.6	0.5	0.7	0.6
29. Paints and allied products.....	-1.1	-1.2	-1.2	-1.3	-1.6	-1.7	-1.7	-1.9
30. Petroleum refining and related industries.....	3.2	3.2	3.3	3.3	2.6	2.5	2.8	2.7
31. Rubber and miscellaneous plastics products.....	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2
32. Leather tanning and industrial leather products.....	-0.2	-0.2	-0.4	-0.5	-0.3	-0.4	-0.6	-0.7
33. Footwear and other leather products.....	1.6	1.5	1.7	1.6	1.2	1.2	1.4	1.3
34. Glass and glass products.....	1.5	1.4	1.7	1.6	2.1	2.0	2.3	2.2
35. Stone and clay products.....	-0.7	-0.7	-0.4	-0.4	-0.8	-0.8	-0.4	-0.5
36. Primary iron and steel manufacturing.....	2.0	1.9	2.4	2.3	1.9	1.9	2.4	2.4
37. Primary nonferrous metals manufacturing.....	0.8	0.7	0.6	0.5	0.2	(¹)	0.2	0.1
38. Metal containers.....	1.9	1.8	2.1	2.1	1.7	1.6	2.0	1.9
39. Heating, plumbing and structural metal products.....	1.5	1.5	1.8	1.8	0.9	0.8	1.3	1.2
40. Stampings, screw machine products and bolts.....	1.5	1.4	1.7	1.6	1.1	1.0	1.4	1.3
41. Other fabricated metal products.....	1.9	1.8	2.3	2.2	0.7	0.7	1.3	1.2
42. Engines and turbines.....	1.5	1.4	1.7	1.7	1.5	1.4	1.8	1.7
43. Farm machinery and equipment.....	1.5	1.4	1.8	1.7	1.1	1.1	1.5	1.4
44. Construction, mining and oil field machinery.....	3.1	3.1	3.5	3.4	2.9	2.8	3.3	3.3
45. Materials handling machinery and equipment.....	1.5	1.4	1.8	1.9	0.8	0.7	1.5	1.4
46. Metalworking machinery and equipment.....	1.6	1.5	2.0	1.9	1.8	1.7	2.2	2.1
47. Special industry machinery and equipment.....	1.4	1.3	1.9	1.8	1.1	1.0	1.8	1.7
48. General industrial machinery and equipment.....								

Table A-19. Total civilian employment by detailed industries, average annual rates of change 1965-80 1968-80—Con.

Industry name and number	Average annual rates of change 1965-80				Average annual rates of change 1968-80			
	Service economy		Durables economy		Service economy		Durables economy	
	3-percent unemployment	4-percent unemployment	3-percent unemployment	4-percent unemployment	3-percent unemployment	4-percent unemployment	3-percent unemployment	4-percent unemployment
50. Machine shop products.....	2.5	2.5	3.1	3.0	1.8	1.7	2.5	2.4
51. Office, computing and accounting machines.....	5.1	5.0	5.6	5.5	4.2	4.1	4.9	4.8
52. Service industry machines.....	3.1	3.0	3.5	3.4	2.4	2.3	2.9	2.8
53. Electric industrial equipment and apparatus.....	1.9	1.8	1.9	2.4	1.2	1.1	1.9	1.8
54. Household appliances.....	1.6	1.6	1.9	1.8	1.4	1.3	1.7	1.7
55. Electric lighting and wiring equipment.....	2.3	2.2	2.6	2.5	1.6	1.5	2.0	1.9
56. Radio, television and communication equipment.....	2.2	2.1	3.0	2.9	1.0	0.9	2.0	1.9
57. Electronic components and accessories.....	3.4	3.3	4.1	4.1	2.2	2.1	3.2	3.1
58. Miscellaneous electrical machinery, equipment and supplies.....	1.7	1.6	1.9	1.9	0.6	0.5	0.9	0.8
59. Motor vehicles and equipment.....	0.4	0.4	0.7	0.6	0.3	0.2	0.6	0.5
60. Aircraft and parts.....	1.3	1.3	3.3	3.2	-0.9	-1.0	1.5	1.4
61. Other transportation equipment.....	1.6	1.6	2.4	2.3	1.0	0.9	2.0	1.9
62. Scientific and controlling instruments.....	2.4	2.3	3.1	3.0	1.7	1.6	2.5	2.5
63. Optical, ophthalmic and photographic equipment.....	2.2	2.1	2.3	2.2	1.0	0.9	1.2	1.1
64. Miscellaneous manufacturing.....	1.0	0.9	1.0	0.9	1.0	0.9	0.9	0.9
Services								
65. Transportation and warehousing.....	0.9	0.8	0.9	0.8	0.7	0.6	0.7	0.6
66. Communications; except radio and TV broadcasting.....	1.5	1.4	1.4	1.4	1.0	0.9	0.9	0.8
67. Radio and TV broadcasting.....	2.7	2.6	2.7	2.6	2.2	2.1	2.2	2.1
68. Electric, gas, water and sanitary services.....	0.9	0.8	0.7	0.7	0.7	0.6	0.6	0.5
69. Wholesale and retail trade.....	1.9	1.9	1.9	1.9	1.8	1.7	1.8	1.7
70. Finance and insurance.....	2.4	2.3	2.2	2.1	2.0	1.9	1.8	1.7
71. Real estate and rental.....	1.4	1.3	1.3	1.2	1.3	1.2	1.2	1.1
72. Hotels; personal and repair services, except auto.....	2.0	2.0	1.8	1.8	1.9	1.8	1.7	1.6
73. Business services.....	4.5	4.4	4.5	4.5	4.2	4.1	4.3	4.2
74. Research and development.....	1.9	1.8	1.8	1.7	1.8	1.7	1.6	1.6
75. Automobile repair and service.....	2.3	2.2	2.0	1.9	2.2	2.1	1.8	1.8
76. Amusements.....	3.8	3.7	3.5	3.4	3.3	3.2	2.9	2.9
77. Medical, educational services, and nonprofit organizations.....	3.5	3.4	3.2	3.1	3.0	2.9	2.6	2.6
Government ²								
Federal Government.....	1.6	1.5	1.6	1.5	0.8	0.7	0.8	0.7
State and local government.....	4.0	3.9	3.6	3.6	3.5	3.4	3.1	3.1
86. Household industry.....	0.5	0.4	0.5	0.4	1.2	1.2	1.2	1.2

¹ Includes wage and salary employees, self employed and unpaid family worker. ² Includes Government enterprises.

Table A-20. Wage and salary employment by major industry group, 1960, 1965, 1968, and projected 1980

Industry	1960	1965	1968	1980			
				Services economy		Durables economy	
				3-percent unemployment	4-percent unemployment	3-percent unemployment	4-percent unemployment
Total.....	62,175	67,775	74,108	92,200	91,274	92,000	91,074
Agriculture, forestry and fisheries ¹	5,560	4,528	4,012	3,030	3,000	3,034	3,004
Mining.....	712	632	610	550	544	548	542
Construction.....	2,885	3,186	3,267	4,600	4,553	4,713	4,665
Manufacturing.....	16,795	18,062	19,768	21,935	21,712	22,817	22,584
Durable.....	9,461	10,407	11,626	13,015	12,883	14,063	13,918
Nondurable.....	7,334	7,655	8,142	8,920	8,829	8,754	8,666
Transportation, communications, and public utilities.....	4,004	4,036	4,314	4,740	4,692	4,725	4,677
Trade.....	11,391	12,716	14,081	17,625	17,450	17,638	17,464
Finance, insurance and real estate.....	2,669	3,023	3,383	4,260	4,217	4,159	4,117
Services, including households.....	9,809	11,501	12,827	18,660	18,474	18,165	17,983
Government.....	8,353	10,091	11,846	16,800	16,632	16,200	16,038

¹ Agriculture includes self-employed and unpaid family workers.

Table A-21. Wage and salary employment by major industry group, average annual rates of change, 1965-80 and 1968-80

Industry	Average annual rates of change							
	1965-80				1968-80			
	Services economy unemployment rate		Durable economy unemployment rate		Services economy unemployment rate		Durable economy unemployment rate	
	3 percent	4 percent	3 percent	4 percent	3 percent	4 percent	3 percent	4 percent
Total	2.1	2.0	2.1	2.0	1.8	1.7	1.8	1.7
Agriculture, forestry and fisheries	-2.6	-2.7	-2.6	-2.7	-2.2	-2.2	-2.2	-2.2
Mining	-0.9	-1.0	-1.0	-1.0	-0.8	-0.8	-0.8	-0.9
Construction	2.5	2.4	2.6	2.6	2.6	2.5	2.7	2.6
Manufacturing	1.3	1.2	1.6	1.5	0.9	0.8	1.2	1.1
Durable	1.5	1.4	2.0	2.0	0.9	0.9	1.6	1.5
Non-durable	1.0	1.0	0.9	0.8	0.8	0.7	0.6	0.5
Transportation, communications, and public utilities	1.1	1.0	1.1	1.0	0.8	0.7	0.8	0.7
Trade	2.2	2.1	2.2	2.1	1.8	1.7	1.8	1.7
Finance, insurance, and real estate	2.3	2.2	2.2	2.1	1.8	1.8	1.7	1.6
Services including households	3.3	3.2	3.1	3.0	2.8	2.7	2.6	2.5
Government	3.5	3.4	3.2	3.1	3.0	2.9	2.6	2.6

Table A-22. Wage and salary employment, by detailed industry, 1965, 1968, and projected 1980

[in thousands]

Industry	1965	1968	Projected ¹ 1980	Average annual rate of change	
				1965-80	1968-80
Total nonagricultural employment	60,832.0	67,860.0	86,600	2.4	2.1
Mining	632.0	610.0	550	-0.9	-0.9
Metal mining	83.8	83.9	85		0.1
Iron ores	25.9	25.3	25	-0.2	-0.1
Copper ores	30.0	29.9	40	1.9	2.5
Lead, zinc, and all other metal ores	² 27.9	² 28.7	20	-2.2	-3.0
Coal mining	141.4	132.8	90	-3.1	-3.3
Bituminous and lignite mining	131.8	126.6	85	-3.0	-3.4
Crude petroleum and natural gas	287.1	276.3	245	-1.1	-1.0
Crude petroleum and natural gas fields	156.6	147.8	130	-1.2	-1.1
Oil and gas field services	130.5	128.5	115	-0.8	-0.9
Quarrying and nonmetallic mining	119.6	117.1	130	0.6	0.9
Contract construction	3,186.0	3,267.0	4,600	2.5	2.9
General building contractors	994.0	986.4	1,200	1.3	1.7
Heavy construction	648.5	680.2	950	2.6	2.8
Special trade contractors	1,543.4	1,600.6	2,400	3.1	3.6
Manufacturing	18,062.0	19,768.0	21,935	1.3	0.9
Durable goods	10,406.0	11,624.0	13,015	1.5	0.9
Ordnance and accessories	225.8	341.5	250	0.7	-2.6
Lumber and wood products	606.9	597.8	585	-0.2	-0.2
Logging camps and logging contractors	87.7	78.7	70	-1.5	-1.0
Sawmills and planing mills	249.4	232.4	180	-2.2	-2.1
Millwork, plywood, and related products	164.7	165.6	205	1.5	1.8
Wooden containers	34.4	37.5	25	-2.1	-3.4
Miscellaneous wood products	74.2	83.6	105	2.3	1.9
Furniture and fixtures	430.7	474.2	615	2.4	2.2
Household furniture	309.2	334.8	415	2.8	1.9
All other furniture and fixtures	121.5	139.5	200	3.4	3.0
Stone, clay, and glass products	628.3	637.0	790	1.5	1.9
Glass and glass products	² 147.7	² 175.8	215	2.5	1.7
Cement, hydraulic	38.0	34.8	30	-1.5	-1.2
Structural clay products	69.7	64.3	70		0.7
Pottery and related products	43.4	43.5	35	-1.4	-1.8
Concrete, gypsum, and plaster products	177.8	181.9	285	3.2	3.8
Other stone and mineral products	130.0	136.7	155	1.2	1.1
Primary metal industries	1,301.0	1,314.3	1,340	0.2	0.2
Blast furnaces and basic steel products	657.3	635.3	600	-0.6	-0.5
Iron and steel foundries	227.0	225.4	250	0.6	0.9
Nonferrous foundries	81.5	90.0	120	2.6	2.4
All other primary metal industries	335.2	363.6	370	0.7	0.1
Fabricated metal products	1,269.0	1,393.7	1,615	1.6	1.2
Metal cans	61.0	66.6	65	0.4	-0.2
Cutlery, hand tools and general hardware	155.1	165.1	175	0.9	0.5
Fabricated structural metal products	375.1	411.8	500	1.9	1.6
All other fabricated metal products	677.7	750.3	875	1.7	1.3
Machinery, except electrical	1,735.3	1,960.5	2,445	2.3	1.9
Farm machinery and equipment	135.7	141.4	170	1.5	1.5
Metal working machinery and equipment	304.2	342.6	380	1.5	0.9
Special industry equipment	193.3	198.2	245	1.6	1.8
Office, computing, and accounting machines	190.5	245.4	400	0.7	4.2
All other machinery, except electrical	911.7	1,033.1	1,250	2.1	1.6

Table A-22. Wage and salary employment, by detailed industry, 1965, 1968, and projected 1980—Continued
 [In thousands]

Industry	1965	1968	Projected ¹ 1980	Average annual rate of change	
				1965-80	1968-80
Electrical machinery, equipment, and supplies.....	1,659.2	1,981.9	2,330	2.3	1.4
Electrical transmission and distribution equipment.....	170.0	205.5	235	2.2	1.1
Electrical measuring instruments and test equipment.....	56.6	66.8	90	3.1	2.5
Power, distribution, and specialty transformers.....	46.0	57.5	60	1.8	0.4
Switchgear and switchboard apparatus.....	67.5	81.3	85	1.5	0.4
Electrical industrial apparatus.....	192.3	211.0	245	1.6	1.3
Motor and generators.....	104.8	115.3	130	1.4	1.0
Industrial controls.....	51.8	57.6	70	2.0	1.6
Household appliances.....	165.3	178.4	210	1.6	1.4
Household refrigerator and home and farm freezers.....	52.8	58.4	75	2.4	2.1
Household laundry equipment.....	24.7	25.0	30	1.3	1.5
Electric housewares and fan.....	40.1	43.1	55	2.1	2.1
Electric lighting and wiring equipment.....	173.0	201.9	245	2.3	1.6
Electric lamps.....	31.4	38.6	45	2.4	1.3
Lighting fixtures current-carrying wiring devices.....	58.4	64.8	75	1.7	1.2
Noncurrent-carrying wiring devices.....	83.3	98.5	125	2.7	2.0
Radio and television receiving sets, except communication types.....	133.4	153.4	180	2.0	1.3
Communication equipment.....	416.8	522.9	580	2.2	0.9
Telephone and telegraph apparatus.....	115.6	130.6	130	0.8	.....
Radio and television transmitting, signaling, and detection equipment and apparatus.....	301.1	392.3	450	2.7	1.1
Electronic components and accessories.....	307.1	388.0	505	3.4	2.2
Radio and television receiving type electronic tubes, except cathode ray transmitting, industrial, and special purpose electronic tubes.....	61.5	74.7	60	-0.1	-1.8
Semiconductors and related devices electronics and accessories, not elsewhere classified.....	245.5	313.2	445	4.0	3.0
Miscellaneous electrical machinery, equipment and supplies.....	101.4	120.8	130	1.7	0.6
Electrical equipment for internal combustion engines.....	55.4	66.5	65	1.1	-0.2
Transportation equipment.....	1,740.6	2,028.4	2,010	1.0	.....
Motor vehicles and equipment.....	842.7	869.6	900	0.4	0.3
Aircraft and parts.....	624.2	849.5	760	1.3	-0.9
Aircraft.....	333.3	492.9	410	1.4	-1.6
Aircraft engines and engine parts.....	187.9	213.5	220	1.1	0.2
Other aircraft parts and equipment.....	103.1	143.1	130	1.6	-0.9
Ship and boat building and repairing.....	160.2	181.2	205	1.7	1.0
Shipbuilding and repairing.....	128.9	141.1	165	1.7	1.3
Boat building and repairing.....	31.2	40.0	40	1.7	.....
Railroad equipment.....	56.2	47.1	50	-0.8	0.5
All other transportation equipment.....	57.3	81.1	95	3.4	1.4
Instruments and related products.....	389.0	459.9	550	2.3	1.5
Photographic equipment and supplies.....	84.1	107.7	150	3.9	2.8
Watches and clocks.....	31.9	34.8	40	1.5	1.2
All other instruments and related products.....	273.0	317.3	360	1.9	1.1
Miscellaneous manufacturing industries.....	419.5	434.6	485	1.0	0.9
Jewelry, silverware, and plated ware.....	45.7	51.7	50	0.6	-0.3
Toys, amusement, and sporting goods.....	116.7	120.2	165	2.3	2.7
Costume jewelry, buttons, manufacturing.....	56.4	60.7	55	-0.2	-0.8
All other miscellaneous manufacturing.....	200.7	202.0	215	0.5	0.5
Nondurable goods manufacturing.....	7,656.0	8,144.0	8,920	1.0	0.8
Food and kindred products.....	1,756.7	1,780.8	1,755	0.2	-0.1
Meat products.....	318.4	332.9	330	-1.7	.....
Dairy products.....	285.8	259.9	220	1.0	-1.4
Canned and preserved food, except meats.....	260.2	277.9	300	-0.1	0.6
Grain mill products.....	126.9	133.5	125	-0.8	-0.6
Bakery products.....	287.4	278.7	255	1.5	-0.7
Sugar.....	36.2	37.5	45	.....	1.5
Confectionery and related products.....	77.2	83.4	70	-0.7	-1.5
Beverages.....	221.5	233.3	265	1.3	1.1
Miscellaneous food and kindred products.....	143.2	143.6	145	.....	.....
Tobacco manufacturers.....	86.8	83.8	65	-1.9	-2.1
Cigarettes.....	38.6	40.9	35	-0.7	-1.3
Cigars.....	24.2	20.4	15	-3.2	-2.6
All other tobacco manufacturers.....	24.0	22.5	15	-3.2	-3.4
Textile mill products.....	925.6	990.6	925	.....	-0.6
Knitting.....	229.1	246.4	255	0.7	0.3
Finishing textiles, except knitting.....	76.9	82.0	80	0.3	-0.2
Yarn and thread.....	109.2	120.7	108	.....	-0.9
All other textile mill products.....	510.5	541.6	482	-0.4	-1.0
Apparel and related products.....	1,354.2	1,407.9	1,700	1.5	1.6
Men's and boys' suits and coats.....	119.3	131.4	155	1.8	1.4
Men's and boys' furnishings.....	351.9	365.5	475	2.0	2.2
Women's, misses' and juniors' outerwear.....	417.1	424.5	525	1.5	1.8
Women's and children's undergarments.....	120.8	125.7	135	0.7	0.6
Girls' and children's outerwear.....	78.4	79.8	85	0.5	0.5
All other apparel and related products.....	266.8	280.9	325	1.3	1.2
Paper and allied products.....	639.1	692.5	800	1.5	1.2
Converted paper and paper board products.....	159.6	179.6	245	2.9	2.6
Paperboard containers and boxes.....	199.6	222.3	245	1.4	0.8
All other paper and allied products.....	280.0	290.5	310	0.7	0.5
Printing, publishing, and allied industries.....	979.4	1,063.1	1,240	1.6	1.3
Newspaper publishing and printing.....	345.4	357.5	365	0.4	0.2
Periodical publishing and printing.....	69.7	77.0	75	0.5	-0.2
Books.....	81.3	95.0	150	4.2	3.9
Commercial printing.....	309.3	338.6	390	1.6	1.2
All other printing and publishing.....	173.7	195.1	260	2.7	2.4

Table A-22. Wage and salary employment, by detailed industry, 1965, 1968, and projected 1980—Continued
 [In thousands]

Industry	1965	1968	Projected ¹ 1980	Average annual rate of change	
				1965-80	1968-80
Chemicals and allied products.....	907.8	1,026.1	1,185	1.8	1.2
Industrial inorganic and organic chemicals.....	290.1	314.2	345	1.0	-0.8
Alkalies and chlorine.....	24.0	25.8	25	0.3	-0.3
Industrial gases, cyclic crudes, and pigments.....	² 60.6	66.0	80	1.9	1.6
Industrial organic chemicals, not elsewhere classified.....	112.7	126.6	135	1.2	0.5
Industrial inorganic chemicals, not elsewhere classified.....	92.8	95.8	105	0.8	0.8
Plastic materials and synthetic resins, synthetic rubber, synthetic and other man-made fibers except glass.....	193.7	215.6	275	2.4	2.1
Plastics materials, synthetic resins, and (non-vulcanizable elastomers).....	84.0	92.4	115	2.1	1.8
Cellulosic man-made fibers, except cellulosic.....	96.6	109.3	140	2.5	2.1
Drugs.....	118.1	136.5	185	3.0	2.6
Pharmaceutical preparations.....	87.4	105.6	145	3.4	2.7
Soap, detergents, and cleaning preparations, perfumes, cosmetics and other toilet preparations.....	105.6	116.8	150	2.4	2.1
Soap, and other detergents, except specialty cleaners.....	38.4	39.8	50	1.8	1.9
Perfumes, cosmetics, and the other toilet products.....	38.2	47.5	60	3.1	2.0
Paints, varnishes, lacquers, enamels, and allied products.....	66.3	69.7	75	0.8	0.6
Agricultural chemicals.....	53.2	56.3	70	1.8	1.8
Fertilizers, complete and mixing only.....	39.7	39.4	50	1.5	2.0
Gum and wood and other chemicals.....	80.8	116.9	85	0.3	-2.7
Petroleum refining and related industries.....	182.9	187.0	155	-1.1	-1.6
Petroleum refining.....	148.1	150.5	115	-1.7	-2.3
All other petroleum and coal products.....	34.8	36.4	40	0.9	0.8
Rubber and miscellaneous plastics products.....	470.8	557.1	760	3.2	2.6
Tires and innertubes.....	101.8	113.5	105	0.2	-0.7
Other rubber products.....	171.6	182.8	215	1.5	1.4
Miscellaneous plastic products.....	197.5	260.8	440	5.4	4.5
Leather and leather products.....	352.9	355.5	335	-0.3	-0.5
Leather tanning and finishing.....	31.6	30.7	25	-1.6	-1.7
Footwear, except rubber.....	234.5	233.4	225	-0.3	-0.3
All other leather products.....	86.8	91.4	85	-0.1	-0.6
Transportation, communication and public utilities.....	4,036.0	4,313.0	4,740	1.1	0.8
Transportation.....	2,531.5	2,674.5	2,900	0.9	0.7
Railroad transportation.....	735.3	661.9	500	-2.6	-2.4
Local and interurban passenger transportation.....	268.8	281.5	295	0.6	0.4
Local and suburban passenger transportation.....	82.5	82.0	85	0.2	0.3
Taxicabs.....	109.5	110.7	105	-0.3	-0.4
Intercity and rural highway passenger transportation.....	41.8	43.1	60	2.4	2.8
Motor freight transportation and warehousing.....	963.5	1,046.1	1,235	1.7	1.4
Trucking.....	881.5	961.2	1,145	1.8	1.5
Warehousing.....	82.0	84.8	90	0.6	0.5
Transportation by air.....	229.0	328.8	480	5.1	3.2
Air transportation, common carrier.....	205.9	297.3	440	5.2	3.3
Pipeline transportation.....	19.5	18.8	15	-1.7	-1.9
Water transportation and transportation services, not elsewhere classified.....	315.4	337.4	375	1.2	0.8
Communication.....	880.8	985.6	1,130	1.7	1.1
Telephone communication.....	735.2	816.5	935	1.7	1.1
Telegraph communication.....	31.8	32.8	25	-1.6	-2.3
Radio and television broadcasting.....	106.9	123.0	160	2.7	2.2
Electric, gas, and sanitary services.....	623.4	652.9	710	0.9	0.7
Electric companies and systems.....	253.0	268.1	290	0.9	0.7
Gas companies and systems.....	153.6	158.3	165	0.5	0.3
Combined utility systems.....	176.5	180.2	185	0.3	0.2
Water, steam, and sanitary systems.....	40.4	46.2	70	3.7	3.5
Wholesale and retail trade.....	12,716.0	14,081.0	17,625	2.2	1.9
Wholesale trade.....	3,312.0	3,618.0	4,600	2.3	2.0
Motor vehicles and automotive equipment.....	255.3	288.9	400	3.0	2.8
Drugs, chemicals, and allied products.....	198.0	221.1	275	2.2	1.8
Dry goods and apparel.....	139.4	146.4	185	1.9	2.0
Apparel and accessories stores.....	640.2	695.6	730	0.9	0.4
Furniture and appliance stores.....	409.6	434.1	500	1.3	1.2
Eating and drinking places.....	1,987.9	2,296.4	2,900	2.6	2.0
Miscellaneous retail stores.....	1,060.3	1,165.1	1,400	1.9	1.5
Drug stores.....	401.0	432.2	550	2.1	2.0
Farm and general supply stores and fuel and ice dealers and other miscellaneous retail stores.....	² 659.3	² 732.9	850	1.7	1.2
Groceries and related products.....	510.7	534.4	555	0.6	0.3
Electrical goods, hardware and plumbing and heating equipment.....	406.1	453.7	625	2.9	2.7
Machinery, equipment and supplies.....	579.4	698.2	1,010	3.8	3.1
Farm products, raw materials and miscellaneous.....	² 1,223.1	² 1,275.3	1,550	1.6	1.6
Retail trade.....	9,404.0	10,464.0	13,025	2.3	1.8
Building materials and hardware.....	539.3	535.6	535		
General merchandise stores.....	1,873.4	2,168.6	2,895	2.9	2.4
Limited price variety stores.....	312.7	314.1	335	0.5	0.5
Department stores, mail order houses, merchandise vending machine operators and miscellaneous general merchandise stores.....	² 1,560.7	² 1,854.5	2,560	3.4	2.7
Food stores.....	1,468.6	1,622.5	2,035	2.2	1.9
Auto dealers and service stations.....	1,424.2	1,545.4	2,030	2.4	2.3
Motor vehicle and other vehicle and accessory dealers.....	902.3	959.8	1,300	2.5	2.6
Gasoline service stations.....	521.9	585.6	730	2.3	-1.9
Finance, insurance and real estate.....	3,023.0	3,383.0	4,260	2.3	1.9
Finance.....	1,250.7	1,456.4	1,920	2.9	2.3
Banking.....	792.0	915.4	1,220	2.9	2.4
Credit agencies other than banks.....	326.9	350.6	500	2.9	3.0
Security and commodity brokers, dealers exchange and services.....	131.8	190.4	200	2.8	0.4

Table A-22. Wage and salary employment, by detailed industry, 1965, 1968, and projected 1980—Continued

[In thousands]

Industry	1965	1968	Projected ¹ 1980	Average annual rate of change	
				1965-80	1968-80
Insurance carriers and insurance agents brokers and services.....	1, 126. 2	1, 240. 4	1, 525	2. 0	1. 7
Insurance carriers.....	893. 4	985. 2	1, 200	2. 0	1. 7
Insurance agents, brokers, and services.....	232. 8	255. 2	325	2. 2	2. 0
Real estate, combinations of real estate, insurance, loans, law offices, and holding and other investment companies.....	648. 0	685. 7	815	1. 5	1. 5
Real estate.....	568. 9	608. 6	730	1. 7	1. 5
Combinations of real estate, insurance, loans, law offices, and holding and other investment companies.....	79. 1	77. 1	85	0. 5	0. 8
Services and miscellaneous.....	9, 087. 0	10, 592. 0	16, 090	3. 9	3. 5
Hotels, rooming houses, camps and other lodging places.....	659. 1	719. 4	1, 025	3. 0	3. 0
Hotels, tourist courts, and motels.....	584. 2	645. 3	940	3. 2	3. 2
Other lodging places.....	² 74. 9	² 74. 1	85	0. 8	1. 1
Personal services.....	985. 4	1, 031. 3	1, 370	2. 2	2. 4
Laundries, laundry services and cleaning and dyeing plants.....	548. 4	548. 0	650	1. 1	1. 4
Miscellaneous business services.....	1, 109. 1	1, 398. 0	2, 910	6. 6	6. 3
Advertising.....	112. 5	117. 1	135	1. 2	1. 2
Consumer credit reporting and collection agencies.....	65. 7	72. 3	100	2. 8	2. 7
Motion pictures.....	185. 1	196. 8	225	1. 3	1. 1
Motion picture filming and distributing.....	48. 5	52. 6	70	2. 5	2. 4
Motion picture theaters and services.....	136. 6	144. 3	155	0. 8	0. 6
Medical and other health services.....	2, 079. 5	2, 637. 7	4, 325	5. 0	4. 2
Hospitals.....	1, 356. 5	1, 653. 9	2, 525	4. 2	3. 6
Legal services.....	181. 5	207. 7	325	4. 0	3. 8
Educational services.....	924. 6	1, 065. 9	1, 515	3. 3	3. 0
Elementary and secondary schools (private).....	315. 6	359. 4	460	2. 5	2. 1
Higher educational services (private).....	544. 3	618. 8	895	3. 4	3. 2
Miscellaneous services.....	449. 0	574. 1	900	4. 7	3. 8
Engineering and architectural services.....	242. 4	287. 3	500	4. 9	4. 9
Government.....	10, 091. 0	11, 846. 0	16, 800	3. 5	3. 0
Federal government.....	2, 378. 0	2, 737. 0	3, 000	1. 6	0. 8
Executive.....	2, 346. 7	2, 701. 9	2, 955	1. 5	0. 8
Department of Defense.....	938. 5	1, 107. 1	928	-----	-1. 5
Post Office Department.....	614. 2	723. 5	935	2. 8	2. 2
Other agencies.....	793. 9	871. 4	1, 095	2. 2	1. 9
Legislative.....	25. 4	28. 1	35	2. 2	1. 8
Judicial.....	5. 9	6. 6	10	3. 6	3. 5
State and local government.....	7, 714. 0	9, 109. 0	13, 800	4. 0	3. 5
State and local education.....	3, 799. 0	4, 693. 6	7, 600	4. 7	4. 1
Other State and local government.....	3, 914. 5	4, 415. 5	6, 200	3. 1	2. 9
State government.....	1, 995. 9	2, 448. 8	3, 500	3. 8	3. 0
State education.....	679. 1	958. 0	1, 400	4. 9	3. 2
Other State government.....	1, 316. 8	1, 490. 8	2, 100	3. 2	2. 9
Local government.....	5, 717. 6	6, 660. 3	10, 300	4. 0	3. 7
Local education.....	3, 119. 9	3, 735. 6	6, 200	4. 7	4. 3
Other local government.....	2, 597. 7	2, 924. 7	4, 100	3. 1	2. 9

¹ Services economy, 3-percent unemployment.

² Annual average data are not published for this industry classification. The figure was obtained by subtracting the sum of employment in individual industries for which data are published from total published employment in the major industry group.

Note: Sum of individual items may not add to totals either because of rounding or because data are not presented for all industries.

Table A-23. Comparison of BLS employment data with total labor force 1960, 1968, and projected 1980

[In thousands]

	1960	1968	1980
Labor force (population 16 and over).....	72,142	82,272	100,727
Less: Size of Armed Forces.....	2,514	3,535	2,700
Civilian labor force.....	69,628	78,737	98,027
Less: Unemployment (3 percent of civilian labor force for projected years).....	3,852	2,817	2,941
Civilian employment.....	¹ 65,776	¹ 75,920	95,086
Less: Census agricultural employment ²	5,458	3,817	3,000
Less: Census self employed ³	6,367	5,102	6,000
Mining.....	35	18	20
Contract construction.....	758	664	760
Manufacturing.....	383	254	310
Transportation, communications and public utilities.....	221	192	200
Trade.....	2,443	1,606	1,785
Finance, insurance and real estate.....	317	261	355
Services.....	2,210	2,107	2,570
Less: Nonagricultural unpaid family workers.....	615	484	700
Less: Wage and salary, private household workers.....	2,265	1,916	2,150
Total census nonagricultural wage and salary workers.....	51,071	64,601	83,236
BLS Nonagricultural wage and salary number of jobs.....	⁴ 54,234	⁴ 67,860	86,600
BLS Government.....	8,353	11,846	16,800
BLS Nonagricultural private.....	45,881	56,015	69,800
Difference between BLS nonagricultural number of jobs and census nonagricultural wage and salary employment.....	3,163	3,259	3,364

¹ As reported by the U.S. Bureau of the Census in the Monthly Report on the Labor Force.

² Includes agricultural services.

³ Data for 1968 and 1980 reflect a change in method of counting self-employed workers.

(See *Employment and Earnings and Monthly Report of the Labor Force*, Vol. 13, No. 8, February 1967, p. 7.)

⁴ As reported in the BLS survey of establishments.

Note: Sum of individual items may not add to totals due to rounding.

Table A-24. Employment by major occupational group, 1968 and projected 1980 requirements

[In thousands]

Occupational group	1968 employment		Projected 1980 requirements		Change 1968-80	
	Number	Percent	Number	Percent	Number	Percent
Total.....	75,920	100.0	95,100	100.0	19,180	25.0
White-collar workers	35,551	46.8	48,300	50.8	12,749	35.9
Professional and technical.....	10,325	13.6	15,500	16.3	5,175	50.1
Managers, officials, and proprietors.....	7,776	10.2	9,500	10.0	1,724	22.2
Clerical workers.....	12,803	16.9	17,300	18.2	4,497	35.1
Sales workers.....	4,647	6.1	6,000	6.3	1,353	29.1
Blue-collar workers	27,525	36.3	31,100	32.7	3,575	13.0
Craftsmen and foremen.....	10,015	13.2	12,200	12.8	2,185	21.8
Operatives.....	13,955	18.4	15,400	16.2	1,445	10.4
Nonfarm laborers.....	3,555	4.7	3,500	3.7	-55	-1.5
Service workers	9,381	12.4	13,100	13.8	3,719	39.6
Farm workers	3,464	4.6	2,600	2.7	-864	-33.2

Table A-25. Employment and average annual openings in selected occupations, 1968 and projected 1980 requirements

Occupations	Employment 1968	Requirements 1980	Percent change 1968-80	Average annual openings 1968-80 ²	Occupations	Employment 1968	Requirements 1980	Percent change 1968-80	Average annual openings 1968-80 ²
Total	75,920,000	95,100,000	25	3,990,000	SALES WORKERS—Continued				
PROFESSIONAL, TECHNICAL AND RELATED WORKERS	10,325,000	15,500,000	50	777,000	Retail trade salesworkers.....	2,800,000	3,460,000	24	150,000
Business administration and related professions					Security salesmen.....	135,000	170,000	24	7,400
Accountant.....	500,000	720,000	43	33,000	Wholesale trade salesworkers.....	530,000	695,000	30	25,200
Personnel worker.....	110,000	155,000	43	6,900	CRAFTSMEN, FOREMEN AND KINDRED WORKERS	10,015,000	12,200,000	22	396,000
Public relations worker.....	100,000	165,000	64	8,800	Building trades				
Engineering	1,100,000	1,500,000	40	53,000	Bricklayers.....	175,000	230,000	31	7,600
Health service occupations					Carpenters.....	869,000	1,075,000	24	39,300
Dentist.....	100,000	130,000	30	4,900	Electricians (maintenance and construction).....	430,000	575,000	34	20,400
Dental hygienist.....	16,000	33,500	109	2,400	Excavating, grading and road machinery operators.....	285,000	425,000	49	16,200
Medical laboratory workers.....	100,000	190,000	90	12,800	Painters and paperhangers.....	430,000	560,000	30	23,200
Physician (M.D.'s and D.O.'s).....	307,000	469,000	53	20,800	Plumbers and pipefitters ³	330,000	475,000	44	19,500
Radiologic technologist.....	75,000	120,000	60	7,300	Mechanics and repairmen				
Registered nurse.....	660,000	1,000,000	52	65,000	Air conditioning, refrigeration and heating mechanics.....	100,000	140,000	40	5,000
Speech pathologist and audiologist.....	18,000	33,000	83	2,300	Airplane mechanics.....	135,000	230,000	70	9,700
Natural scientists					Appliance servicemen.....	205,000	260,000	27	8,600
Chemist.....	130,000	200,000	56	8,800	Business machine servicemen.....	115,000	200,000	74	8,500
Physicist.....	45,000	75,000	64	3,200	Industrial machinery repairmen.....	175,000	220,000	26	7,550
Life scientist.....	170,000	245,000	41	9,900	Motor vehicle mechanics.....	825,000	1,000,000	21	26,500
Oceanographer.....	5,200	9,700	85	500	Television and radio service technicians.....	125,000	145,000	16	3,000
Teachers					Printing				
Elementary school teachers.....	1,230,000	1,270,000	3.3	56,300	Compositors and type-setters ⁴	190,000	180,000	-5	3,200
Secondary school teachers.....	940,000	1,065,000	14	40,000	OPERATIVES	13,955,000	15,400,000	10	426,000
College and university teachers.....	286,000	395,000	38	17,000	Driving Occupations				
Technician occupations					Local truckdrivers.....	1,200,000	1,450,000	22	37,000
Engineering and science.....	620,000	890,000	43	31,000	Over-the-road truckdrivers.....	640,000	800,000	25	21,600
Draftsmen.....	295,000	435,000	48	15,300	Other manual occupations				
Other professional and related workers					Assemblers.....	785,000	850,000	8	26,000
Lawyer.....	270,000	335,000	23	14,500	Gasoline service station attendants.....	400,000	475,000	16	10,900
Librarians.....	106,000	135,000	29	8,200	Inspectors (manufacturing).....	585,000	635,000	9	19,200
Mathematician.....	65,000	110,000	60	4,600	Welders and oxygen and arc cutters.....	480,000	675,000	41	23,000
Pilot and copilot.....	52,000	114,000	117	1,800	NONFARM LABORERS	3,555,000	3,500,000	-2	60,000
Programmer.....	175,000	400,000	129	23,000	SERVICE WORKERS	9,381,000	13,100,000	40	752,000
Social worker.....	160,000	270,000	67	16,700	Private household workers.....	1,700,000	1,980,000		121,000
Systems analyst.....	150,000	425,000	183	27,000	Food service workers				
MANAGERS, OFFICIALS AND PROPRIETORS	7,776,000	9,500,000	22	380,000	Cooks and chefs.....	670,000	900,000	33	48,000
CLERICAL WORKERS	12,803,000	17,300,000	35	911,000	Waiters and waitresses.....	960,000	1,240,000	28	67,000
Bank clerks.....	400,000	512,000	29	29,500	Health service workers				
Bank tellers.....	230,000	337,000	46	20,000	Hospital attendants.....	800,000	1,500,000	88	100,000
Bookkeeping workers.....	1,200,000	1,500,000	19	78,000	Licensed practical nurses.....	320,000	600,000	88	48,000
Cashiers.....	730,000	1,110,000	51	69,000	Personal service workers				
Dental assistant.....	100,000	150,000	50	9,000	Barbers.....	210,000	260,000	24	12,800
Electronic computer operating personnel.....	175,000	400,000	129	20,400	Cosmetologists.....	475,000	685,000	43	38,000
Office machine operators.....	325,000	460,000	39	25,000	Protective service workers				
Receptionists.....	240,000	400,000	66	30,000	Firefighters.....	180,000	245,000	34	7,700
Shipping and receiving clerks.....	370,000	465,000	25	15,400	Municipal police officers.....	285,000	360,000	28	15,000
Stenographers and secretaries.....	2,650,000	3,650,000	37	237,000	Other service workers				
Telephone operators.....	400,000	480,000	21	28,000	Building custodians.....	1,100,000	1,460,000	33	80,000
Typists.....	700,000	930,000	37	63,000	FARM WORKERS	3,464,000	2,600,000	-33	25,000
SALES WORKERS	4,647,000	6,000,000	29	263,000					
Automobile salesmen.....	120,000	145,000	21	4,400					
Insurance agents and brokers.....	410,000	480,000	17	16,200					
Manufacturers' salesmen.....	500,000	735,000	47	32,000					
Real estate salesmen and brokers.....	225,000	270,000	20	14,200					

¹ Includes medical technologist, technician, and assistant-
² Growth and replacement openings; does not include transfers.
³ Also called—operating engineer (construction machinery operations).

⁴ Also called—composing room occupations.
 Note: Percent increase based on unrounded estimates.

Table A-26. Occupations that are expected to grow rapidly during the 1970's

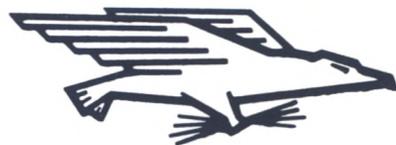
Occupation	Employment		Average annual rate of change, 1968-80
	1968	Projected 1980	
Systems analyst.....	150,000	425,000	9.1
Programmer.....	175,000	400,000	7.1
Electronic computer operator personnel.....	175,000	400,000	7.1
Pilot and copilot.....	52,000	114,000	6.7
Dental hygienist.....	16,000	33,500	6.4
Business machine serviceman.....	115,000	225,000	5.8
Medical laboratory worker.....	100,000	190,000	5.5
Hospital attendant.....	800,000	1,500,000	5.4
Licensed practical nurse.....	320,000	600,000	5.4
Oceanographer.....	5,200	9,700	5.3
Speech pathologist and audiologist.....	18,000	33,000	5.2

Table A-27. Occupations that are expected to grow slowly during the 1970's

Occupation	Employment		Average annual rate of change, 1968-80
	1968	Projected 1980	
Insurance agents and brokers.....	410,000	480,000	1.3
Gasoline service station attendants.....	400,000	475,000	1.2
TV and radio service technicians.....	125,000	145,000	1.2
Carpenters.....	869,000	1,075,000	2.2
Inspectors (manufacturing).....	585,000	635,000	0.7
Assemblers.....	785,000	850,000	-0.7
Elementary school teachers.....	1,230,000	1,270,000	0.3
Nonfarm laborers.....	3,555,000	3,500,000	-0.1
Compositors and typesetters.....	190,000	180,000	-0.5
Farm workers.....	3,464,000	2,600,000	-3.4

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