

USE OF CENSUS OCCUPATIONAL
DATA FOR PLANNING WAR PROGRAM.

By

Barry Casper.

USE OF CENSUS OCCUPATIONAL DATA FOR PLANNING WAR PROGRAMS

By Barry Casper
Occupational Analyst, Population Division
Bureau of the Census

(Reprinted from DOMESTIC COMMERCE, Vol. 30, No. 17, Oct. 22, 1942)

Occupational skills represent one of the most vital resources of a nation at war. This is especially true of the present war in which machines have assumed a dominant role as instruments of warfare. Workers in factories producing these machines, and those behind the scene of actual combat who are servicing them, may well be considered as effective in winning battles in the present war as were the front-line soldiers of previous wars.

Need for Centralized Data

Nations which would successfully wage a modern war must mobilize all of their resources and direct all of their efforts toward victory. Modern war is total war. And total war requires total planning. Total planning includes centralized records of the nation's supply of occupational skills, to insure that maximum use is being made of them, to indicate the limits that present supply might set to production programs, and to measure the size and kind of increments to present supply that are necessary to meet the requirements of present and future programs.

An over-all inventory of occupational skills which are needed for the war production program and for the actual fighting program is essential to agencies concerned with the centralized planning of these programs. Occupational data being published from the 1940 Census of Population will go far toward meeting the need for such an inventory. It might be assumed that occupational data for March 1940 no longer reflect the present situation accurately enough to be of any significant use, but such an assumption is far from correct with respect to many occupations that are most vital to the present production program.

Two Types of Labor Shortages

The vast increase in activities concerned with supplying war needs has created two types of labor shortages. One type of shortage, of unskilled and semiskilled workers for mass-production war industries, can be met either by transfer or workers from nonessential to essential industries, or by bringing new workers into the labor force. In either case, a relatively short training period will provide the required degree of skill.

The other type of shortage, of skilled craftsmen and professional workers, is more difficult to meet because of the time that is usually required to develop the requisite degree of skill. Because the time since March 1940 has been insufficient to add significantly to the number of journeymen craftsmen who were then available in certain skilled occupations, 1940 Census data on these occupations still provide useful measure of the present supply.

Questions Confronting Agencies

Agencies concerned with centralized planning of war programs are confronted with the following questions pertaining to the supply of labor in each essential skilled occupation in which shortages have developed:

1. How many persons are there in the United States who possess this skill? (As an indication of present over-all limitations to war programs which require this skill, and as a measure of the extent to which the present supply needs to be increased if such programs are to be expanded beyond these limitations.)
2. Where are the persons who possess this skill? (As an aid to recruitment.)

3. In which industries are such persons employed? (As an indication of the number who can be made available from nonessential industries.)

4. What are their age and marital status distributions? (As an aid in the determination of Selective Service policy with respect to occupational deferment, and as a measure of the extent to which military needs for persons with this skill would be met by alternative deferment policies.)

What the Statistics Show

Occupational statistics being published from the 1940 Census will assist materially in answering these questions. Tabulations which are of special interest in this connection include:

- A. The number of males and females who were employed during the week of March 24-30, 1940, in each of 451 occupations, for the United States, for each State, and for each city of 100,000 or more.
- B. The "usual" occupations of all males and females in the United States.
- C. Age distributions of employed persons and of experienced persons seeking work, by occupation and sex, for the United States, for each State, and for each city of 100,000 or more.
- D. Marital status by age of employed males and of experienced male workers seeking work, by occupation, for the United States and for each of four regions.
- E. An industrial distribution (132 industries) of males employed in each of 116 occupation groups and of females employed in each of 52 occupation groups, for the United States.

Possibilities of Occupational Classifications

The most detailed occupation classification used for the 1940 Census includes 451 items. This classification is being used only to present current occupations of employed workers, except those on public emer-

gency work, and usual occupations of public emergency workers and experienced persons seeking work. For the presentation of cross classifications with other characteristics (age, marital status, and so on), standard intermediate lists of 167 occupations, for males, and 76 occupations, for females, are being used. While this degree of detail may not be sufficiently refined for some administrative purposes, it should be adequate for many planning functions.

In the most detailed classifications, the major occupation group, craftsmen, foremen, and kindred workers, is subdivided into 76 occupation classifications, including such war-essential groups as machinists; millwrights; tool makers, and die makers and setters; boilermakers; mechanics and repairmen, airplanes; molders, metal; opticians and lens grinders and polishers; pattern and model makers, except paper; structural and ornamental metalworkers; and tinsmiths, coppersmiths, and sheet-metal workers.

The major occupation group, professional and semiprofessional workers, is subdivided into 45 classifications, including such essential groups as architects; chemists, assayers, and metallurgists; dentists; civil engineers; electrical engineers; mechanical engineers; chemical engineers; industrial engineers; mining and metallurgical engineers; pharmacists; physicians and surgeons; trained nurses and student nurses; designers; draftsmen; surveyors; aviators; and radio and wireless operators.

In the intermediate lists, some of these individual classifications are combined. For example, in the intermediate list of 167 occupations for males, the three classifications, machinists, millwrights, and tool makers and die makers and setters, have been combined into a single group, machinists, millwrights, and tool makers.

Possible Uses for Data

To illustrate possible uses of 1940 Census occupational data for centralized war planning, answers to some of the questions raised earlier are presented below in terms of selected preliminary 1940 Census data being published for the occupation group, machinists,

millwrights, and tool makers. (Corresponding data are also being published for many other war-essential occupations.)¹

1. Total number. In the United States as a whole, there were 656,066 males who reported that they possessed skill as journeymen machinists, millwrights, and tool makers. (In addition, there were 13,505 employed male machinists' apprentices, many of whom undoubtedly have acquired journeymen skill since March 1940.)

Of these 656,066 machinists, and so on, 604,606 were employed in this occupation group on private or nonemergency government work during the week of March 24-30, 1940, while 38,340 were seeking work, and 13,020 were assigned to public emergency work projects but reported this as their usual occupation.

Of the total of 656,066 in this group, 516,169 were machinists, 43,426 were millwrights, and 96,471 were tool makers, and die makers and setters.

In addition to the 656,066 who reported themselves as machinists and so on, there undoubtedly were many additional persons who possessed similar skills but were employed in other occupations.

2. Geographic location. More than three-fourths of the 604,706 employed male machinists, millwrights, and tool makers, resided in three highly industrialized geographic divisions: East North Central, Middle Atlantic, and New England. More than one-half resided in five States: Michigan (10.9 percent); New York (10.5 percent); Ohio (10.3 percent); Pennsylvania (9.7 percent); and Illinois (9.0 percent). More than two-fifths were located in the 92 cities with a population of 100,000 or more. More than one-fifth lived in nine of these cities: Detroit, Mich. (31,407); Chicago, Ill. (28,305); New

¹ Statistics presented in the following sections on the total number of employed machinists, millwrights, and tool makers (except those on public emergency work), and on their geographic and age distributions, are preliminary and may be changed slightly when final figures become available. Statistics on public emergency workers and experienced persons seeking work, whose usual occupations were as machinists and so on, and figures on the industrial distribution of employed persons, who reported this as their current occupation, are preliminary data based on a tabulation of a 5-percent cross section multiplied uniformly by 20, and also are subject to slight change.

York, N. Y. (23,669); Philadelphia, Pa. (14,631); Cleveland, Ohio (13,028); Milwaukee, Wis. (8,033); Los Angeles, Calif. (6,046); Baltimore, Md. (5,484); and Buffalo, N. Y. (5,205).

3. Industrial distribution. More than two-thirds of the total number of employed machinists, millwrights, and tool makers were concentrated in 9 of the 132 industries in the Population Census classification as follows: Miscellaneous machinery (144,860); miscellaneous iron and steel manufacturing (62,460); automobile manufacturing (59,340); railroads (43,000); blast furnaces, steel works, and rolling mills (31,720); electrical machinery (27,840); shipbuilding (16,860); aircraft manufacturing (15,500); and agricultural machinery (14,120).

4. Age distribution. The median age of the employed machinists, millwrights, and tool makers was 40.7 years. One-third of them were 20 to 34 years old--the age range which is likely to supply most of the men required by our armed forces. More than one-fourth (27.3 percent) were 35 to 44 years old.

In addition to the 604,706 who were employed during the census week, there were 33,793 males seeking work whose last occupation was in the group, machinists, and so on. Most of these have, presumably, found employment since 1940 in this shortage occupation. These men, with a median age of 42.9 years, were somewhat older than those who were employed. Almost one-third (31.6 percent) were 20 to 34 years old and one-fifth were 35 to 44 years old.

Such information on age distributions, supplemented by the analyses being made of data on the occupational questionnaires of Selective Service registrants (in which occupation will be cross classified with dependency status) will assist materially in evaluating the effect of alternative policies with respect to occupational deferment.

The rapid transformation of our peacetime economy in connection with the war program has changed considerably the geographic and industrial distributions of many occupations. Nevertheless, 1940 Census statistics should be extremely useful as general guides to agencies concerned with the conservation of human skill, which it is so difficult to replace or increase in a short period of time.