

# OCCUPATIONS OF ACTIVE AIRMEN

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The opinions and conclusions contained in this report are those of the author and should not be construed as reflecting the views or endorsement of the Federal Aviation Administration.

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# OCCUPATIONS OF ACTIVE AIRMEN

## I. Introduction.

Data concerning occupational prevalence in the active airman<sup>1</sup> population has been a subject of interest to the agency and the aviation community for some time. The prevalence of certain occupations, aeronautical and other, in the active airman population has been the subject of much conjecture as regards the economic characteristics of the "average" general aviation airman, the primary type of flying engaged in by general aviation, i.e., business or pleasure, the status of aeronautical occupation manpower, and the impact of Federal Aid programs for aviation instruction and subsequent development of aeronautical occupation manpower.

Analysis of general aviation accident experience with respect to selected professional categories has been the subject of intensive review during recent years and promises to be an area of continuing interest in the identification of factors related to accident proneness.<sup>2</sup>

This study is an effort to quantify occupational prevalence in the active airman population according to the broad categories utilized by the Bureau of the Census expanded somewhat by the requirements of this study. Occupational characteristics of the active airman population are compared to the occupational characteristics of the general population of the United States. Data are provided reflecting the primary type of flying engaged in by active airmen.

These data, although broad in scope, provide valuable insight with respect to the several areas of interest mentioned above.

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<sup>1</sup>A medically certified airman is considered "active" for a maximum of 25 months after his last FAA physical examination, i.e., regardless of the class of medical certificate issued, it is valid for third class purposes for a period of time up to 25 months.

<sup>2</sup>*Physician Flight Accidents*, AM 66-25, September 1966, by S. R. Mohler, S. F. Freud, J. E. Veregge, and E. L. Umberger.

## II. Methodology.

A. *The Problem Statement.* The estimation of occupational prevalence in the active airman population reduces to a multinominal sampling problem involving the estimation of population parameters for the following major occupation groups.<sup>3</sup>

1. Professional, technical and kindred workers, except aeronautical.
2. Farmers and farm managers.
3. Managers, officials, and proprietors, except farm.
4. Clerical and kindred workers.
5. Sales workers.
6. Craftsmen, foremen, and kindred workers.
7. Operatives and kindred workers.
8. Private household workers.
9. Service workers, except private household.
10. Farm laborers and foremen.
11. Laborers, except farm and mine.
12. Students.
13. Housewives.
14. Unknown, retired, or none.
15. Aeronautical occupations (civilian).

B. *Methods and Source Data.* A systematic sampling procedure was utilized to extract sample members from the active airman population as defined by the Aeromedical Certification tape file as of July 1, 1968, and the fact that the airman was issued a medical certificate within the past 25 months.<sup>4</sup>

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<sup>3</sup>Bureau of the Census major occupation groups expanded to include students, housewives, and to break out civilian aeronautical occupations.

<sup>4</sup>The Aeromedical Certification active master tape file contains the most recent record of an airman's medical application for certification. This tape includes applications issued, pending, denied, and short records of significant pathologies (link record) retained for future reference in the event the airman decides to again exercise his flying privileges. The latter is the only instance wherein a record is maintained on the Active Master Tape for a period greater than 3 years.

From a population of 662,867 certified active airmen, 9,379 airman records were selected and extracted from the magnetic tape file for estimation of the proportions in the fifteen major occupation groups. Sample size was dictated by desired accuracy and the need to assure an appropriate usable error rate for the smaller proportions expected in some of the occupation groups. A previous study has indicated that class of medical certification issued is not indicative of occupational affiliation to the extent that stratification of the sample would be required.<sup>5</sup> The population was, therefore, treated as homogeneous with respect to sampling technique and the variable being measured.

Occupations are classified by the Bureau of the Census, according to a system of 296 occupation categories. An occupation category consists of a group of related occupation titles which, in effect, define a particular field of work. The 296 categories are arranged and reported by the first eleven major groups outlined in II.A (plus a classification for "Occupation Not Reported").<sup>6</sup>

The most recent applications submitted by the 9,379 sample members were researched to obtain occupation and employer data as provided by the airman in items 10 and 12 of the FAA Form 8500-8, "Application for Airman Medical Certificate or Airman Medical and Student Pilot Certificate".<sup>7</sup> Responses by the airman were classified into one of the 15 major occupation groups by reference to the *Alphabetical Index of Occupations and Industries—Bureau of the Census*.

Previous applications were referenced in some instances when the occupational classification was not obvious from the most recent application or when the item was omitted by the airman in the completion of the most recent application.

Primary type of flying (business or pleasure) was also obtained for each sample member from his response to item 14 of the FAA Form 8500-8.

<sup>5</sup> *Usage of Combined Airman Certification by Active Airmen: An Active Airman Population Estimate*, AM 68-5, by C. F. Booze, Jr.

<sup>6</sup> *Alphabetical Index of Occupations and Industries*, Revised Edition, 1960 Census of Population, Bureau of the Census. Reference Appendix B for specific occupation categories included in the first 11 major occupation groups.

<sup>7</sup> The original application is maintained by the Aero-medical Certification Branch for a minimum of 3 years.

Four responses were possible: (1) Business, (2) Pleasure, (3) Business and Pleasure, or (4) Not Indicated.<sup>8</sup>

Certain limitations are inherent in this approach to estimating the occupational classifications in the population. First, given the time frame defined by the study, the classification is static and reflects only the occupational data available from the most recent application received from the airman. The data provided on the most recent application may be up to 25 months old and, therefore, does not reflect "occupational mobility". Secondly, there is a natural tendency on the part of an individual to ascribe a more sophisticated title to his occupational affiliation when responding to any question dealing with his occupation. This tendency is partially accounted for by the *Alphabetical Index of Occupations and Industries*; however, no information is available to cross-check the "occupation" response, a characteristic usually built into a questionnaire designed specifically to measure such a response, e.g., description of duties, responsibilities, number of persons supervised, etc.

As in most samples, nonresponse is a problem, however, not to the extent normally associated with a typical questionnaire sample directed to members of the population. As mentioned previously, when relevant data elements were omitted from source material, some recourse was available by reference to previous applications. No attempt was made to assign a classification other than "Unknown" to those few for which no data could be reasonably derived by methods previously described.

Reference to Appendix A is recommended for a further detailed discussion of statistical methodology applied in this study.

### III. Findings and Discussion.

A. *Sample Results.* Analysis and classification of the 9,379 sample members resulted in the summary of occupational prevalence for the sample shown in Table I.

As indicated in the footnote to Table I, the "professional, technical and kindred group, except aeronautical" included 150 physicians and

<sup>8</sup> Air Traffic Controllers were classified separately for "type of flying" and included in a category "ATC Duties".

Table I  
OCCUPATIONS OF SAMPLE MEMBERS

Major Occupation Groups	Sample Frequency	Percent*
1. Professional, technical, and kindred workers, except aeronautical**-----	1,721	18.35
2. Farmers and farm managers---	229	2.44
3. Managers, officials, and proprietors, except farm-----	1,155	12.31
4. Clerical and kindred workers---	258	2.75
5. Sales workers-----	556	5.93
6. Craftsmen, foremen, and kindred workers***-----	2,158	23.01
7. Operatives and kindred workers-----	368	3.92
8. Private household workers-----	0	.00
9. Service workers, except private household-----	165	1.76
10. Farm laborers and foremen---	4	.04
11. Laborers, except farm and mine-----	54	.58
12. Students-----	910	9.70
13. Housewives-----	123	1.31
14. Unknown, retired, or none---	531	5.66
15. Aeronautical occupations (civilian)-----	1,147	12.23
TOTAL-----	9,379	99.99+

\*Confidence intervals for the major occupation groups are provided in Appendix A (Table V).

\*\*Group 1 includes 150 physicians and dentists.

\*\*\*Group 6 includes 1,218 members of the armed forces (374 military pilots; 844 others).

+Less than 100 percent due to rounding.

Source: Civil Aeromedical Institute, Aeromedical Certification Branch, Medical Statistical Section.

dentists (1.6%). The *Alphabetical Index of Occupations and Industries* classifies members of the armed forces, regardless of occupational specialty, under the major group of "craftsmen, foremen, and kindred workers". The sample included 1,218 members of the armed forces, 374 military pilots and 844 in other military occupational specialties (101 of the 844 were military air traffic controllers).

Civilian airmen classified in "aeronautical occupations," to include pilots, co-pilots, flight engineers, flight navigators, air traffic controllers, and flight instructors, totaled 1,147 or 12.2 percent. Addition of the 374 military pilots and 101 military air traffic controllers results in a total of 1,622 or 17.3 percent of the active airman

population classified in military or civilian aeronautical occupations.

Type of flying engaged in by sample members was as shown in Table II.

Table II  
TYPE OF FLYING BY SAMPLE MEMBERS

Type of Flying	Sample Frequency	Percent
Business-----	2,231	23.8
Pleasure-----	6,008	64.0
Business and Pleasure-----	456	4.9
Not Indicated-----	387	4.1
ATC Duties-----	297	3.2
TOTAL-----	9,379	100.0

Source: Civil Aeromedical Institute, Aeromedical Certification Branch, Medical Statistical Section.

Exclusion of those military and civilian sample members occupationally connected with aviation would leave approximately 15 percent from all other occupational categories who expressed interest in flying in connection with business activity, ("Business"—2,231; "Business and Pleasure"—456; and "ATC Duties"—297, less 1,622 military and civilian airmen in aeronautical occupations, leaves 1,362 or 14.5%).

B. *Current Population Estimates by Occupation.*<sup>9</sup> Extrapolation of sample results to the current active airman population as of January 1, 1969, is presented in Table III.

C. *Occupational Comparison of Active Airmen and United States Populations.* Modification of Table I is necessary in order to compare occupational prevalence in the active airman population with available data for the United States population. The last four groups of Table I are excluded for comparison purposes since summary data for the United States is in terms of employed persons and since the "aeronautical" oc-

<sup>9</sup>The reader is reminded that the precision of any estimate from a sample depends on statistical methodology and "sampling error" as defined in the sampling plan. Such estimates should thus be viewed as point estimates within an acceptable range of accuracy. Reference Appendix A for a further discussion of desired accuracy and confidence intervals. Further reference concerning "point estimates" is provided in Chapter 1 of *Statistical Methods* by George W. Snedecor.

**Table III**  
**CURRENT POPULATION ESTIMATES BY**  
**OCCUPATION**  
**January 1, 1969**

Major Occupation Groups	Estimated Population Frequency
1. Professional, technical, and kindred workers, except aeronautical.....	125,541
2. Farmers and farm managers.....	16,704
3. Managers, officials, and proprietors, except farm.....	84,250
4. Clerical and kindred workers.....	18,819
5. Sales workers.....	40,557
6. Craftsmen, foremen, and kindred workers.....	157,414
7. Operatives and kindred workers.....	26,843
8. Private household workers.....	0
9. Service workers, except private household.....	12,035
10. Farm laborers and foremen.....	292
11. Laborers, except farm and mine.....	3,939
12. Students.....	66,379
13. Housewives.....	8,972
14. Unknown, retired, or none.....	38,734
15. Aeronautical occupations (civilian).....	83,667
<b>TOTAL.....</b>	<b>684,146</b>

Source: Civil Aeromedical Institute, Aeromedical Certification Branch, Medical Statistical Section.

cupation group is normally classified under "professional and technical workers," (see Table IV).

Predominance of "White Collar Workers" in the active airman population is obvious from Table IV. A considerable change in the percent distribution for "White Collar Workers" is apparent when civilian aeronautical occupations are excluded from Group 1. The exclusion of military aeronautical occupations from Group 6 does not have the same effect. "White Collar Workers" plus Craftsmen and Foremen from the "Blue Collar Workers" category make up 85-90 percent of the total active airman population regardless of whether "aeronautical occupations" are excluded. With the exception that White and Blue Collar Workers also comprise the majority of the United States population, comparisons of individual groups reflect considerable difference.

**Table IV**  
**OCCUPATIONAL COMPARISON OF ACTIVE**  
**AIRMEN AND UNITED STATES POPULATIONS**  
**BY PERCENT**

Major Occupation Group	Total Active Airman Popula- tion*	1967 United States Popula- tion**	Active Airman Popula- tion less Aero- nautical Occupa- tions***
	(1)	(2)	(3)
White Collar Workers.....	61.9	48.8	59.6
Professional and technical workers.....	36.7	14.0	27.8
Managers, officials, and proprietors.....	14.8	11.0	18.6
Clerical workers.....	3.3	17.2	4.2
Sales workers.....	7.1	6.6	9.0
Blue Collar Workers.....	33.0	36.0	34.0
Craftsmen and foremen.....	27.6	13.9	27.2
Operatives.....	4.7	18.1	5.9
Nonfarm laborers.....	0.7	4.0	0.9
Service Workers.....	2.1	10.5	2.7
Private household workers.....	0.0	1.4	0.0
Other service workers.....	2.1	9.1	2.7
Farm Workers.....	2.9	4.7	3.7
Farmers and farm managers.....	2.9	2.8	3.7
Farm laborers.....	0.0+	1.9	0.0+
<b>TOTAL.....</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

\*Obtained by merging Group 15 with Group 1 and re-computing the percent distribution based on the new total realized by subtraction of nonemployed Groups 12, 13, and 14 from 9,379. (9,379-910-123-531=7,815).

\*\*United States population data was obtained from the 1968 Statistical Abstract of the United States, Table No. 325, pp 226.

\*\*\*Obtained by subtracting civil and military aeronautical occupations in Groups 1 and 6 respectively from column 1 and re-computation of percent distribution based on the adjusted total of 6,193.

Source: Civil Aeromedical Institute, Aeromedical Certification Branch, Medical Statistical Section.

#### IV. Summary.

The preceding analysis has served to grossly quantify occupational prevalence in the active



airman population. The relative importance of the major groups "Craftsmen and Foremen" and "Students" is the most apparent deviation from empirical expectations.

Three major groups comprise approximately 80 percent of the active airman population when nonemployed categories are excluded (see Table IV). In order of relative importance they are:

Professional and Technical Workers; Craftsmen and Foremen; and Managers, Officials and Proprietors. The same three groups account for approximately 75 percent when "aeronautical occupations" are excluded. Approximately 15 percent of all airmen in nonaeronautical categories expressed a business motivation for their interest in flying.



## APPENDIX A

### Statistical Methodology

#### I. General.

As mentioned in the introductory remarks, the sampling problem in this study amounted to an estimation of  $\hat{\pi}_i$  for 15 major occupation groups via determination of  $p_i$  where  $p_i = \frac{n_i}{n}$  and  $n_i$  denotes the observed frequencies in a major occupation group from a sample size of  $n$ . Estimates of  $\hat{\pi}_i$  for the 15 parameters provided the basis for the extrapolation of estimates for  $\hat{N}_i$  from the population  $N$ , where  $N_i$  is the population equivalent of  $n_i$ .

#### II. The Multinomial Estimation Model.

The following definitive relationships exist with respect to the study:

$$n = n_1 + n_2 + n_3 + \dots + n_{15}$$

Where,

$n_1$  = The observed frequency of sample members classified as professional, technical, and kindred workers, except aeronautical.

$n_2$  = The observed frequency of sample members classified as farmers and farm managers.

$n_3$  = The observed frequency of sample members classified as managers, officials, and proprietors, except farm.

$n_4$  = The observed frequency of sample members classified as clerical and kindred workers.

$n_5$  = The observed frequency of sample members classified as sales workers.

$n_6$  = The observed frequency of sample members classified as craftsmen, foremen, and kindred workers.

$n_7$  = The observed frequency of sample members classified as operative and kindred workers.

$n_8$  = The observed frequency of sample members classified as private household workers.

$n_9$  = The observed frequency of sample members classified as service workers, except private household.

$n_{10}$  = The observed frequency of sample members classified as farm laborers and foremen.

$n_{11}$  = The observed frequency of sample members classified as laborers, except farm and mine.

$n_{12}$  = The observed frequency of sample members classified as students.

$n_{13}$  = The observed frequency of sample members classified as housewives.

$n_{14}$  = The observed frequency of sample members classified as unknown, retired, or none.

$n_{15}$  = The observed frequency of sample members classified as aeronautical occupation (civilian).

Therefore,

$$p_i = \frac{n_i}{n} = \hat{\pi}_i \quad (i=1, 2, \dots, 15)$$

And,

$$\hat{N}_i = \hat{\pi}_i (N) \quad (i=1, 2, \dots, 15)$$

#### III. Sample Size.

Extracting from multinomial sampling theory as presented by Quesenberry and Hurst (1964)<sup>10</sup> and Goodman (1965)<sup>11</sup>, sample size was arrived at as follows:

$$(p_i - \pi_i)^2 = A \pi_i (1 - \pi_i) / n \quad (i=1, 2, \dots, 15)$$

<sup>10</sup> Quesenberry, C. P., and Hurst, D. C. 1964. Large sample simultaneous confidence intervals for multinomial proportions. *Technometrics*, 6, 191-5.

<sup>11</sup> Goodman, Leo A., On Simultaneous Confidence Intervals for Multinomial Proportions, *Technometrics*, Vol. 7, No. 2, May 1965.

Where,  $p_i = n_i/n$  and  $A$  equals the upper  $\alpha \times 100$ th percentile of the chi-square distribution with 14 degrees of freedom.

Therefore,

$$n = \frac{A \pi_i (1 - \pi_i)}{(p_i - \pi_i)^2}$$

Or substituting,

$$n = \frac{A p_i (1 - p_i)}{(p_i - \pi_i)^2}$$

Assuring adequate sample size for  $p_i = 0.01$  with a sampling error of  $\pm 0.005$  and  $\alpha = 0.05$  yields,

$$n = \frac{23.685 (0.01) (0.99)}{(0.005)^2}$$

$$n = \frac{23.685 (0.0099)}{0.000025}$$

$$n = \frac{0.2344815}{0.000025}$$

$$n = 9,379.26 \text{ or } 9,379$$

This sample size results in a sampling error of  $\pm 0.0251$  (2.51%) when  $p_i = 0.50$ .

$$\begin{aligned} \hat{\pi}_i &= p_i \pm \left[ \frac{A p_i (1 - p_i)}{n} \right]^{1/2} \\ &= 0.50 \pm \left[ \frac{23.685 (0.50) (1 - 0.50)}{9,379} \right]^{1/2} \\ &= 0.50 \pm \left[ \frac{23.685 (0.25)}{9,379} \right]^{1/2} \\ &= 0.50 \pm \left[ \frac{5.92125}{9,379} \right]^{1/2} \\ &= 0.50 \pm [0.00063]^{1/2} \\ &= 0.50 \pm 0.0251 \end{aligned}$$

The decision was made to assure an appropriate, usable error rate at the smaller  $p_i$ . This choice defines an increasing absolute error rate as the sample  $p_i$  increases but a decreasing relative error rate as sample  $p_i$  increases. The 2.51% sample error at  $p_i = 0.50$  is acceptable for purposes of this study.

#### IV. Sample Design.

Following a scheme of systematic sampling, every  $k$ th item was selected as dictated by the sample size and the population size.

Therefore,

$$k = \frac{N}{n} = \frac{662,867}{9,379} = 70.68 \text{ or } 70$$

From a table of random numbers, a starting point of 63 was selected within the interval 1-70.

Hence, starting with the 63rd certified active airman record on the tape file, every 70th record was selected for the sample, i.e., 63, 133, 203, 273, etc.

A systematic sampling plan was utilized in view of the economies to be realized in sampling from a sequential tape file, particularly since there is no reason to suspect the introduction of bias in this instance due to the alphabetic arrangement of the tape file.<sup>12</sup>

#### V. Confidence Interval for the $\pi_i$ .

Utilizing the formula,

$$\hat{\pi}_i \pm p_i \pm \left[ \frac{A p_i (1 - p_i)}{n} \right]^{1/2}$$

confidence intervals for the  $\pi_i$  ( $i=1, 2, \dots, 15$ ) are as follows:

Table V

#### CONFIDENCE INTERVALS FOR THE MAJOR OCCUPATION GROUP PROPORTIONS

Major Occupation Group	$\hat{\pi}_i -$	$\hat{\pi}_i$	$\hat{\pi}_i +$
1. Professional, technical, and kindred workers, except aeronautical.....	.1641	.1835	.2029
2. Farmers and farm managers.....	.0166	.0244	.0322
3. Managers, officials, and proprietors, except farm....	.1066	.1231	.1396
4. Clerical and kindred workers.....	.0193	.0275	.0357
5. Sales workers.....	.0474	.0593	.0712
6. Craftsmen, foremen, and kindred workers.....	.2089	.2301	.2513
7. Operatives and kindred workers.....	.0294	.0392	.0490
8. Private household workers.....	.0000	.0000	.0000
9. Service workers, except private household.....	.0110	.0176	.0242
10. Farm laborers and foremen.....	.0000	.0004	.0014
11. Laborers, except farm and mine.....	.0020	.0058	.0096
12. Students.....	.0829	.0978	.1127
13. Housewives.....	.0074	.0131	.0188
14. Unknown, retired, or none.....	.0450	.0566	.0682
15. Aeronautical occupations (civilian).....	.1058	.1223	.1388

Source: Civil Aeromedical Institute, Aeromedical Certification Branch, Medical Statistical Section.

<sup>12</sup> Cochran, W. G., (1953), *Sampling Techniques*; John Wiley and Sons, New York, Second Edition, Chapter 8.

## APPENDIX B

### Occupation Groups

#### 1. *Professional, Technical, and Kindred Workers*

Accountants and auditors  
 Actors and actresses  
 Architects  
 Artists and art teachers  
 Athletes  
 Authors  
 Chemists  
 Chiropractors  
 Clergymen  
 College presidents, professors, and instructors (not elsewhere classified)  
 College presidents and deans  
 Professors and instructors, agricultural sciences  
 Professors and instructors, biological sciences  
 Professors and instructors, chemistry  
 Professors and instructors, economics  
 Professors and instructors, engineering  
 Professors and instructors, geology and geophysics  
 Professors and instructors, mathematics  
 Professors and instructors, medical sciences  
 Professors and instructors, physics  
 Professors and instructors, psychology  
 Professors and instructors, statistics  
 Professors and instructors, natural sciences (not elsewhere classified)  
 Professors and instructors, social sciences (not elsewhere classified)  
 Professors and instructors, nonscientific subjects  
 Professors and instructors, subject not specified  
 Dancers and dancing teachers  
 Dentists  
 Designers  
 Dietitians and nutritionists  
 Draftsmen  
 Editors and reporters  
 Engineers, aeronautical  
 Engineers, chemical  
 Engineers, civil  
 Engineers, electrical  
 Engineers, industrial  
 Engineers, mechanical  
 Engineers, metallurgical, and metallurgists  
 Engineers, mining  
 Engineers, sales  
 Engineers (not elsewhere classified)  
 Entertainers (not elsewhere classified)  
 Farm and home management advisors  
 Foresters and conservationists  
 Funeral directors and embalmers

Lawyers and judges  
 Librarians  
 Musicians and music teachers  
 Natural scientists (not elsewhere classified)  
 Agricultural scientists  
 Biological scientists  
 Geologists and geophysicists  
 Mathematicians  
 Physicists  
 Miscellaneous natural scientists  
 Nurses, professional  
 Nurses, student professional  
 Optometrists  
 Osteopaths  
 Personnel and labor relations workers  
 Pharmacists  
 Photographers  
 Physicians and surgeons  
 Public relations men and publicity writers  
 Radio operators  
 Recreation and group workers  
 Religious workers  
 Social and welfare workers, except group  
 Social scientists  
 Economists  
 Psychologists  
 Statisticians and actuaries  
 Miscellaneous social scientists  
 Sports instructors and officials  
 Surveyors  
 Teachers, elementary schools  
 Teachers, secondary schools  
 Teachers (not elsewhere classified)  
 Technicians, medical and dental  
 Technicians, electrical and electronic  
 Technicians, other engineering and physical sciences  
 Technicians (not elsewhere classified)  
 Therapists and healers (not elsewhere classified)  
 Veterinarians  
 Professional, technical, and kindred workers (not elsewhere classified)

#### 2. *Farmers and Farm Managers*

Farmers (owners and tenants)  
 Farm managers

#### 3. *Managers, Officials, and Proprietors, Except Farm*

Buyers and department heads, store  
 Buyers and shippers, farm products

- Conductors, railroad
  - Credit men
  - Floor men and floor managers, store
  - Inspectors, public administration
  - Managers and superintendents, building
  - Officers, pilots, pursers, and engineers, ship
  - Officials and administrators (not elsewhere classified), public administration
  - Officials, lodge, society, union, etc.
  - Postmasters
  - Purchasing agents and buyers (not elsewhere classified)
  - Managers, officials, proprietors (not elsewhere classified)
4. *Clerical and Kindred Workers*
- Agents (not elsewhere classified)
  - Attendants and assistants, library
  - Attendants, physician's and dentist's office
  - Baggagemen, transportation
  - Bank tellers
  - Bookkeepers
  - Cashiers
  - Collectors, bill and account
  - Dispatchers and starters, vehicle
  - Express messengers and railway mail clerks
  - File clerks
  - Insurance adjusters, examiners, and investigators
  - Mail carriers
  - Messengers and office boys
  - Office machine operators
  - Payroll and timekeeping clerks
  - Postal clerks
  - Receptionists
  - Secretaries
  - Shipping and receiving clerks
  - Stenographers
  - Stock clerks and storekeepers
  - Telegraph messengers
  - Telegraph operators
  - Telephone operators
  - Ticket, station, and express agents
  - Typists
  - Clerical and kindred workers (not elsewhere classified)
5. *Sales Workers*
- Advertising agents and salesmen
  - Auctioneers
  - Demonstrators
  - Hucksters and peddlers
  - Insurance agents, brokers, and underwriters
  - Newsboys
  - Real estate agents and brokers
  - Stock and bond salesmen
  - Salesmen and sales clerks (not elsewhere classified)
6. *Craftsmen, Foremen, and Kindred Workers*
- Bakers
  - Blacksmiths
  - Boilermakers
  - Bookbinders
  - Brickmasons, stonemasons, and tile setters
  - Cabinetmakers
  - Carpenters
  - Cement and concrete finishers
  - Compositors and typesetters
  - Cranemen, derrickmen, and hoistmen
  - Decorators and window dressers
  - Electricians
  - Electrotypers and stereotypers
  - Engravers, except photoengravers
  - Excavating, grading, and road machinery operators
  - Foremen (not elsewhere classified)
  - Forgemen and hammermen
  - Furriers
  - Glaziers
  - Heat treaters, annealers, and temperers
  - Inspectors, scalers, and graders, log and lumber
  - Inspectors (not elsewhere classified)
  - Jewelers, watchmakers, goldsmiths, and silversmiths
  - Job setters, metal
  - Linemen and servicemen, telegraph, telephone, and power
  - Locomotive engineers
  - Locomotive firemen
  - Loom fixers
  - Machinists
  - Mechanics and repairmen, air conditioning, heating, and refrigeration
  - Mechanics and repairmen, airplane
  - Mechanics and repairmen, automobile
  - Mechanics and repairmen, office machine
  - Mechanics and repairmen, radio and television
  - Mechanics and repairmen, railroad and car shop
  - Mechanics and repairmen (not elsewhere classified)
  - Millers, grain, flour, feed, etc.
  - Millwrights
  - Molders, metal
  - Motion picture projectionists
  - Opticians, and lens grinders and polishers
  - Painters, construction and maintenance
  - Paperhangers
  - Pattern and model makers, except paper
  - Photoengravers and lithographers
  - Piano and organ tuners and repairmen
  - Plasterers
  - Plumbers and pipe fitters
  - Pressmen and plate printers, printing
  - Rollers and roll hands, metal
  - Roofers and slaters
  - Shoemakers and repairers, except factory
  - Stationary engineers
  - Stone cutters and stone carvers
  - Structural metal workers
  - Tailors and tailoresses
  - Tinsmiths, coppersmiths, and sheet metal workers
  - Toolmakers, and die makers and setters
  - Upholsterers

Craftsmen and kindred workers (not elsewhere classified)

Members of the armed forces

7. *Operatives and Kindred Workers*

Apprentice auto mechanics  
Apprentice bricklayers and masons  
Apprentice carpenters  
Apprentice electricians  
Apprentice machinists and toolmakers  
Apprentice mechanics, except auto  
Apprentice plumbers and pipe fitters  
Apprentices, building trades (not elsewhere classified)  
Apprentices, metalworking trades (not elsewhere classified)  
Apprentices, printing trades  
Apprentices, other specified trades  
Apprentices, trade not specified  
Asbestos and insulation workers  
Assemblers  
Attendants, auto service and parking  
Blasters and powdermen  
Boatmen, canalmen, and lock keepers  
Brakemen, railroad  
Bus drivers  
Chairmen, rodmen, and axmen, surveying  
Checkers, examiners, and inspectors, manufacturing  
Conductors, bus and street railway  
Deliverymen and routemen  
Dressmakers and seamstresses, except factory  
Dyers  
Filers, grinders, and polishers, metal  
Fruit, nut, and vegetable graders and packers, except factory  
Furnacemen, smeltermen, and pourers  
Graders and sorters, manufacturing  
Heaters, metal  
Knitters, loopers, and toppers, textile  
Laundry and dry cleaning operatives  
Meat cutters, except slaughter and packing house  
Milliners  
Mine operatives and laborers (not elsewhere classified)  
Motormen, mine, factory, logging camp, etc.  
Motormen, street, subway, and elevated railway  
Oilers and greasers, except auto  
Packers and wrappers (not elsewhere classified)  
Painters, except construction and maintenance  
Photographic process workers  
Power station operators  
Sailors and deck hands  
Sawyers  
Sewers and stitchers, manufacturing  
Spinners, textile  
Stationary firemen  
Switchmen, railroad  
Taxicab drivers and chauffeurs  
Truck and tractor drivers  
Weavers, textile  
Welders and flame-cutters

Operatives and kindred workers (not elsewhere classified)

8. *Private Household Workers*

Baby sitters, private household  
Housekeepers, private household  
Laundresses, private household  
Private household workers (not elsewhere classified)

9. *Service Workers, Except Private Household*

Attendants, hospital and other institutions  
Attendants, professional and personal service (not elsewhere classified)  
Attendants, recreation and amusement  
Barbers  
Bartenders  
Bootblacks  
Boarding and lodging house keepers  
Chambermaids and maids, except private household  
Charwomen and cleaners  
Cooks, except private household  
Counter and fountain workers  
Elevator operators  
Hairdressers and cosmetologists  
Housekeepers and stewards, except private household  
Janitors and sextons  
Kitchen workers (not elsewhere classified), except private household  
Midwives  
Porters  
Practical nurses  
Protective service workers  
Firemen, fire protection  
Guards, watchmen, doorkeepers  
Marshals and constables  
Policemen and detectives  
Sheriffs and bailiffs  
Watchmen (crossing) and bridge tenders  
Ushers, recreation and amusement  
Waiters and waitresses  
Service workers, except private household (not elsewhere classified)

10. *Farm Laborers and Foremen*

Farm foremen  
Farm laborers, wage workers  
Farm laborers, unpaid family workers  
Farm service laborers, self-employed

11. *Laborers, Except Farm and Mine*

Carpenters' helpers, except logging and mining  
Fishermen and oystermen  
Garage laborers, and car washers and greasers  
Gardeners, except farm, and groundkeepers  
Longshoremen and stevedores  
Lumbermen, raftsmen, and woodchoppers  
Teamsters  
Truck drivers' helpers  
Warehousemen (not elsewhere classified)  
Laborers (not elsewhere classified)

12. *Students*

Highschool students  
College or university students

13. *Housewives*

Housewives  
Homemakers

14. *Unknown, Retired, or None*

Occupation not given  
Occupation unclassifiable  
Retired  
Unemployed

15. *Aeronautical Occupation—(Civilian)*

Pilot, scheduled and non-scheduled airlines only (includes captain, co-pilot, second officer, etc.)

Flight engineer

Flight navigator and flight radio operator

Business or executive pilot

Commercial pilot, self-employed

Commercial pilot, not self-employed

Aero application (agriculture)

Air Traffic Controller

Flight instructor