OCCUPATIONS OF ACTIVE AIRMEN

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July 1969

Department of Transportation
FEDERAL AVIATION ADMINISTRATION
Office of Aviation Medicine
ACKNOWLEDGMENT

This study is from the Civil Aeromedical Institute, Medical Statistical Section, Federal Aviation Administration, Oklahoma City, Oklahoma.

The author wishes to express his gratitude to Robert C. Duncan, Ph.D., of the University of Oklahoma Medical Center, for his comments and suggestions. Appreciation is also extended to Theodore Dalbow, Shirley Dark, and Judy Toberman for their assistance in data accumulation and preparation of this study.

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\(^1\) 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.\(^2\)

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.

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.\(^3\)

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.
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.\(^4\)

---

\(^{1}\)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.


\(^{3}\)Bureau of the Census major occupation groups expanded to include students, housewives, and to break out civilian aeronautical occupations.

\(^{4}\)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. 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”).

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.” 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.

Four responses were possible: (1) Business, (2) Pleasure, (3) Business and Pleasure, or (4) Not Indicated.

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.

1 Usage of Combined Airman Certification by Active Airman: An Active Airman Population Estimate, AM 68-5, by C. F. Booze, Jr.
3 The original application is maintained by the Aeromedical Certification Branch for a minimum of 3 years.

*Air Traffic Controllers were classified separately for “type of flying” and included in a category “ATC Duties”.

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

OCCUPATIONS OF SAMPLE MEMBERS

<table>
<thead>
<tr>
<th>Major Occupation Groups</th>
<th>Sample</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Professional, technical, and kindred workers, except aeronautical**</td>
<td>1,721</td>
<td>18.35</td>
</tr>
<tr>
<td>2. Farmers and farm managers</td>
<td>229</td>
<td>2.44</td>
</tr>
<tr>
<td>3. Managers, officials, and proprietors, except farm</td>
<td>1,155</td>
<td>12.31</td>
</tr>
<tr>
<td>4. Clerical and kindred workers</td>
<td>258</td>
<td>2.75</td>
</tr>
<tr>
<td>5. Sales workers</td>
<td>556</td>
<td>5.93</td>
</tr>
<tr>
<td>6. Craftsmen, foremen, and kindred workers***</td>
<td>2,158</td>
<td>23.01</td>
</tr>
<tr>
<td>7. Operatives and kindred workers</td>
<td>368</td>
<td>3.92</td>
</tr>
<tr>
<td>8. Private household workers</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>9. Service workers, except private household</td>
<td>165</td>
<td>1.76</td>
</tr>
<tr>
<td>10. Farm laborers and foremen</td>
<td>4</td>
<td>0.04</td>
</tr>
<tr>
<td>11. Laborers, except farm and mine</td>
<td>54</td>
<td>0.58</td>
</tr>
<tr>
<td>12. Students</td>
<td>910</td>
<td>9.70</td>
</tr>
<tr>
<td>13. Housewives</td>
<td>123</td>
<td>1.31</td>
</tr>
<tr>
<td>14. Unknown, retired, or none</td>
<td>531</td>
<td>5.66</td>
</tr>
<tr>
<td>15. Aeronautical occupations (civilian)</td>
<td>1,147</td>
<td>12.23</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>9,379</td>
<td>99.99+</td>
</tr>
</tbody>
</table>

*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.

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. 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-

*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

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

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

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

<table>
<thead>
<tr>
<th>Major Occupation Group</th>
<th>Total Active Airmen Population*</th>
<th>1967 United States Population**</th>
<th>Active Airmen Population less Aeronautical Occupations***</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>White Collar Workers</td>
<td>61.9</td>
<td>48.8</td>
<td>59.6</td>
</tr>
<tr>
<td>Professional and technical workers</td>
<td>36.7</td>
<td>14.0</td>
<td>27.8</td>
</tr>
<tr>
<td>Managers, officials, and proprietors</td>
<td>14.8</td>
<td>11.0</td>
<td>18.6</td>
</tr>
<tr>
<td>Clerical workers</td>
<td>3.3</td>
<td>17.2</td>
<td>4.2</td>
</tr>
<tr>
<td>Sales workers</td>
<td>7.1</td>
<td>6.6</td>
<td>0.0</td>
</tr>
<tr>
<td>Blue Collar Workers</td>
<td>33.0</td>
<td>36.0</td>
<td>34.0</td>
</tr>
<tr>
<td>Craftsmen and foremen</td>
<td>27.6</td>
<td>13.9</td>
<td>27.2</td>
</tr>
<tr>
<td>Operatives</td>
<td>4.7</td>
<td>18.1</td>
<td>5.9</td>
</tr>
<tr>
<td>Nonfarm laborers</td>
<td>0.7</td>
<td>4.0</td>
<td>0.9</td>
</tr>
<tr>
<td>Service Workers</td>
<td>2.1</td>
<td>10.5</td>
<td>2.7</td>
</tr>
<tr>
<td>Private household workers</td>
<td>0.0</td>
<td>1.4</td>
<td>0.0</td>
</tr>
<tr>
<td>Other service workers</td>
<td>2.1</td>
<td>9.1</td>
<td>2.7</td>
</tr>
<tr>
<td>Farm Workers</td>
<td>2.9</td>
<td>4.7</td>
<td>3.7</td>
</tr>
<tr>
<td>Farmers and farm managers</td>
<td>2.9</td>
<td>2.8</td>
<td>3.7</td>
</tr>
<tr>
<td>Farm laborers</td>
<td>0.0</td>
<td>1.9</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

*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 \( N_i \), 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:

\[
n = n_1 + n_2 + n_3 + \ldots n_{15}
\]

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,

\[
p_i = \frac{n_i}{n} = \hat{\pi}_i \quad (i = 1, 2, \ldots, 15)
\]

And,

\[
\hat{N}_i = \hat{\pi}_i \cdot N \quad (i = 1, 2, \ldots, 15)
\]

III. Sample Size.

Extracting from multinomial sampling theory as presented by Queneneberry and Hurst (1964)\(^a\) and Goodman (1965)\(^b\), sample size was arrived at as follows:

\[
(p_i - \pi_i)^2 = \frac{A \cdot \pi_i (1 - \pi_i)}{n} \quad (i = 1, 2, \ldots, 15)
\]

---

\(^a\) Queneneberry, C. P., and Hurst, D. C. 1964. Large sample simultaneous confidence intervals for multinomial proportions. Technometrics, 6, 191-5.

Where, \( p_1 = \frac{n_1}{n} \) and \( \Lambda \) equals the upper \( \alpha \times 100 \text{th} \) percentile of the chi-square distribution with 14 degrees of freedom.

Therefore,
\[
n = \frac{\Lambda \; \pi_1 \; (1-\pi_1)}{(p_1-\pi_1)^2}
\]

Or substituting,
\[
n = \frac{\Lambda \; p_1 \; (1-p_1)}{(p_1-\pi_1)^2}
\]

Assuring adequate sample size for \( p_1 = 0.01 \) with a sampling error of \( \pm 0.005 \) and \( \alpha = 0.05 \) yields,
\[
n = \frac{23.685 \; (0.01) \; (0.99)}{(0.005)^2} = \frac{23.685 \; (0.0099)}{0.0000025} = \frac{23.685 \; (0.0099)}{23.685 \; (0.0099)} = \frac{0.2344815}{0.0000025} = 9,379.26 \text{ or } 9,379
\]

This sample size results in a sampling error of \( \pm 0.025 \) (2.11\%) when \( p_1 = 0.50 \).
\[
\hat{\pi}_1 = p_1 \pm \left[ \frac{\Lambda \; p_1 \; (1-p_1)}{n} \right]^{\frac{1}{2}}
\]
\[
= 0.50 \pm \left[ \frac{23.685 \; (0.50) \; (1-0.50)}{9,379} \right]^{\frac{1}{2}}
\]
\[
= 0.50 \pm \left[ \frac{23.685 \; (0.25)}{9,379} \right]^{\frac{1}{2}}
\]
\[
= 0.50 \pm \left[ \frac{5.92125}{9,379} \right]^{\frac{1}{2}}
\]
\[
= 0.50 \pm \left[ \frac{0.00063}{9,379} \right]^{\frac{1}{2}}
\]
\[
= 0.50 \pm 0.0251
\]

The decision was made to assure an appropriate, usable error rate at the smaller \( p_1 \). This choice defines an increasing absolute error rate as the sample \( p_1 \) increases but a decreasing relative error rate as sample \( p_1 \) increases. The 2.51% sample error at \( p_1 = 0.50 \) 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.\(^2\)

V. Confidence Interval for the \( \pi_1 \).

Utilizing the formula,
\[
\hat{\pi}_i \pm = p_i \pm \left[ \frac{\Lambda \; p_i \; (1-p_i)}{n} \right]^{\frac{1}{2}}
\]

confidence intervals for the \( \pi_1 \) (i=1, 2, \ldots 15) are as follows:

Table V

<table>
<thead>
<tr>
<th>Major Occupation Group</th>
<th>( \hat{\pi}_1^- )</th>
<th>( \hat{\pi}_1^+ )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Professional, technical, and kindred workers, except aeronautical</td>
<td>.1641</td>
<td>.1835</td>
</tr>
<tr>
<td>2. Farmers and farm managers</td>
<td>.0166</td>
<td>.0244</td>
</tr>
<tr>
<td>3. Managers, officials, and proprietors, except farm</td>
<td>.1066</td>
<td>.1321</td>
</tr>
<tr>
<td>4. Clerical and kindred workers</td>
<td>.0193</td>
<td>.0275</td>
</tr>
<tr>
<td>5. Sales workers</td>
<td>.0474</td>
<td>.0593</td>
</tr>
<tr>
<td>6. Craftsmen, foremen, and kindred workers</td>
<td>.2089</td>
<td>.2301</td>
</tr>
<tr>
<td>7. Operatives and kindred workers</td>
<td>.0294</td>
<td>.0392</td>
</tr>
<tr>
<td>8. Private household workers</td>
<td>.0000</td>
<td>.0000</td>
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<td>9. Service workers, except private household</td>
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<td>10. Farm laborers and foremen</td>
<td>.0000</td>
<td>.0004</td>
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<td>11. Laborers, except farm and mine</td>
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<td>12. Students</td>
<td>.0829</td>
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<td>13. Housewives</td>
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<td>14. Unknown, retired, or none</td>
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<td>15. Aeronautical occupations (civilian)</td>
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</table>

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, nonscience 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
Baggage men, 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
   Fileers, grinders, and polishers, metal
   Fruit, nut, and vegetable graders and packers, except factory
   Furnacemen, smeltermen, and pourers
   Graders and sorters, manufacturing
   Heaters, metal
   Knitters, looper, 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
   Sawyer
   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