

OCCUPATIONAL MORTALITY IN WASHINGTON STATE

1950-1979

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ABSTRACT

The occupational and cause-of-death information on 429,926 Washington State male deaths for 1950-1979 and 25,066 female deaths for 1974-1979 was analyzed using an age and year-of-death standardized proportionate mortality ratio program. A detailed cause-of-death analysis (160 causes) is published for each of 219 occupational categories for males and for each of 51 occupational categories for females.

The occupational mortality findings are compared with those of the Registrar General and with the published occupational mortality literature. The Washington State mortality pattern is, in general, consistent with both the Registrar General's results and with the published literature. Some of the new occupational mortality findings published in the 1950-1971 report and in this updated version have been confirmed. Others warrant follow-up. These include a lung cancer excess in workers at the ASARCO Tacoma copper smelter, increased mortality due to multiple myeloma and pancreatic cancer in workers at the Hanford atomic energy facility, and excess mortality due to cancer of the pancreas, lymphoma, leukemia, and emphysema in aluminum workers.

New findings in this report are a leukemia increase in workers exposed to electric and magnetic fields and a deficit of multiple sclerosis deaths among outdoor workers.

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INTRODUCTION

The current study is an update of Occupational Mortality in Washington State, 1950-1971 published in 1976 by NIOSH(1). The original file of about 300,000 deaths has been expanded by adding male resident deaths, age 20+, in the years 1972-1979 and female resident deaths, age 20+, in the years 1974-1979. This increases the male file to 429,926 deaths and the female file has 25,066 deaths exclusive of 52,307 housewives.

Three new tables have been added to this report. They are a table of female mortality (Table 2) in the same format as the male table (Table 1), a table which ranks occupations by proportionate mortality ratio (PMR) for each cause of death (Table 3), and a table which shows those causes of death with a statistically significant ($P < .05$) excess or deficit for each occupation (Table 4).

This study had its beginnings in a case-control study(2) of Hodgkin's disease which used the upstate New York death record file for occupational and cause-of-death information. The study showed an excess of woodwork-ing occupations in the Hodgkin's disease group as compared to matched controls. When an interview study(3) and a population-based study(4) confirmed this finding, I decided to examine the occupational pattern in other selected cause-of-death groupings. An unpublished case-control study of male bladder cancer death certificates in Washington State was able to identify the same occupations with increased risk as previous clinical and inter-view studies(5-8). Also, a study(9) of leukemia death certificates in Washington State and Oregon was able to confirm and extend a previously reported(10) association of leukemia with farming occupations.

The accuracy and completeness of the death certificate occupational statement on the Washington State death certificate was seen to be quite good. The occupational item on the death certificate asks for "Usual occupation during most of lifetime" (Exhibit 1 item 13a). Over 97% of adult male death certificates contained a usable occupation statement, i.e., only 3% had a blank or "retired" or "unknown" in the item 13a space. The death record industrial statement was too poorly reported for use.

The accuracy of death certificate occupational statements was examined for three different cancers. For men dying of Hodgkin's disease(3) and urinary bladder cancer, interviews with next of kin indicated that the death certificate occupational statement was identical to that obtained by inter-view in 75% of cases, gave a related occupation in 10% of cases, and was completely different in only 15% of cases. An example of "related" occupational statements is "plywood mill worker" vs "millworker."

In a study of community arsenic exposure near a copper smelter(11), county records alone were able to identify 24 smelter workers dying of bronchogenic carcinoma. Ascertainment of bronchogenic carcinoma records yielded only one more death, an out-of-county resident. Of 100 Boeing engineers' deaths ascertained through union records, 98 were coded to the Boeing engineer category.

With this experience and confidence in the occupational information on the Washington State death record, I thought it appropriate to examine the mortality pattern for all occupational groups. The rationale behind this approach was that new occupational/cause-of-death associations would be revealed and could be followed up in cohort studies. The great appeal of identifying specific occupational causes of mortality is that, technically, all are preventable by environmental manipulation.

The decision to update the file was based on a number of facts:

1. Death records for all male deaths had been routinely coded to occupation in this office, starting with 1972 deaths. Female deaths had also been coded to occupation starting with 1974 deaths.
2. A number of findings of the 1950-1971 study had been substantiated in population-based studies(12-14).
3. The 1950-1971 tables had proven useful in a number of areas but were not as current as was possible.
4. NIOSH was working with various states to promote this sort of analysis and expressed an interest in supporting an update of this study.
5. Since 30 consecutive years of data were present, I hoped that time trends in occupational mortality would now be discernable. The large increase (140,000 male deaths) in file size had also made it possible to analyze more specific occupation classes and to check on earlier findings based on small numbers of deaths.

This report is made up of four sets of tables:

Table 1: Male mortality by occupation

Table 2: Female mortality by occupation

Table 3: Occupations ranked by PMR within each cause of death (males only)

Table 4: Causes of death with significantly ($P < .05$) elevated or reduced PMRs by occupation (males only)

The tabular format has been changed in that mortality is now shown for three 10-year periods: 1950-1959, 1960-1969, and 1970-1979.

METHOD

Punch cards containing death record information were available for the years 1950-1971. Death certificate numbers of all male resident deaths in Washington State, age 20+, for the years 1950-1971 were listed in certificate number order within year of death. The death record occupation statements were abstracted and coded using a modification of the U. S. Census Bureau code (Exhibit 2). The death certificate numbers and the occupation codes were key punched into a deck of cards and these cards were then matched to the original death cards on year and death certificate number. For matching cards, the occupation code was punched into the initial death card. Non-matches were resolved clerically. The completed cards were read onto magnetic tape.

For male deaths 1972-1979 and female deaths 1974-1979, occupation was coded routinely on a monthly basis and added to the ordinarily prepared computer record of death. These records were added to the existing 1950-1971 file.

Since the study period included two International Classification of Diseases code changes, ninth and eighth revision codes were translated to seventh revision codes with a translation table. The causes of death given in this study are according to the seventh revision ICD codes.

Since non-white deaths made up less than 3% of the total file, they were omitted from the basic tables of this study, for the sake of homogeneity. All tables presented are for white deaths only. Out-of-state resident deaths were also eliminated from the file.

A computer program which performed an age and year of death standardized PMR analysis was written and run (see Exhibit 3). For each occupation, observed and expected deaths and a PMR are presented by detailed cause of death, grouped years of death, and age. Expected deaths are generated for each year of the study based on that year's mortality experience. Expectations are then summed over years of death into the appropriate cells of the table. Expected deaths are therefore specific for five-year age classes as well as year of death.

Expected death frequencies are rounded to the nearest whole number before printing; however, exact fractional expected frequencies are totaled into grouped years and grouped ages, so that these totals may be slightly different than the sum of the expected frequencies by five-year age classes. A minus sign (-) is printed for PMR values generated by division by an expected value less than one (to avoid large meaningless PMRs). An asterisk (*) after a PMR value indicates that the observed and expected values for that PMR are significantly different at the 5% level ($\chi^2_1 > 3.84$; $P < .05$). A double asterisk (**) indicates that the observed and expected deaths are significantly different at the 1% level ($\chi^2_1 > 6.64$; $P < .01$). PMRs are calculated using exact expected values. Statistical testing was done only on observed values of six or greater and in the grouped years of death and age 20-64 columns. Cause-of-death lines are printed only if there is an observed or expected death.

The occupation code used in the 1950-1971 study was refined to eliminate as much misclassification as possible. For example, telephone installers and repairmen were separated from telephone linemen, and body and fender repairmen were separated from automobile mechanics and repairmen.

In generating the female mortality tables, female specific causes of death were added. Since the housewives rubric (908) is so large (52,307 deaths), female PMRs were run without the housewives rubric. A mortality table for housewives is available on request.

The major flaw of the proportionate mortality ratio (PMR) is that it says nothing about total force of mortality for a given occupation (see Exhibit 3 for PMR calculation). All occupations have a total PMR of 100. Also, since the cause-of-death specific PMRs must sum to 100, a very high or low PMR in a common cause-of-death group will affect the other PMRs for that occupation. Although the method has had numerous critics, I know of no body of data which has been able to discredit the PMR method by systematic comparison with denominator-based statistics. In one case in which such testing was done(15), the PMR seemed to accurately reflect the mortality pattern derived using a population-based statistic [standardized mortality ratio (SMR)].

RESULTS

The basic occupational mortality data are found in the accompanying four sets of tables: Table 1, Male Mortality; Table 2, Female Mortality; Table 3, Occupations Ranked by PMR within each Cause of Death (males only); and Table 4, Causes of Death with Significantly ($P < .05$) Elevated or Reduced PMRs by Occupation (males only).

The male and female mortality tables (Tables 1 and 2) are presented in occupation code number order (see Exhibit 2) and the commentary is in the same order. The listing in Exhibit 4 indicates how individual occupations are grouped for analysis. The commentary for Table 3 is in cause-of-death order (7th ICD).

Table 4 [Causes of Death with Significantly ($P < .05$) Elevated or Reduced PMRs by Occupation] is in occupation code number order (Exhibit 2). No commentary is presented.

It is reassuring that all the intuitive or well-known occupational mortality associations show up in this study: airplane pilots die in plane crashes, loggers are struck by falling objects, roofers fall, telephone and power linemen are electrocuted, etc.

The associations between cause of death and occupation seen in this study are statistical associations. Some will, of course, be chance associations but many will be real. These associations are clues or starting points for more definitive studies.

The commentary reflects the author's biases, and it is possible that different inferences may be drawn from the same data by others.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

This commentary consists of a description of the mortality pattern seen in each of the occupation groupings and compares this pattern to what has been published by the Registrar General(16) for the same occupation group. Frequently, comparison is impossible because of lack of occupation code comparability or because of difference in cause-of-death groupings. Where other published work is applicable it is cited. Occupation groups with less than 200 deaths are not described unless an interesting mortality pattern or known occupational hazard exists. A few groups with more than 200 deaths are not described, if the mortality pattern is not unusual and no known occupational hazard exists. Unless specified, the PMRs described are for the entire study period (1950-1979).

Accountants, Auditors, and Assessors
Occupation code 000
Total deaths 3,732

Cancer of the esophagus has a significant mortality increase due to excess deaths in 1950-1969. Since 1970, the PMR is only 122. Other statistically significant increases in PMR are seen for cancers of stomach, biliary passages and liver, lymphatic and hematopoietic tissues (1970-1979), acute leukemia (1950-1979), asthma (1950-1959), cerebral embolism and thrombosis (1950-1979), arteriosclerotic heart disease (age 20-64), bronchiectasis, and aircraft accidents (1970-1979). The Registrar General's study showed non-significant increases in SMR for brain cancer, lung cancer, and ischemic heart disease. The brain cancer and ischemic heart disease excesses are supported in the Washington State data but the lung cancer excess is not.

Airplane Pilots and Navigators
Occupation code 012
Total deaths 362

Statistically significant excess deaths are seen for cancer of the rectum and for deaths due to aircraft accidents (observed 171, expected 7, PMR over 2,000**). This excess is seen in the Registrar General's data (SMR=2,948). Kidney, brain, and connective tissue cancers also show non-significant PMR increases based on small numbers of deaths. There is a slight PMR elevation due to leukemia. Pilots and plane crews are exposed to cosmic radiation, especially at high altitudes and latitudes in the northern hemisphere(17).

Architects
Occupation code 013
Total deaths 387

Multiple myeloma, chronic rheumatic heart disease and accidental falls show mortality increases based on small numbers of deaths. Architects show a leukemia excess in the Registrar General's data.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Artists and Art Teachers

Occupation code 014

Total deaths 322

Elevated PMRs are seen for lymphosarcoma, ulcer of the stomach, sub-arachnoid hemorrhage, multiple sclerosis, cirrhosis of the liver, and suicide.

Chemists

Occupation code 021

Total deaths 249

Cancer of the pancreas shows a PMR increase based on deaths 1950-1969. No excess is seen in deaths since 1970. Leukemia has a PMR of 242 based on 5 deaths. Leukemia has an SMR of 141 (age 15-64) and a PMR of 320 (age 65-74) in the Registrar General's study.

The American Chemical Society study(18) showed increased mortality from cancer of the pancreas and malignant lymphoma. A study of Swedish chemistry graduates(19) showed excess mortality due to lymphatic and hematopoietic cancers and malignant brain tumors. A study of Dupont chemists(20) showed an SMR of 50 for all malignant neoplasms, but cancer of the intestine, Hodgkin's disease, and leukemia had SMRs >100.

Chiropractors

Occupation code 022

Total deaths 180

Malignant neoplasms of stomach and rectum show PMR increases as does suicide in men age 20-64.

Clergymen

Occupation code 023

Total deaths 2,062

Significantly low PMRs are seen for lung cancer (PMR = 37**), emphysema (PMR = 20**), and cirrhosis of the liver (PMR = 41**). Presumably, this is due to abstinence from alcohol and tobacco. Causes with a significant excess of deaths are malignant neoplasms of the kidney (age 20-64), malignant neoplasms of large intestine, malignant melanoma, malignant neoplasms of brain (age 20-64), Hodgkin's disease, other lymphomas, multiple myeloma, diabetes mellitus, diseases of the blood-forming organs, diseases of the circulatory system, hypertensive disease, pulmonary embolism and infarction. Suicide has a very low PMR (PMR = 25**) based on 7 deaths observed to 28 expected.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

A cohort study of Lutheran ministers(21) and studies of Catholic priests(22,23) support this pattern. The Catholic priests also show an SMR increase for malignant melanoma.

Professors and Instructors
Occupation code 060
Total deaths 700

Malignant neoplasms of large intestine (age 20-64), malignant melanoma, reticulosarcoma, other lymphomas, multiple myeloma, paralysis agitans, and kidney infections have elevated PMRs. Lung cancer and respiratory diseases show low PMRs.

Dentists
Occupation code 071
Total deaths 947

Lung cancer shows a low PMR. Cancer of pancreas, urinary bladder, malignant melanoma, lymphosarcoma, myeloid leukemia, and aircraft accidents have elevated PMRs. Suicide has a very high PMR as reported elsewhere(24,25).

Draftsmen
Occupation code 074
Total deaths 332

Increased mortality is seen due to diabetes mellitus, multiple sclerosis, and suicide. Motor vehicle accidents have a low PMR.

Editors and Reporters
Occupation code 075
Total deaths 323

Pneumonia (1970-1979) and accidental falls show PMR increases.

Newspaper Owners, Publishers, and Managers
Occupation code 076
Total deaths 449

Lymphosarcoma and cirrhosis of the liver show excess deaths.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Aeronautical Engineers
Occupation code 080
Total deaths 1,003

Most of these men are employed by the Boeing Company in Seattle. There were only 94 deaths in this occupational class in 1950-1959 versus 610 deaths 1970-1979. The age distribution of deaths is interesting in that the peak frequency is at ages 55-59, reflecting that this occupation is a comparatively new one.

There is a significant increase in the PMR for all malignant neoplasms due to increased mortality from malignant neoplasms of the stomach, large intestine, lymphosarcoma, multiple myeloma and leukemia. Subarachnoid hemorrhage, multiple sclerosis, and amyotrophic lateral sclerosis also show excess deaths. As might be expected, the PMR for deaths due to aircraft accidents is increased.

Pulmonary emphysema and cirrhosis of the liver show low PMRs.

Civil Engineers
Occupation code 082
Total deaths 1,371

An elevated PMR is seen for cancer of the large intestine. This excess is also seen in the Registrar General's data. Paralysis agitans, cerebral embolism and thrombosis, and aircraft accidents also have elevated PMRs.

Electrical Engineers
Occupation code 083
Total deaths 783

Asthma and aircraft accidents show excess mortality. Asthma mortality is mentioned in the Registrar General's analysis as being elevated in electrical engineers. Small number PMR excesses are seen for malignant melanoma, malignant neoplasms of the small intestine, brain cancer, and lymphosarcoma.

Mechanical Engineers
Occupation code 085
Total deaths 365

Infective and parasitic diseases have an increased mortality due to respiratory tuberculosis. Malignant brain tumors have a PMR of 422** based on 8 deaths. Vascular lesions affecting the central nervous system (age 20-64) and suicide also have elevated PMRs.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Marine Engineers
Occupation code 086
Total deaths 628

Cancers of lung, liver, and brain have excess deaths. Lymphosarcoma has a PMR of 310 based on 4 deaths.

Engineers NEC
Occupation code 093
Total deaths 3,593

Cancer of the large intestine and brain, leukemia, Hodgkin's disease, benign neoplasms, multiple sclerosis, and duodenal ulcer show excess deaths. The Registrar General's tables for engineers NEC show mortality excesses due to cancer of the large intestine and benign neoplasms.

Construction Engineers
Occupation code 094
Total deaths 351

Lung cancer, chronic rheumatic heart disease and hypertensive disease show elevated PMRs.

Operating Engineers
Occupation code 096
Total deaths 913

Lung cancer and motor vehicle accidents show significant PMR elevations.

Foresters and Conservationists
Occupation code 103
Total deaths 217

Men in this group show a 32% excess of total malignant neoplasms; however, this excess is limited to deaths before 1970. Cancers of the rectum, pancreas, nose and sinuses, and asthma show PMR elevations.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Funeral Directors and Embalmers
Occupation code 104
Total deaths 333

Leukemia, urinary bladder cancer, and cirrhosis of the liver show excess deaths. No excess mortality is seen from either malignant or non-malignant respiratory disease.

Lawyers and Judges
Occupation code 105
Total deaths 1,671

Intestinal cancers (age 20-64) show a significant PMR elevation. Lung cancer and non-malignant respiratory diseases have significantly lowered PMRs. Malignant tumors of the brain, Hodgkin's disease, leukemia, diabetes mellitus, paralysis agitans, multiple sclerosis and amyotrophic lateral sclerosis, hyperplasia of the prostate, and aircraft accidents also show PMR elevations. The Registrar General's study agrees with the mortality patterns seen for intestinal cancer, leukemia, lung cancer, and non-malignant respiratory diseases.

Musicians and Music Teachers
Occupation code 120
Total deaths 891

Hodgkin's disease, other lymphomas, aplastic anemia, multiple sclerosis, and diseases of the pancreas show PMRs over 200. The Hodgkin's disease excess is also seen in the school teachers rubric (occupation code 184). Many of these men work in schools.

Optometrists
Occupation code 152
Total deaths 181

Malignant neoplasms of the pancreas, prostate, and leukemia show PMRs over 200.

Personnel and Labor Relations Workers
Occupation code 154
Total deaths 204

The mortality pattern in this group is unremarkable except that accidental deaths have a low PMR.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Pharmacists and Druggists
Occupation code 160
Total deaths 1,143

Elevated PMRs are seen for deaths due to multiple myeloma, the other lymphomas, and acute pancreatitis. There is no excess for the cirrhosis category, so the pancreatitis excess is probably not related to alcoholism. There is no suicide excess in this group as seen in the Registrar General's data.

Photographers
Occupation code 161
Total deaths 507

Mortality excesses based on small numbers are seen for respiratory tuberculosis and diseases of the blood-forming organs. Intestinal cancer has a low PMR (observed 3, expected 8, PMR = 38). Hyperplasia of the prostate and aircraft accidents also show small number PMR elevations. Arteriosclerotic heart disease including coronary disease has a slightly elevated PMR.

Physicians
Occupation code 162
Total deaths 1,554

Cancer of the large intestine and prostate, cancers of the lymphatic and hematopoietic tissues (age 20-64), aircraft accidents, and suicide show statistically significant PMR excesses. The intestinal cancer and suicide excesses agree with the Registrar General's data. Lung cancer and non-malignant respiratory diseases have low PMRs. Other studies(25,26) support the suicide excess.

Statisticians, Actuaries, Analysts, and Computer Programmers
Occupation code 174
Total deaths 220

Cancer of the large intestine and rectum (1970-1979), lymphosarcoma, Hodgkin's disease, and acute leukemia have excess deaths. Other diseases of the heart and hypertensive heart disease also show significantly elevated PMRs.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Surveyors

Occupation code 181

Total deaths 325

Cancers of buccal cavity and pharynx (8 deaths observed, 2 expected) have a PMR of 511**. Four of these were cancers of the tongue.

School Teachers

Occupation code 184

Total deaths 2,773

Male school teachers have low PMRs for lung cancer and non-malignant respiratory diseases. For malignant respiratory diseases there were 87 deaths observed to 149 expected. Low PMRs are also seen for buccal and pharyngeal cancers and for cirrhosis of the liver with alcoholism. This is most likely due to abstinence from tobacco and alcohol. Increased mortality is seen due to cancer of the large intestine, biliary passages and liver, malignant melanoma of skin, connective tissue cancers, Hodgkin's disease, benign neoplasms, chronic rheumatic heart disease, and coronary heart disease. Hodgkin's disease clusters have been reported in high school students(27).

Medical and Dental Technicians

Occupation code 185

Total deaths 266

Infective and parasitic diseases, arteriosclerotic heart disease including coronary disease, cirrhosis of the liver, and suicide show significant mortality increases.

Electrical and Electronic Technicians

Occupation code 190

Total deaths 457

Cancers of pancreas, kidney, urinary bladder, and brain, and the other lymphomas show small number PMR increases. Arteriosclerotic heart disease including coronary artery disease shows a significant mortality excess.

COMMENTARY ON TABLE 1, (MALE MORTALITY, 1950-1979)

Veterinarians

Occupation code 194

Total deaths 211

Cancer of the large intestine (PMR = 333**) and suicide (PMR = 223*) show mortality excesses. A recent proportionate mortality study among veterinarians(28) supports this mortality pattern.

Professional and Technical Workers NEC

Occupation code 195

Total deaths 275

No statistically significant mortality excesses are seen, but tuberculosis and cancer of the esophagus show small number PMR excesses.

Students (18 and over)

Occupation code 196

Total deaths 1,290

Tuberculosis, testicular, brain, and bone cancers, Hodgkin's disease, myeloid and acute leukemia, multiple sclerosis, ulcerative colitis, accidental falls, and suicide show excess deaths.

Farmers NEC

Occupation code 200

Total deaths 31,760

Due to a large sample size, many causes show statistically significant excesses and deficits with only small PMR variations. Cancer of bronchus and lung shows a 20% deficit (observed 646, expected 813, PMR = 79**). PMRs over 125 are seen for malignant neoplasms of lip, salivary glands, unspecified digestive organs, eye, and other endocrine glands. Reticulosarcoma, multiple myeloma, lymphatic leukemia, agranulocytosis, amyotrophic lateral sclerosis, other pneumoconiosis, acute yellow atrophy of liver, rheumatoid arthritis, machinery accidents, and accidental electrocution all have increased deaths. The excess accidental electrocution is due to metal irrigation pipes coming in contact with high tension lines while being moved. The Registrar General's tables agree with the lymphatic/hematopoietic excess and with the pneumoconiosis and accidental death excess. Other studies support these findings (10,29,30).

COMMENTARY ON TABLE 1, (MALE MORTALITY, 1950-1979)

Orchardists
Occupation code 201
Total deaths 3,215

Orchard farmers show a significant lung cancer excess which is especially interesting since the other farming rubrics show a significant deficit of lung cancer deaths. The lung cancer excess seems to be increasing in that the PMR for 1950-1959 deaths was 102; 1960-1969, PMR = 121; and 1970-1979, PMR = 143**. The non-malignant respiratory disease rubric shows a deficit, suggesting that the lung cancer excess is not due to cigarette smoking. Lead arsenate insecticide was used heavily in the orchard areas of the State until 1940. Men who manufacture arsenical-based pesticides have increased mortality from lung cancer(31,32).

Hodgkin's disease, cerebral embolism and thrombosis, and cholelithiasis have elevated PMRs. Cirrhosis of the liver shows a deficit of deaths in these men while aircraft accidents show an excess.

Nurserymen
Occupation code 202
Total deaths 503

Respiratory tuberculosis and cancer of the pancreas show significantly elevated PMRs.

Ranchers (cattle, sheep, etc.)
Occupation code 203
Total deaths 3,913

These men show a deficit of lung cancer deaths; however, prostate and kidney cancer, lymphatic leukemia (age 20-64), chronic bronchitis, machinery accidents, and accidental electrocutions had elevated PMRs.

Dairy Farmers
Occupation code 204
Total deaths 2,629

Lung cancers show a deficit of deaths. The stomach and brain cancer excesses seen in the 1950-1971 study are not seen in 1970-1979 deaths.

Chronic rheumatic heart disease and coronary heart disease had excess deaths as did amyotrophic lateral sclerosis and machinery accidents.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Wheat and Grain Farmers
Occupation code 205
Total deaths 4,217

Kidney cancer, cancer of the testis, and lymphatic leukemia show excess deaths while lung cancer and cirrhosis of the liver show a deficit of deaths. Hyperplasia of the prostate, hypertensive disease, chronic enteritis, and motor vehicle, aircraft, and machinery accidents also show excess deaths.

Egg/Poultry Farmers and Distributors
Occupation code 206
Total deaths 749

Lymphatic and acute leukemia show excess deaths, but the mortality increase is limited to deaths in the years 1950-1969.

Florists
Occupation code 249
Total deaths 361

Florists have an unremarkable mortality pattern, with the exception of increased deaths due to motor vehicle accidents.

Store Buyers and Department Heads
Occupation code 250
Total deaths 340

Leukemia has an elevated PMR.

Buyers and Shippers of Farm Products and Produce Brokers
Occupation code 251
Total deaths 839

Lymphosarcoma, myeloid, and acute leukemia show PMR increases.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Railroad Conductors
Occupation code 252
Total deaths 1,080

PMR elevations are seen for tumors of the buccal cavity and pharynx, and cancers of the lung, prostate and kidney. Diabetes mellitus and, as expected, deaths from railway accidents show increased PMRs.

Credit Men
Occupation code 253
Total deaths 366

Brain cancer, malignant lymphoma, and cerebral embolism and thrombosis show PMR elevations.

City and Civil Service Employees
Occupation code 255
Total deaths 2,719

Men in this group show a deficit of deaths due to tuberculosis. Cancer of the pancreas has elevated PMRs in 1950-1969, but not in the 1970-1979 period. There is a very high PMR (>700) in age class 45-49 due to cancer of the pancreas (observe 7 deaths, expect less than 1). Appendicitis also has an elevated PMR limited to the years 1950-1969.

Public Administration Inspectors
Occupation code 260
Total Deaths 479

Malignant neoplasms of the stomach (1970-1979) and lymphatic and hematopoietic tissues (1970-1979) have significant PMR increases. Cerebral hemorrhage has a PMR increase limited to 1950-1959.

Building Managers and Superintendents
Occupation code 262
Total deaths 253

The mortality pattern in this group is unremarkable.

Ships' Officers, Pilots, Pursers, and Engineers
Occupation code 265
Total deaths 1,153

Cancer of the stomach, hypertensive disease, and intestinal obstruction show mortality excesses.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Public Administrators and Officials NEC
Occupation code 270
Total deaths 951

Malignant melanoma of skin, malignant neoplasm of rectum, and coronary heart disease show elevated PMRs.

Lodge/Society/Union Officials
Occupation code 275
Total deaths 758

Myeloid leukemia has a PMR of 459 based on 6 deaths.

Postmasters
Occupation code 280
Total deaths 538

PMRs are elevated for malignant neoplasm of prostate, lymphosarcoma, multiple myeloma, and myeloid leukemia.

Purchasing Agents and Buyers NEC, Sales Managers
Occupation code 285
Total deaths 1,007

Cancer of the large intestine and brain, arteriosclerotic heart disease including coronary artery disease, and aircraft accidents have significant PMR excesses.

Managers, Officials, and Proprietors NEC
Occupation code 290
Total deaths 9,122

Tuberculosis shows a low PMR while cancers of the large intestine, rectum, and pancreas all have PMR excesses. Other rubrics with elevated PMRs are malignant neoplasms of testis, brain, lymphatic, myeloid, and acute leukemia, diseases of the blood-forming organs, arteriosclerotic heart disease including coronary artery disease, and aircraft accidents.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Gas Station/Garage Owners and Attendants

Occupation code 291

Total deaths 2,786

Diabetes mellitus, diseases of circulatory system, and duodenal ulcer show statistically significant PMR elevations. PMRs over 200 are seen for malignant neoplasms of other parts of the mouth, thoracic organs (secondary), monocytic leukemia, and aplastic anemia. Asthma has a significantly elevated PMR in men age 20-64.

Lumber Company Managers, Owners, and Workers

Occupation code 292

Total deaths 1,036

Cancer of the pancreas and liver (secondary and unspecified) have elevated PMRs. Malignant melanoma of the skin has a PMR of 317 based on 4 deaths. Coronary heart disease and cerebral hemorrhage have excess deaths.

Boeing Officials, Managers, and Supervisors

Occupation code 294

Total deaths 726

The total malignant neoplasms rubric has an elevated PMR due to malignant neoplasms of the esophagus, lymphatic and hematopoietic tissues, lymphosarcoma, other lymphomas, and myeloid and acute leukemia. All show small-number PMR excesses. Subarachnoid hemorrhage and aircraft accidents have elevated PMRs. The mortality pattern in this group is similar to that of Boeing engineers. Some of the similarity may be due to occupational misclassification.

Fuel Oil Dealers and Workers

Occupation code 295

Total deaths 1,554

Malignant neoplasms of lymphatic and hematopoietic tissues (1970-1979) have a significant excess of deaths due to increased mortality from lymphosarcoma and the non-Hodgkin's lymphomas. Excess deaths are also seen for psychoses and paralysis agitans. Asthma has a PMR increase (1950-1969), but other non-malignant respiratory diseases have a deficit.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Furniture Store Owners, Managers, and Clerks
Occupation code 297
Total deaths 740

Cancer of the pancreas (age 20-64) and chronic rheumatic heart disease have high PMRs.

Grocers and Grocery Clerks
Occupation code 298
Total deaths 4,203

Bone cancer and diabetes mellitus (age 20-64) have increased PMRs. Tumors of the floor of the mouth and nose also show PMR elevations based on small numbers of deaths. Cerebral hemorrhage and coronary heart disease also have slightly elevated PMRs. The homicide excess seen in the 1960s is not as apparent in the 1970s deaths.

Transportation Baggage men
Occupation code 304
Total deaths 156

Only cirrhosis of the liver without alcoholism shows a PMR above 200.

Bankers, Bank Clerks, and Managers
Occupation code 305
Total deaths 1,407

All malignant neoplasms, cancers of the large intestine, larynx, brain and connective tissue, Hodgkin's disease (age 20-64), lymphatic and acute leukemia, and coronary heart disease have excess deaths. The PMR for connective tissue tumors was 465 based on 5 deaths.

Bookkeepers, Cashiers, and Payroll Clerks
Occupation code 310
Total deaths 1,308

Lung cancer shows a significant deficit in these men, while non-malignant respiratory diseases show an excess. The urinary bladder cancer excess seen in deaths before 1960 is not seen since. Cancer of the tongue, lymphosarcoma, intestinal obstruction without hernia, and cholecystitis without calculi have PMR elevations.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Tuberculosis, multiple sclerosis, chronic rheumatic heart disease, and the non-malignant respiratory disease excess may be due to self-selection into this occupation of chronically ill men. The Registrar General's data agree quite well.

Vehicle Dispatchers and Starters, and Traffic Managers
Occupation code 314
Total deaths 787

Cerebral embolism and thrombosis and coronary heart disease have increased PMRs in these men. The Registrar General's tables for occupational unit 126 (traffic controllers and dispatchers, transport) show a similar excess for coronary heart disease.

Adjusters and Examiners
Occupation code 321
Total deaths 404

No cause of death class has a significantly elevated PMR, but buccal and pharyngeal cancers and kidney neoplasms show small number PMR elevations.

Mail Carriers
Occupation code 323
Total deaths 1,304

PMRs over 200 are seen for lymphosarcoma, Hodgkin's disease (age 20-64), and diseases of the pancreas. The urinary bladder cancer increase seen in the 1950s is not seen in the 1960-1979 period.

Postal Clerks
Occupation code 340
Total deaths 1,321

Like the mail carriers, lymphosarcoma shows a PMR increase. Diseases of the blood-forming organs and hyperplasia of the prostate also show mortality excesses.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Shipping and Receiving Clerks
Occupation code 343
Total deaths 832

Significant PMR increases are seen for chronic interstitial pneumonia, duodenal ulcer, and intestinal obstruction without hernia.

Stock Clerks and Storekeepers
Occupation code 350
Total deaths 1,075

Total malignant neoplasms have a small but significant PMR excess. Cancers of the large intestine have a significantly elevated mortality.

Telegraph and Radio Operators
Occupation code 352
Total deaths 615

Elevated PMRs are seen for causes of death associated with alcoholism, i.e., cancers of the buccal cavity and pharynx and alcoholic cirrhosis of the liver. Hodgkin's disease and acute leukemia also have elevated PMRs.

Ticket, Station, Express, and Travel Agents
Occupation code 354
Total deaths 870

Lung cancer mortality is very low. Myeloid leukemia, other hypertensive disease, and chronic bronchitis have elevated PMRs.

Railroad Clerks
Occupation code 361
Total deaths 923

Malignant brain tumors have very high PMRs in these men (observed 13 deaths, expected 3, PMR = 382). Chronic rheumatic heart disease also shows excess deaths.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Boeing Clerks
Occupation code 362
Total deaths 226

Diabetes mellitus and cerebral embolism and thrombosis show PMR elevations.

Public Utility Workers
Occupation code 363
Total deaths 1,585

Accidental electrocution has increased mortality in these men presumably due to occupational exposure to electric current.

Public Utility Supervisors and Officials
Occupation code 364
Total deaths 988

These men also suffer an accidental electrocution increase. In addition, they have increased mortality due to coronary heart disease, brain, and rectal cancer (age 20-64).

Clerks NEC
Occupation code 370
Total deaths 1,173

Malignant tumors of the buccal cavity and pharynx, cancer of the rectum, Hodgkin's disease, myeloid leukemia, and emphysema without bronchitis have more deaths than expected. The Hodgkin's disease excess is also seen in the Registrar General's analysis.

Travelling Salesmen and Sales Representatives
Occupation code 380
Total deaths 4,618

The rubric for total malignant neoplasms has a significant excess mortality due to elevated PMRs for malignant neoplasms of the buccal cavity and pharynx, testis, kidney (1950-1959, 1970-1979), brain (age 20-64), and lymphatic and hematopoietic malignancies. Benign neoplasms (age 20-64) and diabetes mellitus also show PMR elevations.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Lumber Salesmen
Occupation code 384
Total deaths 442

Malignant neoplasms of the large intestine, cerebral hemorrhage, and other vascular lesions affecting central nervous system show a mortality excess.

Insurance Agents, Brokers, Underwriters, Appraisers
Occupation code 385
Total deaths 2,595

Cancers of the small intestine, large intestine, prostate, brain, and bone have excess deaths. Leukemia (acute and myeloid) show elevated PMRs in 1970-1979. Multiple sclerosis and accidental falls also have mortality excesses.

Car Salesmen
Occupation code 386
Total deaths 1,877

Reticulosarcoma, diabetes mellitus, coronary heart disease, and aircraft accidents have significant mortality excesses.

Newsboys
Occupation code 390
Total deaths 227

Infective and parasitic diseases, cancer of the stomach, hypertensive disease, and auto accidents have PMR elevations in these men.

Real Estate Agents, Brokers, Developers, Appraisers
Occupation code 393
Total deaths 3,700

Lung cancer and non-malignant respiratory diseases show low PMRs. Elevated PMRs are seen for cancer of the tongue, lymphosarcoma (age 20-64), coronary heart disease, aircraft accidents, and suicide.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Stocks and Bonds Salesmen
Occupation code 395
Total deaths 379

A curious excess mortality is seen for deaths due to paralysis agitans (7 deaths observed, 1 expected, PMR = 697). Coronary heart disease also has a slight PMR excess.

Sales Clerks NEC
Occupation code 396
Total deaths 5,279

This is the miscellaneous sales clerk category. Malignant neoplasms of the buccal cavity and pharynx, larynx, acute leukemia, and chronic rheumatic heart disease show high PMRs. The buccal cavity and laryngeal tumors may be due to alcohol ingestion.

Carpet Makers and Layers
Occupation code 400
Total deaths 148

Cerebral embolism and thrombosis has a PMR increase in these men.

Bakers
Occupation code 401
Total deaths 1,370

Most of the mortality excesses seen in the 1950-1971 study have not persisted in the 1970-1979 deaths. PMRs over 200 are seen for cancer of the tongue, acute leukemia, psychoses, abdominal hernias, senility, and falls on the same level.

Blacksmiths
Occupation code 402
Total deaths 1,304

Nearly half the deaths in this group of men occurred at age 80+, with fewer deaths occurring in recent years. Elevated PMRs are seen for cancers of the large intestine and esophagus, other diseases of the heart, hypertensive disease, and homicide.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Boilermakers
Occupation code 403
Total deaths 1,568

Respiratory tuberculosis, lung cancer, pulmonary emphysema, and cirrhosis of the liver all have excess deaths. There are 2 deaths ascribed to silicosis and 1 to asbestosis in these men. Inhaled metal particles and fumes, plus dusts containing silica, account for some of this mortality pattern. A recent cohort study of a boilermakers' union in this State(33) supports these findings.

Brickmasons, Stonemasons, and Tile Setters
Occupation code 405
Total deaths 1,543

Cancers of the stomach, biliary passages and liver, lung and rectum (1970-1979), avitaminosis and metabolic diseases, appendicitis, and falls have elevated PMRs. The stomach and lung cancer excesses are seen in the Registrar General's data.

Building Contractors, Construction Contractors, and Foremen
Occupation code 406
Total deaths 4,300

These men have increased deaths from cancers of the stomach and skin. Lymphosarcoma, multiple myeloma and leukemia, aircraft accidents, machinery accidents, and electrocution also have elevated PMRs.

Boatbuilders
Occupation code 407
Total deaths 430

Stomach cancer (age 20-64) and rectal cancer have high PMRs.

Cabinetmakers
Occupation code 410
Total deaths 1,249

Stomach cancer shows a significant mortality excess. Nephritis (1950-1959) also shows a significant PMR rise especially in men under age 60.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Carpenters

Occupation code 411

Total deaths 16,843

Like the cabinetmakers, carpenters have a gastric cancer excess. Nasal cancers (ICD 160) (1970-1979) have a significant mortality excess and nasopharyngeal cancers (ICD 146) show a slight PMR excess. This is consistent with British reports of a nasal cancer excess in furniture workers(34). Lung cancer has a PMR excess (age 20-64). Hodgkin's disease has a PMR excess (1960-1969) and monocytic leukemia has a significant excess (age 20-64). Emphysema without bronchitis and accidental falls have excess deaths. The Registrar General's study supports the lung cancer and accidental fall excess.

Fabric Workers

Occupation code 412

Total deaths 333

Chronic rheumatic heart disease and lymphatic and hematopoietic tissue cancers (1970-1979) have increased PMRs.

Cement and Concrete Finishers

Occupation code 413

Total deaths 1,246

Rectal cancer, accidental falls and electrocutions have excess deaths. The falls are also seen in the Registrar General's data.

Cranemen, Derrickmen, and Hoistmen

Occupation code 415

Total deaths 705

Asthma, pancreatitis, accidental falls, machinery accidents, and electrocution have elevated PMRs.

Oil Well Drillers

Occupation code 416

Total deaths 149

These men have increased mortality from non-malignant respiratory diseases, especially pulmonary emphysema.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Decorators and Window Dressers
Occupation code 420
Total deaths 247

Tumors of the buccal cavity and pharynx, larynx, and lung, and accidental falls have elevated PMRs.

Electricians
Occupation code 421
Total deaths 4,549

The lung cancer excess seen in deaths in 1950-1959 is not seen in deaths after 1960. Malignant melanoma (age 20-64), malignant brain tumors, acute leukemia, silicosis, bronchitis, emphysema, and accidental electrocution have more deaths than expected.

Road Graders and Pavers, Machine Operators, and Excavators
Occupation code 425
Total deaths 4,629

Lung cancer, appendicitis, motor vehicle accidents, blows from falling objects, machinery accidents, and electrocution have increased deaths.

Water Well Drillers
Occupation code 426
Total deaths 279

Elevated PMRs are seen for malignant neoplasms of the brain, for other diseases of the urinary system, and for work-related accidents.

Railroad Foremen
Occupation code 427
Total deaths 847

Multiple myeloma shows a small number increase. Railway accidents, as expected, are more common in these men. Diseases of the circulatory system show a small but significant increase in deaths.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Foremen NEC
Occupation code 430
Total deaths 656

Cancer of the large intestine and kidney, Hodgkin's disease, and other lymphomas show small number PMR increases. Cerebral embolism and thrombosis (age 20-64) shows a significant PMR increase.

Glaziers
Occupation code 434
Total deaths 294

Digestive and peritoneal cancers (stomach, large intestine, and rectum) and lymphatic and hematopoietic tissue cancers, especially multiple myeloma, show excess deaths.

Smelter Workers
Occupation code 435
Total deaths 1,150

These men work at the American Smelting and Refining Company in Tacoma, Washington, a large copper smelter which specializes in refining arsenic-rich copper ores.

Lung cancers show an excess mortality in these workers. A population-based study(35) in this work force corroborates this finding and relates it to inhaled arsenic trioxide exposure.

Log/Lumber Inspectors, Scalers, and Graders, and Timber Cruisers
Occupation code 444
Total deaths 1,110

Cancer of the large intestine (age 20-64) and leukemia (1970-1979) have elevated PMRs.

Railroad Inspectors
Occupation code 447
Total deaths 345

Asthma and chronic nephritis have increased PMRs.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Inspectors NEC
Occupation code 450
Total deaths 452

PMRs over 200 are seen for brain cancer, subarachnoid hemorrhage, and kidney infections.

Jewelers, Watchmakers, Goldsmiths, Silversmiths, and Locksmiths
Occupation code 451
Total deaths 995

Lymphosarcoma and reticulosarcoma, chronic rheumatic heart disease, coronary artery disease (age 20-64), and accidental falls on the same level have PMR increases. The Registrar General's data agree with the rheumatic and ischemic heart disease excesses.

Telegraph/Telephone/Power Linemen
Occupation code 453
Total deaths 1,125

As expected, accidental falls and electrocution have very high PMRs. Acute and myelogenous leukemia and pulmonary embolism and infarction also have elevated PMRs.

Locomotive Engineers
Occupation code 454
Total deaths 1,992

Cancer of the large intestine, arteriosclerotic heart disease including coronary disease (age 20-64), and railway accidents have more deaths than expected. The Registrar General's data corroborate the accident and heart disease excess.

Telephone Installers and Repairers
Occupation code 459
Total deaths 344

Malignant neoplasms of the large intestine and brain and lymphosarcoma have elevated PMRs.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Locomotive Firemen
Occupation code 460
Total deaths 339

Railway accidents have an elevated PMR. Infective and parasitic diseases and multiple sclerosis have small number PMR excesses.

Manufacturing Workers
Occupation code 462
Total deaths 426

Malignant neoplasms of the digestive organs and peritoneum have a significantly elevated PMR due to a slightly increased mortality in all the causes in this group (malignant neoplasms of esophagus, stomach, large intestine, rectum, etc.). Malignant neoplasms of other and unspecified sites also have a mortality increase.

Machinists NEC
Occupation code 465
Total deaths 5,799

Subarachnoid hemorrhage and chronic nephritis have increased deaths in the period 1970-1979. Myeloid leukemia has an elevated PMR especially in men under age 65.

Railroad Workers NEC
Occupation code 469
Total deaths 332

Stomach cancer (1970-1979) and cancer of the prostate have increased deaths in this residual railroad workers group.

Air Conditioning/Heating/Refrigeration Mechanics and Repairmen
Occupation code 470
Total deaths 657

PMR increases based on small numbers of deaths are seen for malignant melanoma of the skin, lymphosarcoma, reticulosarcoma, and amyotrophic lateral sclerosis.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Airplane Mechanics and Repairmen

Occupation code 471

Total deaths 839

Cancers of kidney, urinary bladder, and brain, Hodgkin's disease, asthma, multiple sclerosis, and aircraft accidents all have mortality increases. Chronic rheumatic heart disease (1970-1979) also has a PMR increase.

Auto Mechanics and Repairmen

Occupation code 472

Total deaths 3,445

Esophageal cancer, lung cancer, multiple sclerosis, chronic rheumatic heart disease, paralysis agitans, and hernia of the abdominal cavity have increased deaths. The Registrar General's study also shows a slight lung cancer increase.

Office Machine Mechanics and Repairmen

Occupation code 473

Total deaths 153

Tuberculosis, pancreatic cancer, chronic rheumatic heart disease, and ulcerative colitis have PMR increases based on small numbers of deaths. This pattern of mortality suggests possible self-selection into this occupation of chronically ill men.

Radio/Television Mechanics and Repairmen

Occupation code 474

Total deaths 343

Acute leukemia, pneumonia, pulmonary emphysema, and suicide have elevated PMRs.

Railroad/Car Shop Mechanics and Repairmen

Occupation code 475

Total deaths 818

Cancer of the kidney (1970-1979), paralysis agitans, cerebral embolism and thrombosis, and unspecified falls have high PMRs. Cancer of the stomach and rectum have elevated PMRs especially in deaths before 1960.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Tire Recappers and Repairers, Rubber Welders
Occupation code 477
Total deaths 359

Elevations of PMR are seen for lung cancer, other diseases of the heart, and pulmonary emphysema.

Body/Fender Repairmen and Auto Painters
Occupation code 479
Total deaths 428

Gastric cancer, lung cancer (especially ages 20-64), chronic respiratory disease, cerebral hemorrhage, and suicide show increased deaths. Coach painters (occupational unit 101) have an SMR of 140 for lung cancer in the Registrar General's data.

Mechanics and Repairmen NEC
Occupation code 480
Total deaths 4,266

Tumors of the nose and nasopharynx, lung cancer, myeloid leukemia, subarachnoid hemorrhage, and accidents caused by machinery have increased PMRs.

Grain/Flour/Feed Mill Workers
Occupation code 490
Total deaths 596

Rectal and kidney cancer, chronic rheumatic heart disease, other diseases of the heart (age 20-64), and unspecified falls show elevated PMRs.

Millwrights
Occupation code 491
Total deaths 1,207

Hodgkin's disease, chronic rheumatic heart disease, accidental falls from one level to another, and machinery accidents have elevated PMRs.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Metal Molders
Occupation code 492
Total deaths 486

Respiratory tuberculosis, stomach cancer, silicosis, chronic bronchitis with emphysema, cirrhosis of the liver, and lung cancer show excess deaths. These men inhale siliceous and metallic dusts.

Motion Picture Projectionists
Occupation code 493
Total deaths 210

Cancer of pancreas and appendicitis have PMR elevations.

Paper/Pulp Mill Workers
Occupation code 500
Total deaths 3,711

Cancer of small intestine, gallbladder (age 20-64), lymphatic and hematopoietic tissues, Hodgkin's disease, multiple myeloma, fatal anemias including aplastic anemia, coronary heart disease, and machinery accidents all have more deaths than expected. The Hodgkin's disease excess is supported by a New York State study(2).

Paperhangers and Decorators (Painters)
Occupation code 501
Total deaths 832

Lung cancer, cancer of the urinary bladder, reticulosarcoma, hypertensive heart disease, and gastric ulcer have increased deaths.

Pattern and Model Makers, except Paper
Occupation code 502
Total deaths 161

Stomach cancer and chronic rheumatic heart disease have small number excesses.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Plasterers and Lathers
Occupation code 505
Total deaths 773

Stomach and respiratory cancers have PMR elevations. Cancer of the pleura had 2 deaths observed to less than .5 expected. Asthma and emphysema without bronchitis also have elevated PMRs. The lung cancer and pleural cancer increases may be asbestos related.

Shipyard Workers, Shipwrights, and Shipfitters
Occupation code 507
Total deaths 5,330

Lung cancer and malignancies of pleura (mesothelioma) have increased PMRs. These workers were exposed to asbestos. Interestingly, 8 of the 9 pleural cancer deaths occurred 1970-1979, suggesting that the latency period since the World War II shipbuilding boom has been spanned. Benign neoplasms also show increased deaths because mesothelioma, not specified as malignant, is coded to the benign neoplasm rubric.

Additional evidence for occupational asbestos exposure is the elevation of PMR due to asbestosis. Silicosis and other chronic interstitial pneumonia show excess deaths. Hyperplasia of prostate, falls from ladders, and motor vehicle accidents also have PMR elevations. Asbestosis has been studied in other shipyards(36).

Plumbers and Pipefitters
Occupation code 510
Total deaths 4,313

The grouped malignant neoplasm rubric has excess deaths. Cancer of esophagus, lung, and connective tissue have high PMRs. Pulmonary emphysema without bronchitis and accidents due to fire and explosion have more deaths than expected. The Registrar General's data support the lung cancer excess. A U. S. plumbers' union study supports the lung and esophageal cancer excesses(37).

Printing Pressmen, Plate Printers, and Typewriters
Occupation code 512
Total deaths 1,889

Cancers of the tongue, esophagus, large intestine (age 20-64), rectum, lung, and kidney are all in excess. A cohort study(38) of newspaper pressmen supports the lung and kidney cancer increase. A PMR study of printing pressmen(39) supports the rectal cancer increase.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Roofers and Slaters
Occupation code 514
Total deaths 681

Four lung-related diseases have elevated PMRs: respiratory tuberculosis, lung cancer, asthma, and pulmonary emphysema. Cancer of the larynx, cirrhosis of the liver, and accidental falls also have elevated PMRs. Hydrocarbons, including known carcinogens like Benzo(a)pyrene, are inhaled in hot tar roofing.

Shoemakers, Shoe Repairers, and Leather Workers
Occupation code 515
Total deaths 1,006

Cancer of the esophagus and larynx, Hodgkin's disease, diabetes mellitus (age 20-64), paralysis agitans, pulmonary embolism, and acute pancreatitis have PMRs >200. The laryngeal cancer and Hodgkin's disease increases are supported by a New York State study(40).

Stationary Engineers and Firemen
Occupation code 520
Total deaths 1,617

Cancer of the pancreas and non-lymphatic leukemias have elevated PMRs. Urinary bladder cancer (age 20-64) also has a significantly elevated PMR.

Stonecutters and Stonecarvers
Occupation code 521
Total deaths 179

Of the 179 deaths in this group of workers, 8 were due to silicosis versus less than .5 expected. Respiratory tuberculosis and cancer of the pancreas also have excess deaths. The Registrar General's data support the pneumoconiosis excess.

Structural Metal Workers
Occupation code 523
Total deaths 2,166

Cancer of the tongue, lung, and urinary bladder, fatal anemias, cerebral embolism and thrombosis, and accidental falls from one level to another have increased deaths.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Tailors

Occupation code 524

Total deaths 713

Hypertensive disease, intestinal obstruction, hyperplasia of prostate, cancer of urinary bladder, cirrhosis of the liver, and cholelithiasis show increased deaths. The urinary bladder cancer increase has been reported elsewhere(6).

Tinsmiths, Coppersmiths, and Sheet Metal Workers

Occupation code 525

Total deaths 2,102

Respiratory cancers and accidental falls have significantly elevated PMRs. Lung cancer has an SMR of 145 in sheet metal workers (occupational unit 33) in the Registrar General's data set. Elevated PMRs are also seen for cerebral embolism and thrombosis and chronic interstitial pneumonia.

Aluminum Workers

Occupation code 526

Total deaths 1,238

The all malignant neoplasms (grouped) rubric has a significant PMR elevation. Statistically significant PMR increases are seen for cancers of the pancreas, other lymphomas, and leukemia. These findings are supported by a retrospective cohort (SMR) study in a Spokane aluminum reduction mill(13) and by a multiplant study of U. S. aluminum reduction mills(41).

Cannery and Food Processing Workers

Occupation code 527

Total deaths 1,489

Cancer of urinary bladder, avitaminosis and metabolic diseases, gastric and duodenal ulcer (20-64), and motor vehicle accidents have significantly elevated PMRs.

Floor Workers (covering, hardwood, linoleum, etc.)

Occupation code 528

Total deaths 263

Hypertensive disease has a PMR increase.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Tool and Die Makers and Setters
Occupation code 530
Total deaths 487

Lung cancer has elevated mortality (1950-1969) but not in the years 1970-1979. Suicide is more common in these men than expected.

Upholsterers
Occupation code 535
Total deaths 456

Small number PMR excesses are seen for malignant neoplasms of the urinary bladder and brain, and chronic rheumatic heart disease.

Craftsmen and Kindred Workers NEC
Occupation code 545
Total deaths 395

This is a miscellaneous craftsmen group. Vascular lesions affecting the central nervous system (age 20-64), lung cancer (age 20-64), and diseases of the arteries (age 20-64) (1970-1979) have elevated PMRs.

Navy/Coast Guard Officers and Enlisted Men
Occupation code 551
Total deaths 2,309

Army/Air Force/Marine Corps Officers and Enlisted Men
Occupation code 555
Total deaths 4,654

PMRs are probably artificially elevated for a number of causes of death (including lung cancer and cirrhosis of the liver) because of referral of ill servicemen to the large military medical centers in this State. Also, men retired for medical reasons are more likely to take up residence near the military medical facilities in the State. These populations have a high risk of dying and inflate the PMR for these two occupational classes.

Aircraft accidents are elevated because of flight training and flight activities associated with air bases in the State.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Boeing Workers NEC
Occupation code 557
Total deaths 3,718

This is a residual code for Boeing workers who do not fit a more specific category. Coronary heart disease has a small but significant PMR increase. Malignant neoplasms of the nasopharynx and benign neoplasms have PMRs over 200.

Atomic Energy Workers NEC
Occupation code 558
Total deaths 1,480

These are men who worked at the Atomic Energy Commission Hanford project at Richland, Washington. The project started in 1941 and, as the work force ages, more deaths are being seen.

Malignant neoplasms of the digestive organs and peritoneum (age 20-64) show a significant excess of deaths due to cancers of the stomach, large intestine, and pancreas. Large intestinal cancer shows a PMR of 453 in men age 45-49 based on 6 deaths.

PMRs over 200 are seen for bone cancer, hyperplasia of the prostate, and amyotrophic lateral sclerosis.

Low PMRs are seen for leukemia, but multiple myeloma has a small PMR excess. A population-based study in these workers(12) supports the pancreatic cancer and multiple myeloma excess and, more importantly, links the excess to low-dose occupational radiation exposure.

Asbestos and Insulation Workers
Occupation code 630
Total deaths 215

The total cancer PMR is 186 due to a lung cancer PMR of 351 (38 deaths observed versus 11 expected). Asbestosis has 10 deaths observed to less than .5 expected. These relationships are well known(42). Three deaths were coded to benign neoplasm, all of which were pleural mesotheliomas.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Blasters and Powdermen
Occupation code 634
Total deaths 235

The other accident rubric (ICD 910-936) has a PMR of 606 based on 35 deaths observed to 6 expected. PMRs are elevated for blows from falling objects and explosion-related deaths.

Railroad Brakemen
Occupation code 640
Total deaths 1,410

Diseases of arteries (age 20-64) and railway accidents have significant death increases. PMRs are also elevated for malignant neoplasms of tongue and testis, emphysema without bronchitis, and unspecified falls.

Bus Drivers
Occupation code 641
Total deaths 1,494

Fatal anemias and agranulocytosis show PMR elevations. Multiple myeloma and myeloid and acute leukemia have slightly elevated PMRs also.

Deliverymen and Routemen
Occupation code 650
Total deaths 754

Malignant neoplasms of the esophagus, rectum, and pancreas show high PMRs. Acute pancreatitis also has a PMR elevation.

Dairy Workers, Ice Cream and Cheesemakers
Occupation code 655
Total deaths 882

Malignant neoplasms of the kidney, lymphatic and hematopoietic tissues, and leukemia have high PMRs.

As noted in the 1950-1971 study, chronic rheumatic heart disease, leukemia, and chronic enteritis have elevated PMRs in this group and in dairy farmers. The similar mortality patterns could be explained by

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

misclassification of occupation; however, both groups are exposed to milk and to streptococcal and enteric diseases associated with dairy cattle and raw milk. This may explain the rheumatic and enteric disease excess.

Milk Route Deliverymen
Occupation code 656
Total deaths 353

Lymphosarcoma shows a non-significant PMR elevation based on 3 deaths observed to less than 1 expected.

Laundry/Dry Cleaning Operatives
Occupation code 674
Total deaths 1,268

Malignant neoplasms of the buccal cavity and pharynx, liver, and connective tissue have elevated PMRs. Subarachnoid hemorrhage (age 20-64) has a PMR of 227 based on 7 deaths. Acute pancreatitis has a PMR of 279 based on 5 deaths. The dry cleaning workers are exposed to solvents, but this mortality pattern could also be due to excessive drinking. Cirrhosis of the liver has a small PMR increase.

Meatcutters and Butchers
Occupation code 675
Total deaths 2,907

Malignant neoplasms of the hypopharynx, esophagus, and liver (age 20-64), and pneumonia (age 20-64) have high PMRs. The pharyngeal cancers are probably related to alcoholism since cirrhosis of the liver also shows a 40% increase. Inflammatory diseases of the central nervous system, hypertensive disease, and the other chronic interstitial pneumonia rubric show elevated PMRs.

Mine Operatives and Laborers NEC
Occupation code 685
Total deaths 4,050

Respiratory tuberculosis has a PMR of 506 (observed 79 deaths, expected 16). Lung cancer and all the non-malignant respiratory disease rubrics have

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

high PMRs (ICD 470-527). Silicosis has 50 deaths observed to less than 2 expected. Blows from falling objects and fire and explosion have elevated PMRs. This pattern agrees well with the occupational literature on miners' mortality(43-45).

Oilers and Greasers, except Auto
Occupation code 692
Total deaths 325

Lung cancer, machinery accidents, and electrocution have high PMRs.

Packers and Wrappers NEC
Occupation code 693
Total deaths 200

PMRs over 200 are seen for malignant neoplasms of the pancreas and leukemia.

Painters
Occupation code 694
Total deaths 5,287

Significant mortality excess is seen for lung cancer, cirrhosis of the liver, and accidental falls, especially from ladders. Elevated PMRs are seen for cholelithiasis, acute pancreatitis, cancer of gallbladder, pulmonary emphysema, and chronic interstitial pneumonia. Part of this pattern is probably related to alcohol intake. A very low PMR is seen for multiple sclerosis (observed 1, expected 6, PMR = 18). The Registrar General's data support the lung cancer increase.

Power Station Operators
Occupation code 701
Total deaths 385

Men in this category have increased deaths due to malignant lymphoma, leukemia, and arteriosclerotic heart disease, including coronary artery disease.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Sailors, Deckhands, and Seamen NEC
Occupation code 703
Total deaths 3,149

Respiratory tuberculosis, multiple myeloma, and malignant neoplasms of the esophagus and lung have increased mortality. Other causes of death with PMR increases are disorders of character, behavior and intelligence; pneumonia, alcoholic cirrhosis of the liver; acute pancreatitis; accidental falls, and homicide.

Plywood Workers
Occupation code 706
Total deaths 2,256

Malignant neoplasms of the stomach (age 20-64), multiple sclerosis, arteriosclerotic heart disease, and suicide have excess deaths. Leukemia had high PMRs before 1970, but not afterward, suggesting that the leukemogenic agents formerly involved are no longer present in the work environment.

Railroad Switchmen
Occupation code 713
Total deaths 637

Respiratory and urinary bladder cancer, cirrhosis of the liver, and railroad accidents have significant mortality increases.

Taxicab Drivers and Chauffeurs
Occupation code 714
Total deaths 989

Diseases of the arteries, pneumonia, pulmonary emphysema, cirrhosis of the liver, ulcer of the stomach and duodenum, and homicide have high PMRs. Urinary bladder cancer shows a slight elevation.

Truck and Tractor Drivers
Occupation code 715
Total deaths 8,048

Malignant neoplasms of the pharynx, larynx, lung, and skin, chronic bronchitis, bronchitis with emphysema, other diseases of the lung and pleural cavity, cirrhosis of the liver, and motor vehicle accidents have increased deaths.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Fuel Oil Truck Drivers
Occupation code 716
Total deaths 334

The same general pattern of mortality is seen in these men as in the truck and tractor drivers group. Motor vehicle accidents and diseases of arteries have increased deaths.

Lumber/Log/Sawmill Truck Drivers
Occupation code 718
Total deaths 770

Asthma and logging-related accidents have PMR elevations. Motor vehicle accidents and blows from falling objects (logs) show excess deaths.

Welders and Flame Cutters
Occupation code 721
Total deaths 2,124

Malignant neoplasms of the lung and kidney have significant PMR excesses as do bronchitis with emphysema and deaths due to fire and explosion. The Registrar General's data agree with the lung cancer increase.

Tree Farmers, Forest Service and Parks Department Workers
Occupation code 724
Total deaths 1,114

Lymphatic leukemia, other anemias, diseases of arteries (1970-1979), and the other accidents category have increased deaths.

Sandblasters
Occupation code 725
Total deaths 82

No table is published since there were only 82 deaths in sandblasters. These men have very high PMRs due to malignant and non-malignant respiratory diseases. As expected, there were 2 deaths from pneumoconiosis, 1 due to silicosis, and 1 due to other pneumoconiosis.

Ordnance Plant Workers
Occupation code 726
Total deaths 377

Other diseases of the respiratory system and motor vehicle accidents show increased deaths in this group.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Hospital/Institution Attendants
Occupation code 810
Total deaths 537

Respiratory tuberculosis, non-malignant respiratory diseases, diabetes mellitus, and chronic rheumatic heart disease have PMR elevations.

Recreation/Amusement Attendants (cardroom, pool hall, carnival)
Occupation code 812
Total deaths 528

Respiratory tuberculosis, malignant neoplasms of urinary bladder, cirrhosis of the liver, and other diseases of the urinary system have significant mortality increases. Causes with elevated PMRs are multiple myeloma, pulmonary embolism, and hyperplasia of prostate.

Barbers
Occupation code 814
Total deaths 3,014

Multiple myeloma, asthma, cirrhosis of the liver, chronic enteritis (1970-1979), chronic nephritis (age 20-64), and suicide have increased PMRs.

Bartenders
Occupation code 815
Total deaths 2,676

Causes of death usually associated with alcoholism show excess deaths. Malignant neoplasms of the buccal cavity, tongue and larynx have significantly elevated PMRs. Diabetes mellitus, duodenal and gastric ulcers, cirrhosis of the liver, acute pancreatitis, and homicide all have increased deaths.

Restaurant Owners, Managers, and Workers
Occupation code 817
Total deaths 1,973

A pattern of mortality quite similar to that of the bartenders is seen with excess deaths due to diabetes mellitus, cirrhosis of the liver, and homicide. In addition, cancer of the stomach and large intestine have significant PMR increases.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Brewery Workers
Occupation code 818
Total deaths 437

The infective and parasitic diseases rubric has a PMR elevation as does malignant neoplasm of the prostate. Malignant neoplasms of digestive organs and peritoneum are in excess because of cancer of stomach and large intestine. A large PMR excess is also seen for primary neoplasms of the biliary passages and liver. A study of Danish brewery workers supports the liver cancer excess(46).

Hotel/Motel Owners and Managers
Occupation code 819
Total deaths 3,109

Tuberculosis of the respiratory system, malignant neoplasms of unspecified sites (1970-1979) (age 20-64), multiple myeloma, and cirrhosis of the liver have significant PMR increases. Causes with PMRs >200 are malignant neoplasms of the testis, malignant melanoma of the skin, cholelithiasis, acute pancreatitis, and homicide.

Cooks, Candymakers, and Chefs
Occupation code 825
Total deaths 5,034

Respiratory tuberculosis, malignant neoplasms of the buccal cavity and pharynx, and esophagus, avitaminosis and metabolic diseases, disorders of character, behavior and intelligence, pneumonia, pulmonary emphysema, acute pancreatitis, homicide, accidental falls, ulcer of the stomach, and cirrhosis of the liver have increased PMRs. The Registrar General's data agree quite well.

Dishwashers
Occupation code 826
Total deaths 285

Diseases of the respiratory system, cirrhosis of the liver, disorders of character, behavior and intelligence, accidental falls, and homicide have PMR increases. The pattern of mortality seen in dishwashers is quite similar to that seen in cooks.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Window Cleaners and Wall Washers
Occupation code 833
Total deaths 163

Accidental falls, as expected, have an elevated PMR. Cerebral embolism and thrombosis also shows a PMR elevation.

Janitors, Maintenance Men, and Sextons
Occupation code 834
Total deaths 6,558

Malignant neoplasms of the rectum and urinary bladder (age 20-64), lymphosarcoma (especially 1970-1979), diseases of the endocrine glands, and purpura and other hemorrhagic conditions have high PMRs.

School Custodians
Occupation code 836
Total deaths 1,744

School custodians show increased mortality in the 20-64 age class for all malignant neoplasms. Cancer of the rectum, prostate, urinary bladder (age 20-64), and lymphatic and hematopoietic tissues show elevated PMRs. Multiple myeloma, reticulum-cell sarcoma, and the other lymphoma group have elevated PMRs. Diseases of the circulatory system show small but significant PMR increases as do deaths from duodenal ulcer (age 20-64). This pattern of mortality agrees well with that seen for men in the janitors category.

Porters
Occupation code 841
Total deaths 191

Respiratory tuberculosis, malignant neoplasms of the stomach, hypertensive disease, and cirrhosis of the liver have excess deaths.

Hairdressers and Cosmetologists
Occupation code 843
Total deaths 102

Men in this category show increased deaths due to lung cancer, cirrhosis of the liver, suicide, and homicide.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Firemen and Fire Protection Workers
Occupation code 850
Total deaths 1,636

Malignant neoplasms of the brain, bronchiectasis, and deaths caused by fire and explosion have significantly elevated PMRs. Small number PMR elevations are seen for malignant neoplasms of the gallbladder and bile ducts, malignant melanoma, leukemia, and psychosis.

Guards, Watchmen, and Doorkeepers
Occupation code 851
Total deaths 2,042

Cirrhosis of the liver without alcoholism, cholelithiasis, and suicide (age 20-64) have significant PMR elevations.

Policemen, Sheriffs, and Marshals
Occupation code 853
Total deaths 2,253

Malignant neoplasms of the large intestine and liver, diseases of veins (age 20-64), pulmonary embolism and infarction, diabetes mellitus, and deaths due to homicide show high PMRs. The intestinal cancer excess is seen in the Registrar General's data.

Bridge Tenders and Crossing Watchmen
Occupation code 860
Total deaths 329

Men in this category show significantly increased mortality due to diabetes mellitus and hyperplasia of the prostate.

Waiters
Occupation code 875
Total deaths 329

Men in this group have increased mortality due to respiratory tuberculosis and homicide.

Garbage Collectors
Occupation code 891
Total deaths 283

Esophageal and rectal cancers and cirrhosis of the liver have increased PMRs.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Junk Dealers, Secondhand Store and Salvage Workers
Occupation code 892
Total deaths 457

Malignant neoplasms of the urinary bladder, Hodgkin's disease, cerebral embolism and thrombosis (age 20-64), chronic bronchitis, blows from falling objects, and homicide show elevated PMRs.

Farm Laborers
Occupation code 902
Total deaths 4,438

Respiratory tuberculosis, disorders of character, behavior and intelligence, other diseases of the heart, pneumonia, senility and ill-defined diseases, railway accidents, motor vehicle accidents, machinery accidents, accidents due to fire and explosion, and homicide all show significant mortality excesses. Low social class, poor quality of medical certification of causes of death, and dangerous work may account for much of the mortality pattern seen in these men.

Shepherders and Wool Workers
Occupation code 907
Total deaths 377

High PMRs are seen for senility and ill-defined diseases, motor vehicle accidents, and suicide.

Fishermen and Oystermen
Occupation code 962
Total deaths 4,675

Malignant neoplasms of the stomach, disorders of character, behavior and intelligence, cirrhosis of the liver, accidental drowning, and accidents due to fire and explosion have increased mortality. The Registrar General's data agree for cirrhosis and accidental deaths.

Landscape Gardeners, Groundskeepers, and Greenskeepers
Occupation code 964
Total deaths 2,677

Malignant neoplasms of the stomach and other and unspecified sites, subarachnoid hemorrhage, inflammatory diseases of the central nervous system, and accidental electrocution show PMR increases.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Longshoremen and Stevedores
Occupation code 965
Total deaths 3,735

Psychoses, disorders of character, behavior and intelligence, pneumonia (age 20-64), cirrhosis of the liver, ulcer of the stomach (age 20-64), senility and ill-defined diseases, and unspecified falls (age 20-64) show high PMRs.

Produce/Seed/Feed/Grain Company Workers
Occupation code 966
Total deaths 650

Motor vehicle accidents (1970-1979) and aplastic anemia have raised PMRs.

Loggers
Occupation code 970
Total deaths 16,625

Malignant neoplasms of the stomach and prostate and respiratory tuberculosis have small but significant PMR elevations. Very high PMRs are seen for logging-related accidents, i.e., blows from falling objects (logs) has 448 deaths observed compared to 42 expected. Disorders of character, behavior and intelligence and bronchiectasis have elevated PMRs. The bronchiectasis excess is not seen in deaths after 1970.

Warehousemen
Occupation code 973
Total deaths 2,066

Increased mortality due to suicide is seen in these men. Small number PMR elevations are seen for laryngeal cancer, aplastic anemia, intestinal obstruction, cholecystitis, and accidental electrocution.

Wood/Lumber/Sawmill Workers
Occupation code 974
Total deaths 15,067

Malignant neoplasms show a small but significant deficit of deaths. Pancreatic cancer (age 20-64) and cancer of the testis show PMR excesses. Other causes with significant PMR excesses are asthma, aplastic anemia (1970-1979), senility and ill-defined diseases, and work-related accidents.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Fruit Warehousemen
Occupation code 975
Total deaths 567

Hypertensive disease, lung cancer, kidney cancer (age 20-64), diseases of arteries, and unspecified falls have PMR increases.

Laborers NEC
Occupation code 980
Total deaths 18,251

Respiratory tuberculosis shows a PMR increase. Most cancer and cardiovascular disease rubrics have low PMRs. The exceptions are malignant neoplasms of the buccal cavity and pharynx, gallbladder, nose and accessory sinuses.

Asthma, psychoses, disorders of character, intelligence and behavior, other diseases of the heart, hypertensive disease, pneumonia, emphysema, duodenal ulcer, intestinal obstruction, cirrhosis of the liver, senility, railway accidents, accidental falls, death by fire and explosion, and homicide all have significantly elevated PMRs.

Railroad Laborers NEC
Occupation code 981
Total deaths 5,164

Respiratory tuberculosis, avitaminosis and metabolic diseases, psychoses, disorders of character, behavior and intelligence, pneumonia, ulcer of stomach, cirrhosis of liver with alcoholism, and railway accidents have increased deaths.

Construction Laborers NEC
Occupation code 982
Total deaths 4,519

Respiratory tuberculosis, malignant neoplasms of the larynx, lung, urinary bladder, and connective tissue, disorders of character, behavior and intelligence, diseases of the respiratory system, cirrhosis of the liver, motor vehicle accidents, accidental falls, blows from falling objects, and machinery-related accidents have PMR increases.

COMMENTARY ON TABLE 1 (MALE MORTALITY, 1950-1979)

Orchard Laborers
Occupation code 983
Total deaths 1,138

PMRs over 200 are seen for urinary bladder cancer (age 20-64), lymphatic leukemia, psychoses, disorders of character, behavior and intelligence, ulcer of stomach and duodenum (age 20-64), senility, accidental death due to electric current, fire and explosion, homicide, and railway accidents. Motor vehicle accidents also show increased deaths.

Chemical Company Workers
Occupation code 985
Total deaths 379

PMRs over 200 are seen for leukemia, amyotrophic lateral sclerosis, and infections of the kidney.

Institutionalized, Retarded, Disabled, and Unemployable Persons
Occupation code 997
Total deaths 1,506

Tuberculosis, psychoses, disorders of character, behavior and intelligence, cerebral hemorrhage, multiple sclerosis, pneumonia, other diseases of respiratory system, ulcer of the stomach, intestinal obstruction, urinary disease, and infections of the kidney have high PMRs. Very low PMRs are seen for motor vehicle and work-related accidents presumably because these men do not drive or work.

The pattern of mortality reflects causes of death common in bedridden men and the diseases which cause institutionalization.

Not Stated or Unknown
Occupation code 999
Total deaths 8,926

Respiratory tuberculosis, diabetes mellitus, avitaminosis and metabolic diseases, psychoses, disorders of character, behavior and intelligence, other diseases of heart, pneumonia, other diseases of intestine, cirrhosis of liver, infections of kidney, senility, railway accidents, unspecified falls, and deaths due to fire and explosion have increased PMRs. This pattern of mortality is similar to that of laborers (code 980).

COMMENTARY ON TABLE 2 (FEMALE MORTALITY, 1974-1979)

As in the commentary on Table 1 (Male Mortality) this section consists of a description of the mortality pattern seen in each of the occupational groupings in Table 2. The numbers of deaths available for analysis are small because only 6 years of data are available for females (vs. 30 for males) and nearly two-thirds are in the single non-specific group coded "housewife."

Accountants, Auditors, and Assessors
Occupation code 000
Total deaths 296

The PMR for all malignant neoplasms is slightly elevated (PMR=108). Cancer of the body of the uterus has a PMR of 349 based on 5 deaths.

Artists and Art Teachers
Occupation code 014
Total deaths 87

Women in this occupation show 3 deaths in the other lymphoma category compared to 0 expected. Breast cancer has a PMR of 171 based on 10 deaths.

Dietitians and Nutritionists
Occupation code 073
Total deaths 104

These women show a significant excess of malignant neoplasms of the digestive organs (PMR=254 based on 7 deaths) in the 20-64 age class. This is due to 4 deaths observed due to cancer of the pancreas to less than 2 expected. Malignant neoplasms of lymphatic and hematopoietic tissues (age 20-64) show a PMR of 476 based on 5 deaths, 3 of which were in the other lymphoma category. Diabetes mellitus had a PMR of 225 based on 5 deaths.

Librarians
Occupation code 111
Total deaths 201

Elevated PMRs are seen for cancers of the large intestine and rectum.

COMMENTARY ON TABLE 2 (FEMALE MORTALITY, 1974-1979)

Musicians and Music Teachers

Occupation code 120

Total deaths 236

Cancer of the breast has a PMR of 150 based on 14 deaths. Rectal cancer has a PMR of 226 based on 3 deaths.

Nurses

Occupation code 150

Total deaths 2,105

Stomach cancer has a PMR of 212 based on 10 deaths in nurses dying in the age group 20-64. Deaths due to avitaminosis and other metabolic diseases show significant excess deaths. The PMR for suicide is slightly elevated (PMR=121) agreeing with the Registrar General's findings.

Religious Workers

Occupation code 170

Total deaths 130

Elevated PMRs are seen for uterine cancer and other diseases of the heart.

School Teachers

Occupation code 184

Total deaths 2,448

Women in this class show a 10 percent increase in cancer mortality (28 percent under age 65). Cancers of the digestive organs and peritoneum show a significant excess due to cancers of the esophagus, stomach, large intestine, and pancreas. Breast cancer, malignant melanoma, and malignant neoplasms of the brain (age 20-64) all show significant excess deaths, while respiratory cancers show a significant deficit. The other lymphoma category has excess deaths in the age 20-64 category. Circulatory diseases and cirrhosis of the liver show a significant deficit of deaths, while the chronic interstitial pneumonia category has an excess. Multiple sclerosis, paralysis agitans, and rheumatoid arthritis also have excess deaths.

Medical and Dental Technicians

Occupation code 185

Total deaths 114

Breast, ovarian, and uterine (corpus and unspecified) cancer have elevated PMRs. Cerebral embolism and thrombosis and subarachnoid hemorrhage also show small number PMR elevations.

COMMENTARY ON TABLE 2 (FEMALE MORTALITY, 1974-1979)

Students
Occupation code 196
Total deaths 137

Hodgkin's disease and brain tumors show small number excesses of deaths similar to the excesses seen in male students.

Farmers
Occupation code 200
Total deaths 212

Lung cancer shows a PMR of 141 based on 7 deaths. Male farmers show a deficit of lung cancer. Subarachnoid hemorrhage has a PMR of 284 based on 4 deaths.

Florists
Occupation code 249
Total deaths 65

Diabetes mellitus has a PMR of 399 based on 5 deaths (4 over age 75).

Store Buyers and Department Heads
Occupation code 250
Total deaths 126

Cancer of the rectum, lymphatic and hematopoietic tissues, cirrhosis of the liver, and suicide have elevated PMRs.

City and Civil Service Employees
Occupation code 255
Total deaths 409

Cancer of the breast shows a significant excess mortality (PMR=157) based on 39 deaths. Cervical cancer and cancer of the corpus of the uterus show low PMRs. Cancer of the buccal cavity and pharynx, brain, and lymphatic and hematopoietic tissues also show increased deaths.

COMMENTARY ON TABLE 2 (FEMALE MORTALITY, 1974-1979)

Managers, Officials, and Proprietors NEC
Occupation code 290
Total deaths 492

Malignant neoplasms of other and unspecified sites show a mortality increase as does the subarachnoid hemorrhage rubric. Coronary heart disease shows a deficit of deaths.

Grocers and Grocery Clerks
Occupation code 298
Total deaths 323

The other lymphoma category, lymphosarcoma, subarachnoid hemorrhage, and homicide show mortality increases based on small numbers.

Bankers, Bank Clerks, and Managers
Occupation code 305
Total deaths 187

Total malignant neoplasms show a 38 percent increase in deaths due primarily to increased mortality from malignant neoplasms of the large intestine, lung, breast, and ovary.

Bookkeepers, Cashiers, and Payroll Clerks
Occupation code 310
Total deaths 1,058

Women in this group show increased mortality due to multiple sclerosis. Pulmonary embolism and infarction and chronic rheumatic heart disease (age 20-64) also have increased deaths.

Postal Workers
Occupation code 340
Total deaths 192

Brain cancer has a PMR of 519 based on 7 deaths.

COMMENTARY ON TABLE 2 (FEMALE MORTALITY, 1974-1979)

Secretaries

Occupation code 342

Total deaths 1,654

The total malignant neoplasms rubric has increased mortality due to cancers of the breast, body of uterus and brain. Multiple myeloma also shows a PMR increase. Diseases of the circulatory system show a significant deficit of deaths. Deaths due to accidental falls are increased. Multiple sclerosis and cirrhosis of the liver also have PMR increases.

Shipping and Receiving Clerks

Occupation code 343

Total deaths 122

Breast cancer (age 20-64) shows a PMR increase. Cancer of the cervix also shows a small PMR excess as does hypertensive disease.

Telephone Operators

Occupation code 353

Total deaths 427

Cancer of the cervix and homicide show elevated PMRs.

Boeing Clerks

Occupation code 362

Total deaths 152

Cancers of the large intestine (age 20-64) and lung show significant excesses in these women.

Public Utility Workers

Occupation code 363

Total deaths 159

Malignant neoplasms of the breast and ovary show elevated PMRs.

COMMENTARY ON TABLE 2 (FEMALE MORTALITY, 1974-1979)

Clerks NEC
Occupation code 370
Total deaths 829

Women in this category have increased mortality due to accidental deaths, especially deaths caused by fire and explosion. The psychoses rubric has an elevated PMR due to deaths in women over 80 years old.

Insurance Agents, Brokers, Underwriters, and Appraisers
Occupation code 385
Total deaths 162

There is a significant excess of total malignant neoplasms in the 20-64 age class. Tumors of the lung, breast, and ovaries show mortality excesses.

Real Estate Agents, Brokers, Developers, and Appraisers
Occupation code 393
Total deaths 199

Cancers of the large intestine, lung, and cervix show PMR increases based on small numbers of deaths.

Sales Clerks NEC
Occupation code 396
Total deaths 1,460

Cancer of the lung shows excess deaths while cervical cancer in age group 20-64 shows a deficit. Multiple myeloma, other and unspecified leukemia, cirrhosis of the liver, motor vehicle accidents, suicide, and homicide show small mortality excesses.

Fabric Workers
Occupation code 412
Total deaths 264

Malignant neoplasms of the buccal cavity and pharynx, lung, and brain show elevated PMRs.

COMMENTARY ON TABLE 2 (FEMALE MORTALITY, 1974-1979)

Paper/Pulp Mill Workers
Occupation code 500
Total deaths 101

Women who work in these mills have a 19 percent increase in total cancers due to cancers of large intestine, rectum, and breast.

Shipyards Workers and Shipfitters
Occupation code 507
Total deaths 123

Cancers of digestive organs have a significant PMR elevation due to cancers of large intestine and biliary passages and liver. Lung cancer, hypertensive disease, and emphysema also have PMR elevations.

Cannery/Food Processing Workers
Occupation code 527
Total deaths 314

Cancer of the esophagus and chronic rheumatic heart disease have PMR increases. Lung cancer has a deficit of deaths.

Boeing Workers NEC
Occupation code 557
Total deaths 198

Malignant neoplasms of digestive organs and peritoneum have a significant excess mortality due to cancers of esophagus (2 cases), stomach (3 cases), and large intestine (10 cases). Multiple myeloma and chronic rheumatic heart disease also have increased PMRs.

Dressmakers and Seamstresses, except Factory
Occupation code 651
Total deaths 530

Cancers of the urinary bladder and lymphatic and hematopoietic tissues, infections of the kidney, and cirrhosis of the liver show PMR increases.

COMMENTARY ON TABLE 2 (FEMALE MORTALITY, 1974-1979)

Laundry/Dry Cleaning Operatives
Occupation code 674
Total deaths 398

Arteriosclerotic heart disease (age 20-64) has an elevated PMR.

Meatcutters and Wrappers
Occupation code 675
Total deaths 65

Pulmonary emphysema, cirrhosis of the liver, and motor vehicle accidents have increased mortality.

Hospital/Institution Attendants
Occupation code 810
Total deaths 438

Cancers of the buccal cavity and pharynx, large intestine, gallbladder and bile ducts, uterine cervix, and kidney show increased PMRs. Pulmonary emphysema also shows excess deaths.

Bartenders
Occupation code 815
Total deaths 79

Female bartenders show PMR increases based on small numbers for respiratory and ovarian cancer, pulmonary emphysema, cirrhosis of the liver, motor vehicle accidents, and homicide. This pattern is similar to that of male bartenders.

Cocktail Bar/Tavern Owners, Operators, and Workers
Occupation code 816
Total deaths 90

Respiratory cancer, cirrhosis of the liver, motor vehicle accidents, and homicide show increased deaths.

COMMENTARY ON TABLE 2 (FEMALE MORTALITY, 1974-1979)

Restaurant Owners, Managers, and Workers
Occupation code 817
Total deaths 359

Lung cancer, pancreatic cancer (age 20-64), and pulmonary emphysema have PMR elevations.

Hotel/Motel Owners and Managers
Occupation code 819
Total deaths 346

Cancers of the buccal cavity and pharynx, stomach, and liver (secondary and unspecified), and suicide show excess deaths.

Hotel/Motel Maids and Housekeepers
Occupation code 821
Total deaths 155

Malignant neoplasm of the ovary, arteriosclerotic heart disease (age 20-64), and pulmonary emphysema show PMR increases.

Charwomen and Cleaners
Occupation code 824
Total deaths 82

Vascular lesions affecting the central nervous system (age 20-64) show a small number PMR increase.

Cooks, Candymakers, and Chefs
Occupation code 825
Total deaths 1,263

Cancers of the tongue and cervix, diabetes mellitus, and avitaminosis and metabolic diseases show increased deaths. Arteriosclerotic heart disease (age 20-64) and duodenal ulcer also have excess deaths.

COMMENTARY ON TABLE 2 (FEMALE MORTALITY, 1974-1979)

Housekeepers and Stewards (in private households)
Occupation code 832
Total deaths 336

These women have a significantly lower PMR due to all malignant neoplasms. Chronic rheumatic heart disease and pneumonia have elevated PMRs as do accidental and specified falls.

Janitors
Occupation code 834
Total deaths 180

These women show a significant deficit of deaths due to malignant neoplasms. Arteriosclerotic heart disease and pneumonia have significant PMR increases. Accidental falls have a PMR of 277 based on 4 deaths.

Kitchen Workers (not private households)
Occupation code 835
Total deaths 174

Cancers of the brain and cervix have elevated PMRs.

Hairdressers and Cosmetologists
Occupation code 843
Total deaths 409

Cancer of the stomach, the other lymphoma category, multiple myeloma, acute leukemia, and malignant neoplasms of other and unspecified sites have PMR increases. Diseases of veins, cirrhosis of the liver without alcoholism, accidental falls, and death due to fire and explosion also have increased mortality.

Waitresses
Occupation code 875
Total deaths 862

Cancers of the esophagus, stomach, larynx, lung, cervix and uterus unspecified have increased PMRs. Psychoses, pulmonary emphysema, cirrhosis of the liver, motor vehicle accidents, and homicide have mortality increases. Much of this mortality pattern may be due to life-style patterns, i.e., smoking, drinking, and promiscuity.

COMMENTARY ON TABLE 2 (FEMALE MORTALITY, 1974-1979)

Nuns

Occupation code 909

Total deaths 109

These women have a very interesting pattern of mortality. Cancers of digestive organs and peritoneum have a PMR of only 15 (1 death observed to 7 expected). Lung cancer also has a low PMR (38) probably due to the fact that most nuns do not smoke cigarettes; however, ovarian cancers have a very high PMR (480 based on 6 deaths) and breast cancer also has a PMR increase. The ovarian and breast cancer increases are probably related to the fact that very few nuns have pregnancies.

Fruit Warehousemen

Occupation code 975

Total deaths 130

These women show a slight and statistically insignificant PMR increase for malignant neoplasm of the bronchus and lung. Chronic rheumatic heart disease has a PMR of 276 based on 3 deaths.

COMMENTARY ON TABLE 3

(MALE MORTALITY BY OCCUPATION WITHIN CAUSE-OF-DEATH GROUPS)

This table examines mortality by cause of death, showing occupations with statistically significant elevations or reductions in PMR. The commentary that follows is for selected causes of death. The commentary and the table are in cause-of-death (Seventh Revision International Classification of Diseases) code number order. Organizing the mortality data in this way allows common exposure patterns or other common denominators to be seen which might explain an increase or decrease in mortality due to a particular cause of death.

Infective and Parasitic Diseases (ICD 001-138)
Tuberculosis (total) (001-019)

Most of the deaths in this group are due to tuberculosis. The occupations with high PMRs are workers of low income and education; workers at increased risk of occupational exposure to infectious diseases; and workers exposed to siliceous dust and, therefore, to increased mortality from silico-tuberculosis. In the first group are porters, newsboys, farm laborers, laborers NEC, waiters, recreation and amusement attendants, and cooks. Medical and dental technicians and hospital and institution attendants are occupationally exposed to tuberculosis. As expected, men in the rubric 997 (institutionalized, retarded, disabled, ect.) have a high PMR from this cause because they are institutionalized for tuberculosis. Men exposed to siliceous dust are stonecutters, mine operatives and laborers, and boilermakers.

Malignant Neoplasm of the Buccal Cavity and Pharynx (ICD 140-148)
Malignant Neoplasm of the Tongue (ICD 141)
Malignant Neoplasm of the Oral Mesopharynx (ICD 145)

These cancers have been associated with the ingestion of alcoholic beverages. Each occupational class represented with a high PMR from these causes has, with rare exception, elevated mortality due to alcoholic cirrhosis of the liver. The laundry and dry cleaning operatives, however, are also occupationally exposed to solvents.

Malignant Neoplasm of the Esophagus (ICD 150)

Alcohol ingestion is also associated with cancers of the upper cervical esophagus. This could account for high PMRs in the sailors and cooks. The printers however also have solvent exposures.

Malignant Neoplasm of the Stomach (ICD 151)

Carpenters, cabinetmakers, and plywood workers are exposed to wood dusts. A national study of carpenters(4) supports the stomach cancer excess. Brickmasons, plasterers, and metal molders are exposed to stone,

COMMENTARY ON TABLE 3

(MALE MORTALITY BY OCCUPATION WITHIN CAUSE-OF-DEATH GROUPS)

cement, and metal-bearing dusts. Fishermen and oystermen and men in occupation code group 265 (officers, pilots, pursers, engineers, ship) work on ships. The agent responsible for their gastric cancer increase remains to be determined.

Malignant Neoplasm of the Large Intestine (ICD 153)

This cause of death is more common in upper social classes, presumably due to dietary habits. This would account for the high PMRs seen in veterinarians, physicians, bankers, and engineers. This cannot, however, account for the increased PMRs seen in many of the other occupational groups.

Malignant Neoplasm of the Rectum (ICD 154)

Occupations having high PMRs due to rectal cancer are a curious mixture with no obvious common denominator. The excess in printers has been reported elsewhere(38).

Malignant Neoplasm of the Biliary Passages and Liver (ICD 155)
Malignant Neoplasm of the Gallbladder, Bile Ducts and Ampulla of Vater (ICD 155.1)

These cancers have also been related to alcohol ingestion. This would seem to account for the high PMR seen in brewery workers for ICD 155. Men in the accountants rubric show an increased mortality from these causes over time while their alcoholic cirrhosis PMRs have fallen over time. Laundry and dry cleaning workers also have solvent exposures.

Malignant Neoplasm of the Pancreas (ICD 157)

The excess of pancreatic cancer in chemists has been reported previously(18). Foresters and nurserymen have pesticide exposures. Motion picture projectionists and aluminum workers are both exposed to coal tar pitch volatiles released when anode binder material is burned.

Malignant Neoplasm of the Respiratory System (ICD 160-165)

With the exception of the two military code groups, and possibly window dressers (code 420), all the occupations having high PMRs due to respiratory cancer are employed in dusty, blue collar jobs, most of which have exposure to known carcinogens. Cigarette smoking is probably also involved. Exposure to known respiratory carcinogens is seen in asbestos

COMMENTARY ON TABLE 3

(MALE MORTALITY BY OCCUPATION WITHIN CAUSE-OF-DEATH GROUPS)

and insulation workers and shipyard workers (asbestos), smelter workers and orchardists (arsenic), roofers and slaters (benzopyrene). Body and fender repairmen are exposed to paints and solvents. Boilermakers, miners, plumbers, metal workers, and welders are exposed to metallic fumes, dusts, and ores.

Malignant Neoplasm of the Larynx (ICD 161)

Cancer of the larynx has been related to both cigarette smoking and alcohol ingestion. Both factors are probably operating in the occupational groups with high PMRs due to laryngeal cancer, i.e., bartenders.

Malignant Neoplasm of the Pleura (ICD 162.2)

This cancer has a high PMR in shipyard workers dying since 1970. These men are exposed to asbestos, and the recent emergence of a high PMR probably reflects the World War II shipbuilding boom and a long latent period.

Malignant Melanoma of Skin (ICD 190)

Three of the four occupations with high PMRs (clergymen, school teachers, hotel managers) have no obvious relationship to outdoor work or exposure to sunlight. Navy and Coast Guard personnel, however, probably are exposed to sunlight.

Hodgkin's Disease (ICD 201)

Millwrights, paper and pulp mill workers, and carpenters all show significant excess deaths due to Hodgkin's disease. This association has been reported previously(2,47).

Benign Neoplasms (ICD 210-229)

Three of the six occupations with elevated PMRs due to benign neoplasms have known exposure to asbestos or silica (asbestos and insulation workers, shipyard workers and miners). Examination of the death certificates reveals that the excess seen in asbestos and insulation workers and shipyard workers is due to pulmonary and/or abdominal mesothelioma, i.e., "malignant mesothelioma" is coded to 162.2, while "mesothelioma" is coded to a benign neoplasm rubric.

COMMENTARY ON TABLE 3
(MALE MORTALITY BY OCCUPATION WITHIN CAUSE-OF-DEATH GROUPS)

Subarachnoid Hemorrhage (ICD 330)

Two occupational classes employed at a large aircraft manufacturing facility (Boeing) have elevated PMRs due to subarachnoid hemorrhage.

Diseases of the Respiratory System (ICD 470-527)

Cigarette smoking and exposure to asbestos, silica, metal fumes, and other toxic inhalants can cause these diseases. The occupations with high PMRs reflect this.

Silicosis (ICD 523.0)

Metal molders, stonecutters and stonecarvers, and miners are all exposed to free crystalline silica.

Asbestosis (523.2)

Shipyards workers and asbestos and insulation workers are exposed to asbestos fibers.

Cirrhosis of the Liver without Alcoholism (ICD 581.0)

Cirrhosis of the Liver with Alcoholism (ICD 581.1)

Ulcer of the Stomach (ICD 540)

Acute Pancreatitis (ICD 587.0)

These causes of death are all related to excessive ingestion of alcohol. Alcoholism is probably an occupational hazard of bartenders and restaurant and cafe workers. Men in the other occupations with high PMRs due to these causes probably suffer alcoholism due to lifestyle, not occupation.

Aircraft Accidents (ICD 860-866)

Airplane pilots and navigators, aeronautical engineers, and airplane mechanics and repairmen are, of course, at increased risk of dying in plane crashes. The other occupational classes with high PMRs due to aircraft accidents may represent those men with enough money to own or fly in small aircraft.

COMMENTARY ON TABLE 3

(MALE MORTALITY BY OCCUPATION WITHIN CAUSE-OF-DEATH GROUPS)

Accidental Falls (ICD 900-904)

Men whose occupations require them to work in elevated places (linemen, roofers, painters, carpenters, construction laborers, structural metal workers) have high PMRs.

Blow from falling object (ICD 910)

Loggers and logging truck drivers are at increased risk of being struck by trees during the logging operation.

Accident caused by electric current (ICD 914)

Electricians, linemen, and public utility workers are occupationally exposed to electricity. The cranemen are electrocuted when conductive booms accidentally contact high-tension lines. Building contractors and painters are frequently electrocuted when aluminum ladders accidentally contact high-tension lines. The contractors are also electrocuted by defective power tools.

Suicide (ICD 970-979)

Although the etiology of suicide is complex, the elevated PMR seen in sheepherders may be due to the fact that these men are alone for long periods of time in remote areas. Dentists, veterinarians, physicians, and medical and dental technicians have access to drugs used in suicide and the knowledge to use them effectively.

Homicide (ICD 980-985)

Policemen and detectives are at increased risk of homicide due to the nature of their work. Taxi drivers and bartenders are at increased risk of homicide incidental to robbery attempts. The other occupational classes are at increased risk of homicide due to lifestyle.

COMMENTARY ON TABLE 4
(MALE MORTALITY BY CAUSE-OF-DEATH GROUPS WITHIN OCCUPATION)

Table 4 presents, for each occupational class, those causes of death with significantly elevated or reduced PMRs. Significance testing is done only in the grouped year-of-death column (1950-1979), so significant differences seen in the other grouped year-of-death or age-at-death columns will be missed.

The commentary on Table 1 applies to Table 4 since it is a subset of Table 1.

DISCUSSION

This section consists of an examination of the mortality patterns of groups of selected occupations which appear to have similar environmental exposures. Finding similar mortality patterns in occupations with similar exposures adds significance to the finding in the individual occupation; however, misclassification of occupation can give the same result.

1. Farmers

In Washington State the occupational exposures of farmers differ markedly, depending on the type of farming. The cancer pattern seen in these men seems to reflect these differences. Stomach cancer shows an excess in farmers NEC, nurserymen, dairy farmers, and poultry farmers. Lung cancer shows excess mortality only in orchardists and nurserymen, with low PMRs in other types of farmers. The orchardist excess is probably related to the use of arsenical-based pesticides before 1945. Cancer of the pancreas shows a significant excess mortality in nurserymen; kidney cancer in cattle ranchers and wheat farmers; and brain cancer in wheat farmers and poultry farmers. Among the hypotheses to be considered in attempting to explain some of the specific cancer excesses in farmers is animal to human transmission of disease. Dairy cattle and chickens suffer endemic leukemia-like diseases. Case-control death record studies in other states(29) support the leukemia-farming association.

PMRs AND CANCER DEATHS FOR FARM SUB-GROUPS

Code	ICD number → Malignant Neoplasm → Occupation †	151 Stomach		157 Pancreas		162.1,163 Bronchus/Lung		180 Kidney		193.0 Brain		204 Leukemia	
		PMR	Deaths	PMR	Deaths	PMR	Deaths	PMR	Deaths	PMR	Deaths	PMR	Deaths
200	Farmers NEC	118**	573	109	323	79**	646	89	89	111	69	107	225
201	Orchardists	69*	30	113	38	130**	154	114	14	106	11	94	22
202	Nurserymen	134	9	222**	12	110	22	0	0	164	3	79	3
203	Cattle Ranchers	82	45	89	35	81*	106	187**	26	115	12	96	27
204	Dairy Farmers	137*	49	81	22	60**	56	61	6	115	9	105	20
205	Wheat Farmers	97	58	92	38	60**	78	151	22	84	9	144*	43
206	Poultry Farmers	145	16	104	8	92	23	71	2	175	4	241**	13

* P < .05; ** P < .01

2. Woodworkers

There are interesting similarities and differences in the mortality patterns shown by men who work with wood and wood products. Exposures in these trades are varied. Stomach cancer shows significant PMR elevations in both carpenters and cabinetmakers and slight PMR elevations in all the

other groups shown in the accompanying table. This suggests that inhaled and swallowed wood particles may cause gastric cancer. The gastric cancer excess may also be related to the fact that a high proportion of men in these trades, especially the loggers and mill workers, use chewing tobacco. The lymphatic and hematopoietic cancer increases, especially in the paper, pulp, and plywood workers, suggest that physical and chemical breakdown products of wood may be carcinogenic. Men who work in sawmills where wood is simply machined do not show a cancer excess as seen in the paper, pulp, and plywood industries.

Nasal and paranasal sinus cancers, which have been related to wood dust exposure, show an excess mortality (PMR 200) in the cabinetmakers class (based on 2 deaths observed). Hodgkin's disease shows significant PMR elevations in millwrights and in paper and pulp mill workers. Carpenters and cabinetmakers also show slight elevations in the PMR for Hodgkin's disease. The paper workers also show a significantly elevated PMR for deaths due to multiple myeloma. The elevated leukemia PMR formerly seen in plywood workers is not demonstrated in recent deaths, although plywood workers still have a leukemia PMR of 142 based on 26 deaths for the entire study period.

These mortality figures are averages for all men in a given occupation. Mortality figures for men working in high-risk processes may be much higher.

PMRs AND CANCER DEATHS FOR ALL WOOD-EXPOSURE OCCUPATIONS

Code	Occupation	151		155.1		160		197		201		203		204	
		PMR	Deaths	PMR	Deaths	PMR	Deaths	PMR	Deaths	PMR	Deaths	PMR	Deaths	PMR	Deaths
410	Cabinetmakers	177**	31	119	2	>200	2	0	0	142	3	104	3	143	13
411	Carpenters	120**	285	88	20	119	9	96	11	150**	41	118	47	95	118
491	Millwrights	109	19	70	1	0	0	100	1	324**	6	73	2	83	7
500	Paper and Pulp mill Workers	108	47	142	8	56	1	91	3	194**	17	182**	19	126	38
706	Plywood Workers	146*	41	169	6	97	1	103	2	74	4	144	9	142	26
970	Loggers	115*	261	101	22	92	7	61	7	60*	21	85	33	79*	100
974	Wood, Lumber and Sawmill Workers	106	224	136	28	73	5	98	10	88	24	81	30	98	111

* P < .05; ** P < .01

3. Metal Workers

Workers in the 10 metal working occupations show increased mortality from respiratory cancer. Boilermakers, smelter workers, plumbers, sheet-metal workers and welders have a significant (P < .01) excess mortality from respiratory cancer. Only machinists and aluminum workers have PMRs below 110. Pancreatic cancer shows a significant excess of mortality in aluminum workers only, suggesting that exposure in this occupation may be different than that in the other metal working trades. The total PMR for pancreatic cancer in these workers is 96. Six of the 10 occupational groupings have elevated PMRs for urinary bladder cancer.

The mortality patterns seen in these groups suggest that respiratory cancer may be induced in humans by inhalation of metals and metallic compounds. Certain metals have been shown to be involved in respiratory carcinogenesis, so the lung cancer excess seen in these occupational groups is not surprising.

The urinary bladder cancer excess suggests that metals or metallic urinary excretion products may be carcinogenic for urinary bladder mucosa.

OBSERVED AND EXPECTED DEATHS AND
PMRs FOR SELECTED CANCERS IN METAL-EXPOSURE OCCUPATIONS

Code	ICD number → Malignant Neoplasm → Occupation ↓	157			160-165			181		
		Pancreas			Respiratory			Urinary Bladder		
		Obs.	Exp.	PMR	Obs.	Exp.	PMR	Obs.	Exp.	PMR
403	Boilermakers	13	18	72	116	82	142**	17	12	146
435	Smelter Workers	8	13	62	102	61	167**	5	8	60
465	Machinists	64	65	99	313	302	104	41	41	99
492	Metal Molders	3	5	57	27	21	129	3	4	83
510	Plumbers	42	50	84	300	236	127**	39	31	125
523	Structural Metal Wkrs.	26	25	105	151	124	122*	23	15	156*
525	Sheet Metal Workers	27	24	112	151	120	126**	18	14	129
526	Aluminum Workers	29	15	195**	92	86	106	10	8	126
530	Tool and Die Makers	2	6	36	35	27	129	2	3	60
721	Welders and Flame Cutters	22	25	87	177	140	126**	16	12	128
	TOTAL	236	246	96	1464	1199	122*	174	148	118

* P < .05; ** P < .01

4. Petroleum Products Workers

Men who work around garages and gas stations and men who deliver fuel oil and gasoline show an excess of urinary bladder cancer. This suggests that a volatile constituent of gasoline and fuel oil or its urinary excretion product may be carcinogenic for urinary bladder mucosa. Since vehicle drivers also have a bladder cancer excess, it may be automotive exhaust rather than gasoline which is the critical variable.

URINARY BLADDER CANCER DEATHS (ICD 181)

Code	Occupation	Observed	Expected	PMR
291	Gas Station and Garage Owners and Attendants	26	18	144
295	Fuel Oil Dealers	15	12	129
472	Auto Mechanics	28	24	119
716	Fuel Oil and Gasoline Truck Drivers	3	2	138
	TOTAL	72	56	129*

* P < .05

5. Motor Vehicle Drivers

Of the 8 occupational groups engaged in driving cars and trucks, 6 show a slight elevation of urinary bladder cancer PMR.

URINARY BLADDER CANCER DEATHS (ICD 181)

<u>Code</u>	<u>Occupation</u>	<u>Observed</u>	<u>Expected</u>	<u>PMR</u>
380	Travelling Salesmen	40	31	129
641	Bus Drivers	9	11	83
650	Deliverymen and Routemen	8	5	165
656	Milk Route Deliverymen	2	2	80
714	Taxicab Drivers	11	6	177
715	Truck Drivers	55	49	112
716	Fuel Oil Truck Drivers	3	2	138
718	Log and Lumber Truck Drivers	5	4	130
	TOTAL	133	110	121*

* P < .05

6. Painters and Decorators

Men working as painters, paperhangers, decorators, etc. show excess deaths due to lung cancer, suggesting that volatile constituents of certain paints may be carcinogenic.

DEATHS DUE TO PRIMARY CANCER OF TRACHEA, BRONCHUS, AND LUNG (ICD 162)

<u>Code</u>	<u>Occupation</u>	<u>Observed</u>	<u>Expected</u>	<u>PMR</u>
420	Decorators, Window Dressers	13	7	196*
479	Body and Fender Men, Car Painters	38	27	139*
501	Paperhangers, Interior Painters	41	30	138*
694	Painters	251	208	121**
	TOTAL	343	272	126*

* P < .05; ** P < .01

7. Fabric Workers

Men working with fabrics show increased mortality from urinary bladder cancer, presumably due to exposures to dyes. Dry cleaning workers are also exposed to solvents.

URINARY BLADDER CANCER DEATHS (ICD 181)

<u>Code</u>	<u>Occupation</u>	<u>Observed</u>	<u>Expected</u>	<u>PMR</u>
412	Canvas Makers, Fabric Workers	4	3	154
524	Tailors	10	6	180
535	Upholsterers	7	3	214*
674	Laundry and Dry Cleaning Workers	11	9	119
	TOTAL	32	21	152*

* P < .05

8. Workers in Magnetic and/or Electrical Fields

Men exposed to electricity or magnetic fields produced by electric current have excess mortality due to leukemia. Aluminum workers are exposed to strong magnetic fields induced by the high amperage direct current used in the pots in the aluminum reduction process. The other workers are exposed to electrical fields associated with alternating current flowing in wires and power lines. Some of these workers have other exposures which might explain some of the leukemia excess. Among the few studies available (48,49), there is no evidence to support the hypothesis that occupational exposures to electric or magnetic fields is carcinogenic. One study, however, has associated the incidence of juvenile cancers with proximity of residence to electrical distribution wires(50) and another associates power-frequency magnetic fields with suicide(51).

Leukemia Mortality
In Men Occupationally Exposed to Electric and Magnetic Fields
Washington State White Male Deaths, 1950-1979

Code	ICD Number Malignant Neoplasm Occupation	204			204.3		
		All Leukemia Obs	Exp	PMR	Acute Leukemia Obs	Exp	PMR
083	Electrical Engineers	7	6	114	2	2	97
190	Electronic Technicians	6	4	149	3	2	162
352	Radio and Telegraph Operators	5	4	111	3	1	239
421	Electricians	51	37	138*	23	13	178**
453	Power and Telephone Linemen	15	9	159	6	3	183
474	Television and Radio Repairmen	5	3	157	4	1	291
493	Motion Picture Projectionists	4	2	234	1	1	111
526	Aluminum Workers	20	11	189**	11	4	258**
691	Streetcar and Subway Motormen	3	2	175	0	0	0
701	Power Station Operators	8	3	259*	3	1	282
721	Welders and Flame Cutters	<u>12</u>	<u>18</u>	<u>67</u>	<u>4</u>	<u>7</u>	<u>56</u>
	TOTAL	136	99	137*	60	35	160*

* P < .05; ** P < .01

9. Workers Exposed to Phenoxy Herbicides and Chlorophenols

Swedish investigators(52,53), using case-control interview studies, have shown increased mortality and incidence of soft tissue tumors and lymphomas in workers exposed to phenoxy herbicides and chlorophenols. There is considerable exposure in this State to these agents in agriculture and forestry and the wood products industry. 2,4-D is used extensively in wheat farming, roadside brush and weed control, management of unwanted forest growth, and in paper mills and sawmills for control of bluestaining fungi.

Table A shows mortality due to soft tissue cancers, Hodgkin's disease, and the non-Hodgkin's lymphomas for men in occupations which have exposure to phenoxy herbicides and chlorophenols.

Only farmers (NOS) have a significant excess of soft tissue cancers, but the total PMR for these occupations is not significantly elevated. Similarly, papermakers have a significant excess of Hodgkin's disease while the overall PMR for Hodgkin's disease in these occupations is only 102.

Table B shows the 15 occupations (of 219) with the highest PMRs for soft tissue cancers. None of them have an intuitive exposure to the phenoxy herbicides or chlorophenols. The dry cleaners, printers, and mechanics have solvent exposure.

The mortality patterns seen here do not offer convincing support for the phenoxy herbicide and chlorophenol link to soft tissue tumors, Hodgkin's disease, and non-Hodgkin's lymphomas.

TABLE A
OBSERVED AND EXPECTED DEATHS AND PMRS FOR
SELECTED CANCERS IN OCCUPATIONS WITH EXPOSURE TO PHENOXY HERBICIDES AND CHLOROPHENOLS

ICD Number	Malignant Neoplasm	197			201			200.0-200.1			202-202.2		
		Obs	Exp	PMR	Obs	Exp	PMR	Obs	Exp	PMR	Obs	Exp	PMR
103	Foresters	-	-	-	-	-	-	1	1	120	-	-	-
200	Farmers (NOS)	25	16	152*	38	36	107	72	71	101	41	40	103
201	Orchardists	3	2	145	9	5	196	12	9	136	3	5	58
202	Nurserymen	-	-	-	-	-	-	1	1	71	-	-	-
203	Ranchers	1	2	43	2	5	38	9	10	91	6	6	102
205	Wheat Farmers	1	2	40	5	6	90	13	11	121	9	6	148
983	Orchard Laborers	1	1	99	2	3	67	2	4	46	0	2	0
964	Landscapers, Gardeners	1	2	56	4	4	89	4	8	52	5	4	116
500	Paperworkers	3	3	91	17	9	194*	17	13	133	7	8	92
704	Sawmill Workers	10	10	98	24	27	88	42	45	94	23	24	96
724	Tree Farmers	-	-	-	3	3	118	3	4	82	3	2	154
981	Railroad Laborers	4	3	120	5	9	58	12	15	83	12	7	169
	TOTAL	49	41	120	109	107	102	188	192	98	109	104	105

* P < .05

TABLE B

OCCUPATIONS WITH HIGHEST PMRS DUE TO SOFT TISSUE CANCERS (ICD 197)

	<u>Observed</u>	<u>Expected</u>	<u>PMR</u>
086 Marine engineers	3	<.5	>600
305 Bankers	5	1	465
674 Laundry, dry cleaners	3	1	>300
510 Plumbers, pipefitters	10	3	300**
184 Teachers	7	3	272**
196 Students	4	2	250
512 Pressmen, printing	3	1	209
982 Construction laborers	8	4	198*
386 Car salesmen	3	2	184
405 Brickmasons	2	1	179
551 Navy officers/enlisted men	4	2	177
080 Engineers, aeronautical	2	1	176
641 Bus drivers	2	1	175
526 Aluminum workers	2	1	158
480 Mechanics NEC	6	4	156

* P < .05; ** P < .01

10. Multiple Sclerosis in Indoor and Outdoor Workers

Noticing that fishermen, sailors, and painters had low PMRs for deaths due to multiple sclerosis (MS), I extended the analysis to all indoor and all outdoor workers. Many occupations are impossible to categorize as being indoor or outdoor. For example, a policeman may work outdoors if he is a patrolman or may, alternatively, have an indoor desk job. It is possible that chronically disabled MS patients are forced to give up strenuous outdoor jobs; however, rheumatoid arthritis, another disabling disease, showed no deficit of deaths in outdoor workers, while chronic rheumatic heart disease showed only an 8% deficit of deaths in outdoor workers.

Since with rare exception all outdoor workers are blue collar workers, the best control group is indoor blue collar workers. MS has a PMR of 70 in outdoor blue collar workers versus 102 in indoor blue collar workers (see Table).

If real, the deficit of MS deaths in men who work outdoors suggests that exposure to sunlight or some other outdoor factor may moderate or prevent MS.

MORTALITY IN INDOOR VERSUS OUTDOOR WORKERS

ICD Number →	345			410-416			722.0		
	Multiple Sclerosis			Chronic Rheumatic Heart Disease			Rheumatoid Arthritis		
Cause of Death →	Obs	Exp	PMR	Obs	Exp	PMR	Obs	Exp	PMR
Occupation	Obs	Exp	PMR	Obs	Exp	PMR	Obs	Exp	PMR
Outdoor blue collar	70	100	70**	789	853	92*	56	56	100
Indoor white collar	117	82	142**	723	618	117**	45	39	115
Indoor blue collar	112	110	102	881	849	104	52	53	98
All other occupations	126	134	94	938	1010	93*	57	60	95

* P < .05; ** P < .01

Outdoor blue collar occupation codes: 103, 181, 200, 201, 202, 203, 204, 205, 323, 390, 405, 406, 413, 416, 425, 426, 444, 447, 453, 507, 514, 634, 703, 713, 724, 891, 902, 907, 962, 964, 965, 970, 981, 982, 983.

Indoor white collar occupation codes: 000, 012, 013, 014, 021, 022, 023, 060, 071, 074, 075, 076, 080, 082, 083, 085, 086, 093, 094, 096, 104, 105, 120, 152, 154, 160, 162, 174, 184, 185, 190, 194, 195, 249, 250, 252, 253, 255, 262, 270, 275, 280, 285, 290, 292, 294, 297, 298, 305, 310, 314, 321, 340, 350, 352, 354, 361, 362, 370, 385, 386, 393, 395, 396.

Indoor blue collar occupation codes: 400, 401, 402, 403, 407, 410, 412, 420, 421, 435, 451, 459, 462, 465, 470, 471, 472, 473, 474, 475, 477, 479, 480, 490, 491, 492, 493, 500, 501, 502, 505, 510, 512, 515, 520, 521, 524, 525, 526, 527, 528, 530, 535, 545, 557, 558, 630, 655, 674, 675, 693, 701, 706, 810, 814, 815, 817, 818, 819, 825, 826, 843, 973, 974.

All other occupations: 161, 196, 206, 251, 265, 291, 295, 304, 343, 363, 364, 380, 384, 411, 415, 427, 430, 434, 450, 454, 460, 469, 523, 551, 555, 640, 641, 650, 656, 685, 692, 694, 714, 715, 716, 718, 721, 726, 812, 833, 834, 836, 841, 850, 851, 853, 875, 892, 966, 975, 980, 985, 986, 997, 999.

CONCLUSION

In the interval since the publication of the 1950-1971 analysis of this data set, a number of new occupational mortality associations demonstrated in that study have been substantiated by independent study results. Increased mortality due to pancreatic cancer and multiple myeloma in workers at the Hanford atomic energy facility has been substantiated by a population-based study(12) and, more importantly, has been shown to be associated with low-level radiation.

Similarly, the lung cancer excess seen in workers at the ASARCO Tacoma smelter has been confirmed by a population-based study(14) in that workforce. Additionally, this lung cancer excess has been related to occupational arsenic exposures. Partly as a result of this work, a lowered federal workplace standard for arsenic has been promulgated.

Aluminum workers showed elevated PMRs for cancer of the pancreas, leukemia, lymphoma, and emphysema. These excesses have been confirmed in a population-based study done at a Washington State aluminum reduction plant(13) and in a recently-concluded multiplant study done in the United States(41).

It is hoped that the new findings of the 1950-1979 analysis presented here will provide a rational basis for future studies.

As this type of information becomes available for other populations, comparisons will indicate which occupational mortality findings warrant followup. The pattern of mortality within an occupational group should also assist in the study of morbidity in that group.

An inescapable conclusion of the previous study and the current analysis is that the proportionate mortality ratio method is appropriate for this type of analysis.

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EXHIBIT 1 - Death Certificate

WASHINGTON STATE DEPARTMENT OF SOCIAL AND HEALTH SERVICES
BUREAU OF VITAL STATISTICS

CERTIFICATE OF DEATH

TYPE, OR PRINT IN
PERMANENT INK

LOCAL FILE NUMBER

STATE FILE NUMBER

DECEASED—NAME		FIRST	MIDDLE	LAST	SEX	DATE OF DEATH (MONTH, DAY, YEAR)
1.					2.	3.
RACE WHITE, NEGRO, AMERICAN INDIAN, ETC. (SPECIFY)		AGE—LAST BIRTHDAY (YEARS)	UNDER 1 YEAR MOS. DAYS	UNDER 1 DAY HOURS MIN.	DATE OF BIRTH (MONTH, DAY, YEAR)	COUNTY OF DEATH
4.		5a.	5b.	5c.	6.	7a.
CITY, TOWN, OR LOCATION OF DEATH		INSIDE CITY LIMITS (SPECIFY YES OR NO)		HOSPITAL OR OTHER INSTITUTION—NAME (IF NOT IN EITHER, GIVE STREET AND NUMBER)		
7b.		7c.	7d.		7e.	
STATE OF BIRTH (IF NOT IN U.S.A., NAME COUNTRY)		CITIZEN OF WHAT COUNTRY		MARRIED, NEVER MARRIED, WIDOWED, DIVORCED (SPECIFY)		SURVIVING SPOUSE (IF WIFE, GIVE MAIDEN NAME)
8.		9.		10.		11.
SOCIAL SECURITY NUMBER		USUAL OCCUPATION (GIVE KIND OF WORK DONE DURING MOST OF WORKING LIFE, EVEN IF RETIRED)			KIND OF BUSINESS OR INDUSTRY	
12.		13a.			13b.	
RESIDENCE—STATE		COUNTY	CITY, TOWN, OR LOCATION		INSIDE CITY LIMITS (SPECIFY YES OR NO)	STREET AND NUMBER
14a.		14b.	14c.		14d.	14e.
FATHER—NAME		FIRST	MIDDLE	LAST	MOTHER—MAIDEN NAME	
15.					16.	
INFORMANT—NAME		MAILING ADDRESS (STREET OR R.F.D. NO., CITY OR TOWN, STATE, ZIP)				
17a.		17b.				
PART I. DEATH WAS CAUSED BY: [ENTER ONLY ONE CAUSE PER LINE FOR (a), (b), AND (c)]						APPROXIMATE INTERVAL BETWEEN ONSET AND DEATH
18. IMMEDIATE CAUSE						
(a) DUE TO, OR AS A CONSEQUENCE OF:						
CONDITIONS, IF ANY, WHICH GAVE RISE TO IMMEDIATE CAUSE (a), STATING THE UNDERLYING CAUSE LAST						
(b) DUE TO, OR AS A CONSEQUENCE OF:						
(c)						
PART II. OTHER SIGNIFICANT CONDITIONS: CONDITIONS CONTRIBUTING TO DEATH BUT NOT RELATED TO CAUSE GIVEN IN PART I (a)						AUTOPSY (YES OR NO) 19a.
						IF YES WERE FINDINGS CONSIDERED IN DETERMINING CAUSE OF DEATH 19b.
ACCIDENT, SUICIDE, HOMICIDE, OR UNDETERMINED (SPECIFY)		DATE OF INJURY (MONTH, DAY, YEAR)	HOUR	HOW INJURY OCCURRED (ENTER NATURE OF INJURY IN PART I OR PART II, ITEM 18)		
20a.		20b.	20c.	M. 20d.		
INJURY AT WORK (SPECIFY YES OR NO)		PLACE OF INJURY AT HOME, FARM, STREET, FACTORY, OFFICE BLDG., ETC. (SPECIFY)		LOCATION (STREET OR R.F.D. NO., CITY OR TOWN, STATE)		
20e.		20f.		20g.		
CERTIFICATION—PHYSICIAN:		MONTH DAY YEAR	TO	MONTH DAY YEAR	AND LAST SAW HIM/HER ALIVE ON MONTH DAY YEAR	I DID/DID NOT VIEW THE BODY AFTER DEATH.
21a.		21b.		21c.	21d.	21e.
CERTIFICATION—CORONER: ON THE BASIS OF THE EXAMINATION OF THE BODY AND/OR THE INVESTIGATION, IN MY OPINION, DEATH OCCURRED ON THE DATE AND DUE TO THE CAUSE(S) STATED.						DEATH OCCURRED AT THE PLACE, ON THE DATE, AND, TO THE BEST OF MY KNOWLEDGE, DUE TO THE CAUSE(S) STATED.
22a.						M. 22b.
CERTIFIER—NAME (TYPE OR PRINT)		SIGNATURE			DEGREE OR TITLE	DATE SIGNED (MONTH, DAY, YEAR)
23a.		23b.			23c.	M.
MAILING ADDRESS—CERTIFIER		STREET OR R.F.D. NO.		CITY OR TOWN	STATE	ZIP
23d.						
BURIAL, CREMATION, REMOVAL (SPECIFY)		CEMETERY OR CREMATORY—NAME		LOCATION	CITY OR TOWN	STATE
24a.		24b.		24c.		
DATE (MONTH, DAY, YEAR)		FUNERAL HOME—NAME AND ADDRESS (STREET OR R.F.D. NO., CITY OR TOWN, STATE, ZIP)				
24d.		25a.				
FUNERAL DIRECTOR—SIGNATURE		REGISTRAR—SIGNATURE			DATE RECEIVED BY LOCAL REGISTRAR	
25b.		26a.			26b.	

DSHS 9-181 (REV. 3/78)

EXHIBIT 2 - OCCUPATION CODES

PROFESSIONAL, TECHNICAL AND KINDRED WORKERS

000	Accountants, auditors, assessors
007	Atomic energy accountants
009	Flight attendants, airline
010	Actors, actresses, radio announcers
011	Air traffic controllers
012	Airplane pilots and navigators
013	Architects
014	Artists and art teachers
015	Athletes, athletic coaches
016	Chiropodists
020	Authors
021	Chemists
022	Chiropractors
023	Clergymen
030	College presidents and deans
031	Professors/instructors, agricultural sciences
032	" " biological
034	" " chemistry
035	" " economics
040	" " engineering
041	" " geology and geophysics
042	" " mathematics
043	" " medical sciences
045	" " physics
050	" " psychology
051	" " statistics
052	" " natural sciences NEC
053	" " social sciences NEC
054	" " non-scientific subjects
055	" " forestry
060	" " subject not specified
070	Dancers and dancing teachers
071	Dentists
072	Designers
073	Dietitians and nutritionists
074	Draftsmen
088	Draftsmen, atomic energy
089	Draftsmen, Boeing
075	Editors and reporters
076	Newspaper owners, publishers, managers, etc.
080	Engineers, aeronautical
081	" chemical
082	" civil
083	" electrical
084	" industrial
085	" mechanical
086	" marine
087	" nuclear
090	" metallurgical
091	" mining
092	" sales
094	" construction

EXHIBIT 2 - OCCUPATION CODES

PROFESSIONAL, TECHNICAL AND KINDRED WORKERS (continued)

095 Engineers, refrigeration
 096 " operating
 097 " Boeing
 099 " steam
 093 " NEC, including aides
 101 Entertainers NEC
 102 Farm and home management advisers
 103 Foresters and conservationists
 104 Funeral directors and embalmers
 105 Lawyers and judges
 106 Court reporters
 111 Librarians
 120 Musicians and music teachers
 130 Agricultural scientists
 131 Biological scientists
 134 Geologists and geophysicists
 135 Mathematicians
 140 Physicists
 141 Meteorologists
 145 Miscellaneous natural scientists
 150 Nurses, professional
 151 Nurses, student professional
 152 Optometrists
 153 Osteopaths
 154 Personnel and labor relations workers
 160 Pharmacists, druggists
 161 Photographers
 162 Physicians and surgeons
 163 Public relations men and publicity writers
 164 Radio operators
 165 Recreation and group workers
 170 Religious workers
 171 Social and welfare workers, except group
 172 Economists
 173 Psychologists, psychiatrists
 174 Statisticians and actuaries, analysts
 175 Miscellaneous social scientists
 176 Sanitarians
 180 Sports instructors and officials
 181 Surveyors
 182 Teachers, elementary and secondary schools
 183 " high school and NEC
 184 Teachers and administrators NEC
 185 Technicians, medical and dental
 186 Technicians, X-ray, medical radiologists
 190 Technicians, electrical and electronic
 191 Technicians, other engineering and physical sciences
 192 Technicians, laboratory NEC
 193 Therapists and healers NEC
 194 Veterinarians
 195 Professional, technical and kindred workers NEC
 196 Students

EXHIBIT 2 - OCCUPATION CODES

FARMERS AND FARM MANAGERS

200 Farmers, owners and tenants
201 Orchardists
202 Nurserymen
203 Ranchers
204 Dairy farmers
205 Wheat and grain farmers
206 Egg and poultry farmers, distributors
207 Bee keepers
222 Farm managers
387 Mink ranchers, fur traders
901 Farm foremen
902 Farm laborers, wage workers
903 Unpaid family farm workers
904 Farm caretakers
905 Self-employed farm service
906 Itinerant laborers
907 Shepherders, wool workers

MANAGERS, OFFICIALS, PROPRIETERS except farm

249 Florists
250 Buyers and department heads, store
251 Buyers and shippers, farm products, produce brokers
252 Conductors, railroad
253 Credit men
254 Floor men and floor managers, store
255 City, civil service employees
260 Inspectors, public administration
261 Lighthouse keepers
262 Managers and superintendents, building
265 Officers, pilots, pursers, engineers, ship
270 Officials and administrators NEC, public administration
275 Officials, lodge, society, union, etc.
280 Postmasters
285 Purchasing agents and buyers NEC, sales managers
289 Aircraft managers, etc.
290 Managers, officials and proprietors NEC
291 Owners, attendants, gas station/garage; car wash, parking
292 Lumber company managers, owners, and workers
294 Boeing officials, managers, supervisors
295 Fuel oil dealers, workers
296 Pet shop owners, workers
297 Furniture store owners, managers, clerks
298 Grocers, grocery clerks

EXHIBIT 2 - OCCUPATION CODES

CLERICAL

301 Agents NEC
302 Attendants and assistants, library
303 Attendants, physician/dentist's office
304 Baggage men, transportation
305 Bankers, bank clerks, managers
310 Bookkeepers
312 Cashiers
313 Collectors, bill and account
314 Dispatchers and starters, vehicle; traffic managers
315 Express messengers, railroad mail clerks
320 File clerks
321 Adjusters, examiners, investigators, inspectors
323 Mail carriers
324 Messengers and office boys
325 Office machine operators
333 Payroll and timekeeping clerks
340 Postal clerks
341 Receptionists
342 Secretaries
343 Shipping and receiving clerks
345 Stenographers
350 Stock clerks and storekeepers
351 Telegraph messengers
352 Telegraph operators
353 Telephone operators
354 Ticket, station, express, and travel agents
360 Typists
361 Railroad clerks
362 Boeing clerks
363 Public utility workers
364 Public utility supervisors and officials, etc.
370 Clerks NEC

SALES WORKERS

380 Travelling salesmen, sales representatives, advertising agents
381 Auctioneers
382 Demonstrators
383 Hucksters, peddlers, promoters
384 Lumber salesmen
385 Insurance agents, brokers, underwriters, appraisers
386 Car salesmen
388 Chemical salesmen
390 Newsboys
393 Real estate agents, brokers, developers, appraisers
395 Stocks and bonds salesmen
396 Sales clerks NEC

EXHIBIT 2 - OCCUPATION CODES

CRAFTSMEN, FOREMEN AND KINDRED

400 Carpet makers, carpet layers
401 Bakers
402 Blacksmiths
403 Boilermakers
404 Bookbinders
405 Brickmasons, stonemasons, tile setters
406 Building contractors, construction contractors
407 Boatbuilders
408 Railroad contractors
409 Shipwrights
410 Cabinetmakers
411 Carpenters
412 Canvas makers, sailmakers, awning sales and service and fabric workers
413 Cement and concrete finishers
414 Compositors and typesetters
415 Cranemen, derrickmen and hoistmen
416 Oilwell drillers
417 Oil refinery workers
420 Decorators and window dressers
421 Electricians
418 Electricians, atomic energy
419 Electricians, Boeing or airplane
422 Electricians, shipyard
423 Electrotypers and stereotypers
424 Engravers, except photoengravers
425 Excavating, grading, road machinery operators, pavers, highway maintenance
426 Water well drillers
427 Railroad foremen
429 Construction foremen NEC
430 Foremen NEC
431 Forgemen and hammermen
434 Glaziers
435 Smelter workers, heat treaters, annealers, temperers (ASARCO)
436 Fiberglass, bathtub and boat workers
444 Inspectors, scalers, graders--log and lumber; timber cruisers
445 Inspectors, machinery
446 Inspectors, Boeing
447 Inspectors, railroad
448 Inspectors, construction
450 Inspectors, NEC
976 Inspectors, fruit
260 Inspectors, public administration
451 Jewelers, watchmakers, goldsmiths, silversmiths, locksmiths
452 Jobsetters, metal
453 Linemen and servicemen, telegraph, telephone, power
454 Locomotive engineers, railroad
455 Logging engineers
459 Telephone installers, repairmen
460 Locomotive firemen, railroad
461 Military machinists
462 Manufacturing workers
464 Logging machinists and mechanics

EXHIBIT 2 - OCCUPATION CODES

CRAFTSMEN, FOREMEN AND KINDRED WORKERS (continued)

465 Machinists NEC
 466 Machinists, Boeing
 467 Machinists, shipyard
 468 Maintenance workers, Boeing
 469 Maintenance workers, railroad
 476 Maintenance workers, lumber, plywood, veneer, etc.
 470 Mechanics and repairmen, air conditioning, heating, refrigeration
 471 " " " airplane
 472 " " " automobile
 473 " " " office machines
 474 " " " radio, television (manufacturing, etc.)
 475 " " " railroad and car shop
 480 " " " NEC
 477 Tire recappers and repairers, rubber welders
 479 Auto body and fender/car painters
 490 Millers, grain, flour, feed, etc.
 491 Millwrights
 492 Molders, metal
 493 Motion picture projectionists
 494 Opticians, lens grinders, and polishers
 495 Painters, construction and maintenance
 496 County-city road construction and maintenance
 500 Paper, pulp mill workers
 501 Paperhangers and decorators (painters)
 502 Pattern and model makers, except paper
 504 Piano and organ tuners and repairmen
 505 Plasterers and lathers
 507 Shipyard workers, shipfitters
 508 Steamfitters
 509 Atomic steamfitters, pipefitters
 510 Plumbers and pipefitters
 512 Pressmen and plate printers, printing
 513 Rollers and roll hands, metal
 514 Roofers and slaters
 515 Shoemakers and repairers (except factory), leather workers, tanners
 520 Stationary engineers
 521 Stonecutters and stone carvers
 523 Structural metal workers
 524 Tailors
 525 Tinsmiths, coppersmiths and sheet metal workers
 526 Aluminum workers
 527 Cannery and food processing workers
 528 Floor workers (covering, waxing, hardwood, linoleum, etc.)
 530 Tool and die makers and setters, toolmakers, etc.
 535 Upholsterers
 545 Craftsmen and kindred workers NEC

EXHIBIT 2 - OCCUPATION CODES

CRAFTSMEN, FOREMEN AND KINDRED WORKERS (continued)

548 Officers and enlisted men, Coast Guard
 549 " " " Marine Corps
 550 " " " Air Force
 551 " " " Navy
 552 " " " Army
 555 " " " Armed Forces NEC
 553 Merchant Marines
 554 Civilian employees of the Armed Forces
 557 Boeing workers NEC
 558 Atomic energy workers NEC
 559 Nuclear workers, not Hanford

OPERATIVES

601 Apprentice, auto mechanics
 602 " bricklayers and masons
 604 " electricians
 605 " machinists and toolmakers
 610 " mechanics, except auto
 612 " plumbers and pipefitters
 613 " building trades NEC
 614 " metalworking trades NEC
 615 " printing trades
 620 " other specified trades
 621 " trade not specified
 630 Asbestos and insulation workers
 631 Assemblers, factory workers
 634 Blasters and powdermen
 635 Boatmen, canalmen and lock keepers
 640 Railroad brakemen, carmen
 641 Bus drivers
 642 Chainmen, rodmen and axmen, surveying
 643 Checkers, examiners and inspectors, manufacturing
 645 Conductors, bus and street railway
 650 Deliverymen and routemen
 651 Dressmakers and seamstresses, except factory
 652 Dyers
 653 Metal filers, grinders, and polishers
 654 Graders and packers (except factory) fruit, nut, vegetable
 655 Creamery, ice cream and cheesemakers, and dairy workers
 656 Milk route deliverymen
 657 Parts finishers, Boeing
 670 Furnacemen, smeltermen and pourers
 671 Heaters, metal
 672 Other smelter workers

EXHIBIT 2 - OCCUPATION CODES

OPERATIVES (continued)

673 Knitters, loopers and toppers, textile
674 Laundry and drycleaning operatives
675 Meatcutters (except slaughter- and packing house) and butchers
676 Heavy equipment operators
677 Slaughterhouse butchers
680 Milliners
685 Mine operatives and laborers NEC
690 Motormen, mine, factory, etc.
691 Motormen, street, subway, elevated railway
692 Oilers and greasers, except auto
693 Packers and wrappers NEC
694 Painters, sign (except construction and maintenance)
695 Photographic process workers
701 Power station operators
702 Divers
703 Sailors, deckhands, and seamen NEC
704 Sawyers, sawmill workers and saw filers
705 Sewers, stitchers, and cutters, manufacturing
706 Plywood workers
710 Spinners, textile
711 Rope makers
712 Stationary firemen
713 Railroad switchmen
714 Taxicab drivers and chauffeurs
715 Truck and tractor drivers
716 Fuel oil truck drivers
717 Sawmill truck drivers
718 Lumber and logging truck drivers
719 Moving, transfer, and storage truck drivers and workers
720 Weavers, textile
721 Welders and flame cutters
722 Operatives and kindred workers NEC
724 Tree farmers, Forest Service and Parks Department workers
725 Sandblasters
726 Ordnance plant workers

SERVICE WORKERS

810 Attendants, hospital and institutions
811 Nursing home, convalescent center, hospital managers, owners, etc.
812 Attendants, professional and personal service NEC
813 Attendants, recreation and amusement (cardroom, poolhall, carnival)
814 Barbers
815 Bartenders
816 Cocktail bars and tavern owners, operators, managers, workers NEC
817 Restaurant and cafe owners, operators, managers, workers
818 Brewery workers

EXHIBIT 2 - OCCUPATION CODES

SERVICE WORKERS (continued)

819 Hotel, motel, resort, apartment house, dude ranch owners, managers, etc.
820 Bootblacks and shoeshine operators
821 Boarding, lodging, hospital housekeepers; motel/hotel maids
822 Babysitters, preschool, nursery, day care
824 Charwomen and cleaners
825 Cooks, candymakers & chefs (except private household)
826 Dishwashers
827 Lumber camp cooks
830 Counter and fountain workers
831 Elevator operators
832 Housekeepers and stewards in private household (maids)
833 Window cleaners, wall washers
834 Janitors, maintenance men, sextons
835 Kitchen workers, restaurant employees NEC (not private household)
836 School custodians
840 Midwives
841 Porters
842 Practical nurses
843 Hairdressers and cosmetologists
849 Fumigation employees
850 Firemen and fire protection workers
851 Guards, watchmen and doorkeepers
852 Marshals and constables
853 Policemen and detectives
854 Sheriffs and bailiffs
855 Watchmen, lumber/logging
856 Watchmen and guards, atomic energy plants
860 Watchmen, crossing and bridge tenders
874 Ushers, recreation and amusement
875 Waiters and waitresses
890 Service workers NEC (except private household)
891 Garbage collectors
892 Junk dealers, secondhand store and salvage workers

LABORERS except farm and mine

960 Carpenter helpers, except logging and mining
962 Fishermen and oystermen
964 Gardeners (except farm), groundskeepers, greenskeepers, landscapers
965 Longshoremen and stevedores
966 Produce, seed, feed, grain company workers
967 Flour mill employees
970 Lumbermen, raftsmen, woodchoppers, lumberjacks, woodsmen, loggers
971 Teamsters
972 Truck driver helpers
973 Warehousemen NEC
974 Woodworkers (yardworkers): mill, pole, match, shingle weavers, sash-door, furniture finishers

EXHIBIT 2 - OCCUPATION CODES

LABORERS except farm and mine (continued)

975 Fruit warehousemen
976 Fruit inspectors
980 Laborers NEC
981 Railroad laborers NEC
982 Construction laborers NEC
983 Orchard laborers, brush pickers
984 Hod carriers
985 Chemical company employees
986 Pest control employees

OTHER

908 Housewife/homemaker (her own home)
909 Nuns
996 Children under 18
997 Institutionalized, retarded, disabled war veterans; unemployable
998 Unemployed
999 Not stated or unknown

EXHIBIT 3 - PMR Calculation

Table B. COMPUTATION OF PROPORTIONATE MORTALITY RATIOS FOR TUBERCULOSIS, ALL FORMS, FOR WHITE MINERS: UNITED STATES, 1950

$$\text{Proportionate Mortality Ratio} = \frac{\text{Tabulated deaths for an occupation-cause-color group}}{\text{Expected deaths for an occupation-cause-color group}} \times 100$$

Age	Percent tuberculosis deaths of all deaths all occupations (1)	Deaths from all causes for white miners (2)	Expected deaths from tuberculosis, all forms, for white miners (3) = (1) x (2)	Tabulated deaths from tuberculosis, all forms, for white miners (4)
20-24 years-----	6.28	292	18.34	10
25-29 years-----	8.30	357	29.63	20
30-34 years-----	9.01	341	30.72	22
35-44 years-----	7.78	1,095	85.19	98
45-54 years-----	5.19	1,784	92.59	174
55-59 years-----	3.68	1,554	57.19	112
60-64 years-----	2.77	2,051	56.81	104
Total:				
25-59 years-----	295.32	426
20-64 years-----	370.47	540

Proportionate mortality ratio 25-59 years = $\frac{426}{295} \times 100 = 146$ 20-64 years = $\frac{540}{370} \times 100 = 144$

Reference: Guralnick, L. Mortality by Occupation and Cause of Death among Men 20-64 Years of Age: U.S. 1950. Vital Statistics--Special Reports, Vol. 53, No. 3, 1963.

EXHIBIT 4 -- OCCUPATION GROUPINGS FOR MEN

<u>Grouped Code</u>	<u>Occupation Code</u>	<u>Occupation Title</u>
000	000	Accountants, Auditors, and Assessors
012	012	Airplane Pilots and Navigators
013	013	Architects
014	014	Artists and Art Teachers
021	021	Chemists
022	022	Chiropractors
023	023	Clergymen
060	060	Professors and Instructors
	031	Professors and Instructors, Agricultural Sciences
	032	Professors and Instructors, Biological
	034	Professors and Instructors, Chemistry
	035	Professors and Instructors, Economics
	040	Professors and Instructors, Engineering
	041	Professors and Instructors, Geology and Geophysics
	042	Professors and Instructors, Mathematics
	043	Professors and Instructors, Medical Sciences
	045	Professors and Instructors, Physics
	050	Professors and Instructors, Psychology
	052	Professors and Instructors, Natural Sciences NEC
	053	Professors and Instructors, Social Sciences NEC
054	Professors and Instructors, Non-scientific subjects	
071	071	Dentists
074	074	Draftsmen
075	075	Editors and Reporters
076	076	Newspaper Owners, Publishers, and Managers
080	080	Aeronautical Engineers
	097	Boeing Engineers

EXHIBIT 4 -- OCCUPATION GROUPINGS FOR MEN

<u>Grouped Code</u>	<u>Occupation Code</u>	<u>Occupation Title</u>
082	082	Civil Engineers
083	083	Electrical Engineers
085	085	Mechanical Engineers
086	086	Marine Engineers
093	093	Engineers NEC
	081	Engineers, Chemical
	084	Engineers, Industrial
	090	Engineers, Metallurgical
	091	Engineers, Mining
	092	Engineers, Sales
	095	Engineers, Refrigeration
	099	Engineers, Steam
094	094	Construction Engineers
096	096	Operating Engineers
103	103	Foresters and Conservationists
104	104	Funeral Directors and Embalmers
105	105	Lawyers and Judges
120	120	Musicians and Music Teachers
152	152	Optometrists
154	154	Personnel and Labor Relations Workers
160	160	Pharmacists and Druggists
161	161	Photographers
	695	Photographic Process Workers
162	162	Physicians
	153	Osteopaths
174	174	Statisticians, Actuaries, Analysts, and Computer Programmers
	135	Mathematicians

EXHIBIT 4 -- OCCUPATION GROUPINGS FOR MEN

<u>Grouped Code</u>	<u>Occupation Code</u>	<u>Occupation Title</u>
181	181 642	Surveyors Chainmen, Rodmen, and Axmen, Surveying
184	184 182 183	School Teachers Teachers, Elementary and Secondary Schools Teachers, High School NEC
185	185	Medical and Dental Technicians
190	190	Electrical and Electronic Technicians
194	194	Veterinarians
195	195	Professional and Technical Workers NEC
196	196	Students (18 and over)
200	200	Farmers NEC
201	201	Orchardists
202	202	Nurserymen
203	203	Ranchers (cattle, sheep, etc.)
204	204	Dairy Farmers
205	205	Wheat and Grain Farmers
206	206	Egg/Poultry Farmers and Distributors
249	249	Florists
250	250	Store Buyers and Department Heads
251	251	Buyers and Shippers of Farm Products and Produce Brokers
252	252	Railroad Conductors
253	253	Credit Men
255	255	City and Civil Service Employees
260	260	Public Administration Inspectors
262	262	Building Managers and Superintendents

EXHIBIT 4 -- OCCUPATION GROUPINGS FOR MEN

<u>Grouped Code</u>	<u>Occupation Code</u>	<u>Occupation Title</u>
265	265	Ships' Officers, Pilots, Purser, and Engineers
270	270	Public Administrators and Officials NEC
275	275	Lodge/Society/Union Officials
280	280	Postmasters
285	285	Purchasing Agents and Buyers NEC, Sales Managers
290	290	Managers, Officials, and Proprietors NEC
291	291	Gas Station/Garage Owners and Attendants
292	292	Lumber Company Managers, Owners, and Workers
294	294	Boeing Officials, Managers, and Supervisors
295	295	Fuel Oil Dealers and Workers
297	297	Furniture Store Owners, Managers, and Clerks
298	298	Grocers and Grocery Clerks
304	304	Transportation Baggage-men
305	305	Bankers, Bank Clerks, and Managers
310	310	Bookkeepers, Cashiers, and Payroll Clerks
	312	Cashiers
	333	Payroll and Timekeeping Clerks
314	314	Vehicle Dispatchers and Starters and Traffic Managers
321	321	Adjusters and Examiners
323	323	Mail Carriers
340	340	Postal Clerks
343	343	Shipping and Receiving Clerks
350	350	Stock Clerks and Storekeepers

EXHIBIT 4 -- OCCUPATION GROUPINGS FOR MEN

<u>Grouped Code</u>	<u>Occupation Code</u>	<u>Occupation Title</u>
352	352 164	Telegraph and Radio Operators Radio Operators
354	354	Ticket, Station, Express, and Travel Agents
361	361	Railroad Clerks
362	362	Boeing Clerks
363	363	Public Utility Workers
364	364	Public Utility Supervisors and Officials
370	370	Clerks NEC
380	380 382 383	Travelling Salesmen and Sales Representatives Demonstrators Hucksters, Peddlers, and Promoters
384	384	Lumber Salesmen
385	385	Insurance Agents, Brokers, Underwriters, and Appraisers
386	386	Car Salesmen
390	390	Newsboys
393	393	Real Estate Agents, Brokers, Developers, and Appraisers
395	395	Stocks and Bonds Salesmen
396	396	Sales Clerks NEC
400	400	Carpet Makers and Layers
401	401	Bakers
402	402	Blacksmiths
403	403	Boilermakers

EXHIBIT 4 -- OCCUPATION GROUPINGS FOR MEN

<u>Grouped Code</u>	<u>Occupation Code</u>	<u>Occupation Title</u>
405	405	Brickmasons, Stonemasons, and Tile Setters Apprentice Bricklayers and Masons
	602	
406	406	Building and Construction Contractors and Foremen Railroad Contractors Construction Foremen NEC Apprentices, Building Trades NEC
	408	
	429	
	613	
407	407	Boatbuilders
410	410	Cabinetmakers
411	411	Carpenters Carpenter Helpers, except Logging and Mining
	960	
412	412	Fabric Workers Dyers Textile Knitters, Loopers, and Toppers Manufacturing Sewers, Stitchers, and Cutters Textile Spinners Ropemakers Textile Weavers
	652	
	673	
	705	
	710	
	711	
	720	
413	413	Cement and Concrete Finishers
415	415	Cranemen, Derrickmen, and Hoistmen
416	416	Oil Well Drillers
420	420	Decorators and Window Dressers
421	421	Electricians Electricians, Boeing or Airplane Apprentice Electricians
	419	
	604	
425	425	Road Graders, Pavers, Machine Operators, and Excavators County/City Road Construction and Maintenance Workers Heavy Equipment Operators
	496	
	676	
426	426	Water Well Drillers
427	427	Railroad Foremen

EXHIBIT 4 -- OCCUPATION GROUPINGS FOR MEN

<u>Grouped Code</u>	<u>Occupation Code</u>	<u>Occupation Title</u>
430	430	Foremen NEC
434	434	Glaziers
435	435	Smelter Workers
	431	Forgemen and Hammermen
	670	Furnacemen and Pourers
	671	Metal Heaters
	672	Smelter Workers NEC
444	444	Log/Lumber Inspectors, Scalers, Graders, and Timber Cruisers
447	447	Railroad Inspectors
450	450	Inspectors NEC
	445	Inspectors, Machinery
	448	Inspectors, Construction
	643	Manufacturing Checkers, Examiners, and Inspectors
451	451	Jewelers, Watchmakers, Goldsmiths, Silversmiths, and Locksmiths
453	453	Telegraph/Telephone/Power Linemen
454	454	Locomotive Engineers
459	459	Telephone Installers and Repairers
460	460	Locomotive Firemen
462	462	Manufacturing Workers
465	465	Machinists NEC
	461	Military Machinists
	605	Apprentice Machinists and Toolmakers
469	469	Railroad Workers NEC
470	470	Air Conditioning/Heating/Refrigeration Mechanics and Repairmen
471	471	Airplane Mechanics and Repairmen

EXHIBIT 4 -- OCCUPATION GROUPINGS FOR MEN

<u>Grouped Code</u>	<u>Occupation Code</u>	<u>Occupation Title</u>
472	472	Auto Mechanics and Repairmen
	601	Apprentice Auto Mechanics
473	473	Office Machine Mechanics and Repairmen
474	474	Radio/Television Mechanics and Repairmen
475	475	Railroad/Car Shop Mechanics and Repairmen
477	477	Tire Recappers and Repairers, Rubber Welders
479	479	Body/Fender Repairmen and Auto Painters
480	480	Mechanics and Repairmen NEC
	610	Apprentice Mechanics, except Auto
490	490	Grain/Flour/Feed Mill Workers
	967	Flour Mill Workers
491	491	Millwrights
492	492	Metal Molders
493	493	Motion Picture Projectionists
500	500	Paper/Pulp Mill Workers
501	501	Paperhangers and Decorators (Painters)
502	502	Pattern and Model Makers, except Paper
505	505	Plasterers and Lathers
507	507	Shipyard Workers, Shipwrights, and Shipfitters
	409	Shipwrights
	422	Shipyard Electricians
	467	Shipyard Machinists
510	510	Plumbers and Pipefitters
	508	Steamfitters
	612	Apprentice Plumbers and Pipefitters

EXHIBIT 4 -- OCCUPATION GROUPINGS FOR MEN

<u>Grouped Code</u>	<u>Occupation Code</u>	<u>Occupation Title</u>
512	512	Printing Pressmen, Plate Printers, and Typesetters
	414	Compositors and Typesetters
	423	Electrotypers and Stereotypers
	615	Apprentice Printing Trades
514	514	Roofers and Slaters
515	515	Shoemakers, Shoe Repairers, and Leather Workers
520	520	Stationary Engineers and Firemen
	712	Stationary Firemen
521	521	Stonecutters and Stonecarvers
523	523	Structural Metal Workers
	452	Metal Jobsetters
	614	Metal Working Trades Apprentices NEC
	653	Metal Filers, Grinders, and Polishers
524	524	Tailors
525	525	Tinsmiths, Coppersmiths, and Sheet Metal Workers
	513	Metal Rollers and Roll Hands
526	526	Aluminum Workers
527	527	Cannery and Food Processing Workers
528	528	Floor Workers (Covering, Hardwood, Linoleum)
530	530	Tool and Die Makers and Setters
535	535	Upholsterers
545	545	Craftsmen and Kindred Workers NEC
551	551	Navy/Coast Guard Officers and Enlisted Men
	548	Coast Guard Officers and Enlisted Men
555	555	Army/Air Force/Marine Corps Officers and Enlisted Men
	549	Marine Corps Officers and Enlisted Men
	550	Air Force Officers and Enlisted Men
	552	Army Officers and Enlisted Men

EXHIBIT 4 -- OCCUPATION GROUPINGS FOR MEN

<u>Grouped Code</u>	<u>Occupation Code</u>	<u>Occupation Title</u>
557	557	Boeing Workers
	089	Draftsmen, Boeing
	446	Inspectors, Boeing
	466	Machinists, Boeing
	468	Maintenance Workers, Boeing
	657	Parts Finishers, Boeing
558	558	Atomic Energy Workers NEC
	007	Atomic Energy Accountants
	087	Engineers, Nuclear
	088	Draftsmen, Atomic Energy
	418	Electricians, Atomic Energy
	509	Steamfitters/Pipefitters, Atomic Energy
	559	Nuclear Workers, not Hanford
	856	Watchmen and Guards, Atomic Energy Plants
630	630	Asbestos and Insulation Workers
634	634	Blasters and Powdermen
640	640	Railroad Brakemen
641	641	Bus Drivers
	691	Street, Subway, Elevated Railway Motormen
650	650	Deliverymen and Routemen
655	655	Dairy Workers, Ice Cream and Cheesemakers
656	656	Milk Route Deliverymen
674	674	Laundry/Dry Cleaning Operatives
675	675	Meatcutters and Butchers
	677	Slaughterhouse Butchers
685	685	Mine Operatives and Laborers NEC
692	692	Oilers and Greasers, except Auto
693	693	Packers and Wrappers NEC
694	694	Painters
	495	Painters, Construction and Maintenance

EXHIBIT 4 -- OCCUPATION GROUPINGS FOR MEN

<u>Grouped Code</u>	<u>Occupation Code</u>	<u>Occupation Title</u>
701	701	Power Station Operators
703	703 553	Sailors, Deckhands, and Seamen NEC Merchant Marines
706	706	Plywood Workers
713	713	Railroad Switchmen
714	714	Taxicab Drivers and Chauffeurs
715	715 719 972	Truck and Tractor Drivers Moving, Transfer, and Storage Workers and Truck Drivers Truck Driver Helpers
716	716	Fuel Oil Truck Drivers
718	718 717	Lumber/Log/Sawmill Truck Drivers Sawmill Truck Drivers
721	721	Welders and Flame Cutters
724	724	Tree Farmers, Forest Service and Parks Department Workers
726	726	Ordnance Plant Workers
810	810	Hospital/Institution Attendants
812	812	Recreation/Amusement Attendants (Cardroom, Pool Hall, Carnival)
814	814	Barbers
815	815 816	Bartenders Cocktail Bar/Tavern Owners, Operators and Workers
817	817	Restaurant Owners, Managers, and Workers
818	818	Brewery Workers
819	819	Hotel/Motel Owners and Managers

EXHIBIT 4 -- OCCUPATION GROUPINGS FOR MEN

<u>Grouped Code</u>	<u>Occupation Code</u>	<u>Occupation Title</u>
825	825	Cooks, Candymakers, and Chefs
	827	Lumber Camp Cooks
	835	Kitchen Workers (not private household)
826	826	Dishwashers
833	833	Window Cleaners and Wall Washers
834	834	Janitors, Maintenance Men, and Sextons
836	836	School Custodians
841	841	Porters
843	843	Hairdressers and Cosmetologists
850	850	Firemen and Fire Protection Workers
851	851	Guards, Watchmen, and Doorkeepers
853	853	Policemen, Sheriffs, and Marshals
	852	Marshals and Constables
	854	Sheriffs and Bailiffs
860	860	Bridge Tenders and Crossing Watchmen
875	875	Waiters
891	891	Garbage Collectors
892	892	Junk Dealers, Secondhand Store and Salvage Workers
902	902	Farm Laborers
	222	Farm Managers
	901	Farm Foremen
	903	Unpaid Family Farm Workers
	904	Farm Caretakers
	905	Self-employed Farm Workers
	906	Itinerant Farm Laborers
907	907	Shepherders and Wool Workers
962	962	Fishermen and Oystermen
964	964	Landscape Gardeners, Groundskeepers, and Greenskeepers

EXHIBIT 4 -- OCCUPATION GROUPINGS FOR MEN

<u>Grouped Code</u>	<u>Occupation Code</u>	<u>Occupation Title</u>
965	965	Longshoremen and Stevedores
966	966	Produce/Seed/Feed/Grain Company Workers
970	970	Loggers
	455	Logging Engineers
	464	Logging Machinists and Mechanics
	855	Lumber/Logging Watchmen
973	973	Warehousemen
974	974	Wood/Lumber/Sawmill Workers
	476	Lumber/Plywood/Veneer Maintenance Men
	704	Sawyers, Sawmill Workers, Saw Filers
975	975	Fruit Warehousemen
	654	Fruit/Nut/Vegetable Graders and Packers
	976	Fruit Inspectors
980	980	Laborers NEC
981	981	Railroad Laborers NEC
982	982	Construction Laborers NEC
	984	Hod Carriers
983	983	Orchard Laborers
985	985	Chemical Company Workers
997	997	Institutionalized, Retarded, Disabled, and Unemployable Men :
999	999	Not Stated or Unknown
	998	Unemployed

EXHIBIT 4 -- OCCUPATION GROUPINGS FOR WOMEN

<u>Grouped Code</u>	<u>Occupation Code</u>	<u>Occupation Title</u>
000	000	Accountants, Auditors, and Assessors
014	014	Artists and Art Teachers
073	073	Dietitians and Nutritionists
111	111	Librarians
	302	Library Assistants
120	120	Musicians and Music Teachers
150	150	Nurses
	151	Nurses, Student Professional
	842	Nurses, Practical
170	170	Religious Workers
	023	Clergymen
184	184	School Teachers
	182	Elementary School Teachers
	183	High School Teachers
185	185	Medical and Dental Technicians
196	196	Students
200	200	Farmers
	201	Orchardists
	202	Nurserymen
	203	Ranchers (cattle, sheep, etc.)
	204	Dairy Farmers
	205	Wheat and Grain Farmers
	206	Egg/Poultry Farmers and Distributors
249	249	Florists
250	250	Store Buyers and Department Heads
	285	Purchasing Agents
255	255	City and Civil Service Employees
290	290	Managers, Officials, and Proprietors NEC
298	298	Grocers and Grocery Clerks
305	305	Bankers, Bank Clerks, and Managers

EXHIBIT 4 -- OCCUPATION GROUPINGS FOR WOMEN

<u>Grouped Code</u>	<u>Occupation Code</u>	<u>Occupation Title</u>
310	310	Bookkeepers, Cashiers, and Payroll Clerks
	312	Cashiers
	333	Payroll and Timekeeping Clerks
340	340	Postal Workers
	280	Postmasters
342	342	Secretaries
	345	Stenographers
343	343	Shipping and Receiving Clerks
	350	Stock Clerks
	973	Warehousemen
353	353	Telephone Operators
362	362	Boeing Clerks
	294	Boeing Officials, Managers, and Supervisors
363	363	Public Utility Workers
	364	Public Utility Supervisors
370	370	Clerks NEC
	320	File Clerks
	321	Adjusters and Examiners
	325	Office Machine Operators
	341	Receptionists
	360	Typists, Data Entry Operators
	361	Railroad Clerks
385	385	Insurance Agents, Brokers, Underwriters, Appraisers
393	393	Real Estate Agents, Brokers, Developers, Appraisers
396	396	Sales Clerks NEC
412	412	Fabric Workers
	652	Dyers
	673	Knitters, Loopers, and Toppers, Textile
	705	Sewers, Stitchers, and Cutters, Manufacturing
	710	Spinners, Textile
	711	Rope Makers
720	Weavers, Textile	
500	500	Paper/Pulp Mill Workers
507	507	Shipyards Workers and Shipfitters
	422	Shipyards Electricians
	467	Shipyards Machinists

EXHIBIT 4 -- OCCUPATION GROUPINGS FOR WOMEN

<u>Grouped Code</u>	<u>Occupation Code</u>	<u>Occupation Title</u>
527	527	Cannery and Food Processing Workers
557	557	Boeing Workers
	089	Boeing Draftsmen
	419	Boeing Electricians
	446	Boeing Inspectors
	466	Boeing Machinists
	468	Boeing Maintenance Workers
	657	Boeing Parts Finishers
651	651	Dressmakers and Steamstresses, except factory
	524	Tailors
674	674	Laundry/Dry Cleaning Operatives
675	675	Meatcutters and Wrappers
	677	Slaughterhouse Butchers
810	810	Hospital/Institution Attendants
815	815	Bartenders
816	816	Cocktail Bar/Tavern Owners, Operators, and Workers
817	817	Restaurant Owners, Managers, and Workers
819	819	Hotel/Motel Owners and Managers
821	821	Hotel/Motel Maids and Housekeepers
824	824	Charwomen and Cleaners
825	825	Cooks, Candymakers, and Chefs
832	832	Housekeepers and Stewards (in private households)
834	834	Janitors
	836	School Custodians
835	835	Kitchen Workers (not private households)
843	843	Hairdressers and Cosmetologists
875	875	Waitresses
909	909	Nuns
975	975	Fruit Warehousemen
	654	Fruit/Nut/Vegetable Graders and Packers
	976	Fruit Inspectors

INDEX OF OCCUPATIONS FOR MEN

Number of deaths is given if no occupation mortality table is printed or when the occupation is analyzed with others in a group. Grouped Code (Column 3) supersedes Occupation Code (Column 2) when listed. An asterisk (*) indicates that no occupation mortality table is printed (data available on request).

A	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Accountants.....		000	---	7
Accountants, atomic energy.....	22	007	558	40
Actors.....	92	010*	---	--
Actuaries.....		174	---	13
Adjusters.....		321	---	22
Administrators, public.....		270	---	19
Administrators, school.....		184	---	14
Advertising agents.....		380	---	24
Advisers, farm and home management	37	102*	---	--
Aeronautical engineers.....	267	080	---	10
Agents, advertising.....		380	---	24
Agents, express.....		354	---	23
Agents, insurance.....		385	---	25
Agents NEC.....	89	301*	---	--
Agents, purchasing.....	1,007	285	---	19
Agents, real estate.....		393	---	25
Agents, station and ticket.....		354	---	23
Agents, travel.....		354	---	23
Agricultural science professors...	26	031	060	9
Agricultural scientists.....	94	130*	---	--
Air conditioning repairmen.....		470	---	32
Aircraft managers.....	51	289*	---	--
Air Force officers & enlisted men.	1,183	550	555	39
Airplane electricians.....	186	419	421	29
Airplane mechanics and repairmen..		471	---	33
Airplane navigators.....		012	---	7
Airplane pilots.....		012	---	7
Air traffic controllers.....	37	011*	---	--
Aluminum workers.....		526	---	38
Amusement attendants (cardroom, pool hall, carnival).....		812	---	46

INDEX OF OCCUPATIONS FOR MEN

	Number of <u>Deaths</u>	<u>Occupation Code</u>	<u>Grouped Code</u>	<u>Commentary Page</u>
Analysts.....		174	---	13
Annealers.....		435	---	30
Announcers, radio.....	92	010*	---	--
Apartment house owners, managers..	3,109	819	---	47
Appraisers, insurance.....		385	---	25
Appraisers, real estate.....		393	---	25
Apprentice auto mechanics.....	6	601	472	33
Apprentice bricklayers and masons.	6	602	405	27
Apprentice, building trades NEC...	17	613	406	27
Apprentice electricians.....	13	604	421	29
Apprentice machinists and tool- makers.....	43	605	465	32
Apprentice mechanics except auto..	3	610	480	34
Apprentice, metal working trades NEC.....	14	614	523	37
Apprentice, other specified trades	7	620*	---	--
Apprentice plumbers and pipefitters.....	13	612	510	36
Apprentice, printing trades.....	6	615	512	36
Apprentice, trade not specified...	7	621*	---	--
Architects.....		013	---	7
Armed Forces civilian employees...	330	554*	---	--
Armed Forces officers and enlisted men NEC.....	506	555	---	39
Army officers and enlisted men....	2,780	552	555	39
Artists.....		014	---	8
Art teachers.....		014	---	8
Asbestos and insulation workers...		630	---	40
Assemblers.....	88	631*	---	--
Assessors.....		000	---	7
Assistants, library.....	11	302*	---	--
Athletes.....	118	015*	---	--
Atomic energy accountants.....	22	007	558	40
Atomic energy draftsmen.....	10	088	558	40
Atomic energy electricians.....	55	418	558	40
Atomic energy plant watchmen and guards.....	122	856	558	40
Atomic energy steamfitters and pipefitters.....	65	509	558	40
Atomic energy workers NEC.....	1,091	558	---	40
Attendants, flight.....	10	009*	---	--
Attendants, gas station/garage....		291	---	20
Attendants, hospital/institution..		810	---	46
Attendants, library.....	11	302*	---	--

INDEX OF OCCUPATIONS FOR MEN

	Number of <u>Deaths</u>	<u>Occupation Code</u>	<u>Grouped Code</u>	<u>Commentary Page</u>
Attendants, physicians' and dentists' offices.....	6	303*	---	--
Attendants, recreation and amusement.....		812	---	46
Auctioneers.....	53	381*	---	--
Auditors.....		000	---	7
Authors.....	93	020*	---	--
Auto greasers and washers.....		291	---	20
Auto mechanic apprentices.....	6	601	472	33
Auto mechanics.....		472	---	33
Auto painters.....		479	---	34
Auto service attendants.....		291	---	20
Awning sales and service workers..		412	---	28
Axmen, surveying.....	21	642	181	14
B				
Baggagemen, transportation.....		304	---	21
Bailiffs and sheriffs.....	470	854	853	49
Bakers.....		401	---	26
Bankers, bank clerks, managers....		305	---	21
Barbers.....		814	---	46
Bartenders.....		815	---	46
Beekeepers.....	64	207*	---	--
Biological science professors.....	4	032	060	9
Biological scientists.....	81	131*	---	--
Blacksmiths.....		402	---	26
Blasters and powdermen.....		634	---	41
Boarding/lodging housekeepers.....	15	821*	---	--
Boatbuilders.....		407	---	27
Boatmen.....	150	635*	---	--
Boat workers, fiberglass.....	27	436*	---	--
Body/fender repairmen.....		479	---	34
Boeing clerks.....		362	---	24
Boeing draftsmen.....	51	089	557	40
Boeing electricians.....	186	419	421	29
Boeing engineers.....	736	097	080	10
Boeing inspectors.....	273	446	557	40
Boeing machinists.....	967	466	557	40
Boeing maintenance workers.....	199	468	557	40
Boeing managers.....		294	---	20
Boeing officials.....		294	---	20
Boeing parts finishers.....	145	657	557	40
Boeing supervisors.....		294	---	20
Boeing workers NEC.....	2,083	557	---	40
Boilermakers.....		403	---	27
Bonds salesmen.....		395	---	26

INDEX OF OCCUPATIONS FOR MEN

	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Bookbinders.....	95	404*	---	--
Bookkeepers.....		310	---	21
Bootblacks.....	110	820*	---	--
Brakemen, railroad.....		640	---	41
Brewery workers.....		818	---	47
Bricklayer apprentices.....	6	602	405	27
Brickmasons.....		405	---	27
Bridge tenders.....	329	860	---	49
Brokers, insurance.....		385	---	25
Brokers, produce/farm products....		251	---	17
Brokers, real estate.....		393	---	25
Brush pickers.....		983	---	53
Building contractors.....		406	---	27
Building managers/superintendents.		262	---	18
Building trade apprentices NEC....	17	613	406	27
Bus and street railway conductors.	101	645*	---	--
Bus drivers.....		641	---	41
Butchers, except slaughterhouse...	2,064	675	---	42
Butchers, slaughterhouse.....	843	677	675	42
Buyers, farm products.....		251	---	17
Buyers NEC.....		285	---	19
Buyers, store.....		250	---	17

C

Cabinetmakers.....		410	---	27
Cafe/restaurant owners, managers and workers.....		817	---	46
Canalmen.....	150	635*	---	--
Candymakers and cooks.....		825	---	47
Cannery workers.....		527	---	38
Canvasmakers.....		412	---	28
Carmen, railroad.....		640	---	41
Carpenters.....		411	---	27
Carpenter helpers, except logging and mining.....		960	411	27
Carpet layers and makers.....		400	---	26
Car salesmen.....		386	---	25
Car shop/railroad mechanics.....		475	---	33
Car washers.....		291	---	20
Cashiers.....	169	312	310	21
Cement finishers.....		413	---	28
Chainmen, surveying.....	21	642	181	14
Chauffeurs.....		714	---	44
Checkers, manufacturing.....	67	643	450	31

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	Number of <u>Deaths</u>	<u>Occupation Code</u>	<u>Grouped Code</u>	<u>Commentary Page</u>
Cheesemakers.....		655	---	41
Chefs.....		825	---	47
Chemical company employees.....		985	---	53
Chemical engineers.....	106	081	093	11
Chemical salesmen.....	77	388*	---	--
Chemistry professors.....	12	034	060	9
Chemists.....		021	---	8
Chiropodists.....	21	016*	---	--
Chiropractors.....		022	---	8
City/county road construction and maintenance workers.....	1,616	496	425	29
City employees.....		255	---	18
Civil engineers.....		082	---	10
Civil service employees.....		255	---	18
Cleaners.....	28	824*	---	--
Clergymen.....		023	---	8
Clerks, bank.....		305	---	21
Clerks, Boeing.....		362	---	24
Clerks, file.....	22	320*	---	--
Clerks, furniture store.....		297	---	21
Clerks, grocery store.....		298	---	21
Clerks, NEC.....		370	---	24
Clerks, payroll and timekeeping... Clerks, postal.....		333	310	21
Clerks, railroad.....		340	---	22
Clerks, sales NEC.....		361	---	23
Clerks, shipping and receiving.... Clerks, stock.....		396	---	26
Coaches, athletic.....	118	343	---	23
Coast Guard officers/enlisted men.	293	350	---	23
Cocktail bar owners/operators, managers and workers.....	1,188	015*	---	--
Collectors, bill and account.....	94	548	551	39
College presidents and deans.....	54	816	815	46
Compositors.....	471	313*	---	--
Comptrollers.....		030*	---	--
Computer programmers.....		414	512	36
Concrete finishers.....		000	---	7
Conductors, bus/street railway.... Conductors, railroad.....	101	174	---	13
Conservationists.....		413	---	28
Constables and marshals.....	106	103	---	11
Construction contractors.....	3,591	852	853	49
Construction, city/county roads... Construction engineers.....	1,616	406	---	27
Construction foremen.....	351	496	425	29
	661	094	093	11
		429	406	27

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	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Construction inspectors.....	139	448	450	31
Construction laborers NEC.....	4,097	982	---	52
Construction painters.....	4,802	495	694	43
Contractors, building/construction		406	---	27
Contractors, railroad.....	31	408	406	27
Controllers, air traffic.....	37	011*	---	--
Cooks, chefs, candymakers.....		825	---	47
Cooks, lumber camp.....	150	827	825	47
Coppersmiths.....		525	---	38
Cosmetologists.....	102	843	---	48
County/city road construction and maintenance workers.....	1,616	496	425	29
Court reporters.....	29	106*	---	--
Craftsmen NEC.....		545	---	39
Cranemen.....		415	---	28
Creamery workers.....		655	---	41
Credit men.....		253	---	18
Crossing watchmen.....	329	860	---	49
Custodians, school.....		836	---	48
Cutters/sewers, manufacturing.....	103	705	412	28

D

Dairy farmers.....		204	---	16
Dairy workers.....		655	---	41
Dancers.....	20	070*	---	--
Dancing teachers.....	20	070*	---	--
Deans, college.....	54	030*	---	--
Deckhands.....		703	---	44
Decorators (home interior).....		501	---	35
Decorators (window dressers).....		420	---	29
Deliverymen.....		650	---	41
Deliverymen, milk route.....		656	---	42
Demonstrators.....	17	382	380	24
Dental technicians.....		185	---	14
Dentists.....		071	---	9
Dentist office attendants.....	6	303*	---	--
Department heads.....		250	---	17
Derrickmen.....		415	---	28
Designers.....	93	072*	---	--
Detectives and policemen.....		853	---	49
Developers, real estate.....		393	---	25
Dietitians.....	23	073*	---	--
Dishwashers.....		826	---	47
Dispatchers, vehicle.....		314	---	22
Distributors, egg and poultry.....		206	---	17

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	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Divers.....	32	702*	---	--
Doorkeepers, guards, watchmen.....		851	---	49
Draftsmen.....		074	---	9
Draftsmen, atomic energy.....	10	088	558	40
Draftsmen, Boeing.....	51	089	557	40
Dressmakers, except factory.....	10	651*	---	--
Drillers, oil well.....		416	---	28
Drillers, water.....		426	---	29
Drivers, bus.....		641	---	41
Drivers, fuel oil trucks.....		716	---	45
Drivers, lumber and log trucks....	755	718	---	45
Drivers, moving/transfer trucks...	616	719	715	44
Drivers, sawmill trucks.....	15	717	718	45
Drivers, taxicab.....		714	---	44
Drivers, truck and tractor.....		715	---	44
Druggists.....		160	---	13
Dry cleaning operatives.....		674	---	42

E

Economics professors.....	7	035	060	9
Economists.....	11	172*	---	--
Editors.....		075	---	9
Egg farmers.....		206	---	17
Electrical/electronic technicians.		190	---	14
Electrical engineers.....		083	---	10
Electricians.....		421	---	29
Electrician apprentices.....	13	604	421	29
Electricians, atomic energy.....	55	418	558	40
Electricians, Boeing/airplane....	186	419	421	29
Electricians, shipyard.....	316	422	507	36
Electrotypers.....	100	423	512	36
Elevator operators.....	175	831*	---	--
Embalmers.....		104	---	12
Engineering professors.....		040	060	9
Engineers, aeronautical.....		080	093	11
Engineers, Boeing.....		097	093	11
Engineers, chemical.....		081	093	11
Engineers, civil.....		082	---	10
Engineers, construction.....		092	093	11
Engineers, electrical.....		083	---	10
Engineers, industrial.....		084	093	11
Engineers, locomotive.....		454	---	31
Engineers, logging.....		455	970	51
Engineers, marine.....		086	093	11
Engineers, mechanical.....		085	---	10
Engineers, metallurgical.....		090	093	11

INDEX OF OCCUPATIONS FOR MEN

	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Engineers, mining.....	241	091	093	11
Engineers NEC (including aides)...		093	---	11
Engineers, nuclear.....	115	087	558	40
Engineers, operating.....		096	---	11
Engineers, railroad.....		454	---	31
Engineers, refrigeration.....	160	095	093	11
Engineers, sales.....	65	092	093	11
Engineers, ship.....		265	---	18
Engineers, stationary.....		520	---	37
Engineers, steam.....	374	099	093	11
Engravers.....	100	424*	---	--
Entertainers.....	68	101*	---	--
Examiners.....		321	---	22
Examiners, manufacturing.....	67	643	450	31
Excavating machine operators.....		425	---	29
Express agents.....		354	---	23

F

Fabric workers.....		412	---	28
Factory motormen.....	21	690*	---	--
Farm caretakers.....	11	904	902	50
Farmers, bee.....	64	207*	---	--
Farmers, cattle.....		203	---	16
Farmers, dairy.....		204	---	16
Farmers, egg.....		206	---	17
Farmers, grain.....		205	---	17
Farmers, mink.....	266	387*	---	--
Farmers, nursery.....		202	---	16
Farmers, poultry.....		206	---	17
Farmers, sheep.....		203	---	16
Farmers, tree.....		724	---	45
Farmers, wheat.....		205	---	17
Farm foremen.....	70	901	902	50
Farm laborers.....		902	---	50
Farm laborers, itinerant.....	46	906	902	50
Farm laborers, orchard.....		983	---	53
Farm managers.....	60	222	902	50
Farm management advisers.....	37	102*	---	--
Farm owners NEC.....		200	---	15
Farm products buyers and shippers.		251	---	17
Farm service (self-employed).....	51	905	902	50
Farm workers, family.....	4	903	902	50
Feed/grain company workers.....		966	---	51
Feed mill workers.....		490	---	34
Fender/body repairmen.....		479	---	34
Fiberglass workers.....	27	436*	---	--
File clerks.....	22	320*	---	--

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	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Filers, metal.....	153	653	523	37
Filers, saw.....	3,201	704	974	51
Firemen/fire protection workers...		850	---	49
Firemen, locomotive.....		460	---	32
Firemen, stationary.....	424	712	520	37
Fishermen.....		962	---	50
Flame cutters.....		721	---	45
Flight attendants, airline.....	10	009*	---	--
Floor workers (covering, hardwood)		528	---	38
Floor men and managers, store.....	43	254*	---	--
Florists.....		249	---	17
Flour mill employees.....	402	967	490	34
Food processing workers.....		527	---	38
Foremen, construction.....	661	429	406	27
Foremen, farm.....	70	901	902	50
Foremen, garage.....		291	---	20
Foremen NEC.....		430	---	30
Foremen, railroad.....		427	---	29
Foresters.....		103	---	11
Forest service workers/lookouts...		724	---	45
Forgemen.....	17	431	435	30
Foundry, furnacemen.....	211	670	435	30
Fountain/counter workers.....	39	830*	---	--
Fruit/nut graders and packers.....	89	654	975	52
Fruit inspectors.....	56	976	975	52
Fruit warehouse workers.....	422	975	---	52
Fuel oil dealers/workers.....		295	---	20
Fuel oil truck drivers.....		716	---	45
Fumigation workers.....	6	849*	---	--
Funeral directors.....		104	---	11
Furnacemen.....	211	670	435	30
Furniture finishers.....		974	---	54
Furniture store owners, managers, clerks.....		297	---	21
Fur traders.....	266	387*	---	--

G

Game department workers.....		724	---	45
Garage laborers, car washers.....		291	---	20
Garage owners.....		291	---	20
Garbage collectors.....		891	---	49
Gardeners, landscape (not farm)...		964	---	50
Gas station attendants.....		291	---	20
Gas station owners.....		291	---	20
Geologists and geophysicists.....	58	134*	---	--

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	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Geology/geophysics professors.....	5	041	060	9
Glaziers.....		434	---	30
Goldsmiths.....		451	---	31
Grader operators, road.....		425	---	29
Graders, log and lumber.....		444	---	30
Graders/packers, fruit/vegetables.	89	654	975	52
Grain/feed company workers.....		966	---	51
Grain farmers.....		205	---	17
Grain, flour/feed mill workers....		490	---	34
Greasers, auto.....		291	---	20
Greasers, except auto.....		692	---	43
Greenskeepers.....		964	---	50
Grinders, metal.....	153	653	523	37
Grocers.....		298	---	21
Groundskeepers.....		964	---	50
Group workers.....	74	165*	---	--
Guards, atomic energy plant.....	122	856	558	40
Guards, watchmen/doorkeepers.....		851	---	49

H

Hairdressers.....		843	---	48
Hammermen.....	17	431	435	30
Hardwood floor workers.....		528	---	38
Healers, therapists.....	187	193*	---	--
Heaters, metal.....	25	671	435	38
Heating repairmen.....		470	---	32
Heat treaters.....		435	---	30
Heavy equipment operators.....	1,944	676	425	29
Highway maintenancemen.....		425	---	29
Hod carriers.....	422	984	982	52
Hoistmen.....		415	---	28
Home management advisers.....	37	102*	---	--
Hospital attendants.....		810	---	46
Hospital managers.....	169	811*	---	--
Hotel owners and managers.....		819	---	47
Housekeepers and stewards (private household).....	204	832*	---	--
Housekeepers, lodging.....	15	821*	---	--
Hucksters.....	17	383	380	24

I

Ice cream manufacturers.....		655	---	41
Industrial engineers.....	102	084	093	11

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	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Inspectors, Boeing.....	273	446	557	40
Inspectors, construction.....	139	448	450	31
Inspectors, fruit.....	56	976	975	52
Inspectors, log and lumber.....		444	---	30
Inspectors, machinery.....	60	445	450	31
Inspectors, manufacturing.....	67	643	450	31
Inspectors NEC.....		450	---	31
Inspectors, public administration.		260	---	18
Inspectors, railroad.....	345	447		30
Institution attendants.....		810	---	46
Institutionalized.....		997	---	53
Instructors, sports.....	48	180*	---	--
Insulation workers.....		630	---	40
Insurance agents, brokers, under- writers, appraisers.....		385	---	25
J				
Janitors.....		834	---	48
Janitors, school.....		836	---	48
Jewelers.....		451	---	31
Jobsetters, metal.....	9	452	523	37
Judges.....		105	---	12
Junk dealers.....		892	---	50
K				
Kitchen/restaurant workers NEC....	306	835	825	47
Knitters, textile.....	53	673	412	28
L				
Laborers, construction NEC.....	4,097	982	---	52
Laborers, farm.....		902	---	50
Laborers, garage.....		291	---	20
Laborers, itinerant farm.....	46	906	902	50
Laborers, mine.....		685	---	42
Laborers NEC.....		980	---	52
Laborers, orchard.....	1,138	983	---	53
Laborers, railroad NEC.....	5,164	981	---	52
Labor relations workers.....		154	---	12
Landscapers.....		964	---	50
Lathers.....		505	---	36
Laundry operatives.....		674	---	42
Lawyers.....		105	---	12
Leather workers.....		515	---	37

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	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Lens grinders and polishers.....	99	494*	---	--
Librarians.....	35	111*	---	--
Library attendants and assistants.	11	302*	---	--
Lighthouse keepers.....	41	261*	---	--
Linemen, telegraph/telephone/power		453	---	31
Linoleum floor workers.....		528	---	38
Lockkeepers, canal.....	150	635*	---	--
Locksmiths.....		451	---	31
Locomotive engineers.....		454	---	31
Locomotive firemen.....		460	---	32
Lodge officials.....		275	---	19
Lodging housekeepers.....	15	821*	---	--
Log/lumber inspectors, scalers, graders.....		444	---	30
Loggers.....		970	---	51
Logging engineers.....	289	455	970	51
Logging machinists and mechanics..	227	464	970	51
Log truck drivers.....	755	718	---	45
Longshoremen.....		965	---	51
Loopers, textile.....	53	673	412	28
Lumber/logging maintenance and watchmen.....	363	855	970	51
Lumber camp cooks.....	150	827	825	47
Lumber company owners, managers, and workers.....		292	---	20
Lumberjacks (loggers).....		970	---	51
Lumbermen (loggers).....		970	---	51
Lumber/plywood/veneer maintenance.	126	476	974	51
Lumber salesmen.....		384	---	25
Lumber truck drivers.....	755	718	---	45
Lumberyard workers.....		974	---	50

M

Machine operators, road.....	1,069	425	---	29
Machinery inspectors.....	60	445	450	31
Machinist apprentices.....	43	605	465	32
Machinists, Boeing.....	967	466	557	40
Machinists, logging.....	227	464	970	51
Machinists, military.....	17	461	465	32
Machinists NEC.....	5,739	465	---	32
Machinists, shipyard.....	573	467	507	36
Mail carriers.....		323	---	22
Maintenance, Boeing.....	199	468	557	40
Maintenance, highway.....		425	---	29

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	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Maintenance, lumber/plywood/veneer	126	476	974	51
Maintenance, lumber and logging...	363	855	970	51
Maintenance men, janitors.....		834	---	48
Maintenance, railroad.....		469	---	32
Managers, bank.....		305	---	21
Managers, Boeing.....		294	---	20
Managers, building.....		262	---	18
Managers, cocktail bars/tavern....	1,188	816	815	46
Managers, farm.....	60	222	902	50
Managers, furniture store.....		297	---	21
Managers, hospitals/nursing homes.	169	811*	---	--
Managers, hotel/motel/resort/ apartment house.....		819	---	47
Managers, lumber company.....		292	---	20
Managers NEC.....		290	---	19
Managers, newspaper.....		076	---	9
Managers, restaurant and cafe.....		817	---	46
Managers, sales.....		285	---	19
Managers, traffic.....		314	---	22
Manufacturing workers.....		462	---	32
Manufacturing checkers, examiners, and inspectors.....	67	643	450	31
Marine Corps officers/enlisted men	185	549	555	39
Marine engineers.....		086	---	11
Markers, manufacturing.....	67	643	450	31
Markers, store.....	43	254*	---	--
Marshals and constables.....	106	852	853	49
Masons, brick and stone.....		405	---	27
Mathematicians.....	3	135	174	13
Mathematics professors.....	16	042	060	9
Meatcutters, except slaughterhouse		675	---	42
Mechanical engineers.....		085	---	42
Mechanics/repairmen, air condi- tioning, heating, refrigeration.		470	---	32
Mechanics/repairmen, airplane.....		471	---	33
Mechanics/repairmen, auto.....		472	---	33
Mechanics/repairmen NEC.....		480	---	34
Mechanics/repairmen, office machines.....		473	---	33
Mechanics/repairmen, radio and television.....		474	---	33
Mechanics/repairmen, railroad and car shop.....		475	---	33
Mechanic apprentices, auto.....	6	601	472	33
Mechanic apprentices, except auto.	3	610	480	34

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	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Mechanics, logging.....	227	464	970	51
Medical sciences professors.....	15	043	060	9
Medical technicians.....		185	---	14
Merchant Marines.....	1,314	553	703	44
Messengers.....	47	324*	---	--
Messengers, telegraph.....	22	351*	---	--
Metal filers, grinders, polishers.	153	653	523	37
Metal heaters.....	21	671	435	30
Metal jobsetters.....	9	452	523	37
Metallurgical engineers.....	79	090	093	11
Metal molders.....		492	---	35
Metal rollers and roll hands.....	30	513	525	38
Metal workers, structural.....		523	---	37
Metal workers, tin, copper, sheet.		525	---	38
Metal working trades apprentices NEC.....	14	614	523	37
Meteorologists.....	29	141*	---	--
Milk route deliverymen.....		656	---	42
Millers, grain, flour, feed.....		490	---	34
Milliners.....	17	680*	---	--
Mill workers, paper/pulp.....		500	---	35
Mill workers, sash-door/pole.....		974	---	51
Millwrights.....		491	---	34
Mine motormen.....	21	690*	---	--
Mine operatives and laborers NEC..		685	---	42
Mining engineers.....	241	091	093	11
Mink ranchers.....	266	387*	---	--
Model makers, except paper.....		502	---	35
Molders, metal.....		492	---	35
Motel owners and managers.....		819	---	47
Motion picture projectionists.....		493	---	35
Motormen, mine and factory.....	21	690*	---	--
Motormen, street/subway/elevated railway.....	261	691	641	41
Musicians.....		120	---	12
Music teachers.....		120	---	12

N

Navigators, airplane.....		012	---	7
Navy officers and enlisted men....		551	---	39
Natural sciences professors.....	20	052	060	9
Newsboys.....		390	---	25
Newspaper owners.....		076	---	9
Non-scientific professors.....	81	054	060	9

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	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Nuclear engineers.....	115	087	558	40
Nurserymen.....		202	---	16
Nurses, practical.....	30	842*	---	--
Nurses, professional.....	97	150*	---	--
Nurses, student professional.....	11	151*	---	--
Nursing home managers.....	169	811*	---	--
Nutritionists.....	23	073*	---	--
0				
Office boys.....	47	324*	---	--
Office machine operators.....	56	325*	---	--
Office machine repairmen.....		473	---	33
Officers, ships.....		265	---	18
Officials, Boeing.....		294	---	20
Officials, lodge.....		275	---	19
Officials, public administration..		270	---	19
Officials, public utility.....		364	---	24
Officials NEC.....		290	---	19
Officials, society.....		275	---	19
Officials, sports.....	48	180*	---	--
Officials, union.....		275	---	19
Oilers, except auto.....		692	---	43
Oil well drillers.....		416	---	28
Operating engineers.....		096	---	11
Operatives NEC.....	109	722*	---	--
Operators, heavy equipment.....	1,944	676	425	29
Operators, power station.....		701	---	43
Operators, radio.....	128	164	352	23
Operators, telegraph.....		352	---	23
Operators, telephone.....	44	353*	---	--
Opticians.....	99	494*	---	--
Optometrists.....		152	---	12
Orchardists.....		201	---	16
Orchard laborers.....	1,138	983	---	53
Ordnance plant workers.....		726	---	45
Organ tuners and repairmen.....	100	504*	---	--
Osteopaths.....	79	153	162	13
Owners, furniture store.....		297	---	21
Owners, garage.....		291	---	20
Owners, lumber company.....		292	---	20
Owners, newspaper.....		076	---	9
Owners, pet shop.....	73	296*	---	--
Oystermen.....		962	---	50

INDEX OF OCCUPATIONS FOR MEN

	<u>Number of Deaths</u>	<u>Occupation Code</u>	<u>Grouped Code</u>	<u>Commentary Page</u>
P				
Packers, fruit and vegetables.....	89	654	975	52
Packers NEC.....		693	---	43
Painters, auto.....		479	---	34
Painters, construction/maintenance	4,802	495	694	43
Painters, sign.....		694	---	43
Paperhangers/decorators.....		501	---	35
Paper mill workers.....		500	---	35
Parking attendants.....		291	---	20
Parks Department workers.....		724	---	45
Parts finishers, Boeing.....	145	657	557	40
Pattern makers, except paper.....		502	---	35
Pavers, road.....		425	---	29
Payroll clerks.....	142	333	310	21
Peddlers.....	120	383	380	24
Personnel workers.....		154	---	12
Pest control employees.....	61	986*	---	--
Pet store owners.....	73	296*	---	--
Pharmacists.....		160	---	13
Photographers.....		161	---	13
Photographic process workers.....	99	695	161	13
Physicians.....		162	---	13
Physicians' office attendants.....	6	303*	---	--
Physicists.....	18	140*	---	--
Physics professors.....	11	045	060	9
Piano tuners and repairmen.....	100	504*	---	--
Pilots, airplane.....		012	---	7
Pilots, ship.....		265	---	18
Pipefitters, atomic energy.....	65	509	558	40
Plasterers and lathers.....		505	---	36
Plastic workers.....	27	436*	---	--
Plumber/pipefitter apprentices....	13	612	510	36
Plumbers.....		510	---	36
Plywood workers.....		706	---	44
Policemen and detectives.....		853	---	49
Polishers, metal.....	153	653	523	37
Porters.....		841	---	48
Postal clerks.....		340	---	22
Postmasters.....		280	---	19
Poultry farmers.....		206	---	17
Pourers, furnacemen.....	211	670	435	30
Powdermen and blasters.....		634	---	41
Power linemen.....		453	---	31
Power station operators.....		701	---	43
Presidents, college.....	54	030*	---	--

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	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Pressmen.....		512	---	36
Printers, plate.....		512	---	36
Printing trade apprentices.....	6	615	512	36
Produce brokers.....		251	---	17
Produce/seed/grain company workers		966	---	51
Professional/technical workers NEC		195	---	15
Professors/instructors, agricul- tural sciences.....	26	031	060	9
Professors/instructors, biological	4	032	060	9
Professors/instructors, chemistry.	12	034	060	9
Professors/instructors, economics.	7	035	060	9
Professors/instructors, engineering.....	29	040	060	9
Professors/instructors, geology and geophysics.....	5	041	060	9
Professors/instructors, mathematics.....	16	042	060	9
Professors/instructors, medical sciences.....	15	043	060	9
Professors/instructors, natural sciences.....	20	052	060	9
Professors/instructors NEC	444	060	---	9
Professors/instructors, non- scientific subjects.....	81	054	060	9
Professors/instructors, physics...	11	045	060	9
Professors/instructors, psychology	10	050	060	9
Professors/instructors, social sciences NEC.....	20	053	060	9
Programmers, computer.....		174	---	13
Projectionists, motion picture....		493	---	35
Promoters.....	120	383	380	24
Proprietors NEC.....		290	---	19
Psychiatrists.....	74	173*	---	--
Psychologists.....	74	173*	---	--
Psychology professors.....	10	050	060	9
Public administration inspectors..	479	260	---	18
Public administration officials...		270	---	19
Publicity writers.....	175	163*	---	--
Public relations men.....	175	163*	---	--
Public utility officials and supervisors.....		364	---	24
Public utility workers.....		363	---	24
Publishers, newspaper.....		076	---	9
Pulp mill workers.....		500	---	35
Purchasing agents.....		285	---	19
Pursers, ship.....		265	---	18

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	Number of <u>Deaths</u>	<u>Occupation Code</u>	<u>Grouped Code</u>	<u>Commentary Page</u>
R				
Radio announcers.....	92	010*	---	--
Radio operators.....	128	164	352	23
Radio repairmen.....		474	---	33
Raftsmen (loggers).....		970	---	51
Railroad brakemen and carmen.....		640	---	41
Railroad clerks.....		361	---	23
Railroad conductors.....		252	---	18
Railroad contractors.....	31	408	406	27
Railroad engineers.....		454	---	31
Railroad firemen.....		460	---	32
Railroad foremen.....		427	---	29
Railroad inspectors.....		447	---	30
Railroad laborers NEC.....	3,164	981	---	52
Railroad (and car shop) mechanics.		475	---	33
Railroad switchmen.....		713	---	44
Railroad workers NEC.....		469	---	32
Ranchers, cattle and sheep.....		203	---	16
Ranchers, mink.....	266	387*	---	--
Real estate agents, brokers, developers, appraisers.....		393	---	25
Receiving clerks.....		343	---	23
Receptionists.....	3	341*	---	--
Recreation attendants (cardroom, pool hall, carnival).....		812	---	46
Recreation/amusement ushers.....	10	874*	---	--
Recreation workers.....	74	165*	---	--
Refrigeration engineers.....	160	095	093	11
Refrigeration repairmen.....		470	---	32
Religious workers.....	122	170*	---	--
Reporters.....		075	---	9
Representatives, sales.....		380	---	24
Resort owners and managers.....		819	---	47
Restaurant/cafe owners, managers and workers.....		817	---	46
Restaurant/kitchen workers NEC....	306	835	825	47
Retarded and disabled.....		997	---	53
Road construction, city/county....	1,616	496	425	29
Road graders, machine operators...		425	---	29
Rodmen, surveying.....	21	642	181	14
Rollers/roll hands, metal.....	30	513	525	38
Roofers and slaters.....		514	---	37
Rope makers.....	19	711	412	28
Routemen.....		650	---	41
Rubber welders.....		477	---	34

INDEX OF OCCUPATIONS FOR MEN

	Number of <u>Deaths</u>	<u>Occupation Code</u>	<u>Grouped Code</u>	<u>Commentary Page</u>
S				
Sailmakers.....		412	---	28
Sailors.....		703	---	44
Sales clerks NEC.....		396	---	26
Sales engineers.....	65	092	093	11
Sales, lumber.....		384	---	25
Sales managers.....		285	---	19
Salesmen, car.....		386	---	25
Salesmen, chemical.....	77	388*	---	--
Salesmen, stocks and bonds.....		395	---	26
Salesmen, travelling.....		380	---	24
Sales representatives.....		380	---	24
Salvage/secondhand store workers..		892	---	50
Sandblasters.....	82	725*	---	45
Sanitarians.....	63	176*	---	--
Saw filers.....	3,201	704	974	51
Sawmill truck drivers.....	15	717	718	45
Sawmill workers.....	3,201	704	974	51
Sawyers.....	3,201	704	974	51
Scalers, log and lumber.....		444	---	30
School custodians.....		836	---	48
Scientists, agricultural.....	94	130*	---	--
Scientists, biological.....	81	131*	---	--
Scientists, natural NEC.....	55	145*	---	--
Scientists, social NEC.....	10	175*	---	--
Seamen NEC.....		703	---	44
Secretaries.....	104	342*	---	--
Seed company workers.....		966	---	51
Servicemen, telegraph/telephone/ power linemen.....		453	---	31
Sextons.....		834	---	48
Sewers, stitchers, cutters, manufacturing.....	103	705	412	28
Sheepherders.....		907	---	50
Sheet metal workers.....		525	---	38
Sheriffs and bailiffs.....	470	854	853	49
Shingle weavers.....		974	---	51
Shipfitters.....		507	---	36
Shippers, farm products.....		251	---	17
Shipping clerks.....		343	---	23
Ships' officers, pilots, pursers, engineers.....		265	---	18
Shipwrights.....	273	409	507	36
Shipyard electricians.....	316	422	507	36
Shipyard machinists.....	573	467	507	36

INDEX OF OCCUPATIONS FOR MEN

	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Shipyard workers NEC.....		507	---	36
Shoemakers and repairers.....		515	---	37
Shoeshine operators.....	110	820*	---	--
Sign painters.....		694	---	43
Silversmiths.....		451	---	31
Slaters.....		514	---	37
Slaughterhouse butchers.....	843	677	675	42
Smelter workers.....		435	---	30
Smelter workers NEC.....	147	672	435	30
Social science professors.....	20	053	060	9
Social scientists.....	10	175*	---	--
Social workers.....	209	171*	---	--
Society officials.....		275	---	19
Spinners, textile.....	26	710	412	28
Sports instructors and officials..	48	180*	---	--
Starters, vehicle.....		314	---	22
Station agents.....		354	---	23
Stationary engineers.....		520	---	37
Stationary firemen.....	424	712	520	37
Statisticians.....		174	---	13
Steam engineers.....	374	099	093	11
Steamfitters.....	831	508	510	36
Steamfitters, atomic energy.....	65	509	558	40
Stenographers.....	18	345*	---	--
Stereotypers.....	100	423	512	36
Stevedores.....		965	---	51
Stewards and housekeepers.....	204	832*	---	--
Stock clerks and storekeepers.....		350	---	23
Stocks salesmen.....		395	---	26
Stonecutters and stonecarvers.....		521	---	37
Stonemasons.....		405	---	27
Storage workers and truck drivers..	616	719	715	44
Store buyers.....		250	---	17
Structural metal workers.....		523	---	37
Students 18 and over.....		196	---	15
Superintendents, building.....		262	---	18
Supervisors, Boeing.....		294	---	20
Supervisors, public utility.....		364	---	24
Surgeons.....		162	---	13
Surveying chainmen, rodmen, axmen..	21	642*	---	--
Surveyors.....		181	---	14
Switchmen, railroad.....		713	---	44
T				
Tailors.....		524	---	38
Tanners.....		515	---	37

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	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Tavern owners and operators.....	1,188	816	815	46
Taxicab drivers.....		714	---	44
Teachers and administrators.....		184	---	14
Teachers, art.....		014	---	8
Teachers, dancing.....	20	070*	---	--
Teachers, elementary.....	571	182	184	14
Teachers, high school and NEC.....	1,139	183	184	14
Teachers, music.....		120	---	12
Teachers, secondary.....	571	182	184	14
Technical workers NEC.....		195	---	15
Technicians, electrical/electronic		190	---	14
Technicians, engineering and physical sciences.....	75	191*	---	--
Technicians, medical/dental.....		185	---	14
Technicians NEC.....	126	192*	---	--
Telegraph linemen.....		453	---	31
Telegraph messengers.....	22	351*	---	--
Telegraph operators.....		352	---	23
Telephone installers/repairers....		459	---	31
Telephone linemen.....		453	---	31
Telephone operators.....	44	353*	---	--
Television repairmen.....		474	---	33
Temperers.....		435	---	30
Textile knitters/loopers/toppers..	53	673	412	28
Textile spinners.....	26	710	412	28
Textile weavers.....	37	720	412	28
Therapists.....	187	193*	---	--
Ticket agents.....		354	---	23
Tile setters.....		405	---	27
Timber cruisers.....		444	---	30
Timekeeping clerks.....	142	333	310	21
Tinsmiths.....		525	---	38
Tire recappers/repairers.....		477	---	34
Tool and die makers/setters.....		530	---	39
Toppers, textile manufacturing....	53	673	412	28
Traders, fur.....	266	387*	---	--
Traffic managers.....		314	---	22
Transfer workers/truck drivers....	616	719	715	44
Transportation baggagemen.....		304	---	21
Travel agents.....		354	---	23
Travelling salesmen.....		380	---	24
Tree farmers.....		724	---	45
Truck/tractor drivers.....		715	---	44
Truck drivers, fuel oil.....		716	---	45
Truck driver helpers.....	40	972	715	44
Truck drivers, lumber/log.....		718	---	45

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	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Truck drivers, moving/transfer/ storage.....	616	719	715	44
Truck drivers, sawmill.....	15	717	718	45
Tuners, piano and organ.....	100	504*	---	--
Typesetters.....	471	414	512	36
Typists.....	11	360*	---	--
U				
Underwriters, insurance.....		385	---	25
Unemployable.....		997	---	53
Unemployed.....	409	998	999	53
Union officials.....		275	---	19
Unknown.....	8,517	999	---	53
Upholsterers.....		535	---	39
Ushers, recreation/amusement.....	10	874*	---	--
V				
Vegetable graders/packers.....	89	654	975	52
Vehicle dispatchers.....		314	---	22
Veterinarians.....		194	---	15
W				
Waiters.....		875	---	49
Wall washers.....		833	---	48
Warehousemen, fruit.....	422	975	---	52
Warehousemen NEC.....		973	---	51
Watchmakers.....		451	---	31
Watchmen, atomic energy plant.....	122	856	558	40
Watchmen, crossing.....	329	860	---	49
Watchmen, guards/doorkeepers.....		851	---	49
Watchmen, lumber/logging.....	363	855	970	51
Water well drillers.....		426	---	29
Weavers, textile.....	37	720	412	28
Welders.....		721	---	45
Welders, rubber.....		477	---	34
Welfare workers.....	209	171*	---	--
Well drillers, oil.....		416	---	28
Well drillers, water.....		426	---	29
Wheat farmers.....		205	---	17
Window cleaners.....		833	---	48
Window dressers.....		420	---	29
Woodchoppers/woodsmen (loggers)...		970	---	51
Woodworkers.....		974	---	51
Wool workers.....		907	---	50
Wrappers NEC.....		693	---	43
Writers, publicity.....	175	163*	---	--

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Number of deaths is given if no occupation mortality table is printed or when the occupation is analyzed with others in a group. Grouped Code (Column 3) supersedes Occupation Code (Column 2) when listed. An asterisk (*) indicates that no occupation mortality table is printed (data available on request).

<u>A</u>	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Accountants.....		000	---	54
Accountants, atomic energy.....	5	007*	---	--
Actresses.....	10	010*	---	--
Actuaries and statisticians.....	28	174*	---	--
Adjusters.....	14	321	370	59
Administrators, public.....	61	270*	---	--
Administrators, school.....	28	184	---	55
Advertising agents.....	65	380*	---	--
Advisers, farm and home management	8	102*	---	--
Agents, advertising.....	65	380*	---	--
Agents, insurance.....		385	---	59
Agents NEC.....	5	301*	---	--
Agents, purchasing.....	30	285	250	56
Agents, travel/ticket/station/ express.....	27	354*	---	--
Agricultural science professors...	1	031*	---	--
Agricultural scientists.....	5	130*	---	--
Air conditioning repairmen.....	2	470*	---	--
Aircraft managers.....	3	289*	---	--
Air Force officers/enlisted men...	7	550*	---	--
Airplane mechanics.....	15	471*	---	--
Air traffic controllers.....	1	011*	---	--
Aluminum workers.....	12	526*	---	--
Analysts.....	28	174*	---	--
Announcers, radio.....	10	010*	---	--
Appraisers, insurance.....		385	---	59
Apprentices, metal working trades.	1	614*	---	--
Apprentices, other specified trade	1	620*	---	--
Apprentices, trade not specified..	1	621*	---	--
Architects.....	2	013*	---	--
Armed Forces NEC.....	3	555*	---	--
Army officers and enlisted men....	21	552*	---	--
Artists.....		014	---	54

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	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Art teachers.....		014	---	54
Assemblers, factory workers.....	30	631*	---	--
Assessors.....		000	---	54
Athletes.....	6	015*	---	--
Attendants, flight.....	10	009*	---	--
Attendants, gas station/garage....	13	291*	---	--
Attendants, hospital/institution..		810	---	61
Attendants, library.....	34	302	111	54
Attendants, physicians' and dentists' offices.....	64	303*	---	--
Attendants, recreation/amusement..	27	812*	---	--
Atomic energy accountants.....	5	007*	---	--
Atomic energy workers.....	51	558*	---	--
Attorneys.....	13	105*	---	--
Auditors.....		000	---	54
Authors.....	28	020*	---	--
Auto mechanics.....	6	472*	---	--
Auto painters.....	2	479*	---	--
Auto salesmen.....	6	386*	---	--
Awning sales and service workers..	5	412	---	59

B

Babysitters, preschool/day care workers.....	62	822*	---	--
Baggagemen.....	1	304*	---	--
Bailiffs.....	9	854*	---	--
Bakers.....	85	400*	---	--
Bank clerks.....		305	---	57
Bankers and bank managers.....		305	---	57
Barbers.....	19	814*	---	--
Bartenders.....		815	---	61
Beekeepers.....	1	207*	---	--
Bill collectors.....	22	313*	---	--
Biological scientists.....	10	131*	---	--
Biology professors/instructors....	1	032*	---	--
Blacksmiths.....	1	402*	---	--
Body/fender repairmen.....	2	479*	---	--
Boeing clerks.....	121	362	---	58
Boeing draftsmen.....	10	089	557	60
Boeing electricians.....	16	419	557	60
Boeing engineers.....	7	097*	---	--
Boeing inspectors.....	9	446	557	60
Boeing machinists.....	7	466	557	60
Boeing maintenance workers.....	14	468	557	60

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	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Boeing officials/managers/ supervisors.....	31	294	362	58
Boeing parts finishers.....	2	657	557	60
Boeing workers NEC.....	140	557	---	60
Bookbinders.....	34	404*	---	--
Bookkeepers.....	879	310	---	57
Brakemen, railroad.....	2	640*	---	--
Brewery workers.....	3	818*	---	--
Brickmasons.....	2	405*	---	--
Brokers, insurance.....		385	---	59
Building contractors.....	4	406*	---	--
Building managers/superintendents.	8	262*	---	--
Bus drivers.....	22	641*	---	--
Butchers, slaughterhouse.....	2	677	675	61
Buyers/shippers, farm products....	2	251*	---	--
Buyers, store.....	96	250	---	56
C				
Cabinetmakers.....	2	410*	---	--
Candymakers.....		825	---	62
Cannery workers.....		527	---	60
Canvasmakers.....	5	412	---	59
Carpenter helpers.....	1	960*	---	--
Carpenters.....	8	411*	---	--
Cashiers.....	148	312	310	57
Cement/concrete finishers.....	1	413*	---	--
Charwomen.....		824	---	62
Cheese and ice cream makers.....	20	655*	---	--
Chefs.....		825	---	62
Chemical company workers.....	12	985*	---	--
Chemical salesmen.....	2	388*	---	--
Chemistry professors.....	2	034*	---	--
Chemists.....	2	021*	---	--
Chiropodists.....	1	016*	---	--
Chiropractors.....	15	022*	---	--
City/civil service employees.....		255	---	56
Civil engineers.....	3	082*	---	--
Civilian employees of armed forces	26	554*	---	--
Civil service employees.....		255	---	56
Cleaners and charwomen.....		824	---	62
Cleaners, windows and walls.....	2	833*	---	--
Clergymen.....	28	023	170	55
Clerical NEC.....	486	370*	---	--
Clerks, bank.....		305	---	57
Clerks, Boeing.....	121	362	---	58

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	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Clerks, file.....	35	320	370	59
Clerks, furniture store.....	55	297*	---	--
Clerks, grocery store.....		298	---	57
Clerks, payroll/timekeeping.....	32	333	310	57
Clerks, postal.....	116	340	---	57
Clerks, railroad NEC.....	67	361	370	59
Clerks, railway mail.....	1	314*	---	--
Clerks, sales.....		396	---	59
Clerks, shipping and receiving....	62	343	---	58
Clerks, stock.....	46	350	343	58
Coaches, athletic.....	6	015*	---	--
Coast Guard officers/enlisted men.	2	548*	---	--
Cocktail bar owners/operators/ managers/workers.....		816	----	61
Collectors, bill and account.....	22	313*	----	--
College presidents and deans.....	20	030*	----	--
Compositors and typesetters.....	10	414*	----	--
Computer programmers.....	28	174*	----	--
Conductors, bus/street railway....	1	645*	----	--
Conservationists.....	4	103*	----	--
Construction contractors.....	4	406*	----	--
Construction, city/county roads...	2	496*	----	--
Construction engineers.....	1	094*	----	--
Construction laborers.....	4	982*	----	--
Contractors, building/construction	4	406*	----	--
Contractors, railroad.....	3	408*	----	--
Controllers, air traffic.....	1	011*	----	--
Cooks.....		825	----	62
Cooks, lumber camp.....	6	827*	----	--
Cosmetologists.....		843	----	63
Counter/fountain workers.....	13	830*	----	--
Court reporters.....	9	106*	----	--
Craftsmen NEC.....	21	545*	----	--
Creamery workers/pasteurizers.....	20	655*	----	--
Credit men.....	57	253*	----	--
Cutters, garment factory.....	219	705	412	59
Cutters, meat.....		675	----	61

D

Dairy farmers.....	20	204	200	56
Dancers.....	10	070*	----	--
Dancing teachers.....	10	070*	----	--
Day care/pre-school workers.....	62	822*	----	--
Deans, college.....	20	030*	----	--

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	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Decorators and window dressers....	24	420*	---	--
Decorators, interior.....	16	501*	---	--
Deliverymen and routemen.....	15	650*	---	--
Demonstrators.....	5	382*	---	--
Dental technicians.....		185	---	55
Dentists.....	6	071*	---	--
Dentists' office attendants.....	64	303*	---	--
Department heads/store buyers.....	96	250	---	56
Designers.....	16	072*	---	--
Dietitians.....		073	---	54
Disabled and retarded.....	137	997*	---	--
Dishwashers.....	33	826*	---	--
Dispatchers.....	33	314*	---	--
Draftsmen.....	14	074*	---	--
Draftsmen, Boeing.....	10	089	557	60
Dressmakers and seamstresses, except factory.....	477	651	---	60
Drivers, bus.....	22	641*	---	--
Drivers, fuel truck.....	1	716*	---	--
Drivers, moving/transfer trucks...	4	719*	---	--
Drivers, taxicab.....	10	714*	---	--
Drivers, truck.....	10	715*	---	--
Druggists.....	34	160*	---	--
Dry cleaning operatives.....		674	---	61
Dyers.....	3	652	412	59

E

Economists.....	1	172*	---	--
Editors.....	43	075*	---	--
Egg farmers/distributors.....	28	206	200	56
Electrical/electronic technicians	30	190*	---	--
Electrical engineers.....	1	083*	---	--
Electricians.....	6	421*	---	--
Electricians, Boeing.....	16	419	557	60
Electricians, shipyard.....	1	422	507	60
Elevator operators.....	22	831*	---	--
Embalmers.....	11	104*	---	--
Engineering technicians.....	11	191*	---	--
Engineers, Boeing.....	7	097*	---	--
Engineers, civil.....	3	082*	---	--
Engineers, electrical.....	1	083*	---	--
Engineers, logging.....	1	455*	---	--
Engineers NEC.....	6	093*	---	--
Engineers, stationary.....	1	520*	---	--
Engravers, except photoengravers..	1	424*	---	--
Entertainers.....	9	101*	---	--

INDEX OF OCCUPATIONS FOR WOMEN

	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Examiners.....	14	321	370	59
F				
Fabric workers.....	5	412	---	59
Farm advisers.....	8	102*	---	--
Farmers, cattle.....	20	203	200	56
Farmers, dairy.....	20	204	200	56
Farmers, egg.....	28	206	200	56
Farmers, grain.....	17	205	200	56
Farmers NEC.....	71	200	---	56
Farmers, nursery.....	28	202	200	56
Farmers, orchard.....	28	201	200	56
Farmers, poultry.....	28	206	200	56
Farmers, sheep.....	20	203	200	56
Farmers, wheat.....	17	205	200	56
Farm foremen.....	2	901*	---	--
Farm laborers.....	24	902*	---	--
Farm laborers, itinerant.....	5	906*	---	--
Farm products buyers/shippers.....	2	251*	---	--
Farm service (self-employed).....	2	905*	---	--
Farm workers, unpaid family.....	2	903*	---	--
Feed/grain company workers.....	7	966*	---	--
Fiberglass and plastics workers...	5	436*	---	--
File clerks.....	35	320	370	59
Finishers, cement and concrete....	1	413*	---	--
Firemen/fire protection.....	2	850*	---	--
Fishermen.....	13	962*	---	--
Flight attendants, airline.....	10	009*	---	--
Floor/linoleum workers.....	1	528*	---	--
Floor men and managers, store.....	16	254*	---	--
Florists.....		249	---	56
Flour mill workers.....	3	967*	---	--
Food processing workers.....		527	---	60
Foremen, farm.....	2	901*	---	--
Foremen NEC.....	12	430*	---	--
Foresters.....	4	103*	---	--
Forest service/Parks/Game depart- ment workers.....	13	724*	---	--
Foundry workers.....	2	670*	---	--
Fruit inspectors.....	1	976	975	64
Fruit/nut/vegetable graders and packers.....	108	654	975	64
Fruit warehousemen.....	21	975	---	64
Fuel oil dealers/workers.....	20	295*	---	--
Fuel oil truck drivers.....	1	716*	---	--

INDEX OF OCCUPATIONS FOR WOMEN

	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Funeral directors.....	11	104*	---	--
Furniture store owners, managers, clerks.....	55	297*	---	--
Furriers.....	22	387*	---	--
G				
Garage owners and attendants.....	13	291*	---	--
Gardeners, landscape (not farm)...	9	964*	---	--
Garment factory sewers, stitchers, cutters.....	219	705	412	59
Gas station owners/attendants.....	13	291*	---	--
Glaziers.....	5	434*	---	--
Graders, fruit/nut/vegetables.....	108	654	975	64
Grain farmers.....	17	205	200	56
Grocers and clerks.....		298	---	57
Group and recreation leaders.....	67	165*	---	--
Guards and watchmen.....	18	851*	---	--
H				
Hairdressers.....		843	---	63
Heating repairmen.....	2	470*	---	--
Home management advisers.....	8	102*	---	--
Hospital attendants.....		810	---	61
Hospital/nursing home managers and owners.....	80	811*	---	--
Hotel/motel maids/housekeepers....		821	---	62
Hotel/motel owners and managers...		819	---	62
Housekeepers, hotel and motel.....		821	---	62
Housekeepers in private household.		832	---	63
Housemothers.....	67	165*	---	--
Housewives.....	52,307	908*	---	1,5,54
I				
Inspectors/markers, manufacturers.	6	643*	---	--
Inspectors, Boeing.....	9	446	557	60
Inspectors, fruit.....	1	976	975	64
Inspectors, machinery.....	2	445*	---	--
Inspectors NEC.....	7	450*	---	--
Inspectors, public administration.	6	260*	---	--
Inspectors, railroad.....	1	447*	---	--
Inspectors/scalers/graders, lumber	3	444*	---	--
Installers/repairers, telephone...	4	459*	---	--

INDEX OF OCCUPATIONS FOR WOMEN

	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Institutionalized.....	137	997*	---	--
Instructors, sports.....	4	180*	---	--
Insurance agents/brokers/under- writers, and appraisers.....		385	---	59
J				
Janitors.....	158	834	---	63
Janitors, school.....	22	836	834	63
Jewelers and watchmakers.....	25	451*	---	--
Judges.....	13	105*	---	--
Junk dealers/secondhand store workers.....	8	892*	---	--
K				
Keypunchers and typists.....	91	360	370	59
Kitchen workers, not private household.....		835	---	63
Knitters, textile.....	24	673	412	59
L				
Laboratory technicians.....	54	192*	---	--
Laborers, construction.....	4	982*	---	--
Laborers, NEC.....	48	980*	---	--
Laborers, orchard.....	20	983*	---	--
Laborers, railroad NEC.....	11	981*	---	--
Labor relations/personnel workers.	50	154*	---	--
Landscapers and gardeners.....	9	964*	---	--
Laundry operatives.....		674	---	61
Lawyers.....	13	105*	---	--
Leather workers.....	16	515*	---	--
Librarians.....	167	111	---	54
Library attendants/assistants.....	34	302	111	54
Linemen, telegraph/telephone/power	1	453*	---	--
Lodge officials.....	44	275*	---	--
Loggers.....	9	970*	---	--
Logging engineers.....	1	455*	---	--
Longshoremens.....	2	965*	---	--
Loopers, textile.....	24	673	412	59
Lumber camp cooks.....	6	827*	---	--
Lumber company maintenance workers	4	476*	---	--
Lumber company owners, managers, and workers.....	51	292*	---	--
Lumber inspectors/scalers/graders.	3	444*	---	--
Lumber/logging watchmen.....	2	855*	---	--
Lumber salesmen.....	5	384*	---	--

INDEX OF OCCUPATIONS FOR WOMEN

M	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Machinery inspectors.....	2	445*	---	--
Machinists, Boeing.....	7	466	557	60
Machinists NEC.....	20	465*	---	--
Machinists, shipyard.....	1	467	507	60
Maids, hotel/motel.....		821	---	62
Mail carriers.....	20	323*	---	--
Maintenance, Boeing.....	14	468	557	60
Maintenance, lumber company.....	4	476*	---	--
Maintenance, railroad.....	6	469*	---	--
Managers, aircraft.....	3	289*	---	--
Managers, bank.....		305	---	57
Managers/floor men, store.....	16	254*	---	--
Managers, furniture store.....	55	297*	---	--
Managers, hotel/motel.....		819	---	62
Managers, lumber company.....	51	292*	---	--
Managers NEC.....		290	---	57
Managers, newspaper.....	27	076*	---	--
Managers/owners, nursing home and hospital.....	80	811*	---	--
Managers, sales.....	30	285*	---	--
Managers/superintendents, building	8	262*	---	--
Managers, traffic.....	33	314*	---	--
Manufacturing checkers/inspectors/ markers.....	6	643*	---	--
Manufacturing workers.....	32	462*	---	--
Marine Corps officers/enlisted men	1	549*	---	--
Markers/inspectors, manufacturing.	6	643*	---	--
Masons, brick and stone.....	2	405*	---	--
Mathematicians.....	2	135*	---	--
Meatcutters, packers/wrappers.....	63	675	---	61
Mechanics/repairmen, air condi- tioning, heating, refrigeration.	2	470*	---	--
Mechanics/repairmen, airplane.....	15	471*	---	--
Mechanics/repairmen, auto.....	6	472*	---	--
Mechanics/repairmen NEC.....	5	480*	---	--
Mechanics/repairmen, office machines.....	1	473*	---	--
Mechanics/repairmen, radio and television.....	1	474*	---	--
Mechanics/repairmen, railroad and car shop.....	4	475*	---	--
Medical radiologists.....	18	186*	---	--
Medical sciences professors and instructors.....	3	043*	---	--
Medical technicians.....		185	---	55

INDEX OF OCCUPATIONS FOR WOMEN

	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Merchant Marines.....	2	553*	---	--
Messengers, express.....	1	314*	---	--
Messengers, telegraph.....	1	350*	---	--
Milliners.....	41	680*	---	--
Millwrights.....	1	491*	---	--
Moving/storage truck drivers.....	4	719*	---	--
Musicians.....		120	---	54
Music teachers.....		120	---	54

N

Natural sciences professors.....	3	052*	---	--
Navy officers and enlisted men....	11	551*	---	--
Newsboys.....	3	390*	---	--
Newspaper owners/publishers/ managers.....	27	076*	---	--
Nuns.....		909	---	64
Nurserymen.....	28	202	200	56
Nurses, practical.....	666	842	150	55
Nurses, professional.....	1,429	150	---	55
Nurses, student professional.....	1	151	150	55
Nursing home/hospital managers and owners.....	80	811*	---	--
Nutritionists.....		073	---	54

O

Office machine operators.....	42	325	370	59
Office machine repairmen.....	1	473*	---	--
Officers, ship.....	7	265*	---	--
Officials, lodge/society/union....	44	275*	---	--
Officials NEC.....		290	---	57
Officials, public administration..	61	270*	---	--
Officials, sports.....	4	180*	---	--
Oilers and greasers, except auto..	1	692*	---	--
Operatives NEC.....	3	722*	---	--
Operators, elevator.....	22	831*	---	--
Operators, heavy equipment.....	4	676*	---	--
Operators, office machine.....	42	325	370	59
Operators, radio.....	1	164*	---	--
Operators, road machinery.....	1	425*	---	--
Operators, telegraph.....	40	352*	---	--
Operators, telephone.....		353	---	58
Opticians and lens grinders.....	4	494*	---	--
Optometrists.....	2	152*	---	--

INDEX OF OCCUPATIONS FOR WOMEN

	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Orchardists.....	28	201	200	56
Ordnance plant workers.....	6	726*	---	--
Osteopaths.....	4	153*	---	--
Owners, cocktail bar/tavern.....		816	---	61
Owners, furniture store.....	55	297*	---	--
Owners, gas station/garage.....	13	291*	---	--
Owners, hotel/motel.....		819	---	62
Owners, lumber company.....	51	292*	---	--
Owners, newspapers.....	27	076*	---	--
Owners, pet shop.....	17	296*	---	--
Owners, restaurant.....		817	---	62
Oystermen.....	13	962*	---	--

P

Packers, fruit/nut/vegetables.....	108	654	975	64
Packers/wrappers NEC.....	40	693*	---	--
Packers, meat.....		675	---	61
Painters, auto.....	2	479*	---	--
Painters, construction/maintenance	10	495*	---	--
Painters, sign.....	7	694*	---	--
Paperhangers/decorators (painters)	16	501*	---	--
Paper mill workers.....		500	---	60
Parts finishers, Boeing.....	2	657	557	60
Pattern/model makers, not paper...	1	502*	---	--
Pavers, road.....	1	425*	---	--
Payroll clerks.....	32	333	310	57
Peddlers and promoters.....	5	383*	---	--
Personnel/labor relations workers.	50	154*	---	--
Pet shop owners.....	17	296*	---	--
Pharmacists.....	34	160*	---	--
Photographers.....	34	161*	---	--
Photographic process workers.....	25	695*	---	--
Physicians.....	21	162*	---	--
Physicians' office attendants.....	64	303*	---	--
Piano and organ tuners.....	1	504*	---	--
Pilots, ship.....	7	265*	---	--
Plastics/fiberglass workers.....	5	436*	---	--
Plywood workers.....	29	706*	---	--
Policemen.....	16	853*	---	--
Postal clerks.....	116	340	---	57
Postmasters.....	76	280	370	59
Poultry farmers/distributors.....	28	206	200	56
Power/telephone linemen.....	1	453*	---	--
Pressmen and plate printers.....	26	512*	---	--

INDEX OF OCCUPATIONS FOR WOMEN

	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Produce brokers.....	2	251*	---	--
Professional workers NEC.....	5	195*	---	--
Professors/instructors, agri- cultural sciences.....	1	031*	---	--
Professors/instructors, biology...	1	032*	---	--
Professors/instructors, chemistry.	2	034*	---	--
Professors/instructors, medical sciences.....	3	043*	---	--
Professors, instructors, natural sciences NEC.....	3	052*	---	--
Professors/instructors NEC.....	58	060*	---	--
Professors/instructors, non- scientific subjects.....	16	054*	---	--
Professors/instructors, social sciences NEC.....	4	053*	---	--
Professors/instructors, statistics	1	051*	---	--
Programmers, computer.....	28	174*	---	--
Proprietors NEC.....		290	---	57
Psychiatrists.....	10	173*	---	--
Psychologists.....	10	173*	---	--
Public administration inspectors..	6	260*	---	--
Public administrators.....	61	270*	---	--
Publicity writers.....	27	163*	---	--
Public relations workers.....	27	163*	---	--
Public utility supervisors.....	78	364	363	58
Public utility workers.....	81	363	---	58
Publishers, newspaper.....	27	076*	---	--
Pulp mill workers.....		500	---	60
Purchasing agents.....	30	285	250	56
Pursers, ship.....	7	265*	---	--

R

Radio and television, mechanics/ repairmen.....	1	474*	---	--
Radio announcers.....	10	010*	---	--
Radiologists, medical.....	18	186*	---	--
Radio operators.....	1	164*	---	--
Railroad brakemen/carmen.....	2	640*	---	--
Railroad clerks NEC.....	67	361	370	59
Railroad contractors.....	3	408*	---	--
Railroad inspectors.....	1	447*	---	--
Railroad laborers NEC.....	11	981*	---	--
Railroad workers NEC.....	6	469*	---	--
Railroad switchmen.....	1	713*	---	--

INDEX OF OCCUPATIONS FOR WOMEN

	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Ranchers.....	20	203	200	56
Receiving clerks.....	62	343	---	58
Receptionists.....	94	341	370	59
Recreation and group leaders.....	67	165*	---	--
Religious workers.....	102	170	---	55
Reporters.....	43	075*	---	--
Reporters, court.....	9	006*	---	--
Restaurant/cafe owners, managers and workers.....		817	---	62
Roofers and slaters.....	2	514*	---	--
Rubber welders and tire recappers.	6	477*	---	--
S				
Sailmakers.....	5	412	---	59
Sailors and seamen.....	2	703*	---	--
Sales clerks.....		396	---	59
Sales managers.....	30	285*	---	--
Salesmen, auto.....	6	386*	---	--
Salesmen, chemical.....	2	388*	---	--
Salesmen, lumber.....	5	384*	---	--
Salesmen, stocks and bonds.....	12	395*	---	--
Salesmen, travelling.....	65	380*	---	--
Sales representatives.....	65	380*	---	--
Sandblasters.....	1	725*	---	--
Sanitarians.....	1	176*	---	--
Sawyers and sawmill workers.....	5	704*	---	--
School administrators.....	28	184	---	55
School janitors.....	22	836	834	63
Scientists, agricultural.....	5	130*	---	--
Scientists, biological.....	10	131*	---	--
Scientists, social.....	6	175*	---	--
Seamstresses/dressmakers except factory.....	477	651	---	60
Secondhand store workers and junk dealers.....	8	892*	---	--
Secretaries.....	1,514	342	---	58
Sewers, garment factory.....	219	705	412	59
Shepherders.....	9	907*	---	--
Sheet metal workers, tinsmiths, and coppersmiths.....	17	525*	---	--
Sheriffs.....	9	854*	---	--
Shipfitters.....	121	507	---	60
Shipping clerks.....	62	343	---	58
Ships' officers/pilots/pursers....	7	265*	---	--
Shipyards electricians.....	1	422	507	60
Shipyards machinists.....	1	467	507	60
Shipyards workers NEC.....	121	507	---	60

INDEX OF OCCUPATIONS FOR WOMEN

	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Shoemakers and leather workers....	16	515*	---	--
Smelter workers.....	2	435*	---	--
Social science professors and instructors NEC.....	4	053*	---	--
Social scientists.....	6	175*	---	--
Social workers.....	140	171*	---	--
Spinners, textile.....	5	710	412	59
Sports instructors and officials..	4	180*	---	--
Stationary engineers.....	1	520*	---	--
Statisticians and actuaries.....	28	174*	---	--
Statistics professors/instructors.	1	051*	---	--
Stenographers.....	140	345	342	58
Stewards in private household....		832	---	63
Stitchers, garment factory.....	219	705	412	59
Stocks and bonds salesmen.....	12	395*	---	--
Stock clerks and storekeepers....	46	350	343	58
Stonecutters and stonecarvers....	2	521*	---	--
Students.....		196	---	56
Supervisors, Boeing.....	31	294	362	58
Surgeons.....	21	162*	---	--
Surveying chainmen and rodmen....	1	642*	---	--
Switchmen, railroad.....	1	713*	---	--

T

Tailors.....	53	524	651	60
Tavern owners/operators/workers...		816	---	61
Taxicab drivers.....	10	714*	---	--
Teachers, art.....		014	---	54
Teachers, dancing.....	10	070*	---	--
Teachers, elementary/secondary....	1,344	182	184	55
Teachers, high school.....	1,076	183	184	55
Technicians.....	5	195*	---	--
Technicians, dental.....		185	---	55
Technicians, electrical/electronic	30	190*	---	--
Technicians, engineering.....	11	191*	---	--
Technicians, laboratory.....	54	192*	---	--
Technicians, medical.....		185	---	55
Technicians, physical sciences....	11	191*	---	--
Technicians, X-ray.....	18	186*	---	--
Telegraph messengers.....	1	351*	---	--
Telegraph operators.....	40	352*	---	--
Telephone installers/repairers....	4	459*	---	--
Telephone operators.....		353	---	58
Telephone/power linemen.....	1	453*	---	--

INDEX OF OCCUPATIONS FOR WOMEN

	Number of Deaths	Occupation Code	Grouped Code	Commentary Page
Television repairmen.....	1	474*	---	--
Textile knitters/loopers/toppers..	24	673	412	59
Textile spinners.....	5	710	412	59
Textile weavers.....	8	720	412	59
Therapists.....	48	193*	---	--
Ticket agents.....	27	354*	---	--
Tile setters/brickmasons.....	2	405*	---	--
Timekeeping clerks.....	32	333	310	57
Tinsmiths/coppersmiths/sheet metal workers.....	17	525*	---	--
Tire recappers and rubber welders.	6	477*	---	--
Tool and die makers.....	3	530*	---	--
Toppers, textile.....	24	673	412	59
Traffic managers.....	33	314*	---	--
Travel agents.....	27	354*	---	--
Travelling salesmen.....	65	380*	---	--
Truck drivers.....	10	715*	---	--
Tuners, piano and organ.....	1	504*	---	--
Typesetters and compositors.....	10	414*	---	--
Typists and keypunchers.....	91	360	370	59
Underwriters, insurance.....		385	---	59
Unemployable.....	137	997*	---	--
Unemployed.....	37	998*	---	--
Union officials.....	44	275*	---	--
Unknown.....	564	999*	---	--
Upholsterers.....	20	535*	---	--
Ushers, recreation/amusement.....	1	874*	---	--
Veterinarians.....	6	194*	---	--
Waitresses.....		875	---	63
Warehousemen.....	14	973	343	58
Warehousemen, fruit.....	21	975	---	64
Watchmakers and jewelers.....	25	451*	---	--
Watchmen and guards.....	18	851*	---	--
Watchmen, lumber and logging.....	2	855*	---	--
Weavers, textile.....	8	720	412	59
Welders.....	4	721*	---	--
Welfare workers.....	140	171*	---	--
Wheat farmers.....	17	205	200	56
Woodworkers.....	72	974*	---	--
Wrappers, meat.....		675	---	61
Writers, publicity.....	27	163*	---	--
X				
X-ray technicians.....	18	186*	---	--

MICROFICHE TABLES - TABLE 1, MALE MORTALITY

<u>Grouped Code</u>	<u>Occupation</u>	<u>Microfiche Page</u>	<u>Column</u>
000	Accountants, Auditors, and Assessors.....	1	1
012	Airplane Pilots and Navigators.....	1	2
013	Architects.....	1	3
014	Artists and Art Teachers.....	1	4
021	Chemists.....	1	5
022	Chiropractors.....	1	6
023	Clergymen.....	1	7
060	Professors and Instructors.....	1	8
071	Dentists.....	1	9
074	Draftsmen.....	1	10
075	Editors and Reporters.....	1	11
076	Newspaper Owners, Publishers, and Managers....	1	12
080	Aeronautical Engineers.....	1	13
082	Civil Engineers.....	1	14
083	Electrical Engineers.....	1	15
085	Mechanical Engineers.....	1	16
086	Marine Engineers.....	2	1
093	Engineers NEC.....	2	2
094	Construction Engineers.....	2	3
096	Operating Engineers.....	2	4
103	Foresters and Conservationists.....	2	5
104	Funeral Directors and Embalmers.....	2	6
105	Lawyers and Judges.....	2	7
120	Musicians and Music Teachers.....	2	8
152	Optometrists.....	2	9
154	Personnel and Labor Relations Workers.....	2	10
160	Pharmacists and Druggists.....	2	11
161	Photographers.....	2	12
162	Physicians.....	2	13
174	Statisticians, Actuaries, Analysts, and Computer Programmers.....	2	14
181	Surveyors.....	2	15
184	School Teachers.....	2	16
185	Medical and Dental Technicians.....	3	1
190	Electrical and Electronic Technicians.....	3	2
194	Veterinarians.....	3	3
195	Professional and Technical Workers NEC.....	3	4

MICROFICHE TABLES - TABLE 1, MALE MORTALITY

<u>Grouped Code</u>	<u>Occupation</u>	<u>Microfiche Page</u>	<u>Column</u>
196	Students (18 and over).....	3	5
200	Farmers NEC.....	3	6
201	Orchardists.....	3	7
202	Nurserymen.....	3	8
203	Ranchers (cattle, sheep, etc.).....	3	9
204	Dairy Farmers.....	3	10
205	Wheat and Grain Farmers.....	3	11
206	Egg/Poultry Farmers and Distributors.....	3	12
249	Florists.....	3	13
250	Store Buyers and Department Heads.....	3	14
251	Buyers and Shippers of Farm Products and Produce Brokers.....	3	15
252	Railroad Conductors.....	3	16
253	Credit Men.....	4	1
255	City and Civil Services Employees.....	4	2
260	Public Administration Inspectors.....	4	3
262	Building Managers and Superintendents.....	4	4
265	Ships' Officers, Pilots, Pursers, Engineers...	4	5
270	Public Administrators and Officials NEC.....	4	6
275	Lodge/Society/Union Officials.....	4	7
280	Postmasters.....	4	8
285	Purchasing Agents and Buyers, NEC, and Sales Managers.....	4	9
290	Managers, Officials, and Proprietors NEC.....	4	10
291	Gas Station/Garage Owners and Attendants.....	4	11
292	Lumber Company Managers, Owners, and Workers.....	4	12
294	Boeing Officials, Managers, and Supervisors...	4	13
295	Fuel Oil Dealers and Workers.....	4	14
297	Furniture Store Owners, Managers, and Clerks..	4	15
298	Grocers and Grocery Clerks.....	4	16
304	Transportation Baggage men.....	5	1
305	Bankers, Bank Clerks, and Managers.....	5	2
310	Bookkeepers, Cashiers, and Payroll Clerks.....	5	3
314	Vehicle Dispatchers and Starters, and Traffic Managers.....	5	4
321	Adjusters and Examiners.....	5	5
323	Mail Carriers.....	5	6
340	Postal Clerks.....	5	7
343	Shipping and Receiving Clerks.....	5	8

MICROFICHE TABLES - TABLE 1, MALE MORTALITY

<u>Grouped Code</u>	<u>Occupation</u>	<u>Microfiche Page</u>	<u>Column</u>
350	Stock Clerks and Storekeepers.....	5	9
352	Telegraph and Radio Operators.....	5	10
354	Ticket, Station, Express, and Travel Agents...	5	11
361	Railroad Clerks.....	5	12
362	Boeing Clerks.....	5	13
363	Public Utility Workers.....	5	14
364	Public Utility Supervisors and Officials.....	5	15
370	Clerks NEC.....	5	16
380	Travelling Salesmen and Sales Representatives.	6	1
384	Lumber Salesmen.....	6	2
385	Insurance Agents, Brokers, Underwriters, and Appraisers.....	6	3
386	Car Salesmen.....	6	4
390	Newsboys.....	6	5
393	Real Estate Agents, Brokers, Developers, and Appraisers.....	6	6
395	Stocks and Bonds Salesmen.....	6	7
396	Sales Clerks NEC.....	6	8
400	Carpet Makers and Layers.....	6	9
401	Bakers.....	6	10
402	Blacksmiths.....	6	11
403	Boilermakers.....	6	12
405	Brickmasons, Stonemasons, and Tile Setters....	6	13
406	Building and Construction Contractors and Foremen.....	6	14
407	Boatbuilders.....	6	15
410	Cabinetmakers.....	6	16
411	Carpenters.....	7	1
412	Fabric Workers.....	7	2
413	Cement and Concrete Finishers.....	7	3
415	Cranemen, Derrickmen, and Hoistmen.....	7	4
416	Oil Well Drillers.....	7	5
420	Decorators and Window Dressers.....	7	6
421	Electricians.....	7	7
425	Road Graders and Pavers, Machine Operators, and Excavators.....	7	8
426	Water Well Drillers.....	7	9
427	Railroad Foremen.....	7	10
430	Foremen NEC.....	7	11
434	Glaziers.....	7	12

MICROFICHE TABLES - TABLE 1, MALE MORTALITY

Grouped Code	Occupation	Microfiche	
		Page	Column
435	Smelter Workers and Heat Treaters.....	7	13
444	Log/Lumber Inspectors, Scalers and Graders, and Timber Cruisers.....	7	14
447	Railroad Inspectors.....	7	15
450	Inspectors NEC.....	7	16
451	Jewelers, Watchmakers, Goldsmiths, Silversmiths, and Locksmiths.....	8	1
453	Telegraph/Telephone/Power Linemen.....	8	2
454	Locomotive Engineers.....	8	3
459	Telephone Installers and Repairers.....	8	4
460	Locomotive Firemen.....	8	5
462	Manufacturing Workers.....	8	6
465	Machinists NEC.....	8	7
469	Railroad Workers NEC.....	8	8
470	Air Conditioning/Heating/Refrigeration Mechanics and Repairmen.....	8	9
471	Airplane Mechanics and Repairmen.....	8	10
472	Auto Mechanics and Repairmen.....	8	11
473	Office Machine Mechanics and Repairmen.....	8	12
474	Radio/Television Mechanics and Repairmen.....	8	13
475	Railroad/Car Shop Mechanics and Repairmen.....	8	14
477	Tire Recappers and Repairers, Rubber Welders...	8	15
479	Body/Fender Repairmen and Auto Painters.....	8	16
480	Mechanics and Repairmen NEC.....	9	1
490	Grain/Flour/Feed Mill Workers.....	9	2
491	Millwrights.....	9	3
492	Metal Molders.....	9	4
493	Motion Picture Projectionists.....	9	5
500	Paper/Pulp Mill Workers.....	9	6
501	Paperhangers and Decorators (Painters).....	9	7
502	Pattern and Model Makers, except Paper.....	9	8
505	Plasterers and Lathers.....	9	9
507	Shipyard Workers, Shipwrights, and Shipfitters.	9	10
510	Plumbers and Pipefitters.....	9	11
512	Printing Pressmen, Plate Printers, and Typesetters.....	9	12
514	Roofers and Slaters.....	9	13
515	Shoemakers, Shoe Repairers, and Leather Workers	9	14
520	Stationary Engineers and Firemen.....	9	15
521	Stonecutters and Stonecarvers.....	9	16

MICROFICHE TABLES - TABLE 1, MALE MORTALITY

<u>Grouped Code</u>	<u>Occupation</u>	<u>Microfiche Page</u>	<u>Column</u>
523	Structural Metal Workers.....	10	1
524	Tailors.....	10	2
525	Tinsmiths, Coppersmiths, Sheet Metal Workers...	10	3
526	Aluminum Workers.....	10	4
527	Cannery and Food Processing Workers.....	10	5
528	Floor Workers (covering, hardwood, linoleum)...	10	6
530	Tool and Die Makers and Setters.....	10	7
535	Upholsterers.....	10	8
545	Craftsmen and Kindred Workers NEC.....	10	9
551	Navy/Coast Guard Officers and Enlisted Men.....	10	10
555	Army/Air Force/Marine Corps Officers and Enlisted Men.....	10	11
557	Boeing Workers.....	10	12
558	Atomic Energy Workers NEC.....	10	13
630	Asbestos and Insulation Workers.....	10	14
634	Blasters and Powdermen.....	10	15
640	Railroad Brakemen.....	10	16
641	Bus Drivers.....	11	1
650	Deliverymen and Routemen.....	11	2
655	Dairy Workers, Ice Cream and Cheesemakers.....	11	3
656	Milk Route Deliverymen.....	11	4
674	Laundry/Dry Cleaning Operatives.....	11	5
675	Meatcutters and Butchers.....	11	6
685	Mine Operatives and Laborers NEC.....	11	7
692	Oilers and Greasers, except Auto.....	11	8
693	Packers and Wrappers NEC.....	11	9
694	Painters.....	11	10
701	Power Station Operators.....	11	11
703	Sailors, Deckhands, and Seamen NEC.....	11	12
706	Plywood Workers.....	11	13
713	Railroad Switchmen.....	11	14
714	Taxicab Drivers and Chauffeurs.....	11	15
715	Truck and Tractor Drivers.....	11	16
716	Fuel Oil Truck Drivers.....	12	1
718	Log/Lumber/Sawmill Truck Drivers.....	12	2
721	Welders and Flame Cutters.....	12	3
724	Tree Farmers, Forest Service and Parks Department Workers.....	12	4

MICROFICHE TABLES - TABLE 1, MALE MORTALITY

Grouped Code	Occupation	Microfiche	
		Page	Column
726	Ordnance Plant Workers.....	12	5
810	Hospital/Institution Attendants.....	12	6
812	Recreation/Amusement Attendants (cardroom, pool hall, carnival).....	12	7
814	Barbers.....	12	8
815	Bartenders.....	12	9
817	Restaurant Owners, Managers, and Workers.....	12	10
818	Brewery Workers.....	12	11
819	Hotel/Motel Owners and Managers.....	12	12
825	Cooks, Candymakers, and Chefs.....	12	13
826	Dishwashers.....	12	14
833	Window Cleaners and Wall Washers.....	12	15
834	Janitors, Maintenance Men, and Sextons.....	12	16
836	School Custodians.....	13	1
841	Porters.....	13	2
843	Hairdressers and Cosmetologists.....	13	3
850	Firemen and Fire Protection Workers.....	13	4
851	Guards, Watchmen, and Doorkeepers.....	13	5
853	Policemen, Sheriffs, and Marshals.....	13	6
860	Bridge Tenders and Crossing Watchmen.....	13	7
875	Waiters.....	13	8
891	Garbage Collectors.....	13	9
892	Junk Dealers, Secondhand Store and Salvage Workers NEC.....	13	10
902	Farm Laborers.....	13	11
907	Shepherders and Wool Workers.....	13	12
962	Fishermen and Oystermen.....	13	13
964	Landscape Gardeners, Groundskeepers, and Greenskeepers.....	13	14
965	Longshoremen and Stevedores.....	13	15
966	Produce/Seed/Feed/Grain Company Workers.....	13	16
970	Loggers.....	14	1
973	Warehousemen.....	14	2
974	Wood/Lumber/Sawmill Workers.....	14	3
975	Fruit Warehousemen.....	14	4
980	Laborers NEC.....	14	5
981	Railroad Laborers NEC.....	14	6
982	Construction Laborers NEC.....	14	7
983	Orchard Laborers.....	14	8
985	Chemical Company Workers.....	14	9
997	Institutionalized, Retarded, Disabled, and Unemployable Men.....	14	10
999	Not Stated or Unknown.....	14	11

MICROFICHE TABLES - TABLE 2, FEMALE MORTALITY

<u>Grouped Code</u>	<u>Occupation</u>	<u>Microfiche Page</u>	<u>Row/Column</u>
000	Accountants, Auditors, and Assessors.....	15	A 1-G 1
014	Artists and Art Teachers.....	"	H 1-K 1
073	Dietitians and Nutritionists.....	"	L 1-C 2
111	Librarians.....	"	D 2-J 2
120	Musicians and Music Teachers.....	"	K 2-C 3
150	Nurses.....	"	D 3-A 4
170	Religious Workers.....	"	B 4-F 4
184	School Teachers.....	"	G 4-D 5
185	Medical and Dental Technicians.....	"	E 5-I 5
196	Students.....	"	J 5-A 6
200	Farmers.....	"	B 6-G 6
249	Florists.....	"	H 6-J 6
250	Store Buyers and Department Heads.....	"	K 6-B 7
255	City and Civil Service Employees.....	"	C 7-J 7
290	Managers, Officials, and Proprietors NEC.....	"	K 7-E 8
298	Grocers and Grocery Clerks.....	"	F 8-M 8
305	Bankers, Bank Clerks, and Managers.....	"	A 9-F 9
310	Bookkeepers, Cashiers, and Payroll Clerks.....	"	G 9-B10
340	Postal Workers.....	"	C10-H10
342	Secretaries.....	"	I10-F11
343	Shipping and Receiving Clerks.....	"	G11-K11
353	Telephone Operators.....	"	L11-E12
362	Boeing Clerks.....	"	F12-K12
363	Public Utility Workers.....	"	L12-D13
370	Clerks NEC.....	"	E13-A14
385	Insurance Agents, Brokers, Underwriters, and Appraisers.....	"	B14-F14
393	Real Estate Agents, Brokers, Developers, and Appraisers.....	"	G14-L14
396	Sales Clerks NEC.....	"	M14-I15
412	Fabric Workers.....	"	J15-C16
500	Paper/Pulp Mill Workers.....	"	D16-H16
507	Shipyard Workers and Shipfitters.....	"	I16-M16
527	Cannery and Food Processing Workers.....	16	A 1-G 1
557	Boeing Workers.....	"	H 1-L 1
651	Dressmakers and Seamstresses, except factory..	"	M 1-G 2
674	Laundry/Dry Cleaning Operatives.....	"	H 2-B 3
675	Meatcutters and Wrappers.....	"	C 3-F 3

MICROFICHE TABLES - TABLE 2, FEMALE MORTALITY

<u>Grouped Code</u>	<u>Occupation</u>	<u>Microfiche Page</u>	<u>Row/Column</u>
810	Hospital/Institution Attendants.....	16	G 3-A 4
815	Bartenders.....	"	B 4-E 4
816	Cocktail Bar/Tavern Owners, Operators, and Workers.....	"	F 4-J 4
817	Restaurant Owners, Managers, and Workers.....	"	K 4-D 5
819	Hotel/Motel Owners and Managers.....	"	E 5-L 5
821	Hotel/Motel Maids and Housekeepers.....	"	M 5-D 6
824	Charwomen and Cleaners.....	"	E 6-I 6
825	Cooks, Candymakers, and Chefs.....	"	J 6-F 7
832	Housekeepers and Stewards (in private household).....	"	G 7-M 7
834	Janitors.....	"	A 8-E 8
835	Kitchen Workers (not private household).....	"	F 8-K 8
843	Hairdressers and Cosmetologists.....	"	L 8-E 9
875	Waitresses.....	"	F 9-A10
909	Nuns.....	"	B10-E10
975	Fruit Warehousemen.....	"	F10-J10

MICROFICHE TABLES - TABLE 3, MALE OCCUPATIONAL MORTALITY BY CAUSE OF DEATH

ICD No.	Cause of Death	Microfiche	
		Page	Row/Column
001-138	Infective and Parasitic Diseases.....	17	A 1-C 1
001-019	Tuberculosis (Total).....	"	D 1-E 1
001-008	Tuberculosis of Respiratory System.....	"	F 1-G 1
140-205	Malignant Neoplasms (Total).....	"	H 1-J 1
140-148	MN Buccal Cavity and Pharynx.....	"	K 1-L 1
140	MN Lip.....	"	M 1
141	MN Tongue.....	"	A 2
144	MN Other Parts of Mouth.....	"	B 2
145	MN Oral Mesopharynx.....	"	C 2
147	MN Hypopharynx.....	"	D 2
148	MN Pharynx, Unspecified.....	"	E 2
150-159	MN Digestive Organs and Peritoneum.....	"	F 2-H 2
150	MN Esophagus.....	"	I 2
151	MN Stomach.....	"	J 2-L 2
152	MN Small Intestine, including Duodenum.....	"	M 2
153	MN Large Intestine, except Rectum.....	"	A 3-C 3
154	MN Rectum.....	"	D 3-E 3
155	MN Biliary Passages and Liver (Primary).....	"	F 3
155.0	MN Liver.....	"	G 3
155.1	MN Gallbladder, Ducts and Ampulla of Vater.....	"	H 3
156	MN Liver (Secondary and Unspecified).....	"	I 3
157	MN Pancreas.....	"	J 3-K 3
159	MN Unspecified Digestive Organs.....	"	L 3
160-165	MN of Respiratory System.....	"	M 3-D 4
161	MN Larynx.....	"	E 4
162	MN Bronchus, Trachea, Lung (Primary).....	"	F 4-I 4
162.1,163	MN Bronchus and Lung.....	"	J 4-M 4
162.2	MN Pleura.....	"	A 5
165	MN Thoracic Organs (Secondary).....	"	B 5
177	MN Prostate.....	"	C 5-D 5
178	MN Testis.....	"	E 5
180	MN Kidney.....	"	F 5
181	MN Bladder and Other Urinary Organs.....	"	G 5-H 5
190	Malignant Melanoma of Skin.....	"	I 5
191	Other MN of Skin.....	"	J 5
193	MN Brain and Nervous System.....	"	K 5-L 5

MICROFICHE TABLES - TABLE 3, MALE OCCUPATIONAL MORTALITY BY CAUSE OF DEATH

<u>ICD No.</u>	<u>Cause of Death</u>	<u>Microfiche Page</u>	<u>Row/Column</u>
193.0	MN Brain.....	17	M 5-A 6
195	MN Other Endocrine Glands.....	"	B 6
196	MN Bone.....	"	C 6
197	MN Connective Tissue.....	"	D 6
199	MN Other and Unspecified Sites.....	"	E 6
200-205	MN Lymphatic and Hematopoietic Tissues.....	"	F 6-H 6
200.0-200.1	Lymphosarcoma and Reticulosarcoma.....	"	I 6
200.0	Reticulum Cell Sarcoma.....	"	J 6
200.1	Lymphosarcoma.....	"	K 6
201	Hodgkin's Disease.....	"	L 6-M 6
202,200.2	Other Lymphomas.....	"	A 7
203	Multiple Myeloma.....	"	B 7
204	Leukemia and Aleukemia.....	"	C 7-D 7
204.0	Lymphatic Leukemia.....	"	E 7
204.1	Myeloid Leukemia.....	"	F 7
204.3	Acute Leukemia.....	"	G 7
204.4	Other and Unspecified Leukemia.....	"	H 7
210-229	Benign Neoplasms.....	"	I 7
230-239	Neoplasms of Unspecified Nature.....	"	J 7
241	Asthma.....	"	K 7
250-254	Diseases of Thyroid Gland.....	"	L 7
260	Diabetes Mellitus.....	"	M 7-A 8
270-277	Diseases of Other Endocrine Glands.....	"	B 8
280-289	Avitaminoses and Metabolic Diseases.....	"	C 8
290-299	Diseases of Blood and Blood-forming Organs.....	"	D 8
292	Other Anemias of Specified Type.....	"	E 8
292.4	Aplastic Anemia.....	"	F 8
297	Agranulocytosis.....	"	G 8
300-309	Psychoses.....	"	H 8
320-326	Disorders of Character, Behavior and Intelligence	"	I 8-J 8
330-334	Vascular Lesions Affecting Central Nervous System	"	K 8-L 8
330	Subarachnoid Hemorrhage.....	"	M 8
331,334	Cerebral Hemorrhage and Other Vascular Lesions...	"	A 9-B 9
332	Cerebral Embolism and Thrombosis.....	"	C 9-D 9
340-345	Inflammatory Diseases of Central Nervous System..	"	E 9
345	Multiple Sclerosis.....	"	F 9

MICROFICHE TABLES - TABLE 3, MALE OCCUPATIONAL MORTALITY BY CAUSE OF DEATH

<u>ICD. No.</u>	<u>Cause of Death</u>	<u>Microfiche Page</u>	<u>Row/Column</u>
350	Paralysis Agitans.....	17	G 9
356.1	Amyotrophic Lateral Sclerosis.....	"	H 9
400-468	Diseases of Circulatory System.....	"	I 9-K 9
410-416	Chronic Rheumatic Heart Disease.....	"	L 9-M 9
420	Arteriosclerotic Heart Disease, including Coronary Disease.....	"	A10-D10
430-434	Other Diseases of Heart.....	"	E10-F10
440-447	Hypertensive Disease.....	"	G10-H10
450-456	Diseases of Arteries.....	"	I10
460-468	Diseases of Veins, etc.....	"	J10
465	Pulmonary Embolism and Infarction.....	"	K10
470-527	Diseases of Respiratory System.....	"	L10-C11
490-493	Pneumonia.....	"	D11-F11
502	Chronic Bronchitis.....	"	G11
502.0	Bronchitis with Emphysema.....	"	H11
510-527	Other Diseases of Respiratory System.....	"	I11-K11
523.0	Silicosis.....	"	L11
523.1	Anthracosilicosis.....	"	M11
523.2	Asbestosis.....	"	A12
523.3	Other Pneumoconiosis.....	"	B12
525	Other Chronic Interstitial Pneumonia.....	"	C12
526	Bronchiectasis.....	"	D12
527	Other Diseases of Lung and Pleural Cavity.....	"	E12-G12
527.1	Emphysema without Bronchitis.....	"	H12-J12
540	Ulcer of Stomach.....	"	K12
541	Ulcer of Duodenum.....	"	L12
550-553	Appendicitis.....	"	M12
560-561	Hernia of Abdominal Cavity.....	"	A13
570-578	Other Diseases of Intestine and Peritoneum.....	"	B13
570	Intestinal Obstruction, without Hernia.....	"	C13
572	Chronic Enteritis, Ulcerative Colitis.....	"	D13
581	Cirrhosis of Liver.....	"	E13-H13
581.0	Cirrhosis of Liver without Alcoholism.....	"	I13-J13
581.1	Cirrhosis of Liver with Alcoholism.....	"	K13-L13
584	Cholelithiasis.....	"	M13
587	Diseases of Pancreas.....	"	A14
587.0	Acute Pancreatitis.....	"	B14

MICROFICHE TABLES - TABLE 3, MALE OCCUPATIONAL MORTALITY BY CAUSE OF DEATH

<u>ICD No.</u>	<u>Cause of Death</u>	<u>Microfiche Page</u>	<u>Row/Column</u>
590-594	Nephritis and Nephrosis.....	17	C14
592	Chronic Nephritis.....	"	D14
600-609	Other Diseases of Urinary System.....	"	E14
600	Infections of Kidney.....	"	F14
602	Calculi of Kidney and Ureter.....	"	G14
610-617	Diseases of Male Genital Organs.....	"	H14
610	Hyperplasia of Prostate.....	"	I14
690-716	Diseases of Skin, Cellular Tissue.....	"	J14
722.0	Rheumatoid Arthritis.....	"	K14
730-738	Osteomyelitis, Diseases of Bone and Joint.....	"	L14
790-795	Senility and Ill-defined Diseases.....	"	M14
800-999	Accidents, Poisonings and Violence.....	"	A15-E15
800-802	Railway Accidents.....	"	F15
810-835	Motor Vehicle Accidents (Total).....	"	G15-I15
860-866	Aircraft Accidents.....	"	J15-K15
900-904	Accidental Falls.....	"	L15-M15
901	Falls from Ladders.....	"	A16
902	Other Falls from One Level to Another.....	"	B16-C16
903	Falls on Same Level.....	"	D16
904	Unspecified Falls.....	"	E16
910-936	Other Accidents.....	"	F16-J16
910	Blows from Falling Object.....	"	K16
912	Accidents caused by Machinery.....	"	L16-M16
914	Accidents caused by Electric Current.....	18	A 1
916	Accidents caused by Fire and Explosion.....	"	B 1-C 1
970-979	Suicide.....	"	D 1-F 1
980-985	Homicide.....	"	G 1-H 1

MICROFICHE TABLES - TABLE 4, SIGNIFICANT MALE PMRS BY OCCUPATION

Grouped Code	Occupation	Microfiche	
		Page	Row/Column
000	Accountants, Auditors, and Assessors.....	19	A 1-B 1
012	Airplane Pilots and Navigators.....	"	C 1
014	Artists and Art Teachers.....	"	D 1
021	Chemists.....	"	E 1
023	Clergymen.....	"	F 1-G 1
060	Professors and Instructors.....	"	H 1
071	Dentists.....	"	I 1
074	Draftsmen.....	"	J 1
075	Editors and Reporters.....	"	K 1
076	Newspaper Owners, Publishers, and Managers....	"	L 1
080	Aeronautical Engineers.....	"	M 1-A 2
082	Civil Engineers.....	"	B 2
083	Electrical Engineers.....	"	C 2
085	Mechanical Engineers.....	"	D 2
086	Marine Engineers.....	"	E 2
093	Engineers NEC.....	"	F 2
094	Construction Engineers.....	"	G 2
096	Operating Engineers.....	"	H 2
103	Foresters and Conservationists.....	"	I 2
104	Funeral Directors and Embalmers.....	"	J 2
105	Lawyers and Judges.....	"	K 2-L 2
120	Musicians and Music Teachers.....	"	M 2
152	Optometrists.....	"	A 3
154	Personnel and Labor Relations Workers.....	"	B 3
160	Pharmacists and Druggists.....	"	C 3
161	Photographers.....	"	D 3
162	Physicians.....	"	E 3-F 3
174	Statisticians, Actuaries, Analysts, and Computer Programmers.....	"	G 3
181	Surveyors.....	"	H 3
184	School Teachers.....	"	I 3-J 3
185	Medical and Dental Technicians.....	"	K 3
190	Electrical and Electronic Technicians.....	"	L 3
194	Veterinarians.....	"	M 3
196	Students.....	"	A 4-B 4
200	Farmers NEC.....	"	C 4-E 4
201	Orchardists.....	"	F 4-G 4

MICROFICHE TABLES - TABLE 4, SIGNIFICANT MALE PMRS BY OCCUPATION

<u>Grouped Code</u>	<u>Occupation</u>	<u>Microfiche Page</u>	<u>Row/Column</u>
202	Nurserymen.....	19	H 4
203	Ranchers (cattle, sheep, etc.).....	"	I 4-J 4
204	Dairy Farmers.....	"	K 4-L 4
205	Wheat and Grain Farmers.....	"	M 4-A 5
206	Egg/Poultry Farmers and Distributors.....	"	B 5
249	Florists.....	"	C 5
250	Store Buyers and Department Heads.....	"	D 5
252	Railroad Conductors.....	"	E 5
253	Credit Men.....	"	F 5
255	City and Civil Service Employees.....	"	G 5
265	Ships' Officers, Pilots, Pursers, Engineers...	"	H 5
270	Public Administrators and Officials NEC.....	"	I 5
275	Lodge/Society/Union Officials.....	"	J 5
280	Postmasters.....	"	K 5
285	Purchasing Agents and Buyers NEC, and Sales Managers.....	"	L 5
290	Managers, Officials, and Proprietors NEC.....	"	M 5-C 6
291	Gas Station/Garage Owners and Attendants.....	"	D 6
292	Lumber Company Managers, Owners, and Workers..	"	E 6
294	Boeing Officials, Managers, and Supervisors...	"	F 6
295	Fuel Oil Dealers and Workers.....	"	G 6
297	Furniture Store Owners, Managers, and Clerks..	"	H 6
298	Grocers and Grocery Clerks.....	"	I 6
305	Bankers, Bank Clerks, and Managers.....	"	J 6-K 6
310	Bookkeepers, Cashiers, and Payroll Clerks.....	"	L 6
314	Vehicle Dispatchers, Starters, and Traffic Managers.....	"	M 6
321	Adjusters and Examiners.....	"	A 7
323	Mail Carriers.....	"	B 7
340	Postal Clerks.....	"	C 7
343	Shipping and Receiving Clerks.....	"	D 7
350	Stock Clerks and Storekeepers.....	"	E 7
352	Telegraph and Radio Operators.....	"	F 7
354	Ticket, Station, Express, and Travel Agents...	"	G 7
361	Railroad Clerks.....	"	H 7
362	Boeing Clerks.....	"	I 7
364	Public Utility Supervisors and Officials.....	"	J 7
370	Clerks NEC.....	"	K 7

MICROFICHE TABLES - TABLE 4, SIGNIFICANT MALE PMRS BY OCCUPATION

<u>Grouped Code</u>	<u>Occupation</u>	<u>Microfiche Page</u>	<u>Row/Column</u>
380	Travelling Salesmen and Sales Representatives..	19	L 7-M 7
384	Lumber Salesmen.....	"	A 8
385	Insurance Agents, Brokers, Underwriters, and Appraisers.....	"	B 8-C 8
386	Car Salesmen.....	"	D 8
390	Newsboys.....	"	E 8
393	Real Estate Agents, Brokers, Developers, and Appraisers.....	"	F 8-G 8
395	Stocks and Bonds Salesmen.....	"	H 8
396	Sales Clerks NEC.....	"	I 8-J 8
400	Carpet Makers and Layers.....	"	K 8
401	Bakers.....	"	L 8
402	Blacksmiths.....	"	M 8
403	Boilermakers.....	"	A 9-B 9
405	Brickmasons, Stonemasons, and Tile Setters.....	"	C 9
406	Building and Construction Contractors and Foremen.....	"	D 9-E 9
407	Boatbuilders.....	"	F 9
410	Cabinetmakers.....	"	G 9
411	Carpenters.....	"	H 9-I 9
412	Fabric Workers.....	"	J 9
413	Cement and Concrete Finishers.....	"	K 9
415	Cranemen, Derrickmen, and Hoistmen.....	"	L 9
416	Oil Well Drillers.....	"	M 9
420	Decorators and Window Dressers.....	"	A10
421	Electricians.....	"	B10
425	Road Graders and Pavers, Machine Operators, and Excavators.....	"	C10-D10
426	Water Well Drillers.....	"	E10
427	Railroad Foremen.....	"	F10
430	Foremen NEC.....	"	G10
434	Glaziers.....	"	H10
435	Smelter Workers and Heat Treaters.....	"	I10
444	Log/Lumber Inspectors, Scalers and Graders, and Timber Cruisers.....	"	J10
447	Railroad Inspectors.....	"	K10
450	Inspectors NEC.....	"	L10

MICROFICHE TABLES - TABLE 4, SIGNIFICANT MALE PMRS BY OCCUPATION

<u>Grouped Code</u>	<u>Occupation</u>	<u>Microfiche Page</u>	<u>Row/Column</u>
451	Jewelers, Watchmakers, Goldsmiths, Silver-smiths, and Locksmiths.....	19	M10
453	Telegraph/Telephone/Power Linemen.....	"	A11
454	Locomotive Engineers.....	"	B11
459	Telephone Installers and Repairers.....	"	C11
460	Locomotive Firemen.....	"	D11
462	Manufacturing Workers.....	"	E11
465	Machinists NEC.....	"	F11
469	Railroad Workers NEC.....	"	G11
471	Airplane Mechanics and Repairmen.....	"	H11
472	Auto Mechanics and Repairmen.....	"	I11
473	Office Machine Mechanics and Repairmen.....	"	J11
474	Radio/Television Mechanics and Repairmen.....	"	K11
475	Railroad/Car Shop Mechanics and Repairmen.....	"	L11
477	Tire Recappers and Repairers, Rubber Welders..	"	M11
479	Body/Fender Repairmen and Auto Painters.....	"	A12
480	Mechanics and Repairmen NEC.....	"	B12
490	Grain/Flour/Feed Mill Workers.....	"	C12
491	Millwrights.....	"	D12
492	Metal Molders.....	"	E12
493	Motion Picture Projectionists.....	"	F12
500	Paper/Pulp Mill Workers.....	"	G12-H12
501	Paperhangers and Decorators (Painters).....	"	I12
505	Plasterers and Lathers.....	"	J12
507	Shipyard Workers, Shipwrights, and Shipfitters	"	K12
510	Plumbers and Pipefitters.....	"	L12
512	Printing Pressmen, Plate Printers, and Typesetters.....	"	M12
514	Roofers and Slaters.....	"	A13-B13
515	Shoemakers, Shoe Repairers and Leather Workers	"	C13
520	Stationary Engineers and Firemen.....	"	D13
521	Stonecutters and Stonecarvers.....	"	E13
523	Structural Metal Workers.....	"	F13
524	Tailors.....	"	G13
525	Tinsmiths, Coppersmiths, Sheet Metal Workers..	"	H13
526	Aluminum Workers.....	"	I13
527	Cannery and Food Processing Workers.....	"	J13
528	Floor Workers (covering, hardwood, linoleum)..	"	K13

MICROFICHE TABLES - TABLE 4, SIGNIFICANT MALE PMRS BY OCCUPATION

<u>Grouped Code</u>	<u>Occupation</u>	<u>Microfiche Page</u>	<u>Row/Column</u>
530	Tool and Die Makers and Setters.....	19	L13
535	Upholsterers.....	"	M13
551	Navy/Coast Guard Officers and Enlisted Men....	"	A14-B14
555	Army/Air Force/Marine Corps Officers and Enlisted Men.....	"	C14-D14
557	Boeing Workers.....	"	E14
558	Atomic Energy Workers NEC.....	"	F14
630	Asbestos and Insulation Workers.....	"	G14
634	Blasters and Powdermen.....	"	H14
640	Railroad Brakemen.....	"	I14
641	Bus Drivers.....	"	J14
650	Deliverymen and Routemen.....	"	K14
655	Dairy Workers, Ice Cream and Cheesemakers.....	"	L14
674	Laundry/Dry Cleaning Operatives.....	"	M14
675	Meatcutters and Butchers.....	"	A15
685	Mine Operatives and Laborers NEC.....	"	B15-D15
692	Oilers and Greasers, except auto.....	"	E15
694	Painters.....	"	F15-G15
701	Power Station Operators.....	"	H15
703	Sailors, Deckhands, and Seamen NEC.....	"	I15-J15
706	Plywood Workers.....	"	K15
713	Railroad Switchmen.....	"	L15
714	Taxicab Drivers and Chauffeurs.....	"	M15-A16
715	Truck and Tractor Drivers.....	"	B16-C16
716	Fuel Oil Truck Drivers.....	"	D16
718	Log/Lumber/Sawmill Truck Drivers.....	"	E16
721	Welders and Flame Cutters.....	"	F16
724	Tree Farmers, Forest Service and Parks Department Workers.....	"	G16
726	Ordnance Plant Workers.....	"	H16
810	Hospital/Institution Attendants.....	"	I16
812	Recreation/Amusement Attendants (cardroom, pool hall, carnival).....	"	J16
814	Barbers.....	"	K16
815	Bartenders.....	"	L16-M16
817	Restaurant Owners, Managers, and Workers.....	20	A 1
818	Brewery Workers.....	"	B 1
819	Hotel/Motel Owners and Managers.....	"	C 1
825	Cooks, Candymakers, and Chefs.....	"	D 1-F 1

MICROFICHE TABLES - TABLE 4, SIGNIFICANT MALE PMRS BY OCCUPATION

<u>Grouped Code</u>	<u>Occupation</u>	<u>Microfiche Page</u>	<u>Row/Column</u>
826	Dishwashers.....	20	G 1
833	Window Cleaners and Wall Washers.....	"	H 1
834	Janitors, Maintenance Men, and Sextons.....	"	I 1
836	School Custodians.....	"	J 1
841	Porters.....	"	K 1
843	Hairdressers and Cosmetologists.....	"	L 1
850	Firemen and Fire Protection Workers.....	"	M 1
851	Guards, Watchmen, and Doorkeepers.....	"	A 2
853	Policemen, Sheriffs, and Marshals.....	"	B 2
860	Bridge Tenders and Crossing Watchmen.....	"	C 2
875	Waiters.....	"	D 2
891	Garbage Collectors.....	"	E 2
892	Junk Dealers, Secondhand Store and Salvage Workers NEC.....	"	F 2
902	Farm Laborers.....	"	G 2-I 2
907	Shepherders and Wool Workers.....	"	J 2
962	Fishermen and Oystermen.....	"	K 2-L 2
964	Landscape Gardeners, Groundskeepers, and Greenskeepers.....	"	M 2
965	Longshoremen and Stevedores.....	"	A 3
966	Produce/Seed/Feed/Grain Company Workers.....	"	B 3
970	Loggers.....	"	C 3-E 3
973	Warehousemen.....	"	F 3
974	Wood/Lumber/Sawmill Workers.....	"	G 3-H 3
975	Fruit Warehousemen.....	"	I 3
980	Laborers NEC.....	"	J 3-A 4
981	Railroad Laborers NEC.....	"	B 4-C 4
982	Construction Laborers NEC.....	"	D 4-F 4
983	Orchard Laborers.....	"	G 4
985	Chemical Company Workers.....	"	H 4
997	Institutionalized, Retarded, Disabled, and Unemployable Men.....	"	I 4-K 4
999	Not Stated or Unknown.....	"	L 4-B 5

