

OCCUPATION AND INDUSTRY INFORMATION FROM THE DEATH CERTIFICATE;  
ASSESSMENT OF THE COMPLETENESS OF REPORTING

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INTRODUCTION

Interest in occupational and environmental health has grown rapidly in recent years, having its apparent origins in both a shift in the values of the American public as well as in increasing empirical evidence of the relation between the environment and health. The shift in our values in recent years has been toward a growing concern with the quality of our physical and occupational environment and its implications for the public's health. Concurrently, there has been increasing evidence that various substances to which we are exposed in both occupational and non-occupational settings are associated statistically and sometimes even causally with health and with the probability of premature death.

In the United States, this has led to renewed interest in identifying statistical information that can generate hypotheses on the relationship between environmental factors, including occupation, and health. Among the important recent developments reflecting these concerns are publication by the National Cancer Institute in 1975 of the Atlas of Cancer Mortality for U.S. Counties, 1950-69.<sup>1/</sup> Another development was appointment by the U.S. National Committee on Vital and Health Statistics of a Technical Consulting Panel (TCP) in 1972. This TCP was charged with identifying statistics needed for determining the effects of the environment on health.<sup>2/</sup> In addition, stimulated by the growing interest in environmental health statistics, the Congress recently enacted Public Law 95-623 (1978), which calls on the National Center for Health Statistics (NCHS) to play an active role in the coordination and utilization of statistics related to occupational and environmental health.

These developments have directed renewed attention to the potential of the vital statistics system to produce information relevant to these concerns. In response, the Division of Vital Statistics (NCHS), in cooperation with the National Institute for Occupational Safety and Health (NIOSH), and the Bureau of the Census, undertook an evaluation of the completeness of occupation and industry reporting on a national sample of death certificates for 1975. The study examined the completeness of the information entered on the death certificate, from a coding point of view. This paper is a first report on the results of that study.<sup>3/</sup>

As an introduction to presenting the results of the 1975 occupational coding feasibility study, we present some general considerations and problems associated with occupational mortality studies; and we also attempt to place the 1975 study into historical context through tracing the history of U.S. occupational mortality studies, and through a comparison of the results of this study with those of two other studies containing information on the codability of occupational entries on the death certificate. These two studies, also car-

ried out under the auspices of the National Center for Health Statistics and its predecessor agency, were undertaken in 1950 and 1974.

DIFFERENCES IN REPORTING OCCUPATION

A number of problems are inherent in studies of occupational mortality that use death certificate and census information in combination. One of these problems is related to the occupation "referent," that is, the time period to which the occupation and industry questions on the respective instruments are directed. There is, as Kitagawa noted, a great discrepancy between the "usual occupation" reported on the death certificate and the "current occupation" reported in the population census.<sup>4/</sup> The structure and the content of the items for occupation and industry are very different between the questionnaires of the Census Bureau--the Census schedule and the questionnaires of the periodic Current Population Survey--and the Standard Certificate of Death. Where the Census forms are oriented toward determining the current labor force status of the respondent, including their present occupation and industry, the death certificate, in contrast, attempts to determine what the decedent's main occupational pursuit was during his or her lifetime.

In compiling the information on the decedent's demographic characteristics for the certificate of death, the funeral director is asked to provide the following information on occupation and industry:

Usual Occupation. "Give kind of work done during most of working life, even if retired." The funeral director is instructed in a supplementary handbook to enter the usual occupation of the decedent.<sup>5/</sup> This is not necessarily the last occupation of the decedent. The Handbook indicates that "usual occupation" is the kind of work the decedent did during most of his or her working life, with some examples such as farmhand, housewife, college professor. It states that "retired" is not an acceptable category, and that the entry "student" is appropriate if the decedent was a student at the time of death and was never regularly employed.

Kind of Business of Industry. Here, the funeral director is asked to enter the kind of business or industry to which the occupation listed earlier was related, such as insurance, farming, university, etc. The funeral director is not to enter the name of the firm or the organization in which the decedent was employed.

Even if the death certificate and the census/survey schedule contained the same occupation and industry items, differences in reporting would likely be associated with the contrasting methods for collecting the information. Thus, census reports are generally based on self-enumeration, while the

occupation information on the death certificate represents statements that a funeral director receives from an informant, whose perception of the deceased's occupation may differ considerably from that which the decedent actually had in life. The informant may not be aware of the exact functions performed or of the detailed job title. He may also attempt to "promote" the decedent into a higher occupational class than he or she had. All of these problems may affect the occupational group to which the decedent is assigned based on information from the death certificate.

#### U.S. TABULATIONS OF OCCUPATIONAL MORTALITY

In the United States, the first study of occupational mortality from death certificates was made for the year 1890. Mortality data by occupation collected during the decennial censuses had been published earlier, in the census volumes of 1870, 1880, and 1890. The tabulations of deaths by occupation from death certificates were continued for each census year after 1900, according to the report by Guralnick.<sup>6/</sup> However, tables were published only in 1890, 1900, and 1930. The vital statistics volumes give no reason why tabulations for other years were not published, but there may have been some concern about problems of consistency in reporting occupational information on the death certificates, which provide the numerator of occupational mortality rates, and reporting of occupation in the census schedules that are used to develop estimates for the population at risk represented in the denominator of these rates.

Lack of comparability appears to have been a deciding reason for not publishing the 1940 data, according to Guralnick. Shortly before the 1940 Census, an evaluation was made of the comparability of occupation reported on a sample of death certificates with that for the same individual in the census; previous evaluations had been made only by examining the quality of death certificate entries alone. The frequent lack of consistency in reporting the item on the two instruments as well as the lack of information in the census for persons who had retired appear to have contributed to the decision not to attempt a study of occupational mortality for 1940.

For 1950, however, circumstances were more favorable to reconsideration of a study of occupational mortality from the death certificate and census records, and a major national study was undertaken. For the 1950 study, occupation and industry were coded for all male deaths between the ages of 20-64 years--some 300,000--utilizing the Alphabetical Index of Occupations and Industries: 1950, published by the U.S. Bureau of the Census along with supplementary instructions also provided by the Bureau of the Census.

#### CODING STUDIES

While much of the methodological concern regarding occupational mortality studies has focussed on issues of comparability between information contained on the death certificates and that contained on census reports, there has also been a persistent question, particularly in recent years, about the codability of the information entered on the death certificate. Here the issue that is raised is much more basic and elementary than that of consistency. It is rather the question,

"Can the entries on the death certificate be coded at a level of detail sufficiently meaningful to even undertake studies of consistency?" We have some information with which to address that question from the 1950 national occupational study, albeit for only a segment of the population, males 20-64 years of age. Moreover, we have additional information from a study carried out in 1973 in conjunction with the work of the NCHS Technical Consultant Panel to the U.S. National Committee on Vital and Health Statistics. These were methodological forerunners of the 1975 national study that provides the basis for this report. The results of the 1975 study, we shall see, are surprisingly consistent with those of the earlier studies. As a general context within which to view the 1975 results, those of the 1950 and 1973 tests are presented below.

#### 1950 and 1973 STUDIES

The 1950 study was restricted to males aged 20-64 years. For this population, 81.5 percent of the certificates included entries on which both occupation and industry of the decedent were stated; on an additional 10.0 percent occupation only was stated. In addition, 0.5 percent of the decedents were reported as being students and 1.1 percent were reported on the death certificate as being members of the Armed Forces. Thus, 93.1 percent of the certificates had codable occupations among the 334,151 death certificates for males aged 20-64 years in 1950. For the age group 20-44 years, the codable occupation figure was 91.8 percent; and for males aged 45-64 years, 93.5 percent.

The 1973 coding study by NCHS represented a limited investigation of the occupational entries of a sample of 2,900 death certificates from one month of records in the Current Mortality Sample for 1973.

The objective was to obtain counts of death records with "usable" occupation entries by age and sex for four age groups (under 20 years, 20-44, 45-64, and 65 and over). Regarded as unusable were such entries as "temporary illness," "on vacation," "on strike," "unemployed," "laid off," "looking for work," or "retired;" since the objective was to ascertain usual occupation, not necessarily current occupation. Results of this study are shown in Table 1.

According to this investigation, about 81 percent of the death certificates in the sample had an occupational entry that was assessed as usable by the coder. For males 20-44 years of age, the figure was 90.2 percent. This compares with 91.8 in the 1950 study, which was preceded by an intensive campaign to improve reporting on the occupation and industry items. For males 45-64 years, the percent usable entries in the 1973 study was estimated as 85.9 percent compared with over 93 percent in the 1950 study.

In the 1973 study, the percent usable entries was higher for females (88 percent) than for males (76 percent), and this pattern obtained for all but the youngest age group.

#### THE 1975 STUDY

The national mortality coding feasibility study using 1975 records was undertaken as a joint project of the National Center for Health Statistics (NCHS), the National Institute for Occupational Safety and Health (NIOSH), and the U.S. Bureau of the Census. This study was designed by NCHS and

NIOSH and was carried out by the Bureau of the Census. Principal support for the study was from 1-percent evaluation funds from the U.S. Department of Health, Education, and Welfare, supplemented with a contract to the Census Bureau from NIOSH.

Sample Design. From all resident deaths occurring in 1975, a sample of 5,000 death certificates was drawn randomly within four age-color strata. The strata were comprised of white decedents aged 20-64 years; all other decedents in the same age group; white decedents 65 years old and over; and all other decedents in the same age group. Another sample of 5,000 records are drawn from this same source. This sample was comprised of all deaths from a number of causes of death selected by NIOSH. This preliminary analysis, however, deals with the national random sample. Microfilm copies of death certificate files from all States in 1975 were provided to the Bureau of the Census, which was able to locate 9,892 of the certificates from the combined samples of 10,000 records. The Bureau then converted the written occupation and industry entries into three-digit codes shown in the Alphabetical Index of Industries and Occupations.<sup>27</sup>

Results. For the 1975 coding feasibility study, a special set of codes were developed to indicate the quality of occupation and industry entries on the death certificate. The codes ranged from "no entries, that is, the item was left completely blank by funeral directors, to the most complete recording in which the entry was "codable to a detailed group," that is, to one of the 424 occupational categories, or, in the case of industry, one of the 215 industry categories that are identified in the Census Bureau's current Alphabetical Index of Industries and Occupations.

Tabulations of these codes by age, color, and sex of decedents representing a national sample of 5,000 deaths are shown in Tables 2 and 3. For both occupation and industry, codable entries are also classified according to whether the decedent was reported as being in the labor force or outside the labor force. If the latter, the category is further subdivided into the classification of Armed Forces, students, housewives, and retired.

#### Occupation.

Results in Tables 2 and 3 show that for a representative sample of all U.S. deaths in 1975, an estimated 91 percent of the records contained occupation entries that were codable; this included 32 percent of the decedents who were reported as not being in the labor force. Most of those were housewives (28 of the 32 percent). For the 59 percent of deaths that were reported as being in the labor force, about 45 percent were codable to a detailed occupation category. Stated differently, over 75 percent (44.9/59.4) of the records for persons in the labor force were codable to a detailed occupation (3-digit level), such as an "electrical engineer."

About 15 percent of all entries could be coded to more than one detailed category. In most of these cases, the choice was between categories in different major occupation groups. However, for about one of five of these cases, the choice was between detailed categories within the same major occupational group. An example of an entry that could be coded to more than one group is that of

"steel worker." Without information concerning the person's specific industry category, the coding clerk would arbitrarily code this entry either to a category in the "craft and kindred" major group or to one in the "operative, except transport" major group.

Of particular interest is the very small proportion of certificates for which the occupation entry was given as "retired." Instructions to funeral directors in the Funeral Directors' Handbook on Registration and Fetal Death Reporting state that retired should not be used as an entry for the occupation item, and apparently this instruction is closely followed. For the total representative sample of deaths in the United States in 1975, only 2.6 percent contained occupational entries coded as retired. For decedents 65 years old and over, who account for over two-thirds of the deaths of persons 20 years old and over in the United States annually, the percent reporting occupation as retired was only 3.0 percent in 1975. For those aged 20-64 years, the figure was 1.7 percent.

By sex, occupation entries for females were more codable than for males, when those not in the labor force were included in the count, that is, 94 compared with 88 percent. For those decedents reported as being in the labor force, female entries again were somewhat more codable at the detailed occupation level, about 80 percent (24.6/30.9) compared with 74 percent for males (61.4/82.5). By color for the total sample, the occupation entries of white deaths were somewhat more codable than for persons of races other than white, 91 percent compared with 88 percent. These relative differences also existed for comparisons in codability between males and between females of the different color groups.

Results in Table 3 also indicate that a greater proportion of white male decedents were reported as being in the labor force than among other males--a pattern consistent with general population of living persons, 83 compared with 79 percent. A far sharper contrast is evident for females: 65 percent of white female entries were coded to not being in the labor force compared with 51 percent for other females. Again, this pattern is generally consistent with that of the living population.

#### Industry.

The codability of the industry item was not as good as that of occupation, as shown in Tables 2 and 3. Overall, about 81 percent of the national sample had entries that were reported as codable to an industry, compared with 91 percent codable to an occupation. For the codable industry entries of decedents in the labor force (49 percent), 72 percent were codable to a detailed industry group compared with about 75 percent for occupational entries.

By sex and by color, the general patterns for industry reporting parallel those for occupation, though the reporting was consistently lower for each color-sex group in the case of industry entries. Thus, for females about 89 percent of the entries were codable compared with 69 percent for the male entries; for white decedents 82 percent codable compared with 71 percent for persons of races other than white.

About 5 percent of all industry entries were derived from the occupation code. For example, if

"farmer" were entered in the occupation code item and no codable industry was present, the coder was instructed to assign the industry code for "agricultural production." For the remaining cases with a codable entry, the coding clerks chose either among categories in different major categories in different major industry groups (6 percent of the codable entries), or among categories within one major group (3 percent of the codable entries).

For the approximately 20 percent of the certificates that were not codable to an industry, about half had no entry. Most of the remainder had a company name that could not be associated with a specified industry.

#### Age Patterns.

By age, occupation entries appear to be slightly more codable for the population aged 65 years and over than for the younger population of decedents, those aged 20-64 years. For the former group, an estimated 92 percent were codable compared with 88 percent for the latter. For both age groups, however, about the same proportion of the deaths for persons reported as in the labor force were codable at the detailed level, that is 76.3 percent (42.2/55.3) for the older group and 74.4 percent for the younger group (50.6/68.0). For industry, a similar pattern was observed, with the older group consistently having more codable entries across all color-sex groups.

#### DISCUSSION

Attention has focussed increasingly on occupation and industry information on the death certificate in recent years, reflecting the growing concern about occupational and environmental health in the United States. For many years, in the United States as in Great Britain occupational mortality studies utilizing information from the death certificate in combination with information from the decennial censuses provided an important statistical base for describing and assessing differentials in occupational mortality, and for characterizing in broad terms socioeconomic differentials in mortality. While this important statistical tradition continued in Great Britain from 1851 through 1971 with only a single interruption, the war year 1941, in the United States the record has been less complete. Our most recent national study was in 1950. No studies of occupational mortality were carried out in connection with either the 1960 or the 1970 Census of Population. Stimulus to resume work of this type has come from a number of sources including the "Goldsmith Report" in 1977.

The 1975 coding feasibility study, undertaken as a cooperative effort of NIOSH, NCHS, and the Census Bureau, was designed to address a very limited set of questions, namely, how codable are the industry and occupation items on the death certificates used now in the United States. Additionally, the Census Bureau was asked to make some general observations about coding these items in comparison with coding the occupation and industry item on the schedules they are accustomed to processing, namely those from the decennial census and the Current Population Survey.

Generally, the occupation item had a much lower nonresponse rate (2.6 percent) than the industry item (9.0 percent). Census Bureau personnel sug-

gested that one reason for these differences may be the location of the industry item on the death certificate. Since the industry item is located after the occupation item, some funeral directors may feel that the occupation entry is sufficient.

Comparisons can be made of the codability of the occupation entries on the death certificate from the three U.S. studies over the past 25 years. These comparisons are standardized against the 1975 age distribution of decedents and are restricted to males aged 20-64 years, the population to which the 1950 national occupational mortality study was restricted. The standardized percent of occupational entries that were codable in the three time periods are shown below:

<u>1950</u>	<u>1973</u>	<u>1975</u>
92.8	86.9	86.1

The similarity of the consistently high codability of the occupational entries in the three studies--about 90 percent--is surprising in view of the different procedures used in the three studies. The somewhat better results for the 1950 study may be attributable to two factors. First, the 1950 study represents a select sample in that it included only that 80 percent of the original death records to which a corresponding census schedule could be matched. These deaths, may therefore, have had more complete occupational entries than those certificates for which no corresponding census record could be found. In addition, for the 1950 study, a campaign to improve occupational reporting was mounted by the National Office of Vital Statistics shortly before the study. In any case, it can be said that there is a high degree of consistency in the results of three studies that included or focussed on the codability of occupation on the death certificate.

For the past 25 years, then, about nine of ten certificates have contained sufficient information to permit coding of the occupation entry. Currently over 75 percent of the certificates have sufficient information to permit coding at the three-digit level. To be sure, some ambiguity of entries exists, in that some occupational entries can be coded to more than one detailed occupation. Special coding instructions allowing cross-referencing to the industry item, may have reduced this ambiguity.

Certainly, codability is but one of the issues to be addressed in considering the usefulness of the occupation and industry items on the death certificate for research purposes. We have discussed other limitations of these items in reference particularly to occupational mortality studies that utilize both vital statistics and census information. The problems include consistency of reporting these items between the two statistical sources. They also include interpretive issues that arise because fatal outcomes sometimes are far removed in time and space from the environmental and occupational exposures that may have triggered a disease that culminated in death. Occupation and industry may also be misstated on the death certificate or on the census schedule, or on both instruments.

Despite such limitations, the work of John Fox in Great Britain and Lillian Guralnick in the U.S., and others suggests strongly that occupational mortality studies based on information from death

certificates can yield important clues to occupationally-related risk factors, and in some of the less complicated situations may actually quantify with some precision the relative risk of death associated with certain occupational categories.

The 1975 national feasibility study of coding occupation and industry on the death certificate was designed to address a limited question in a systematic and objective way that could be generalized to all deaths in the U.S., cross-classified by age, color, and sex. The results corroborate the more limited findings of earlier studies. They suggest, moreover, that it is both feasible and practical to code this information on the death certificate on at least a periodic basis to further our knowledge of the occupational and socioeconomic correlates of death in the United States.

#### FOOTNOTES

1. Thomas J. Mason, Frank W. McKay, Robert Hoover, William J. Blot, Joseph F. Fraumeni, Jr., Atlas of Cancer Mortality for U.S. Counties, 1950-69. National Institutes of Health, U.S. Department of Health, Education, and Welfare (DHEW Publication No. (NIH) 75-780).

2. National Center for Health Statistics (NCHS), "Statistics Needed for Determining the Effects of the Environment on Health," Vital and Health Statistics (VHS), Series 4, No. 20, July 1977.

3. This study was supported in part by 1-percent HEW evaluation funds (FY 1979), and with support from the National Institute for Occupational Safety and Health. This is to acknowledge support of the following NCHS staff who assisted in various phases of the study; Dwight French, sampling design; Rita Hoffman and Joe Farrell, sample selection and programming; Marshall Evans and Ronald Chamblee, records acquisition; Joel Kleinman, general comments.

4. Kitagawa, Evelyn M. and Philip M. Hauser, Differential Mortality in the United States; A Study of Socioeconomic Epidemiology, Cambridge, Massachusetts, Harvard University Press, 1973.

5. NCHS, Funeral Directors' Handbook on Death Registration and Fetal Death Reporting, June 1978.

6. Guralnick, Lillian, "Mortality by Occupation and Industry, Among Men 20-64 Years of Age: United States, 1950," Vital Statistics--Special Reports, Vol. 53, No. 2, September 1962, p. 53.

"Mortality by Occupation and Cause of Death Among Men 20 to 64 Years of Age: United States, 1950," Vital Statistics--Special Reports, Vol. 53, No. 3, September 1963.

"Mortality by Industry and Cause of Death Among Men 20-64 Years of Age: United States, 1950," Vital Statistics--Special Reports, Vol. 53, No. 4, September 1963.

"Mortality by Occupation and Level and Cause of Death Among Men 20 to 64 Years of Age: United States, 1950," Vital Statistics--Special Reports, Vol. 53, No. 5, September 1963.

7. Three States had death certificates that excluded the "business or industry" item. These constituted 356 of the 5,000 records in the stratified random sample. The States were Arizona, Delaware, and Pennsylvania, all of which by 1978 had modified their death certificates to include this item.

#### TECHNICAL APPENDIX

The standard errors of the percentages in Tables 2 and 1 were calculated according to the following formula:

$$\text{Var}(\hat{p}_{ghik}) = \left[ 1 - \frac{n_{ghi}}{N_{ghi}} \right] \frac{\hat{p}_{ghik}(1-\hat{p}_{ghik})}{n_{ghi} - 1}$$

$n_{ghi}$  = number of deaths in the sample in the ghi (age-color-sex) group

$N_{ghi}$  = number of deaths in the population in the ghi group

$\hat{p}_{ghik}$  = proportion of ghi group with codability k

TABLE 1. PERCENT USABLE OCCUPATION ENTRIES FOR A NATIONAL SAMPLE OF 2,900 DEATHS, BY AGE AND SEX: UNITED STATES, 1973  
(Deaths to residents of the United States)

Age	Percent Useable Entries		
	Total	Male	Female
All Ages	81.3	76.0	87.7
Under 20 years	32.9	34.8	29.4
20-44 years	91.1	90.2	93.0
45-64 years	87.3	85.9	89.5
65 years old & over	81.6	72.8	90.0
20 years old & over	83.8	78.4	90.0

Source: Division of Vital Statistics, National Center for Health Statistics

Table 2.—Percent Distribution of Completeness of Occupation and Industry Entries on Death Certificates, by Age and by Color: United States, 1975  
 [Representative of all U.S. resident deaths in 1975. Based on a stratified sample. Standard errors shown in parentheses; see Technical Appendix.]

Completeness of Entry	Occupation					Industry				
	Total	Age		Color		Total	Age		Color	
		20-64	65+	White	Other		20-64	65+	White	Other
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Entry not codable	9.1 (0.405)	11.7 (0.641)	7.3 (0.535)	8.7 (0.562)	12.1 (0.647)	19.4 (0.558)	25.9 (0.873)	16.3 (0.737)	18.1 (0.769)	29.3 (0.904)
No Entry	2.6 (0.221)	3.2 (0.349)	2.3 (0.296)	2.3 (0.297)	4.8 (0.423)	8.9 (0.401)	11.4 (0.634)	7.8 (0.535)	7.7 (0.532)	18.5 (0.771)
Entry not readable	0.2 (0.045)	0.1* (0.045)	0.2 (0.077)	0.2* (0.077)	0.3 (0.100)	0.1 (0.632)	0.2* (0.077)	0.1* (0.045)	0.1* (0.045)	0.2* (0.077)
Entry readable, not codable	6.3 (0.342)	8.4 (0.552)	5.3 (0.448)	6.2 (0.481)	7.0 (0.506)	3.2 (0.245)	4.9 (0.430)	2.4 (0.303)	2.8 (0.327)	6.3 (0.433)
Company name given	-	-	-	-	-	7.2 (0.363)	9.4 (0.501)	6.1 (0.477)	7.6 (0.529)	4.3 (0.402)
Entry codable <sup>1</sup>	90.9 (0.405)	88.3 (0.641)	92.2 (0.535)	91.3 (0.562)	87.9 (0.647)	80.6 (0.558)	74.1 (0.873)	83.7 (0.737)	81.9 (0.769)	70.7 (0.904)
Entry codable, person not in labor force	31.6 (0.656)	20.3 (0.802)	36.9 (0.964)	32.3 (0.934)	26.0 (0.871)	31.4 (0.654)	20.2 (0.801)	36.8 (0.963)	32.1 (0.933)	25.9 (0.670)
Armed Forces	0.6 (0.100)	1.1 (0.205)	0.4 (0.110)	0.7 (0.151)	0.3 (0.100)	1.4 (0.161)	1.9 (0.270)	1.2 (0.214)	1.5 (0.241)	1.0 (0.195)
Students	0.3 (0.063)	1.0 (0.195)	-	0.3 (0.100)	0.4 (0.118)	0.3 (0.063)	1.0 (0.195)	-	0.3 (0.100)	0.5 (0.134)
Housewives	28.0 (0.633)	16.5 (0.740)	33.6 (0.943)	29.0 (0.906)	20.6 (0.804)	28.0 (0.633)	16.5 (0.740)	33.5 (0.943)	29.0 (0.906)	20.7 (0.805)
Retired	2.6 (0.221)	1.7 (0.255)	3.0 (0.339)	2.3 (0.297)	4.7 (0.420)	1.6 (0.173)	0.7 (0.161)	2.0 (0.277)	1.3 (0.224)	3.7 (0.374)
Entry codable, person in labor force	59.4 (0.693)	68.2 (0.924)	55.3 (0.993)	59.1 (0.982)	51.8 (0.965)	49.2 (0.705)	53.9 (0.994)	46.9 (0.936)	49.8 (0.999)	44.8 (0.983)
Codable to detailed category	44.9 (0.701)	50.6 (0.997)	42.2 (0.986)	45.2 (0.994)	42.6 (0.923)	35.2 (0.674)	39.2 (0.976)	33.2 (0.941)	35.2 (0.954)	34.6 (0.946)
Choices within one major group <sup>2</sup>	3.1 (0.243)	3.6 (0.370)	2.8 (0.327)	3.1 (0.345)	2.3 (0.295)	2.6 (0.21)	2.7 (0.322)	2.5 (0.310)	2.7 (0.322)	1.4 (0.232)
Choices between major groups	11.5 (0.449)	13.9 (0.683)	10.3 (0.607)	10.7 (0.617)	16.9 (0.774)	6.2 (0.339)	7.4 (0.522)	5.6 (0.458)	6.5 (0.492)	3.8 (0.375)
Derived from occupation	-	-	-	-	-	5.2 (0.311)	4.7 (0.423)	5.5 (0.454)	5.3 (0.446)	4.9 (0.428)

<sup>1</sup>Includes persons in the labor force and persons not in the labor force.

<sup>2</sup>Includes a small number of entries codable to major group only.

\*Based on less than 5 sample deaths.

Table 3.--Percent Distribution of Completeness of Occupation and Industry Entries on Death Certificates by Sex and Color: United States, 1975  
 [Representative of all U.S. resident deaths in 1975. Based on a stratified sample. Standard errors shown in parentheses; see Technical Appendix.]

Completeness of Entry	Occupation							Industry						
	TOTAL	Males			Females			TOTAL	Males			Females		
		Total	White	Other	Total	White	Other		Total	White	Other	Total	White	Other
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Entry not codable	9.1 (0.405)	11.8 (0.600)	11.5 (0.834)	14.2 (0.921)	5.6 (0.498)	5.2 (.0688)	9.4 (0.831)	19.4 (0.558)	26.1 (0.817)	24.0 (1.117)	40.4 (1.304)	11.3 (0.686)	10.9 (0.965)	14.6 (1.067)
No Entry	2.6 (0.221)	2.6 (0.295)	2.3 (0.391)	5.3 (0.591)	2.5 (0.336)	2.3 (0.464)	4.1 (0.598)	8.9 (0.401)	10.9 (0.580)	9.0 (0.748)	24.8 (1.142)	6.5 (0.534)	6.1 (0.741)	10.2 (0.914)
Entry not readable	0.2 (0.045)	0.2* (0.071)	0.2* (0.110)	0.1* (0.084)	0.2 (0.089)	0.1* (0.089)	0.5 (0.210)	0.1 (0.032)	0.1* (0.045)	0.1* (0.071)	0.1* (0.084)	0.1* (0.055)	0.1* (0.089)	0.2* (0.130)
Entry readable, not codable	6.3 (0.342)	9.0 (0.532)	9.0 (0.748)	8.7 (0.744)	3.0 (0.369)	2.7 (0.501)	4.7 (0.639)	3.2 (0.245)	4.5 (0.385)	3.9 (0.506)	9.5 (0.779)	1.5 (0.261)	1.4 (0.362)	2.1 (0.432)
Company name given	-	-	-	-	-	-	-	7.2 (0.363)	10.5 (0.570)	11.1 (0.821)	6.0 (0.631)	3.2 (0.379)	3.3 (0.552)	2.1 (0.432)
Entry codable <sup>1</sup>	90.9 (0.405)	88.2 (0.600)	88.5 (0.834)	85.8 (0.921)	94.4 (0.498)	94.8 (0.688)	90.7 (0.881)	80.6 (0.558)	68.8 (0.817)	76.0 (1.117)	59.6 (1.304)	88.7 (0.686)	89.1 (0.965)	85.4 (1.067)
Entry codable, person not in labor force	31.6 (0.656)	5.7 (0.430)	5.5 (0.596)	7.1 (0.677)	63.4 (1.044)	65.0 (1.477)	51.1 (1.510)	31.4 (0.654)	5.3 (0.416)	5.1 (0.574)	6.7 (0.664)	63.6 (1.043)	65.2 (1.475)	51.2 (1.510)
Armed Forces	0.6 (0.100)	1.1 (0.190)	2.0 (0.365)	0.5 (0.184)	-	-	-	1.4 (0.161)	2.4 (0.283)	2.6 (0.415)	1.5 (0.854)	0.2 (0.089)	0.2* (0.134)	0.4 (0.187)
Students	0.3 (0.063)	0.5 (0.126)	0.4 (0.161)	0.6 (0.205)	0.2 (0.089)	0.2 (0.134)	0.2 (0.130)	0.3 (0.063)	0.5 (0.126)	0.4 (0.161)	0.6 (0.205)	0.2 (0.089)	0.2* (0.134)	0.3* (0.161)
Housewives	28.0 (0.633)	0.1 (0.045)	0.1* (0.071)	0.3* (0.141)	62.4 (1.050)	64.3 (1.484)	47.6 (1.509)	28.0 (0.633)	0.1* (0.045)	0.1* (0.071)	0.2* (0.118)	62.4 (1.050)	64.3 (1.484)	47.8 (1.510)
Retired	2.6 (0.221)	4.0 (0.363)	3.7 (0.493)	5.8 (0.616)	0.8 (0.190)	0.5 (0.214)	3.2 (0.531)	1.6 (0.173)	2.2 (0.270)	1.9 (0.355)	4.5 (0.550)	0.8 (0.190)	0.6 (0.237)	2.8 (0.497)
Entry codable, person in labor force	59.4 (0.693)	82.5 (0.707)	83.0 (0.982)	78.7 (1.081)	30.9 (1.001)	29.8 (1.417)	40.0 (1.480)	49.2 (0.705)	63.5 (0.896)	70.9 (1.188)	52.8 (1.327)	25.0 (.938)	23.9 (1.321)	34.1 (1.432)
Codable to detailed category	44.9 (0.701)	61.4 (0.906)	63.0 (1.263)	49.2 (1.321)	24.6 (0.933)	23.4 (1.311)	34.0 (1.431)	35.2 (0.674)	42.6 (0.920)	49.0 (1.308)	39.2 (1.297)	19.5 (0.858)	18.4 (1.200)	28.5 (1.364)
Choices within one major group <sup>2</sup>	3.1 (0.243)	4.6 (0.389)	4.9 (0.564)	2.9 (0.442)	1.1 (0.224)	1.0 (0.307)	1.6 (0.378)	2.6 (0.221)	3.8 (0.355)	4.1 (0.518)	2.0 (0.371)	1.0 (0.212)	1.1 (0.321)	0.7 (0.251)
Choices between major groups	11.5 (0.449)	16.5 (0.691)	15.1 (0.936)	26.6 (1.167)	5.2 (0.481)	5.4 (0.700)	4.0 (0.591)	6.2 (0.339)	9.3 (0.540)	9.8 (0.777)	5.8 (0.616)	2.3 (0.322)	2.5 (0.483)	1.2 (0.327)
Derived from occupation	-	-	-	-	-	-	-	5.2 (0.311)	7.8 (0.499)	8.0 (0.709)	5.6 (0.616)	2.1 (0.308)	1.9 (0.422)	3.8 (0.576)

<sup>1</sup>Includes persons in the labor force and persons not in the labor force.

<sup>2</sup>Includes a small number of entries codable to major group only.

\*Based on less than 5 sample deaths.



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with emphasis on mortality and disability research : selected papers given at the 1979 annual meeting of the American Statistical Association in Washington, D. C. /

Linda **DelBene**; Fritz **Scheuren**

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**English** Book v, 176 p. : ill.  
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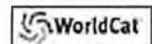
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