



A Review of Farm Accident Data Sources and Research: Review of Data Sources¹

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No comprehensive data system exists to identify the extent of the farm safety problem or the potential risk factors associated with injury and illness on the Nation's farms (Gerberich and others, 1991). Serious limitations in the existing data sources mask the extent of the problem, and little agreement has been reached on the annual estimates of farm injuries, illnesses, and fatalities (Toscano and Windau, 1991). For example, 1989 estimates of fatalities in the agricultural, forestry, and fishing industry ranged from the 110 reported by the Bureau of Labor Statistics (BLS) (U.S. Department of Labor, 1992) to the 1,300 cases reported by the National Safety Council (National Safety Council, 1991a). Farm injury and illness incidence rates also vary. BLS reported an incidence rate of 10.9 per 100 full-time workers in agriculture, forestry, and fishing in 1989, while the National Safety Council reported a rate of 8.8 for the same industry group. Variations are due largely to differences in definitions, the worker populations included, age criteria, methods of case ascertainment, data collection methodology, and types of information collected. Comparisons are further complicated by the lack of standardized reporting categories.

Efforts to monitor farm injuries and illnesses have also been hampered by the lack of adequate data to identify the population at risk. In the broadest sense, this population includes farm operators, domestic hired workers, foreign nationals, contract workers, and unpaid

family and other workers as well as those who live on farms. No data source identifies the total number of people at risk and the various demographic characteristics of that population at the national level.

Several sources of farm safety data are produced by the U.S. Department of Labor, the U.S. Consumer Product Safety Commission, the U.S. Department of Health and Human Services, and the National Safety Council. Other new data collection efforts by the U.S. Departments of Commerce and Agriculture are underway. Gerberich and others contains an evaluation of most farm safety data sources (Gerberich and others, 1991).

U.S. DEPARTMENT OF LABOR

Data sources from the U.S. Department of Labor which include farm statistics are considered below.

Annual Survey of Occupational Injuries and Illnesses

The Bureau of Labor Statistics (BLS) in the U.S. Department of Labor publishes annual estimates of occupational injuries and illnesses for industries in the private sector (U.S. Department of Labor, 1992). These estimates are based on a survey of about 280,000 private sector establishments stratified by industry and

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employment size. Data are collected from records maintained by employers in accordance with the Occupational Safety and Health Act of 1970.¹ Published statistics include the number and incidence rate per 100 full-time employees for workplace injuries, illnesses, and fatalities by two- or three-digit Standard Industrial Classification (SIC) codes and size of establishment. Self-employed individuals are excluded from the survey. Farm injury and illness data are collected only for farms employing 11 or more workers. Information on fatalities for all industries, including agriculture, is collected only for establishments employing 11 or more workers. Farm fatality data are published for the broader category of agriculture, forestry, and fishing.

The BLS data have three major limitations for farm safety research. First, farm establishments employing fewer than 11 people or only immediate family members are not included in either the injury/illness or fatality data (Gerberich and others, 1991).² Thus, these data probably undercount the number of farm accidents by omitting those many farms employing few hired workers or none at all. Second, the data do not isolate farm fatalities from the broader industry category of agriculture, forestry, and fishing. Third, the data do not include injuries or illnesses for the self-employed. However, the BLS data are useful for tracking changes in the number and incidence rates of accidents over time in the agriculture, forestry, and fishing industry and for industry comparisons by size of the workforce.

Census of Fatal Occupational Injuries

In February 1991, the BLS established the Census of Fatal Occupational Injuries (CFOI) as an ongoing data collection program (Toscano and Windau, 1991). CFOI was published for the first time in 1992 and was designed to provide a more systematic, verifiable count of all fatal occupational injuries and to obtain descriptive data on the circumstances surrounding these events. The first CFOI reported data from only 33 States, but the coverage will be nationwide in the future. The data are collected by the Federal-State Cooperative System using death certificates, State and Federal workers' compensation reports, motor vehicle traffic fatality reports, coroner or medical examiner reports, work-related fatality reports from the Occupational Safety and Health Administration, Mine Safety and Health Administration data, Employment Standards Administration data, and other sources. Fatalities are counted if two sources indicate work relationship. CFOI includes data on work-related fatalities resulting from both injuries and illness occurring in agricultural establishments with one or more employees, as well as

those involving self-employed farmers and their family members.

U.S. CONSUMER PRODUCT SAFETY COMMISSION

The data from this source involve product-related injuries such as those involving tractors and other farm machinery.

Product Summary Reports

The National Injury Information Clearinghouse of the U.S. Consumer Product Safety Commission publishes estimates of product-associated injuries on an annual basis (U.S. Consumer Product Safety Commission, 1991). These estimates are based on reports of product-associated injuries treated in hospital emergency rooms participating in the National Electronic Injury Surveillance System (NEISS). Product-associated injuries are those related to machinery, chemicals, or other manufactured products, and thus falls and animal-related injuries, for example, are not included. The NEISS estimates are calculated from a sample of hospitals with emergency treatment departments (U.S. Consumer Product Safety Commission, 1991). In addition to estimates of the number of injuries, the *Product Summary Report* also includes data on injuries by age group, and it identifies whether the victim was treated and released or was hospitalized.

These data have several limitations. First, four injury groups are not counted in this data set: those who are treated in a doctor's office; those who either ignore or treat their own injuries; those injured by falls, natural irritants, nonmanufactured products, or animals; and those who die before reaching the hospital. Second, data are reported for product-related injuries only. Third, the sample is small and not representative of U.S. emergency rooms (Gerberich and others, 1991). Fourth, the commission's policy on disseminating national estimates eliminates reporting of some product-associated injuries.³ However, these data do permit identifying the developing trends as to how the number of injuries that required hospital treatment have changed over time for the most frequently reported products (such as farm tractors and farm wagons).

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

The U.S. Department of Health and Human Services (HHS) has been attempting to develop methods that will accurately estimate the incidence of accidents in U.S.

agriculture. One of the methods developed is discussed below. A second method being developed is discussed later in the report.

National Traumatic Occupational Fatalities System

The National Institute for Occupational Safety and Health (NIOSH) in the U.S. Department of Health and Human Services began a surveillance project in 1985 to quantify the number of U.S. occupational deaths due to trauma (Myers, 1989). This project is known as the National Traumatic Occupational Fatalities (NTOF) System. NTOF is a census of death certificates from all 52 agencies reporting vital statistics in the United States. Each agency provides NIOSH with copies of death certificates that meet the following criteria: the age of the victim is 16 years of age and older, the injury is an immediate underlying or contributing cause of death, and the "injury at work" item on the certificate is marked "yes" (Myers, 1989). The NTOF has both advantages and limitations in detecting agricultural deaths (Myers, 1989). Advantages are:

1. information contained on death certificates, including the coding of the cause of death, is consistent from State to State,
2. all workers (operators, hired, and unpaid family) are included because a death certificate is filed for each U.S. death,
3. the "injury at work" item assists in denoting those agricultural deaths that are occupational, and
4. certificates are easily accessible (Gerberich and others, 1991, and Myers, 1989).

Major limitations include:

1. occupational deaths involving juveniles under the age of 16 are not reported in the NTOF,
2. certain manners of death (for example, motor vehicle deaths) and some occupational groups (for example, farmworkers, especially part-time farmers holding other jobs) tend to be underreported by death certificates,
3. the industry and occupation information on the death certificate reflects the victim's usual work history and may not reflect where the person was employed at the time of death (Myers, 1989), and

4. information collected on certificates is frequently misclassified or missing (Gerberich and others, 1991, and Myers, 1989). Studies suggest that death certificates are only between 70 and 80 percent efficient in detecting occupational deaths (Myers, 1989).

NATIONAL SAFETY COUNCIL

The National Safety Council (NSC) annually releases data that measure levels and rates of injuries and fatalities and identifies pertinent industries by two- and three-digit SIC codes (National Safety Council 1991a and 1991b). Data are based on occupational injury and illness reports of over 6,500 National Safety Council members. Data are collected in accordance with the recordkeeping requirements established by OSHA. Information is presented on occupational injury and illness incidence rates per 100 full-time employees. The council also estimates unintentional deaths by injury (homicides and suicides are excluded) of persons in the civilian work force, 14 years and older, with the exception of private household workers. The NSC estimates are not developed using scientific sampling procedures, and the reliability of the estimates is unclear.

U.S. DEPARTMENT OF COMMERCE

The Bureau of the Census in the U.S. Department of Commerce for the first time included questions in the *1992 Census of Agriculture* to measure the number of injuries and deaths incurred by farm operators, family members, and hired workers. Data from the *1992 Census of Agriculture* will be published at both the national and State levels. These data will be available in late 1994.

U.S. DEPARTMENT OF AGRICULTURE

The Economic Research Service, U.S. Department of Agriculture, included questions about the number and severity of farm accidents in its 1992 Farm Costs and Returns Survey (FCRS), a national survey of about 13,000 farms. The FCRS data will be available in the spring of 1994.

STATE WORKERS' COMPENSATION SYSTEMS

State Workers' Compensation systems are also sources of farm accident data. These data provide information on persons covered under respective State compensation programs who incurred a work-related injury or illness. State requirements for worker coverage

vary as do types and classifications of data available. Thus, workers' compensation data are not comparable from State to State (Daberkow and Fritsch, 1979, and Gerberich and others, 1991). For example, agricultural workers are covered by workers' compensation in only 38 States or jurisdictions, and most have special provisions that exempt some farms and are based on size of payroll, number of employees, or number of workdays (Runyan, 1992).

OTHER

Researchers have used a variety of State and local sources to explore farm safety issues. These sources include newspaper clipping services to help detect fatal events not readily accessible through death certificate data, hospital records, emergency room and urgent care cases, outpatient facilities, primary care practitioners, government records, and a variety of personal interview, mail, and telephone surveys to collect data. (See Gerberich and others, 1991, for an evaluation of some of these sources).

1. OSHA requires all employers who are not exempt to maintain records of occupational injuries and illnesses and lost days. Recordable injuries and illnesses are: (1) occupational deaths, regardless of the time between injury and death or the length of the illness, (2) nonfatal occupational illnesses, or (3) nonfatal occupational injuries that involve one or more of the following: loss of consciousness, restriction of work or motion, transfer to another job, or medical treatment (other than first aid) (U.S. Department of Labor, 1992, p. 71). Lost workday cases involve days away from work or days of restricted work activity or both (U.S. Department of Labor, 1992, p. 71).
2. Annual appropriation bills have specifically exempted farms employing 10 or fewer workers from coverage under the Occupational Safety and Health Act.
3. The Commission policy is to disseminate only national estimates that meet all three of the following criteria: coefficients of variation that are 33 percent or smaller, national estimates that are 1200 or greater, and national estimates that are based on a sample count of 20 or greater' (U.S. Consumer Product Safety Commission, 1991).