Toward a National Program of State and Regional Agricultural Safety and Health Statistics

by

Conrad F. Fritsch and John M. Zimmer*

Introduction

Prior to the passage of the Occupational Safety and Health Act of 1970, farm and ranch safety efforts placed only minor emphasis on distinctions between work related and non-work related accidents, injuries and illnesses. Direct incentives were not present to encourage such differentiation and problems were treated on a worst-first basis. A long-run strategy for reducing occupational injuries and illnesses was not articulated.

Most existing accident loss reduction programs were concentrated in the Midwest, a relatively homogeneous agricultural region with a predominately family labor supply. Farm safety educational efforts were enhanced by recourse to global statistics emphasizing an over-generalized national picture. Loss reduction programs were justified with available statistics indicating that agriculture was the third most hazardous industry (National Safety Council).

As recently as the late 1960's, few comprehensive studies of farm accidents existed (Hofmeister and Pfister). But soon after the formation of the Occupational Safety and Health Administration (OSHA) in the Department of Labor, the need for a national data system to identify Priority agricultural safety and health concerns was recognized (Center for Disease Control). A comparison of Ohio farm accidents in 1967 and 1972 indicates that work-related farm accidents declined as a proportion of total farm accidents

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between those dates (Phillips, Stuckey, Pugh) and a summary of 1974 farm fatalities in Texas reveals that over half of the accidental deaths occurring on farms (but not in the farm home) were not work related (Texas Farm Bureau). Moreover, sports equipment was the single most important factor associated with 1970 farm accidents in Nebraska (Schneider, et. al.).

Recently available data suggests that occupational injury and illness rates for agricultural employees ranks slightly below the mean for all industries. Yet, even these figures show that annually about nine of every 100 hired agricultural workers suffers a work related injury or illness, with rates tending to be higher in states heavily dependent on hired labor (U.S. Department of Labor). An estimated $280 million in uninsured labor income was lost in 1975 from occupational injuries, illnesses and fatalities in 1975 (Fritsch and Zimmer).

In this paper, we discuss the standard development procedure of OSHA and present results from the three major sources of agricultural safety and health data: (1) the National Safety Council/Extension Service Survey, (2) the program of the Bureau of Labor Statistics and (3) state Worker's Compensation administrative data. The ability of each to approach the envisioned ideal of a national safety and health data system is evaluated.

OSHA Standard Development

Under OSHA, the Department of Labor has assumed an advocate role in reducing occupational injuries and illnesses in agriculture.

The initial step in the present standards development process is evaluation at the preproposal stage by the Standards Advisory Committee for Agriculture (SACA). This committee, composed of agriculture, labor, public and government representatives is an advisory body to OSHA and its meetings are open to the public. Public Fact Finding hearings may also be held prior to promulgation of a new or revised standard.

Sixteen potential agricultural standards have been discussed by SACA since October 1972. However, only four standards now apply to agriculture (although employers may be cited under a general duty clause if a potentially serious hazard exists). These include sanitation and maintenance of temporary labor camps, storage and handling of anhydrous ammonia, slow-moving-vehicle markers and pulpwood logging. A standard requiring roll-over protective devices on tractors with 20 or more engine horsepower (except for certain low profile tractors operated under specific orchard conditions) went into effect June 7, 1976, but only applies to tractors manufactured after October 25, 1976. A machine-guarding standard will also become effective on that date.

Both the temporary labor camp and anhydrous ammonia standards, which were adopted from existing American National Standards Institute (ANSI) codes are being revised and a field sanitation standard has been proposed. Possible proposed standards requiring public discussion in the near future include safety requirements of small hand and portable power tools, use of worker protective equipment, safe transportation of agricultural employees, abatement and control of agricultural noise hazards and approved electrical fixtures and wiring in buildings used as a part of the work environment of hired employees.

A national system of agricultural injury and illness data can enhance the OSHA-initiated standards deliberative process. In addition, basic data are required to monitor changes in injury and illness occurrences, both occupational and non-occupational, and to estimate resulting economic losses including personal and family business losses. Data are needed to provide background information for development of corrective safety engineering solutions, development of safety and health educational programs and for development of rate structures for workers' compensation plans.

National Safety Council/Extension Service Survey

Systematic documentation of accident occurrences and specific detail concerning accident causing agents began in the early 1960's, with the first statistically sophisticated farm family accident studies in Michigan and Ohio. These early efforts resulted in the development, in 1968, of the "Standardized Procedure for Collecting Farm Accident Data" by the National Safety Council in cooperation with the Federal and State Extension Services (Institute of Agricultural Medicine; Brazelton). The unique features of this state level data gathering procedure are the use of a pre-coded standard questionnaire format to facilitate computer processing and a special bi-level schedule to permit gathering of detailed causal factor data associated with serious accident occurrences.

Interviewers initially obtain base data on the characteristics of persons living and working on the farm and then obtain specific detail concerning accident occurrences at quarterly intervals. To date, 22 states have completed at least one survey. Each state is targeted to complete a survey in recurring 5-year cycles, resulting in a 5-year moving analysis of national farm and agricultural accident patterns. Data collected under this "Standardized Procedure" provided information to develop specific educational program thrusts and to identify needs for further engineering and epidemiological research.

Although a good source of state accident data, the primary weaknesses of this survey are: First, a lack of data uniformity between states due to (a) differences in sample selection procedures caused by unique geographical features or type of agriculture practices (b) non-sampling biases introduced through lack of uniform interviewer training procedures. (Interviewers are generally unpaid volunteers from the farm community). Secondly, the current survey design and bi-level feature monitors farm activities for a complete year. Poor representation of accidents to the hired labor force in those states heavily dependent on large numbers of seasonal hired labor inputs occurs as a result.

High mobility patterns and turnover rates among seasonal employees, both local and migratory, reduce long-term employer/employee contacts to minimal levels, especially on large operations hiring 10 or more seasonal workers. The bi-level feature of the survey provides specific causal factor information on full-time employees and farm family members but requires that the respondent, who is generally the operator or his wife, have specific knowledge of the details surrounding each accident occurrence. This may be a near impossibility when large numbers of hired workers are involved. Even if details are known the

characteristics of the employee suffering the illness or injury may not be available. To date insufficient analysis has been done with these survey data to provide generalizations about existing differences, if any, between the nature of causal factors and severity of accidents occurring to hired and to self-employed workers.

BLS Employee Injury and Illness Data

The Bureau of Labor Statistics was assigned responsibility to develop a "program of collection, compilation and analysis of occupational safety and health statistics" under the Occupational Safety and Health Act of 1970. Since the OSHA regulatory function extends only to hired employees, the data gathering mandate of BLS is limited to this subset of the farm population. Employers are selected into the sample annually and reporting is mandatory for those employers selected to participate.

Hired workers account for about 30 percent of annual labor inputs used in agriculture but virtually all agricultural production units with annual sales of $100,000 or more employ hired workers and about 67 percent of the units with annual agricultural sales of $40,000-$99,999 utilize hired labor inputs. These larger agricultural operations account for some 57 percent of the total value of agricultural output and hire about 70 percent of the hired labor force (U.S. Dept. of Commerce).

A primary purpose of the BLS data system is identification of target industries requiring priority attention in the reduction of occupationally related injury and illness occurrences. With a national incidence rate below the

all industry mean, agriculture does not merit special target consideration. The incidence of total recordable injury and illness cases for production agriculture in 1974 was 9.1 per 100 full-time employees, compared with an all industry rate of 10.4 The total incidence rate per 100 full-time workers in the construction industry was 18.3, in manufacturing 14.6, in transportation and public utilities 10.5, and in mining 10.2.

However, agricultural injury and illness rates exhibit large variability across the 37 states from which 1974 data are available. With the exception of Arkansas, states with total recordable case rates above the national average were located in the Northeast and Pacific states (chart 1, left panel). The three Pacific States: Washington, Oregon and California with total recordable incident rates of 17.1, 15.5 and 12.1 per 100 full-time employees, accounted for over 21 percent of the 1974 annual average employment in the contiguous United States (U.S. Dept. of Agriculture, SRS). Hawaii had the highest recordable case rate at 21.6 occupational injury and illness occurrences per 100 full-time employees. At the low extremes were Mississippi, Wisconsin, South Carolina and Nebraska with rates of 3.7, 4.1, 4.4 and 5.1. Firms hiring fewer than 20 workers recorded injuries and illnesses at levels less than half those of larger employing units.

Since recordable injuries and illnesses are defined broadly to include any injury or illness requiring more than first aid treatment, a potentially wide latitude exists for respondent interpretation. This factor could partially explain some of the more extreme variation in total recordable incidence rates. Greater accuracy can be obtained by comparing only those injuries and illnesses resulting in lost workday cases.

Incidence rates for lost workday cases are shown in the right panel of chart 1. With minor exceptions, the direction of variation from the national mean is very similar to that for total incidence rates but the oscillations are considerably dampened. Maine, New Hampshire and Connecticut in the Northeast; Washington, Oregon, California and Hawaii in the West and Arkansas in the Delta Region exceeded the national mean of 4.5 lost workday cases per 100 full-time workers.

While overall injury rates for agricultural employees are slightly below the mean for all industries, occupational illness rates are above the national mean and the proportion of occupational injuries resulting in lost workdays is also above the national mean (tables 1 and 2). Yet, incidence rates are 15 times greater for injury cases involving lost workdays than for illness cases. Injury and illness rates also vary by type of farm. Injury rates are highest on livestock farms and ranches while illness rates are highest on miscellaneous farms (primarily nursery and greenhouse operations).

These new data provide additional insight into the general level of work related accidents and illnesses suffered by agricultural employees, but do not cover self-employed workers or nonwork related accidents. A broad-ranging comparative overview of state and national injury and illness occurrences is provided but case data of specific occurrences and detail of causal factors involved are not available. To this extent the data do not provide a good guide for determination of need for specific safety and health standards.

Worker's Compensation Data

In 1975, 31 states provided some type of workers' compensation coverage to hired farm workers. In January 1976, 21 states covered full-time farm workers on the same basis as other industries.

Although worker's compensation data are a source of injury and illness information for the hired agricultural working force, the full potential of these data may not be reached for many years. In all but a few states, hired agricultural employment makes up only a small proportion of the total hired work force. Unless severe safety problems exist, developing, analyzing and publishing detailed agricultural statistics on a regular basis would probably be considered prohibitive.

Workers' compensation case data from seven states were recently evaluated by the Utah Biomedical Test Laboratory. States included were California, Kentucky, New Jersey, New York, Ohio, Tennessee and Vermont. Data from Puerto Rico were also analyzed. It was concluded that these data "can define general problem areas rather than specific...and except for California, Puerto Rico and possibly New Jersey, the data are likely unrepresentative of agricultural accidents in the state" (Utah Biomedical Test Laboratory). The major weaknesses of this data source include lack of case record detail, coding incompatabilities between states, reporting errors primarily involving agricultural illnesses, and additional under-reporting of total injury and illness occurrences. Only cases treated by a physician are included in the administrative records.

Conclusion

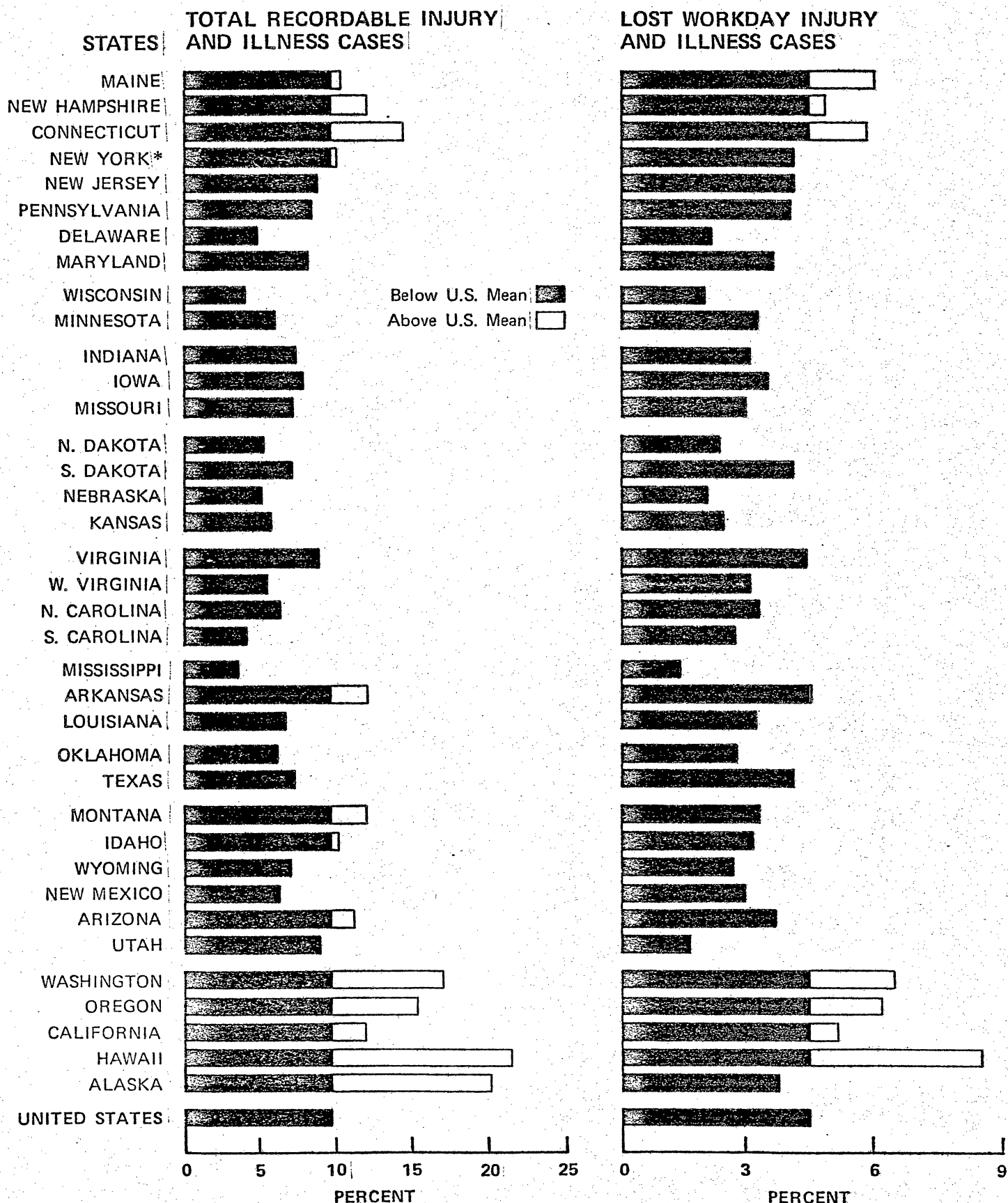
Development, maintenance and analysis of a national farm health and safety data system with relevance to regional, state and local loss reduction programs requires a long run resource commitment. Such a system will serve as a basis for developing area specific safety and health education programs and will provide base data to evaluate the need for agricultural safety and health standards. An initial effort to develop farm and rural safety data base is currently underway in ERS.

No one existing data source adequately meets the tests of: (1) area specificity, (2) interregional comparability and (3) national validity. However, in combination, the attributes of the current BLS and the National Safety Council/Extension Service survey can provide both summary comparisons at state and national levels and area specific, indepth causal factor analysis of accident occurrences. Coverage of all farm accidents in the latter survey further extends the usefulness of this data source.

Workers' compensation case data can partially compensate for weaknesses in the NSC/ES survey in states largely dependent on hired labor. To date, California is the only state in which data are available in sufficient quantity to realize this potential.

Chart 1

INCIDENCE RATE PER 100 FULL-TIME WORKERS, 1974
Agriculture, Forestry and Fisheries Division



*AGRICULTURAL SERVICES ONLY. SOURCE: U.S. DEPARTMENT OF LABOR, BUREAU OF LABOR STATISTICS.

Table 1--Occupational Injury Incidence Rates by Type of Agriculture, 1974

Type of Agriculture	Total recordable cases	Nonfatal cases without lost workdays
	(per 100 employees)	(percent of total recordable cases)
Fruits, veg., tree nuts	8.7	56
Miscellaneous farms	8.6	60
General farms	8.4	55
Livestock	8.9	44
Total private sector	~~9.4~~ 10.4	66

Table 2--Occupational Illness Incidence Rates by Type of Agriculture, 1974

Type of Agriculture	Total recordable cases	Nonfatal cases without lost workdays
	(per 1000 employees)	(percent of total recordable cases)
Livestock	--	--
Fruits, veg., tree nuts	7	57
General farms	7	43
Miscellaneous farms	11	73
Total private sector	4	69

Source: Dept. of Labor, Bureau of Labor Statistics.

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