

Occupational Injury Rates Among Hired Farmworkers

D. Villarejo

Abstract

A new method for determining occupational injury incidence rates among hired farmworkers is presented. The method relies exclusively on reports pertaining to all paid claims by hired farmworkers under workers compensation insurance and is sufficiently specific to determine incidence rates for persons employed in each of 14 different types of agricultural commodities.

The Workers Compensation Insurance Rating Bureau of California (WCIRB) provided summaries of case reports including injury date, type of injury, body part affected, nature of injury, weekly earnings of claimant, medical payments, indemnity payments (if any), and the Risk Classification code in which the injury occurred, which is a type of categorization of the commodity group in which the injury occurred. In addition, the WCIRB provided total wages paid by all employers in each risk classification code as a surrogate for direct measurement of exposure. The number of reported paid claims under workers compensation insurance by hired farmworkers in California for the period 1978-1994 totaled 673,316.

Aggregate wages and average weekly earnings for each risk classification code were used to determine annual average employment (FTE). The total number of reported paid claims within each classification code was then utilized to compute the incidence rate for occupational injury in the respective category. From these data an overall incidence rate for California hired farmworkers is calculated.

The 1994 incidence rates for non-fatal occupational injuries and illnesses found using this method ranged from a high of 19,660 cases per 100,000 FTE for stock farm and feed yard workers to a low of 4,440 cases per 100,000 FTE for berry farmworkers. Overall, the incidence rate among all California hired farm workers in 1994 was found to be 10,546 per 100,000 FTE. These results compare favorably to other recent determinations of incidence rates for injury among hired farmworkers.

Keywords. California, Hired farmworkers, Incidence rates, Injuries, Workers compensation.

The determination of occupational injury and illness incidence rates among hired farmworkers presents formidable methodological challenges. First, measurement of the magnitude of the population's exposure to the risk of injury ultimately depends on the size of the hired farmworker labor force, which is

Article based on presentation at NIOSH Agricultural Health & Safety Conference, 15-17 July 1997, Morgantown, W. Va., Abstract No. 65.

The author is Don Villarejo, Executive Director, California Institute for Rural Studies, PO Box 2143, 221 G Street, Ste. 204, Davis, CA 95616; tel: (530) 756-6555; fax: (530) 756-7429; e-mail: dqvillarejo@ucdavis.edu.

not accurately known and is subject to rapid changes within a short time frame. Investigators in many disciplines, ranging from labor economics to epidemiology, have been unable to present compelling evidence supporting the accuracy of determinations of the size of this population.

Second, reports of injuries among this population, whether self-reported or objectively determined by knowledgeable professionals, are generally recognized to be incomplete, primarily due to language and cultural differences of a labor force composed mostly of low-literacy, recent immigrants. This problem of incomplete reporting is further complicated by the reluctance of many hired farmworkers, especially those who are not authorized to work in the U.S., to report injuries to anyone in authority. Ethnographic studies also suggest that some hired farmworkers who experience on-the-job injuries perform an informal calculus in which they weigh the opportunity cost of lost income against the risk of damaging health effects that may result from such injuries.

The present report examines both of these methodological issues in the context of seeking to determine incidence rates of occupational injuries and illnesses among hired farmworkers in California agriculture. California is the most important state for the study of hired farmworkers. It leads the nation in farm production. Equally significant, an estimated 700,000 hired farmworkers are employed at some point each year on the state's farms, accounting for about one-fourth of all U.S. hired farm labor demand (U.S. Department of Commerce, 1992).

Workers Compensation Insurance Reports of Agricultural Occupational Injuries and Illnesses

Workers Compensation Insurance is required by statute for virtually all hired farmworkers in 14 states, including California. In most of these states, hired farmworkers are protected as a result of broadly worded legislation intended to provide coverage for nearly every employed person. Exceptions are specified for Federal employees (covered under the Jones Act), railroad workers, maritime and long shore workers, and certain other categories of employees. Self-employed persons are normally exempted. In all cases, the burden of proof is on an employer to demonstrate that an individual should not be insured, rather than the reverse.

From the point of view of determining incidence rates, case reports concerning injuries or illnesses covered by Workers Compensation Insurance provide a useful body of data. In principle, both frequencies of injuries and illnesses and measures of exposure are available for a well-defined population. The accuracy and reliability of both sets of data are a matter of concern. For this reason, individual case reports concerning claims under Workers Compensation must include a physician's certification regarding the nature and cause of the injury or illness, and an insurance provider reviews the claim as well. Claims for compensation may be rejected, and thousands of claims are rejected every year. In California, an appeals process exists through a public agency that potentially provides both employees and employers with the possibility of independent review of any disputed case.

There are several reports in the literature in which workers compensation insurance data have been successfully utilized to study agricultural injuries and illnesses among hired farmworkers. Demers and Rosenstock (1991) analyzed nearly 30,000 claims filed by hired farmworkers in the state of Washington over a five-year period (1982-86) and found substantially higher claim rates for agricultural workers

as compared with non-agricultural workers for a significant number of adverse health outcomes.

Heyer and co-workers (1992) reported on workers compensation claims for work-related injuries among children under the age of 18 who were employed as hired farmworkers in the state of Washington in the period 1986-1989. Comparisons were made with food service workers and analyses were also made as a function of age of the child. Minors employed as hired farmworkers accounted for a disproportionately large share of serious injuries and disabling injury claims.

Belville and co-workers (1993) reported on workers compensation claims for occupational injuries among adolescent workers in New York State during the period 1980-1987. They noted that the highest rate of paid claims was among manufacturing and agricultural workers.

Finally, Cooper and Rothstein (1995) reported on child labor violations and occupational injuries and illnesses involving children in Texas. They found 1,097 claims for workers compensation filed by minors in 1991.

In California, unlike some other states, private insurance carriers may offer Workers Compensation Insurance to any employer at premium rates determined by a combination of "Pure Premium" rates and the employer's history of paid claims awarded to injured workers (experience modification). A public agency, the State Compensation Insurance Fund, within the California Department of Industrial Relations, serves as an insurer of last resort.

Any California employer may self-insure, providing Workers Compensation Insurance coverage from its own resources. However, just 14 employers with agricultural activities choose to provide self-insurance, and their aggregate annual payroll, including both farm and non-farm employees, is less than 1.5% of the aggregate hired farm worker payroll of all employers with private insurer coverage (Ashcraft, 1990).

The Workers Compensation Insurance Rating Bureau of California (WCIRB) is a quasi-public agency that compiles all reports with respect to insurer-provided workers compensation coverage. These reports are utilized to form the basis for an annual "pure premium" computation using actuarial methods to set appropriate rates for coverage.

As in all other states, WCIRB uses a standardized set of empirically derived Risk Classification categories to assign types of occupational tasks. Within agriculture there are currently fourteen categories in use ranging from Berry Crops to Vineyards. An important feature of this system is that, unlike the Standard Industrial Classification (SIC) assignment of employers to a single category, the Risk Classification system is intended to assign each individual employee to a specific category according to his or her occupational risk. Thus, an employer may, for workers compensation insurance purposes, have employees assigned to any number of risk categories.

To illustrate the use of Risk Classification, an actual major farm employer in the San Joaquin Valley has employees classified among seven different risk classification categories. This is because the farm produces a very wide range of commodities, including almonds, citrus, cotton, grapes, safflower, sugar beets, vegetables and wheat. But the same employer's SIC code is 0191 (General Farm, Primarily Crop).

Individual case reports summarized by WCIRB include details concerning the claim for workers compensation. These include the type of injury, nature of injury, body part(s) affected, demographics of the employee (age, gender), weekly earnings of the employee, risk classification, medical expense, indemnity paid (if any), and

other data regarding aspects of the case. WCIRB also compiles annual data for all employers aggregated by Risk Classification category.

Methods

Aggregated data for all employers at the level of Risk Classification were obtained from WCIRB for a total of seventeen years (1978-1994). Only those categories corresponding to on-farm employment were included. Agriculture-related categories involving off-farm or post-harvest activities were carefully excluded, e.g., cotton ginning or citrus packing. Figure 1 presents the summary of the WCIRB data set for all Risk Classification categories corresponding to hired farmworkers. The total number of cases represented is 673,316. Of particular note is the large fall-off in paid claims in the 1990s.

Figure 2 presents the same set of reported occupational injuries and fatalities based on paid claims under workers compensation, but assigned to the appropriate Risk Classification categories. Nearly one in four cases involved orchard work, and about one in five cases involved Truck crops (primarily vegetables). Vineyard work was associated with about one in seven cases. Taken together the Fruit, Vegetable and Ornamental Horticulture crop industries accounted for about three-quarters of all paid claims involving hired farmworkers.

To determine incidence rates, a simple approach is used. The concept is based on using the following set of data, available within each Risk Classification category: aggregate payroll, average weekly earnings, number of paid claims.

Employment, expressed in worker-weeks, is determined as follows:

$$\text{Employment (worker-weeks)} = \frac{[\text{Aggregate Payroll}]}{[\text{Average Weekly Earnings}]} \quad (1)$$

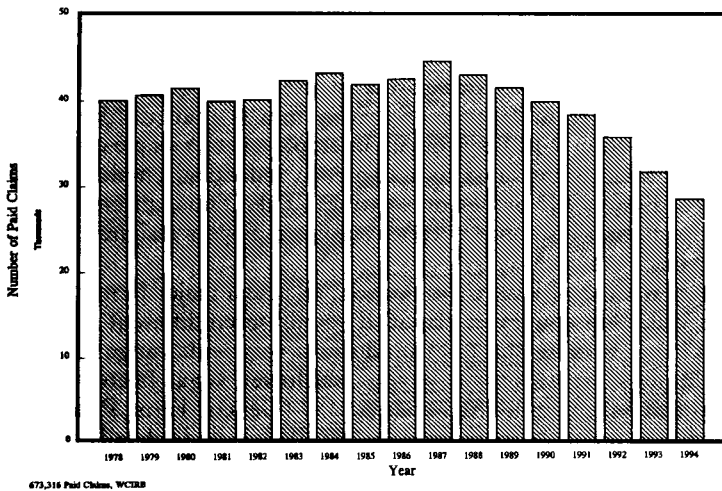


Figure 1—Hired farm worker occupational injuries/fatalities, paid workers compensation claims, California.

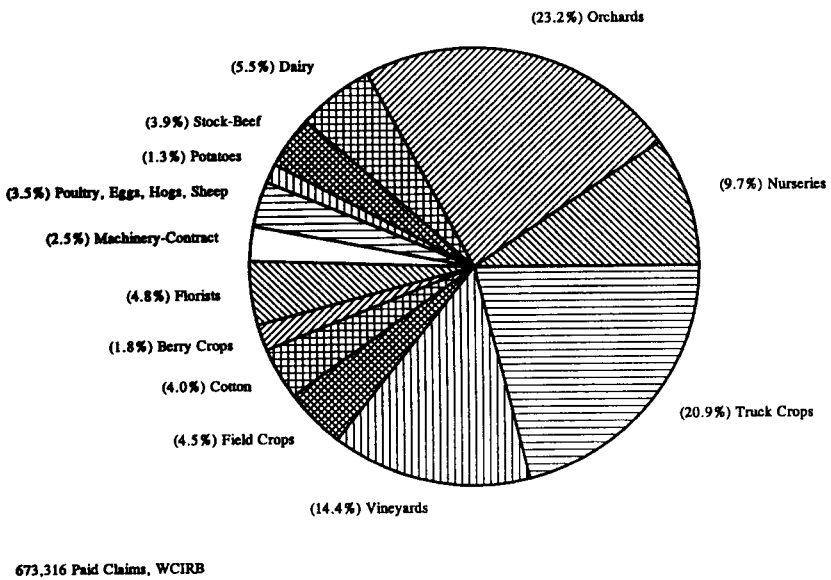


Figure 2—Hired farm worker occupational injuries/fatalities, paid workers compensation claims, California.

Since the annual average number of weeks per year is known, the annual average employment, equivalent to full-time-equivalents (FTE), can be computed.

$$\text{Employment (annual average)} = [\text{Employment (worker-weeks)}] / 52 \quad (2)$$

Results

Using this method to determine employment, occupational injury rates were computed for each of the fourteen Risk Classification categories pertaining to hired farmworkers. The elements utilized in the computation and results for 1994 are shown in table 1. In addition, the Total Employment (Annual Average) and overall Incidence Rate for 1994 are indicated.

The results of these computations of occupational injury incidence rate for each separately reported Risk Classification (termed "Class Code") include the finding that the Stock Farm-Feed Yard category of work presented the highest risk for injury among hired farmworkers in California during 1994, followed by Dairy, and the Poultry-Eggs-Hogs-Sheep categories. Berry crops present the least overall hazards by this measure. Interestingly, Vineyard work and Truck crops are associated with much smaller risks than are Orchards-fruit and Field Crops.

Using the same methods the overall occupational injury incidence rate was computed for all hired farm work in California. The results for the most recent six-year period are presented in figure 3. Note that when the level of employment is properly taken into account the incidence rate for 1990 is slightly higher than for 1989; whereas, figure 1 indicated that the relative frequency of injuries was greater in 1989 than in 1990.

Table 1. Incidence rates for paid claims under Workers Compensation, California, 1994

Class Code	Total Payroll	Weekly Wage	Employment	Paid Claims	Incidence Rate
Nursery crops	340,200,000	290.31	22,536	2,639	11,710
Orchard-Fruit	478,700,000	207.78	44,305	5,617	12,678
Poultry, eggs, hogs	78,000,000	295.34	5,079	777	15,299
Floral crops	176,400,000	279.49	12,137	1,140	9,392
Dairy	238,400,000	369.47	12,409	1,906	15,360
Stock farm	63,700,000	310.39	3,947	776	19,662
Vineyard	724,600,000	255.11	54,622	4,921	9,009
Potato crops	79,500,000	225.17	6,790	489	7,202
Cotton	165,400,000	332.21	9,575	1,091	11,395
Orchard-Nut	121,000,000	264.12	8,810	905	10,272
Machinery-Contract	96,400,000	363.24	5,104	752	14,735
Berry crop	227,200,000	235.27	18,571	825	4,442
Field crop	9,850,000	338.66	5,593	831	14,857
Truck crop	899,700,000	294.76	58,698	5,613	9,562
Total			268,176	28,282	10,546

Note: Payroll and weekly wage in dollars; Incidence Rate is expressed per 100,000 FTE.

Discussion

These results for the incidence rate for occupational injury among hired farmworkers are consistent with other reports in the literature. In particular, the Bureau of Labor Statistics (BLS) Survey for California farm operators shows a rate of 12,600 cases per 100,000 FTE in 1993 and 11,900 cases per 100,000 FTE in 1992 (California Department of Industrial Relations, 1992-93). The method presented herein finds 11,960 cases per 100,000 FTE in 1993 and 13,930 cases per 100,000 FTE in 1992. However, some caution is essential in making these comparisons since the BLS Survey excludes farms with 10 or fewer employees, and we have also excluded the BLS tabulation of Agricultural Service categories of employers (SIC 07) from this comparison.

Clearly, a critical assumption of the method presented herein is that the computation of the level of Agricultural Employment is accurate. To test the

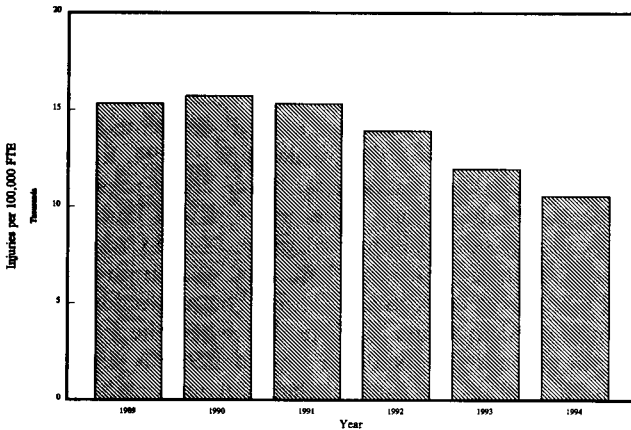


Figure 3—Occupational injury incidence rate, hired farm workers, California, 1989-1994.

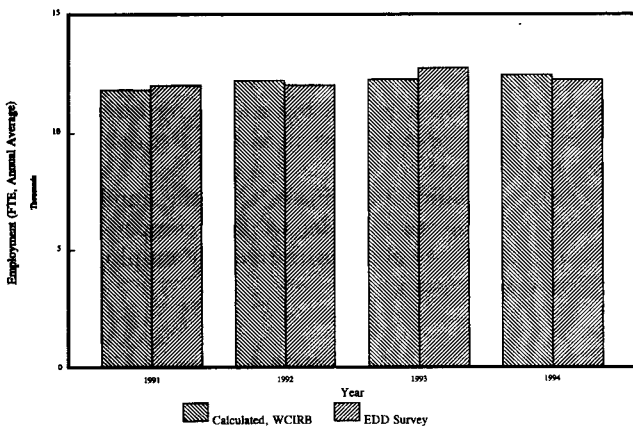


Figure 4—Dairy employment, FTE (annual average): Calculated (WCIRB) vs EDD Survey, SIC 0241.

reliability of this approach we compare the results of this computation with a field survey of agricultural employers by the California Department of Employment Development, conducted monthly since January 1991 (California Department of Employment Development). Figure 4 shows the direct comparison of this article's results with those of the EDD survey for the Dairy Farm category of employment. The calculated Dairy Employment (FTE-annual average), using the methods described in this article, yields values for employment that are within 3.5% of the EDD survey findings for each of the four years. This suggests that this article's calculation of employment is accurate.

With respect to the issue of the steady decline in the reported number of paid claims during the 1990s, there are several possibilities. Of course, under-reporting by a population of hired farmworkers that is increasingly undocumented is a serious concern and may explain the decline.

At the same time, there is also substantial evidence that new initiatives intended to reduce injuries may be having an effect. For example, all California employers are now required to have a written Illness and Injury Prevention Plan in place. Although passed by the California legislature in 1989, this rule was not fully implemented until 1991. Similarly, the 1992 referendum re-establishing Cal-OSHA put a boost into field enforcement efforts. And in late 1992, the newly established Targeted Industries Partnership Program among the leading field enforcement agencies set enforcement of labor and safety laws in agriculture and garment as its highest priorities. Finally, the sharp increase in workers compensation insurance premiums, by two and one-half fold between 1985 and 1992, undoubtedly got the attention of the employer community.

Conclusions

The most important finding of this article is that claims, payroll, and wage data available from the workers compensation insurance industry is sufficiently comprehensive to permit calculation of incidence rates of paid claims for occupational injury and illness. Where comparisons are possible, both the

employment figures and incidence rates are in good agreement with reports by other authors.

The incidence rates of paid claims for occupational injury or illness were highest among hired livestock farmworkers and lowest among hired berry farmworkers. Overall, hired livestock farmworkers experienced a greater risk of occupational injury than did hired crop farmworkers.

There has also been a significant decline in both the number and incidence rate of paid claims by hired farmworkers under workers compensation in California in recent years. The influence of safety initiatives by employers and/or agencies regarding this decline is not known.

References

- Ashcraft, M. B. 1990. Manager, Self-insurance Plans, California Department of Industrial Relations, 13 July. Private communication to the author. For the 12-year period 1978-1989, aggregate payrolls of the 14 employers was \$50 million or less, as compared with \$3.4 billion for all farm employers in 1989.
- Belville, R., S. H. Pollack, J. H. Godbold, and P. J. Landrigan. 1993. Occupational injuries among working adolescents in New York state. *JAMA* 269(21):2754-2759.
- California Department of Employment Development, Labor Market Information Division. 1992, 1994, 1995, 1996. Annual averages, 1991-94. California Agricultural Employment and Earnings Bulletin.
- California Department of Industrial Relations, Division of Labor Statistics and Research. 1994, 1995. California work injuries and illnesses, based on BLS survey of farms with 11 or more employees. San Francisco, Calif.
- Cooper, P. S., and M. A. Rothstein. 1995. Health hazards among working children in Texas. *Southern Medical J* 88(May):550-554.
- Demers, P., and L. Rosenstock. 1991. Occupational injuries and illnesses among Washington State agricultural workers. *Am J Public Health* 81(Dec):1656-1658.
- Heyer, N. J., G. Franklin, F. P. Rivara, P. Parker, and J. A. Huag. 1992. Occupational injuries among minors doing farm work in Washington State: 1986-1989. *Am J Public Health* 82(April):557-560.
- U.S. Department of Commerce, Bureau of the Census. 1992. *Census of Agriculture. 1992. United States*, Vol. 1, Part 51, Table 3. Farm Production Expenses: 1992 and 1987. State Data, p. 190. Hired Farm Labor and Contract Labor expenses for California farm operators are reported to be \$3.9 billion, or 25.4% of the U.S. total of \$15.3 billion. Washington, D.C.