Experimental Fatality Rates

Both absolute numbers (or frequencies) and rates are useful when examining fatal work injuries for research or prevention efforts. A frequency shows "how many" fatal work injuries occurred. A rate indicates the relative danger.

The relative danger of an occupation or industry group can be indicated by combining frequency data with either employment or hours data to calculate a rate. An hours-based rate indicates the relative danger using time of exposure. An employment-based rate indicates the relative danger using the number of employed workers.

Each type of rate has a different purpose. An employment-based fatality rate measures the incidence of fatal injury for all workers in the group regardless of exposure time. It does not account for the fact that part-time workers may have fewer fatal work injuries because they spend less time in the work environment. An hours-based fatality rate accounts for different time of exposure levels among workers. Hours-based measurements are especially useful for industry and occupation comparisons, when the number of workers can vary greatly among industry or occupation groups for a given period.

Work fatality counts from the Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI) can be combined with employment or hours at work data to produce a fatal work injury rate. Since hours at work and employment data are not collected by CFOI, experimental fatality rates were calculated using estimates of employed[1] civilian workers (age 16 and older) from the Current Population Survey (CPS).[2] In addition, resident military figures, derived from resident and civilian population data from the Bureau of the Census, were added to the CPS employment figures to maintain consistency with the CFOI fatality data.

The fatality rates were calculated as follows.

$$(N / W) \times 100{,}000$$

N = the number of fatally injured workers
W = the number of employed workers

The ratio N/W is multiplied by 100,000 so that worker groups with widely varying employment levels can be expressed in common terms (i.e., per 100,000 workers) for comparisons.

Example. There were 6,210 total work fatalities in 1995. There were 126,248,000 employed workers (124,900,000 employed civilian workers age 16 and older, and 1,348,000 resident military personnel).

"N" must be adjusted to maintain consistency with "W," so the 26 fatally injured workers under age 16 are not included in the rate calculation. (Adjustments of "N" are not reflected in the "Number" and "Percent" columns of the tables, which include all fatalities regardless of age.)

$$N = 6{,}210 - 26 = 6{,}184$$

$$W = 126{,}248{,}000$$

$$(6{,}184 / 126{,}248{,}000) \times 100{,}000 = 5$$

5 fatalities per 100,000 workers

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[1] The rates do not reflect the movement of persons in and out of the labor force, the length of their work week or work year, or the effect of multiple jobholders. BLS will continue its research on fatality rates using employment and exposure hours.

[2] See "Explanatory Notes and Estimates of Error" in the January 1996 *Employment and Earnings* for an explanation of CPS sampling and estimation methodology, and standard error computations. The relative standard errors of the CPS employment estimates can be used to approximate confidence ranges for the fatality rates.