

March Update from the Field 2023: Designated areas for bystanders/guests

Bystander injury evaluation of children from midwestern agricultural operations

Williams, Q. L., Alexander, B. H., Gerberich, S. G., Nachreiner, N. M., Church, T. R., & Ryan, A. (2010). Bystander injury evaluation of children from midwestern agricultural operations. *Journal of Safety Research*, 41(1), 31–37. <https://doi.org/10.1016/j.jsr.2009.11.002>

With more than a million youth living on agricultural operations, it is important for parents to understand the consequences of bystander injuries that children experience in these environments. We identified the childhood injuries for bystander status and compared the severity of these injuries to the working children in the Regional Rural Injury Study-II (RRIS-II).

RRIS-II followed 16,546 children (~ 85% of eligible) from rural communities in the Midwest for two six-month recall periods in 1999 and 2001. Demographic, injury, and exposure data were collected through comprehensive computer-assisted telephone interviews. Child injuries were cataloged using narrative scenarios into four categories: (a) directly work-related; (b) indirectly work-related; (c) non-working accomplice; and (d) non-working attendant; the latter three all being bystander categories. Poisson regression modeling was used to calculate rates of bystander injuries. Frequencies were used for comparison of severity measures.

Among the 463 child injuries (aged < 20 yrs), 102 were bystander injuries. Of the bystander-related injuries, 14 were identified as indirectly work-related (working bystanders), 27 as non-working accomplice (passengers/tag-alongs), and 60 as non-working attendant (playing on the operation). The overall rate of bystander injuries was 6.4 per 1,000 people, 95% CI (5.0, 8.1). Males, compared with females, had more than twice the injury rate (8.7; 95% CI 6.4-11.8, and 3.9; 95% CI 2.7-5.7, per 1,000 people, respectively). Bystanders in this population had more severe injuries with 4% having life-threatening circumstances; of these, 4% of the accomplices and 2% of the attendants subsequently died.

Children who live or work on agricultural operations are vulnerable to many hazards. Therefore, this study examined child injuries and found a clear difference in the consequences of these injuries between working-related and bystanding-related injuries.

Unlike occupations such as construction and mining, where laws and organizations have been created for the protection of bystanders, agricultural bystanders have remained unprotected and have had to face the consequent injury and death outcomes. As public health professionals considering these risks, it is necessary that we work to develop more intervention studies and continue to propose suggestive guidelines for child safety in these environments so as to challenge family traditions and possibly spark public policies that will give further protection to this population.

Child bystanding: A risk factor for injury and identifying its' determinants on midwestern agricultural operations

Williams, Q. L., Alexander, B. H., Gerberich, S. G., Nachreiner, N. M., Church, T. R., & Ryan, A. (2010). Child bystanding: A risk factor for injury and identifying its' determinants on midwestern agricultural operations. *Accident; analysis and prevention*, 42(1), 10–18. <https://doi.org/10.1016/j.aap.2009.06.006>

Agriculture is considered among the most dangerous occupations and has consistently ranked among the top three. Production processes, associated with this occupation, place at risk not only workers but also others who live on the operations. We evaluated the incidence and determinants of associated bystander injuries in the Regional Rural Injury Study-II (RRIS-II).

The RRIS-II followed 32,601 people (approximately 85% of eligible) from rural communities in the Midwest for 1999 and 2001, using six-month recall periods, and identified their injury events. Demographic, injury, and exposure data were collected through comprehensive and case-control computer-assisted telephone interviews. Multivariate logistic regression analyses were used to estimate the risk of child bystanding and agricultural injury, while controlling for potentially confounding variables.

Nearly 60% of all 425-child injury cases (<20 years) responded to sometimes/frequently bystanding in six out of seven different agricultural environments (e.g., workshops, animal areas, etc.) Multivariate regression analyses, with odds ratios and 95% confidence intervals, showed increased odds of injury for bystanding near used (1.5; 1.1, 1.9) or stored (1.4; 1.1, 1.8)

machinery, and near fields and barnyards (1.4; 1.0, 1.9). Further, multivariate analyses revealed increased odds of bystanding for parental beliefs, such as: child age (1.4; 1.0, 2.0) near stored equipment. Parental levels of strictness were also evaluated and showed decreased odds of bystanding when the parents were not strict about the child's wearing a seatbelt near used equipment (0.5; 0.3, 1.0). Households with only one child had decreased odds of bystanding for five of the exposures while there was an increased odds of bystanding near animals for households with five or more children.

Although parents cannot child-proof their operations, it is important for them to understand the apparent odds of and risks associated with bystanding. Children can have injury odds similar to adults in this environment; therefore, it is necessary to examine parental factors that may be associated with children's likelihood of bystanding in high-risk work environments.

Agricultural Work-Related Fatalities to Non-Working Youth: Implications for Intervention Development

Pate, M. L., & Görücü, S. (2020). Agricultural Work-Related Fatalities to Non-Working Youth: Implications for Intervention Development. *Journal of Agricultural Safety and Health*, 26(1), 31–43. <https://doi.org/10.13031/jash.13691>

This article presents data for agricultural work-related fatal injuries to non-working youth (<18 years old) in Pennsylvania. Cases were identified from the Pennsylvania Farm Fatality (PA-FF) database for the period 2000-2018. The circumstances of the death in each incident were reviewed from news clippings, death certificates, and other reports available to determine the victim's status as a bystander, passenger, or other non-working child. The study identified 69 agricultural work-related fatalities to non-working youth in Pennsylvania. Incidents were coded as non-working accomplice (26), non-working accomplice extra rider (14), non-working attendant (25), and ambiguous (4). Fatalities to children <5 years old accounted for 74% of the non-working youth fatalities, and most (75%) of the victims were male. Plain Sect community members (Anabaptists) comprised 78% of the cases. Children contribute significantly to the overall burden of agricultural work-related fatal injuries in Pennsylvania, especially as

bystanders. From the review of the data, we conclude that fatal injuries to non-working children on farms are preventable. The process of identifying different injury patterns associated with non-work-related child activity has increased our understanding of how safety professionals and community members may help prevent these fatalities. Many researchers have noted a variety of intervention efforts that show potential for providing safer farm and home environments but will need long-term commitments in various capacities.