

Economics of Agricultural Injuries to Adolescent and Adult Farmers: A Preliminary Analysis of Exposure and Intervention Effectiveness Data

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Background

The school is at the center of most rural communities. Safety intervention programs for at-risk teens and adult farmers are most effective when they are incorporated into the daily activities wherKreuter 2005). The Economics of Prevention (EOP) program uses a unique approach that helps students, teachers, parents and other community members comprehend the individual and social costs of injury (Myers, Cole, Mazur & Isaacs, 2008) and reaches at-risk teens where they are accessible - in their high school classrooms.

By training pre-career teachers and Extension agents to recognize and understand occupational risks, hazards, injury prevention strategies, and the social costs of injuries, the EOP program equips these individuals to become safety advocates in their communities. The project is innovative by combining farm safety and economics within mandated core content of high school curricula using the latest technologies -- digital documentaries, Web quests, podcasts -- to deliver the materials nationally. e participants work and meet on a regular basis (Green &

Aims

This preliminary analysis examines (1) the prevalence of exposure to and injuries from four agricultural-related hazards: tractor overturns, crush injuries, closed head trauma, and hearing loss; and (2) behavioral intentions to work safely as measured by a stages of change measure validated in a prior 3-year study. The more recent study subjects were pre-career college students enrolled in teacher preparation, agricultural economics or other college level courses at three universities in Kentucky, Mississippi, and Florida. These college students were trained in using interactive narrative simulations and economic cost tools that focus on injury risk, prevention, and cost analysis. After they graduate, students will apply what they have learned to teaching rural youth ages 15-19 who are at risk for rural and farming-related injuries.

Methods

- A 30 item demographic measure, Farm and Rural Life Experience survey (FRLE), documents students' rural and farming-related injury exposure and history.
- The 39-item Thinking and Talking About Safety (TTS) stages of change behavioral intentions measure was administered to treatment and control students pre and post.
- Student data were collected via a relational database constructed in MySQL and PHP hosted on a secure server, a key methodological innovation.
- The intervention prepares college graduates to use the simulations and cost tools to teach rural high school students about injury hazards and risks, safety practices, and the economic benefits of preventing injuries.
- Graduates were interviewed in subsequent years, post treatment.

Results

The sample was 67% male. Subjects ages ranged from age 20-51 years; 90% were between ages 20-26.

Students enrolled in teacher certification programs comprised 25% percent of the sample, with the remainder in a variety of programs including agricultural economics, community public service, leadership, and agribusiness.

While many students had not lived or worked on farms, slightly over 84% report visiting farms of friends and/or family members.

Web site: <http://EOPOnline.org>

Statistically significant increases in the TTS scores were found for intervention students compared to the controls as measured by the TTS.

A GLM composite analysis that pooled total scores across the thinking and talking portions of the TTS found that the treatment group (M = 27.99) scored significantly higher (p < .05) than the controls (M = 23.05).

The GLM procedure also found a significant interaction effect for both treatment and control groups. Students who lived or worked on a farm scored lower, regardless of being an agriculture or non-agriculture major. Thinking and talking about farm safety practices and the economic impact of farm injuries on individuals, families, and communities are precursors to behavioral intentions and behavior change. (Prochaska, 1993, Prochaska & Velicer, 1997).

Data from the FRLE indicate that across all study subjects:

Exposure to Farm Hazards:

- 48% of subjects have lived on a farm.
- 70% have worked on farms.

Injury Surveillance:

- 32% reported a tractor overturn involving self, family, or friend (11% of whom were the study subjects).
- 6% reported a highway MV and farm equipment collision for self/family/friend, with 69% involving study subjects.
- 32% reported a self/family/friend head injury from a fall, 38% of which were to the subjects, with ATV, motorcycle, horseback riding falls most prevalent.
- 62% of the sample reported a temporary hearing loss to self/family/friend from exposure to loud noise; 44 (15%) reported permanent hearing loss from loud noise.
- 23% reported an injury that resulted in financial loss, with 19% of those experiencing that loss personally.

This preliminary analysis suggests that many pre-career professional rural youth leaders have experiences with such injuries regardless of whether or not they have lived or worked on farms. These experiences proved to be motivating factors for engaging future teachers and youth leaders as agricultural safety advocates. Pre- and post intervention data suggest improvements in knowledge about these injury risks, how to prevent them and the huge individual and social costs that result from these incidents. Thus, these teachers and other community youth leaders who have contact with at-risk youth and adult farmers acquired increased safety awareness that informs a sense of responsibility as change agents in the rural communities in which they work following graduation. Follow-up interviews with program graduates indicate that they are using the simulations and cost tools and acting as agricultural and rural safety advocates in the schools in which they have obtained teaching positions or within other community outreach and service agencies.

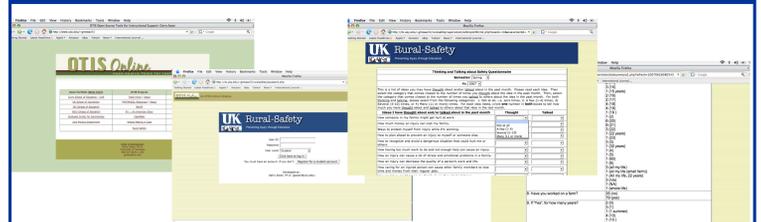
Limitations

This preliminary analysis does not include the complete data set.

References

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- Myers, M.L., Cole H.P., Mazur J., & Isaacs, S. (2008). Economics and safety: Understanding the cost of injuries and their prevention. Professional Safety, 53(4), 37-45.
- Prochaska, J. O., & Velicer, W.F. (1997). The Transtheoretical Model of health behavior change. American Journal of Health Promotion, 12, 38-48.

Web-based Online Data Collection: Implications for Supporting a Distributed Research Infrastructure (NORA)



- Accurate aggregation of complete data sets accessible by instructors and students for classroom use.
- Human subjects compliant. Unique anonymous IDs. The system does not report data for analysis if student consent is not documented.
- Data are portable to SPSS-SAS almost instantaneously. Mobile/hand-held data collection possible.
- Addresses NORA "Cross-Sector" charges: Potential Distributed Data Sharing.

Time to implementation: The problem is clear and solutions are known now, but approaches must be developed to achieve wider implementation.

Approaches: Instances where field and subject data collection is indicated; for example, exposure assessment, hazard evaluation, quantitative risk assessment, pilot studies of interventions, social and economic consequences, intervention effectiveness studies.

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