



Surveillance of Disease and Injury in Wisconsin Dairy Farmers and Workers



PROJECT PERSONNEL

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OUTCOMES OF THE PROJECT:

- ✓ The study reinforced prior observations that injuries are common amongst dairy farmers and provided insight into possible risk factors, like having private health insurance, living off-farm, and not providing safety training to workers.
- ✓ In addition, this study determined that **using medical codes for farm injuries can be correlated to certain high-risk activities and conditions**. Natural language processing to estimate the extent of work-related injuries did not improve this process.
- ✓ Overall, the project team developed successful methods to conduct surveillance of agriculturally based injuries using electronic health records.



PROJECT BACKGROUND

Approximately 10% of farmworkers are injured each year, and dairy farmers have an exceptionally high risk of injury. How farmers get injured has been documented previously, but less is known about how distal and socio-environmental risk factors influence injury rates.

The project's goals included:

This exploratory study intended to inform future agricultural injury prevention research and safety initiatives with the following aims:

Aim 1: Establish a population-based estimate of the incidence of injury and illness

Aim 2: Develop a survey instrument to measure sociodemographic characteristics, farm environment features, and general safety practices

Aim 3: Identify high-risk activities and conditions associated with production processes and farm characteristics, and track any detectable influence on the frequency of injury or illness

Aim 4: Utilize natural language processing, a component of artificial intelligence that understands human language as it is spoken and written, to examine its utility in estimating the extent of work-related injuries

A cross-sectional survey was given to adult dairy producers in north-central Wisconsin within the Marshfield Clinic Health Systems electronic data repository. The survey covered licensed dairy producers within a 20-county target region within the Marshfield Clinics data system.

RESEARCH BRIEF:

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Participants completed a 32 question survey seeking information on the following:

- 1) Personal sociodemographic characteristics** – age, gender, race/ ethnicity, household income, health insurance, farm ownership, farm residence, off-farm employment.
- 2) Farm environment features and general safety practices** – acres in agricultural production, number of cows, number of workers, feed storage facilities, number of tractors, use of other farm equipment, milking methods, manure handling methods, safety management role, safety training provided to workers, tractor rollover protection, and other available safety equipment.

MAJOR FINDINGS OF THE PROJECT:

The survey was distributed to 1293 farmers with a 72% response rate. Respondents who did not consent to have the survey linked to their electronic health records were excluded from the study, so 620 farmers were included in the final analysis. These farmers tended to be middle-aged (71% between 30 and 65 years old) and male dairy owners who lived and worked on their farms. There were 50 injuries observed from the cohort, leading to an estimated 5.7 injuries per 1,000 dairy farmers per year. Factors that were significantly associated with injuries included:

- Having private individually purchased health insurance
- Living off farm
- Not providing safety training to farmworkers

These results are correlational and more research is needed to confirm these findings using prospectively designed studies.



WHAT DOES IT MEAN FOR AGRICULTURAL HEALTH AND SAFETY?

Dairy farming in north-central Wisconsin is a risky occupation, with 8% of respondents having experienced an agricultural injury during the 14-year window of the study. Therefore, it is important to equip farmers with continual practices and measures that can help them to work safely and prevent injuries.



WHAT'S NEXT? WHAT ARE THE POSSIBLE SOLUTIONS OR RECOMMENDATIONS?

Future research should explore how factors such as insurance coverage, living environment, and safety training experience may impact injuries among Upper Midwest dairy farmers. Findings should help to identify strategies to address these factors and inform injury prevention initiatives for this population.

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