Risk Factors for Farm Vehicle Public Road Crashes

Michael D. Schulman
Theresa M. Costello
North Carolina State University
Southern Coastal Agromedicine Center

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Objectives

• Identify driver, vehicle, and environmental risk factors associated with farm vehicle public road crashes in NC

• Compare crash farms and no-crash farms: descriptive and multivariate analysis
Background

• Public road crashes major public health problem
• Increasing demand for public road use with population growth
• Urbanization impacting how public roads are shared
• Crash report data: 300 farm vehicle crashes annually in NC
• Farm vehicle crashes: rare event
  – Official statistics may underestimate problem
  – Vehicle Miles Traveled (VMT)
  – Severity
• NC farmer input through focus groups and mail surveys:
  – Public road conflict and crashes are major safety problems
Methods

- Telephone survey, Winter 2003
- NC farm owners or owner/operators from USDA database
- Two stages of sampling and interviews
- Eligibility
  - over 18 yrs
  - actively farming
  - drive farm vehicle on public roads
  - Crash: farm vehicle public road crash since 1992
- Initial Sample: 424 total
  - Stage 1: 208 no crash, 28 crash (12.9% prevalence)
  - Stage 2: 188 crash
Demographic Characteristics of Farm Respondents: Crash and No-Crash Farms

<table>
<thead>
<tr>
<th></th>
<th>CRASH (N=216)</th>
<th>NO-CRASH (N=208)</th>
</tr>
</thead>
<tbody>
<tr>
<td>*p &lt; .01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Age</td>
<td>49*</td>
<td>46</td>
</tr>
<tr>
<td>Mean Years Farming</td>
<td>39</td>
<td>41</td>
</tr>
<tr>
<td>Mean Number Farm Helpers</td>
<td>8*</td>
<td>5</td>
</tr>
<tr>
<td>Mean Acres Farmed</td>
<td>782*</td>
<td>293</td>
</tr>
<tr>
<td>Mean Gross Farm Sales</td>
<td>$179,660*</td>
<td>$86,500</td>
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</tbody>
</table>
Who Was Driving Farm Vehicle When Most Recent Crash Occurred: Crash Farms (n = 216)

- Farmer Respondent: 32%
- Non-Family Hired Help: 39%
- Family, Relative or Friend: 29%

Frequency response percentage
Farm Vehicle Involved In Most Recent Crash: Crash Farms (n = 216)

- **Tractor**: 62%
- **Truck**: 30%
- **Other + Specialty**: 15%
- **Combine**: 4%
Non-Farm Vehicle Involved In Most Recent Crash: Crash Farms (n = 216)

- Passanger Car: 49%
- Truck: 29%
- SUV: 5%
- Tractor Trailer: 5%
- Minivan: 7%

Response frequency percentage
Road Conditions That Contributed to Farm Vehicle Public Road Crashes: Crash Farms

- Nowhere to Pull Off: 3%
- Narrow Roads/Bridge: 9%
- Too Much Traffic: 3%
- Poor Visibility: 14%
- Bad Weather: 3%
- Blind Curves: 8%

Response frequency percentage (n = 216)
Non-Farm Vehicle Driver Behaviors That Contributed to Farm Vehicle Public Road Crashes: Crash Farms (n = 216)

- Speeding: 31%
- Unsafe Passing: 24%
- Lack Experience: 12%
- Impatient Drivers: 29%
- Not Understand Hand Signals: 5%

Response frequency percentage
Logistic Regression Results: Statistically Significant Predictors and Odds Ratio Point Estimates

Non-English Speaking Help 4.61
Non-Family Hired Help 4.32
Perceived Public Road Conflict 1.77
Non-Farm Public Road Use 1.40
Farm Injury History 1.34
Youngest Driver 1.02
Oldest Driver 0.96
Perception of Danger 0.53
Low Farm Income 0.26
Farmers Recommend Driver, Vehicle and Public Road Environmental Changes for Improved Safety (n = 424)

- Speeding Laws: 14%
- Slow Lanes: 21%
- Road Signage: 22%
- Educate Non-FV Drivers: 33%
- Widen Roads: 34%

Response frequency percentage
Limitations

• Data from one state
• Recall and self-report
• Lack information on specifics of crashes
• Lack information on road conditions and geography of crash and non-crash farms.
Conclusion

- **Crash Farms**: use hired help, use non-English speaking help, report younger drivers, more public road conflict, and higher non-farm public road use

- **No-Crash Farms**: report older drivers, low farm income, higher perception of public road driving danger

- Farm and non-farm vehicle public road sharing, conditions, and driver behaviors contribute to crashes.