

# Purdue University

## *Agricultural Safety and Health Program*

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### **2013 Indiana Farm Fatality Summary**

**Compiled by the Purdue University Agricultural Safety and Health Program**

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The 2013 Indiana Farm Fatality summary was compiled by Purdue's Agricultural Safety and Health Program through a variety of sources, including a contracted news clipping service, web searches, voluntary reporting from Extension educators and individuals, and personal interviews. No cases were identified from sources outside of the state, including Federal government sources such as the Census for Fatal Occupational Injuries. Findings were compared with findings by the Indiana Department of Labor and adjusted to reflect differences due to data interpretation.<sup>1</sup> There is no claim made that the presented data are comprehensive but rather represent the best assessment currently available.<sup>2</sup>

#### **Summary**

A total of 18 farm-related fatalities were documented in Indiana during 2013. The total reflects a decline from the 2012 total of 26 and a substantial drop from the annual average. The lowest number ever documented was 8 in 2006. This decrease in fatal incidents will continue to enhance the downward trend that has occurred over the last two decades. The data also show a continued decline in the frequency of farm-related fatalities involving children and youth under the age of 21, which historically accounted for a disproportionate share of total farm deaths. Only one documented victim was under the age of 21 (15), who died as the result of a tractor overturn.

By comparison, the Indiana Department of Labor reported 17 workplace deaths under the broad category of "Agriculture, Forestry, and Fishing".<sup>3</sup> The Department of Labor data included one fatality of a farmer killed in a pick-up truck crash. The Purdue summary has traditionally not included motor vehicle crashes as farm-related, but records them separately. As noted by the annual Census of Fatal Occupational Injuries, deaths on Indiana farms have had a long history of representing a disproportionate share of the state's workplace fatalities

Tractors and farm machinery remained as the most frequently identified agents of fatal injuries during 2013, as they have been for the last 40 plus years.

There are a number of factors that have contributed to the continued decline in the number of farm-related fatalities. These include the decline in the number of Indiana residents who live and work on farms,

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<sup>1</sup> Appreciation is extended to Mr. Joseph Black, BLS Coordinator, Quality Metrics & Statistics, and Indiana Department of Labor for contributing to this report.

<sup>2</sup> Differences may be found in reporting of prior years due to the addition of previously unidentified cases to the database.

<sup>3</sup> There have been, historically, slight differences between the number of farm-related fatalities reported by the Indiana Department of Labor and the Purdue summary. This is due to the different interpretations being used to define a work-related fatality. Using the Bureau of Labor Statistic's Census of Fatal Occupational Injuries, 17 fatalities were identified in occupations related to agriculture, forestry, fishing and hunting in 2013.

advancements in the safety, durability, and productivity of agricultural equipment, reduced dependency on child and youth labor, increasing expectations for safer and healthier workplaces and continued efforts to enhance the level of awareness of the importance of managing risks in agriculture to reduce the economic impact of deaths, injuries, property losses, and failure to comply with applicable regulations. Advancements in medical science and emergency medical services have also made major contributions towards reducing the fatality rates by increasing the probability of surviving injuries once considered to be most likely to result in a fatality. Achieving zero incidents may be an unrealistic goal, but the record clearly shows that something is working and that many tragic incidents have been prevented during the same time as Indiana farmers have become more productive and efficient than at any time in history.

It should be noted that several other Midwestern states are reporting higher numbers of farm fatalities and many states no longer even have the capacity to document and report on these incidents. Some key agricultural states have done away with or diminished their land grant university-based farm safety efforts and, due to prohibitions in federal appropriation language, federal and state OSHAs have generally maintained a hands-off approach to most agricultural production sites.

For nearly 70 years, Purdue University and organizations such as FFA, Indiana Rural Safety and Health Council and Farm Bureau have been committed to developing and conducting evidence-based agricultural safety and health programs designed to reduce the risks to producers, their families and employees. Even with all this effort, the problem has yet to be completely solved as evidenced by the tragic losses that occurred in 2013.

### **Findings**

A brief description, date, and location of the 18 fatalities documented as agricultural workplace incidents are provided in Table 1. Again, it should be noted that the list may not be comprehensive due to the lack of consistent reporting requirements, Indiana residents dying at medical facilities in neighboring states, and victims dying after the event due to related medical complications.<sup>4</sup>

Figure 1 provides a historical look at the frequency of documented fatalities since 1970. As noted, the frequency of these events has been rather erratic over the years, but there is an overall decline in the number of incidents. It should be noted that during early years the likelihood of incidents not being documented was higher making the decline even more notable.

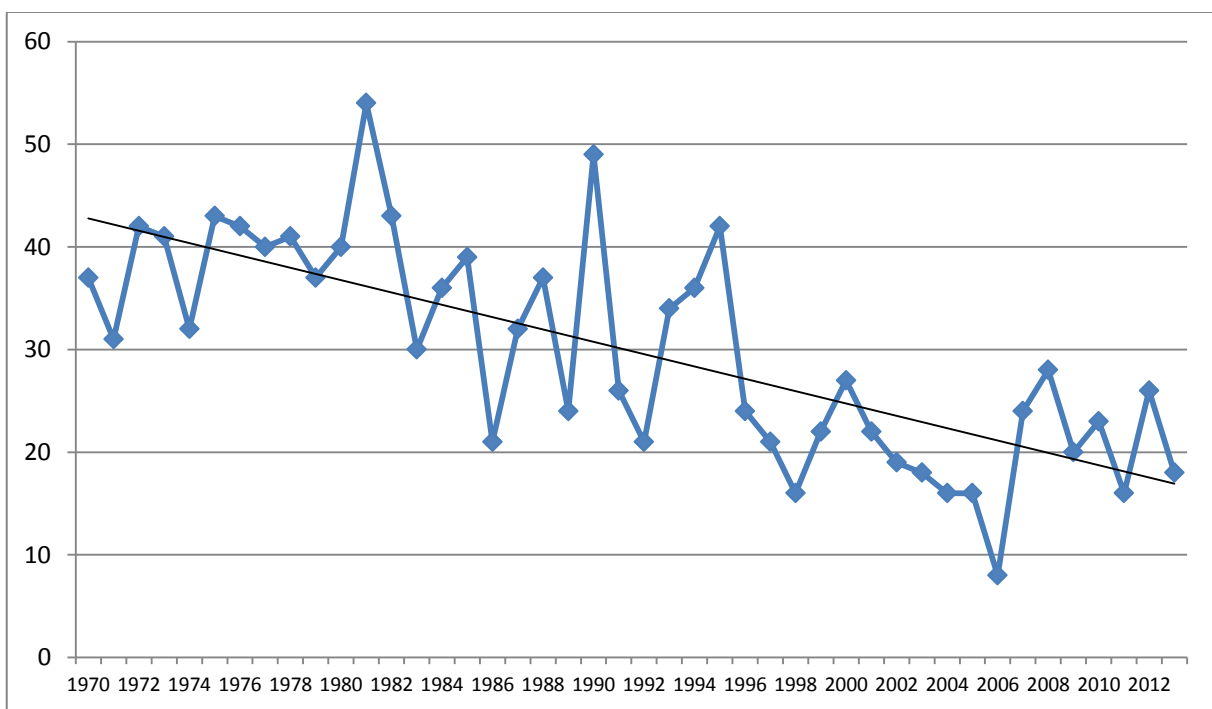
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<sup>4</sup> If you know of additional incidents not included in the data presented and wish to share information on these incidents, please contact the authors.

**Table 1. Description of 2013 Farm-Related Fatalities**

Date	County	Age	Sex	Description
5/14/13	Marshall	61	M	Entangled in irrigation PTO pump shaft
6/19/13	Fountain	59	M	Suffocated in grain bin
6/21/13	Lake	72	M	Fell from tractor
6/24/13	Laporte	60	M	Struck by farm equipment
6/24/13	LaPorte	67	M	Fell from concrete silo
6/26/13	Elkhart	15	M	Tractor overturned
6/29/13	Hancock	77	M	Fell into ditch
6/30/13	Howard	56	M	Struck by falling tree
7/15/13	Posey	59	M	Mower overturned
7/23/13	Bartholomew	71	M	Struck by falling tree
7/30/13	Bartholomew	56	M	Tractor rollover
8/23/13	Lawrence	63	M	Tractor/implement runover
9/5/13	Franklin	78	M	Pinned under tractor while mowing hay
9/22/13	Hendricks	45	M	Tractor overturned
10/4/13	Dubois	73	M	Mower overturned
10/13/13	Kosciusko	65	M	Crushed by skid loader bucket
11/4/13	Fulton	Unknown	M	Crushed by falling tree
12/22/13	Dearborn	66	M	ATV overturned

**Figure 1. Annual Summary of Farm-Related Fatalities: 1970-2013**



No specific factor(s) has been identified that has contributed to the reoccurring spikes in frequency. Other than the incidents involving tractors and farm machinery, other agents of injury have varied widely. This lack of consistency makes the targeting of prevention resources difficult.

The age of the victims ranged from 15 to 78 and averaged 61.4, which is slightly higher than the average age of Indiana farmers, currently at 58. As noted in the past farmers over the age of 60 account for a disproportionate number of farm-related injuries.

The dramatic decline in the number of children and young adults being reported as dying in agricultural work places is an extremely positive trend. It is believed that the changing expectations of parents and the general public towards having children and youth employed in some types of farm work, considered especially hazardous, has had a significant influence on the declining trend in fatalities involving this group. The introduction of larger, more complex and expensive equipment has also made many producers less comfortable using inexperienced workers to operate it.

Table 2 summarizes documented incidents during the period 1994 to 2013 with respect to youth and those over 60. During that time there were no fewer than 442 fatalities of which 51 were under the age of 18 and 261 were over the age of 60. Again, these two groups have historically represented a disproportional share of the total deaths, accounting for nearly 60% of the total.

**Table 2. Analysis of “Youth” and “Over 60” Fatalities as Percent of Total Farm-Related Fatalities**

<b>Year</b>	<b>Deaths Ages 1-17</b>	<b>Youth Deaths as % of Total</b>	<b>Deaths Age Over 60</b>	<b>Over 60 Deaths as % of Total</b>	<b>Deaths of Both Youth &amp; Over 60</b>	<b>Percent of Both Youth &amp; Over 60 Deaths</b>	<b>Average Age of Victim</b>	<b>Total Farm- Related Fatalities</b>
<b>2013</b>	<b>1</b>	<b>6%</b>	<b>10</b>	<b>56%</b>	<b>11</b>	<b>61%</b>	<b>61.4</b>	<b>18</b>
<b>2012</b>	2	8%	9	35%	11	42%	51.3	26
<b>2011</b>	0	0%	8	50%	8	50%	53.5	16
<b>2010</b>	5	22%	9	39%	14	61%	47	23
<b>2009</b>	3	15%	12	60%	15	75%	53	20
<b>2008</b>	2	7%	11	39%	13	46%	49	28
<b>2007</b>	4	17%	10	42%	14	58%	50	24
<b>2006</b>	1	13%	3	38%	4	50%	49	8
<b>2005</b>	2	13%	5	31%	7	44%	52	16
<b>2004</b>	2	13%	9	56%	11	69%	54	16
<b>2003</b>	2	11%	8	44%	10	56%	55	18
<b>2002</b>	2	11%	9	47%	11	58%	53	19
<b>2001</b>	1	5%	11	50%	12	55%	56	22
<b>2000</b>	5	19%	16	59%	21	78%	55	27
<b>1999</b>	2	9%	6	27%	8	36%	49	22
<b>1998</b>	0	6%	11	69%	11	75%	66	16
<b>1997</b>	3	14%	18	86%	21	100%	46	21
<b>1996</b>	2	8%	13	54%	15	63%	59	24
<b>1995</b>	9	21%	12	29%	21	50%	43	42
<b>1994</b>	4	11%	19	53%	23	64%	52	36
<b>Total/ Average</b>	<b>51</b>	<b>12%</b>	<b>209</b>	<b>47%</b>	<b>261</b>	<b>59%</b>	<b>52.71</b>	<b>442</b>

Table 3 summaries 20 years of tractor-related fatality data. During these years, tractors accounted for 205 or 46% of the total of all Indiana fatalities. The most frequent incident continues to be tractor upsets or rollovers followed by falling from the tractor and being run over.

**Table 3. History of Indiana Tractor-Related Fatalities**

<b>Year</b>	<b>Number of Tractor-Related Fatalities</b>	<b>Number of All Farm Fatalities</b>	<b>Percent of Tractor Related Fatalities in Total Fatalities</b>
<b>2013</b>	<b>6</b>	<b>17</b>	<b>35%</b>
<b>2012</b>	12	26	46%
<b>2011</b>	6	16	38%
<b>2010</b>	11	23	48%
<b>2009</b>	11	20	55%
<b>2008</b>	12	28	43%
<b>2007</b>	7	24	29%
<b>2006</b>	2	8	25%
<b>2005</b>	6	16	38%
<b>2004</b>	10	16	63%
<b>2003</b>	10	18	56%
<b>2002</b>	10	19	53%
<b>2001</b>	13	22	59%
<b>2000</b>	16	27	59%
<b>1999</b>	8	22	37%
<b>1998</b>	12	16	75%
<b>1997</b>	8	21	38%
<b>1996</b>	11	24	46%
<b>1995</b>	19	42	45%
<b>1994</b>	15	36	42%
<b>1994-2013</b>	205	441	46%

Table 3 summaries 20 years of tractor-related fatality data. During these years, tractors accounted for 205 or 46% of the total of all Indiana fatalities. The most frequent incident continues to be tractor upsets or rollovers followed by falling from the tractor and being run over.

With approximately 59000 productive farms in Indiana with sales of over \$1,000, it was estimated for 2013 that one out of every 3,277 farms experienced a farm-related fatality.<sup>5</sup> Using a population of 143,000 operators and hired workers on farms in Indiana, the death rate was approximately 12.6 per 100,000 farm workers.<sup>6</sup> Indiana is often referred to as an agricultural state, although less than 1% of the workforce is employed in production agriculture. However, the agriculture industry has traditionally been responsible for one of the highest number of work-related fatalities in Indiana (Indiana Department of Labor, 2012).

The estimated fatality rate of 12.6 per 100,000 Indiana farm workers in 2013 compares to an estimated national death rate of 3.5 per 100,000 for workers in all industries and 25.4 per 100,000 for those engaged in agricultural production nationwide.<sup>7</sup>

<sup>5</sup> Estimated number of farms from the final report of the 2012 U.S. Census of Agriculture.

<sup>6</sup> Estimated farm population of operators and hired workers on farms from the final report of the 2012 U.S. Census of Agriculture.

<sup>7</sup> Estimated death rates from the National Safety Council Injury Facts, 2011 edition.

It is believed, however, that the Indiana and national agricultural fatality rates would be lower if unpaid family laborers were included in the population of those exposed to farm hazards on a regular basis. Furthermore, the National Safety Council data has not historically included children under 16 in their calculation of rates, while Purdue's Agricultural Safety and Health Program does if the children were involved with or exposed to farm-work activities.

Figure 2 shows the distribution of all farm-related fatalities over the past 31 years when the county of location was known. It can be noted that no county has escaped a fatality and some counties have experienced an unusually high number. Counties with the highest number of documented cases are as follows:

- Elkhart – 28
- LaGrange – 26
- Greene – 22
- Dubois – 17
- St. Joseph – 16
- Adams – 15
- Dearborn – 14
- Harrison – 14

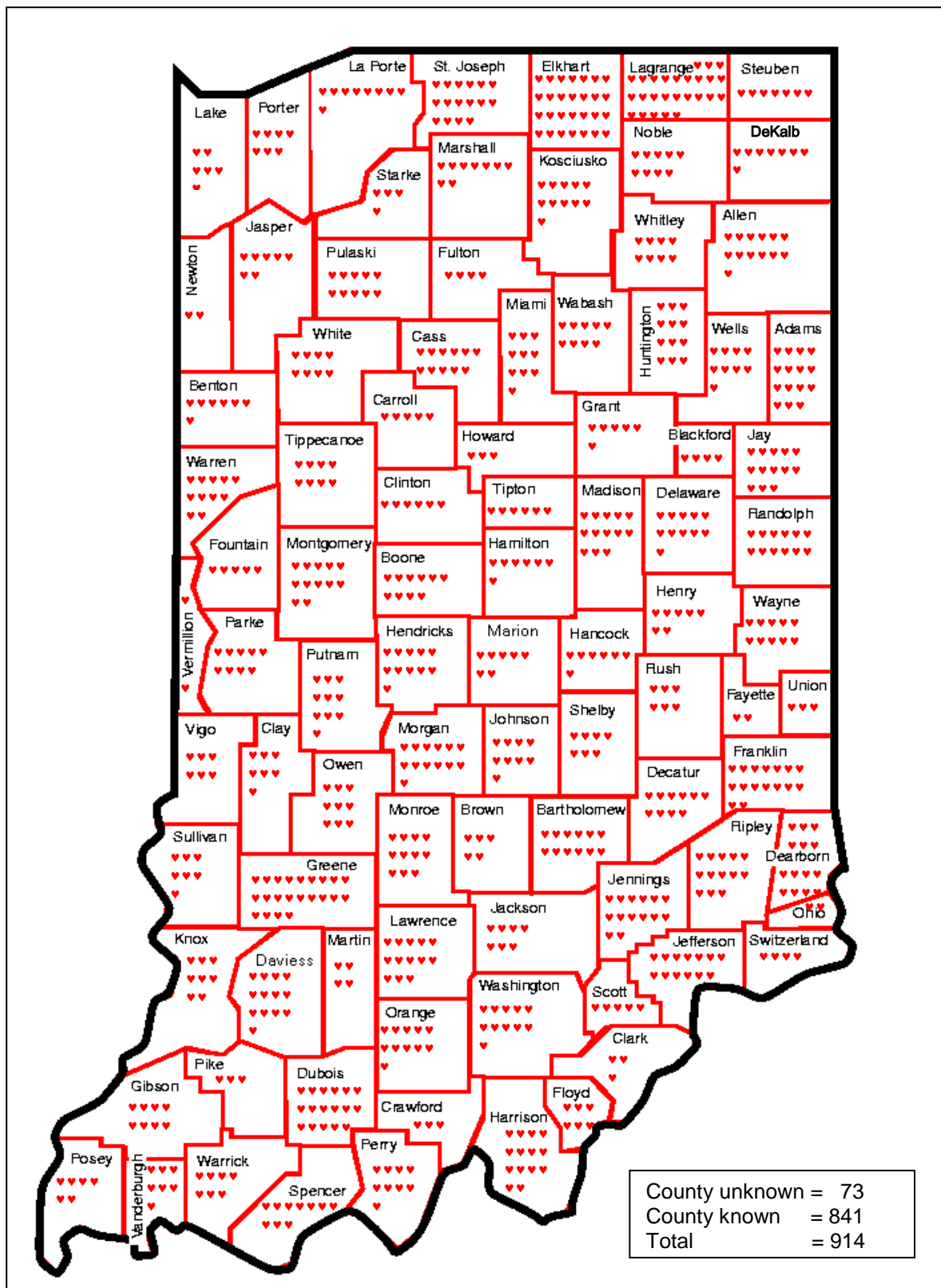


Figure 2. Geographic Distribution By County of Indiana’s Farm-Related Fatalities From 1980 Through 2013

### Summary of Fatal Motor Vehicle Incidents Involving Agricultural Equipment

Table 4 provides a description of incidents involving collisions between motor vehicles and agricultural equipment, including three fatalities. There was one incident involving a farm tractor that resulted in three injuries.

**Table 4. Description of 2013 Farm-Related Motor Vehicle Incidents**

Date	County	Age	Sex	Description
4/11/13	Newton	63	M	Pickup truck collision (fatal)
7/26/13	Jackson	20	F	Collision with farm tractor
7/26/13	Jackson	19	F	Collision with farm tractor
7/26/13	Jackson	19	M	Collision with farm tractor
9/17/13	Huntington	57	M	Collision between a combine at intersection
9/26/13	Ripley	18	M	Collision between a buggy and a pickup truck (fatal)
10/28/13	Dubois	36	F	Collision between combine and motor vehicle
11/25/13	Elkhart	51	M	Highway crushed involving horse-pulled farm equipment (fatal)

### Summary of Indiana’s Farm-Related, Non-Fatal Incidents and Their Economic Impact

While the Purdue Agricultural Safety and Health Program’s surveillance of farm work-related fatalities is thorough, but not comprehensive, farm-related non-fatal injuries are not well documented by any source in the state; therefore, there is little data on the frequency and severity of injuries that occur annually during farm work. However, the relatively few Indiana non-fatal farm-related injuries that were identified in 2013 were severe.

Several of the incidents resulted in amputations, head, and spinal cord injuries and involved the use of medical helicopters for transport to a trauma center. See Table 5 for additional details.

**Table 5. Description of 2013 Farm-Related Non-Fatal Incidents**

Date	County	Age	Sex	Description
2/22/13	Posey	Unknown	M	Fell into manure pit
6/13/13	White	40	M	Tractor struck by train
7/23/13	Wabash	67	M	Entrapped in grain bin
7/30/13	Hancock	Unknown	M	Fell from farm building
11/21/13	Dubois	24	M	Overtuned of scissor lift
12/26/13	Wayne	1	F	Buggy runaway
12/26/13	Wayne	2 month	F	Buggy runaway

It is estimated, based upon prior research, approximately one out of every nine farms experiences a farm-work-related injury requiring medical attention annually. Based upon the estimated 62,000 farms in the state, it can be extrapolated that in 2013 there were approximately 6,888 treated injuries. Prior research by the National Safety Council indicated that 2% of reported farm injuries result in permanent disability; applying the 2% estimate to Indiana’s estimated 6,888 injuries, approximately 135 such cases occurred in the state in 2013. Many of these incidents, however, are not reported in the media, and there is no requirement to report such incidents, including severe injuries, to any official agency. The need for a more comprehensive trauma registry remains and could be helpful in targeting prevention efforts at high risk activities.



To gain a perspective of the potential economic impact of farm injuries to the state, a very conservative estimated cost of \$1,200 for medical treatment per injury<sup>8</sup> would result in over \$8,000,000 in economic losses, not including the costs of transportation to receive medical services, replacement labor, property damage, emergency services, and long-term rehabilitation services. This estimate, however, would be substantially increased if both the direct and indirect costs associated with the 18 fatalities and the 135 permanent disabilities were included. For example, the estimated cost of medical and rehabilitation care for a person with permanent spinal cord damage now exceeds \$1 million. Even though there has been a decline in the number of farm-related injuries, it is believed that the economic impact has been on the rise due to the significant increase in medical and rehabilitation costs. This is especially problematic considering that a disproportionate number of farm families still do not carry or cannot afford sufficient health care insurance, or have very high deductibles. A single serious injury can result in an almost insurmountable financial disaster for an otherwise successful farm family. The impact of the Affordable Health Care Act on farm families remains unclear, but provisions may benefit those farm families who currently have limited access to health care insurance.

Another issue that can create significant hardships for both Indiana farm families and hired farm labor is that most are not covered by nor can they afford state workers compensation insurance programs that nearly all employees of other Indiana industries have available to them. Therefore, an on-the-job injury can result in both excessive personal debt due to medical costs and long-term loss of income.

The lack of both affordable health care insurance and insurance for lost wages due to injury are complex public policy issues that still need attention to ensure that the economic impact of work-related injuries on the state's farm families and agricultural workforce is minimized.

### **The Changing Agricultural Workforce**

Over the past 30 years, the agricultural workforce in Indiana has changed dramatically. In 1970, when the Occupational Safety and Health Act (OSH Act) was passed by Congress, the U.S. Census of Agriculture showed there were fewer than 100 farm operations in Indiana that were required to comply with certain workplace safety and health provisions of the Act due to their workforce exceeding 10 non-family member employees or providing seasonal/migrant worker housing. The estimated number of current farm operations that could be interpreted as needing to be in compliance with certain OSHA provisions is approaching 1,000. It is assumed that this number will continue to increase with additional farm consolidation. Many farms have grown slowly and quietly, and their owners may not even realize that they should be in compliance with certain provisions of the Occupational Safety and Health Administration (OSHA) regulations.

Another major change has been the rapid growth in the number of Hispanics who are now employed in agricultural production operations on a full-time basis. This trend is especially notable on larger dairy, poultry, and hog operations. Many of these workers have limited English speaking skills and lower literacy levels that make traditional agricultural safety and health resources ineffective. To address the workplace safety and health needs of this new workforce, attention must be given to developing new and innovative instructional materials that address the hazards of newer and more complex farm operations. Instructional materials need to be culturally sensitive and delivered in a format that can be interpreted by the target audience.

Based upon the most recent agricultural census data, the increasing number of small farms is another important change occurring in rural communities. These audiences of part-time and hobby farmers have very different educational needs as compared to larger commercial operations. A review of fatality data over the last few years suggests that these smaller operations account for a disproportionate share of all documented fatalities. It has been determined that one of the best ways to reach this population is through online resources.

The recent claims regarding the increasing numbers of women engaged as owner/operators of Indiana farms cannot be proven by any increase in the number of women dying as the result of farm work. Historically over 95% of all farm workplace fatalities have been male. Considering that there are an estimated 6,400

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<sup>8</sup> Estimated cost per injury based upon research conducted at the University of Illinois.

principal farm operators identified as female, it could be expected that there would be a larger number of fatalities involving women. Of the 44 documented fatalities over the past two years only one was female.

### **Farm-related Injuries in the Amish/Old Order Communities**

Amish are a part of the Old Order Anabaptist subculture, and Indiana is home to the third largest Amish community in North America. This group is closely associated with agriculture, has a larger than average number of children per household, and is doubling in population approximately every 20-22 years. In 1996, one third of all documented farm-related fatalities occurred in Amish communities. Elkhart, LaGrange, Adams, and Allen counties, home to some of the largest Amish communities, are also counties with the highest number of farm-related fatalities over the past 40 years. As in 2012, only one work death was reported during 2013 in Elkhart county involving an Amish youth.

There are several contributing factors to the higher number of cases being historically reported from these communities. These include the widespread use of horses and horse drawn vehicles on public road ways, more labor intensive farm practices, greater use of children in completing farm work, and the recent acceptance of skid loaders and certain hybrid equipment that is engine powered yet still horse drawn.

Over the past 15 years, Purdue Extension and other organizations have undertaken an aggressive effort to raise the awareness level within the Amish community of the hazards identified through the injury data collection efforts. This has included facilitating numerous family safety days that have attracted several thousand Amish family members, encouraging the use of more effective marking and lighting on Amish buggies and carts used on roadways, distribution of nearly 70,000 copies of a brochure for motorist traveling in Amish communities, and distribution of over 30,000 copies of a family-oriented farm safety activity book designed specifically for Amish families. Intervention strategies have been developed and presented which include safety material that is more culturally acceptable. It is clear that continued efforts related to use of horse drawn vehicles on public roadways are needed.

### **Grain-Related Entrapments and Engulfments**

Since 1978, Purdue has been documenting agricultural confined space incidents throughout the United States. Approximately 1,750 cases have been documented and entered into Purdue's Agricultural Confined Spaces Incident Database. For a summary of these incidents visit [www.grainsafety.us](http://www.grainsafety.us).

Indiana ranks number 1 historically in the number of documented grain entrapments. In 2013 there was one documented case. It is believed that the high ranking has more to do with the aggressive nature of Purdue's surveillance efforts rather than the actual number of incidents that occur. Regardless, leading the nation in these cases is not the right place to be.

Purdue has been engaged in the most aggressive public awareness effort it has ever conducted on the grain safety topic. For the past four years there have been as many as three grain safety displays at the Indiana State Fair, over 15,000 copies of a safe grain handling brochure have been distributed, near 70 classes conducted for emergency first responders on grain rescue, and grain safety exhibits have been on display at farm events across the state. With a potential record 2014 grain crop on the horizon, everyone in the grain industry will need to become partners in addressing this problem.

### **Impact on Agriculture from Natural Disasters**

An ongoing review of reports from across the state indicates that farmers are also regularly affected by a variety of environmental forces including drought, flooding, tornadoes, winter storms, lightning, and high winds. In most cases, the bulk of these losses are absorbed by the farm operation due to a lack of comprehensive insurance coverage, high levels of deductibles, and policy coverage limitations. Though not always preventable, some of these losses can be mitigated through adequate planning and more effective response strategies.

## **Diminishing Resources**

As budgets have tightened and legislators at the state and federal levels have explored ways to reduce expenditures, farm safety efforts have not gone untouched. In Indiana, reduced travel budgets and increased fuel costs for Extension staff have made coordination and participation in local safety initiatives more difficult. Educational material that was once free and readily available is now expensive or largely restricted to on-line access. Most commercially available farm safety videos and DVDs have become so expensive that they are now out of reach to most public schools and groups such as 4-H and FFA. The Indiana Rural Safety and Health Council, the only non-profit group in the state with its sole mission being to promote agricultural safety and health, has a budget of only a few thousand dollars per year to spend on exhibits, displays, and information dissemination.

Farm safety and health is not, nor will it ever be, a topic that will make the front page of the paper, turn the heads of legislators, or generate an outpouring of public support. However, the 914 Indiana farm families who experienced the loss of a family member since 1980, including the 18 in 2013, know personally the effect these events can have. In many cases, these effects last a lifetime.

If you are interested in learning more or supporting the work of Purdue's Agricultural Safety and Health Program or the Indiana Rural Safety and Health Council, please feel free to call 765-494-1191 or visit [www.farmsafety.org](http://www.farmsafety.org).

Other online resources that may be helpful include:

- [www.agrability.org](http://www.agrability.org)
- [www.agsafety4youth.info](http://www.agsafety4youth.info)
- [www.grainsafety.us](http://www.grainsafety.us)
- [www.eXtension.org](http://www.eXtension.org)