

# FATAL FARM INJURIES IN SASKATCHEWAN 1990 TO 2013

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#### **Canadian Agriculture Injury Reporting**

Canadian Agricultural Injury Reporting (CAIR) was established in 1995 as the Canadian Agriculture Injury Surveillance Program (CAISP) to provide a comprehensive accounting of fatal and hospitalized agricultural injuries in Canada. The results of this surveillance program are used by the farming community, agricultural safety specialists and researchers to inform the development of targeted and effective injury prevention strategies. The CAIR national office is located at the University of Alberta.

### Participants and Sponsors

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#### **Participating Agencies**

Office of the Chief Coroner, Ministry of Justice, Government of Saskatchewan

Occupational Health and Safety Division, Ministry of Labor Relations and Work place Safety, Government of Saskatchewan

# Methods

## 1.1 Database Management

The procedures used to conduct this project were approved by the Biomedical Research Ethics Board at the University of Saskatchewan (BIO #04-204) and an MOU between the Provincial Coroner's Office, Ministry of Justice, Government of Saskatchewan and the University of Saskatchewan. All data collected as part of the Saskatchewan Farm Injury Surveillance project are de-identified and maintained in strict confidence. In the case of fatal farm injury data, personal identifiers are not collected by the researchers. Electronic data files are encrypted and stored on a secure server at the University of Saskatchewan. Documents pertaining to these data are kept in locked filing cabinets also located in locked rooms at CCHSA at the University of Saskatchewan.

## 1.2 Identification of Individual Cases

All reports of patterns of injury contained in this report are based on analyses of group data only. No individual cases are presented. Where stratified analyses by factors of interest resulted in a group size of less than five cases, the results are aggregated to the "other" category or, in the case of fatality data, are reported as a proportion of the total.

## 2. Overview of Data Sets

### 2.1 Identification of Farm Fatalities

The process used in the identification of fatalities on Saskatchewan farms is described below:

1. The two sources of farm fatality data were the Occupational Health and Safety Division, Ministry of Labor Relations and Workplace Safety, Government of Saskatchewan and the Provincial Coroner's Office, Ministry of Justice, Government of Saskatchewan .
2. A comprehensive list of all potential, farm-related fatalities was assembled within each agency.
3. Once cases were identified, detailed case reports were sought for review and data abstraction. The main sources of information were the coroner's reports and the Occupational Health and Safety Division's accident investigation reports. The definitive source of information was the coroner's investigation report.
4. Data abstraction and entry were completed on each eligible case. This was done in a consistent manner using a standard data abstraction form and a database program that was developed using the Canadian Agricultural Injury Reporting (CAIR) program template. All data is de-identified.
5. Ineligible cases were excluded using the decision rules developed by the CAIR collaborators.
6. Cases were stratified into two categories: a) work-related farm fatalities, and b) farm fatalities that were not work-related but were caused by a hazard of the farm environment. The result is the final, provincial registry of farm fatalities.

### 2.2 Calculation of Rates

In this report, some rates of injury are provided. These describe ratios of the number of fatal farm injuries, to the number of persons at risk of experiencing a farm injury over a time period of interest (usually one year). Calculation of rates on a per capita basis allows the frequency of an outcome to be compared, after accounting for differences in population size or period of study.

It is very important to recognize that the rates that are reported here are far from perfect. The best population information available in Canada to describe the persons at risk of experiencing a farm injury is population counts from the Canada Census of Agriculture and Population Census. These counts do not include hired workers who do not live in the households of farmers or visitors to the farm who do not live on farms. We suspect that some of the injured persons counted among those experiencing farm injuries are in these latter groups. The effect of including in the numerator persons who are not also counted in the denominator is that the estimated rate will be higher than the true rate.

In spite of the limitations described above, the authors felt that the estimated rates reported in this document provide some useful information concerning the frequency of these events when comparing age groups or when comparing other health outcomes of interest for this population. However, given the limitations described above, the rates which are reported should be viewed with caution.

### **2.3 Data Quality Limitations**

These data are collected retrospectively. Case identification in real time involves the Occupational Health and Safety Division and the Chief Coroner's Office. When cases are identified retrospectively from the databases it is possible for cases to be missed. Hypothetically we believe that this was possible in the case of a farm work related fatality that occurred off the farm such as when a farmer was hauling bales on the highway and was in a traffic collision. There was same possibility to miss fatal injury events that did not involve farm work but resulted from exposure to a hazard of the farm environment such as drowning in the farm dugout. In spite of these limitations the authors felt that the database provides valuable information about the frequency and patterns of injury on Saskatchewan farms.

### **2.4 Definitions**

For the purposes of this report we have used the following definitions:

Farm Population – persons living in the households of farm operators plus temporary foreign workers as provided by Statistics Canada

Fatal Farm Injury – Any unintentional injury resulting in death that occurred during activities related to the operation of a farm or ranch including deaths that occurred away from the farm location such as during transport of machinery or produce **and** any unintentional injury resulting in death that involved any hazard of a farm or ranch environment such as dugouts or lagoons. Deaths where the victims were killed because a third party was engaged in agricultural work are also included. Fatal injuries that took place in the farm residence due to non-farm activities were not included.

Work-related farm injury – These are deaths that occurred while farm work was being conducted. This included deaths that occurred at off-farm work locations and those that involved motor vehicles that were being used for farm work. Deaths where the victim(s) were killed by a third party who was engaged in farm work are also included.

Not work related farm injury – This category included those deaths that, while occurring on a farm or caused by some aspect of the farm environment, were not directly related to farm-work. For the purposes of clarity, they are analyzed separately from the work-related farm fatalities. Examples of these include drownings in farm water sources, deaths on farm vehicles being used for recreational purposes and deaths from exposure.

Machinery related farm injury – These are deaths that occurred in events where the source of energy that caused the injury was a machine or part of a machine, and/or the location of the injury was a machine (e.g. fall from a machine)

Mechanisms of injury – This describes the most immediate cause, closest in time to the actual occurrence of the injury. See *Appendix A* for a detailed description of each mechanism of injury used in this report.

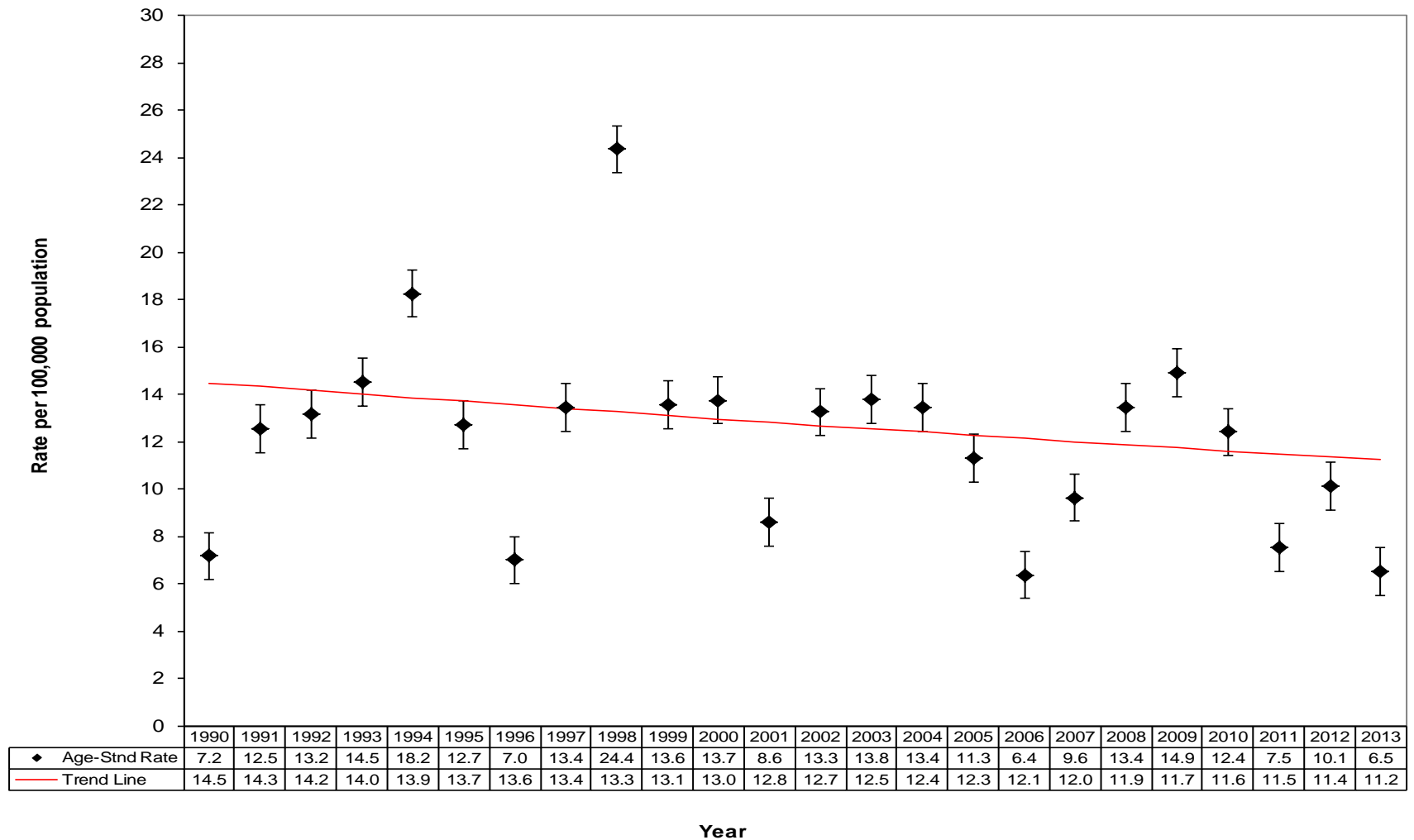
## OVERVIEW OF FATAL FARM INJURIES 1990-2013

**Table 1: Leading mechanism of fatal injury by age group (431 deaths)**

0-14 years (n=52)	15-39 years (n=93)	40-59 years (n=118)	60+ years (168)
Machinery rollover (14)	Machinery Rollover (17)	Entangled in moving machinery parts (16)	Dismounted machinery operator runover by machine (23)
Passenger fell from machine then runover (8)	Pinned or struck by machine component (13)	Machinery rollover (13)	Machinery runover of bystander (14)
Machinery runover of bystander (8)	Machinery vs traffic collision (13)	Machinery vs traffic collision (15)	Machinery rollover (14)
Animal-related (5)	Contact with toxic substance (8)	Dismounted machinery operator runover by machine (11)	Animal related (13)
Drowning (6)	Drowning (5)	Pinned/struck by machinery component (8)	Pinned/struck by machine component (11)
All other codes (11)	All other codes (38)	All other codes (55)	All other codes (24)

- The color bars in the table show that the leading mechanisms of injury vary by age group. This reflects the changing farm work assignments as people age and gain more experience in the work place.
- Machine rollover events are among the leading mechanisms of injury in all age groups.
- When run over event categories are combined they are by far the most common fatal event among the youngest and oldest age groups.

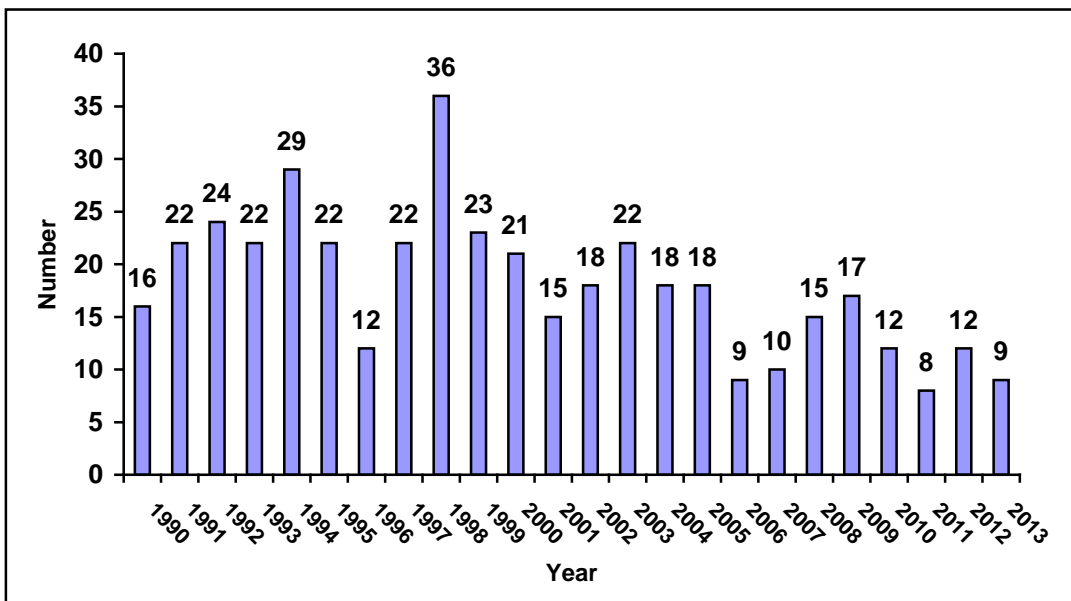
**Figure 1: Age-adjusted Annual Fatality Rate\* by Year, 1990-2013**



\*Farm population, 1996, 2001, 2006 Population Census and Census of Agriculture, Statistics Canada

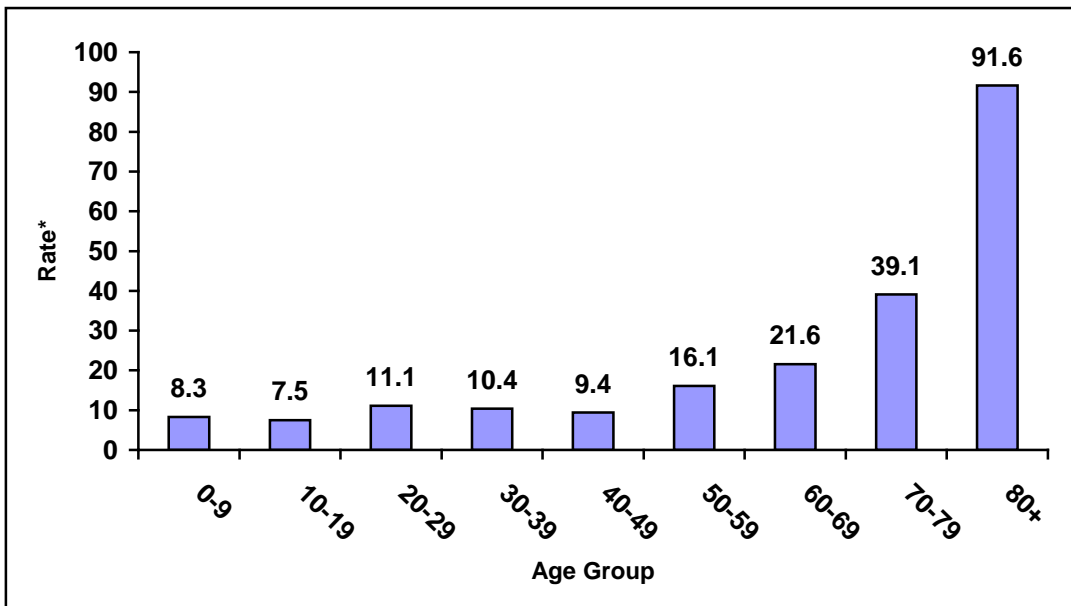
- Rates should be viewed with caution due to the small number of fatalities per year.
- Rates ranged from a high of 24.4 per 100,000 farm population in 1998 to a low of 6.4 per 100,000 farm population in 2006.
- There appears to be a small but statistically insignificant decrease in the rate of fatal farm injuries during the period.

**Figure 2: Number of Fatal Farm Injuries by Calendar Year 1990 – 2013 (431 deaths)**



- The numbers of fatal farm injuries per year have decreased as the farm population has decreased. However when the absolute numbers are adjusted for the decline in the farm population there has been no change in the rate of fatal injuries as demonstrated in Figure 1.
- The average annual number of fatal injuries for the period from 1990 to 2004 was 21.6 compared to 12.8 for the last ten year period from 2004-2013.

**Figure 3: Average annual age-specific Rate\*, 1990-2013**

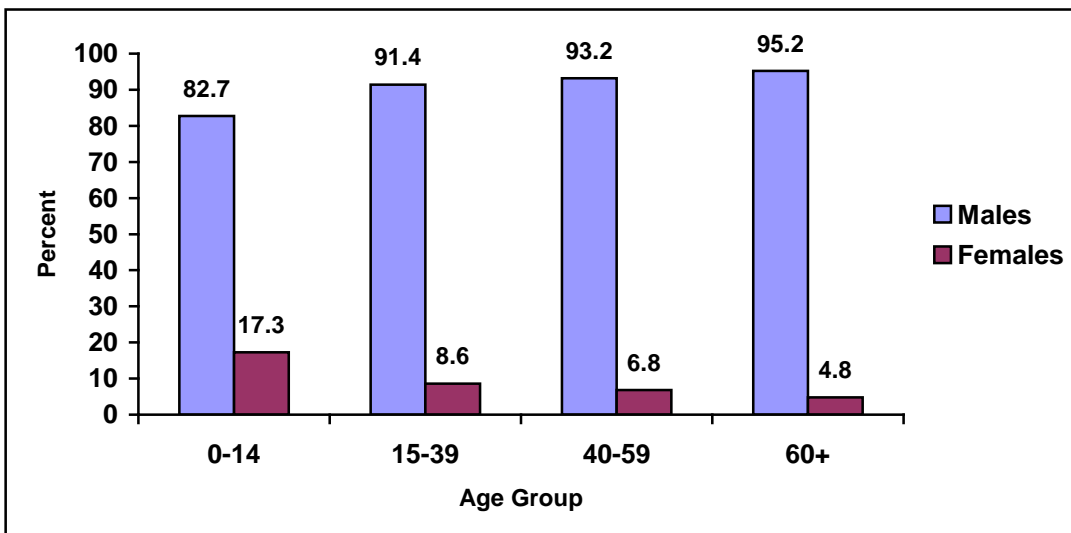


\*Average Annual Age-specific Rate per 100,000 Farm Population, 2001 Population Census and Census of Agriculture, Statistics Canada

- The average annual rate of fatal farm injuries increases with increasing age. There is a sharp increase observed for persons 70+ years old.

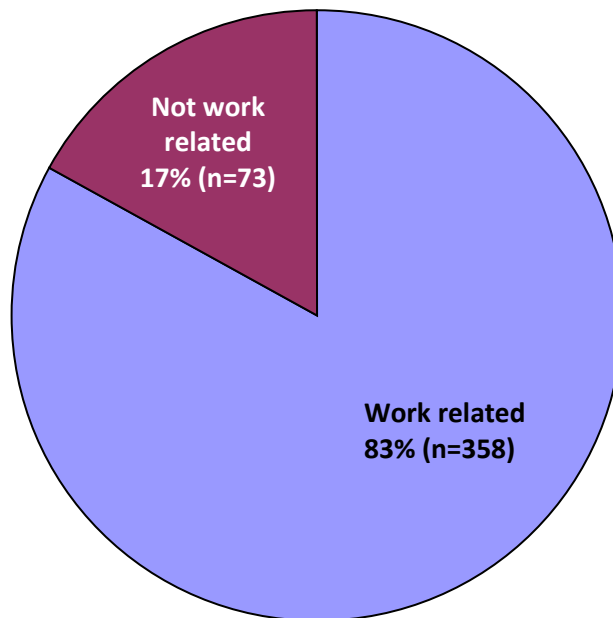


**Figure 4: Distribution of fatal farm injuries by age group and sex, 1990-2013**



- Fatal farm injuries occur primarily among males.
- The overall male to female ratio is 12 males to 1 female. The ratio is lowest among the youngest age groups (4.5:1) and highest in the oldest age group (20:1)

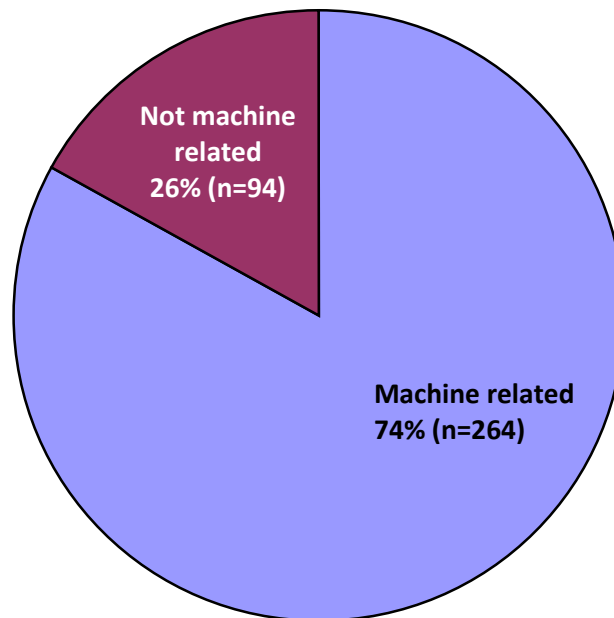
**Figure 5: Distribution of fatal farm injuries by work status, 1990-2013 (431 cases)**



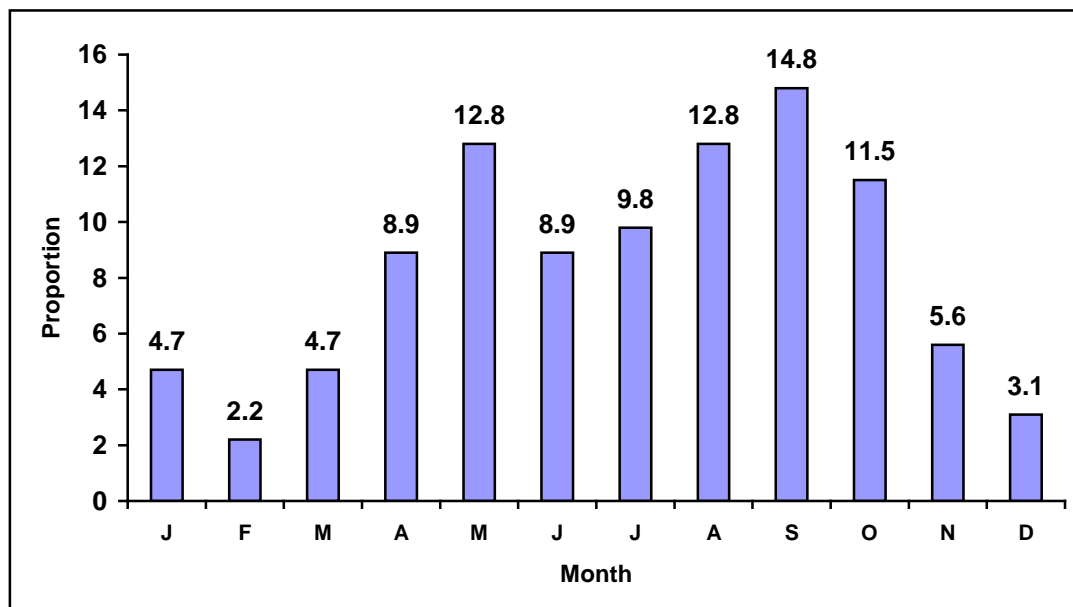
- Work related injuries are those that occurred during farm work activities on or off the farm.
- Not work related injuries are those that occurred as a consequence of exposure to a hazard of the farm environment.

## FATAL FARM WORK RELATED INJURIES

**Figure 6: Distribution of fatal work related injuries by major mechanisms, 1990-2013 (358 deaths)**



**Figure 7: Fatal work related injuries by month of the year, 1990-2013 (358 deaths)**

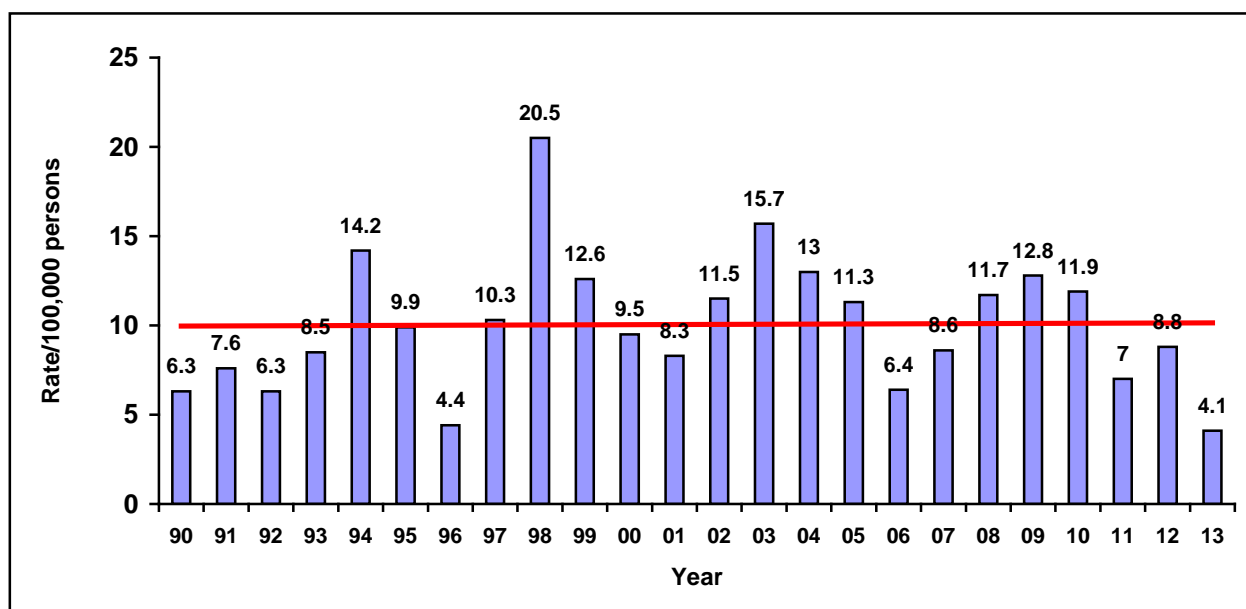


- 80% of farm work related fatalities occurred during the growing season from April to October with peaks during seeding and harvest activities.

**Table 2: Leading mechanisms of fatal work related injury by age group (358 deaths)**

0-14 years (n=33)	15-39 years (n=72)	40-59 years (n=105)	60+ years (168)
Passenger fell from machine then runover (9)	Machinery Rollover (14)	Entangled in moving machinery parts (16)	Dismounted machinery operator runover by machine (21)
Machinery rollover (9)	Pinned or struck by machine component (10)	Machinery rollover (12)	Machinery runover of bystander (13)
Machinery runover of bystander (7)	Machinery vs traffic collision (10)	Machinery vs traffic collision (12)	Machinery rollover (13)
Other machinery related causes (8)	Other machinery related causes (20)	Other machinery related causes (41)	Other machinery causes (53)
Other non machinery causes (5)	Other non machinery causes (18)	Other non machinery causes (25)	Other non machinery causes (47)

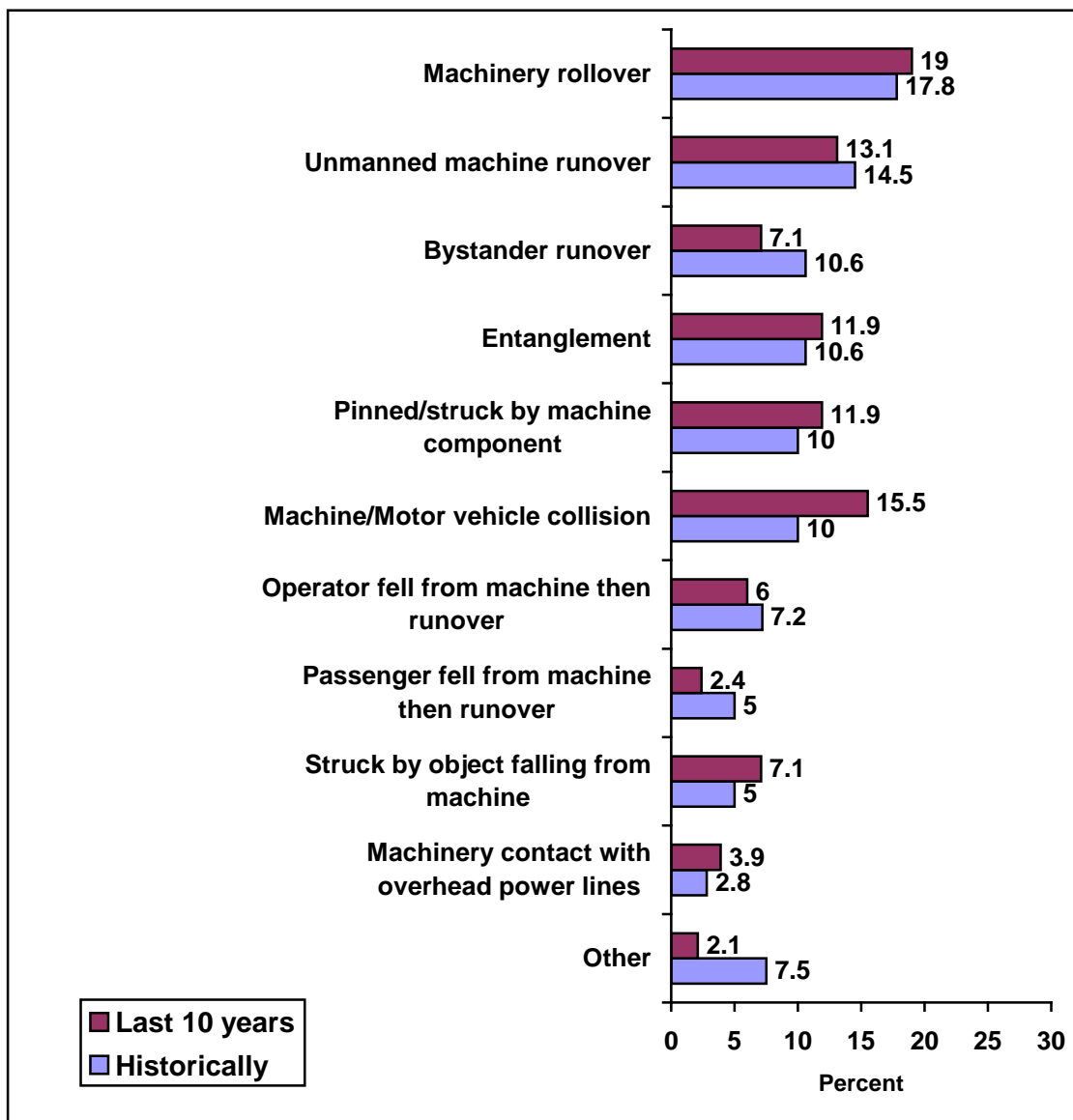
**Figure 8: Age-adjusted annual rate of work-related fatalities by year, 1990-2013 (358 deaths)**



- The figure demonstrates that there has been very little change in the rate of farm work related injuries during the time period. In view of the small numbers involved rates should be viewed with caution.

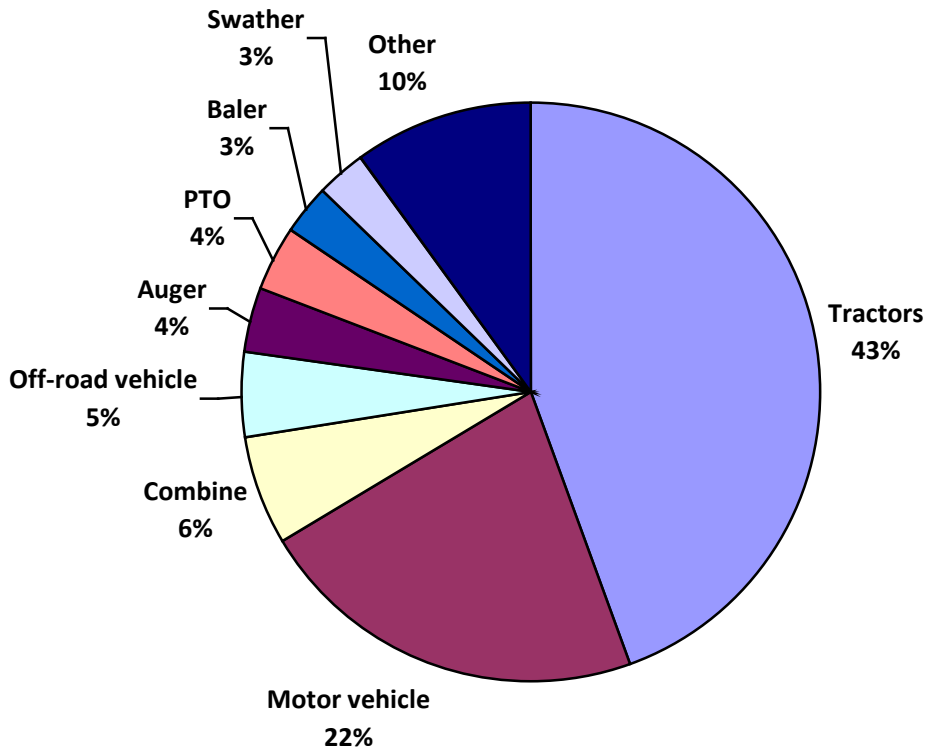
## FATAL FARM WORK INJURIES INVOLVING MACHINES

**Figure 9: Mechanisms of fatal injury involving farm machinery and vehicles (n=264 deaths)**



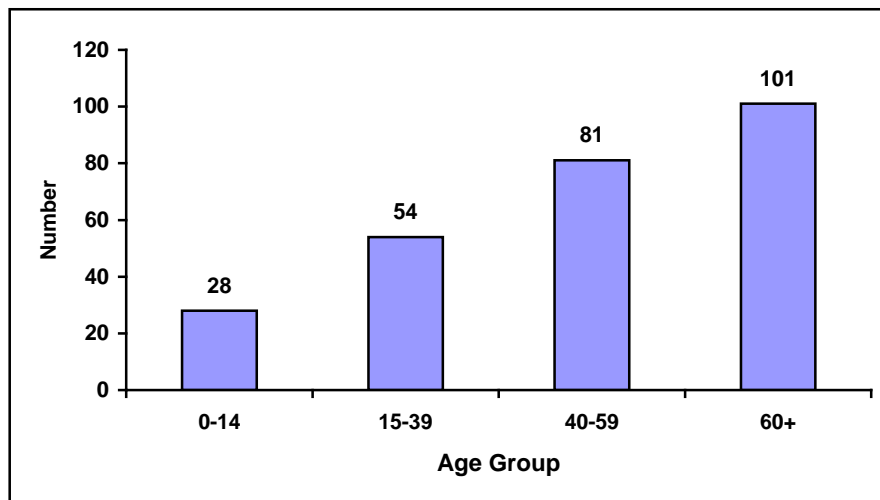
- In recent years machine/motor vehicle collisions have emerged as the second most frequent cause of fatal work related events. This may reflect the changes in grain transport methods as well as the increasing size of farm machines during the last decade.
- Machinery rollover events continue to be the most prevalent mechanisms of injury. These primarily involved tractors during transport and grain trucks during transport.
- Run over of bystanders most frequently involved children younger than 6 years of age and persons older than 60 years of age.
- Machinery entanglements occurred most frequently among persons ages 20 to 59. The machines most frequently involved were balers, combines and power take offs.

**Figure 10: Types of machines involved in fatal injury events (264 deaths)**

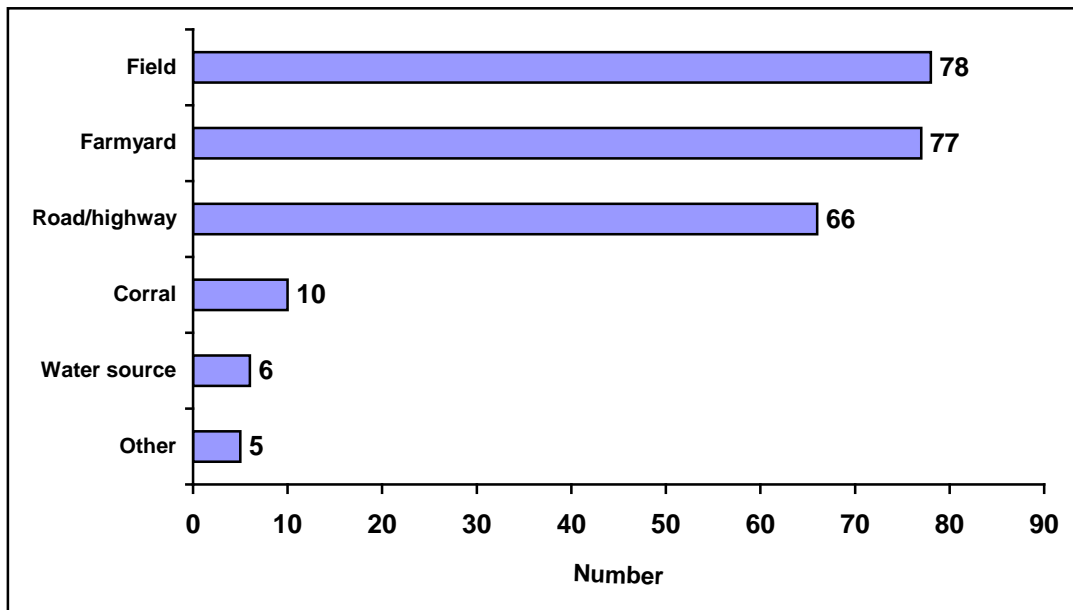


- The category of tractors includes bob cats, skid steers and tractors with front end loaders. Events involving tractors account for almost half of all fatal machine events.
- Motor vehicles were primarily grain trucks including semitrailer trucks, 3 ton trucks and half ton trucks.
- Off-road vehicles were dirt bikes, ATV's and snowmobiles.

**Figure 11: Work related Machine fatalities by age group, 1990-2013 (264 deaths)**

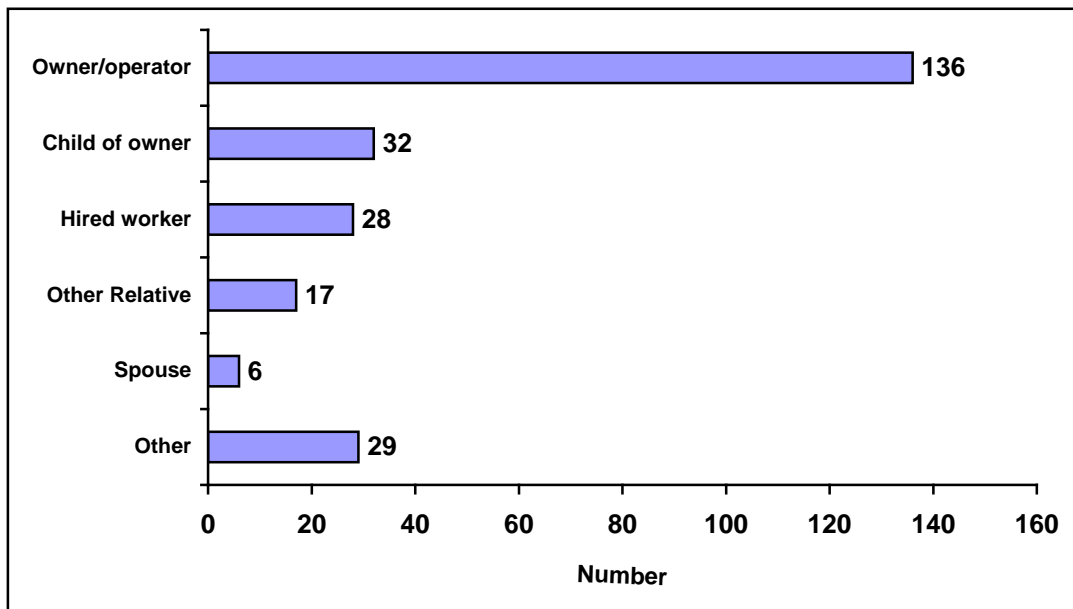


**Figure 12: Work related machine fatalities by location, 1990-2013 (242/264 deaths)**



- 64% of work related fatal machinery injuries occur in the farmyard and the field.
- Fatal events occurring on the roads and highways are the third most common location.

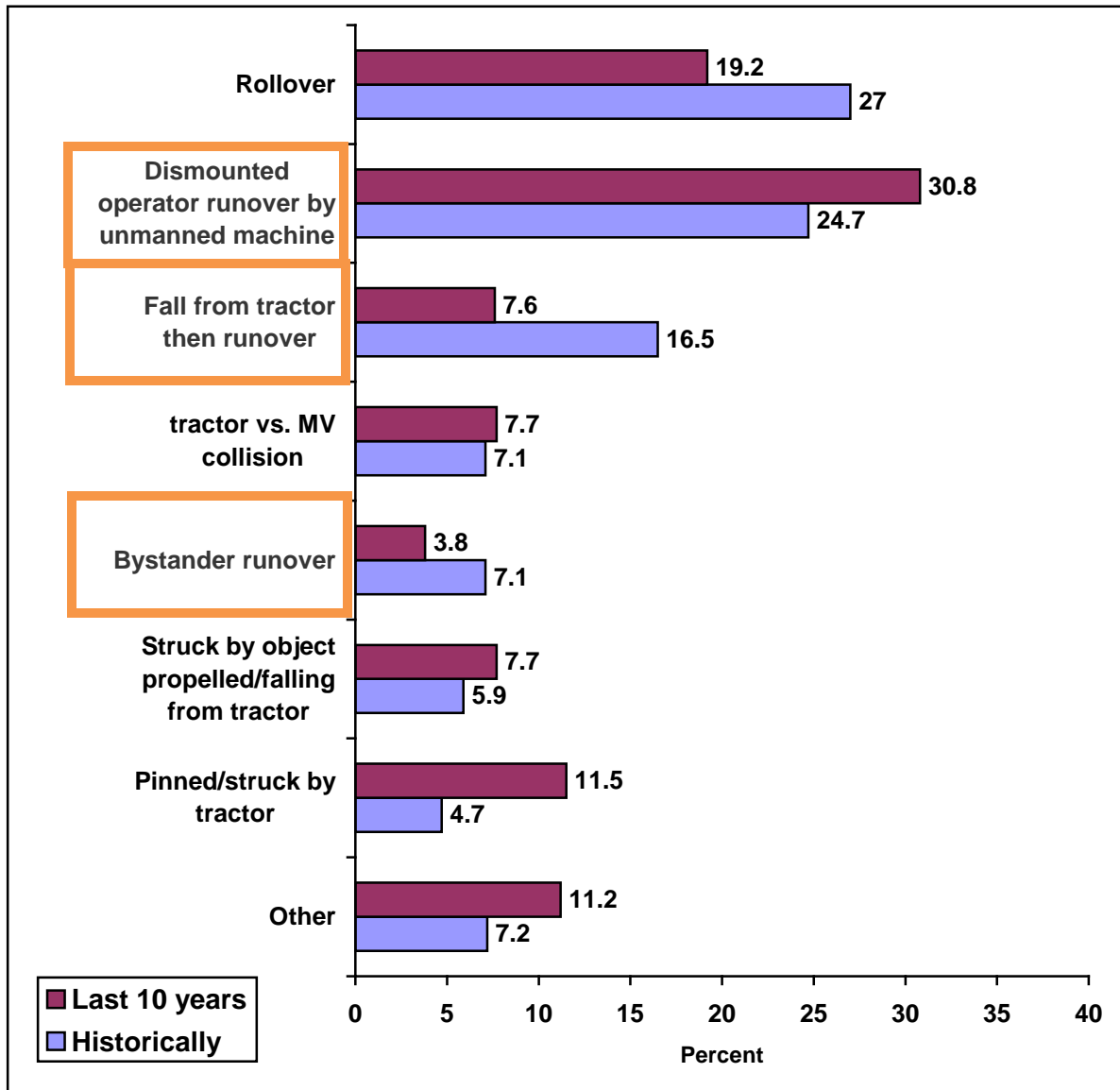
**Figure 13: Work related machine fatalities by relationship to farm owner, 1990-2013 (249/264 deaths)**



- Of those who are killed in work-related machine fatalities 52% are the farm operator.
- Children of the farm operator account for 13% of those killed (this also included adult children).
- Hired workers account for 12% of those killed (this also included workers employed by custom services being provided on farms)

## FARM WORK INJURIES INVOLVING TRACTORS

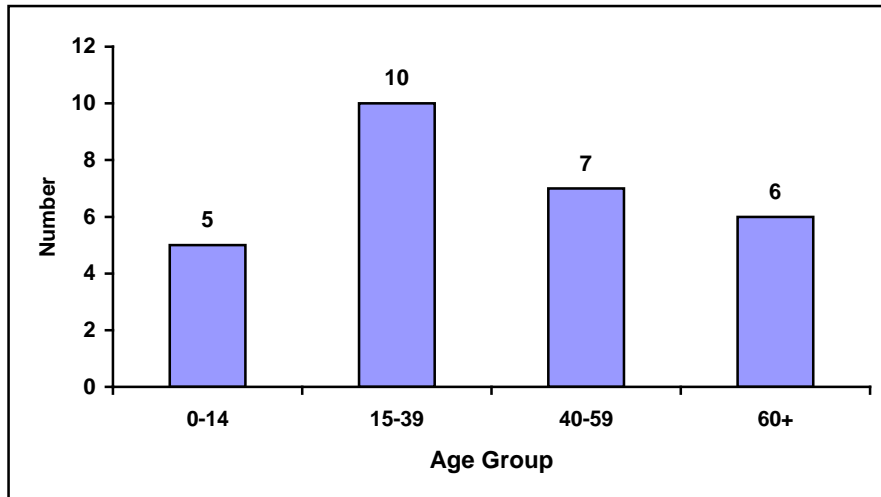
**Figure 14: Work related tractor fatalities by mechanism of injury, 1990-2013 (111 deaths)**



This graph demonstrates that the patterns of injury have changed somewhat when historical data are compared to the last 10 year period.

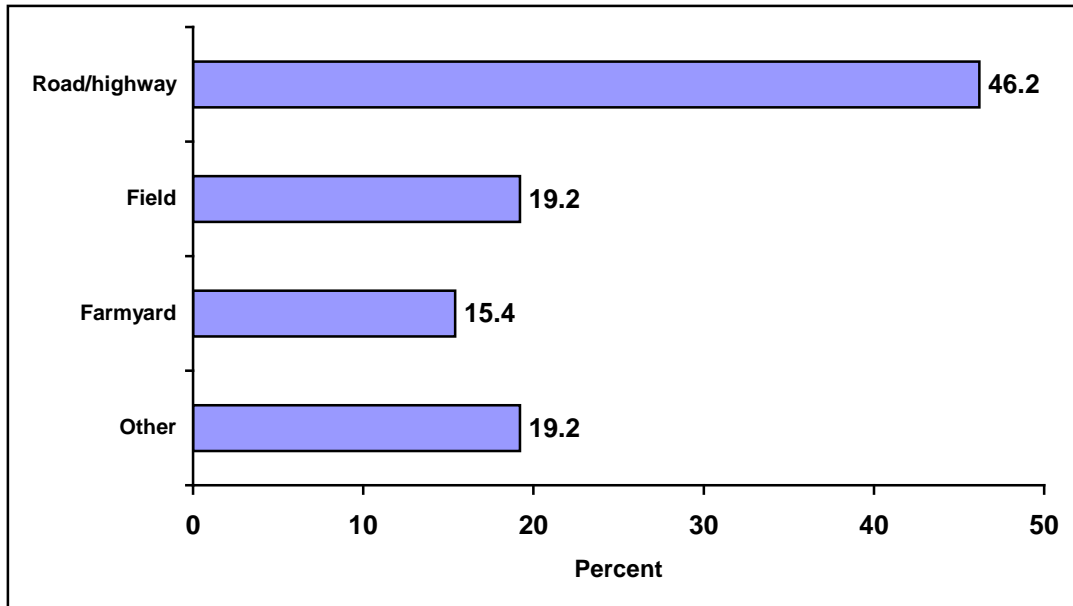
- Rollover and runover events are the by far the most common mechanisms of injury when tractors are involved.
- When all runover mechanisms (orange boxes) are combined they account for 48% of all tractor fatalities.

**Figure 15: Work related tractor rollover fatalities by age group 1990-2013 (28 deaths)**



- Among those killed in tractor rollover events 36% were in the 15-39 years age group.

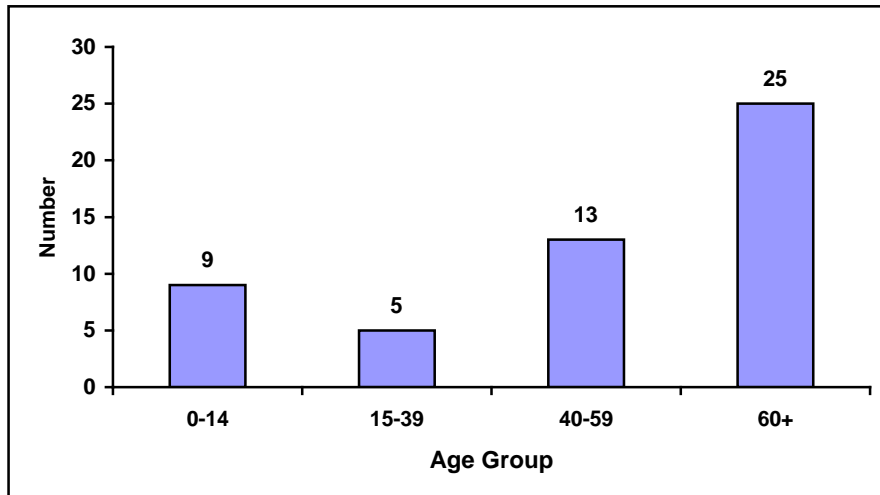
**Figure 16: Work related tractor rollover fatalities by location of rollover event 1990-2013 (28 deaths)**



- The most frequent type of rollover events were sideways rollovers.
- These occurred primarily along roadways and ditches during transport of the tractor from one location to another.
- Of those killed in tractor rollovers on roadways, 50% (6/12) were operators between the ages of 13 and 19 years old.

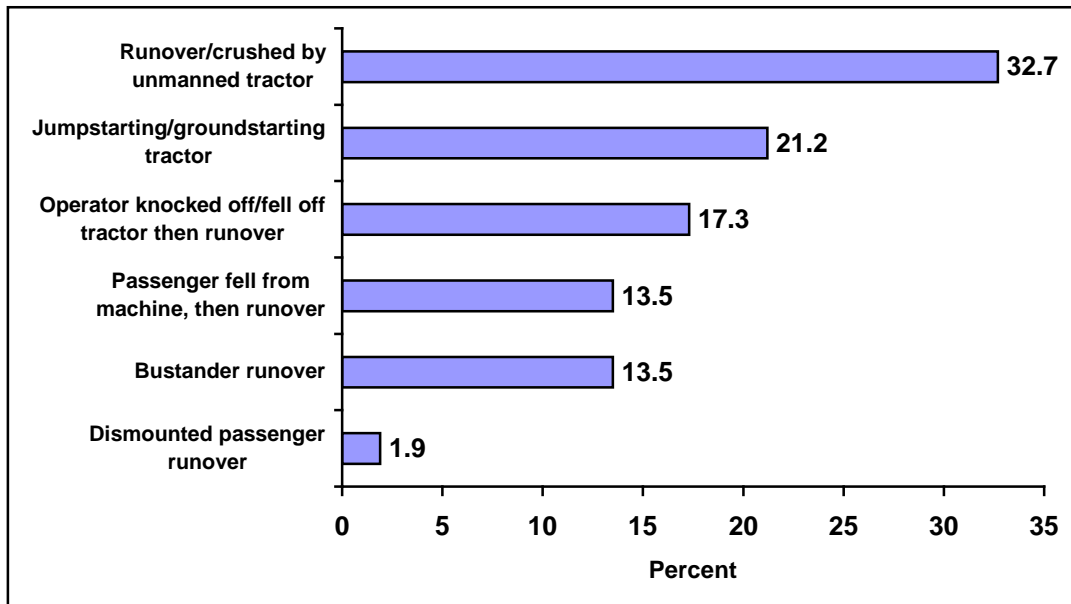


**Figure 17: Work-related tractor run over fatalities by age group 1990-2013 (52 deaths)**



- Among those killed in tractor rollover events almost half, 48% were the 60+ age group.
- It is important to note that 17% of the total group were children 0 – 14 years of age and of these 75% were less than five year old.

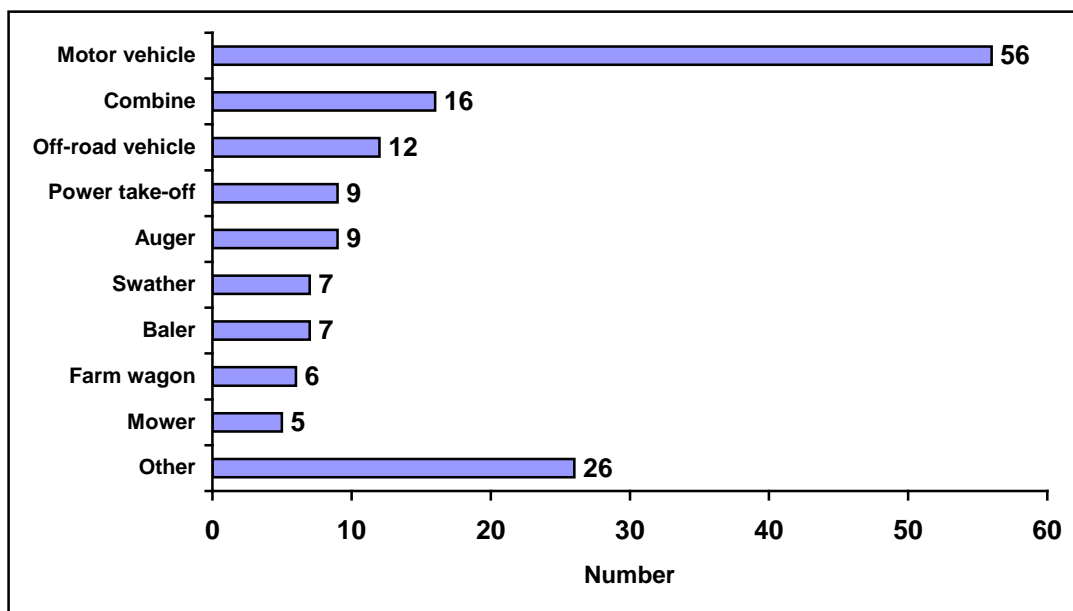
**Figure 18: Work related tractor runover fatalities by type 1990-2013 (52 deaths)**



- There are distinct activities in tractor use that lead to run over fatalities. These are described in the figure above.
- The most common type occurs when the operator of a tractor gets out of the tractor cab while the tractor is running. Typically the tractor slips into gear or creeps forward or backward running over the operator or crushing him/her between the tractor and another stationary object.
- 80% of those killed when a passenger (extra riders) fell from a machine and was run over were children less than 15 years of age.
- Of those killed while jumpstarting or ground starting a tractor, 72% were older than 60 years of age.

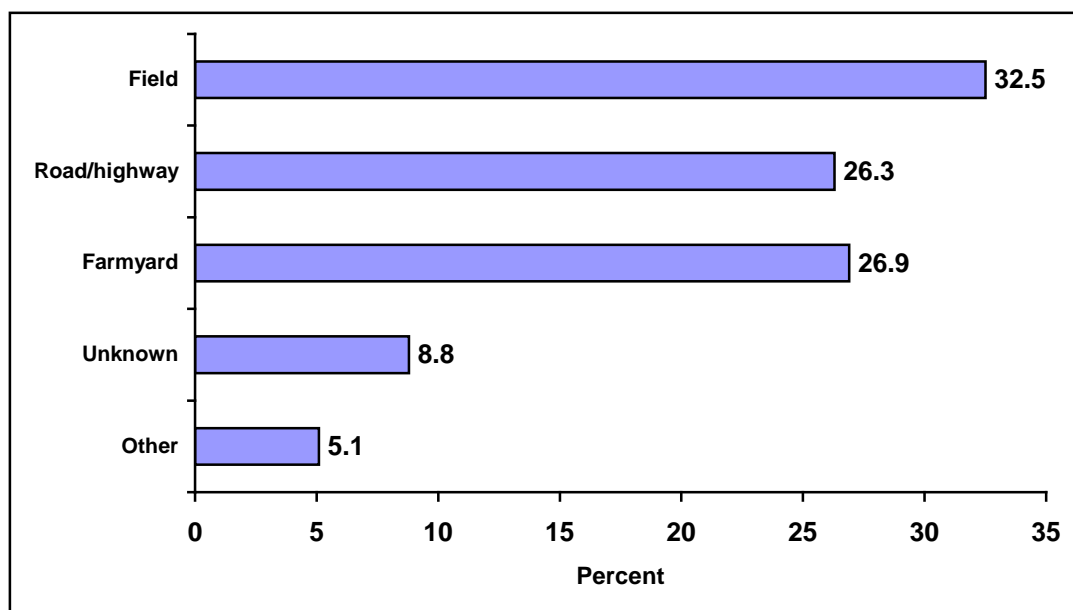
## FARM WORK INJURIES INVOLVING NON-TRACTOR MACHINES

**Figure 19: Work-related non-tractor machine fatalities by machine type, 1990-2013 (153 deaths)**



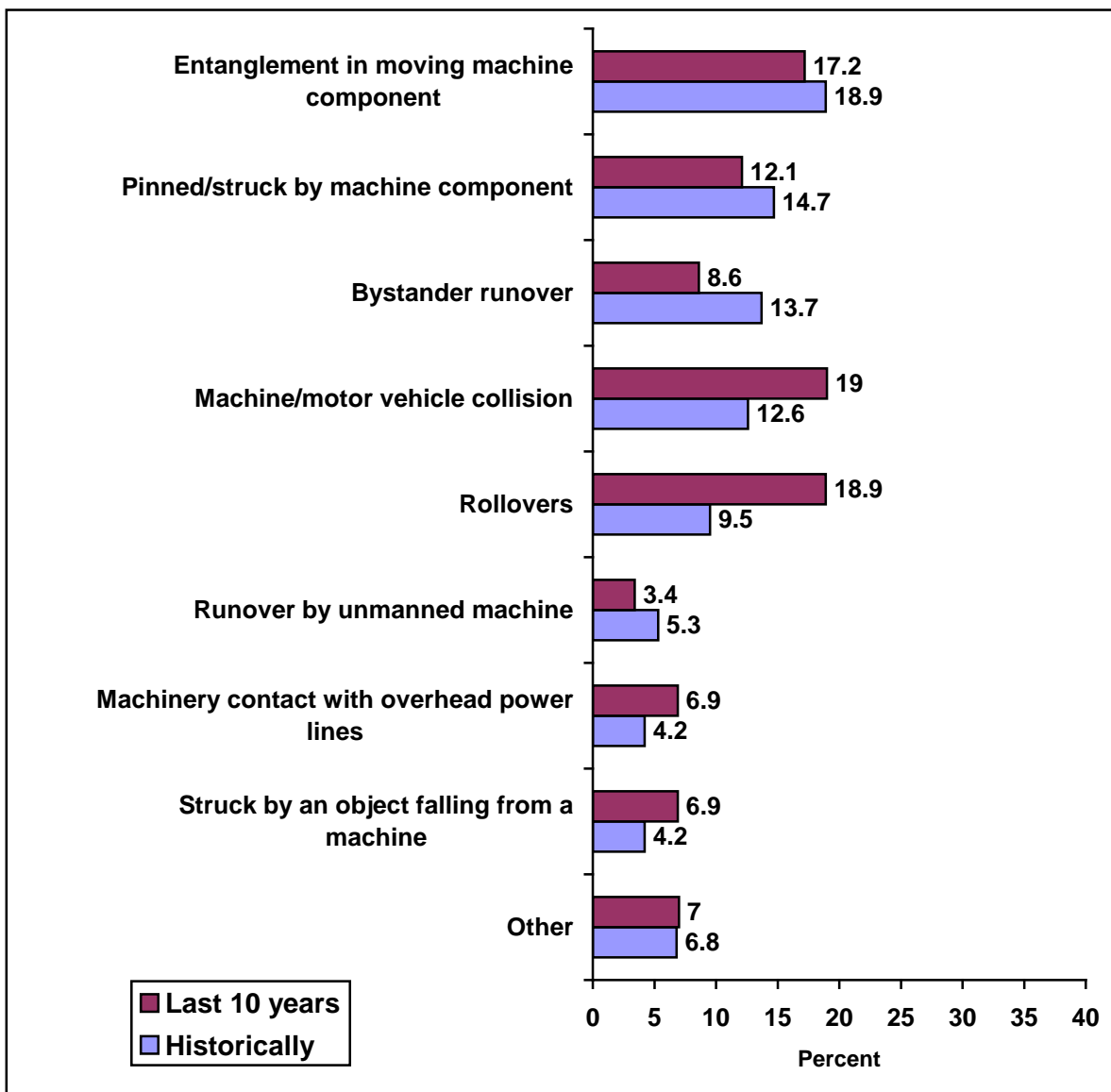
- In the group of non-tractor machines, motor vehicles were the machine most commonly involved.
- The group labelled “other” includes but is not limited to cultivators, power tools, chainsaws, aircraft, rock pickers.

**Figure 20: Work-related non-tractor machine fatalities by location of injury event, 1990-2013 (153 deaths)**



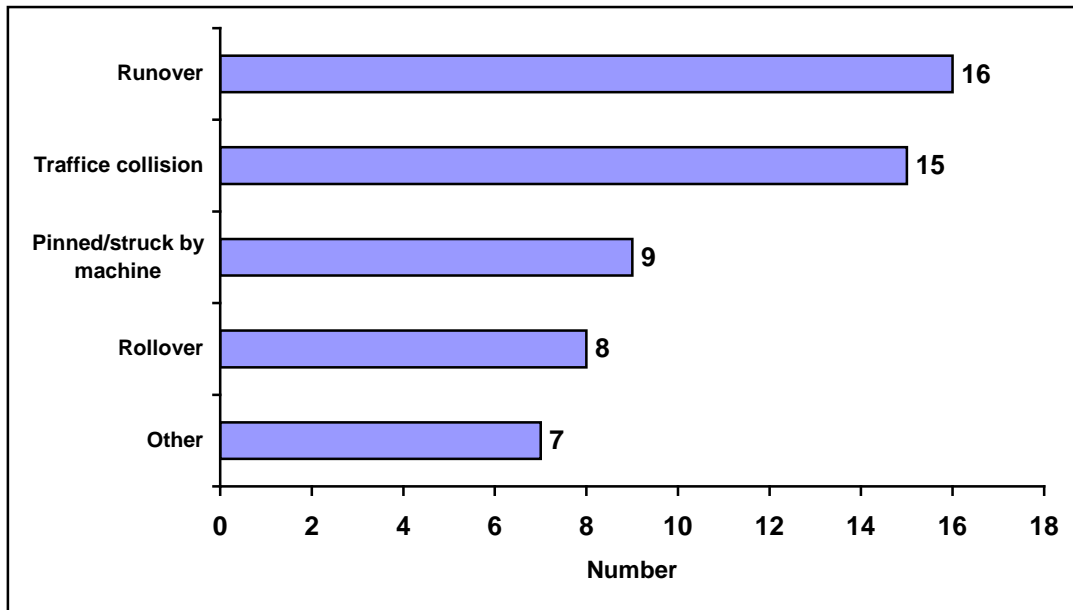
- The field and roads/highways are the most frequent location of these fatal injury events. This pattern is similar to that observed for tractors (see Figure 8)

**Figure 21: Work related non-tractor machine fatalities by mechanisms of injury, 1990-2013 (153 deaths)**



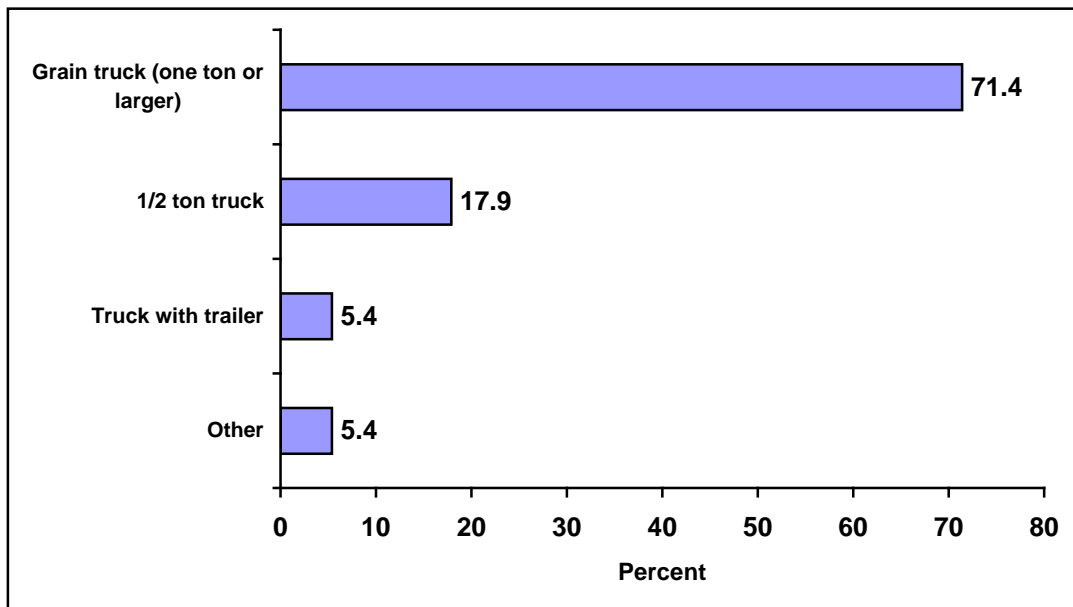
- As can be seen in the graph the leading causes of injury have changed when the past ten years (2004-2013) are compared to the historical data (1990-2003).
- Overall machinery entanglements are the most common type of non-tractor injury event. The machines most commonly involved were power take offs and balers accounting for 51% of events.
- Machine/motor vehicle collisions occurred on public roads and most commonly involved the transport of large equipment or grain trucks. Often the victim was in the non-farm vehicle.
- Rollover events most commonly involved trucks and ATVs.

**Figure 22: Work-related motor vehicle fatalities by mechanism of injury, 1990-2013 (56 deaths)**



- The leading mechanisms of injury involving motor vehicles were run over of bystanders and traffic collisions.
- Rollovers accounted for 14% of the deaths. These occurred during transport of grain or bales in large trucks.
- The “other” category included entanglements, extra rider runovers, dismounted operator runovers, struck by object falling from machine and machines in contact with overhead powerline.

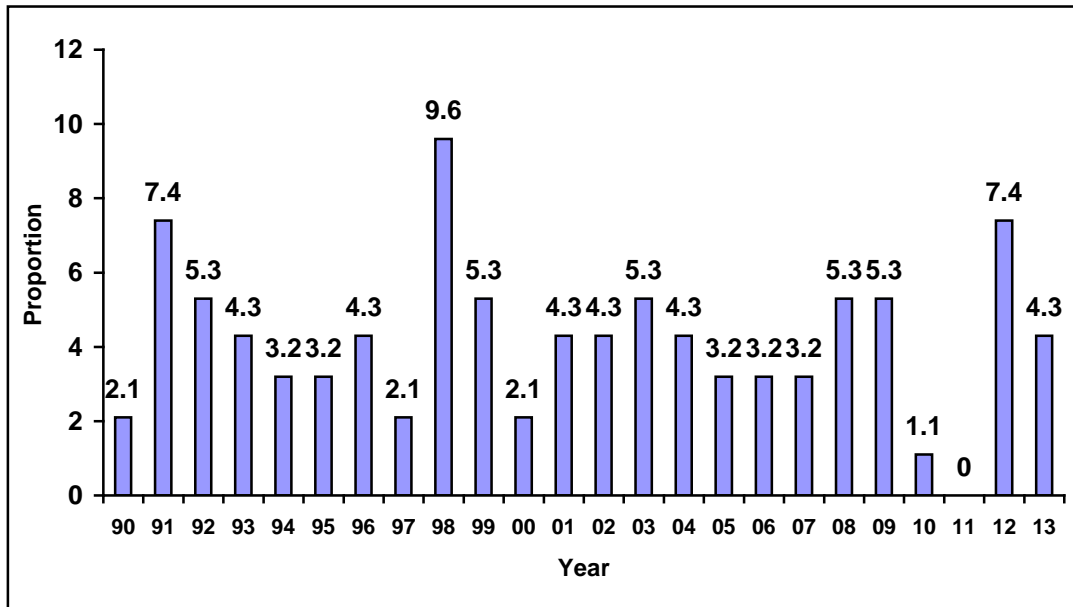
**Figure 23: Work-related motor vehicle fatalities by type of vehicle, 1990-2013 (56 deaths)**



- Grain trucks (including semi-trailers) were the most common type of truck involved in work-related farm fatalities.

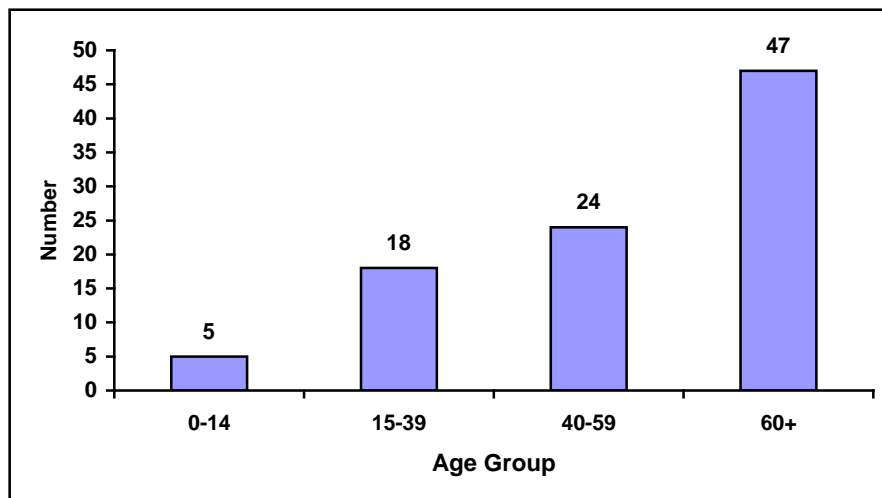
## FARM WORK INJURIES – NOT MACHINE RELATED

**Figure 24: Work-related non-machine fatalities by year, 1990-2013 (94 deaths)**



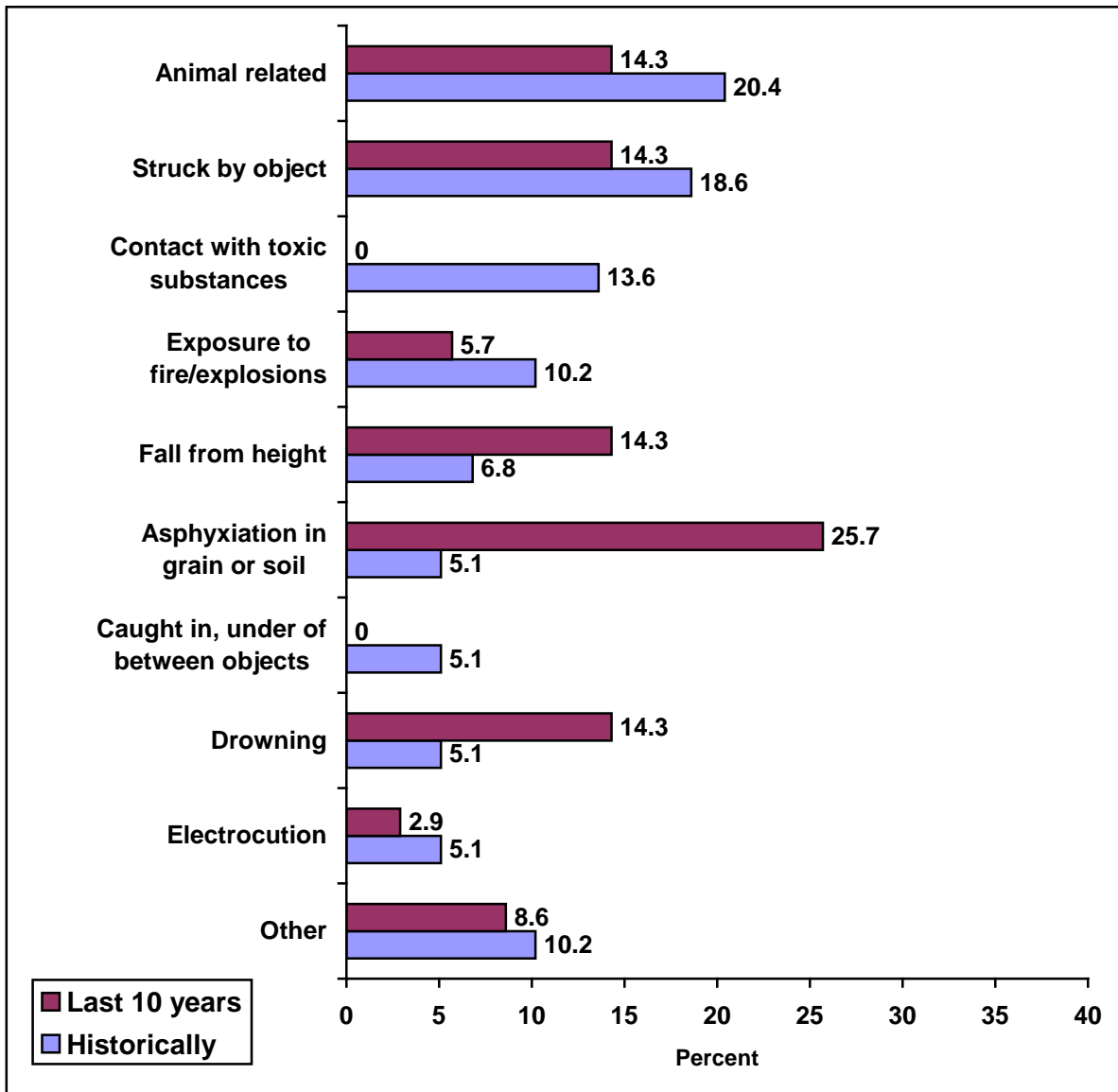
- Due to the small number of non-machine work related fatalities each year it is difficult to determine if the rate of these types of deaths are changing over time.
- The number per year ranges from a low of 0 to a high of 9 in 1998.
- The average annual number of fatalities of this type was 4 deaths per year for the period.

**Figure 25: Work-related non-machine fatalities by age group, 1990-2013 (94 deaths)**



- Persons in the oldest age group represent the majority of those involved in non-machine related deaths.
- Males represented 89% of those killed in these injury events.

**Figure 26: Work-related non-machine fatalities by mechanism of injury, 1990-2013 (94 deaths)**



- As can be seen in the graph the leading causes of injury have changed when the past ten (2004-2013) years are compared to the historical data (1990-2003).
- Animal related injuries (n=17) are the most common type of injury event. The animals most commonly involved are beef cattle accounting for 75% of cases.
- Being struck by an object was the next most common type of injury event accounting for (n=16) cases. The object most often involved was large round bales.
- Asphyxiation in grain or soil was the cause of the third most common type of event accounting for (n=12) cases. Asphyxiation in grain occurred in 8 cases and the remainder occurred in events where a trench wall collapsed.
- In cases caused by contact with a toxic substance the agents involved were hydrogen sulfide gas or carbon monoxide gas.

## FARM WORK INJURIES – NOT WORK RELATED

Figure 27: Not work related fatalities by major cause, 1990-2013 (73 deaths)

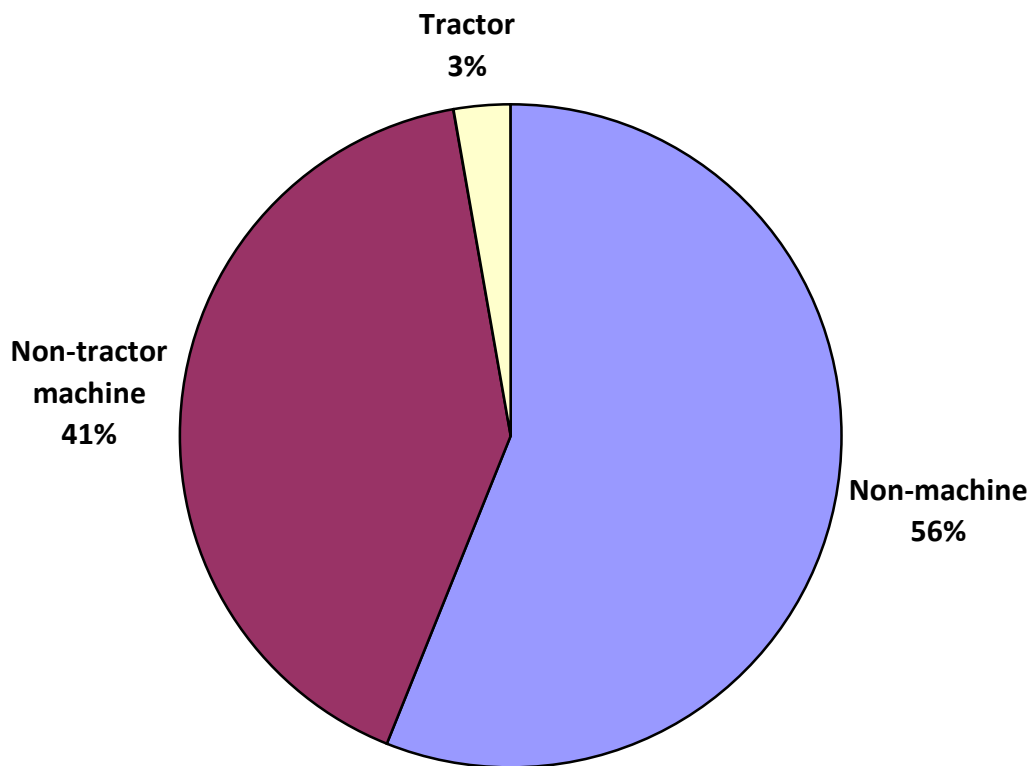
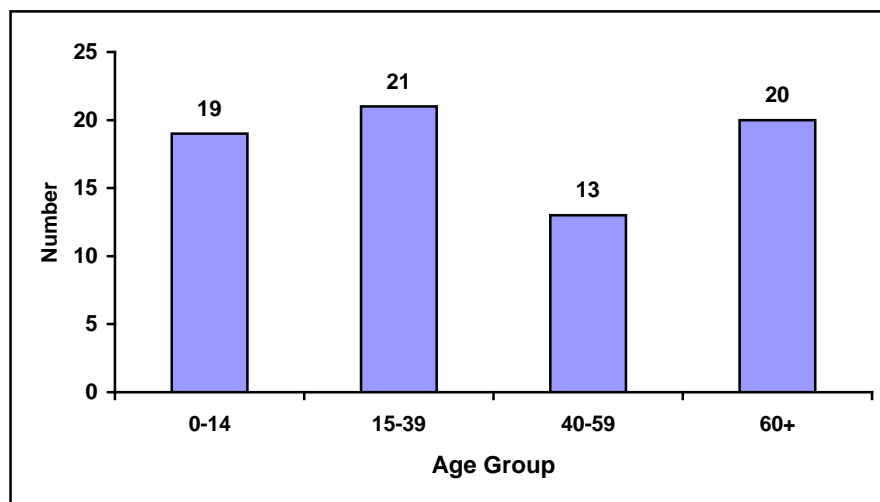
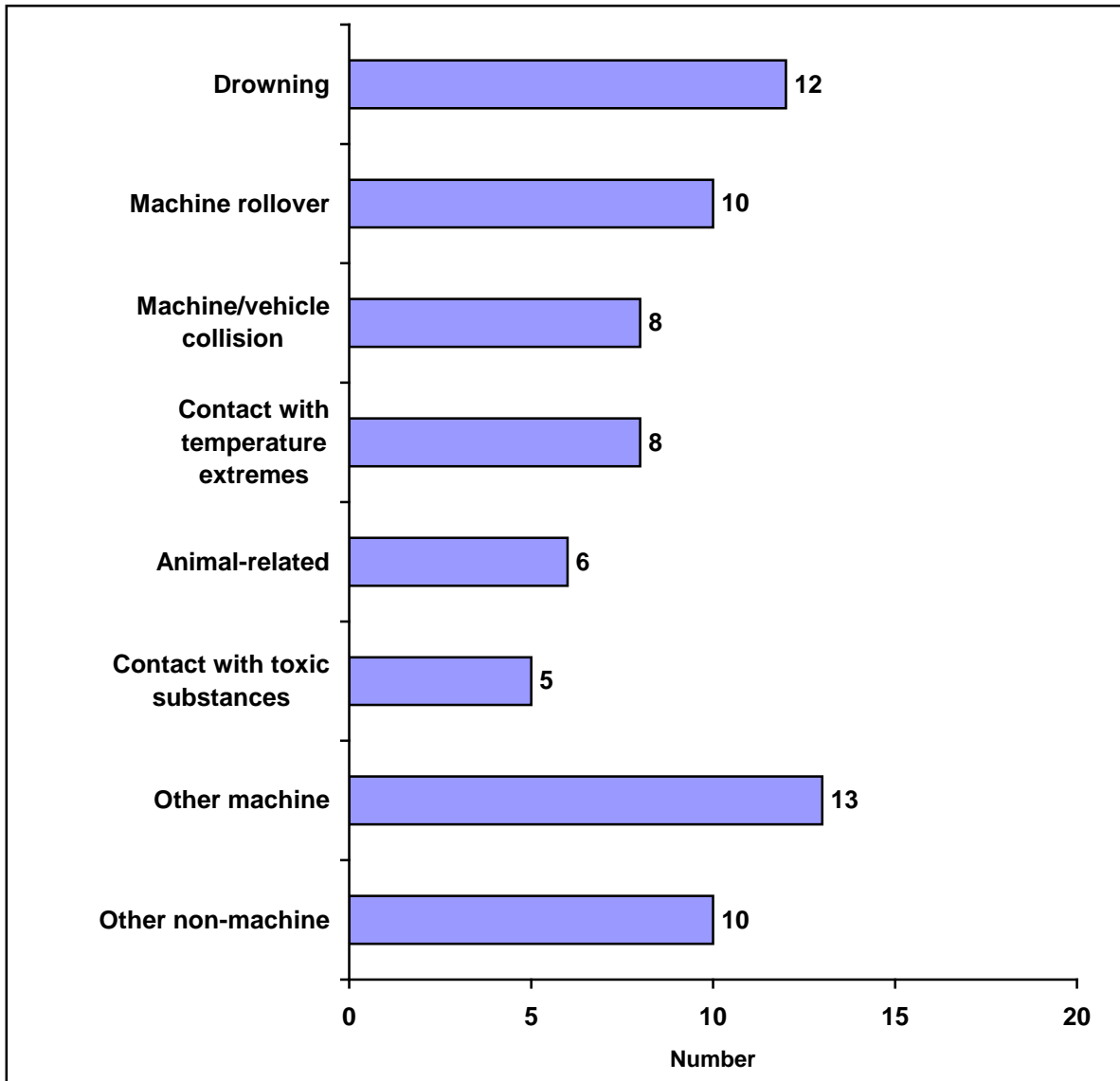


Figure 28: Not work related fatalities by age, 1990-2013



**Figure 29: Not work related fatalities by mechanism of injury 1990-2013 (73 deaths)**



- The patterns of injury associated with not work related fatal injuries on farms is quite different than for work-related injuries.
- Drowning in farm dugouts and ponds is the most common fatal event. These include primarily children and elder farmers and persons of both genders.
- Machine rollovers and traffic collision are the next most common mechanisms. Events involving half ton trucks and ATVs account for almost all of the events.
- Deaths due to exposure were also identified. These occurred primarily among older males with impaired mobility.
- Of those killed in these events 58% were the farm owner/operator and 24% were the children of the owner operator.



# APPENDIX A

## Mechanism of Injury Definitions

### *Non-Machinery Injuries*

#### Animal-related injuries

- 1            **Crushed by / struck by animal**  
*Includes being kicked by animal*  
*Example #1: victim rides horses, falls off, and horse falls on him, crushing him.*  
*Example #2: victim was kicked by a bull.*
  
- 2            **Other animal**  
*Example: The victim was attacked by the dogs at the farm. The dog bites penetrated her neck causing severe bleeding. She died of her injuries.*
  
- 3            **Fall from animal**  
*Example: victim falls off horse, striking his head on the ground.*

#### Struck By injuries

- 4            **Struck by object**  
*Includes:        The object was moving and struck against the    person;*  
*Flying object;*  
*Swinging or slipping object;*  
*Rolling, sliding object on floor;*  
*Falling object during handling;*  
*Falling object, Not Elsewhere Classified;*  
*Struck by, Not Elsewhere Classified.*  
*Excludes:        Being struck by an object (e.g. bale or log) while hoisting it or unloading*  
*it from a machine (e.g. tractor with front end loader or truck trailer / flat*  
*deck).*
  
- 5            **Struck against object**  
*Includes:        Person was moving and struck against the    object;*  
*Struck against moving object;*  
*Step on stationary object;*  
*Struck against stationary object;*  
*Struck against, Not Elsewhere Classified.*

#### Caught-in injuries

- 6            **Caught in, under, or between objects**  
*Includes:        Compressed / pinched by rolling, sliding / shifting objects;*  
*A moving and a stationary object;*  
*Two or more moving objects;*

*Land slides and cave-ins (e.g dirt trenches);  
Collapsing materials;  
Caught in (buried in ) grain;  
Caught in, under, or between, Not Elsewhere Classified;  
Crush asphyxiations;*

*Excludes: Being caught under an object (e.g. bale or log) that has fallen from a machine(e.g. tractor with front end loader or truck trailer / flat deck) while hoisting or unloading the object. See Machine **Mechainj #18***

## **Fall injuries**

**7**            **Fall from height**  
*Includes:      From scaffolds, walkways, platforms, etc.;  
                    From ladders;  
                    From roof;  
                    From piled or stacked materials;  
                    On stairs or steps;  
                    Into shafts, excavations, floor openings, etc.;  
                    Through floor surface;  
                    From ground level to lower level;  
                    Fall from elevation, Not Elsewhere Classified.*

**8**            **Fall on same level**  
*Includes:      Fall to the walkway or working surface;  
                    Fall onto or against objects;  
                    Fall on same level, Not Elsewhere Classified.*

## **Other injuries**

**9**            **Jumped to lower level**  
*Includes:      From scaffold, platform, loading dock;  
                    From structure, structural element, Not Elsewhere Classified;  
                    From stationary vehicle;  
                    To lower level, Not Elsewhere Classified.*

**10**           **Overexertion**  
*Includes:      In lifting objects;  
                    In pulling or pushing objects;  
                    In holding, wielding or throwing objects;  
                    Overexertion, Not Elsewhere Classified.*

**11**           **Drowning in water**  
*Includes:      drowning in Manure Pit, Ditch, Dugout, Pond Other water bodies.  
Excludes:      Drowning due to flowing grain, silage, soil. See # 6 Caught in, under or  
                    between objects.*

**12**           **Exposure to fire / explosions**

*Includes:* Fire in building or other structure including bunk house for hired workers;  
Forest, brush, grass, or other outdoor fire;  
Ignition of clothing from controlled heat source; Explosions.

*Excludes:* Fire in farm residence, as injuries occurring in farm home / residence are excluded from database;  
Fires in machines.

**13 Contact with temperature extremes**

*Includes:* General heat – atmospheric or environmental;  
General cold – atmospheric or environmental;  
Hot objects or substances;  
Cold objects or substances;  
Contact with temperature extremes, Not Elsewhere Classified.

*Excludes:* Contact with hot objects or substances coming from machines (e.g. radiator fluid).

**14 Contact with electric current**

*Excludes:* Overhead electrocution with grain auger; Struck by lightning.  
See “other”

**16 Contact with radiation, caustic, toxic or noxious substances or environments (specify)**

*Includes:* Pesticides (includes herbicides, fungicides, insecticides, rodenticides, etc.); Silo gas (nitrous oxides); Manure pit gases (methane, hydrogen sulfide gas); Carbon monoxide; Insect stings; Venom; Allergic reactions including anaphylaxis; Other toxic or noxious substances, Not Elsewhere Classified.

*Excludes:* Traumatic asphyxiation and asphyxiation due to entrapment in flowing grain, silage or soil. See #6 or #11.

**19 Firearms**

*Includes:* injuries due to being shot by a gun.

***Machinery related Injuries***

**1 Sideways rollover**

*Includes:* Deaths caused by a machine / vehicle rolling over on its side and crushing the victim as it rolled. Usually the victim was operating or riding on the machine.

*Excludes:* Deaths caused by being run over by an upright machine. See # 7 through #13.

**2 Backwards rollover**

*Includes:* Death caused by a machine rolling backwards, that is the front tires of the machine rotate around the rear axle of the machine causing it to land on its top

*Excludes:* Death due to being run over by an upright machine. See #7 through #13

**3 Unspecified rollover**

*Includes:* machine rollover events where the direction of the roll (sideways or backwards) is not clear or where the vehicle rolled end over end.

*Exclude:* Death due to being run over by an upright machine. See #7 though #13

**4 Entangled or caught in moving parts of machinery**

*Includes:* Any part of the body becoming trapped in the moving parts of a machine

**5 Pinned or struck by machine**

*Includes:* Being struck by a machine, but not runover;  
Being caught between two machines, but not runover;  
Being caught between a machine and another stationary object, but not runover;

*Excludes:* Being run over by a machine.

**6 Machine / motor vehicle Collision**

*Includes:* Collisions between farm machinery  
Collisions between farm machinery and other vehicles  
Collisions between farm trucks and other vehicles  
Collision between farm vehicle / machinery and stationary object

**7 Operator fell from machine, not runover**

**8 Operator fell from machine, then runover**

**9 Passenger fell from machine, not runover**

**10 Passenger fell from machine, then runover**

**15 Fall from machine, not runover, person unspecified**

*Applies when it is not known from the text description if the victim was the operator or a passenger on the machine.*

**16 Fall from machine, then runover, person unspecified**

*Applies when it is not known from the text description if the victim was the operator or a passenger on the machine.*

**11 Runover of operator**

*Runover of a pedestrian by a machine*

**12 Runover of passenger**

*Runover of a pedestrian by a machine*

**13 Runover of bystander**

*Runover of a pedestrian by a machine*

- 17 Runover of person, unspecified**  
*Applies when it is not known from the text description if the victim was the dismounted operator of the machine, a dismounted passenger or a bystander.*
- 18 Struck by object propelled or falling off machinery**  
*Includes: Being struck by or caught under an object (e.g. bale or log) while hoisting it or unloading it from a machine (e.g. tractor with front end loader or truck trailer / flat deck);  
Being struck by an object that was propelled by a machine (e.g. stone propelled from mower striking the victim; while towing a truck with a tractor the towing chain broke and struck the victim);  
Part(s) of a machine breaks and then strikes the victim (e.g. the belt of a grain auger breaks striking the victim; pins of front end loader break and front end loader falls off tractor striking the victim).*
- 21 Overexertion**  
*Includes: Overexertion injuries caused while moving, pushing, pulling, repairing machinery (e.g. back strain that occurred while moving a grain auger)*
- 22 Jump to lower level**  
*Includes: Injuries that occurred when the victim intentionally jumped to a lower level from a machine (e.g. jumped off the tractor, combine, truck, etc.)  
Excludes: Injuries that occurred due a slip or trip while mounting / dismounting a machine. See #7, 9 or 15.*
- 23 Struck against machine**  
*Includes: Injuries that occurred when the victim struck a body part against a machine (e.g. while repairing the combine, the victim struck his leg against a sharp metal protrusion causing a laceration that subsequently became infected).*