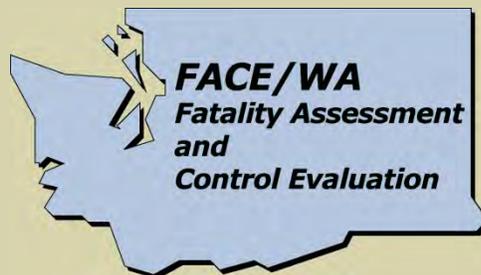


# Logging Related Fatalities in WA State, 1998-2008

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## Logging Related Fatalities in WA State, 1998-2008

According to the National Institute of Occupational Safety and Health (NIOSH), logging has consistently been one of the most hazardous industries in the United States (US). In 2007, the logging industry employed 101,000 workers, and accounted for 88 deaths. This resulted in a fatality rate of 87.1 deaths per 100,000 workers that year. This rate is over 23 times higher than the overall fatality rate in the US in 2007 (3.7 deaths per 100,000). This excessive risk for fatal work injuries points to a need for prioritizing research and intervention programs to make this industry less hazardous.

Data were compiled from Washington State Fatality Assessment and Control Evaluation (FACE) surveillance activities for the years 1998-2008. Fatalities were determined to be logging related based on the North American Industry Classification System (NAICS), the Standard Occupational Classification (SOC) system, and other details that indicate relationship of fatalities to logging. These data are unique to the FACE program and methods of collection and classification may differ from other data sources.

There were 67 total logging related fatalities in WA State from 1998-2008. The majority of logging related fatalities occurred to workers in the logging industry. Workers in the truck transportation industry made up 20% of logging related fatalities. Nearly all of the 67 total fatalities can be categorized into three types of incidents. These were struck by object, motor vehicle, and machinery incidents.

Washington State logging related fatalities peaked in 1999 with 14 and declined dramatically in 2000. From 2000, the number of fatalities increased and held relatively constant at 6-7 per year until 2006 when they started to decline. The decline continued until 2007.

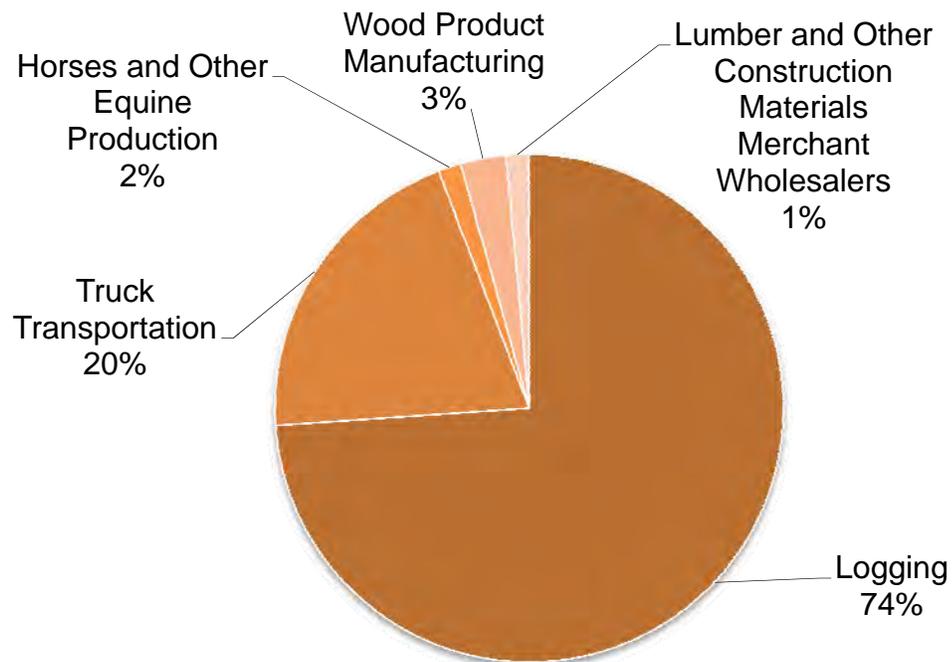
The trends in logging related fatalities were comparable to trends in logging dependent industries in WA State and the region during 1998-2008. Construction and wood products industries were operating at high levels of production in 1999 and suffered great declines in 2000. There was some economic recovery from 2000-2005 and more decline from 2005-2008.



## What were the trends in logging related fatalities by industry?

The following chart shows the distribution of logging-related fatalities by 3-digit North American Industry Classification System (NAICS) codes. Industry subdivisions of “timber tract operations” and “forest nurseries and gathering of forest products” were not included in this report. Fatalities in the logging industry accounted for three quarters of all logging-related fatalities. Those engaged in log hauling may have been classified in either the logging or truck transportation industry.

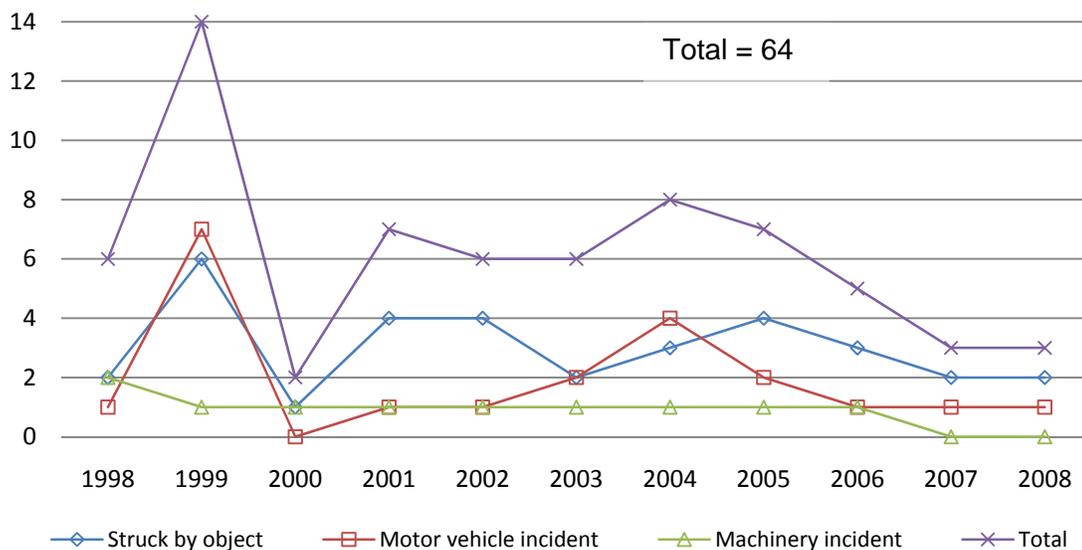
Logging Related Fatalities by NAICS Industrial Classification, WA State 1998-2008



## What were the trends in logging related fatalities by incident type?

The trends in fatalities by incident type over time are shown below. All but three of the 67 logging related fatalities were attributed to three incident types. These were “struck by object”, “motor vehicle”, and “machinery” incidents. The majority of fatalities can be attributed to being struck by objects and motor vehicle incidents each year. These two major incident types alternate as highest proportion of the total while machinery related fatalities remained relatively constant until declining to zero in 2007.

Logging Related Fatalities, Total and Incident Type, WA State 1998-2008



Three fatalities were omitted due to other incident classification



## How were the occupations and incidents related?

### Logging Fatalities by Occupation and Incident Type, WA State, 1998-2008

<b>Truck drivers, heavy and tractor-trailer</b>	<b>26</b>	<b>39%</b>
Log truck driver killed when vehicle leaves road	10	
Log truck driver struck by log falling off truck	5	
Log truck driver killed in crash in roadway	4	
Driver of water tanker killed when vehicle leaves road	2	
Gravel truck driver crushed between loader and stationary truck	1	
Log truck driver strikes head during fall while unloading logs	1	
Log truck ran into a tree after front axle broke	1	
Pickup truck collision	1	
Run over by unattended, parked truck	1	
<b>Logging workers, all others</b>	<b>18</b>	<b>27%</b>
Rigging slinger		
Struck by log	3	
Struck by log from helicopter sling	1	
Logging workers, all others		
Struck by log	3	
Struck by log loader	1	
Chaser		
Struck by loader	1	
Backed over by track log loader	1	
Struck by log at helicopter landing site	1	
Choker setter		
Struck by log	2	
Pinned by rolling log	1	
Cedar block cutter		
Cedar salvage worker was shot	1	
Crushed by slab	1	
Crew vehicle driver		
Logging crew vehicle driver struck by passing vehicle beside his truck	1	
Hook tender		
Struck by log	1	
<b>Fallers</b>	<b>15</b>	<b>22%</b>
Struck by tree being felled	6	
Struck by other tree during falling operations	5	
Struck by tree snag	2	
Crushed between two logs	1	
Crew truck rollover	1	
<b>Logging equipment operators</b>	<b>7</b>	<b>10%</b>
Log skidder rollover	3	
Log loader operator struck by falling tree	1	
Stationary pickup truck rolled onto operator	1	
Tree fell on skidder operator	1	
Crushed in log processing machinery	1	
<b>Paving, surfacing, and tamping equipment operators</b>	<b>1</b>	<b>1%</b>
Roller/compactor operator killed when machine overturns	1	
<b>Total</b>	<b>67</b>	<b>100%</b>

## What was the overall distribution of fatalities by incident type?

### Logging Related Fatalities by Incident Type, WA State 1998-2008

<b>Incident Type</b>	<b>Number</b>	<b>%</b>
Struck by falling object	29	43%
Motor vehicle incident	21	31%
Machinery incident	10	15%
Struck by or against object or person	4	6%
Fall	2	3%
Homicide	1	1%
Total	67	100%

## How were logging related workers killed in struck by incidents?

Most struck by object incidents included loggers being struck by falling trees. One involved a logger struck by the hood of a machinery engine compartment. Most motor vehicle fatalities involved logging trucks. Off highway motor vehicle incidents accounted for 14 fatalities, on highway incidents accounted for 5, and 2 were struck and killed by other vehicles while outside of their vehicles.

### Logging Related Struck by Object Fatalities, WA State 1998-2008

<b>Incident Type</b>	<b>Number</b>	<b>%</b>
Struck by falling tree	15	45%
Struck by rolling log	6	18%
Struck by log from sling	5	12%
Struck by log from truck	4	15%
Struck by truck	2	6%
Struck by machinery	1	3%
Total	33	100%

## How were logging related workers killed in motor vehicle incidents?

Logging Related Motor Vehicle Fatalities, WA State 1998-2008

<b>Incident Type</b>	<b>Number</b>	<b>%</b>
Vehicle loss of control and collision with off-road object or overturning	15	67%
Vehicle to vehicle collision	4	24%
Motor vehicle collision with pedestrian	2	9%
Total	21	100%

## What were the incident types within each age group of logging related workers?

The following table shows each age group divided into incident types. The data is categorized for each age group and not incident type therefore only rows sum to one hundred percent. In the 35-44 and 45-54 year old age groups, motor vehicle incidents were responsible for the highest percentage of fatalities. All other age groups suffered the highest percentage of fatalities in struck by object incidents.

Logging Related Fatalities by Percent Incident Type within Age Groups, WA State 1998-2008

<b>Age</b>	<b>Number</b>	<b>Struck by</b>		
		<b>Object</b>	<b>Motor Vehicle</b>	<b>Machinery</b>
18-24	12	58%	17%	25%
25-34	9	67%	22%	11%
35-44	12	33%	42%	25%
45-54	15	40%	47%	13%
55-65	10	60%	40%	0%
>65	6	67%	17%	17%
Total	64			

Three fatalities omitted due to other incident classification

## How can loggers avoid hazards?

### Hazards to tree fallers

**Danger trees**→ Dead, dying, or hung up danger trees must be removed or avoided.

On July 26, 2006, a faller had just cut down a fir tree and was in the process of bucking it when the top of a maple tree that had been in close proximity to the tree he had just felled struck and killed him.

### How to avoid this and similar hazards

- Before falling or bucking a tree, evaluate overhead hazards such as snags or leaning trees and take precautions.
- Identify and remove snags and danger trees and be on the lookout for falling objects.
- Communicate hazards like snags and danger trees to others.



## Hazards to log haulers

**Steep roads**→ Log roads are often steep and require cautious driving.

On May 27, 2008, the driver of a fully loaded log truck was killed when his vehicle veered off a steeply graded logging road and went down a steep embankment.

## How to avoid this and similar hazards

- Drive cautiously, especially on steep roads.
- Always wear a seatbelt.
- Maintain log trucks in serviceable condition.



## Hazards to machinery operators

**Steep terrain**→ Logging machinery is often used on steep and uneven terrain.

On August 29, 2003, the operator of a log skidder was skidding logs downhill when the engine stalled and he lost control of the skidder and it rolled downhill 230 yards.

## How to avoid this and similar hazards

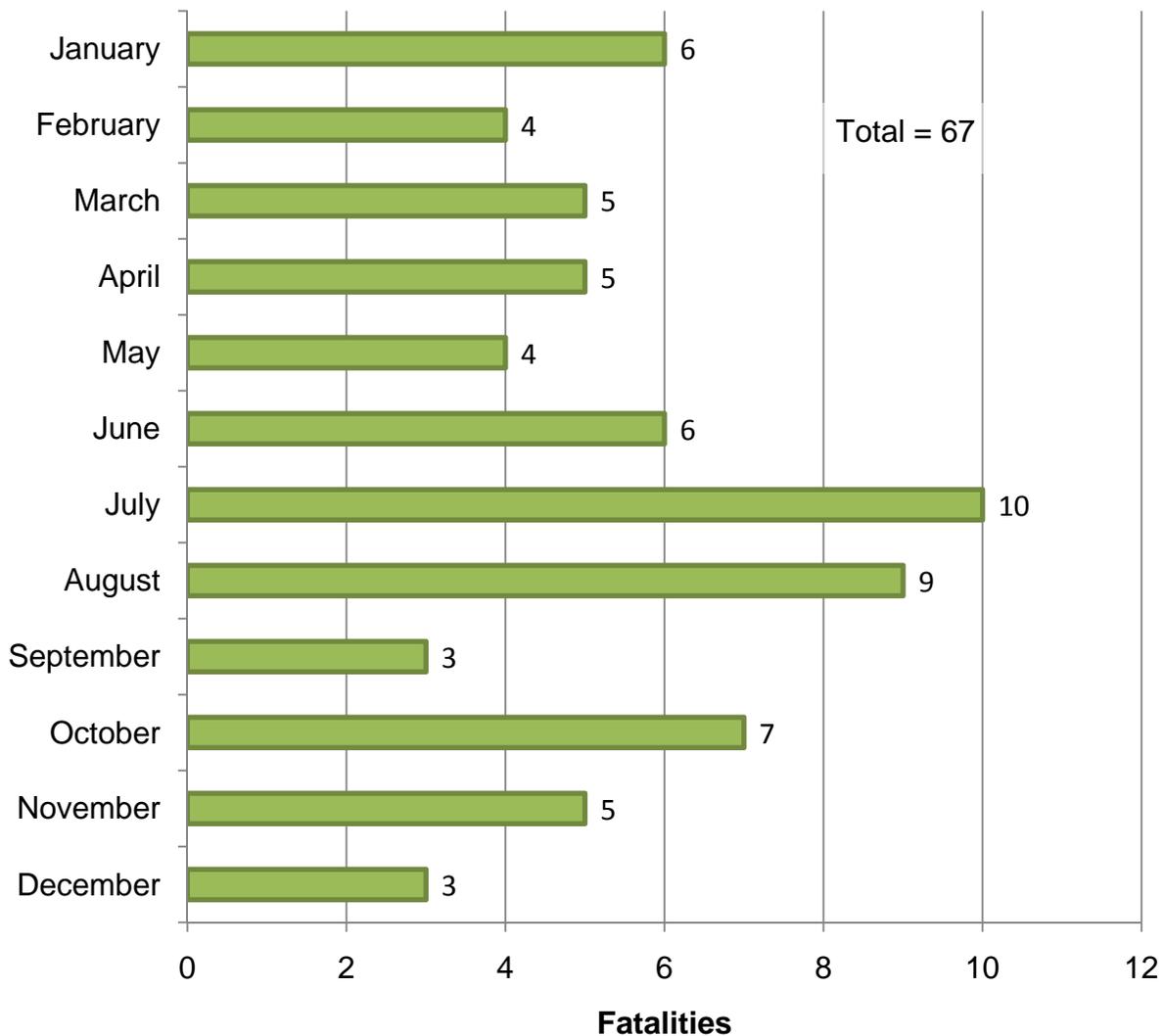
- Machinery operators need to be trained in the safe operation of machinery they are assigned to use.
- Operators must be aware of the terrain and plan to avoid hazardous situations.
- Always wear a seatbelt.



## How did logging related fatalities vary by month of the year?

The chart below shows logging related fatalities by month of the year. The monthly average was six fatalities. The highest number of fatalities occurred in July and August, which are typically the hottest months. Loggers may tend to work at higher elevations on steeper slopes in the hot months. September and December were lowest with three fatalities each month.

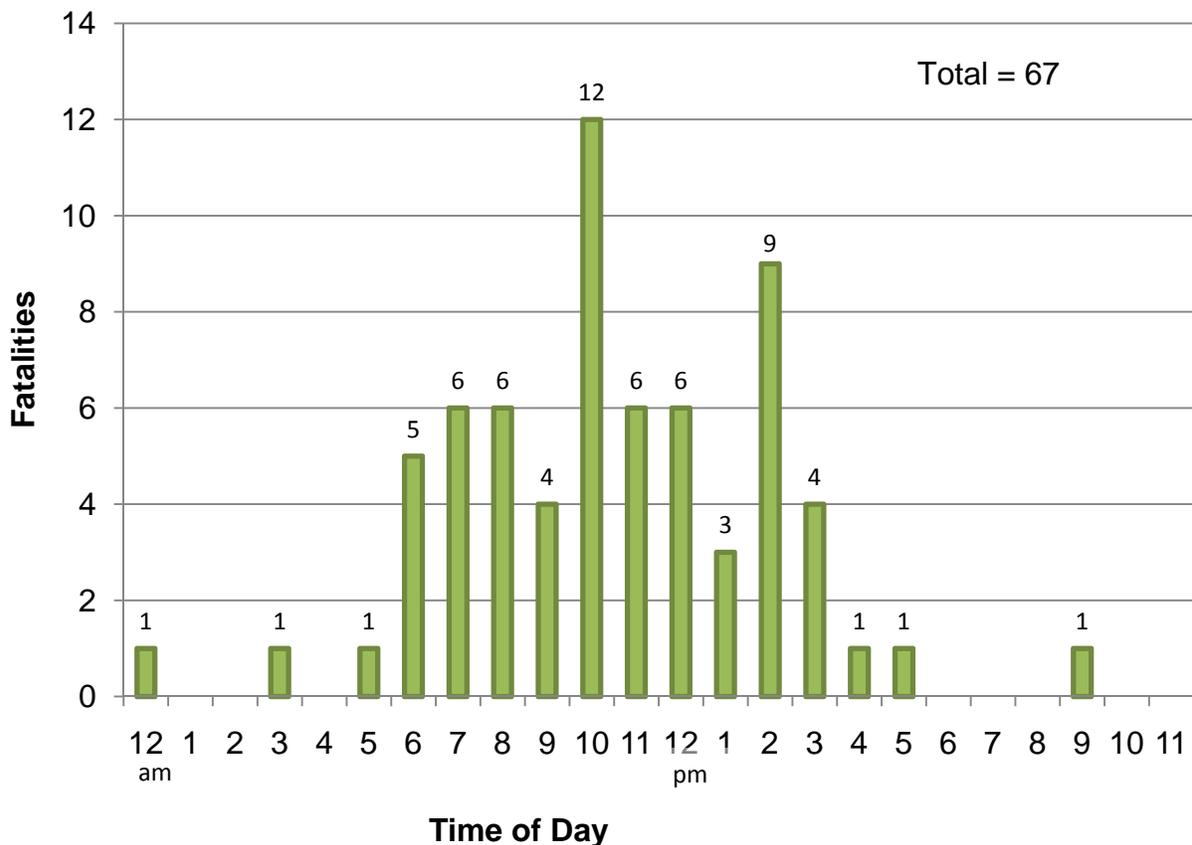
Logging Related Fatalities by Month, WA State 1998-2008



## How did logging related fatalities vary by time of day?

The chart below shows fatalities by hour of the day. The distribution shows that the majority of fatalities occurred during daytime work hours of 6AM to 3PM. Outside of this time interval, no more than one fatality occurred in any hour. The highest number of fatalities occurred at 10AM (12) and 2PM (9). The higher number of fatalities at these times may be related to more logging activity in general at these times or it may be the daily work cycle. The daily work cycle with 10AM and 2PM peaks may indicate worker fatigue-related fatalities towards the end of the work shifts for cutters and riggers. Fallers generally start their work shift around 6AM, especially in hot summer months, and work a six hour shift. Riggers start later than fallers. The data shows that the 10AM peak is not predominately tree fallers nor is the 2PM peak predominantly riggers. However, 11 of the 13 tree faller fatalities occurred before 1PM, while fatalities to other occupations were distributed throughout the day.

Logging Related Fatalities by Time of Day, WA State 1998-2008



## How did logging related fatalities vary by county in WA State?

The fatalities occurred in 21 counties in WA State. The following table shows the number of fatalities in each county over the time period.

Logging Related Fatalities by County, WA State 1998-2008

<b>County</b>	<b>Number</b>
Lewis	11
Grays harbor	9
Thurston	5
Stevens	4
Skagit	4
Kittitas	4
Snohomish	3
Pacific	3
Okanogan	3
Clallam	3
Yakima	2
Wahkiakum	2
Pend Oreille	2
Klickitat	2
King	2
Jefferson	2
Cowlitz	2
Chelan	1
Pierce	1
Ferry	1
Clark	1
Total	67



## Want more information?

Produced by the **Washington State Fatality Assessment & Control Evaluation (FACE) Program**, which is managed by the Safety and Health Assessment and Research for Prevention (SHARP) Program.

### [SHARP Program](#)

Washington Department of Labor & Industries

PO Box 44330

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360-902-5669 or 1-888-667-4277 (toll-free)

<http://www.Lni.wa.gov/Main/ContactInfo/Safety/Sharp.asp>

### [NIOSH Safety and Health Topic: Logging Safety](#)

<http://www.cdc.gov/niosh/topics/logging/>

DOSH Consultation Program

[Washington State Department of Labor and Industries](#)

<http://www.Lni.wa.gov/Safety/KeepSafe/Assistance/Consultation>

**Everett (Region 1, Northwest Washington): 425-290-1300**

**Seattle (Region 2, King County): 206-515-2800**

**Tacoma (Region 3, Pierce, Kitsap, Clallam, and Jefferson Counties): 253-596-3800**

**Olympia (Region 4, Southwest Washington): 360-902-5799**

**East Wenatchee (Region 5, Central and Southeastern Washington): 509-886-6500**

**Spokane (Region 6, Eastern Washington): 509-324-2600**

### **DOSH Technical Services**

Tumwater Central Office – Safety: 360-902-5460

[NIOSH Safety and Health Topic: Logging Safety](http://www.cdc.gov/niosh/topics/logging/)  
<http://www.cdc.gov/niosh/topics/logging/>

[OSHA Logging Advisor](http://www.osha.gov/SLTC/etools/logging/mainpage.html)  
<http://www.osha.gov/SLTC/etools/logging/mainpage.html>

[OSHA Logging health and Safety](http://www.osha.gov/SLTC/logging/index.html)  
<http://www.osha.gov/SLTC/logging/index.html>

[Logging safety and forest management education - A necessary link.](#)

Fosbroke DE, Myers JR. 1996, J FOREST 94 (7): 21-25.

[The Occupational Safety and Health Administration Logging Standard: what it means for forest managers.](#)

Myers JR, Fosbroke DE. 1995, Journal of Forestry. November:34-37



The Safety and Health Assessment and Research for Prevention (SHARP) Program at the Washington State Department of Labor and Industries is funded in part by the National Institute for Occupational Safety and Health (NIOSH) to run the Fatality Assessment and Control Evaluation (FACE) Program in Washington State (Cooperative Agreement No.: 3 U60 OH008487-02S1). The FACE Program collects information on all work-related fatalities in Washington State, investigates select incidents using a safety systems/root-cause approach, and develops reports and other outreach activities. The FACE Program is not compliance-oriented. Its goal is to reduce the number of work-related acute trauma injuries and deaths.