



# falls



## Fall from scaffold

A scaffolder was working with a colleague extending scaffolding between two floors on the face of a building. The colleague was kneeling on boards at the tenth floor whilst the scaffolder stood on the ninth floor passing up two metre standards to his colleague. There were no guardrails on either level and the scaffolder was not wearing a safety harness. The scaffolder passed up one of the standards and let go, apparently believing that the colleague had a good hold. However, the colleague had not properly grasped the standard and the standard fell back, knocking the worker off the scaffold. He fell to a tarpaulin roof and then onto the road below (approximately 35 metres in total), and was killed instantly.

## Fall from a horse

A grazier was riding a horse with work mates, moving cattle from one stock yard to another, when her horse reared up and fell over backwards, causing her to strike her head on the ground, sustaining fatal head injuries. She was only wearing a bush felt hat at the time of the incident.

Two hundred and fourteen workers died in incidents involving falls from a height in the period 1989 to 1992.

This was 12% (one in every eight) of all work-related deaths of workers during this period and represents a rate of 0.67 deaths per 100,000 persons per year. This rate was 23% lower than the rate found for 1982 to 1984.

## Mechanism and circumstances of fatal incidents

In two thirds of deaths the fall was the only mechanism of injury involved. For the other incidents, the most common mechanisms combined with the fall were:

■ drowning (usually after falling from a boat)	8%
■ being hit by a moving object (often after falling from a tractor)	6%
■ hit by a falling object (causing the person to fall)	5%
■ contact with electricity (causing the person to fall)	3%

## Occupation

Of all the work-related falls from a height, the occupations most likely to be involved were:

■ farmers and farm workers	18%
■ construction and mining labourers	15%
■ building tradespersons	13%
■ electrical workers	8%

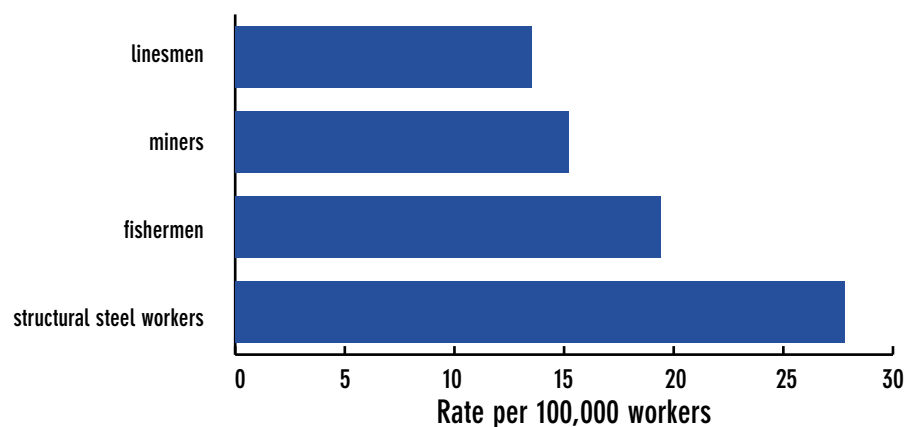
But the occupations in which workers were most at risk of work-related falls were:

- structural steel workers
- fisherpersons
- miners
- linesmen

## Fall from tractor

Whilst driving a tractor over to a paddock on his property, a farmer slipped off the tractor, falling one metre, and was run over by the rear wheels. The tractor ran over his chest and abdomen. The farmer was not wearing a seat belt and the tractor did not have an enclosed cabin.

Figure 1 Highest rates of work-related falls – by occupation



## Industry

Of all the work-related falls, the industries most likely to be involved were:

■ construction	31%
■ farming	15%
■ mining	9%
■ manufacturing	9%
■ recreational and personal services	9%

But the industries in which workers were at greatest risk of work-related falls were:

- fishing and hunting
- mining
- construction
- electricity

Figure 2 Highest rates of work-related falls – by industry

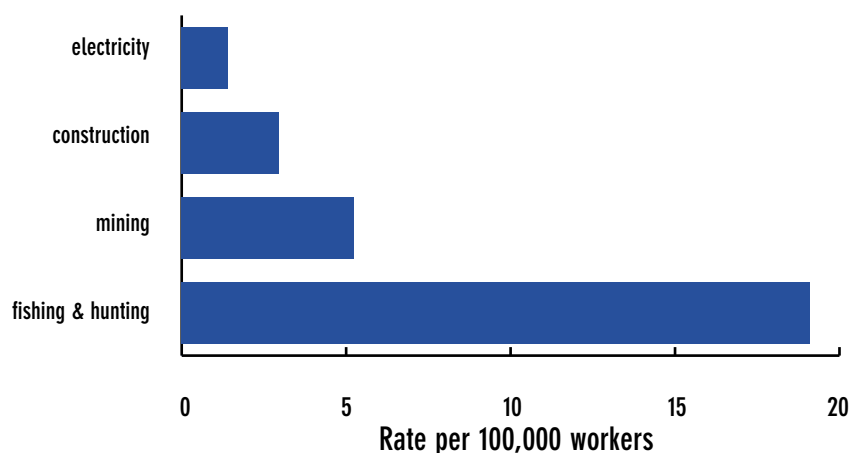
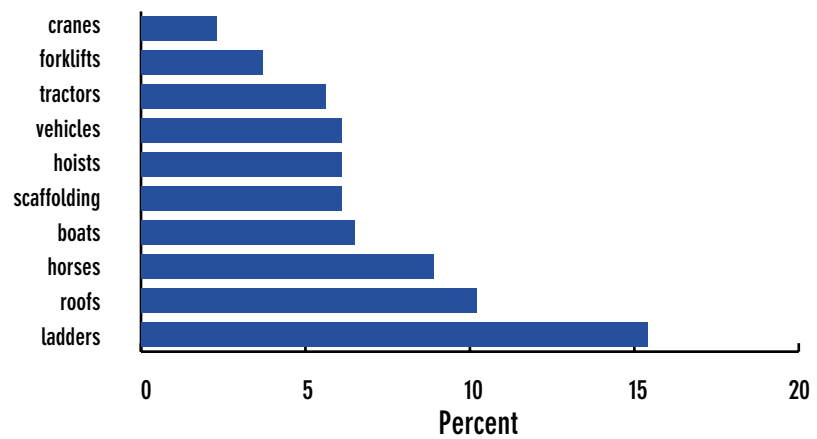


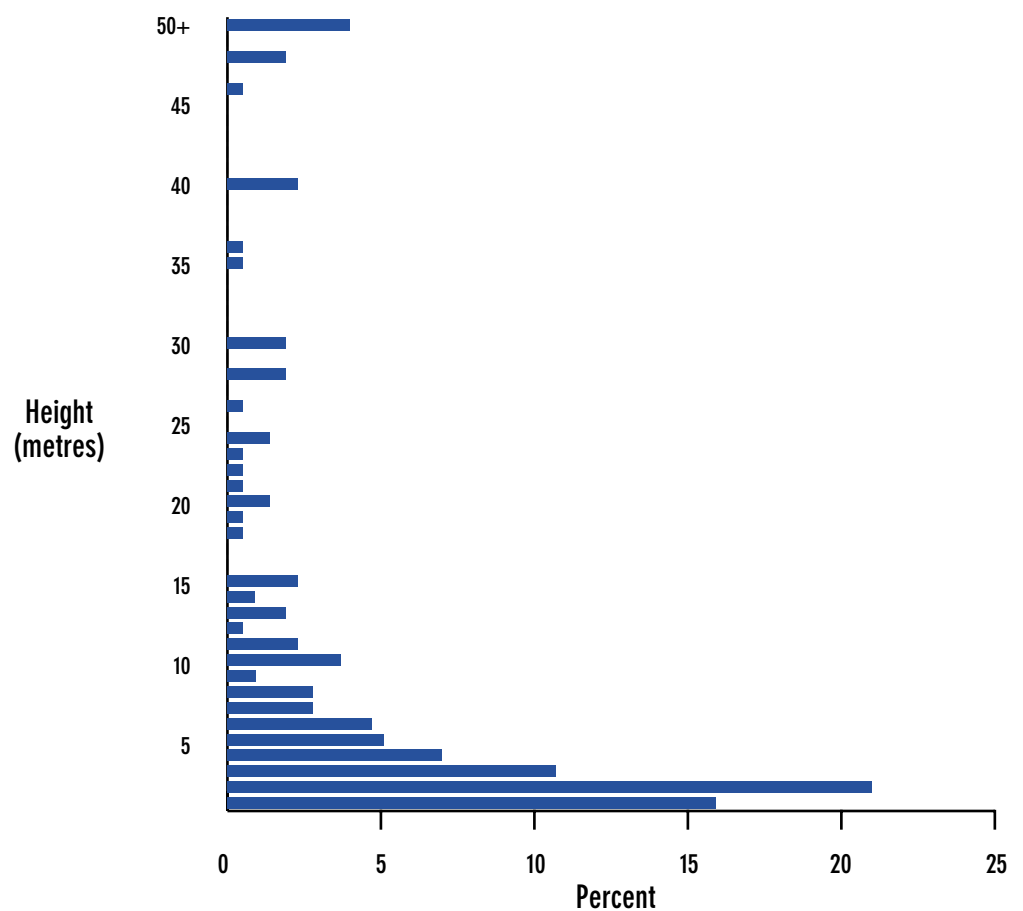
Figure 3 Common origins of falls – percent



### Fall height

Fall heights ranged from one to 200 metres, with 60% of falls occurring at heights of five metres or less (Figure 4).

Figure 4 Height of falls – percent



## Electric shock causes fall

An apprentice electrician died of injuries sustained when he received an electric shock and fell 12 metres from a metal extension ladder whilst doing some maintenance on wires. A wooden ladder was present but it was too short to be used for the job.

Working with a more senior colleague re-routing an overhead cable at a gravel pit, he touched the wires with some pliers but received an electric shock directly through the arcing and fell to the ground. Neither the apprentice or his senior colleague had checked to see if the power pole was live because the plant had been shut down for maintenance, other people were working there and the senior electrician presumed that the power would have been off as no machines were running. There were no tagging or lockout systems.

## Fall through skylight

A plumber died of a severe head injury after falling 11 metres from a roof whilst installing new skylights on the roof of a factory.

The plumber was walking on the roof carrying a piece of roofing iron with another co-worker when he stepped backwards onto an old un-reinforced fibreglass skylight and fell through the roof, hitting his head on the concrete surface below. He was aware of the lack of mesh on the skylights and had instructed his co-workers to take care on the roof.

There were three safety belts (kidney belts) provided at the site, but the plumber was not wearing one of them at the time of the incident.

## Fall from unsecured ladder

A roof tiler was standing on an extension ladder tiling the roof of a pergola at the front entrance of a block of units under construction. The base of the ladder slipped on the slippery ceramic ground surface, causing the tiler to fall five metres and sustain fatal injuries. The ladder was not tied in position while it was being used and it wasn't fitted with non-slip devices.

## Pathophysiological cause of death

Work-related falls were most likely to involve these causes of death:

■ head injuries	46%
■ multiple injuries	19%
■ chest/abdomen/pelvis injuries	10%
■ medical complications	10%

The pattern of injuries sustained varied with the height of the fall. Fatal falls from a low height were more likely to result in head or neck injuries, while fatal falls from heights above 20 metres were much more likely to result in multiple injuries.

## Recurring factors

Common features of the incidents involving falls from a height were:

### Ladders

- person fell due to loss of balance, which was caused by a pre-existing medical condition, the ladder not being secured or whilst climbing down the ladder (five incidents)
- person fell after receiving a non-fatal electric shock, four whilst working with electricity, the other because his aluminium ladder came into contact with an overhead powerline (five incidents)
- person fell due to a ladder slide as the ladder was not secured (five incidents)

### Roofs

- person fell through a skylight due to lack of reinforcement mesh underneath (five incidents)
- person fell through a hole in a roof that had not been highlighted or taped off (three incidents)
- person fell through collapsed roofing asbestos (two incidents)
- weight of person could not be supported by wooden beams in roof (two incidents)
- person lost balance due to weather conditions such as strong winds and fell (two incidents)

### Horses

Persons in the horse racing industry (12 incidents) fell during:

- high speed track work (five incidents)
- a race (four incidents)
- training (three incidents)

In the seven horse-related incidents where the person was working in the agriculture industry, the person fell because the horse stumbled, reared or collapsed.

### Boats

- absence of floatation support devices (11 incidents)
- consumption of alcohol (five incidents)
- the weather and environmental conditions (three incidents)
- slippery surfaces (two incidents)

## Fall from boat

A professional fisherman drowned when he fell overboard whilst laying lobster pots. He had laid some lobster pots in the morning with his son, and in the afternoon had gone out alone in a small aluminium runabout to lay five more pots. The weather at the time was very bad, with winds of 50 knots and waves about 1.5 metres high. It appears that the boat was travelling forwards, about 150 metres from shore, when it was swamped by a big wave, throwing the fisherman into the water. He was found later floating face down in the water. Two life vests were found floating near where he was found.

## Fall from forklift

A warehouse foreman died as the result of a fall from a carton sitting on a pallet on a raised forklift, which was in motion at the time.

The foreman had been using a partly loaded pallet to elevate himself to the third tier level of racking to move around cartons in the warehouse. Once this was done, he then climbed back on top of the forklift and allowed an unlicensed forklift operator to further elevate him and drive out through a narrow passageway. Whilst the forklift travelled along the passageway, the foreman either lost his balance or was struck by the roof of the warehouse, knocking him off balance, which caused him to fall four metres to the floor.

The foreman was responsible for warehouse operations and he frequently allowed the use of the pallet on a forklift to act as an elevating work platform. An approved cage did exist to fit to the forklift, but when it had been used the exercise was unsuccessful because of the design and dimensions of the cage.

## Scaffolding

- person fell from, through or with a scaffold that was poorly designed, poorly installed or inappropriate for the task (five incidents)
- person slipped/lost balance whilst on the scaffolding and fell (four incidents)
- person knocked from scaffolding which had been struck by equipment or a vehicle (three incidents)

## Vehicles

- person hit by material whilst loading or unloading the tray of a truck and fell (six incidents)
- person standing on the tray or platform and fell from the vehicle as it turned at slow speed (four incidents)
- person fell whilst attempting to get out, or down from, the vehicle (three incidents)

## Hoists & elevated work platforms (EWP)

- person fell because the seat of the hoist became disengaged (two incidents)
- person fell because the equipment failed due to poor maintenance and construction of the hoist/EWP (two incidents)
- person fell because the hoist/EWP was incorrectly used in transportation (two incidents)

## Tractors

- person fell and was then run over by a tractor because they were not seated properly whilst the tractor was in motion (four incidents)
- person fell and was then run over, due to pre-existing medical conditions affecting their driving ability (two incidents)

## Forklifts

- person riding in a pallet or stillage on raised forks without protective barriers and fell, usually hitting their head (six incidents)

## Cranes

- person fell when the crane that they were in the process of either constructing or dismantling collapsed (three deaths)
- person fell when incorrectly exiting the crane via its platform (one death)
- person fell from the top of a crane after a long shift, probably due to fatigue (one death)



## Further information and inquiries:

Work-related deaths as a result of incidents involving falls from a height in Australia were studied as part of a larger study of all work-related traumatic deaths from 1989 to 1992. For further information regarding work-related deaths see: *Work-related traumatic fatalities in Australia, 1989 to 1992*.

Information is also available via the NOHSC web site:

<http://www.nohsc.gov.au>

or you can contact:

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