

Aerial Lift Safety in Construction



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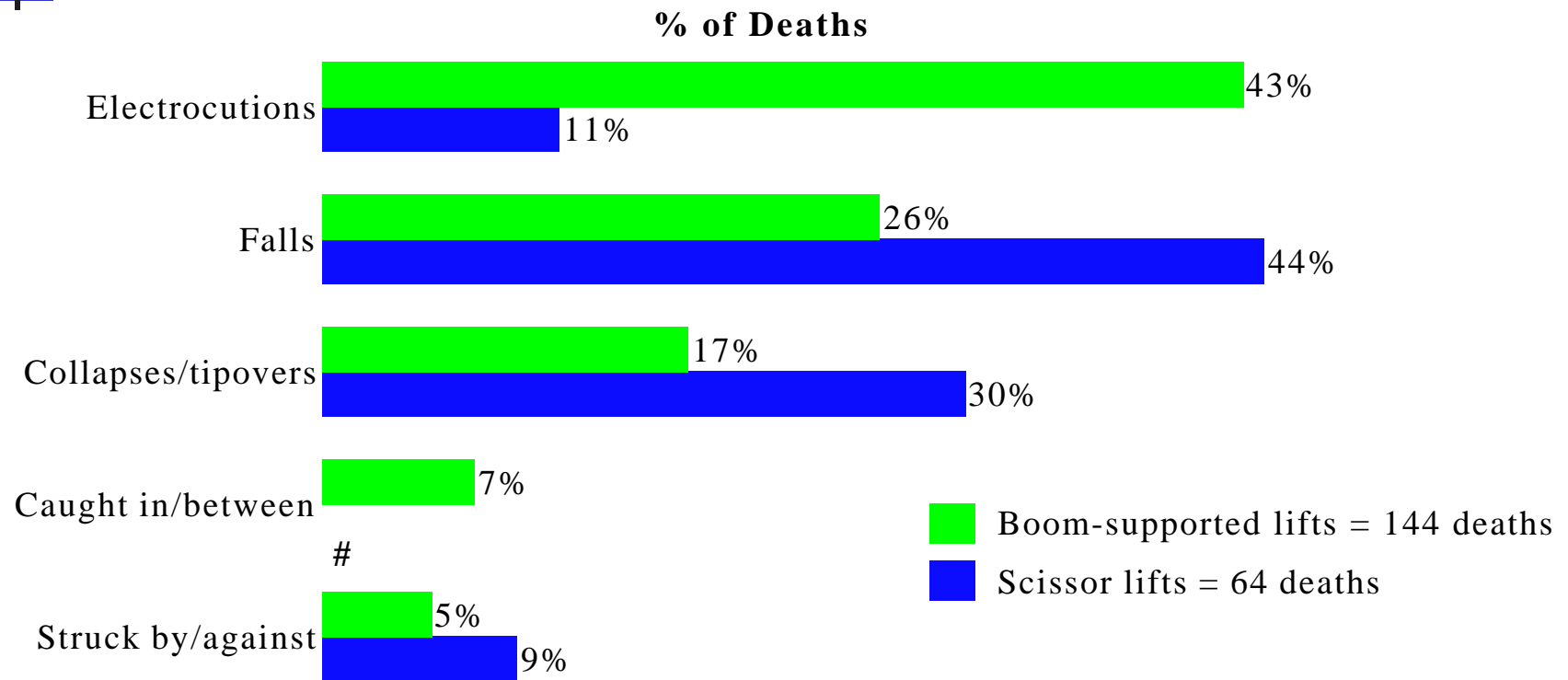
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Deaths from Aerial Lifts in Construction

- From 1992-99, there were 26 deaths per year from lifts in construction.
 - ◆ 18 per year from boom-supported lifts
 - ◆ 8 per year from scissor and other vertical lifts
- This is 3% of all deaths in construction

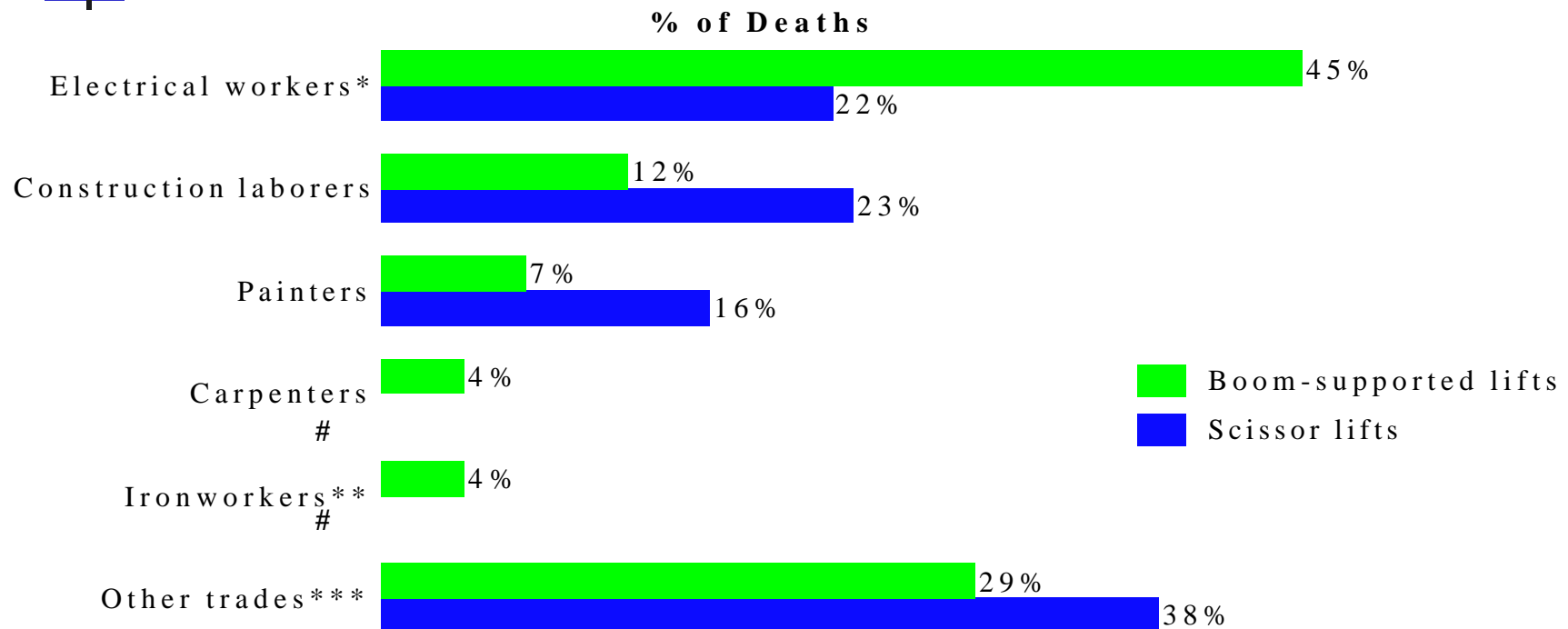
Causes of Death from Aerial Lifts in Construction, 1992-99



#Data for scissor lifts do not meet Bureau of Labor Statistics publication criteria

Source: U.S. Bureau of Labor Statistics data

Deaths from Aerial Lifts in Construction, by Trade, 1992-99



#Data from scissor lifts does not meet Bureau of Labor Statistics publication criteria

* Electricians, electrician apprentices, power installers, and their supervisors

** Structural metal workers and welders and cutters

*** Includes plumbers, pipefitters and steamfitters, brickmasons and stonemasons, drywall installers

Source: U.S. Bureau of Labor Statistics data

Boom-Supported Lifts

- **Electrocutions** – almost all due to overhead power lines
 - ◆ 1/2 of electrocutions involved body contact with overhead power lines
 - ◆ One-third involved overhead power lines contacting lift booms or buckets
- **Falls**
 - ◆ 1/2 of fatal falls involved ejection from the bucket after worker or lifts was struck by vehicles, cranes or objects.
 - ◆ 1/6 occurred while transferring to or from the bucket at a height
- **Collapses/tipovers**
 - ◆ 2/5 of deaths involved collapse of boom
 - ◆ Almost one-third were due to tipovers.
 - ◆ 1/4 involved collapses of bucket



Boom-Supported Lifts (Cont.)

- **Caught in /between**
 - ◆ Most involved the worker getting caught between the bucket edge and a roof joist or beam.
- **Struck by/against**
 - ◆ Mostly involved workers being struck by collapsing materials, girders, etc.



Scissor Lifts

■ Falls

- ◆ 1/5 of deaths involved ejections, after being struck by object
- ◆ Cause of fall unknown in 3/5 of deaths
- ◆ Other causes included removal of chains, standing on or leaning over railings

■ Tipovers

- ◆ Caused almost 1/3 of scissor lift deaths
- ◆ Mostly while elevated over 15 feet
- ◆ 1/4 of tipovers occurred where lift hit a hole or curb while moving

■ Electrocutions

- ◆ 1/2 involved overhead power lines





Renting an Aerial Lift

- Get maintenance history of aerial lift
- Get operator's manual and maintenance manual (if separate)
- Ensure a detailed maintenance check is done before rental
- Make sure operator controls are easily accessible and properly marked



Operator Training

- Training must be done by a qualified person experienced with the particular lift model
- Training must include:
 - Nature of electrical, fall, and other hazards involved in operating lift
 - Precautions for dealing with hazards
 - Rated load capacity for the lift (including workers, tools, materials, bucket liner, etc.)
 - Manufacturer requirements, as outlined in operator manual
 - Demonstration of skill and knowledge in actual operation of the aerial lift



Qualified Person Definition

- OSHA 1926.450(b)

A qualified personby extensive knowledge, training, and experience can....solve....problems related to the subject matter....



Maintenance Requirements

- Training of mechanics should be done by qualified person experienced with lift model
- Maintenance should include:
 - Knowledge of manufacturer's maintenance requirements
 - Frequent inspections of aerial lift by qualified mechanic
 - At least annual detailed inspections by qualified mechanic
- Insulated aerial lifts have special electrical test requirements
- De-energize and lockout/tagout aerial lift before conducting maintenance and repairs



Before Operating Aerial Lifts

- Do not modify aerial lift without written permission
- Check safety devices, operating controls before each use
- Check area in which aerial lift will be used for:
 - Level surface (Do not exceed manufacturer slope recommendations)
 - Holes, drop-offs, bumps, debris, etc.
 - Overhead obstructions and overhead power lines
 - Stable surface
 - Other hazards
- Set outriggers, brakes, wheel chocks



Preventing Electrocutions

- Non-electrical workers must stay at least 10 feet away from overhead power lines.
- Electrical workers must de-energize/insulate power lines or use proper PPE/equipment.
- Use insulated buckets near overhead power lines
- Regularly check insulation on buckets



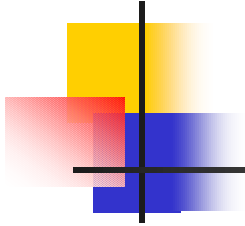
Preventing Tip-Overs

- Do not exceed manufacturer rated load capacity limits
- Do not travel to job location with lift in elevated position.
- Set up proper work zone protection when working near traffic
- Positioning of lifts
 - Do not drive near drop-offs or holes.
 - Do not raise platform on uneven or soft surfaces.
 - Do not drive onto uneven or soft surfaces when elevated.
 - Do not raise platform on slope or drive onto slope when elevated.
 - Do not raise platform in windy or gusty conditions.
- Avoid excessive horizontal forces when working on elevated scissor lifts



Fall Protection

- OSHA regulates aerial lifts as scaffolds
 - 1926.453 Aerial Lifts only applies to bucket trucks
 - Fall protection is required (full body harness with lanyard or body belt with 2-foot lanyard as restraint device)
 - OSHA does not require harnesses and lanyards on other boom lifts and scissor lifts if there are guardrails
- Fall arrest systems (harness plus lanyard to stop a fall)
 - Can tip over some boom lifts and scissor lifts due to fall stopping force
- Fall restraint systems intended to prevent falls are preferred
 - e.g. Full body harness plus lanyard designed for size of lift platform
- Always close entrance chains or doors
- Stand on floor of bucket or lift platform
 - Do not climb on or lean over guardrails



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