

Aerial Lift Safety in Construction



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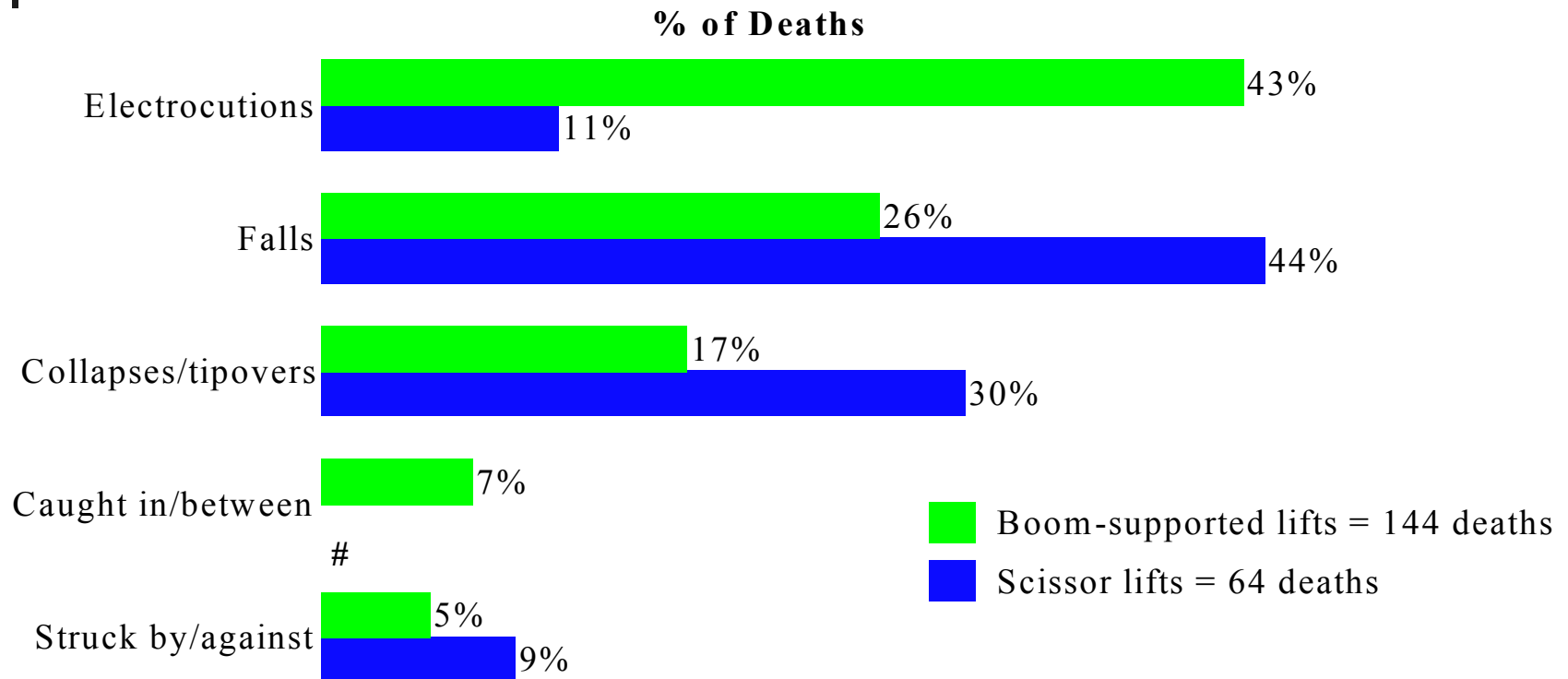
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Deaths from Aerial Lifts in Construction

- 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

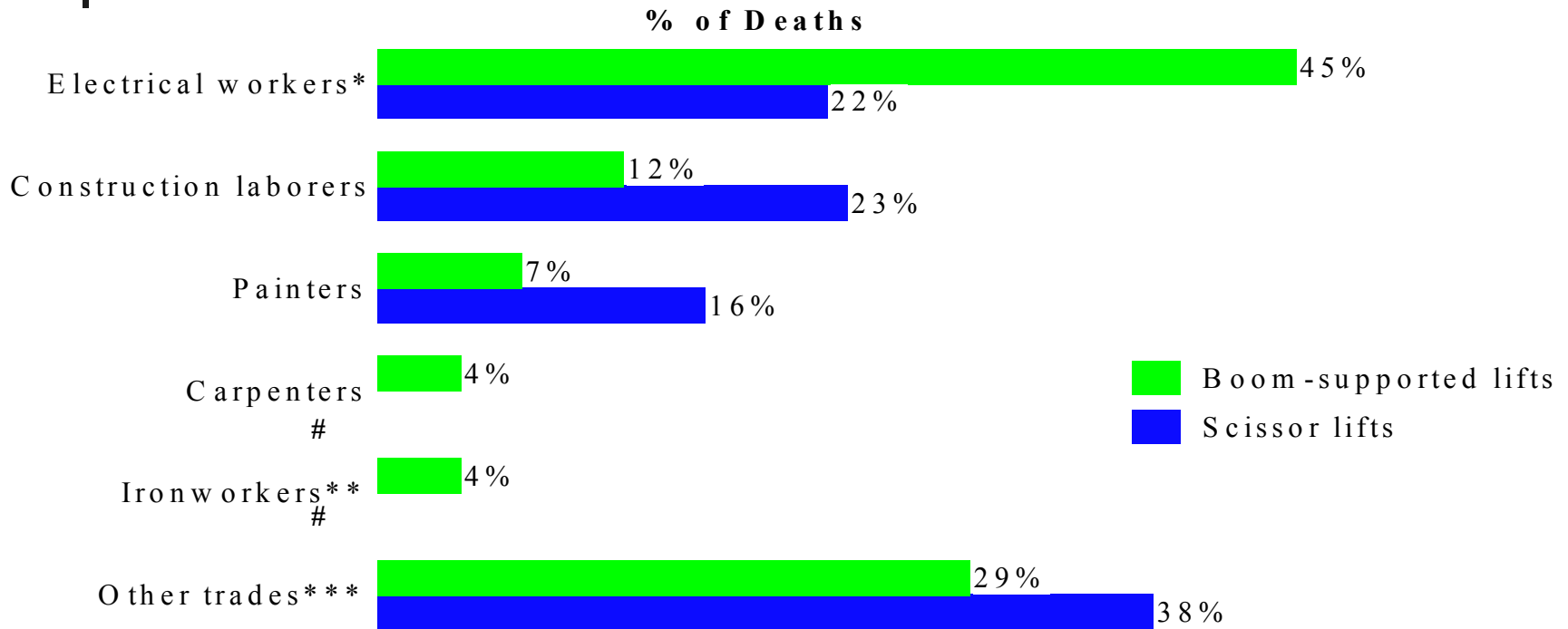
Causes of Death from Aerial Lifts in Construction, 1992-99



#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 steam fitters, 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



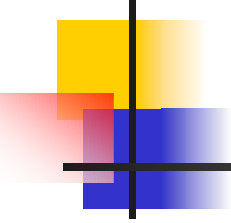
Preventing Tip-Overs

- 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



This research was funded as part of a grant to the Center to Protect Workers' Rights (CPWR) from the National Institute for Occupational Safety and Health, NIOSH (NIOSH grant CCU310982). The research is solely the responsibility of the authors and does not necessarily represent the official views of NIOSH. CPWR is the research, development, and training arm of the Building and Construction Trades Department, AFL-CIO.