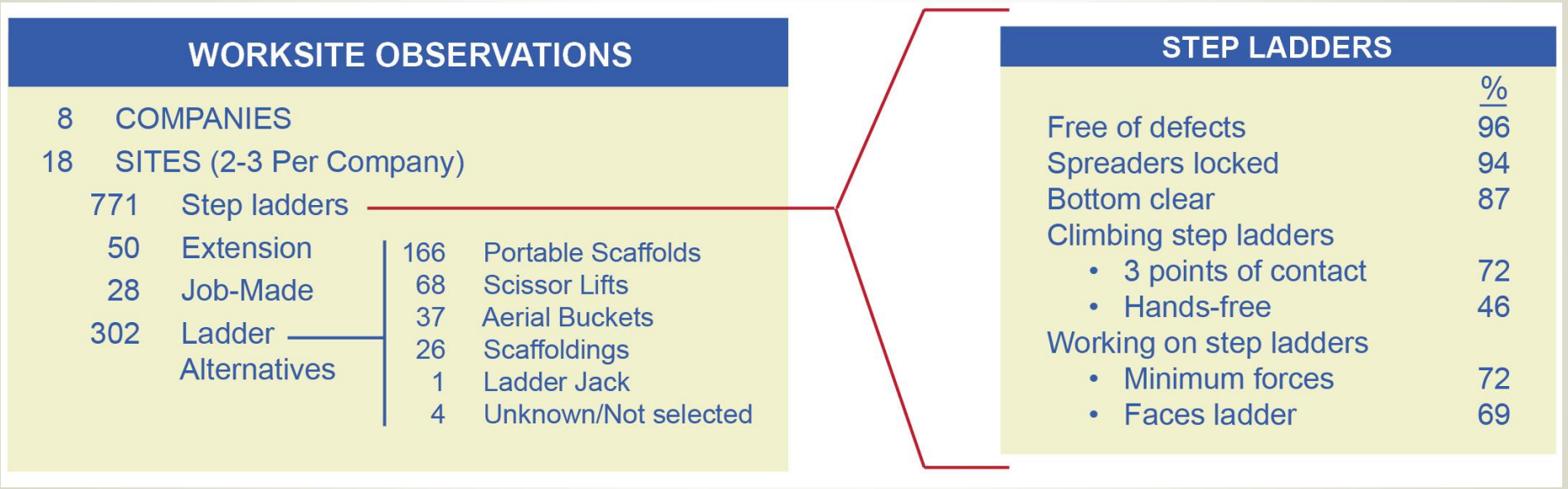
Preventing Falls from Ladders in Construction

2009 Study

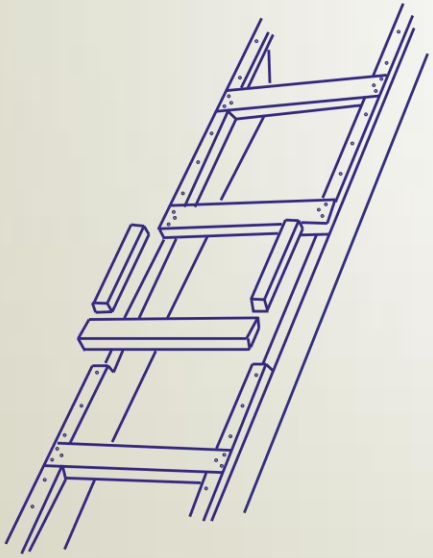

WORKSITE OBSERVATIONS
8 COMPANIES
18 SITES (2-3 Per Company)
771 Step ladders
50 Extension
28 Job-Made
302 Ladder Alternatives
166 Portable Scaffolds
68 Scissor Lifts
37 Aerial Buckets
26 Scaffoldings
1 Ladder Jack
4 Unknown/Not selected
STEP LADDERS
%
Free of defects 96
Spreaders locked 94
Bottom clear 87
Climbing step ladders
• 3 points of contact 72
• Hands-free 46
Working on step ladders
• Minimum forces 72
• Faces ladder 69

Parent Form

Rater
Company
Site (code)

Inspect/ID

Step
Extension
Job
Ladder Alternative



Setup

Step
Extension

Moving

Working

Emergency Room Study

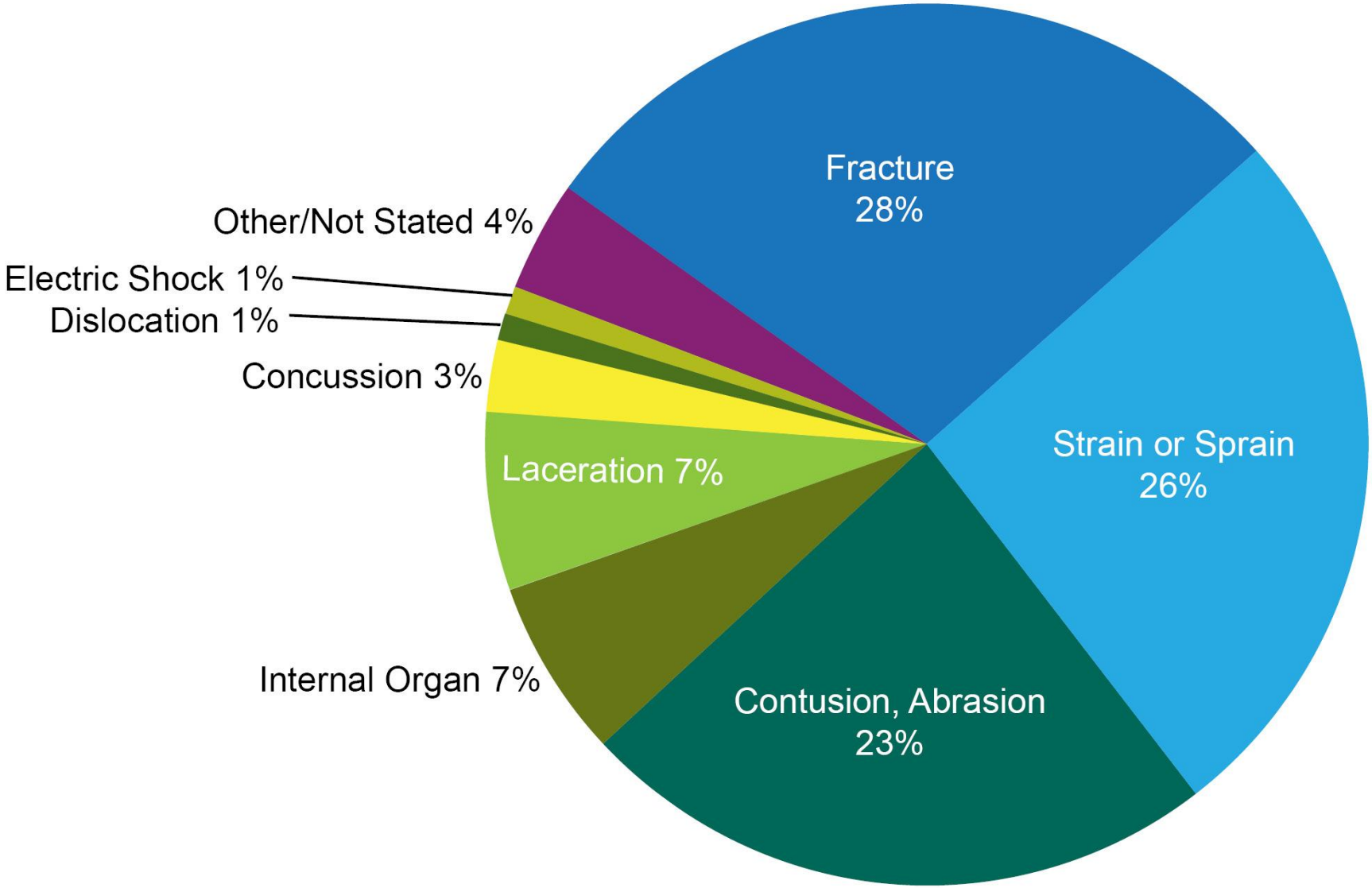
65 US Hospitals

254 Ladder fall victims surveyed

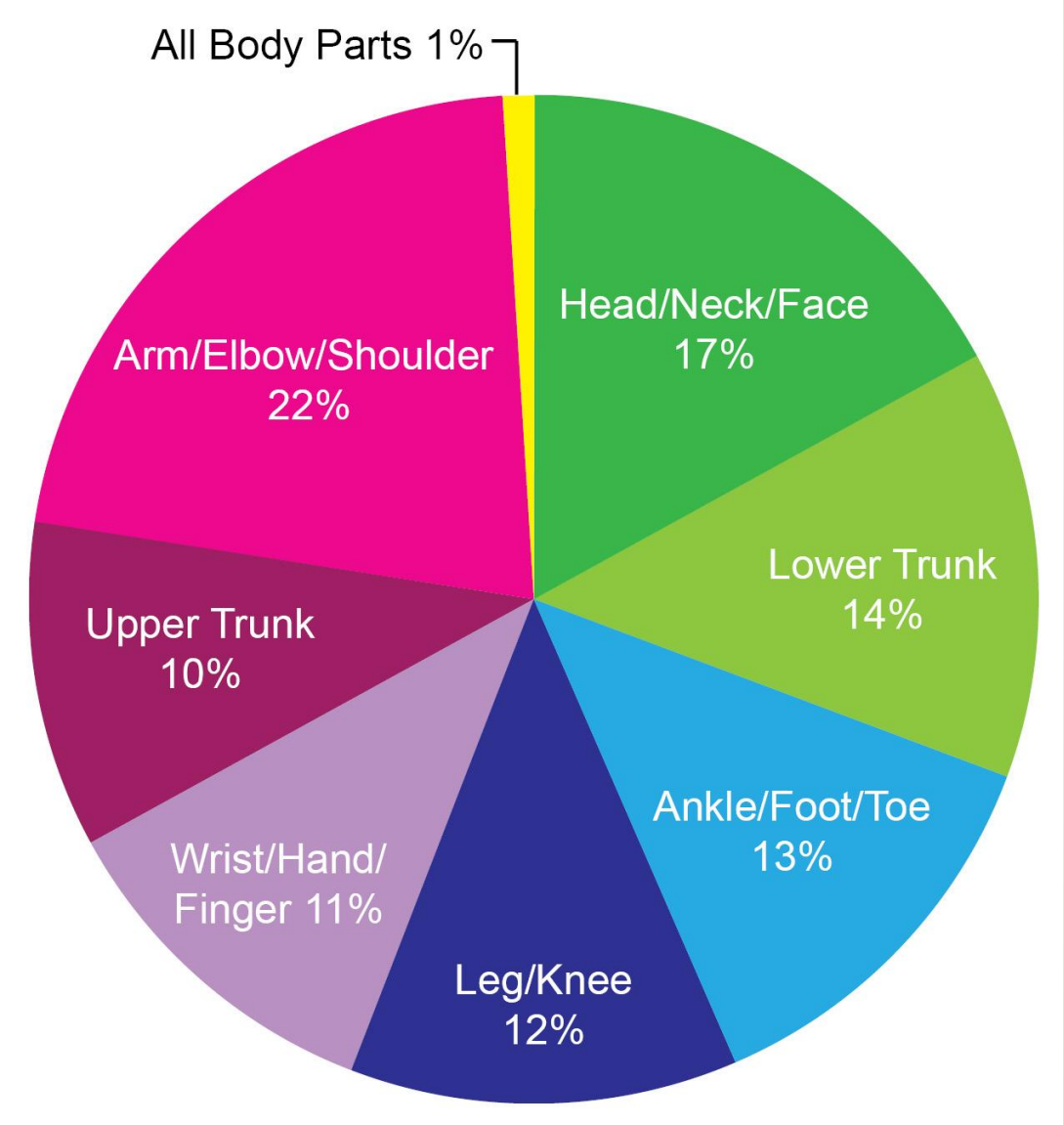
- 97 were construction workers
- Reasons for the fall
- Identifying reoccurring risk factors

Brennan M, Lombardi D, Smith GS, Courtney T, Young J, Dennerlein J, Perry MJ [2008]. Falls from Ladders: Preliminary Results from a Case-crossover Study of Emergency Room Cases. 18th Annual Construction Safety and Health Conference and Expo, Rosemont, Illinois, February.

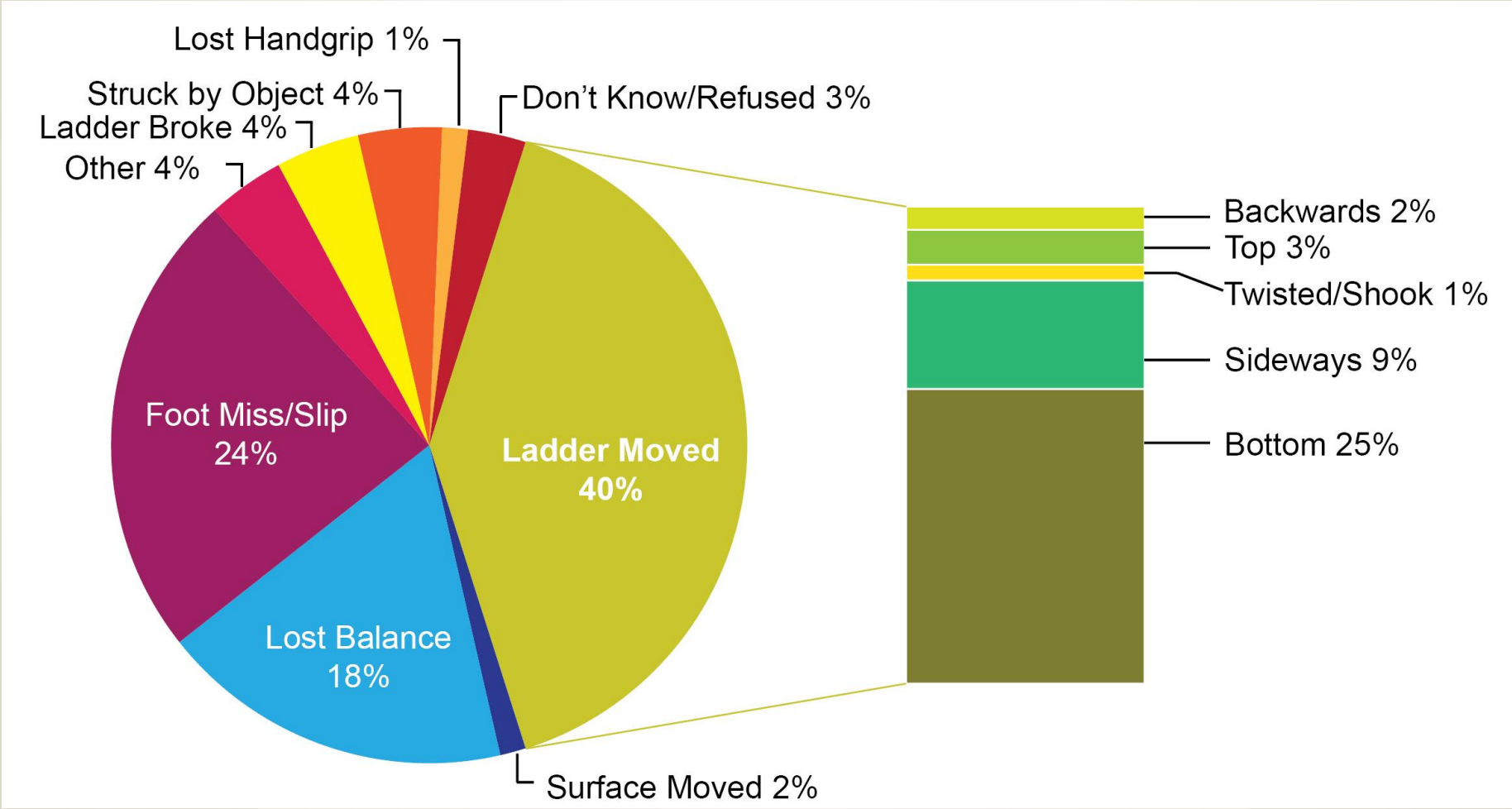
Injury Characteristics: Main Diagnosis



Injury Characteristics: Body Parts



Mechanism of Ladder Fall



Injury Situation

INJURY STATISTICS

GENERAL INDUSTRY

5,488 fatalities
835 falls (15%)
- 132 from ladders
- 88 from scaffold, staging

CONSTRUCTION

38% due to falls
24% of 36,360 nonfatal falls were from ladders

FATAL

1,178 fatalities in 2007
- decline of 5% from 2006

Remains highest in private sector
Construction of buildings (a sub-sector) rose 11%

NONFATAL

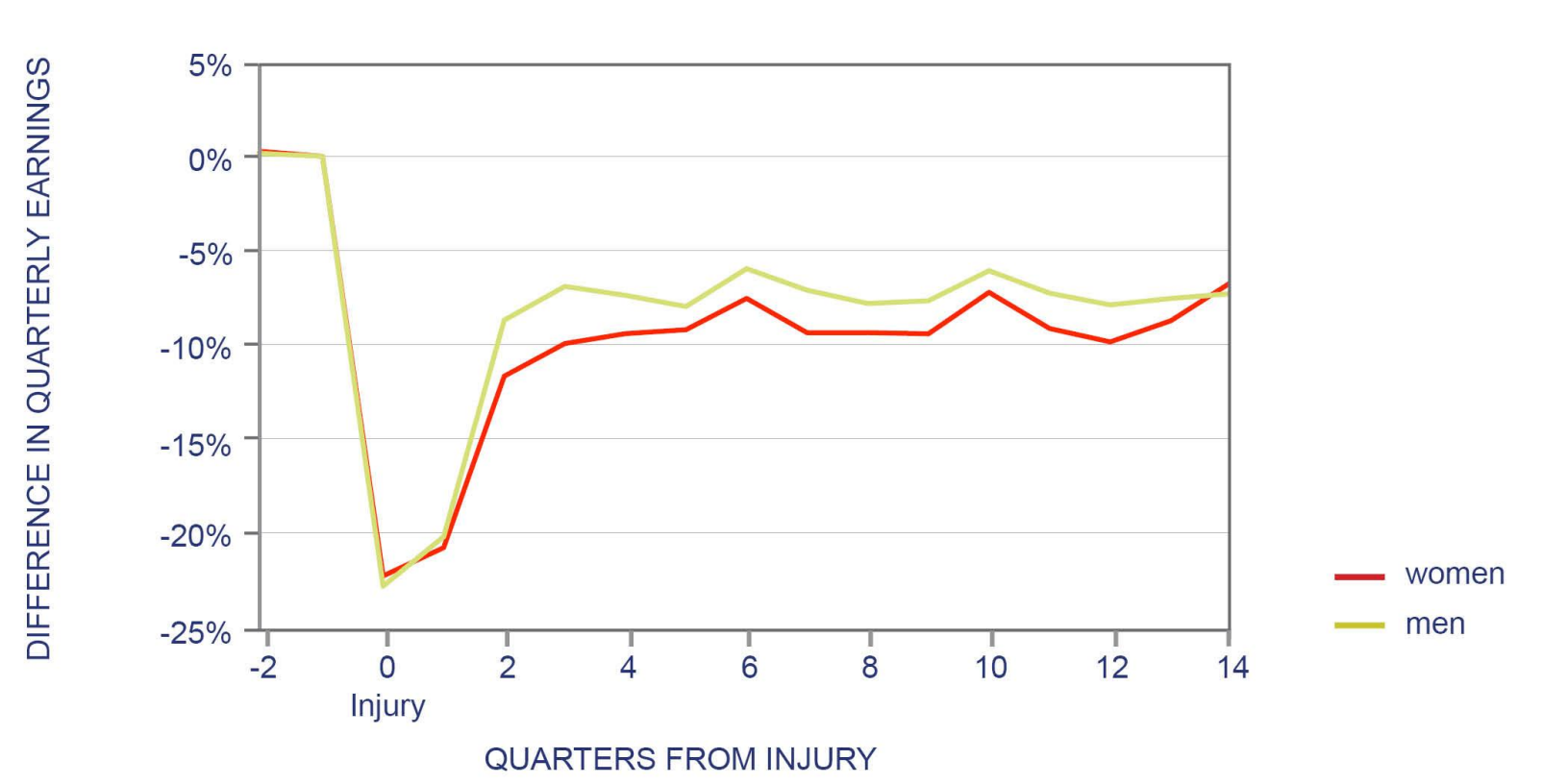
Recordable injury and illness incidence decreased in 2007
Total recordable cases
- 5.4 per 100 equivalent full-time workers

General industry = 4.2 cases / 100 workers
- 4 million injuries and illnesses

BLS. 2008. Workplace Injuries and Illnesses in 2007.

http://onemansblog.com/wp-content/uploads/2007/09/Ladder_on_Ladder.jpg

Salary of Injured Worker



Boden LI, Galizzi M. Income Losses of Women and Men Injured at Work. J Hum Resour 2003; 38(3):722-757.

Salary of Injured Worker-2

TIME	PERCENT CHANGE	AVERAGE MALE SALARY (was $50,000 before injury)
Injury	**-22.9%**	**$38,550**
3 months post	-20.2%	$39,900
6 months post	-8.7%	$45,650
1 year	-7.4%	$46,300
3.5 years	-7.3%	$46,350

Workers lost earnings after being injured at work. Even after 3.5 years they were unable to attain the earnings level they had before being injured.

The total costs of fatal and nonfatal injuries in the construction industry were estimated at **$11.5 billion** in 2002, 15% of the costs for all private industry. The average cost per case of fatal or nonfatal injury is $27,000 in construction, almost double the per-case cost of $15,000 for all industry in 2002.

Waehrer GM, Dong XS, Miller T, Haile E, Men Y. Costs of occupational injuries in construction in the United States. Accid Anal Prev 2007; 39(6):1258-1266

- New construction
- Behind schedule and over budget
- Injuries have plagued the worksite
- A foreman is on the top step of a 14' stepladder screwing in a light bulb 20' above the ground
- The foreman is in charge of a key group of workers and is vital for the completion of the project.
- The foreman is a hothead and has consistently given you problems, but does good work, and his journeymen and apprentices are loyal to him.
- All his workers are overworked and stressed. They are busy doing their work, so he is forced to use leftover supplies (i.e. the ladder) to do this simple task unsafely.

Ladder is placed incorrectly. Ladder should be extended out with its spreaders locked. If the work area is too small, an alternative should be used.

Photo courtesy of the Harvard Construction Group

Unsafe posture. Worker should be facing the ladder and on a lower rung. A taller ladder facing the opposite direction may be necessary.

Photo courtesy of the Harvard Construction Group

Unsafe posture. Worker should be on a lower rung; a taller ladder is needed.

Photo courtesy of the Harvard Construction Group

Extension ladder should extend past the roof by at least three feet. Worker is in an unsafe posture. He should be standing on a rung and should be wearing fall protection.

Photo courtesy of Jack T. Dennerlein

Considerations …

- Planning
- Alternatives
- Communication

The portable stairs on the right are able to be reused on several projects while allowing the workers a safer angle for ascent and descent compared to the gang-ladder on the left.

Photos courtesy of TJ Lyons, Turner Construction Company

The lift on the right allows a worker to reach heights while providing a safe working platform and small footprint in the hallway compared to the very tall step ladders on the left that are still not tall enough for the workers to safely reach their job tasks.

Photos courtesy of TJ Lyons, Turner Construction Company