



Mission, Resources and Proposed Projects

Construction Safety Summit January 2015

Illa Gilbert-Jones, CIH, CSP

| Oregon Institute of Occupational Health Sciences

Agenda

- **What is OR-FACE**
 - Mission
 - History
- **Surveillance/Assessment**
- **Investigation**
- **Outreach**

Oregon Fatality Assessment & Control Evaluation

- **NIOSH surveillance research program**
 - Began in 1982
 - Expanded to states in 1992
- **OR-FACE**
 - Joined 14 other state programs in 2002
 - 2003 - 76 fatalities

OR-FACE Mission

- **Prevent traumatic work-related deaths in Oregon through**
 - **Surveillance**
 - **Targeted investigation,**
 - **Assessment**
 - **Outreach**

OR-FACE Staff



Ryan Olson, PHD
Program Director



Illa Gilbert-Jones, MS, CIH, CSP
Program Manager/Field Investigator



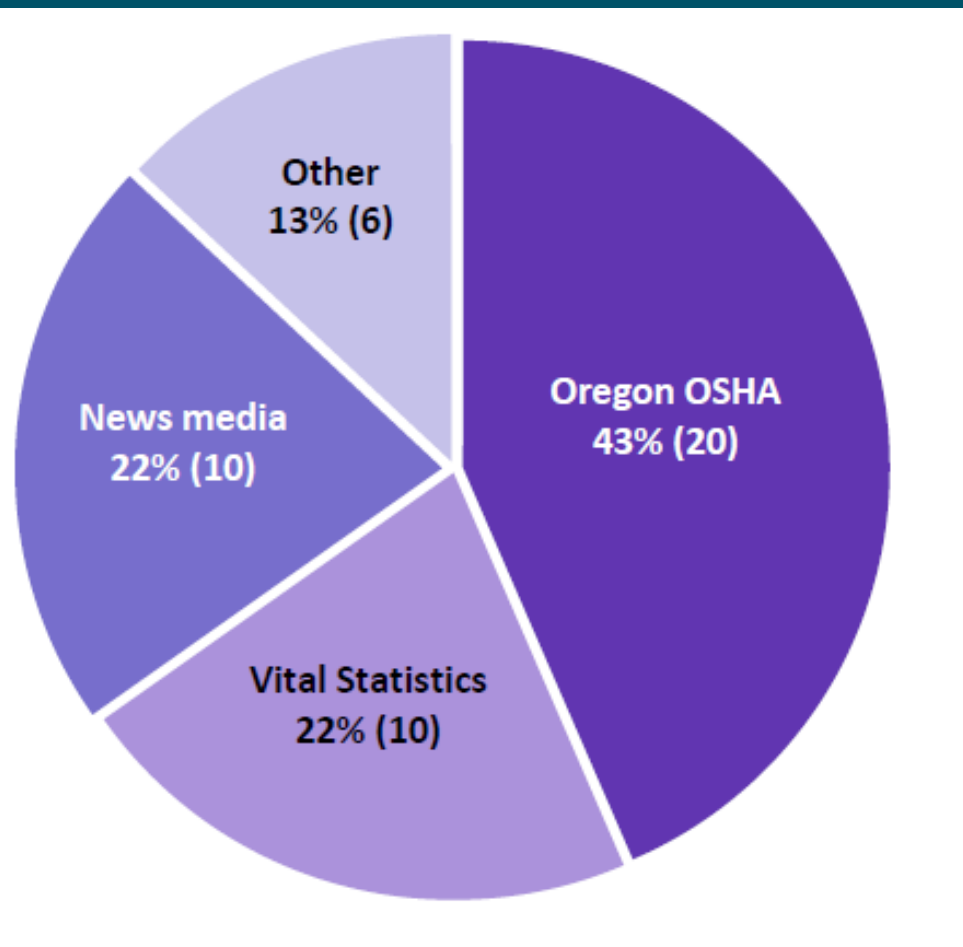
Melodie Bianchini
Student Worker

Contract Investigators with expertise in construction, logging, manufacturing, maritime

Surveillance

Police reports
Coast Guard
CFOI
FAA

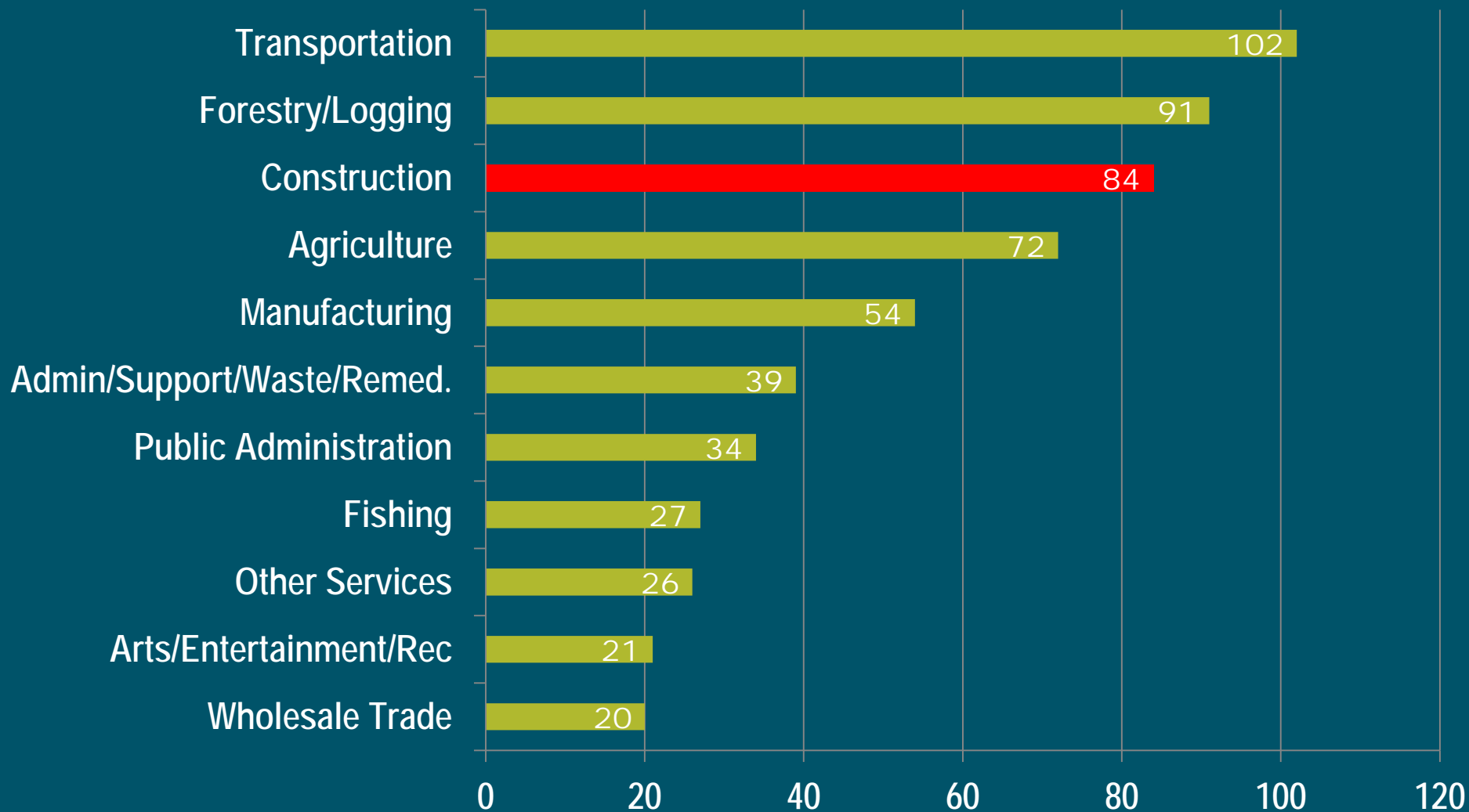
Google alerts



Death certificates
Medical examiner

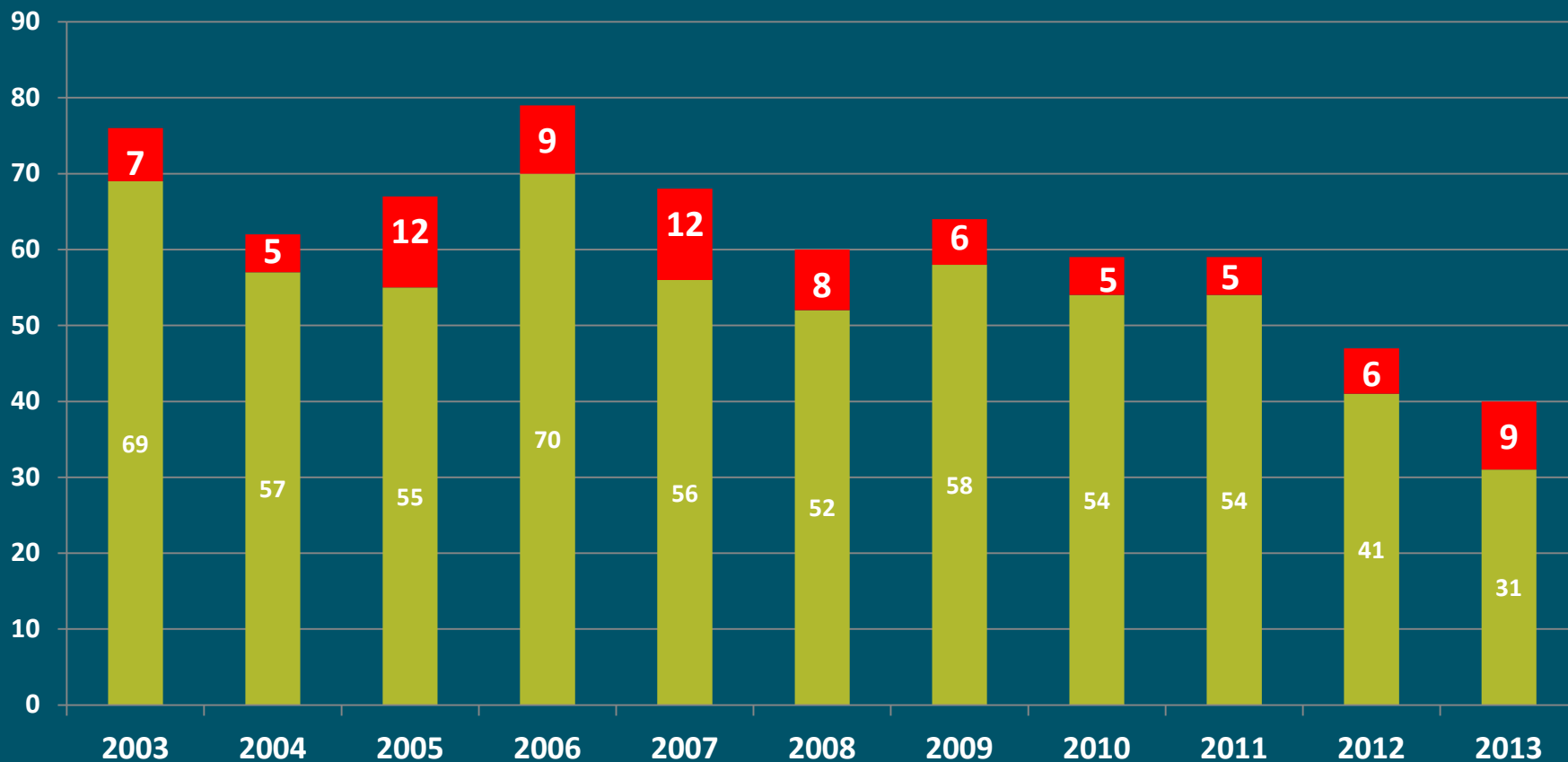
Worker fatalities in Oregon (2003-2013)

Top 10 industries in total number



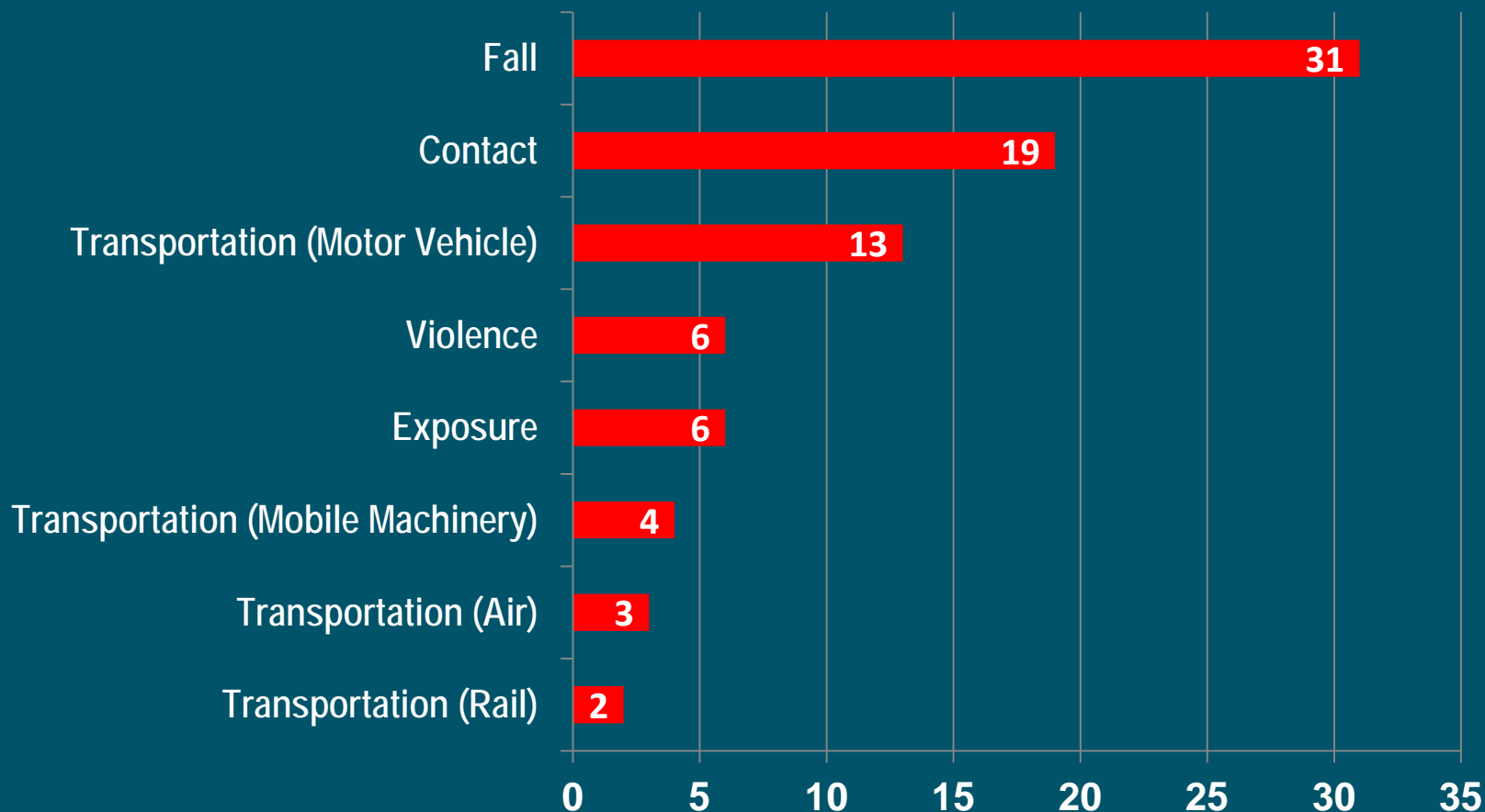
OR-FACE Cases

■ Construction



OR-FACE Cases

Oregon construction worker fatalities (2003-2013)
by event



Published (2013-2014)

1. Experienced journeyman machinist killed while operating an engine lathe
2. Millwright fatality involving a hydraulic accumulator
3. Timber faller killed while working under a hung tree limb
4. Collapsed roof trusses kill carpenter foreman


OREGON FATALITY ASSESSMENT


OREGON FATALITY ASSESSMENT AND CONTROL EVALUATION
www.ohsu.edu/croet/fatce


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OREGON FATALITY ASSESSMENT AND CONTROL EVALUATION
 Oregon Institute of Occupational Health Sciences

Fatality Investigation Report OR 2013-27-1

Collapsed roof trusses kill carpenter foreman

SUMMARY

A 33-year old carpenter foreman was killed when the roof truss system he and his crew were installing collapsed. The victim was hired to be the foreman for a project to construct a residential shop building. A few days before the incident the crew began framing, sheeting and bracing the external four walls. On the day of the incident, vertical truss bracing (2 X 4's) were nailed to the north and the south wall (see Figure 2). The truss manufacturer arranged for the delivery of the trusses on a trailer pulled by a truck-mounted crane. The truck operator provided the foreman with the delivery packet containing the BCSI-B1 Summary Sheet-Guide to Handling, Installing, Restraining and Bracing of Trusses (see Reference #7) before setting up to offload the trusses from the trailer. The foreman assigned each of his four-man crew their positions and tasks. The foreman worked the center span of the trusses installing bracing and runners and unhooking each truss from the crane rigging. After the thirteenth truss was toenailed into its place and the temporary short member top chord lateral restraint was installed, the victim disconnected the truss from the rigging. The truck operator and crew member on the trailer saw the truss system collapsing and yelled to warn the crew. The two crew members working on the top plates of the framed walls were knocked off the structure to the concrete floor below and were injured from the fall and falling trusses. The worker on the concrete floor beneath the erected trusses cutting lateral restraints to size sustained a head concussion. The victim sustained a fatal head injury when he was struck on the head by a falling truss.

RECOMMENDATIONS

- Workers should be trained in the proper handling, installing, restraining and bracing of trusses.
- When installing trusses, workers should ensure that the truss system is properly braced and restrained.
- If a worker is working on a structure that is being erected, they should ensure that the structure is properly braced and restrained.
- Employers should ensure that workers are properly trained and supervised.

Keywords: Construction, Truss collapse, Fall [NAICS=236117]
Publication Date: July 2014



Figure 1. Collapsed trusses where the incident occurred.



Figure 2. The shop/garage building with collapsed trusses within the structure. Note the 2X4's nailed to the outside of the south wall and that ground bracing was not erected. Middle vertical brace remained unbroken.

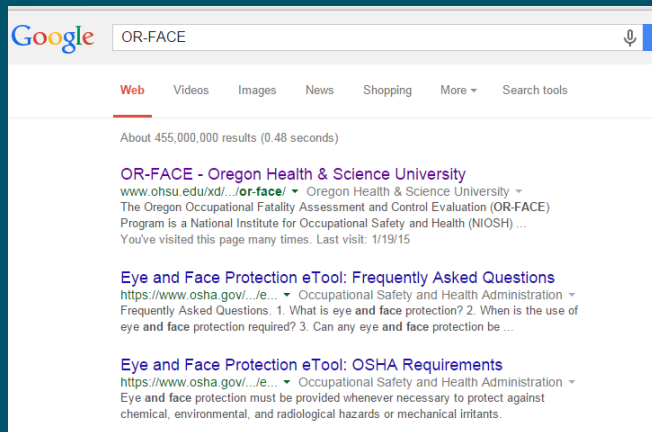
Keywords: Construction, Truss collapse, Fall [NAICS=236117]
Publication Date: July 2014

Oregon FACE Program
 OR 2013-27-1

Outreach

- **Website**
- **Publications**
- **Interventions**
- **Presentations**

<http://www.ohsu.edu/xd/research/centers-institutes/oregon-institute-occupational-health-sciences/outreach/or-face/>



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OR-FACE

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Oregon FACE

The Oregon Occupational Fatality Assessment and Control Evaluation (OR-FACE) Program is a National Institute for Occupational Safety and Health (NIOSH) sponsored program designed to prevent occupational fatalities through surveillance, targeted investigation, assessment, and outreach associated with traumatic work-related deaths in Oregon.

NEWS AND UPDATES

September 2014:

During 2000-2009 70% of commercial fishing deaths off the US West coast were caused by drowning. Dungeness crab fisheries had the highest number of fatalities. Falls overboard accounted for 24% of all fatalities. None of the victim of falls overboard were wearing personal flotation device.

A Crab fishing hazard alert was published with safety tips and fatal stories of three Oregon commercial fishermen.

Four more toolbox talk guides were added to the website: (1) Load of lumber shifts and falls on construction worker; (2) Truck driver crushed between semi-trailer and loading dock; (3) Mechanic killed by excavator bucket; and (4) Excavation worker killed by flying rigging when hook fails.

July 2014: OR-FACE published Fatality Investigation Report OR 2013-27-1, "Collapsed roof trusses kill carpenter foreman."

June 2014: OR-FACE published three Toolbox Talk guides based on occupational fatalities in logging: Logger Killed Under Rigging When Carriage Drops, Timber Faller Killed While Working Under a Hung Tree Limb, and Logger Killed by Falling Sheave When Yarder Tower Collapses. The OR-FACE website highlights the National Safety Stand-Down to Prevent Falls in Construction and provides a direct link to resources.

April 2014: OR-FACE published an investigation report,

FEATURED INVESTIGATION REPORT

Collapsed roof trusses kill carpenter foreman (published July 2014)

OR-FACE ANNUAL REPORTS

[2012](#) | [2011](#) | [2010](#) | [2009](#)
[2008](#) | [2007](#) | [2006](#)
[2005](#) | [2004](#) | [2003](#)

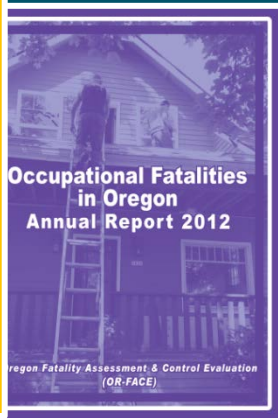
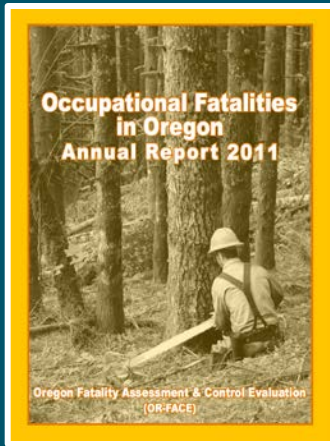
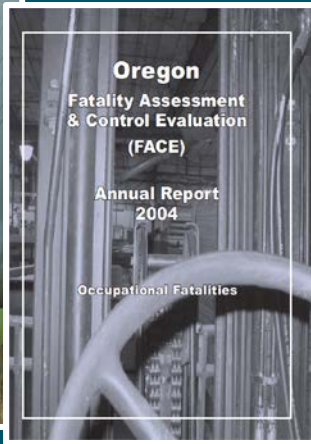
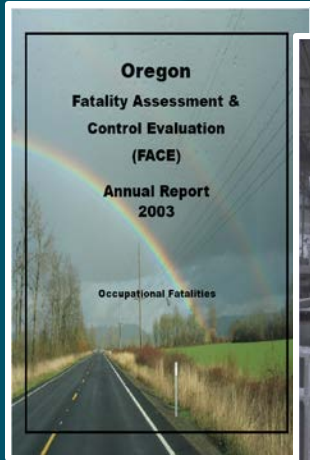
All links above are PDF's. To ensure accurate fatality surveillance, each Annual Report is closed out and published approximately 18 months after the end of a study year. The projected release date for the 2013 Annual Report is July 2015.

CONSTRUCTION FATALITY VIDEOS

The Center for Construction Research and Training (CPWR) created three short videos, each based NIOSH FACE construction fatality reports.

No New Year -- Trench Collapse

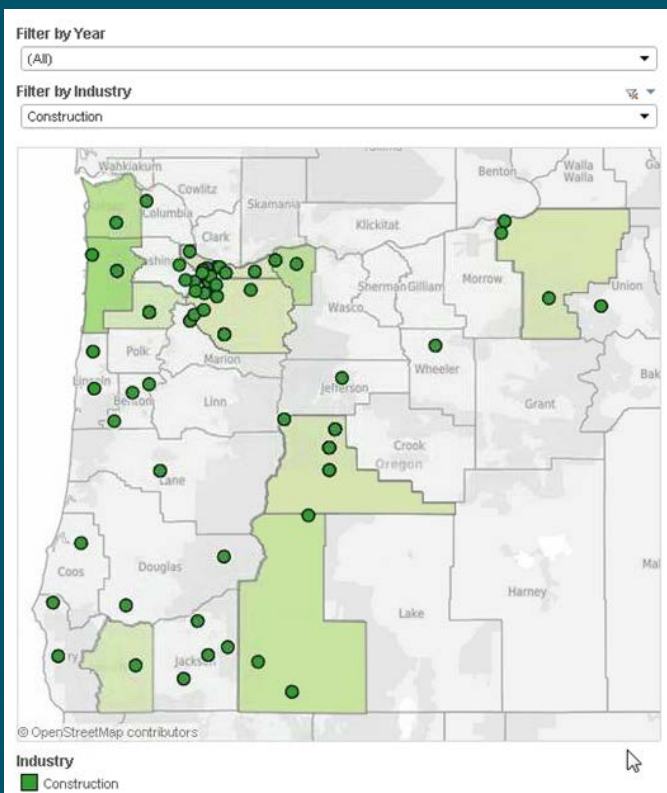
Annual Reports



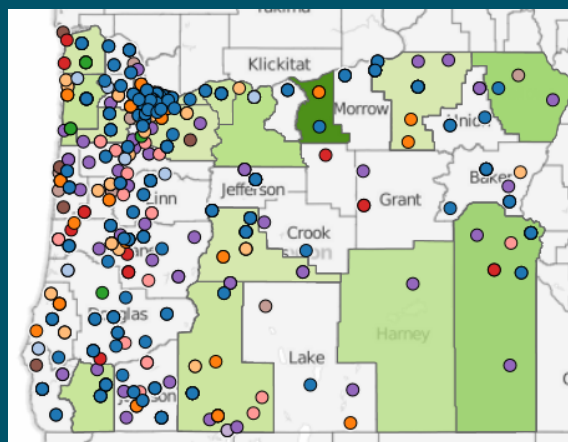
- **Published 18 months**
- **Abstract of cases**
 - **Based on report review**
 - **OSHA investigation**
 - **Police investigation**
 - **Medical examiner**
 - **Pathology**
 - **Toxicology**
 - **National Transportation Safety Board**
 - **US Coast Guard**

Interactive Maps (2003-2012)

Industry



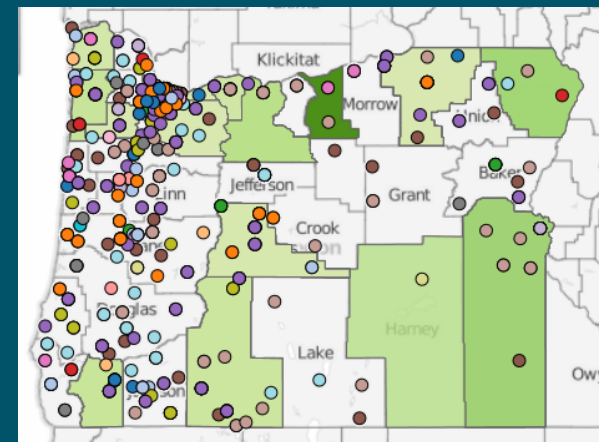
Event



Event



Occupation



Occupation



Hazard Alerts

OR-FACE Fatality Alert

November 2003

OHSU

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#1 OR2003-36-01



#2 OR2003-37-01



#3 OR2003-37-01

**Truck mounted pile driver presents fatal electrocution hazard****Incorrectly spotting for overhead power lines can result in fatal electrocution**

Case 2003-36-01 was electrocuted with an overhead subcontractor. Service area was aware of the proximity of the victim and the truck-mounted pile-driving ground. The victim jumped from the current from the ground and died of injuries.

Case OR2003-37-01 was electrocuted at 1 PM a 20-foot guardrail was the lower part of the driving tower worker.

NOTE: Both companies unmarked performed

Be ac

Fatal Fall Alert**Gravity Kills**

In 3 years, 22 Oregon workers died in falls. Risk increases greatly over age 35, and again over age 65. Fall hazards are everywhere. Falls from ladders are #1.

Please observe the following safety tips.

Recommendations

- Make sure ladder is in good condition, base and locks are secure. Set base 1/4 working length from wall, supported at top by both rails extending 3-4 ft above dismount level.
- Three-point rule: Get a firm grip with three of four limbs, especially in icy conditions.
- Beware losing your balance on the unexpected release of a weight you are carrying or pulling, or from overreaching.

Fatal Stories, 2003-2005**LADDERS**

Store ladder. A female retail clerk fell from the sixth step of a step-ladder in a company store room, and died 5 days later. She sustained a fracture to the left knee and femur. The clerk was admitted to a local hospital, where she developed sepsis.

Icy lumber load. A lumber yard worker was killed when he fell about 11 ft off a loaded semi-trailer. The worker placed an extension ladder against the load and climbed to the top to strap it down. Ice had formed on a layer of plastic covering the load, and the worker apparently slipped as he was stepping from the ladder.

Roof exit. A school custodian died after falling about 12 ft from a ladder. He used a fully extended extension ladder to access a roof to retrieve balls. The spring-loaded locks were not set properly, which allowed the custodian to climb the ladder successfully, but the ladder collapsed when he put his weight on it to return to the ground.

ELEVATED LEDGE

Concrete tank. A construction worker died after falling about 19 ft into a concrete tank. The worker was removing concrete from an underground water treatment tank that was being dismantled, and was chipping away the fastening strip from the top edge. He was either bending over or kneeling to perform this task, and apparently lost his balance when he stood up to move to the next section.

Conveyor belt. A miner fell 12 ft onto a concrete floor from a crossbeam of an elevated conveyor at a sand and gravel operation, and died the next day. The miner and two coworkers were installing a new conveyor belt. The miner was standing on a crossbeam, pulling on a rope tied to the new belt. The rope unexpectedly came loose, causing him to fall.



Much more! See Oregon OSHA's readable manual **FALL PROTECTION FOR THE CONSTRUCTION INDUSTRY** and other resources online at www.croetweb.com

- Avoid standing up from a kneeling position next to a ledge, where momentary dizziness can cause you to lose balance.
- Cover and guard holes securely.

Hay trailer. A rancher fell about 12 ft off a trailer onto his head, and died 2 weeks later. The rancher was feeding horses from the top of a trailer when the string broke on a bale of hay he picked up, sending him backward off the trailer. He walked a few hundred yards to his house, and went to the hospital. He was discharged 4 days later, refused physical therapy, and later died of a massive pulmonary embolism.

HOLE IN ROOF OR FLOOR

Skylight. A roofer's helper died when he fell through a skylight to a concrete floor 35 ft below. The worker was assisting his father, a roofing contractor, repair water leaks on the flat roof of a commercial warehouse. Clearing up for the day, the worker was backing up with a torch hose when he stepped or tripped into the skylight.

Insulated hole. A journeyman roofer died after falling through a covered hole 20 ft onto a concrete floor during a warehouse reroofing project. The roofers removed a fan and covered the hole with a square of insulation, unsecured and unmarked. Wearing sunglasses, the roofer walked across the roof, kicked loose the insulation over the hole, and fell through it.

Loading-hole gate. A female fish processor was killed after falling 12 ft through a loading hole on a second-floor storage area. The opening was designed for use by a forklift; three sides closed by fixed guardrails, and the fourth with a removable gate of two 2x4 rails that sat in cradles. The rails were not pinned or blocked. As the processor leaned over the bottom rail of the gate to catch boxes being thrown up to her, the rail dislodged.

TRIPS AND OTHER FALLS

Tip fracture. An 88-year-old pawnbroker tripped over a bag on the floor of his shop and fractured his hip. The victim died from complications in the hospital 4 days later.


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PLEASE POST

Oregon Fatality Assessment and Control Evaluation

503-494-2502 www.ohsu.edu/croet/face

- One page
- Bulleted recommendations
- Abstract of similar cases

Blogs




Oregon and the Workplace

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National Safety Stand-Down to Prevent Falls in Construction

For those who aren't aware June 2-6, 2014 is the National Safety Stand-Down to prevent falls in construction. A Safety Stand-Down is a voluntary event for employers to take directly to employees about a specific safety topic. The purpose of this National campaign is to raise awareness of fall prevention in construction. Falls from elevation continues to be the leading cause of death for construction workers. In 2012 there were 775 construction fatalities recorded and 389 of these were caused by falls from elevation.



Suggestions to prepare for the Safety Stand-Down are provided by OSHA.

In addition to the resources provided by OSHA, the Center for Construction Research and Training (CPWR) has outstanding training materials (in several languages) and include videos, handouts, "Spot the Hazard", Toolbox Talks and many more.

For more Oregon-specific Toolbox Talks, Oregon Occupational Fatality Assessment and Control Evaluation (OR-FACE) has toolbox talks based on construction fatalities in Oregon.

OSHA will have a webpage (active June 2 to July 15, 2012) where employers can provide feedback on their Safety Stand-Down and download Certificates of Participation.

Let's all participate in preventing falls in construction by having a great Safety Stand-Down during this year's campaign, June 2-6.

SHARE

Participation Guide

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2010 Olyres Video Contest Kick Off

Things are Looking Up for Occupational Health & Safety in Southern Oregon

Infection Control & Staying Healthy

Recent Comments

Deak Montgomery on Infection Control & Staying Healthy

Annie Tranter on Infection Control & Staying Healthy

Hannah on Training Young Workers: How-To's for Employers

Ly on Training Young Workers: How-To's for Employers

Ash MacGregor on Why Use Sunscreen When it is Cloudy?



Oregon and the Workplace

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OR-FACE Publishes More Toolbox Talk Guides



FATAL HAZARD

Work away from sharp points or moving plant parts. Avoid loose clothing when operating machinery. Consider hand placement. Be alert to all work conditions.

Safety communication is an integral part of maintaining an injury prevention culture. Its implementation can be in a variety of methods such as warning labels, safety trainings and meetings, hazard alerts and informal communications between supervisors, workers, and co-workers. In her 30 years of experience as a safety and health professional, Lisa Elizabeth-Jones, program manager of the Oregon Fatality Assessment and Control Evaluation (OR-FACE) program, has learned that increasing the level of interaction between supervisor and workers about safety, positively influences safe behaviors. Moreover, if the interaction is about real world, reliable events, the impact can be significant.

Toolbox talks are a common form of safety communication, especially in construction but they have been used as daily pre-shift meetings in general industry. OR-FACE has created several toolbox talk guides and recently published four. These two-page documents are based on information gathered from Oregon fatality investigations. One side of the toolbox talk is a simple line drawing for viewing from a distance and for ease in understanding the key elements of the incident. At the bottom of the line drawing are key actions to prevent a similar incident. On the other side, are instructions for leading the toolbox talk, a narrative of the incident, bulletted items that reiterate the key prevention actions and a list of questions to facilitate a discussion on current practices, unsafe conditions, and commitment to an action plan.

The overarching goal of these toolbox talk guides is to provide supervisors/leaders with documents to increase interaction and positively influence safe behaviors. The format uses evidence-based safety communication principles and real-world (Oregon) reliable events.

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Participation Guidelines

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HOME POSTS

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Ly on Training Young Workers: How-To's for Employers

Ash MacGregor on Why Use Sunscreen When it is Cloudy?

HOME COMMENTS

Meta

Preventing Construction Fatalities: *The Toolbox Guide Initiative*

OR-FACE
PSU Occupational Health Psychology
Hoffman Construction
Fortis Construction
SAIF Corporation



PLAN

ahead to get the job done safely.

PROVIDE

the right equipment.

TRAIN

everyone to use the equipment safely.

Safety communication studies

Recommendations

- **Technical communications**
 - 5th-7th grade level (refinery communication at 16th grade level (4% can understand))
- **Use pictures**
 - Increase comprehension (often by 100%)
 - Several pictures if subject is complex
- **Use simple text**
 - Never more than one page
 - Lots of white space
- **Communicate as if you were human**

Tool Box Talk Guides: *Evidence-Based Structure*

FRONT: Scripted Story

BACK: Line Drawing

Toolbox Talk Load of Lumber

INSTRUCTIONS side facing you

Our safety talk today is about a recent incident involving a framer from another company who died when a load of lumber fell on him. He was on a ladder to access a stairwell in a house while a rough bundle of lumber to weighed at least 60 maximum possible tipped over. The lumber struck the victim's head and against the ladder. He fell to the first floor and probably died from

So here are some things happening where we work.

- Never exceed the load or extension limits of a lift or crane. You should be trained before you operate a lift or crane, and I can make sure you get the training.
- Never work directly under a load. If you are required to be under a load, use a spotter and communication system to prevent lifts over workers.
- Use a spotter and communication system to prevent lifts over workers, advance, and to

ASK: "Does anyone have ideas for improving our communication systems?"

END WITH ACTION

- "Are there any other things we should be aware of when operating their limits?"
- "Does anyone have ideas for improving our communication systems?"
- "What do you all do to make sure people are not under loads being moved?"
- Discuss a similar situation at your current site.
- Express your commitment to training people for each machine they operate.
- Commit to follow-up at the next safety talk.

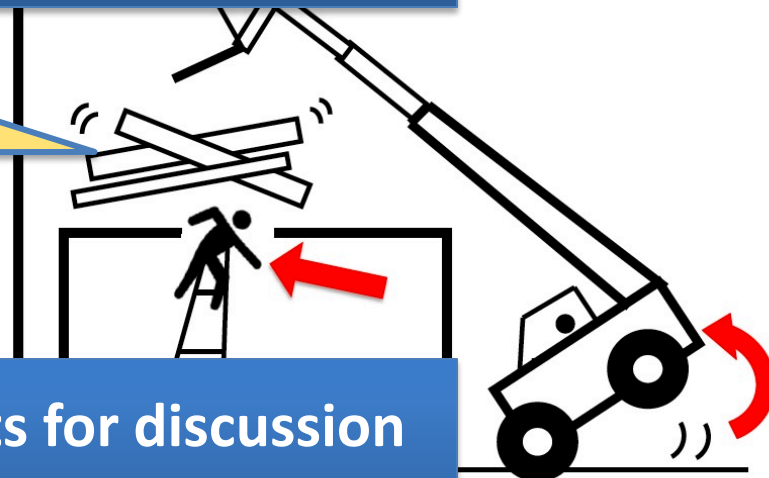
High urgency alert word
in color

Line drawings increase
understanding and
viewing distance

Top 3 preventive actions
in bullets

Script with instructions
in black boxes

Prompts for discussion
and correcting hazards

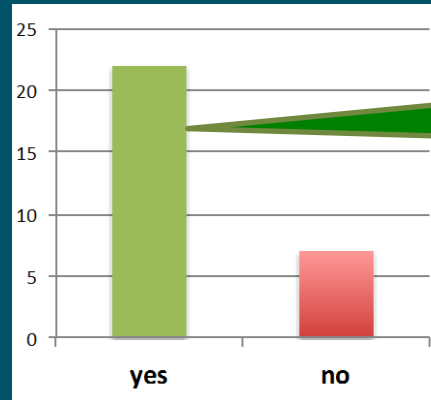


- Never exceed load or extension limits of a lift or crane
- Use a spotter and communication system to prevent lifts over workers
- Never work directly under a load

3 Field Studies (sample findings)

• Study 1: Current Pre-Shift Practices (n=29)

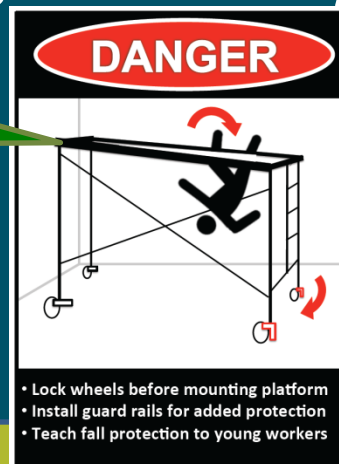
My company
conducts
pre-shift
talks/briefings



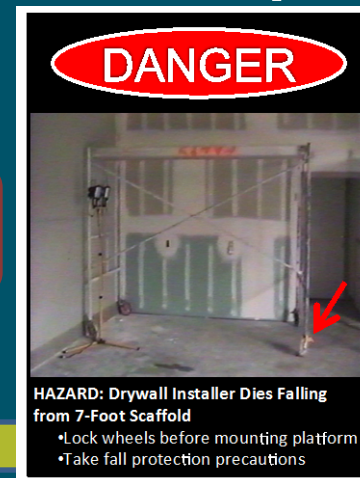
frequency
27% weekly
34% daily

• Study 2: Image Viewing Distances (n=30)

1 to 3 M
greater
viewing
distance



VS.



Study 3: Field Test (n=119)

Supervisors

Talk with
FACE report

VS.

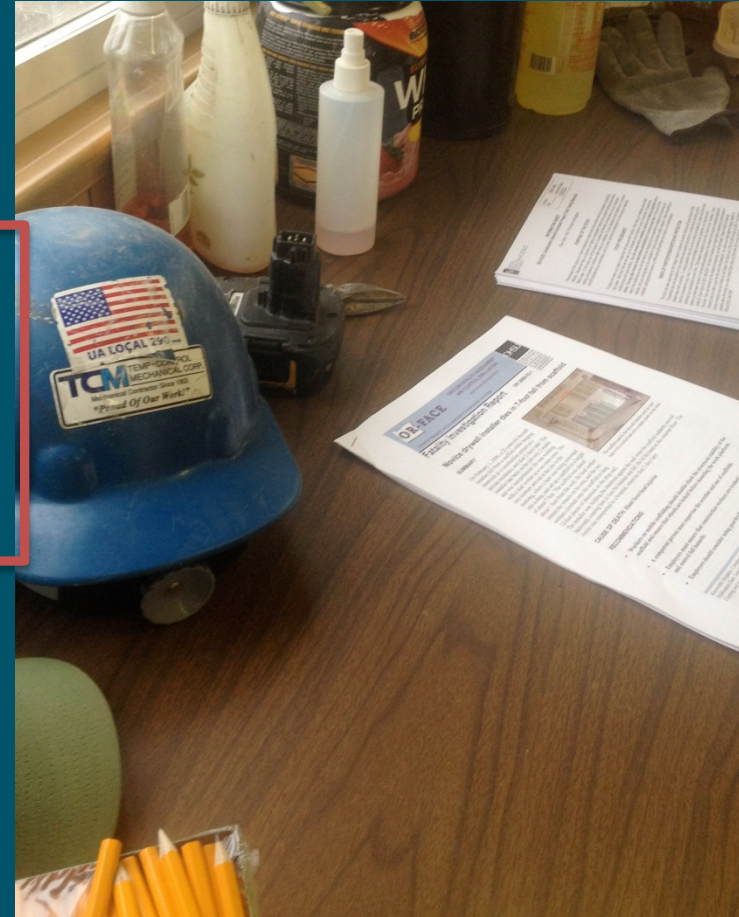
Talk with
Tool Box
Guide

**Preferred
3:1**

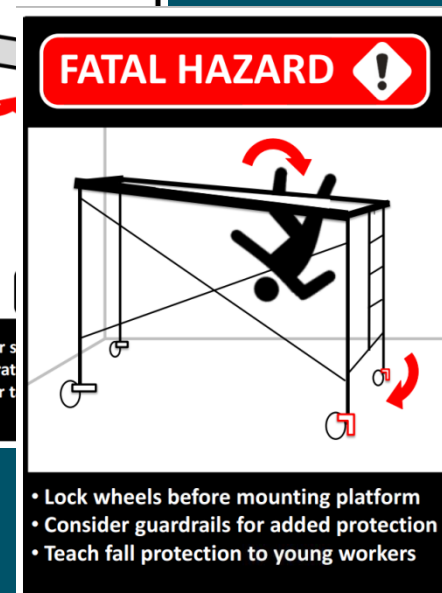
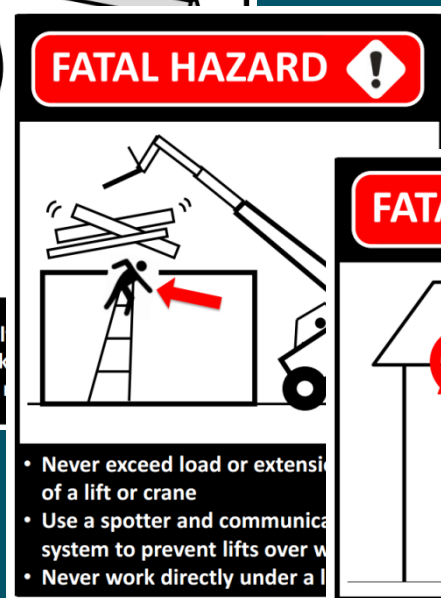
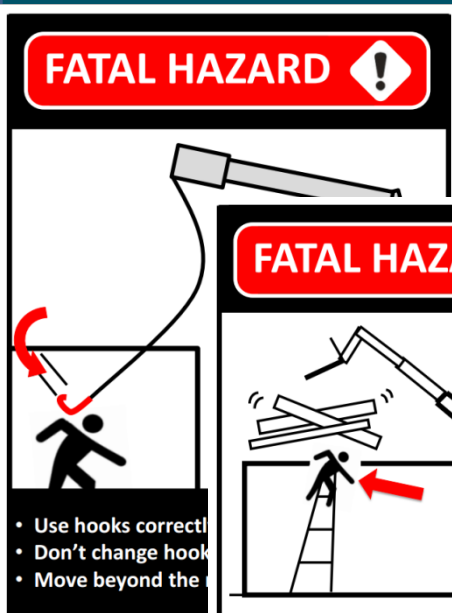
Workers

- **Reactions**
- **Behavioral intentions**
- **Preference**

Similar positive ratings
all $M > 3.7$ (out of 5)



Published



Proposed Projects

- **Mobile system to promote and evaluate**
 - toolbox talks
 - hazard alerts
- **Format – what would be best**
 - Voice (story)
 - Email
 - Picture



Proposed Projects

- **Preventing falls in residential construction**
 - **Identify Participants**
 - Homebuilders Association
 - SAIF Corporation
 - **Study**
 - Experience in recent serious (non-fatal) fall from elevation will increase contractors participation in surveillance survey
 - Small grants program to supply fall prevention equipment and training.

Other Resources

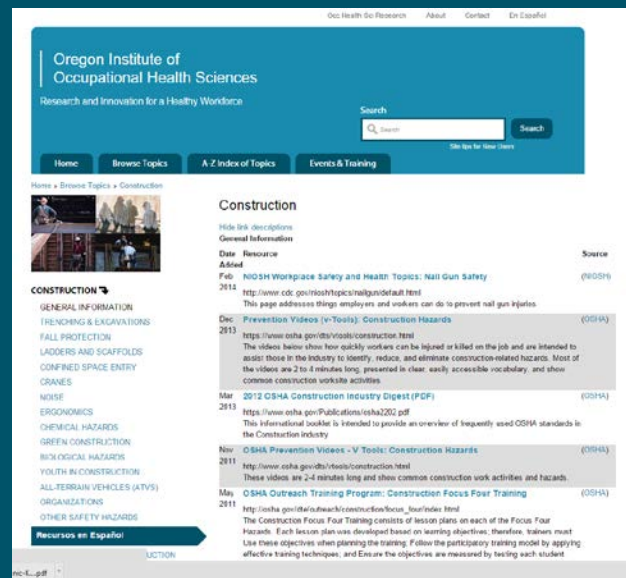
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<http://croetweb.com/index.cfm>

- Safety toolbox talks
- Online videos
- Newsletter
- Blog

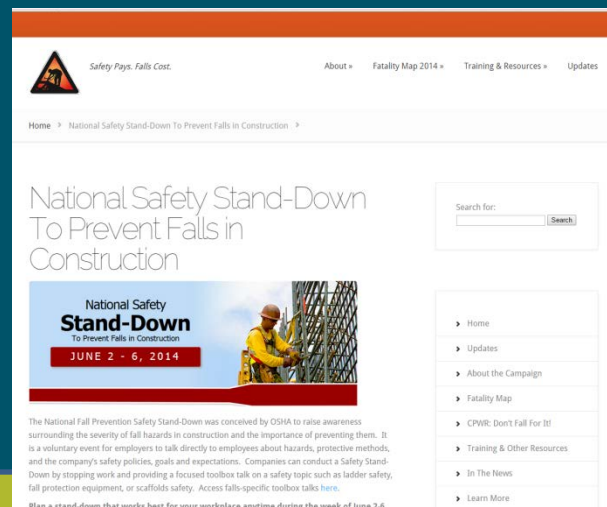
- **NIOSH (CPWR)**

- Stop Construction Falls – National Safety Stand-Down to Prevent Falls in Construction



The screenshot shows the Oregon Institute of Occupational Health Sciences website. The header includes the organization's name and a search bar. The main content area is titled "Construction" and lists various resources. A table of resources is visible, including:

Date Added	Resource	Source
Feb 2013	NIOSH Workplace Safety and Health Topics: Nail Gun Safety	(NIOSH)
Dec 2013	Prevention Videos (v-Tools): Construction Hazards	(OSHA)
Mar 2012	2012 OSHA Construction Industry Digest (PDF)	(OSHA)
Nov 2011	OSHA Prevention Videos - V Tools: Construction Hazards	(OSHA)
May 2011	OSHA Outreach Training Program: Construction Focus Four Training	(OSHA)



The screenshot shows the National Safety Stand-Down to Prevent Falls in Construction website. The header includes the slogan "Safety Pays. Falls Cost." and navigation links. The main content area features the title "National Safety Stand-Down To Prevent Falls in Construction" and a search bar. Below the title is a banner image of a construction worker. The website also includes a sidebar with links to Home, Updates, About the Campaign, Fatality Map, CPWR: Don't Fall For It!, Training & Other Resources, In The News, and Learn More.



Questions?

| Oregon Institute of Occupational Health Sciences