Oregon Fatality Assessment and Control Evaluation (OR-FACE)

Analysis of Oregon occupational fatalities from surveillance, investigation, and assessment findings

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Session A1: Topics in Safety

Overview

- What is OR-FACE
  - Mission
  - History
- Surveillance data (occupational fatalities, 2003-2015)
- Investigations
- Outreach
- Research projects

OR-FACE

Mission (background)

- Workplace fatalities: preventable, yet unacceptably common events
  - Each day traumatic injuries kill ~13 workers on the job
  - Each year ~ 350,000 workers killed on the job globally, with nearly 5,000 deaths in US
  - Current Oregon occupational fatality rate = 2.6 deaths per 100,000 workers

    (national average = 3.5)

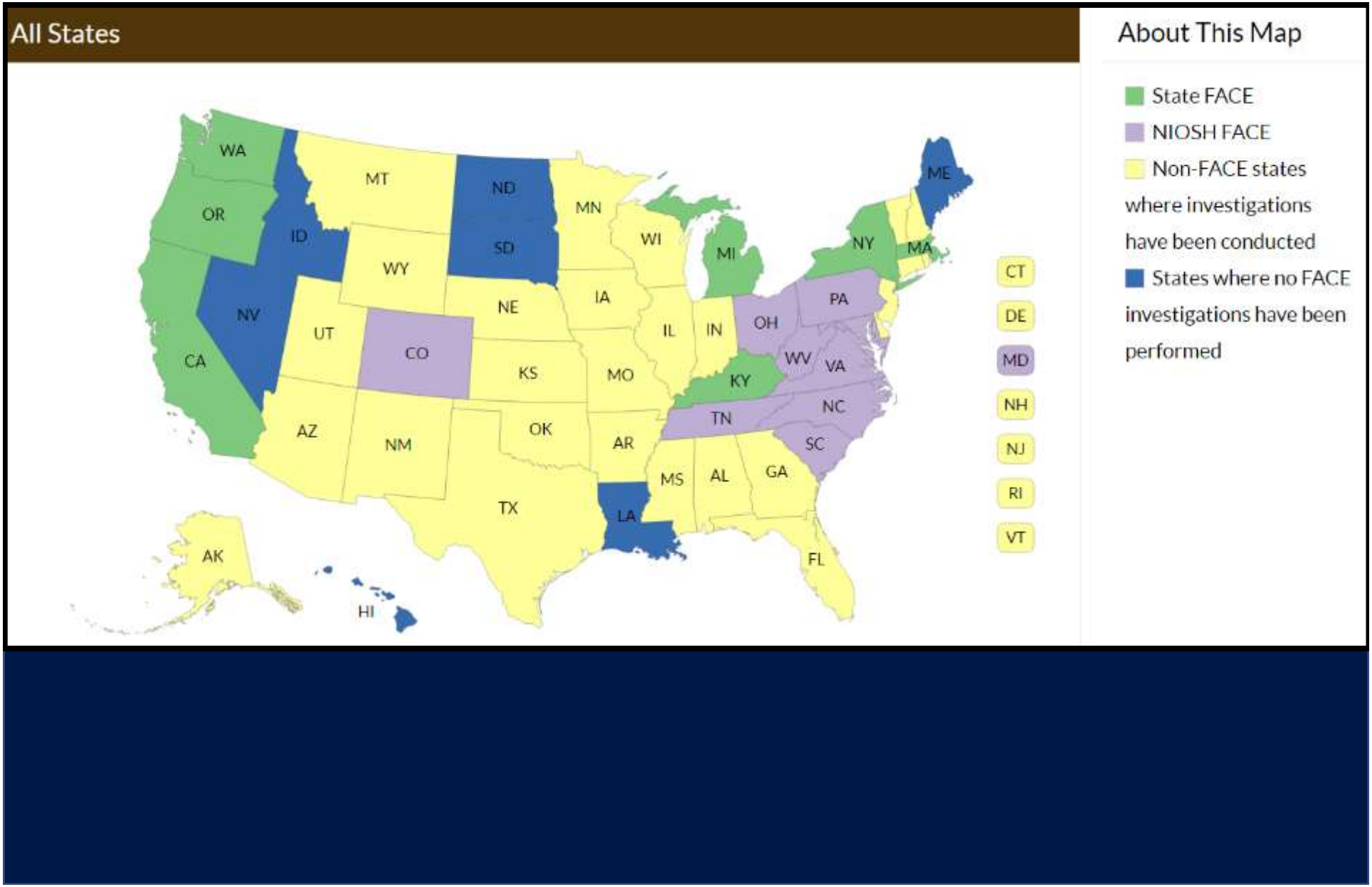
Mission (goal / objectives)

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

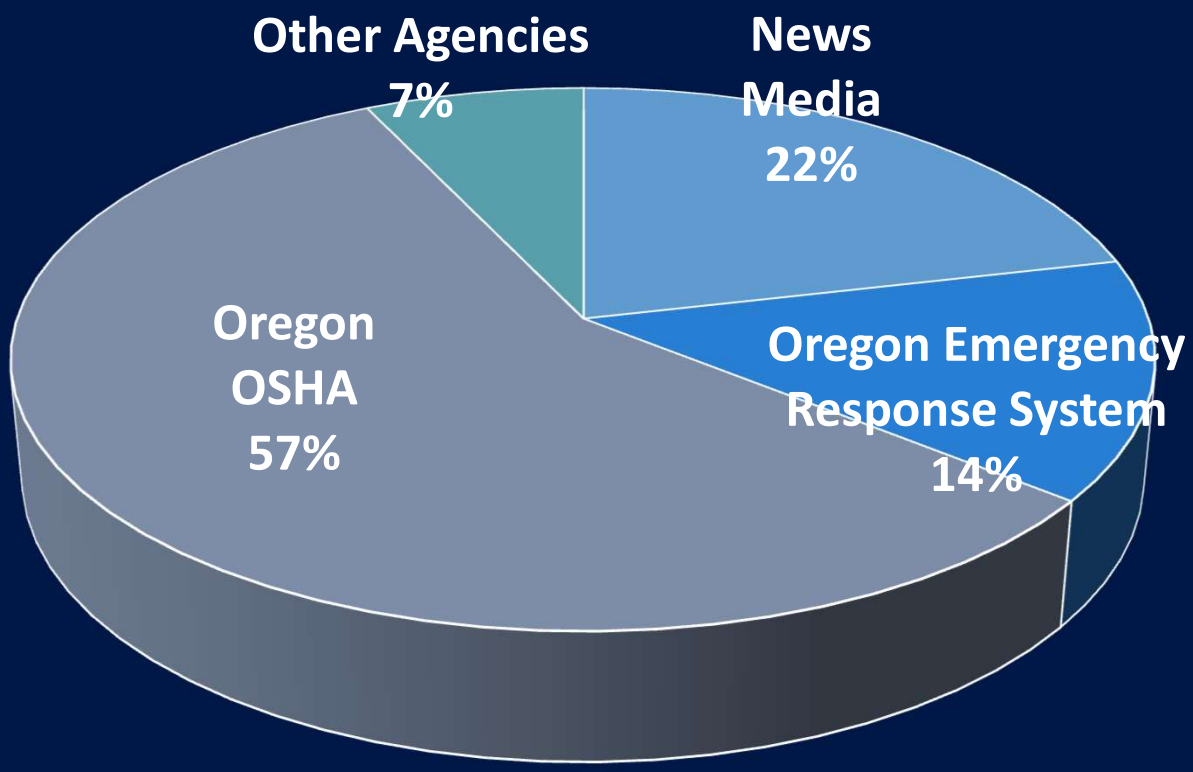
FACE History

- NIOSH surveillance research program
  - Began in 1982
  - Expanded to states in 1992
- OR-FACE
  - Joined 14 other state programs in 2002
  - 2010 only 9 states
  - Currently only 7 states

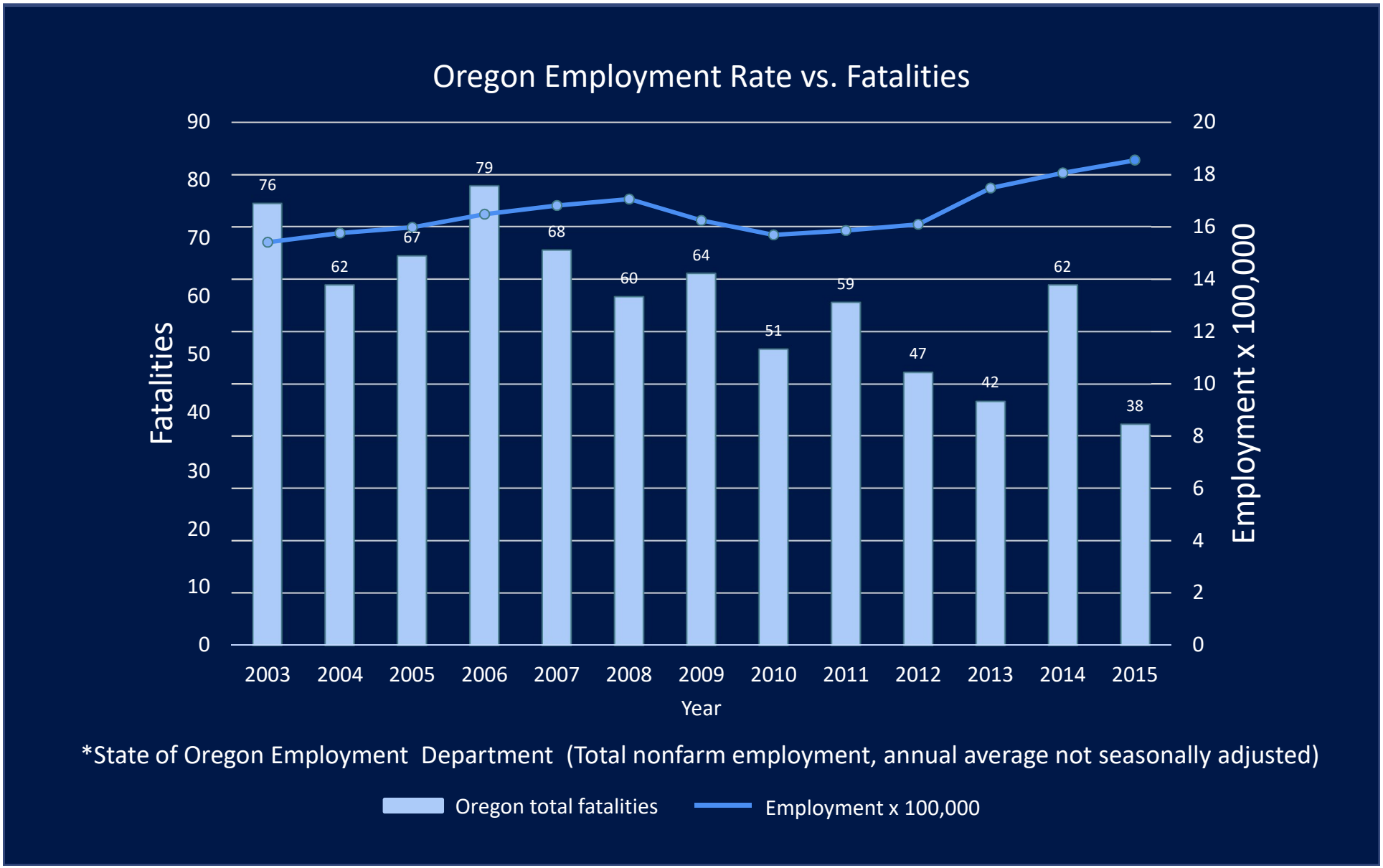
NIOSH Fatality Assessment and Control Evaluation (FACE) Program



Surveillance 2015 Sources

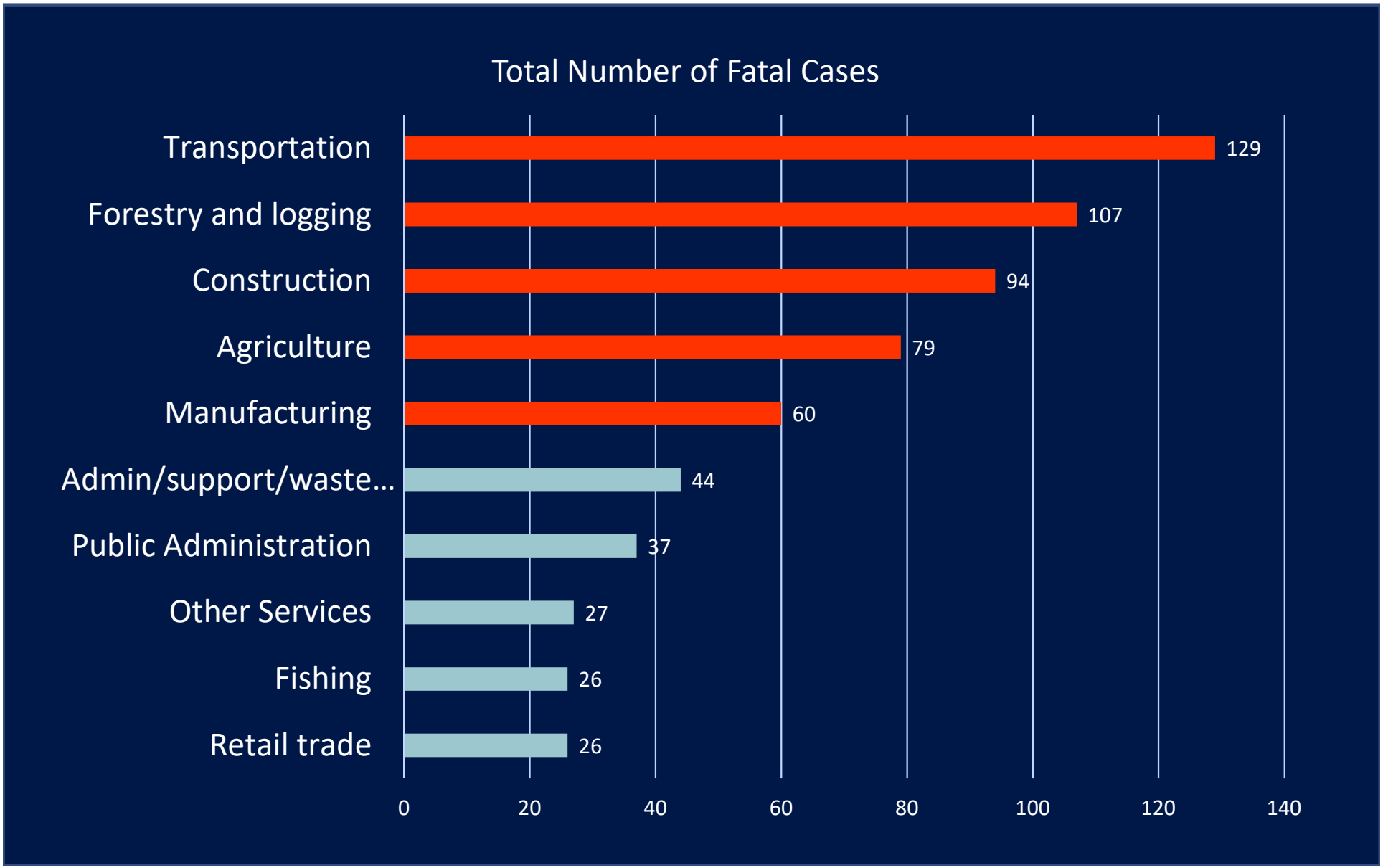


Worker fatalities in Oregon (2003-2015) by year

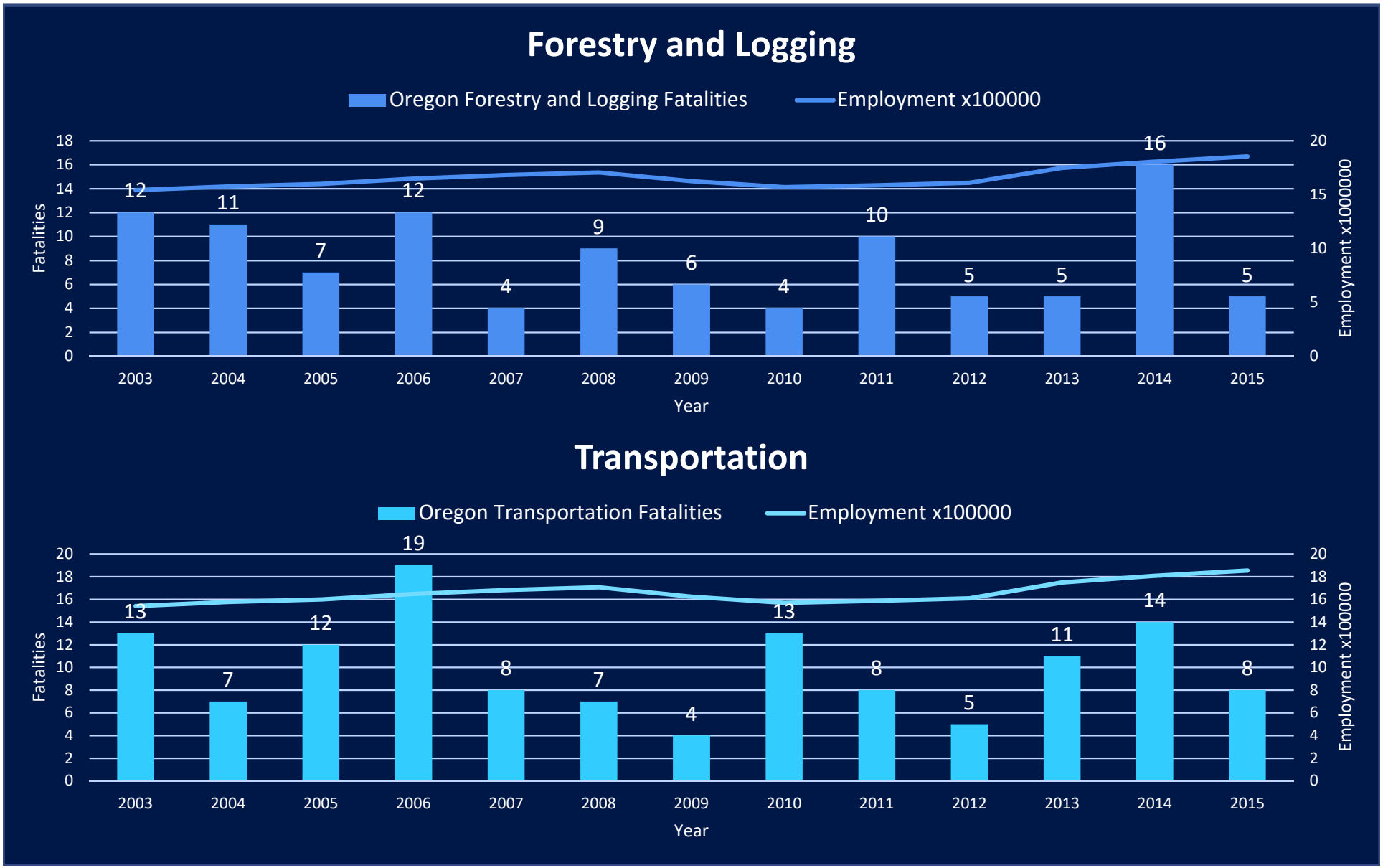


*State of Oregon Employment Department (Total nonfarm employment, annual average not seasonally adjusted)

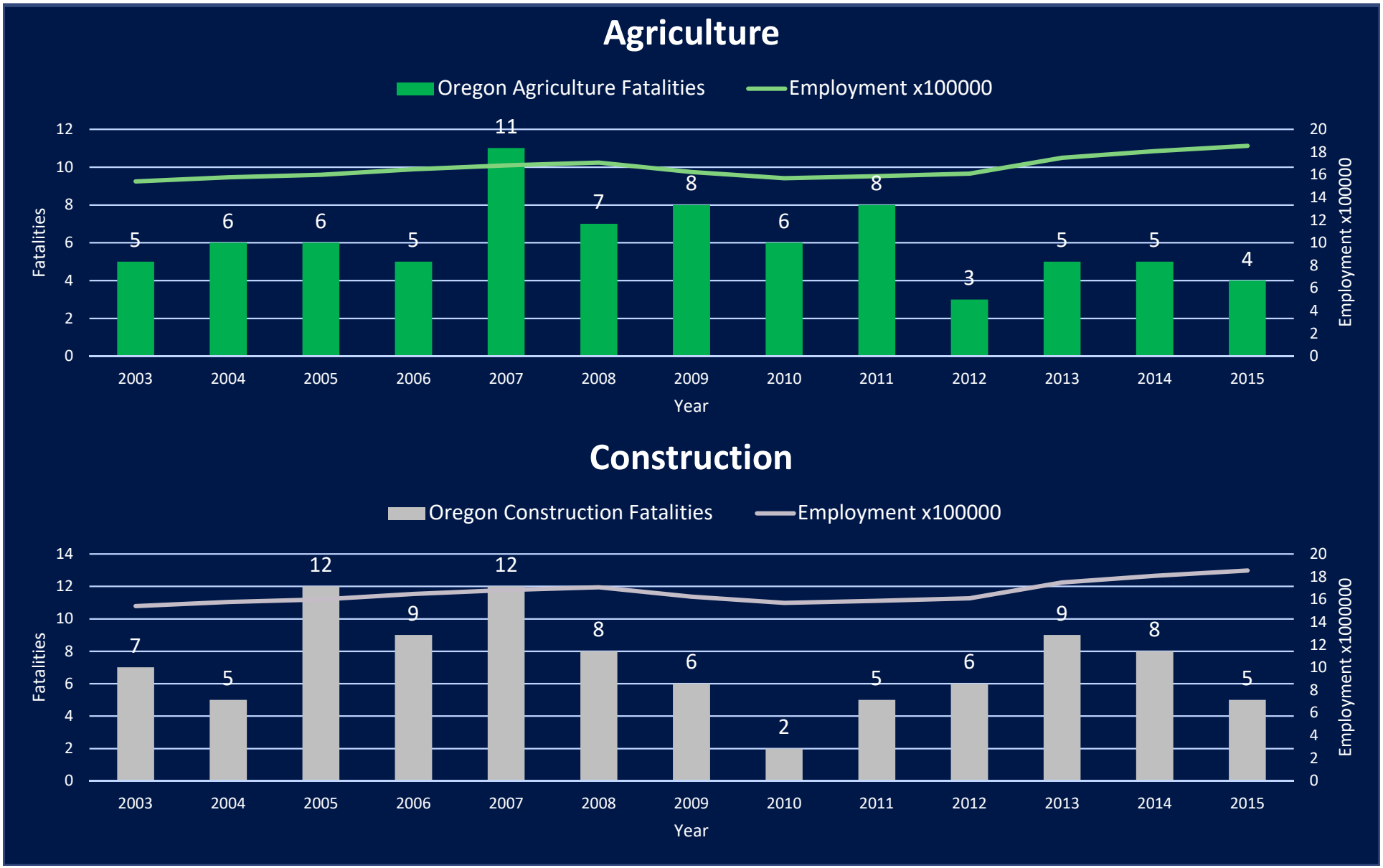
Worker fatalities in Oregon (2003-2015): top 10 industries in total number



Worker fatalities in Oregon (2003-2015) by industry

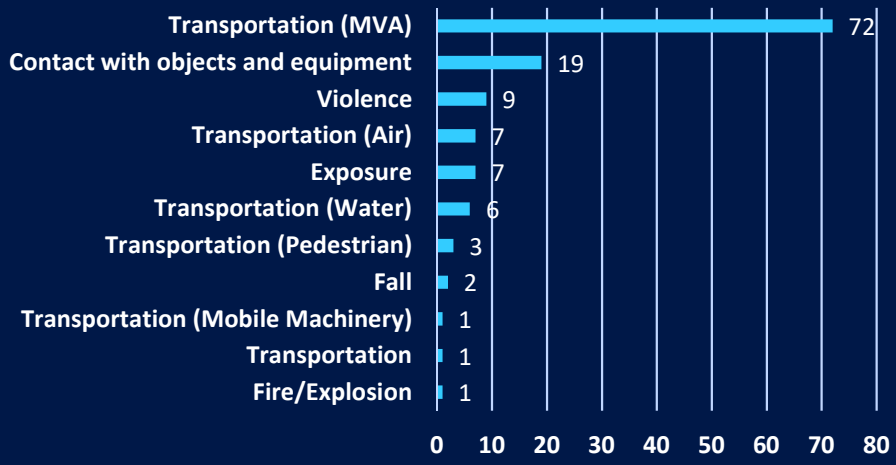


Worker fatalities in Oregon (2003-2015) by industry (cont'd)

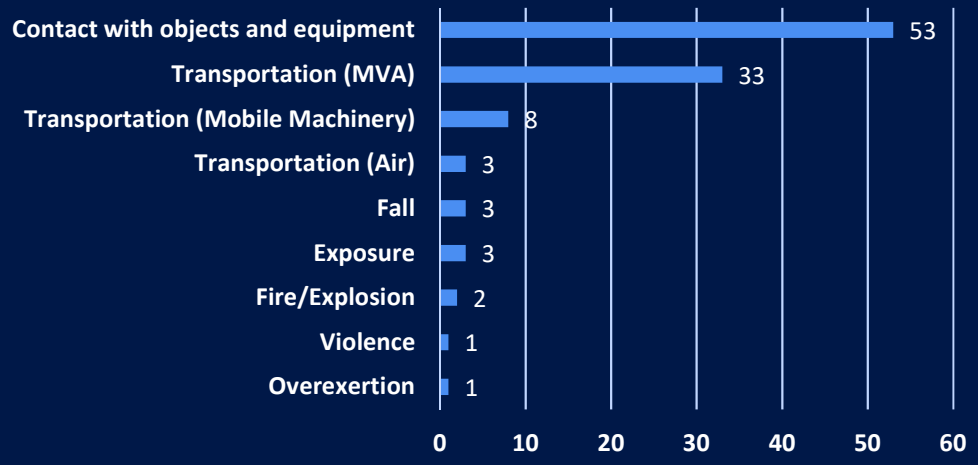


Worker fatalities in Oregon (2003-2015): Events

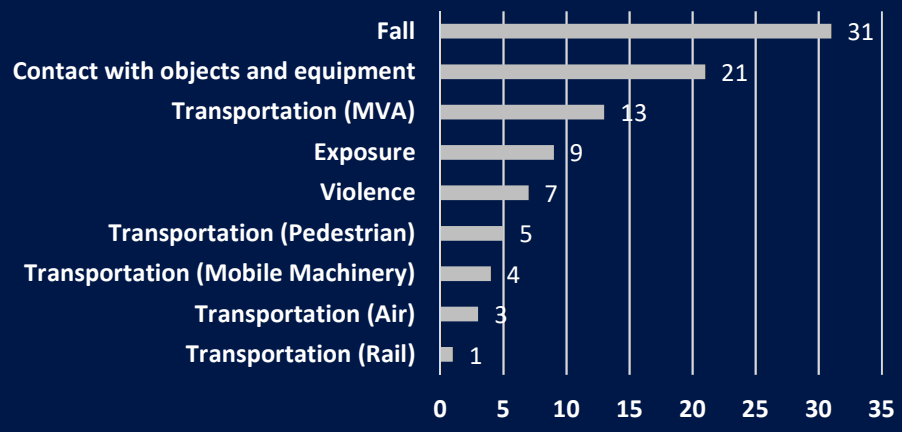
Transportation



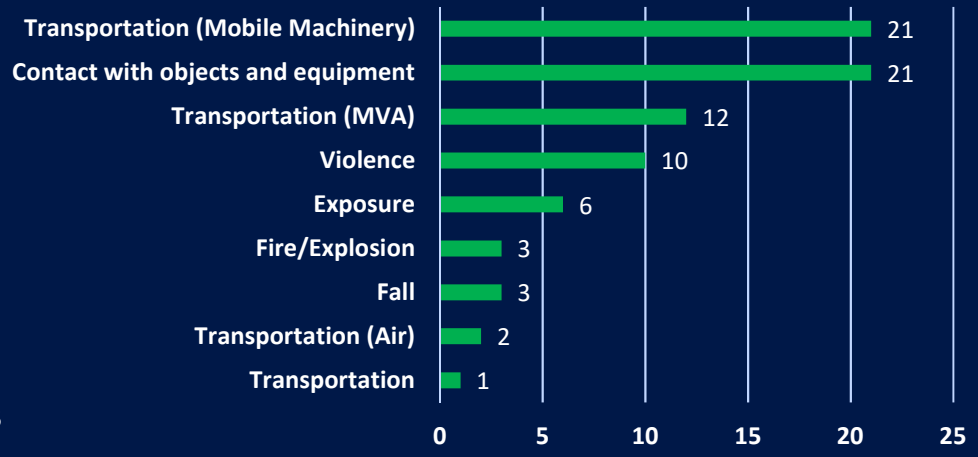
Forestry and Logging



Construction



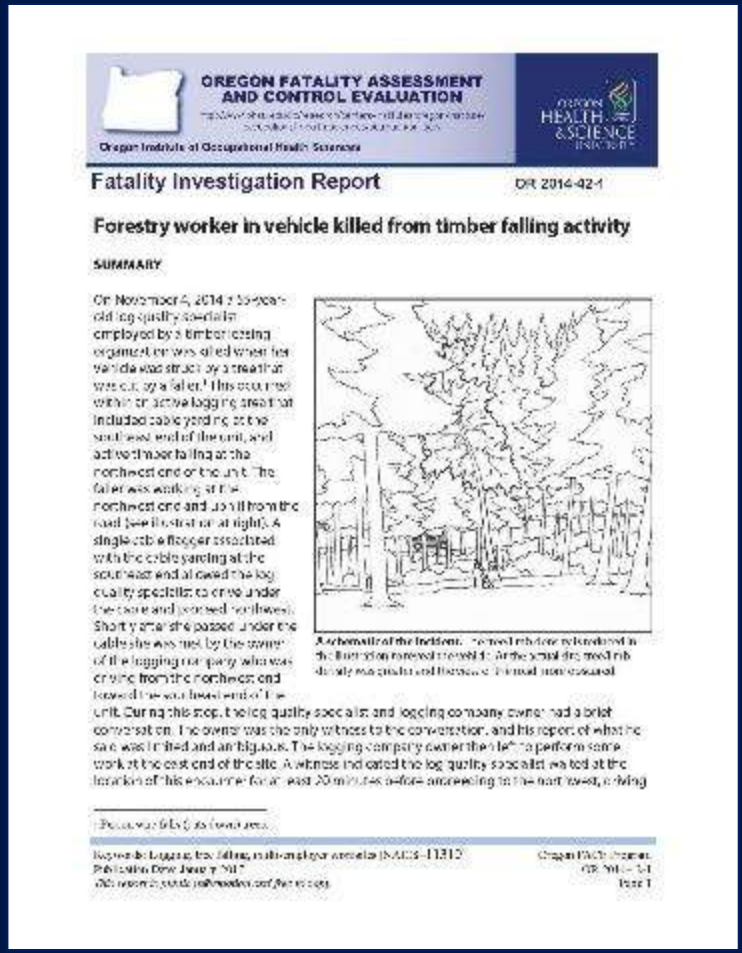
Agriculture



Investigations

Guiding Principles

- Maintain confidentiality
- Provide facts
- Provide best practice recommendations
  - Beyond regulatory requirements
  - Hierarchy of controls



OREGON FATALITY ASSESSMENT AND CONTROL EVALUATION

Oregon Institute of Occupational Health Sciences

Fatality Investigation Report FR 2014-424

Forestry worker in vehicle killed from timber falling activity

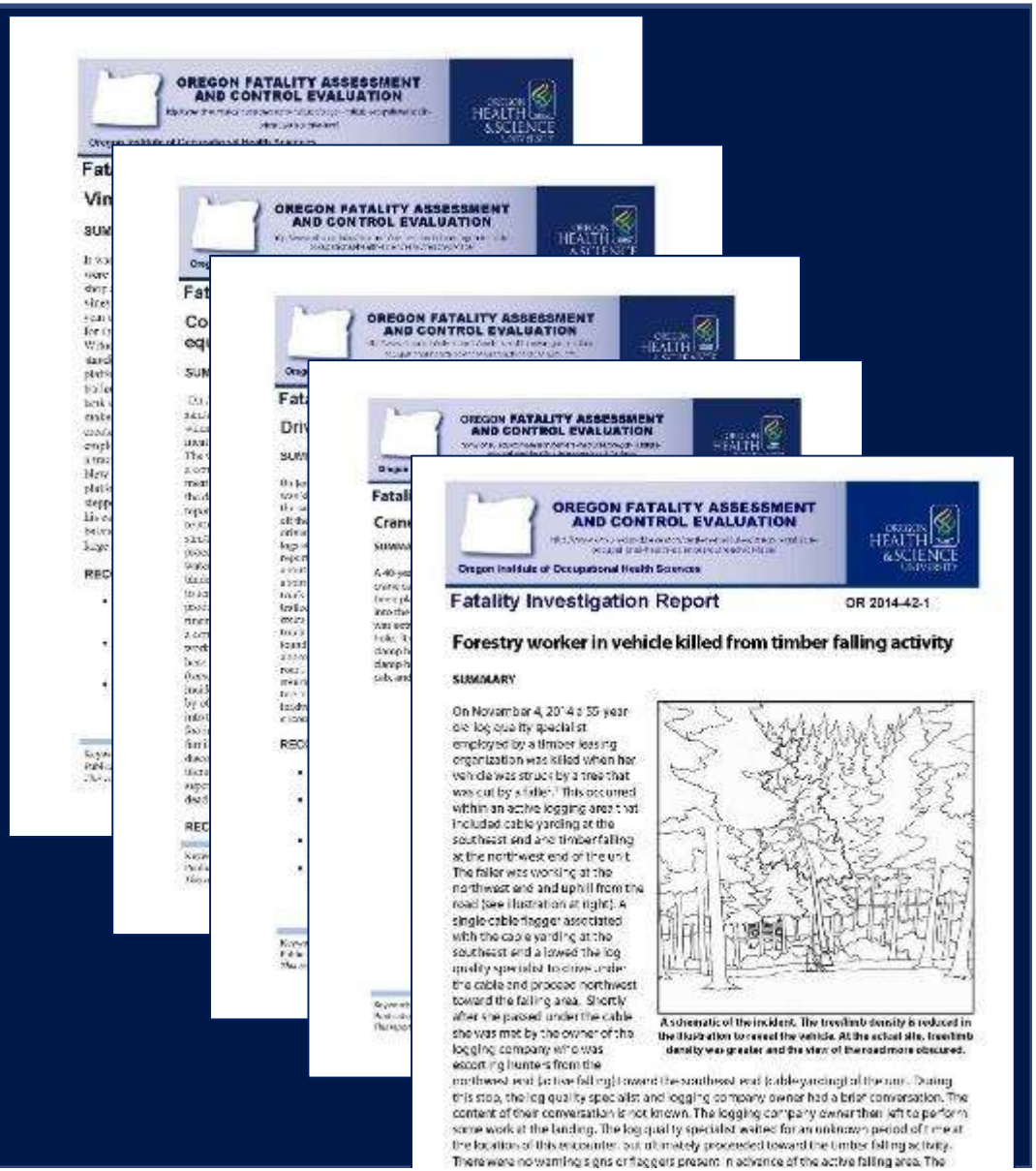
SUMMARY

Targeted Investigations

- Goals
  - Prevent fatal work-related injuries
  - Study work environment, workers, tasks, tools… and management role in controlling how these factors interact
- OR-FACE priorities
  - Portland metro (broad) & surrounding
  - Fall in construction
  - Transportation / mobile machinery
  - Temporary / contingent workers
  - Others, per collaborative partnerships
  - Multiple factors beyond OSHA scope

Recent Investigative Reports (2015-2017)

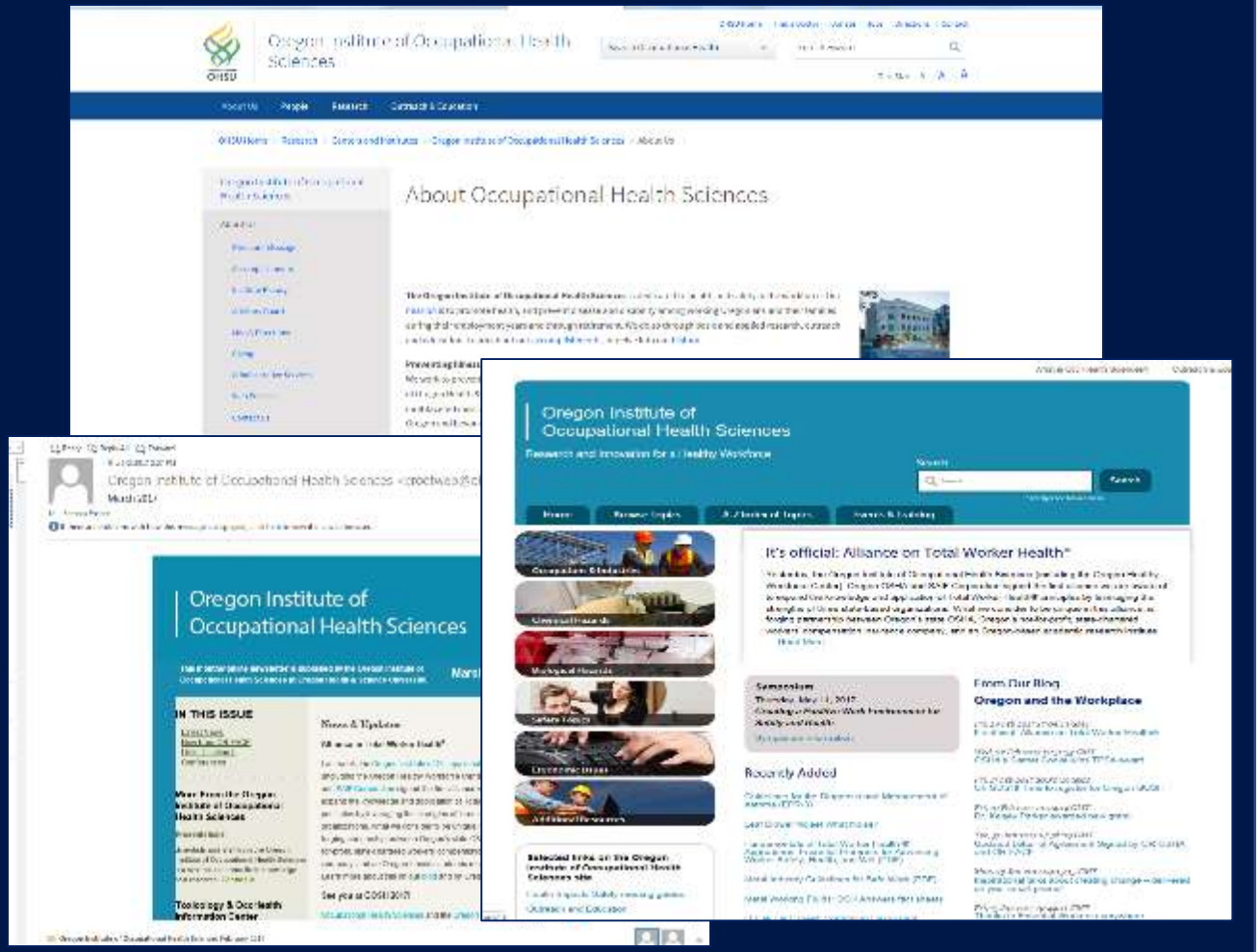
- Vineyard worker killed in fall from trailer
- Contract sanitation worker killed cleaning meat blending equipment
- Driver killed when ejected from logging truck
- Crane operator killed by falling steel beam
- Forestry worked killed in vehicle from timber falling activity



Outreach / Resources

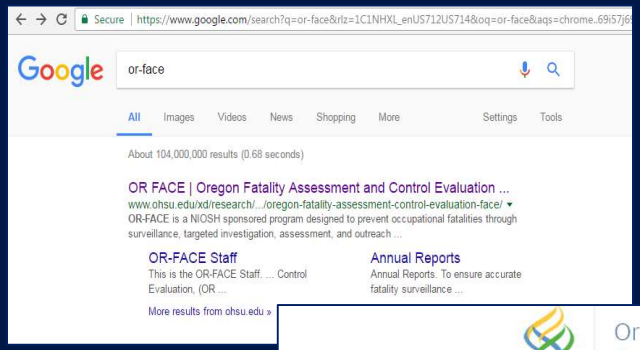
- Oregon Institute of Occupational Health Sciences

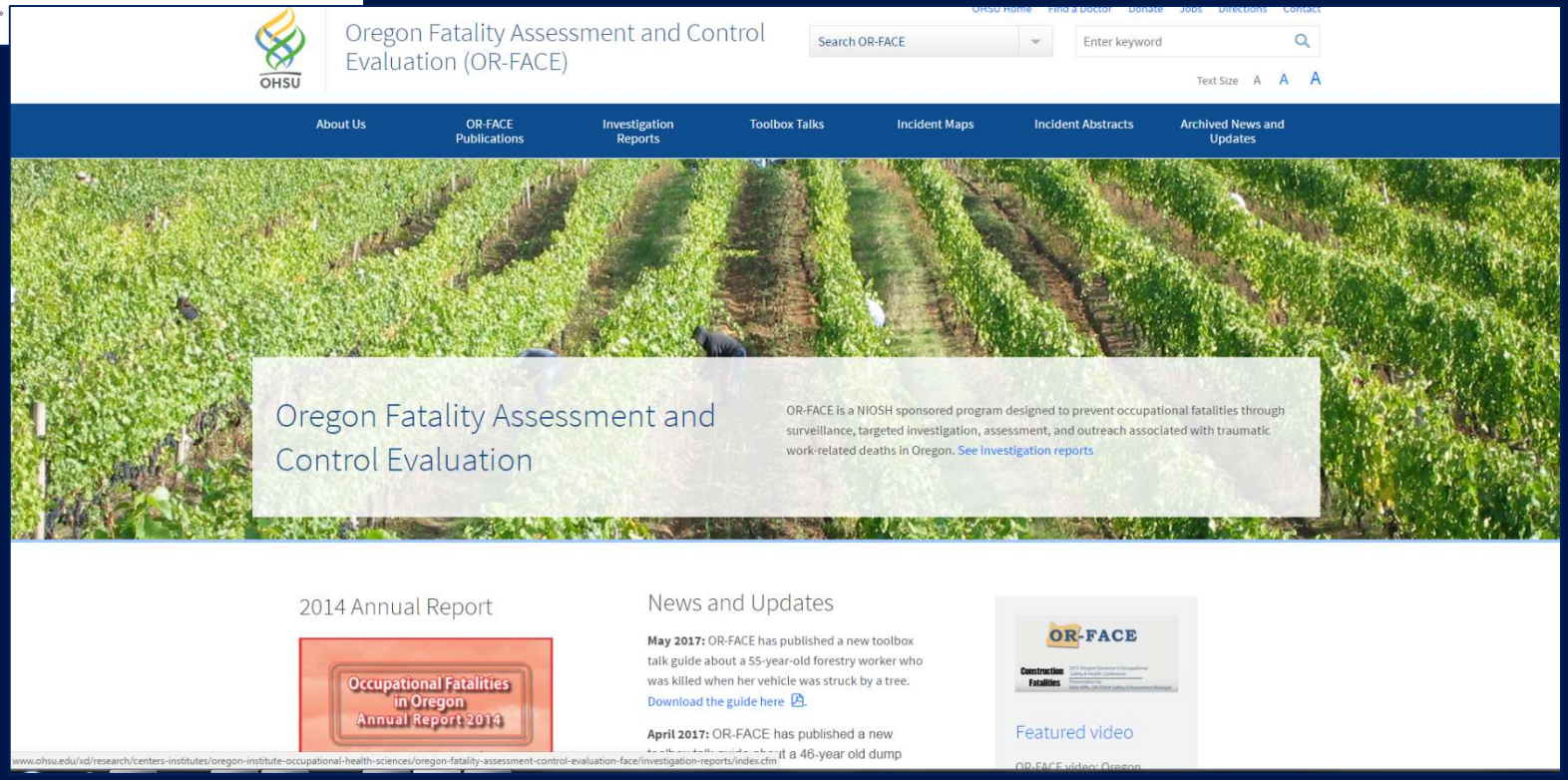
  – Education
  – Outreach
  – Publications
  – Newsletter
  – Blog
  – Symposia
  – Online videos



OR-FACE Website

Google OR-FACE

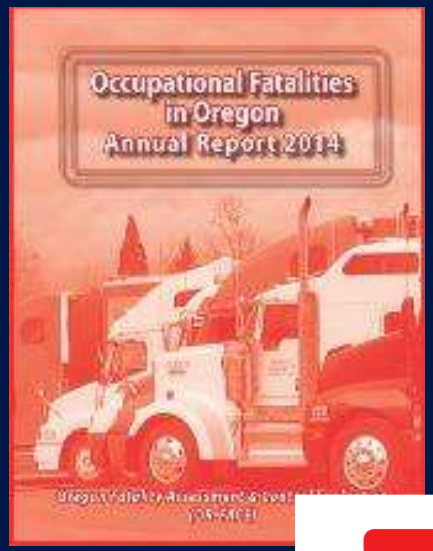


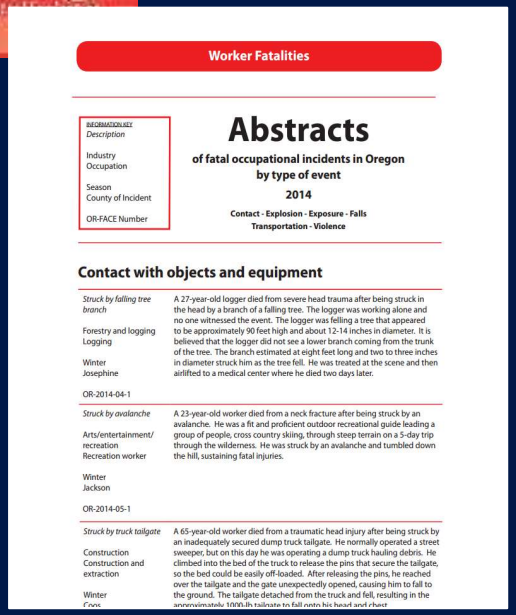


Outreach / Publications

- Annual reports
- Interactive maps
- Safety booklets
- Toolbox talks
- Hazard alerts
- Blogs

Annual Reports (since 2003)





Worker Fatalities

Abstracts

of fatal occupational incidents in Oregon by type of event

2014

Contact · Explosion · Exposure · Falls Transportation · Violence

INFORMATION KEY
Description
Industry
Occupation
Season
County of Incident
OR-FACE Number

Contact with objects and equipment

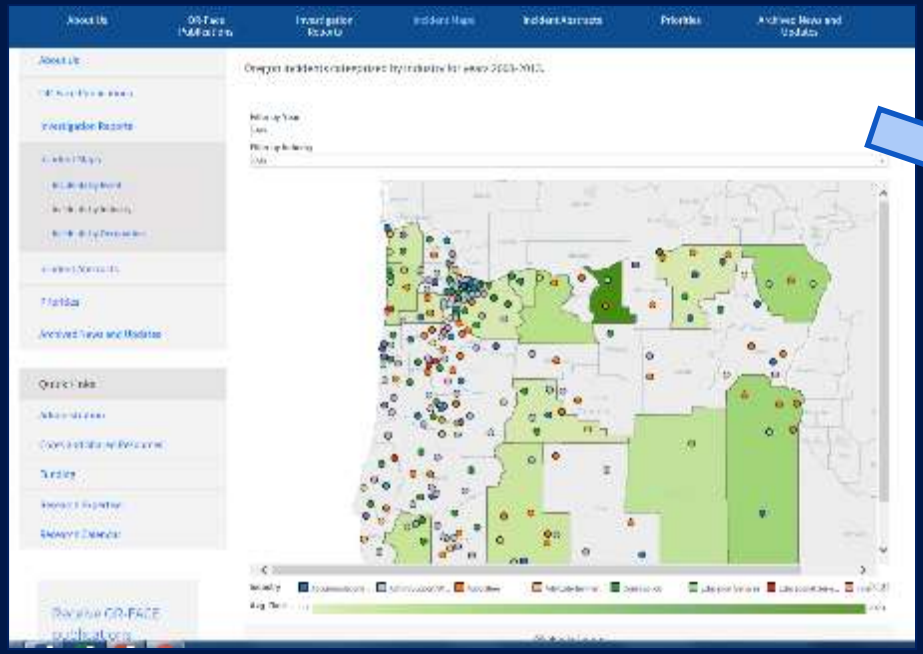
Struck by falling tree branch Forestry and logging Logging Winter Josephine OR-2014-04-1	A 27-year-old logger died from severe head trauma after being struck in the head by a branch of a falling tree. The logger was working alone and no one witnessed the event. The logger was felling a tree that appeared to be approximately 90 feet high and about 12-14 inches in diameter. It is believed that the logger did not see a lower branch coming from the trunk of the tree. The branch estimated at eight feet long and two to three inches in diameter struck him as the tree fell. He was treated at the scene and then airlifted to a medical center where he died two days later.
Struck by avalanche Arts/entertainment/ recreation Recreation worker Winter Jackson OR-2014-05-1	A 23-year-old worker died from a neck fracture after being struck by an avalanche. He was a fit and proficient outdoor recreational guide leading a group of people, cross country skiing, through steep terrain on a 5-day trip through the wilderness. He was struck by an avalanche and tumbled down the hill, sustaining fatal injuries.
Struck by truck tailgate Construction Construction and extraction Winter Coos	A 65-year-old worker died from a traumatic head injury after being struck by an inadequately secured dump truck tailgate. He normally operated a street sweeper, but on this day he was operating a dump truck hauling debris. He climbed into the bed of the truck to release the pins that secure the tailgate, so the bed could be easily off-loaded. After releasing the pins, he reached over the tailgate and the gate unexpectedly opened, causing him to fall to the ground. The tailgate detached from the truck and fell, resulting in the approximately 1000-lb tailgate to fall onto his head and chest.

- Published 18 months
- Case abstracts, based on document review
  - OSHA investigation
  - Police investigation
  - Medical examiner reports
  - National Transportation Safety Board
  - US Coast Guard
  - Others

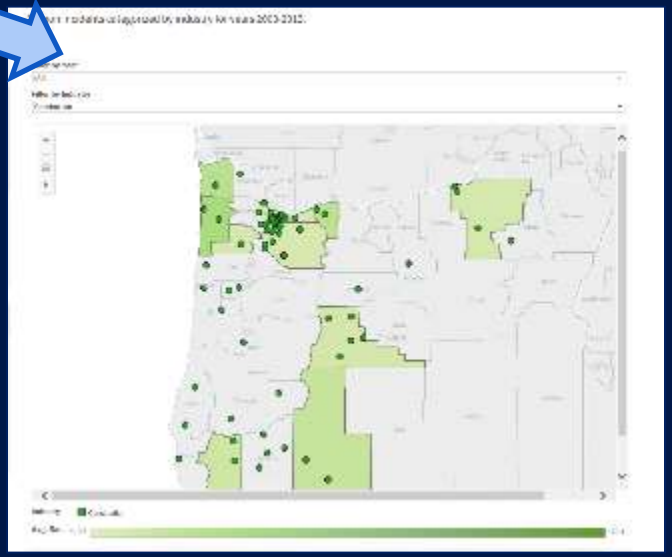
Interactive maps

(2003-2013) by industry

Industry



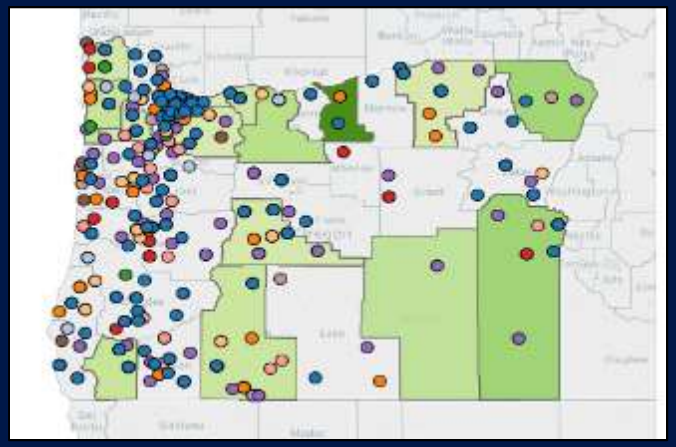
Construction



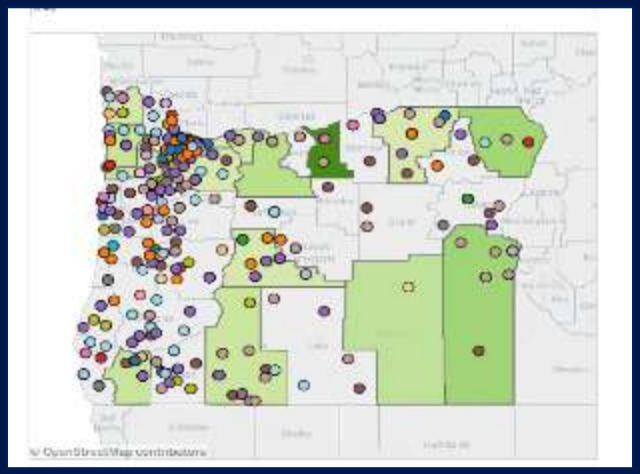
Interactive maps

(2003-2013) by event, occupation

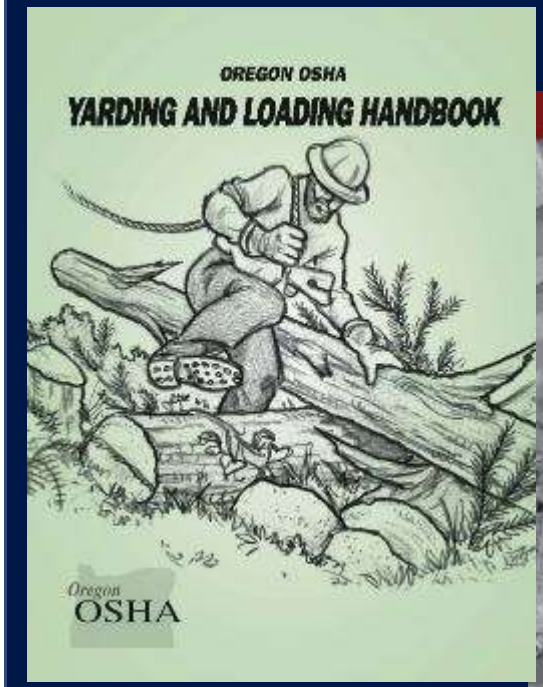
Event

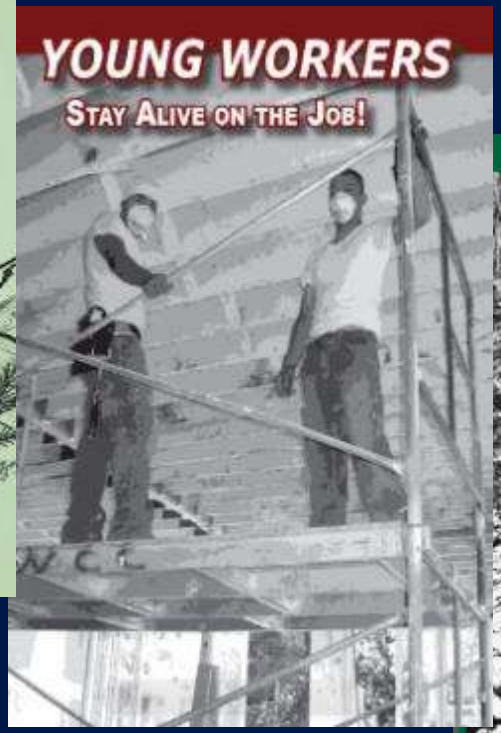


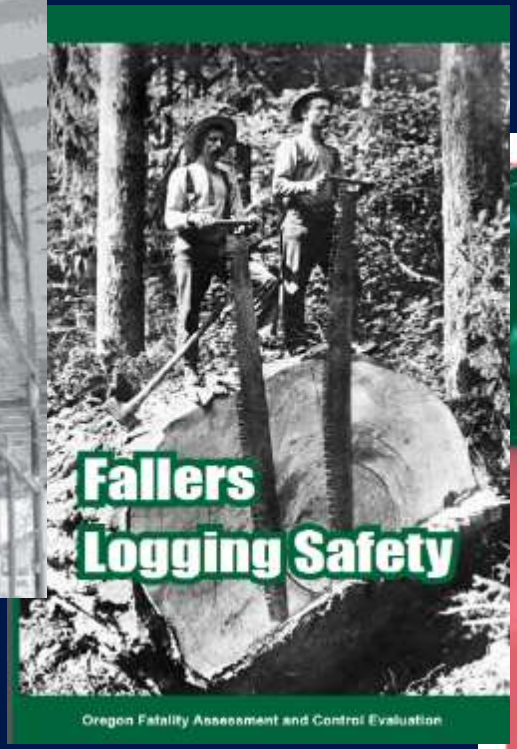
Occupation



Safety booklets







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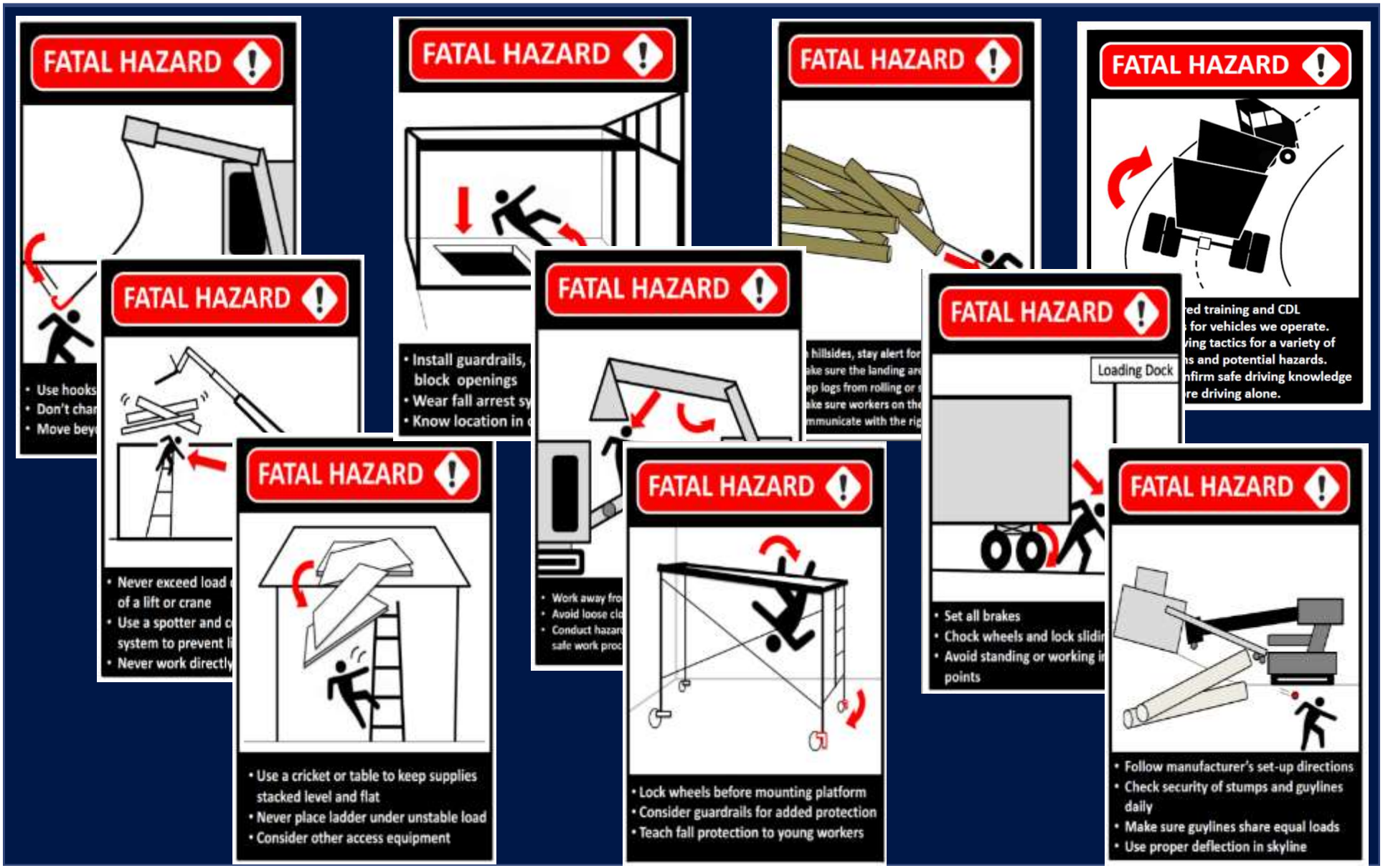
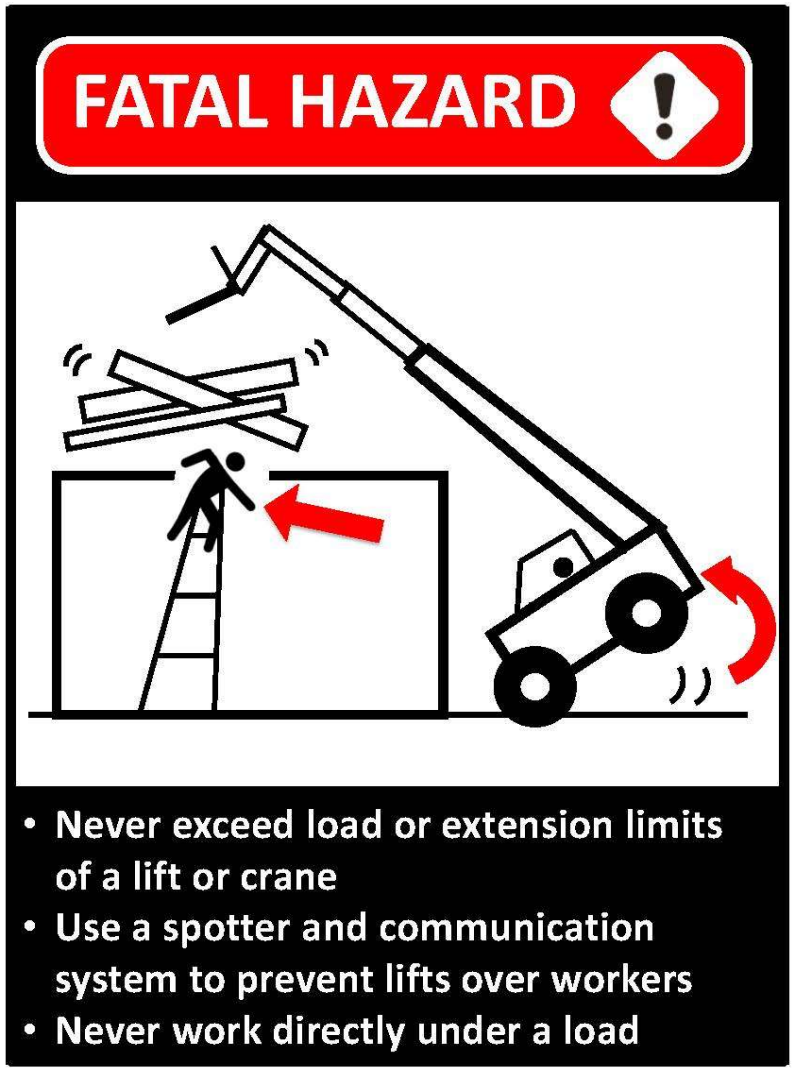
Toolbox Talks



Keep it simple...



Toolbox Talk Guide

Load of Lumber Shifts and Falls on Construction Worker

INSTRUCTIONS: Hold the guide with this side facing you and the other side facing your crew. Then read the story.

Our safety talk today is about a 32-year-old framer from another company who died when a load of lumber fell on him. He was on a ladder to access a stairwell hole to the second level of a house while a rough terrain forklift was lifting a bundle of lumber to the same level. The lumber weighed at least 600-800 lbs more than the maximum possible for the lift arc, and the forklift tipped over. The lumber shifted and dropped on the victim's head and upper body, pinning him against the ladder. The lumber shifted again and he fell to the first floor deck. The worker probably died from being crushed before the fall.

So here are some ways we can prevent something like this from 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, or under the swing radius of a lift or crane, unless you are required to be there as a rigger or guide.
- Use a spotter and communication system to make sure everyone knows about lifts in advance, and to prevent material from passing over workers.

ASK: "Does anyone have more ideas or comments to share?" Pause for discussion. Then see if there are ways to take action.

END WITH ACTION PLAN (ideas for what to ask or say).

- "Are there any operations we do that might cause us to push forklifts too close to 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.

Peer-reviewed publication

- *Safety Science* v.86 (2016) pp.122-131

Safety Science 86 (2016) 122–131

Contents lists available at ScienceDirect

Safety Science

journal homepage: www.elsevier.com/locate/ssci

Toolbox talks to prevent construction fatalities: Empirical development and evaluation

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ARTICLE INFO

Article history:
Received 10 September 2015
Received in revised form 19 November 2015
Accepted 16 February 2016

Keywords:
Safety communication
Injury prevention
Hazards
Construction
Death

ABSTRACT

Three studies were conducted to develop and evaluate safety toolbox talks about fatal construction incidents. Study 1 surveyed workers ($n = 28$) about existing pre-shift meetings. An evidence-based structure for toolbox talks was developed, and study 2 evaluated our selected line drawing illustration format with workers ($n = 30$). Study 3 evaluated supervisors' talks using: (1) new toolbox guides and (2) long-form investigation reports with workers from eight construction crews.

In study 1, 25% of the sample reported never conducted safety meetings. In study 2, compared to photos, line drawings increased the distance workers' could correctly identify hazards by over 1.5 m. In study 3, the new format was preferred by 82% of supervisors, saved them 15 min preparation/presentation time, and produced favorable impacts with workers.

Brief scripted toolbox talks made it easier for supervisors to share fatal stories and prevention recommendations with their crews. When the format includes scripted text for the supervisors, prompts for discussion and action items, and line drawings worker understanding can be enhanced.

1. Introduction

Construction is a high risk industry with dynamic occupational hazards. The work is typically performed at dispersed locations, including multiple job sites or multiple locations within a single job site (Bureau of Labor Statistics, 2014). Industry specializations include, but are not limited to, commercial and residential construction, bridge erection, excavation, demolition, and roadway paving. Common hazards vary by trade, project, and project stage, but include falls from heights, mobile machinery, electrical exposures, falling objects, inclement weather, equipment failure, and structural collapse. The mix of contractors, trades, and workers changes as projects progress and employers must continually adapt to recruit, staff, and communicate with workers at each building stage (Lockyer and Scholarios, 2007). These exposures contribute to elevated occupational fatality rates in construction. Globally it is estimated that 350,000 workers die each year (International Labor Organization, 2014), with 60,000 of these deaths occurring in the construction industry (The National Examination Board in Occupational Safety and Health, 2014). In the US, the current construction industry fatality rate is 9.9 per 100,000 full time workers compared to the average 3.4 rate for all US industries (Bureau of Labor Statistics, 2012). In 2012, the largest proportion (36%) of construction fatalities were due to falls (Bureau of Labor Statistics, 2011).

Controlling hazards and preventing fatal injuries in construction is a multi-faceted challenge. The first priority and best safety control is to completely remove hazards from construction environments. However, when complete hazard removal or control is not possible, training and administrative controls should be applied to promote best safety practices that limit workers' exposures to hazards. In this regard, safety training and communication can set expectations, increase hazard awareness, develop knowledge and skills, and reinforce safe building practices. A traditional communication channel in construction is the safety tailgate or toolbox talk. These brief talks typically address a focused safety

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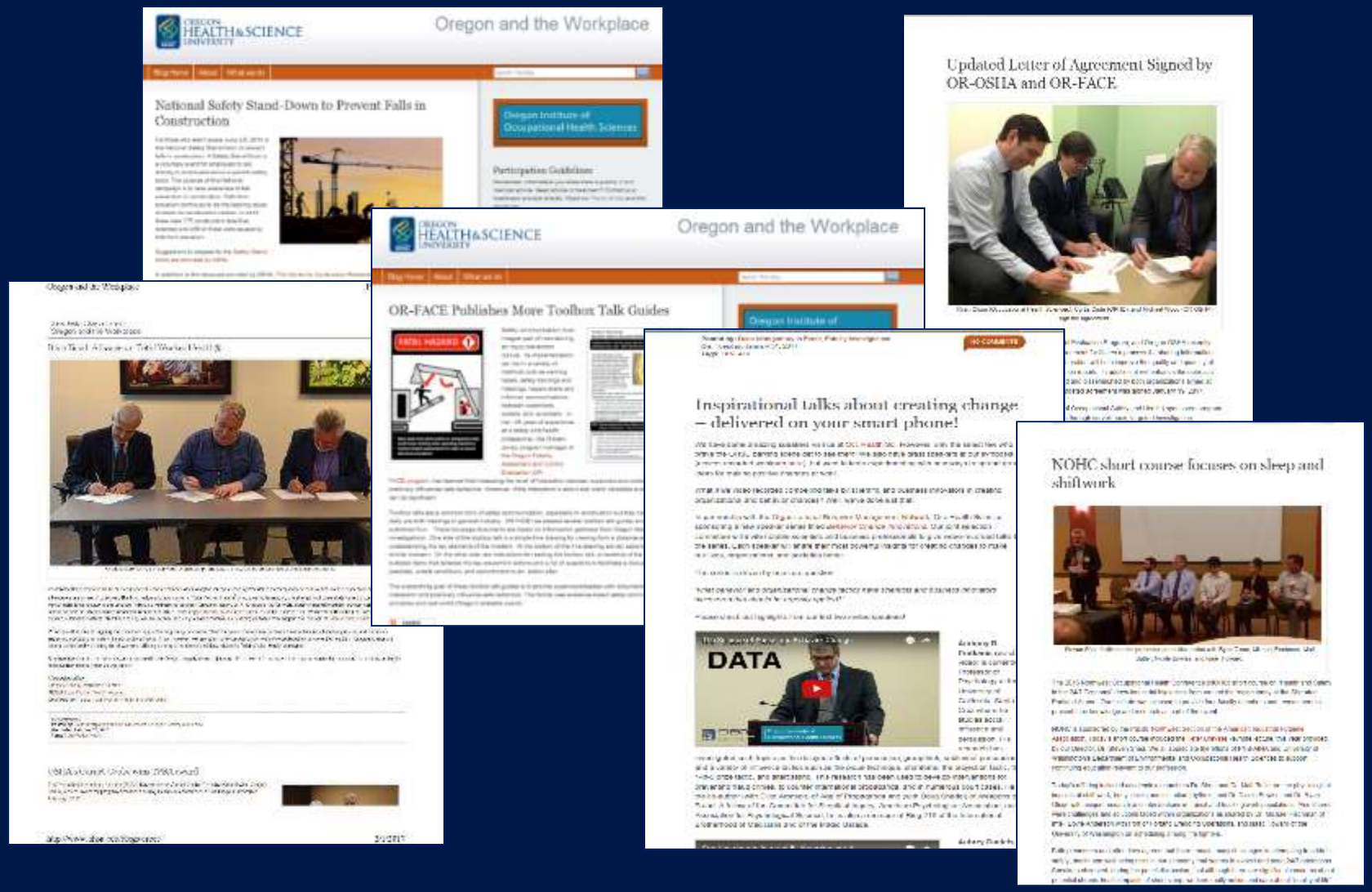
http://dx.doi.org/10.1016/j.ssci.2016.02.009
0925-7535/

Hazard Alerts

- One page
- Bulleted recommendations
- [illegible]s of similar cases

Blogs


Oregon and the Workplace
National Safety Stand-Down to Prevent Falls in Construction
Oregon and the Workplace
OR-FACE Publishes More Toolbox Talk Guides
Updated Letter of Agreement Signed by OR-OSHA and OR-FACE
Inspirational talks about creating change – delivered on your smart phone!
DATA
NOHC short course focuses on sleep and shiftwork

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Targeted Research

- Use knowledge gained through surveillance and investigation, e.g. identify high hazard industries, prevalent injuries, needs for prevention
- Develop and conduct field studies
- Ultimate aim: from lessons learned, produce evidence-based, practical intervention tools & methods

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Current Research Projects

- Social network analysis
  - *Identify info pathways and opinion leaders to better target communications in high risk industries*

- Preventing falls in residential construction
  - *Test "trigger event" hypothesis*

- Mobile toolbox talks
  - *Establish & evaluate mobile marketing system to promote fatality prevention toolbox talks in residential construction*

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FACE's "Bottom Line…"

- Targeted investigations
  - Identify contributing factors
  - Develop comprehensive, best-practice recommendations for preventing similar deaths
- Targeted research
  - Surveillance → investigation → identify high hazard industries, prevalent injuries, prevention needs
  - Develop and conduct field studies
- Outreach
  - Produce evidence-based, practical prevention tools & methods

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Thank you!