Update from the National Construction Center

NORA Construction Sector Council Meeting May 23, 2023

Rick Rinehart, Jessica Bunting, Chris Trahan Cain



Overview

- Research Projects
- Data Bulletins
- Research to Practice (r2p)
 - Struck-by Standdown
 - Falls Standdown
 - New FSL4Res Training Program
 - Best Built Plans Updates
 - Heat Illness Prevention Resources



Research Projects

Improving Contractor Resources for Reducing MSDs

Evaluation of the Best Built Plans Manual Material Handling Tool for Construction (Washington University in St. Louis)—Ann Marie Dale

Moving Ahead with Exoskeleton Research

Evaluation of Trunk and Arm Support Exoskeletons for Construction (University of California, San Francisco and Virginia Tech)—Carisa Harris and Maury Nussbaum

Potential Hazards from Part B Chemicals

Reactive Chemical Systems: Part B—Developing Data-Driven Interventions (University of Massachusetts Lowell)—Ani and Dhimiter Bello

Evaluation of the OSHA 10-Hour

Evaluation and Improvement of OSHA 10-Hour Construction Safety Training (West Virginia University, Boise State University)—Mark Fullen



Research Projects

Developing and Sharing Knowledge about Nanomaterials Controls

Manufactured Nanomaterials in Construction: Evaluating Exposures, Controls and Worker Training (CPWR)—Gavin West

Increasing Adoption of Respiratory Controls

Health Hazard Controls Industry Diffusion: Evidencebased Intervention Strategy (Virginia Tech)—Deb Dickerson

Improving Safety and Health Through Better Pre-Task Planning

Prevention through Augmented Pre-Task Planning (CPWR)—Babak Memarian

FSL4Res, Developed to Reduce Falls in Residential Construction, Now Online

Improving Safety Leadership and Fall Prevention Training in Residential Work (Washington University in St. Louis)—Brad Evanoff



Research Projects

Thousands Begin Using New Safety Climate and Safety Management Tool

Safety Climate-Safety Management Information System (SC-SMIS) (CPWR)—Linda Goldenhar <u>www.scsmis.com</u>

Small Studies Examine Multiple Hazards and Solutions

First study funded in 1993; 140 studies funded. 89 letters of intent received Sept 2019 – present; 21 funded

Last Call for Small Study Proposals

Continued Development of Mentorship Program for Female Sheet Metal Workers

Promoting Safety and Well-being among Sheet Metal Worker Women through Mentoring (University of Washington)—Marissa Baker

Responding to Mental Health Needs of Construction Workers

Providing support to studies, programs, interventions. Analyzing workplace bullying and harassment. Increasing industry training and awareness.

New resilience training tool



Examining Data

January 2023



Leading Causes of All Deaths Among Current, Retired, and Former Construction Workers

Amber Brooke Trueblood, DrPH, William Harris, MS, Thomas Yohannes, MPH, Rick Rinehart, ScD¹

OVERVIEW

Construction is one of the deadliest industries in the United States, with over 1,000 fatal occupational injuries <u>each year since 2016</u>. Although fatal occupational injuries in the industry <u>are well researched</u>, there is limited information on construction worker deaths not on the job among construction workers despite worksite exposures and tasks that may have lifetime health impacts, such as causing cancers. <u>Prior research</u> found, for example, that 19% of construction workers had a respiratory disease and 26% had cancer, diabetes, or heart, kidney, or liver disease.

This Data Bulletin examines the leading *causes of death* among *construction workers* in 2020 for all deaths (both on and off the job site) and compares *at work* death trends with fatal occupational injury trends. Unless specified as at work, charts show all deaths. Examining all deaths provides important insights into conditions affecting construction workers that may be preventable, such as hypertension and diabetes, as well as information on conditions potentially associated with occupational exposures (e.g., cancers or neoplasms).

THIS ISSUE

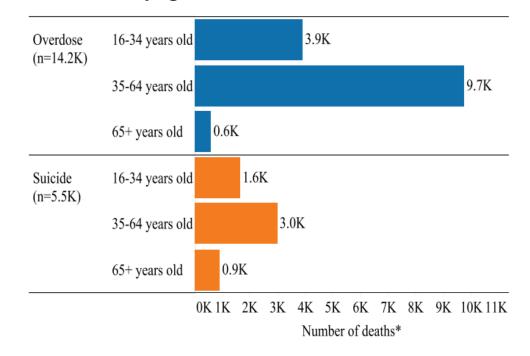
This issue examines the leading causes of death among construction workers, including those currently employed, retired, and no longer in the workforce.

KEY FINDINGS

In 2020, there were 224,400 deaths among construction workers with a majority occurring among those who were 65 years or older (60%), non-Hispanic (88%), white (87%), and male (96%). Charts 1. 2

Manner of death varied by age, with 55% of construction workers 16 to 34 years old dying by an accident, whereas 67% of those 35 to 64 years old and 87% of those 65 years or older died from natural causes.

9. Number of deaths* for selected emerging issues in constrution by age, 2020^



Source: National Center for Health Statistics, 2020 Mortality Mu

- * All causes of death are included in chart, not just at work death
- ^ Suicides include overdoses determined to be intentional.

Examining Data

March 2023

CPWR Data Bulletin March 2023

THIS ISSUE

Fatal and Nonfatal Focus Four Injuries in Construction

William Harris, MS, Thomas Yohannes, MPH, Amber Brooke Trueblood, DrPH¹

OVERVIEW

Construction is one of the most dangerous industries in the United States, with 1,034 fatal occupational injuries among all construction workers and 74,520 nonfatal injuries among private *wage-and-salary* construction workers in 2020. A majority of fatal occupational injuries and a large proportion of nonfatal injuries result from *Construction Focus Four hazards*, which include *falls to a lower level, struck-by, electrocutions*, and *caught-in/between* injuries. This classification was created in 1994 in response to the impact the top four safety hazards have on construction workers.

This Data Bulletin provides information on fatal and nonfatal Focus Four occupational injuries in construction, including by *injury type* and *detailed event/exposure*. (In this Data Bulletin, occupational injuries will be referenced as injuries.) Data for fatal injuries from 2011 to 2021 were obtained from the U.S. Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI), a <u>complete count</u> of fatal injuries and their circumstances. Data for caught/compressed by equipment/objects, which is one of the categories of caught-in/between injuries all data from 2019 forward, but

This issue examines fatal and nonfatal Focus Four injuries in construction by injury type and detailed event/exposure.

KEY FINDINGS

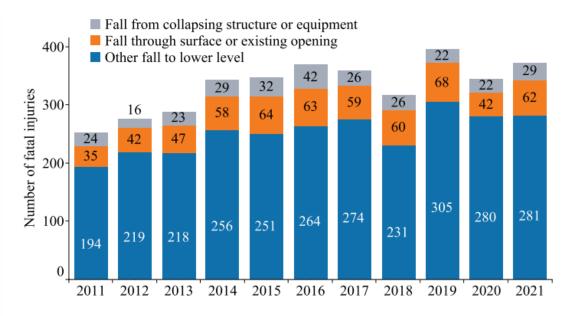
From 2011 to 2021, 65% (n=6.9 thousand (K)) of fatal injuries were a result of a Focus Four hazard. Chart 1

From 2011 to 2021 there were increases in the number (46%) and rate (13%) of fatal falls to a lower level.

Charts 3 and S1

From 2011 to 2020, Focus Four injuries accounted for 40% (n=315.2K) of all nonfatal injuries. Chart 7

4. Number of fatal falls to a lower level* by detailed event/ exposure category, 2011-2021



Source: U.S. Bureau of Labor Statistics, 2011-2021 Census Injuries.

*OIICS 430 (Falls to lower level, unspecified) not included; falls to a lower level shown in chart 3.

Examining Data

May 2023

CPWR Data Bulletin MAY 2023

Women in Construction: Employment, Business Owner, and Injury Trends

Amber Brooke Trueblood, DrPH, William Harris, MS, Thomas Yohannes, MPH¹

OVERVIEW

Women are underrepresented in construction, accounting for almost half of the entire workforce in 2021 but only 11.0% of the <u>construction workforce</u>. This trend persists among *blue-collar workers*; only 3.7% of construction workers are women, compared to 16.5% in all industries. The <u>continuing labor shortages</u> in construction highlight the need for a diverse workforce and for understanding growing workforce populations, including women, Hispanics, and workers 55 years or older.

This Data Bulletin provides information on employment, business owner, and fatal and nonfatal injury trends among women in construction. Data for employment were estimated using the U.S. Bureau of Labor Statistics (BLS) Current Population Survey (CPS), which is published monthly, downloaded through IPUMS. Employment for private *nonfarm wage-and-salary* workers for major subsectors was obtained from the BLS Current Employment Statistics (CES) program, which collects monthly data from payroll establishments. Data for construction business owners were from the Annual Business Survey, Characteristics of Business Owners, administered by the U.S. Census Bureau. Data for fatal injuries from 2011 to 2021 were obtained from the

THIS ISSUE

This issue examines trends for women in construction, including employment, business owners, and fatal and nonfatal injuries.

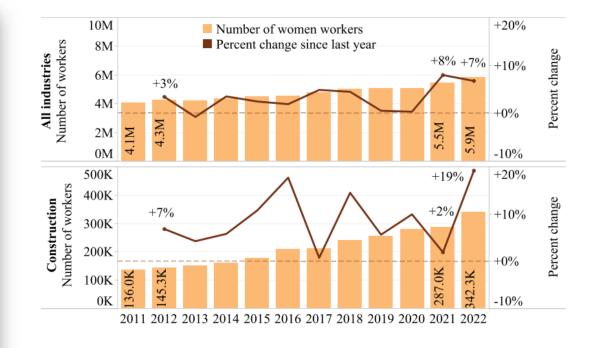
KEY FINDINGS

From 2011 to 2022, the percentage of women in the construction workforce increased from 9% to 11%, with blue-collar women workers rising from 2% to 4%. *Chart 1*

From 2021 to 2022, the number of women in construction grew faster than women employed overall (4% versus 3%), and blue-collar women workers in construction grew almost three times faster than blue-collar women workers overall (19% versus 7%).

Charts 3 and 4

4. Blue-collar women workers by year, construction versus all industries, 2011-2022



Source: Integrated Public Use Microdata Series (IPUMS), 2011-2022 Current Population Survey.

Research to Practice (r2p)

Partnering to Address Priority Hazards in Construction



4th Annual Stand-Down to Prevent Struck-by Incidents



- April 17-21, 2023
- Official <u>Stand-Down webpage</u>
- <u>Kick-Off Webinar</u>
 - 570 live attendees
 - Hundreds of on-demand (YouTube) views

Preventing Struck by Incidents: Tips & Strategies

Pilot Planning Program to Prevent Struck-by Incidents

<u>2022 Survey Results</u>	truction Research and Training to Prevent Struck-by Incidents	Pneumatic or Powder-Actuated Tools: Flying Object Struck-by Hazards Tools or equipment that eject an object using compressed air or a powder propellant charge automatically create flying object struck-by hazards. Powder-actuated fasteners are designed to go through concrete and steel, and can easily go through a person. Using compressed air to clear out a pipeline could eject something with enough force to injure or kill others in the surrounding area if it is not secured properly. Protect workers by: Requiring use of personal protective equipment, such as hard hats, safety glasses, steel-toe footwear, and hearing protection. Using full sequential trigger nail guns, which are the safest trigger option. Inspecting tools to ensure that all safety devices are enabled and working properly (based on the manufacturers' specifications). Providing training on how to properly operate pneumatic and powder-actuated tools and safe work practices. Never using powder-actuated tools in explosive or flammable atmospheres. Reducing compressed air used for cleaning to 30 psi. Installing whip checks on pressurized air hoses to prevent them from flying around if there is a hose or coupling failure.
 TABLE OF CONTENTS: Why should you have a plan to p Section 1. Identify the Risks	How will you protect workers from materials that could be push enough force to cause a collision injury?	Planning Resources CPWR's Nail Gun Safety Webpage CPWR's Head Protection Webpage CPWR's Head Protection Webpage Contractors CpwRiting Information Modeling (BIM) for Safety Building Information Modeling (SIM) for Safety Contractors Contractors

10th Annual Safety Stand-Down to Prevent Falls in Construction

CPWRI

RESEARCH AND TRAINING

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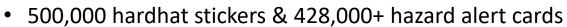


PLANNING A MULTI-LAYERED APPROACH TO FALL PREVENTION AND PROTECTION

A recent CPWR survey identified insufficient or ineffective planning as the number one underlying cause of falls from heights. A lack of preparation can lead to a reliance on PPE as the only protective measure, but the survey also found that when employers didn't do any planning, the odds of workers using their fall protection equipment were 7% lower.¹

The table below is based on the <u>bierarchy of controls</u>. The top of the table represents approaches that result in the most risk reduction and the bottom represents approaches that result in the least risk reduction. Contractors, owners, designers, and others should use this chart, beginning at the top and incorporating controls as feasible to prevent falls^{2,3}

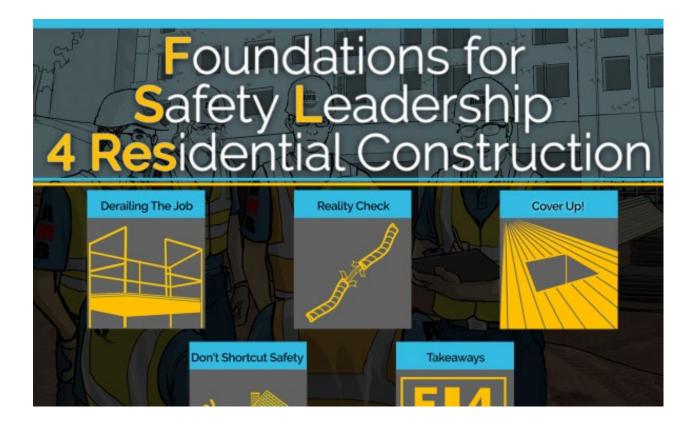
Eliminate or minimize the fall hazard	Elimination	Plan, design, install, or move equipment to eliminate or minimize hazards associated with working at heights. <u>Use Prevention Through</u> <u>Design</u> measures. Inspect and maintain equipment regularly to prevent failure.	 Adopt a building design with a single level at grade rather than multiple levels at elevations. Use parapet walls or permanent guardrails at least 39 inches high.
	Substitution	Change the method of work to reduce the risk of falling.	 Move equipment or work to a lower height. Use safer equipment, for example replace ladders with aerial lifts.
Prevent the fall	Passive Engineering Controls	Use passive fall prevention.	Install temporary guardrails or barriers, including around skylights and holes.
	Active Engineering Controls	Use active fall prevention.	Use fail restraint systems that secure workers via an anchor point, connector, lanyard, and harness to prevent the worker from reaching the fall hazard.
	Adminstrative Controls	Establish and use safe operating procedures when working at heights and provide comprehensive training in a language understood by workers.	 Make sure a competent/qualified person is present on the job site. Train workers for the specific task and unique fall hazards faced.
Minimize the impact of the fall	Personal Protective Equipment & Other Protective Measures	Supply and use personal protective equipment (PPE) such as a personal fall arrest system. ² Plan ahead to reduce the risk of injury or death if a fall does occur.	 Make sure fall harnesses fit workers properly. Plan ahead with input from the competent or qualified person to ensure certified anchor points, lanyard type and length, etc. Provide rescue equipment and training. Make sure the fail cleance is sufficient to avoid both swing hazards and the ground or nearest obstruction below. Select PPE that includes trauma straps or loops or a personal rope ladder to avoid suspension trauma. Provide nard heimets with chinstraps. Have a trained first aider on site when possible.



- Event Ideas <u>English</u>, <u>Español</u>
- Planning and PPE Fit <u>English</u>, <u>Español</u>
- <u>Bilingual Social Media Guide</u>
- <u>New Tipsheets</u> (Rescue planning, Planning a multi-layered approach, Hispanic workers)
- Infographics in <u>7 new languages</u>
- Webinars:
 - Protección Contra Caídas y los Planes de Rescate 260 attendees; 242 on-demand views
 - <u>Preventing Falls through Improved Design</u>
 695 attendees; 820 on-demand views

Stop Construction Falls!

New **FSL4Res** Training Program



- OSHA-approved elective
- 2.5 hours and highly interactive
- Targets foremen, supervisors, and other front-line leaders
- Teaches critical leadership skills
- Presents many safety scenarios
- Includes Instruction Guide, PPT, and Student Handout

Upcoming FSL4Res Webinar

Tuesday, May 30, 2023, 2:00 PM Eastern (1 hour)

Panelists:

- Bradley Evanoff, MD, MPH, Chief, Division of General Medical Sciences, Department of Internal Medicine, Washington University in St. Louis
- Anna Kinghorn, MS, Clinical Research Coordinator, Division of General Medical Sciences, Department of Internal Medicine, Washington University in St. Louis

Registration:

https://cpwr.webex.com/weblink/register/re4933c8eaa0a3c17f2dd384a1a409620

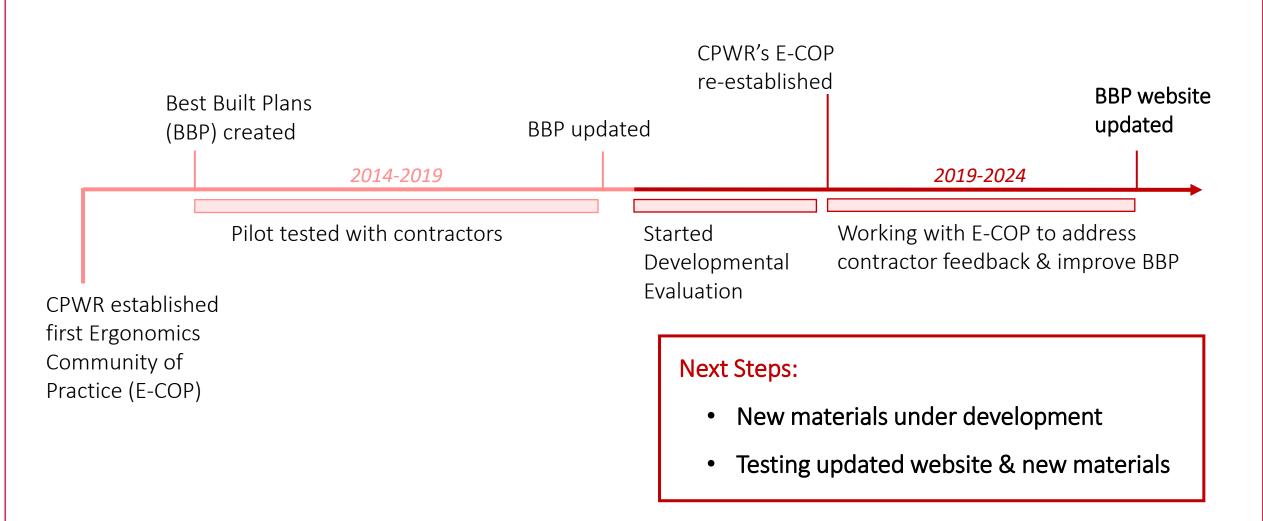
BBP

- Site Planning Tool: to create and implement a manual materials handling hazard control plan at each project stage, from bidding to pre-job, on-the-job, and look-back.
- Interactive Training & Coaching Exercises and Knowledge Tests
- http://bestbuiltplans.org/



History of Best Built Plans

Currently conducting Developmental Evaluation with the Ergonomic Community of Practice





Hierarchy of Controls for Manual Materials Handling to Reduce Strain & Sprain Injuries

CPWR **C**

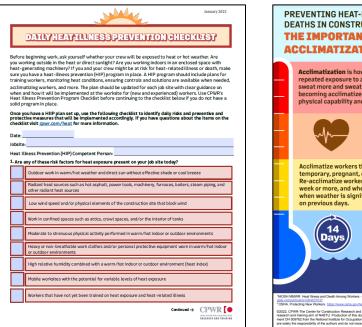
MOST RISK REDUCTION	Elimination: Physically remove the hazard (e.g., deliver and store material near					
	work to avoid lifting and carrying)					
BEST: Elimination or Substitution	Substitution: Replace the hazard (e.g., use smaller or lighter-weight materials) Stage: Bidding + Pre-Job Who's Involved: estimator, project manager, supervisors, suppliers Is Engineering Controls: Isolate people from the hazard (e.g., provide/use lifting equipment for materials ≥ 50 lbs.) Stage: Bidding, Pre-Job Who's Involved: estimator, project manager, supervisors, suppliers Administrative Controls: Change the way work is done [management] (e.g., assign more workers or rotate tasks) Stage: On-the-Job Who's Involved: project manager, supervisor, workers Mork Practices: Change the way work is done [individual workers] (e.g., use proper lifting techniques, two-person lift teams, keep walking paths clear) Stage: Pre-Job, On-the-Job					
BETTER: Engineering Controls	Who's Involved: estimator, project manager, supervisors, suppliers					
GOOD:						
Administrative Controls						
OV. Work Practices	Administrative Controls: Change the way work is done [management] (e.g., assign more					
OK: WORK Practices	OK: Work Practices workers or rotate tasks)					
MINIMAL:						
Others						
	techniques, two-person lift teams, keep walking paths clear)					
	ther Protective Measures: Protect the worker without addressing the hazard (e.g., impact					
resistant gloves, Stretch & Flex programs)						
LEAST RISK Who's In	n-the-Job Ivolved: project manager, supervisor, workers					
REDUCTION						

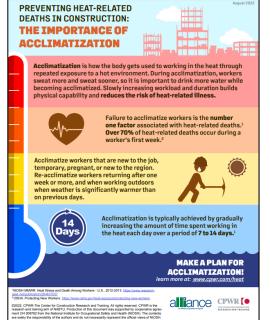
BBP Updates

- Revamped online site planning tool
 - Updated content based on developmental evaluation and E-COP recommendations
 - Clear reasoning behind each stage
 - Less scrolling due to table format
 - Cleaner navigation between stages with NEXT buttons
- New resources coming soon
 - 3 Infographics
 - Look-Back Worksheet
 - Updated Contractor Training Program

Heat Illness Prevention Resources

- Updated Heat Topic Page
- Infographics
- COMING SOON:
 - Heat Illness Prevention Program checklist
 - Daily Heat Illness Prevention checklist





				A-Z Index Lista de recursos en español			
HE CENTER FOR CONSTRUCTION			Sea	rch		٩	
ESEARCH AND TRAINING	RESEARCH	TRAINING	SERVICE	NEWS & EVE	INTS A	BOUT CPWR	
leat Hazards							
onstruction workers, who often work outdoors in direct sunlight or in hot, t risk for heat-related illnesses and, in severe cases, death. Rising global t reent decades increase that risk. However, these illnesses and deaths are	temperatures in	, are		HEAT-RELATED I		Hour Helenad Deaths	
he following resources contain information about heat hazards in construe revent related illnesses.	ction, and ways to	0	Construction wo accounted for on U.S. workforce, b 38% of all heat- deaths at work in	ly 7% of the ut experienced related	Construction	Af abler industries	
CLICK ON A TOPIC BELOW TO EXPAND FOR LINKS TO RESOURCE	ES & MORE INFO)					
Heat Illness Prevention Planning						~	
Employee Training						~	
Acclimatization						~	
Exposure Monitoring						~	
Water, Rest, Shade						~	
PPE, Cooling Systems and Additional Solutions						~	
Rescue Planning						~	

Questions?

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Work Safely in Hot Weather Last Call for Small Study Proposals Yes 🗌 No 🗌 New Checklist Improves Pretask Planning Yes 🛛 No 🗆 New Data Bulletin Examines Women in Construction: Yes 🗌 No 🗌 5/30 -- CPWR's Foundations for **Employment, Business Owner, and Injury Trends** Safety Leadership for CPWR [**Residential Construction** (FSL₄Res) **RECURSOS EN ESPAÑOL** Search for resources to improve construction worker safety and health – free handouts, research results, training materials, workplace guidance, and more. WHAT CAN WE HELP YOU FIND? e.g. Silica, Funding, Toolbox Talks, Past Webinars... SEARCH

RESEARCH

TRAINING

CPWR (

THE CENTER FOR CONSTRUCTION RESEARCH AND TRAINING A-Z Index

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ABOUT CPWR

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