



THE CENTER FOR CONSTRUCTION  
**RESEARCH AND TRAINING**

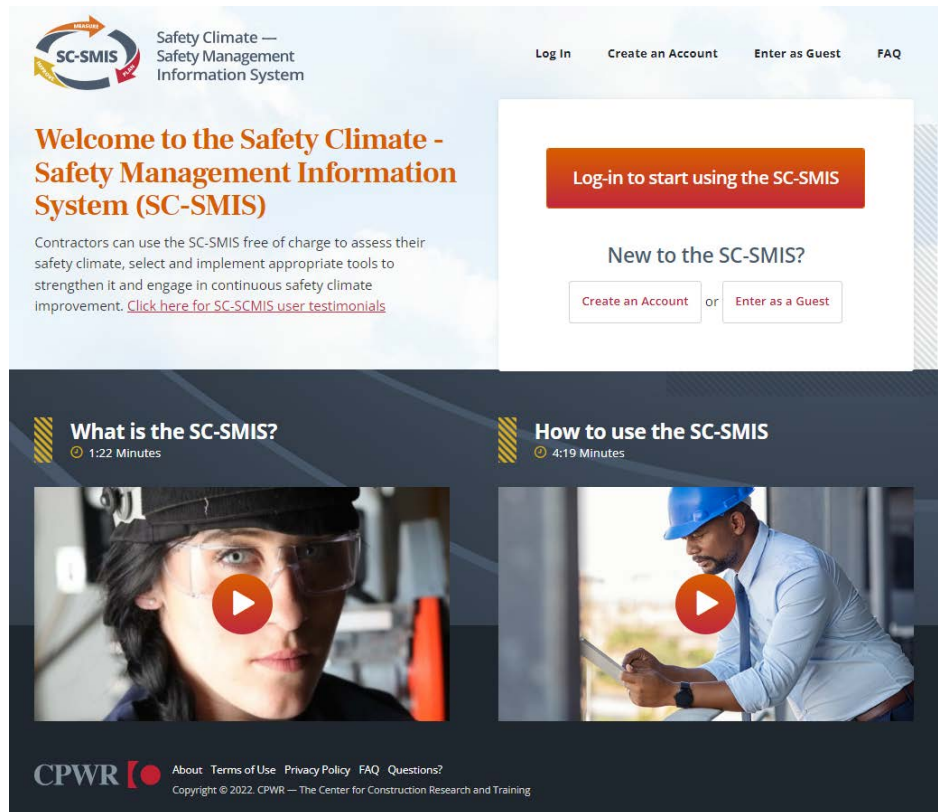
# National Construction Center Update

JUNE 8<sup>TH</sup>, 2022

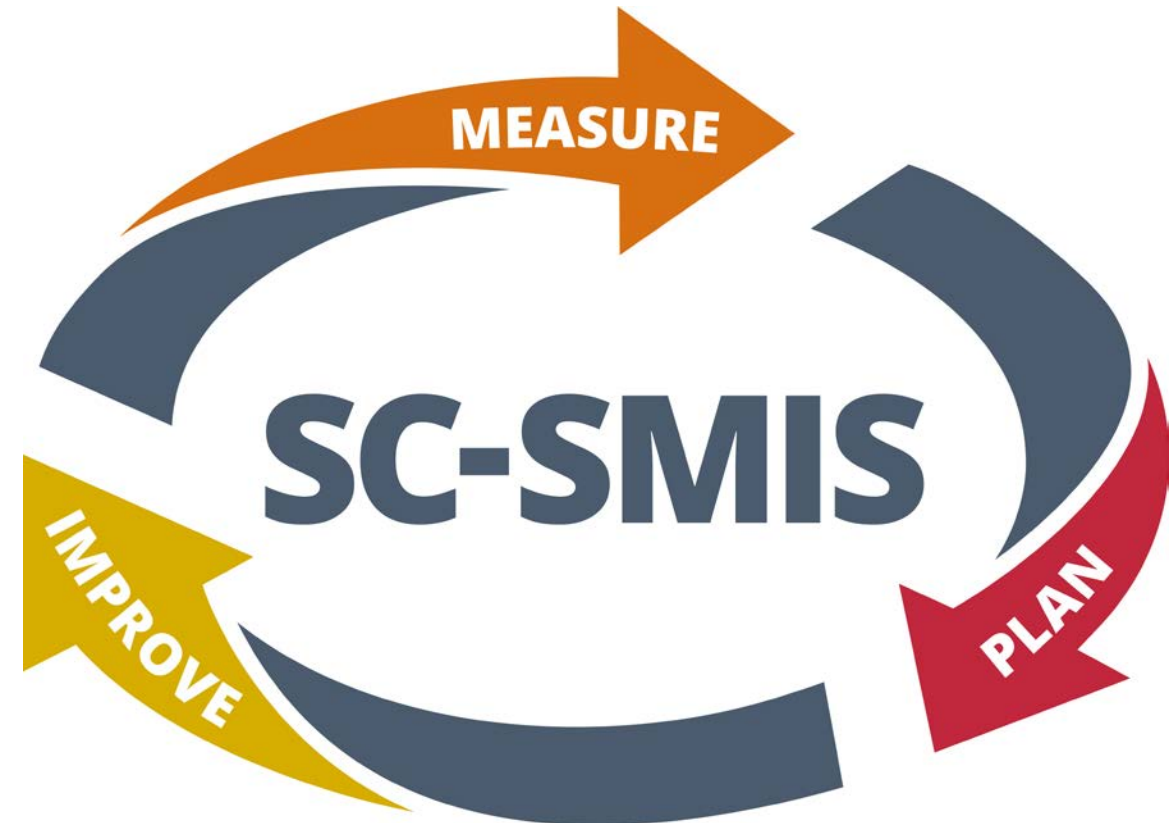
Chris Trahan Cain, CIH, Executive Director

Jessica Bunting, MPH, Research to Practice Director

# Safety Climate – Safety Management Information System



The screenshot shows the homepage of the Safety Climate – Safety Management Information System (SC-SMIS). At the top left is the SC-SMIS logo, which consists of a circular arrow icon with the text 'SC-SMIS' inside. To the right of the logo is the text 'Safety Climate – Safety Management Information System'. In the top right corner, there are links for 'Log In', 'Create an Account', 'Enter as Guest', and 'FAQ'. The main heading reads 'Welcome to the Safety Climate - Safety Management Information System (SC-SMIS)'. Below this, a paragraph states: 'Contractors can use the SC-SMIS free of charge to assess their safety climate, select and implement appropriate tools to strengthen it and engage in continuous safety climate improvement. [Click here for SC-SMIS user testimonials](#)'. A prominent red button says 'Log-in to start using the SC-SMIS'. Below that, a section asks 'New to the SC-SMIS?' with two buttons: 'Create an Account' and 'Enter as a Guest'. At the bottom, there are two video thumbnails. The first is titled 'What is the SC-SMIS?' with a duration of 1:22 Minutes and features a woman wearing safety glasses. The second is titled 'How to use the SC-SMIS' with a duration of 4:19 Minutes and features a man in a white shirt and blue hard hat looking at a tablet. The footer includes the CPWR logo and a list of links: 'About', 'Terms of Use', 'Privacy Policy', 'FAQ', and 'Questions?'. Below the links is the copyright notice: 'Copyright © 2022, CPWR — The Center for Construction Research and Training'.



# Why we created the SC-SMIS

Make available an easy-to-use, interactive, web-based system that construction companies, regardless of size or available resources, can use – **at no cost** – to engage in continuous **Safety Climate** and **Safety Management** improvement.

## Project Team

### CPWR

Linda M. Goldenhar, MS, PhD

Babak Memarian, PhD, CSP, CHST

Jean Christopher Le, MPH

Sherri Wilson

### Web Design/Developer

Wood Street, Inc [www.woodst.com](http://www.woodst.com)

### User Development Team (UDT)

- Bruce & Merrilees Electric Company
- Christenson Electric
- Choate Construction
- Jamerson-Lewis Construction
- Keller - North America
- Leopardo Companies, Inc.
- Manafort-Precision, LLC
- Metcon, Ltd
- NTD Mechanical
- Phase 2 Construction Company
- Wildcat Construction

# Continuous Safety Management & Safety Climate Improvement

Conduct safety climate assessments

**Safety Climate Assessment Options**

About the S-CAT | About the S-CAT<sup>SE</sup>

Companies that are further along on their safety climate improvement journey can measure their safety climate maturity across eight leading indicators of jobsite safety climate using the S-CAT.

Click to Preview & Download S-CAT:  
[English](#) | [Spanish](#)

Plan and Schedule S-CAT

Run reports

**Arlington Homes Safety Climate Maturity Feedback Report**

Arlington Homes - Silver Spring - Field | Arlington Homes - Silver Spring - Supervisors | Arlington Homes - Home Office - Management

**Safety Climate Maturity Scores - Overall and Across Leading Indicators**

The numbers 1-8 in the chart and table below pertain to the eight Safety Climate leading indicators:

1. Demonstrating Management Commitment
2. Aligning and Integrating Safety as a Value
3. Empowering Accountability at All Levels
4. Improving Supervisory Leadership
5. Empowering and Involving Employees
6. Improving Communication
7. Training at All Levels
8. Encouraging Owner/Client Involvement

The bars in the first chart and the table below it show your company's overall average safety climate maturity score from Inactive (1) to Exemplary (8).

The small horizontal gray lines indicate average scores of other respondents from other construction companies who have taken the S-CAT in the past 180 days.

Below that you'll see charts and tables for each of the 8 indicators. The charts show the percent of respondents answering for each level of maturity. The tables show how often each response was chosen (frequency) and the average of those responses for each indicator activity.

Level of Safety Climate Maturity

Leading Indicators

Safety management resource repository

**Safety Management Resources**

The SC-SMS repository is filled with safety management resources that are currently being used by safety professionals at construction companies to strengthen their jobsite safety climate. Click on the indicator buttons (one at a time) to get a list of resources to preview and download/save. Once you decide which one(s) to use, click on the Develop Action Plan for those resources to start putting them into action. [You can also Download a Blank Action Plan Template.](#)

Management Commitment | Align & Integrate | Accountability | Leadership

Empower/Involve Employees | Improve Communication | Train at all Levels | Involve Owners/Clients

**Involve Owners/Clients**

Resource	Type	Level	Actions
Contractor Prequalification Policy With Application	Template	High	<a href="#">Download/Save Resource</a> - <a href="#">Develop an Action Plan</a>
Management Commitment to a Strong Safety Culture	Policy	Basic	<a href="#">Download/Save Resource</a> - <a href="#">Develop an Action Plan</a> English Version   <a href="#">Spanish Version</a>
Management Site Safety Inspection	Procedure	Moderate	<a href="#">Download/Save Resource</a> - <a href="#">Develop an Action Plan</a>
Owner CEO Toolbox Talk - Safety Responsibility	Template	Basic	<a href="#">Download/Save Resource</a> - <a href="#">Develop an Action Plan</a>
Owner CEO Toolbox Talk - Stop Work Obligation	Template	Moderate	<a href="#">Download/Save Resource</a> - <a href="#">Develop an Action Plan</a>
Owner Contractor Sub-contractor Health and Safety Agreement	Template	Basic	<a href="#">Download/Save Resource</a> - <a href="#">Develop an Action Plan</a>
Owner Controlled Insurance Program Overview	Template	Moderate	<a href="#">Download/Save Resource</a> - <a href="#">Develop an Action Plan</a>

Schedule annual assessment

Safety Climate - Safety Management Information System

Menu | FAQ | Company Account | Log

**Action Plans**

Current Action Plans

Congratulations! You've successfully used reminders to conduct a follow-up S-CAT

Indicators(s)

Involve Owners/Clients

Schedule a Reminder

Select a date 9-12 months from today to conduct a follow-up assessment.

Remind me on date: 01/02/2023

January 2023

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

[Schedule Reminder](#) | [Cancel](#)

Plan implementation

Safety Climate - Safety Management Information System

Menu | FAQ | Company Account

**Action Plans**

Current Action Plans | Completed Action Plans

Indicators(s)	Resource(s) / Plan(s)	Action Plan
Involve Owners/Clients	<a href="#">Contractor Prequalification Policy With Application</a>	Pending

Download/tailor resources

**CONTRACTOR PREQUALIFICATION POLICY AND APPLICATION**

**PURPOSE**  
 This policy ensures we hire only those contractors committed to working safely and who offer minimal risk from a financial and business operations standpoint.

A. Prequalification is based upon:  
 a. The contractor's demonstrated safety performance  
 b. The contractor's ability to manage an effective safety program

B. The Prequalification application asks for supporting information on the following:  
 a. Safety statistics  
 b. Safety program and training content

**PRE-QUALIFICATION REQUIREMENTS**

- All contractors with a contract amount of \$500K or greater to provide labor must complete a pre-qualification application that will be used by [COMPANY NAME] to determine hiring.
- A "Letter of Exception" (LOE) process is intended to be a last resort option considered for those not meeting our basic criteria. This process is explained later in this document.
- Contractors with contract amounts of \$500K or greater that do not meet our safety criteria would also require a LOE.
- All contractors are required to pre-qualify on an annual, rolling calendar year basis. Pre-qualification date will be the date all information in the pre-qualification package is complete and the contractor is fully qualified through the pre-qualification package review or LOE.

# SC-SMIS Use (Jan 1- May 25)

## Company Users

Type	Number
Guests	114
Accounts Created	147 Construction
	85 Non-construction
Total Accounts	<b>232</b>

## Safety Climate Assessments

	# Companies Conducting an Assessment	Total # of Responses
<b>S-CAT</b>	54 (54/232 = 23%)	2,175*
<b>S-CAT<sup>sc</sup></b>	21 (21/232 = 9%)	385

\* Benchmark database – 9,705 responses (includes prior S-CAT data)

# SC-SMIS Use (Jan 1- May 25)

## Safety Management Resources Downloaded

Indicator (# of resources)	# Downloaded
Accountability (13)	3,893
Align and Integrate (9)	2,371
Empower and Involve (11)	1,583
Improve Communication (10)	2,227
Involve Owners/Clients (11)	655
Supervisor Leadership (9)	3,038
Management Commitment (14)	2,670
Train at All Levels (12)	2,147
<b>Total across all indicators (89)</b>	<b>18,584</b>

# FSL for Residential Construction

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## Project Team

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Linda Goldenhar<sup>2</sup>

<sup>1</sup>Carpenters Joint Apprenticeship  
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 Washington  
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SCHOOL OF MEDICINE  
Healthy Work Center



# The Problem

- Residential construction lags behind commercial construction in safety practices
- Foremen and other supervisors may lack the skills to effectively lead their teams to safer behaviors
- Fall prevention and other safety practices not fully implemented at many sites, particularly smaller contractors

# A Solution?

## Foundations for Safety Leadership (FSL)

- Training program created by CPWR in 2016
- 2.5 hr training, teaches 6 essential safety leadership skills
- Video scenarios with interactive discussion of effective and less effective leadership behaviors
- Approved as an OSHA 30 elective 2017 – widely disseminated (over 500,000 trained in OSHA 30 or free-standing training)





# FSL Leadership Skills

Skill	Practice
<b>Lead by Example</b>	“Walk the talk.” Make Safety a core value and make sure everyone owns safety.
<b>Engage and Empower Team Members</b>	Encourage and empower crew members to identify, report, and remove hazards – and to come up with solutions.
<b>Actively Listen</b>	Listen to hear and understand what crew members are telling you.
<b>Practice 3-way Communication</b>	Make sure crew members understand what is being said or asked.
<b>Develop Team Members by Teaching, Coaching, &amp; Feedback</b>	Act as a teacher and coach and provide constructive feedback using the FIST principle: Facts, Impact, Solutions, and Timely.
<b>Recognize Team Members for a Job Well Done</b>	This can be done in private or public if the employee is comfortable with it.

# Why FSL for Residential Construction (FSL4Res)?

- Uptake lower in residential sector
- Residential construction is different than commercial
- Smaller contractors, fewer resources, higher injury and fatality rates (particularly falls)
- Residential workers harder to reach than commercial
- Few foremen have OSHA 30 training
- FSL could be highly effective in this high-risk sector

## Adaptations

- Keep all the good didactic material, integrate with existing FSL
- FSL would be even better if.....
  - More real-world scenarios relevant to residential sector, emphasizing use of FSL leadership skills to reduce falls
  - Alter the delivery format to facilitate multiple shorter sessions, training at worksite, refresher training
  - Modify materials to facilitate jobsite training, expand pool of trainers

# Prevention through Augmented Pre-task Planning

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## Project Team:

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Director, Exposure Control Technologies  
Research, CPWR

Sara Brooks, MPH,  
Industrial Hygienist, CPWR

Chris Le, MPH,  
Construction Solutions Program Manager,  
CPWR



# Aims

Enhance the quality of JHA and Pre-task Planning, particularly in electrical construction:

- Partnership with electrical contractors of various sizes, unions, and associations
- Develop ready-for-impact Task Analysis Documents informed by workers' input on task difficulties and solutions
- Make content publicly available through an Electrical Tasks Repository

# Progress To Date:

- JHA shortcomings and effective practices; 23 interviews and 30 sample JHA documents analysis
- Identified 14 high-risk electrical tasks and contributing work factors
- 6 field studies on various types of electrical projects
- 80 onsite interviews with electricians on task difficulties, challenges, and solutions

- Developed **ready-for-impact Task Analysis Documents** for **13 electrical tasks**.
  - Organized by Task and Project Type. Applicable for JHA, Pre-Task Planning, and Training.
  - Contains task-specific challenges raised by workers, images, and recommended solutions.
- Rosendin Electric, one of the largest in the US, to pilot a new Pre-Task Planning approach based on our findings.
- Opportunity to collaborate with the Oil & Gas JHA Training Team of WVU OSHA OTIEC.
- Several requests from industry for publications and research findings.
- 2 peer-reviewed journal articles:
  - Memarian, B., Brooks, S. B., & Le, J.C. (2022). Obstacles and Solutions to Implementing Job Hazard Analysis in Construction: A Case Study. *International Journal of Construction Education and Research*. <https://doi.org/10.1080/15578771.2022.2027053>
  - Memarian, B., Brooks, S.B., Le, J.C. & Rivera, J.E. (accepted-in print August 2022). High-Risk Electrical Tasks and Contributing Work Factors. *Professional Safety Journal*.

# r2p Behavioral Economics Pilot Project

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## Project Team:

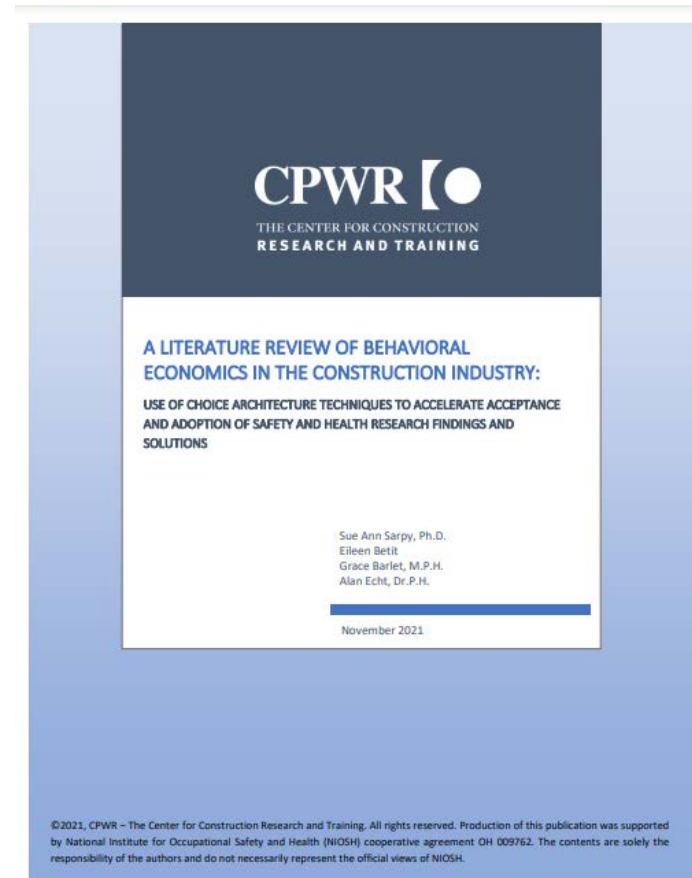
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[www.cpwr.com/wp-content/uploads/Behavioral-Economics-Literature-Review.pdf](http://www.cpwr.com/wp-content/uploads/Behavioral-Economics-Literature-Review.pdf)



# What is Behavioral Economics?

- Combines insights from Economics and Psychology for influencing decision-making behavior
- Traditional Economics: **Rational Choice** (consider **all available information**, process information **correctly and completely** to make the **optimal decision**)
- Behavioral Economics – **Bounded Rationality** (limits on time, information available, knowledge, and computational capacity)
- Individuals rely on strategies such as **heuristics** (rules of thumb) to assist with decision-making

## Common Biases and Heuristics: Health and Safety

- **Status quo bias** – preference for familiar and current (leads to procrastination)
- **Present Bias** – focus on the present and long-term is not as relevant
- **Loss aversion** – focus on the losses rather than gains
- **Availability bias** – use information that readily comes to mind
- **Overconfidence bias** – take risks based on perceived rather than actual ability

# Categories of Choice architecture techniques in Influencing Safety Decisions

Decision Information:  
how available information  
is presented

**Feedback, Social Norms,  
Framing, Simplify**

Decision Structure:  
arrangement of options  
or decision-making  
format

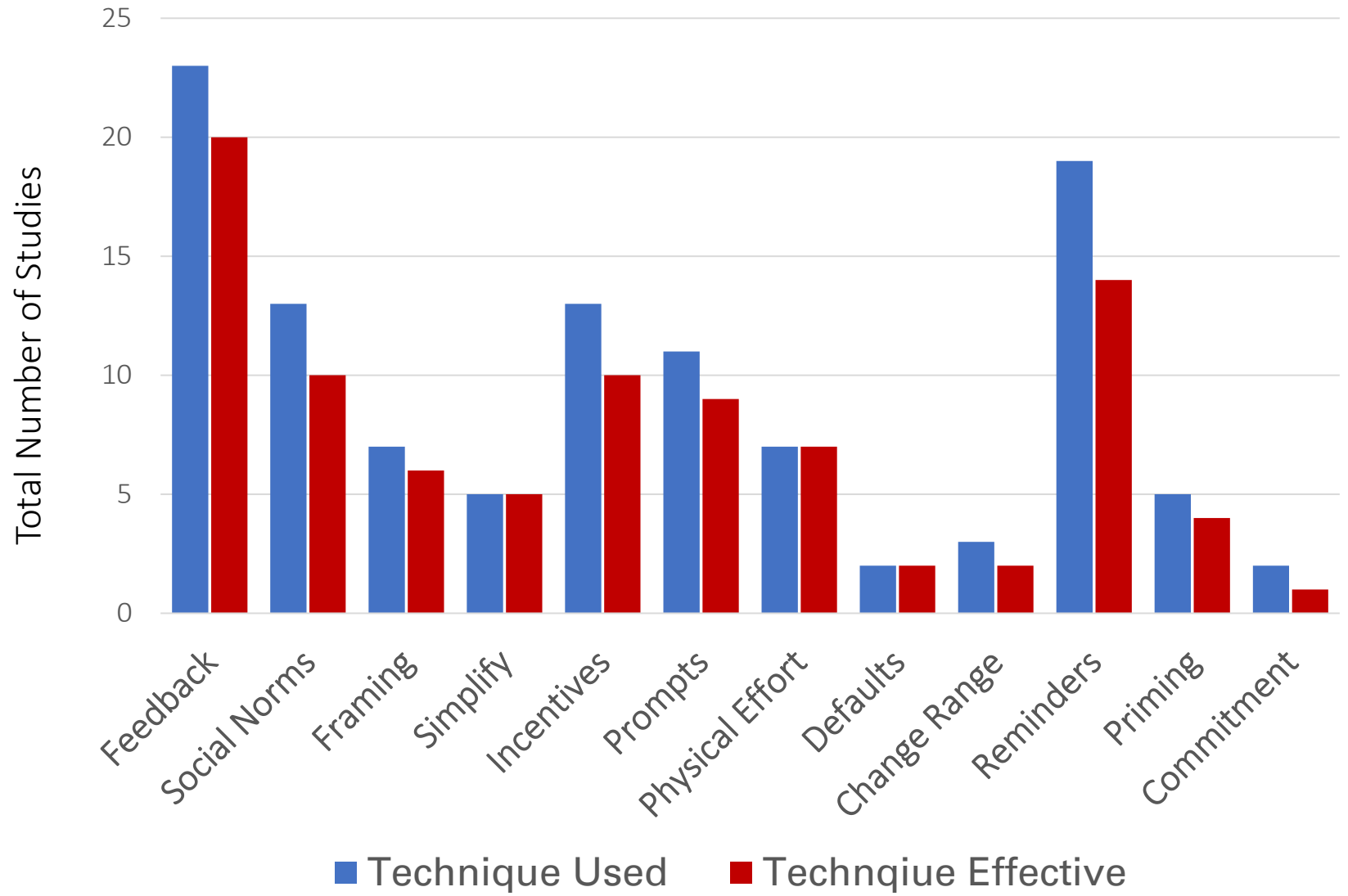
**Incentives, Prompts,  
Decrease Physical Effort,  
Defaults, Change Range  
of Options**

Decision Assistance:  
follow through with  
decision intentions

**Reminders, Priming,  
Commitment**



# Frequency and Effectiveness of Choice Architecture techniques



# Overall Findings

Effectively enhance a **wide array of health and safety decisions** and related practices/outcomes **across occupational settings**

**Simple, cost-effective,** and can be incorporated into **existing health and safety interventions**

Can be tailored and used **in combination with safety interventions** to enhance decisions

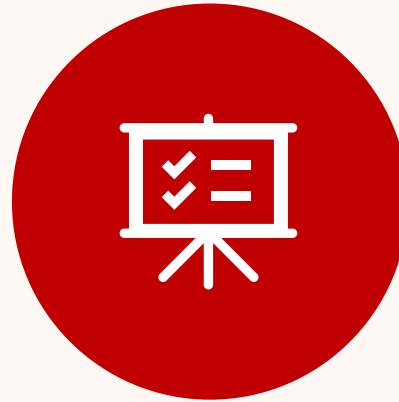
Evidence of effectiveness and support **across stakeholder groups**

Choice architecture in the form of “nudges” **empower individuals**

# Next steps for using nudges to enhance safety decisions in construction



Identify choice architecture techniques tailored toward acceptance and adoption of evidence-based safety solutions in construction



Design a pilot study that systematically addresses barriers and assesses effectiveness of the nudges and monitor effectiveness over time



Focusing on planning toolkit for struck-by incidents

# Struck-By Survey: Hazards, Barriers, & Opportunities to prevent incidents



## Helping your organization Prevent Struck-by Incidents

- Training on how to identify and prevent struck-by hazards
- Training on how to conduct job hazard analysis for struck-by hazards
- Information/best practices from other job sites
- Daily checklists listing hazards and equipment, tools, practices to prevent struck-by incidents
- Easy access to free information on how to prevent struck-by incidents
- Signs on job sites showing how to prevent a struck-by incidents
- Signs showing how to identify a struck-by hazard
- Daily text messages to crew members: hazards and work practices; available equipment/tools to prevent struck-by incidents

# CPWR Small Studies Program

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## **Program Director:**

Patricia Quinn, Program Director

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[www.cpwr.com/research/small-studies-program/](http://www.cpwr.com/research/small-studies-program/)



# New Research: Small Study Program

- Up to 1 year
- Up to \$30,000
- Now accepting applications
- We encourage innovative research proposals focused on:
  - Reaching **high-risk populations**: small employers, vulnerable workers, residential and light commercial construction firms
  - Developing **applicable, practical interventions**
  - Engaging stakeholders, through partnerships and other means, to better understand the **barriers to and motivators for adoption of best practices**
  - Addressing **emerging issues** and exploring **new technologies**
  - Evaluating promising research **translation products and dissemination strategies**
  - Disseminating good practices to **small employers**

# Infrastructure Investment and Jobs Act (IIJA)

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## Why Focus on Infrastructure Construction?

The IIJA offers a unique opportunity for government, labor, management, and safety and health researchers to work together to ensure workers receive safety and health training, OSHA standards are complied with, and research findings and best practices are followed.

CPWR is well positioned to work with these groups.



# Build Safe Build Strong

Keeping Infrastructure Workers Safe as America Rebuilds



CPWR SAFETY BRIEFING

THE BIPARTISAN INFRASTRUCTURE INVESTMENT AND JOBS ACT

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THE CENTER FOR CONSTRUCTION  
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# CPWR's Infrastructure Efforts

- [Infrastructure-focused section of CPWR's website](#)
- [CPWR Safety Briefing](#)
- One-Pager + Executive Summary
- Communications Outreach:
  - [CPWR Monthly Newsletter](#)
  - NABTU Toolkit Emails
  - [Webinars](#)
  - [Podcasts](#)
  - Social media ([Facebook](#), [Twitter](#), [Instagram](#), [LinkedIn](#))
- CPWR's [Data Center](#) monitoring and reporting
- New research + resource development





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Thank you!