Fosbroke, Statistician, NIOSH. Design Safety Messages with Employers Needs and Constraints in Mind. One of the strategic goals of the NIOSH Center for Motor Vehicle Safety is to effectively communicate safety information to employers. To accomplish this goal, the Center worked with RTI International to conduct an audience analysis with managers of small businesses, which often have limited resources, across four different vehicle user groups. Findings from focus group discussions have contributed to a number of changes in the Center's current and planned health communication efforts. Theodore Teske, Health Communications Specialist, NIOSH. Live to be Salty: How NIOSH Got Fishermen to Wear PFDs. NIOSH engaged community partners and a strategic communication firm to develop an intervention to overcome existing barriers and encourage personal flotation device (PFD) use among fishermen. Campaign strategy focused on common touchpoints—coordinating concentrated community, point-of-sale, and digital channels to reach the target audience where they live, work, eat, and shop. The resulting intervention, Live to be Salty, was a 2-year multi-channel campaign featuring a developed spokesman, Angus, designed to be culturally relevant, memorable, and different from typical safety messages targeted at these audiences. A robust evaluation program was implemented to answer questions about PFD use, attitudes about man overboard risk, recognition and recall of the campaign spokesman and his message, and behavioral intention or change. Sydney Webb, Health Communications Specialist, NIOSH. Who DAT (Demographic Access Tool) you want to know more about? Who DAT is a one-stop-shop of web personas, which provide a snapshot of the attributes of a particular audience represented by a single, fictional person on CDC health and safety topics. The personas in this tool include quantitative and qualitative audience data as well as visual guidance to help health communicators develop effective messages that move people to action. David Fosbroke, Statistician, Rebecca Olsavsky, Health Communication Specialist, Sydney Webb Health Communication Specialist, NIOSH. Pulling It All Together—Improving Your Aim. This interactive portion of the workshop will review methods for effectively translating research findings into useful tools for workers, managers, and safety professionals to make changes in the workplace that improve safety outcomes. Participants are encouraged to bring examples from their own research to share and to discuss the role of product choice, format, and delivery channel in con-

veying new safety information in a way that produces lasting results.

Session F1
Title: Lessons from Surveys of Construction Stakeholders
Moderator: Christine Branche

CPWR – The Center for Construction Research and Training is dedicated to reducing occupational injuries, illnesses and fatalities in the construction industry. Effectively reaching, learning from, and communicating with the contractors, workers and other stakeholders who could contribute to or benefit from research findings is critical. This session will cover four distinct survey approaches used to inform and evaluate our ability to reach stakeholders.

F1.1
Title: Safety Management and Safety Culture in the Construction Industry
Authors: Xiuwen Sue Dong, Xuanwen Wang, Rebecca Katz

Background: CPWR has collaborated with Dodge Data & Analytics to conduct a biennial online Construction Safety Management Survey (CSMS) on Dodge's member contractor panel (>3,000) since 2012. This study examined safety management and safety culture in the construction industry using the CSMS data.

Methods: Data from three waves (2012, 2015, and 2017) of the CSMS were analyzed. Safety management was assessed by specific organizational and project safety practices, including the use of personal protective equipment (PPE), Prevention through Design (PtD), and safety and health training. Safety culture was measured by eight indicators, including owner/ client involvement, leadership, safety communication, and employee empowerment and involvement. These measures were stratified by business type, firm size, and union status. SAS 9.4 was used to conduct the analyses.

Results: The findings show broad progress in management commitment to a strong safety culture in the construction industry. Jobsite worker involvement was reported as the top practice in both the 2015 and 2017 surveys. Nearly 60% of the contractors surveyed believed that demonstrating management commitment had a high impact on workplace safety. Moreover, a

high percentage of contractors consistently reported a reduction in work-related injuries and improved project quality due to their investments in safety practices. However, disparities exist among firms with different organizational characteristics. Only 38% of small firms (<10 employees) adopted safety protections in the workplace, compared to nearly 90% of large firms (500+ employees). About 82% of large firms applied all five organizational safety practices, more than eight times the proportion among small firms. Compared to larger firms, smaller firms provided safety and health training to their employees less frequently. Similarly, non-union firms and trade contractors engaged in fewer safety practices than union firms and general contractors.

Discussion: Organizational factors significantly affect safety management and culture in construction. Small and non-union firms lag behind in almost every aspect of safety practices and safety culture measures. There is an urgency for smaller construction companies (which are more likely to be trade contractors and less likely to be unionized) to adopt effective safety practices to improve workplace safety and health.

F1.2
Title: Characterizing Indicators of a Positive Safety Climate in the Construction Industry
Authors: Babak Memarian, Sara Brooks, Bruce Lippy

Background: According to the Bureau of Labor Statistics' (BLS) latest report, the construction industry continues to be one of the highest-risk industries in the nation, with 991 fatalities and 197,700 nonfatal injuries in 2016. Safety climate measurements have been suggested as a proactive method of assessing an organization's effectiveness in identifying and addressing the hazards that lead to injuries and fatalities. Even though safety climate is often defined as employee perceptions of safety in the workplace, preventing work-related injuries and fatalities also depends on organizational practices. Thus, employers are responsible for understanding and addressing underlying systems that affect worker health and safety.

Methods: To explore and assess the leading indicators that contributed to the successful safety performance of a major U.S. contractor, CPWR – The Center for Construction Research and Training conducted site safety climate assessments on multiple jobsites in different states. To create a better understanding of both worker perceptions and organizational practices, CPWR conducted several in-depth field studies that included surveys of 219 craft workers and interviews with 41 members of project management teams across four projects of the same company. Furthermore, researchers conducted jobsite walk-throughs to closely observe site conditions. The questionnaires used for this project drew extensively from the Safety Climate Assessment Tool (S-CAT) developed by CPWR. This presentation will summarize findings and lessons learned under seven major leading indicators of safety climate: (1) demonstrating management commitment, (2) aligning and integrating safety as a value, (3) ensuring accountability at all levels, (4) improving supervisory leadership, (5) empowering and involving employees, (6) improving communication, and (7) providing training at all levels.

Results: Survey results indicated that about 83% of respondents believed "all levels of management were committed to worker safety and health." A vast majority (95%) of participants responded that "their supervisor demonstrated safety leadership" and 87% responded that "their supervisor often would ask for their input on safety." Of all respondents, nearly 91% stated that "they were taught how to protect themselves from jobsites hazards," which was an indicator of effective safety training across the organization. However, only 73% of participants responded that "their employer would share accident investigation results with everyone," which was attributed to the employer's lack of an effective communication system on jobsites. Also, about 25% of respondents perceived that productivity was valued more than safety by the employer, which was mainly attributed to aggressive schedule pressure.

Discussion: Safety appeared to be well integrated into work processes at the participating contractors' jobsites. At these sites, craft workers' perception of the health and safety program and also safety leadership were remarkably positive, and safety was perceived as "everyone's" responsibility. However, communication and production pressure control were two critical issues that needed to be improved.

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