The National Institute for Occupational Safety and Health (NIOSH) Healthy Work Design and Well-Being (HWD) Program seeks to improve the design of work, work environments, and management practices in order to advance worker safety, health, and well-being. HWD partners with industry, labor, trade associations, professional organizations, and academia to accomplish its goals. Current priorities include: improving the organization of work in order to reduce job stress; advancing the safety and health of workers in non-standard work arrangements, such as temporary staffing agency, contract, and gig arrangements; and protecting workers from the adverse health and safety consequences of shift work, long work hour schedules, and other factors that contribute to work-related fatigue.

This poster highlights recent HWD accomplishments and products including information on: the fifth administration of the NIOSH Quality of WorkLife survey, which gathers data from a nationally representative sample of employed adults in order to track changes in the organization of work and understand their impacts on worker health, safety, and well-being; and a satellite meeting of experts at the 24th International Symposium of Shiftwork and Working Time aiming to identify gaps and needs surrounding working hours, sleep, and fatigue among U.S. industries. We also highlight key international presentations including: one on the association between precarious employment and workplace mistreatment, including harassment and discrimination, at the 11th International Conference on Workplace Bullying and Harassment; one on work flexibility in the U.S. and the associated work-related well-being at the 2019 Congress of the European Association for Work & Organizational Psychology; and another at the 5th International Conference on Well-being at Work, on the NIOSH-RAND worker well-being framework that characterizes well-being among workers through individual health and work-related environmental, organizational, and psychosocial factors which, when optimized, enable workers to thrive and achieve their full potential.

Lastly, the poster highlights a few recent HWD publications on opioids, fatigue, and comprehensive approaches to achieve worker safety, health, and well-being. We developed resources that address the "full lifecycle" of the opioid crisis through the lens of industry, occupation, and other work-related factors and provide actionable information and recommendations for workers and employers. In addition, we published on suicide and drug-related mortality following occupational injury and on comprehensive recommendations to reduce fatigue associated with sleep deficiency and work hours in nursing, in collaboration with the American Academy of Nursing. We also published guidance on organizational approaches for designing, implementing, and evaluating policies, programs, and practices that comprehensively address worker safety and health, including through Total Worker Health.®

H-9

NIOSH—Total Worker Health® Program: Exploring new research horizons for worker well-being

Sarah Mitchell (NIOSH)

Today, there is increasing evidence of a strong connection between the work environment and overall health, safety, and well-being of the workers within it. Diminished health or injury, whether caused by work or resulting from non-work activities, reduces quality of life, opportunity, and income for workers and those dependent upon them. Conversely, workplaces with enhanced opportunities for the total health of workers can lead to a vibrant, engaged and high-performing workforce. Employers, workers, and their communities all have a stake in promoting the design of healthy jobs and advancing the well-being of workers.

Traditional workplace health promotion, wellness, and safety programs have often remained siloed, focusing on promoting worker health through reduction of individual risk-related behaviors, or minimizing workers' exposures to job-related risks, including exposures to physical, biological, and chemical hazards. There is increasing evidence that this fragmented approach is not as effective as coordinated and comprehensive organizational-level interventions that consider all aspects of work. New approaches will focus on ensuring the safety of workers while looking more broadly at how work and the workplace can advance worker health and productivity on and off the job. The National Institute for Occupational Safety and Health (NIOSH) believes that a holistic approach that promotes the integration of all conditions of work and employment that impact worker safety is key to protecting workers and designing safer, healthier jobs.

NIOSH defines Total Worker Health (TWH) as "policies, programs, and practices that integrate protection from work-related safety and health hazards with promotion of injury and illness prevention efforts to advance worker well-being." The NIOSH TWH Program has articulated a need for further research to expand the relevant evidence base and move research into practice. The TWH Program at NIOSH supports the development and adoption of ground-breaking research and best practices of integrative prevention approaches that address health risks arising from work-related and non-work related factors. The TWH Program carries out its aim to prevent worker injury and illness and to advance health and well-being through 1) an intramural research program and an extramural research program comprised of six Centers of Excellence for Total Worker Health; 2) active engagement with partners from labor, industry and the federal, state and local government; 3) dissemination of research results through publications, presentations, and scientific meetings; and, 4) motivating trans-disciplinary collaboration among national and international investigators focused on preserving and improving the health of all people who work.

Sarah Mitchell, MPH; CDR Heidi Hudson, MPH; L. Casey Chosewood MD, MPH; on behalf of the NIOSH Office for Total Worker Health®

H-10

NIOSH—Center For Motor Vehicle Safety: Keeping Workers Safe On The Road

Stephanie Pratt (NIOSH)

Motor vehicle crashes are the leading cause of work-related deaths in the United States (U.S.). From 2003-2017, more than 27,000 workers in the U.S. died in a work-related motor vehicle crash. Crashes affect workers in all industries and occupations, whether they drive heavy trucks, emergency vehicles, pickup trucks, or cars, and whether driving is a primary or occasional part of the job. To address this important worker safety issue, the National Institute for Occupational Safety and Health's (NIOSH) Center for Motor Vehicle Safety (CMVS) conducts research and develops strategies to prevent work-related motor vehicle crashes and injuries. Using a multidisciplinary approach, CMVS researchers and communicators across NIOSH work with partners to identify crash risk factors, develop and evaluate workplace interventions to prevent crashes and injuries, and share the results with employers, workers, and others. The poster presentation will convey the scope and purpose of the CMVS and provide highlights of recent

accomplishments. It will also share information about CMVS strategic planning, which is intended to ensure that resources are directed toward highest-priority topics and worker groups.

In September 2019, the CMVS published an evaluation of progress on its 2014-2018 strategic plan, which identified numerous research and communication products focusing on high-priority worker groups: truck drivers, emergency medical services workers and firefighters, law enforcement officers (LEOs), oil and gas extraction (OGE) workers, and light-vehicle drivers. For example, research on motor vehicle crashes among LEOs led to development of trade journal articles on prevention of officer-involved crashes and a toolkit for use by departments and officers. Research findings about the role of fatigue in crash fatalities of OGE workers, coupled with strong interest from industry partners, led to development of fact sheets on driver fatigue directed toward employers and workers. Research findings on non-use of seat belts by truck drivers led to NIOSH's first CDC Vital Signs, a suite of communication products to promote trucker safety and injury prevention by encouraging belt use. Research on the safety of workers in the ambulance patient compartment led to development of ambulance design and testing standards and to changes in performance specifications for ambulance purchases. CMVS research findings have also contributed to NIOSH comments to regulatory agencies and to national and international standards on fleet safety management that provide critical guidance where no regulations exist.

Building on the evaluation of its 2014-2018 plan, the CMVS is developing a 10-year plan which will go into effect in 2020. The draft plan is informed by input from internal and external partners, the public, and research agendas from other organizations. Following the NIOSH strategic plan for 2019-2023, the CMVS plan will emphasize four industry sectors for which motor vehicle safety is a priority: oil and gas extraction; public safety; transportation, warehousing, and utilities; and wholesale and retail trade. Research and communication activities will center on three strategic areas: (1) crash and injury risk factors; (2) engineering and technology-based interventions; and (3) motor vehicle safety management programs and practices. A continuing balance between research and communication positions the CMVS to effectively and efficiently work toward our overarching goal of preventing work-related motor vehicle crashes.

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H-11

NIOSH—Occupational Health Equity Program

Michael Flynn (NIOSH)

Not all workers have the same risk of experiencing a work-related health problem, even when they have the same job. The way societies configure social and economic arrangements influence workers' exposure to occupational hazards (differential exposure) as well as their ability to cope with adverse consequences of an occupational injury or illness (differential susceptibility). These arrangements are commonly referred to as social determinants of health (SDOH). Three types of social arrangement particularly salient for the distribution of occupational injury and illness include: social group/identity along axes such as race, class and gender; organizational and industry practices such as competitive bidding, unionization, and sub-contracting; and employment characteristics such as job security, shift work, and pay structures. The Occupational Health Equity program seeks to identify and eliminate avoidable differences in work-related disease incidence, injury, mental illness, and morbidity and mortality that are closely linked with social, economic, and/or environmental disadvantage.

The United States' workforce is undergoing dramatic demographic and structural shifts. The fastest growing groups in the workforce (such as racial minorities, immigrants, and contingent workers) are also those who are at an increased risk of occupational injuries and illnesses as a result of social, economic, and/or environmental disadvantage. The direct and indirect cost of occupational injury and illness in the United States in 2007 was $250 billion, up from an inflation-adjusted $217 billion in 1992. If the disadvantages that contribute to increased occupational injury and illness are not addressed, the costs to society will increase as workers from these high-risk groups make up an increasing percentage of the workforce. Occupational health equity research and practice is essential if we are to maintain the gains in safety and health of the past half-century.

One of the largest challenges facing occupational health equity is that the same social and economic structures that contribute to higher risks of occupational injury have often also excluded these workers from efforts to understand and prevent workplace illness and injury. As a result, existing surveillance systems often have incomplete information, making the occupational health status of some underserved worker populations unclear. Similarly, research methods that work well for understanding majority populations are often not as effective for working with many racial/ethnic minority groups. Tailored research methods and interventions need to be developed and adopted. Occupational safety and health professionals and organizations need to continue developing the internal capacity and institutional relationships to work effectively with these communities.

The Occupational Health Equity program is working to integrate a social determinants of health approach to occupational safety and health. This work includes:

1. Improving surveillance and research methods to more precisely identify which social, economic, and/or environmental disadvantages contribute to higher rates of occupational injury and illness in which industries.

2. Promoting research that explains how barriers to safety and health related to these factors occur at the worksite and how they can be overcome.

3. Developing and evaluating tailored occupational safety and health programs, policies or other changes that directly address these barriers either by themselves or in combination (Overlapping Vulnerabilities)

4. Improving institutional infrastructure to address these risk factors through internal capacity building and partnership development.

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H-12

NIOSH—Center for Occupational Robotics Research: Program, Goals, and Research

Hongwei Hsiao (NIOSH)

The National Institute for Occupational Safety and Health (NIOSH) conducted extensive robotics research when robots began appearing

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