

**Workforce Protection in Small Businesses**  
**A Response to the National Science Foundation's**  
**Dear Colleague Letter for SBE 2020:**  
**Future Research in the Social, Behavioral & Economic Sciences**

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**Abstract**

*The human and financial costs of work-related illnesses and injuries are a significant and persistent burden to society. The social, behavioral and economic (SBE) sciences have played a role in reducing those costs over the years by developing management practices, workers' compensation insurance systems, and government policies that seek to eliminate dangerous workplaces. Unfortunately, those systems emphasize use of technologies and practices to protect workers that are often beyond the resources of small businesses. We propose a multi-level, cross-disciplinary vision of research that places SBE at the center of workplace safety and health efforts. Research is needed at the social systems level to understand the social networks of small businesses and how those systems can be coordinated to better-deliver safety and health assistance. That effort must be coordinated with research and development on new regulatory and insurance systems that better fit the limited capacities of small enterprises. To succeed, this vision for research must include investigation of the managerial mind and its influence on protective practices in the workplace. We must also understand how family, female, and minority ownership affects prevention practices. There is some existing capacity to execute this vision, but leadership from the SBE research community is vital.*

Few social arrangements are studied by as many social science disciplines as the contract between an individual and her or his employer. What we do for a living is essential to how we define ourselves. It influences where and how we live. The outputs of labor are the drivers of all economic activity and the source of resources that may be applied for the collective good of all. Work provides fulfillment, satisfaction, and a creative outlet. But it may also cause stress, conflict, injury and illness, and substantial financial burden to society.

In 2009, a total of 4,340 U.S. workers died from occupational injuries. Another 49,000 deaths are attributed to work-related diseases each year. An estimated 3.4 million workers were treated in emergency departments because of occupational injuries in 2007 (the most recent data available). In 2006, employers spent nearly \$87.6 billion on workers' compensation insurance. Other costs to businesses include hiring and training replacement workers, property damage, incident investigation,

finer, lowered workforce morale and productivity, and loss of community standing. The total burden of occupational disease and injury is estimated to be between \$128 and \$155 billion per year.

To avoid such losses, society invests in research in labor relations, workers' compensation insurance, occupational safety and health (OSH), and industrial psychology and engineering. Those efforts have improved managerial practices by emphasizing use of OSH programs, engineering controls for workplace hazards, employee training in hazard recognition and reduction, and personal protective equipment. Government has adopted regulations to encourage such prevention efforts.

Unfortunately, OSH management is a major challenge for most businesses because of something they cannot easily change: their size. In 2007, 89% of U.S. firms had less than 20 employees and 98% had less than 100. Of the 10,742 fatal accidents investigated by OSHA from 1992-2001, outside of construction, 4,570 were at establishments with fewer than 20 workers, and in construction this proportion is even higher. Small businesses are a substantial majority of businesses in every major industrial sector, including dangerous sectors such as construction and mining.

Small businesses have few resources for prevention. Additionally, they lack trained safety staff, and therefore "absorptive capacity" to gain sufficient prevention knowledge, and their size prevents learning from experience. Given small employers are more likely than large businesses to be unable to absorb the costs of employee injuries, especially catastrophic ones, one would expect greater motivation to seek prevention knowledge. However, evidence indicates that resource deficiency, isolation, low probability of inspection, and perceptions that incidence rates are low contribute to low motivation among small employers to engage in prevention activities. Likewise, technologies and policies meant to reduce illness and injuries often seem unrealistic for small enterprises -- a condition the U.S. Small Business Administration frequently points out.

Thus, the challenge includes understanding and motivating small employers' prevention behaviors, and devising technological and policy means to help. Many disciplines study small employer behavior but research about injury and illnesses in small businesses is sparse and scattered across perspectives. Given the possible savings, new approaches studying small business OSH should be a high priority. Emphasis on hazard control technology development for workplace health threats is inadequate for small enterprises which lack the necessary managers' skills and technology budgets. Researchers in the social, behavioral, and economic (SBE) disciplines should move from the sidelines of workplace injury prevention to lead a national OSH research program focused on small, rather than large businesses. The nation must better understand small employer behavior and how it is influenced by economic and social forces. This will require multi-level analyses, sophisticated methods and a long term perspective.

### ***Social and Economic Systems***

Businesses operate in a complex system of organizational relationships, and changing those operations depends on a thorough understanding of those relationships. OSH resources are available to small businesses from a variety of public and private organizations, but these efforts are underfunded and poorly coordinated. Research is needed to understand small business social networks, organizational opinion leadership, and where disparate interests intersect and can be coordinated for injury prevention efforts. Research is needed to understand the extent to which OSH for small businesses fits into the value proposition suppliers of other goods and services offer those small businesses. New collaborations for the delivery of OSH information to small businesses need to be tried and documented.

Everett Rogers' diffusion of innovations model is useful for the study of ideas moving through both human and organizational populations. For example, Jippes and colleagues (2010) compared train-the-trainer methods with social network diffusion for the adoption of a healthcare innovation (structured feedback for resident training), and found a strong effect for social network

ties with no effect for train-the-trainer. These findings suggest ties within social networks may be more important than training and education for adoption of new practices. Small business OSH may be improved by diffusion researchers as electronic communications methods advance rapidly, but new models are also needed.

Similarly, economics and policy researchers must develop new approaches to OSH incentives, regulation and workers' compensation systems. Workplace regulations have been derided as picky and overly detailed, perhaps because they are written more for large employers who can manage such detail. New approaches to policy language which small businesses can easily comply with are in the best interest of the nation and its workers.

Research on policy implications for small business OSH by Mendeloff and colleagues (2006) found simple relationships between establishment size and fatality rates and between firm size and fatality rates were both strongly negative. However, when controlling for establishment size, there was no effect for firm size. These researchers suggest firm level effects on safety appear to principally involve financial incentives, while establishment level factors tend to concern the knowledge that exists in the workplace. They also found higher fatality rates in small businesses related to violations, and suggest greater inspection efforts could help, as inspections are associated with lower incident rates. However, given potentially low payoffs due to fixed costs of inspections and the critical need for knowledge, they also suggest expansion of consultation services and information programs for small businesses as viable policy options, which certainly agrees with small business perspectives on regulation. Clearly policy improvement is possible with the attention of SBE researchers.

The nation's workers' compensation system is under enormous pressure because of healthcare costs. Employers who reduce illnesses and injuries may find compensation costs rising anyway. Economists and risk management disciplines should be developing new models that could

be used to assure workers are compensated appropriately for what befalls them at work while devising means to better spread the risks of loss across the social system. Workers' compensation must be figured into the overall healthcare solution for the country.

### ***Employer and Employee Behavior***

There is a need to understand the heterogeneity that exists among small businesses of different resources, motivations, and potential to protect workers. Research is needed to better understand OSH knowledge, attitudes, beliefs, motivations, and behaviors of small business managers and the connection of those constructs with workplace illnesses and injuries. In particular, small business managers have shown they consistently misjudge risks in their operations. Not enough is known about how to change those risk perceptions and the role of emotions in those perceptions. Behavioral economics researchers are addressing many public health issues of personal health choices. In the future, they should also focus on employer and employee choices that influence OSH outcomes. We must study new ways for labor and management to work together on this issue. Also, little is known about how small business managers seek OSH information, what type of consultants they use, and where they go for prevention and clinical services.

Research is needed on the influence of ownership type (family, female, and minority) on managers' OSH activities. Additionally, research is needed to distinguish subtypes of small business. Theory-driven research is needed to account for differences in organization performance, organizational culture, and dynamics by size. Small business culture change must be explored to create stronger safety cultures within organizations, as strong safety culture has been linked to reduced injuries. Research is also needed on workforce characteristics and job designs in small businesses, and their connections to OSH outcomes. Workforce characteristics relevant to small businesses include temporary and contract worker status. Relevant job design issues include having multiple responsibilities.

Research about the effects of small business managers' actions to improve OSH has been limited. A recent review of quantitative evaluations of OSH interventions in small businesses yielded only five medium- or high-quality studies (Breslin et al. 2010). Intervention components included engineering controls, training, safety audits with recommendations, and financial incentives. Moderate evidence was found for the positive effect of OSH interventions, but evidence from rigorous studies was scant. Recommendations for improving the scientific quality of small business intervention evaluations included increasing the number of businesses recruited, using randomized controlled designs, isolating intervention component-specific effects, and measuring outcomes for at least four to 12 months post-intervention to assess sustainability. More intervention effectiveness studies are needed, using both quantitative and qualitative methods.

### ***Implications for Moving Forward***

The nation's health could be significantly improved with a strong scientific initiative to better understand OSH improvement in small business environments. Many workplace health programs which are developed via funded research rely on large organizations with resources to support such efforts. These efforts are promising because they reach adults where a majority of their time is spent. However, a critical segment of potential beneficiaries is missed if such innovative approaches are not made to work with small businesses which have very limited resources. The capabilities which need to be created are novel, cross-disciplined teams of researchers who will work together to understand and improve small businesses prevention activities.

Improved OSH among small businesses involves understanding how to do more with less. This means understanding what resources are available, which resources are actually used and preferred, how best to connect small businesses to additional untapped resources, and what resources need to be created or further developed. This will certainly require the expertise of the SBE disciplines as well as engineers, physical scientists, and marketing experts.

### ***Research Infrastructure Development***

There is some research capacity available to the nation to advance this agenda. In 2006, the National Institute for Occupational Safety and Health (NIOSH) established research advisory councils to set the National Occupational Research Agenda for eight major industrial sector groups. Scientists and stakeholders from business, academia, labor and government make up membership of the councils. In addition, NIOSH supports 16 Educational Research Centers at U.S. universities and many project grants at other post-secondary schools. NIOSH also operates three major intramural research facilities. This infrastructure can guide development of needed research in the SBE sciences. In fact, NIOSH currently operates programs in Work Organization and Stress-Related Disorders, Economics, and Small Business Assistance and Outreach. However, greater attention from a wider SBE research community is warranted given the enormous potential for health improvement.

Education and training in disciplines including the SBE sciences should include a primary focus on small businesses as the norm for the typical organization. Rather than developing understanding of how to improve OSH for large organizations, and then paring down for small organizations, basic components should be derived and tested first and then expanded as needed for larger organizations. This will likely require reorientation of funding announcements among several agencies which support OSH improvement research.

Additionally, monitoring of small business injuries and illnesses must be improved as there is reason to suspect injury and illness data are vastly underreported. Understanding managers' motivation to report incidents is critical for developing a reliable national data set. Additionally, existing small business research centers' agendas should be better coordinated, and traditional research institutions should be convinced to create centers for small business OSH research.

Small businesses are not only the engine of our economic system; they are crucibles of innovation and job creation. They are a part of our national identity. As the SBE sciences evolve,

small business workforce protection is a scientific mission worthy of a much stronger and visionary focus.

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