

Southern States Occupational Network Meeting
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Principal Investigator

Terry Bunn, PhD
University of Kentucky
Kentucky Injury Prevention and Research Center
333 Waller Avenue Suite 242
Lexington, KY 40504
TEL 859 257 4955
Terry.Bunn@uky.edu

Applicant Organization

Council of State and Territorial Epidemiologists
2635 Century Parkway, Suite 700
Atlanta, GA 30345

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List of Terms and Abbreviations

Central Appalachian Regional Education and Research Center (CARERC)

Centers for Disease Control and Prevention (CDC)

Council of State and Territorial Epidemiologists (CSTE)

National Institute for Occupational Safety and Health (NIOSH)

Occupational Safety and Health (OSH)

Training Project Grants (TPG)

Southern States Occupational Network (SouthON)

Abstract

The Council of State and Territorial Epidemiologists (CSTE) collaborated with the National Institute for Occupational Safety and Health (NIOSH), Regional Occupational Safety and Health Education and Research Centers (ERCs), academic partners, and state health departments for five years in meeting locations across the southeastern states to convene and maintain the Southern States Occupational Network (SouthON). This was accomplished through annual meetings, Occupational Safety and Health (OSH) capacity building, resource sharing, multistate research publications, and ongoing communication among various collaborating partners. The past five years of SouthON Meetings, from September 2016 through August 2020, were supported by NIOSH under the R13 conference grant award mechanism.

The overall aims of the SouthON project are to:

- *Aim 1:* Provide epidemiology and program planning tools for establishing OSH capacity building.
- *Aim 2:* Build OSH epidemiology surveillance and research capacity among Southeastern states on work-related injuries and illnesses at both the state and southeast region levels;
- *Aim 3:* Promote multi-state scientific research collaborations among occupational epidemiologists, community partners, worker organizations, NIOSH, and academic colleagues in the Southeastern region;
- *Aim 4:* Develop common priorities for development of occupational risk assessment, applied epidemiology, worksite interventions and occupational health practice.

Each year, SouthON brings together 60-70 participants from the 12 southeastern states; NIOSH-funded ERCs, Agricultural Centers, and Training Project Grants (TPG); NIOSH Divisions and Branches; State Health Departments; academic partners; and public health scientists to present and exchange ideas in a relatively small and informal setting that is conducive to new ideas and collaborative activities.

Over the past five years, SouthON has played a significant role in bringing together more experienced states and states that are considering the development of an occupational epidemiology program and forming new relationships and partnerships as a result in participating in SouthON meetings. SouthON meetings highlighted numerous successful projects, models, and partnerships that can be used by many states in the southern region. Key examples of collaboration include:

- Collaboration between Florida and Kentucky to develop a project surveillance of commercial motor vehicle crashes and incidents, prompted by a presentation from Kentucky on commercial vehicle crashes.
- Collaboration among NIOSH, state health departments, and ERCs on three manuscripts about 1) [work-related hyperthermia emergency departments visits](#); 2) [heat-related illness](#); and 3) [occupational fatalities using data from southeastern NIOSH-funded states](#).
- Collaboration among five states to develop and administer a survey to assess the occupational exposures and first responder concerns surrounding environmental exposures to opioids during responses to opioid overdoses.
- Collaboration among the Kentucky Occupational Safety and Health Surveillance program and the Florida Occupational Safety and Health Surveillance program on the development of hazard alerts and a toolkit on workplace deaths by suicide.

The model of the SouthON meeting is based on the concept that “regional” identification of common issues can help support the development of occupational epidemiology capacity in states that historically have not had commitment or funding in this core area of public health, and foster OSH research. The SouthON meeting is an important part of a larger coordinated effort to build a nationwide public health system in all states to track, investigate and prevent work-related injuries and diseases.

Section 1

C.1. Significant Key Findings

CSTE, in collaboration with the SouthON planning committee, planned, organized, conducted, evaluated, and provided state travel support for annual SOUTHON meetings that built OSH capacity in seven southeastern states not funded by NIOSH. An organizing committee of CSTE members and staff, state and NIOSH representatives, and ERC representatives met via teleconference monthly to plan the annual meeting and finalize the agenda. Planning committee members included representatives from the Deep South Center for Occupational Health and Safety, University of Kentucky, and Sunshine ERCs; current NIOSH occupational safety and health surveillance-funded SouthON states (GA, LA, KY, NC, MS, FL, and TN); one unfunded state (VA); as well as NIOSH.

The 2016 SouthON meeting was held March 8-9, 2016, in New Orleans, LA, with 65 attendees. Presentations discussed current NIOSH activities, occupational health capacity, occupational exposures, heat-related illness and injuries, and common occupational safety and health issues impacting workers in the southeast using occupational health surveillance data. In 2017, a NIOSH and multistate health department (LA, KY, TN, FL, GA, and AR) study was launched based on 2016 meeting results. The objectives of this study were to examine differences in health risks by individual worker characteristics and to identify heat index ranges that correspond with adverse work-related health impacts in the Southeast region.

The 2017 SouthON meeting was convened on April 6-7, 2017, in Nashville, TN, with approximately 60 attendees. The focus areas of the meeting were on temporary workers and on exposure of worker populations to opioids and other schedule I-V drugs while performing work activities. During the 2017 meeting, exposures of first responders to opioids during drug overdose responses was discussed and a survey was developed for administration to law enforcement, EMS, and fire personnel. Following the meeting, the University of Kentucky Central Appalachian Education and Research Center (CARERC) funded 5 pilot projects in the fall of 2017: LA, GA, VA, KY and MS to develop a survey to assess the use of multiple data sources in the surveillance of work-related opioid exposures.

The 2018 SouthON meeting was convened on April 5-6, 2018, in Savannah, GA, with approximately 70 attendees. The major theme of the meeting was opioid exposure among first responders and investigators. The preliminary results from the survey administered to law enforcement, EMS, and fire personnel during 2017 were presented during the 2018 meeting.

The 2019 meeting was convened in Tampa, FL on April 3-4, 2019, with approximately 70 attendees. The major themes of the meeting were social determinants of health associated with work, at-risk worker populations, occupational exposures, and work-related organizational policies. The meeting also highlighted ongoing research collaborations among NIOSH, state health departments, and ERCs. Following the meeting, a multi-state [manuscript](#) was developed by NIOSH that includes emergency department data from five southeastern NIOSH-funded states: Florida, Georgia, Kentucky, Louisiana, and Tennessee.

Finally, the 2020 meeting was convened in Birmingham, AL on February 26, 2020, with approximately 70 people in attendance. The major themes of the 2020 meeting were the same themes discussed during the 2019 meeting. After a presentation by Kentucky on commercial vehicle crashes during the 2019 SouthON meeting, Florida worked with Kentucky to develop their own project to conduct surveillance of commercial motor vehicle crashes and incidents within their own state.

C.2. Translation of Findings

Participant contact information is shared at the meeting and through follow-up email communication to continue the collaborations that occurred throughout the annual meetings. CSTE has maintained the SouthON listserv of over 220 individuals to communicate with meeting participants, share news items of interest and plan for subsequent meetings. The SouthON meeting presentations are posted online at the [CSTE website](#) for

dissemination to meeting participants and more broadly to the CSTE membership as well as the occupational health community.

C.3. Outcomes/Impact

Each year, evaluation responses to the SouthON meeting have been overwhelmingly positive, demonstrating significant impact of the presentations and various networking sessions during the meeting to explore new ideas for possible collaborations in the future. For example, formal evaluation results from the 2020 SouthON meeting indicated 90% of the respondents either “agreed” or “strongly agreed” that they were satisfied with the overall meeting. Additionally, 85% stated that the presentations given during the 2020 SouthON meeting were relevant to their public health practice.

A key goal of SouthON meetings are to build epidemiological capacity in states in addition to bringing together more experienced states and states that are just beginning to consider developing an occupational health program. Close collaboration with NIOSH has been an integral part of planning SouthON meetings to ensure alignment with NIOSH priority areas and in helping to develop ties between NIOSH and state health departments. Participation from regional ERCs and Agricultural Centers has provided an innovative opportunity for discussion about collaboration between academic and state-based occupational epidemiology programs, including the existence of funding opportunities. The SouthON meetings have proven to be a successful approach to projects, models, and partnerships that can be used by many states in the southern region.

Three multi-state-and internal NIOSH-collaborative SouthON studies were produced, peer-reviewed, and published based on collaborations formed during SouthON meetings. The first study showed that there were 6.5 occupational HRI emergency department (ED) visits/100,000 workers and 0.61 occupational HRI inpatient hospitalizations /100,000 in the southeast from 2007- 2011. Younger workers had elevated rates for ED visits, while older workers had higher IH rates (Harduar-Morano et al., 2015).¹ This was the first study to examine occupational HRI in the southeast region. The second study showed that almost one-half (46%) of work-related ED hyperthermia visits in five southeastern US states occurred “on days when the daily maximum heat index was at temperatures the Occupational Safety and Health Administration (OSHA) designates as having “lower” or “moderate” heat risk” (Shire et al., 2020).² These findings indicated that existing OSHA heat-risk levels for ambient temperatures may require further research, enhanced communication to workers and employers, and development of targeted employer policies in the southeastern US. These two multi-state-and NIOSH-collaborative peer-reviewed publications on occupational heat-related illness may be used to inform and improve occupational heat stress risk guidelines and standards.

In the third SouthON study, Fatal Work-Related Injuries: Southeastern United States, Census of Fatal Occupational Injury (CFOI) data was analyzed to compare worker fatalities in the southeast region compared to the rest of the U.S. Study results showed that the median annual fatality rate for work-related injuries from the 12 states in SouthON was 37% higher than the rate for the entire United States (Brinker et al., 2016).³ This seminal southeastern state study is a justification for the continuation of SouthON and demonstrative of multistate collaboration, particularly important in the southeastern U.S. region.

¹ Harduar Morano L, Bunn TL, Lackovic M, Lavender A, Dang GT, Chalmers JJ, Li Y, Zhang L, Flammia DD. Occupational heat-related illness emergency department visits and inpatient hospitalizations in the southeast region, 2007-2011. *Am J Ind Med.* 2015 Oct;58(10):1114-25. doi: 10.1002/ajim.22504. Epub 2015 Aug 25. PMID: 26305997.

² Shire, J., Vaidyanathan, A., Lackovic, M., & Bunn, T. (2020). Association between work-related hyperthermia emergency department visits and ambient heat in five southeastern States, 2010–2012—A case-crossover study. *GeoHealth*, 4, e2019GH000241. <https://doi.org/10.1029/2019GH000241>.

³ Brinker K, Jacobs T, Shire J, et al. Fatal Work-Related Injuries: Southeastern United States, 2008-2011. *Workplace Health & Safety.* 2016;64(4):135-140. doi:10.1177/2165079915607873.

Section 2.

1. Scientific Report

Background

In collaboration with state health departments, NIOSH, academic partners, CSTE, ERCs and other occupational safety and health partners, SouthON meetings have built upon the foundation for occupational health surveillance capacity and collaborative research in the southeastern region. SouthON meetings have also played a critical role in developing occupational health and safety programs in the southeastern U.S. region. A key theme of SouthON meetings is translation of southeastern occupational injury and illness into public health action and planning, while providing attendees with opportunities for networking as well as partnership development.

Specific Aims

From 2016-2020, the overall aims of the SouthON project are to: **1.)** Provide epidemiology and program planning tools for establishing Occupational Safety and Health capacity building; **2.)** Build OSH epidemiology surveillance and research capacity among Southeastern states on work-related injuries and illnesses at both the state and southeast region-levels; **3.)** Promote multi-state scientific research collaborations among occupational epidemiologists, community partners, worker organizations, NIOSH, and academic colleagues in the Southeastern region; **4.)** Develop common priorities for development of occupational risk assessment, applied epidemiology, worksite interventions and occupational health practice.

Methods/Results/Discussion

1. *Provide epidemiology and program planning tools for establishing Occupational Safety and Health capacity building*

Webinars and meeting presentations in 2015-2016 were geared to working with state health departments on the generation of occupational health indicators which are integral to the establishment of a state-based OSH surveillance program. The occupational health indicators draw from multiple data sources and were instrumental to OSH capacity building through the establishment of memorandums of understanding for data access and use of the individual surveillance data sources.

Formal evaluation results from the 2015-2020 meetings demonstrated that at least 80% of the attendees found each of the presentations across the two days of the SouthON meeting to be “effective” or “very effective” (on a 5-point Likert scale with “very effective” as the highest rating), which is consistent with the positive ratings of the SouthON meeting throughout this project period. The 2016 meeting emphasized interventions addressing southeast region-specific occupational health priorities including: emphasizing the hierarchy of controls for safety; industry-specific one-on-one interventions; surveillance research on root causes and commonalities; leading vs trailing indicators; top-down vs bottom-up vs mixed model; and building data sharing networks and enhancing. Similarly, a number of diverse dissemination channels were identified at the 2016 SouthON meeting for follow-up.

2. *Build OSH epidemiology surveillance and research capacity among Southeastern states on work-related injuries and illnesses at both the state and southeast region-levels*

One major highlight of SouthON meetings were presentations from various Southeastern states about their occupational health surveillance programs and priority projects within their states. For example, one state priority project was a direct result of state-to-state collaboration from the 2019 SouthON. After a presentation on commercial vehicle crashes presented by Kentucky in the 2019, Florida collaborated with Kentucky to develop their own project to conduct surveillance on commercial motor vehicle crashes and incidents within their own state. The successful implementation of this commercial motor vehicle project based on the work of Kentucky prompted a lively discussion on how states can continue collaborating with each other to develop projects.

In addition, a key theme of the 2017 SouthON meeting was opioid exposure among first responders and investigators. Presentations during the 2017 meeting discussed exposures of first responders to opioids during drug overdose responses, resulting in the development and administration of a first responder survey. The

University of Kentucky Central Appalachian Education and Research Center (CARERC) funded 5 pilot projects in the fall of 2017: LA, GA, VA, KY, and MS to administer a survey assessing the use of multiple data sources in the surveillance of work-related opioid exposures. States developed and administered the survey during the fall and spring of 2018 to law enforcement, EMS, as well as fire personnel, and presented the preliminary results during the 2018 SouthON meeting. This ERC and state health department partnership built expertise in surveillance and qualitative methodologies, including occupational health qualitative needs assessment, and assessment of current procedures and protocols.

3. *Promote multi-state scientific research collaborations among occupational epidemiologists, community partners, worker organizations, NIOSH, and academic colleagues in the Southeastern region*

The SouthON meetings consistently have strong attendance with diverse professionals represented from across the 12-state southeastern region. Approximately 70 professionals attended the 2020 meeting, including representatives from 10 of the 12 southeastern states (except VA and WV), Southeastern region ERCs, Agricultural Centers, Training Project Grantees (TPG), universities, and medical clinics. Approximately three NIOSH representatives attended as well as an OSHA representative.

The SouthON meeting also enables attendees to discuss common issues and brainstorm solutions with other southeastern states. The meetings over the years have highlighted numerous successful projects and models for other states, including:

- SouthON meeting attendees reported increased research collaborations and partnerships among southeastern health department/ university/ERC/ag center on topics such as temporary workers or opioid exposure among workers.
- SouthON meeting attendees also reported opportunities for additional funding. For example, at the 2018 meeting, the University of South Florida prioritized state health departments in the southeast region for FY 2019 funding.
- The following NIOSH/NCEHS/multistate health department (LA, KY, TN, FL, GA, and AR) study was conducted based on 2016 SouthON meeting results: “Association between Work-Related Hyperthermia Emergency Department Visits and Ambient Heat in Five Southeastern States, 2010-2012.” The results of this study were presented at the 2017 SouthON meeting and resulted in a peer-reviewed [manuscript](#).²
- During the 2018 SouthON meeting, a representative of the Kentucky Office of Drug Control Policy presented on the topic of opioid exposure within first responders in Kentucky, including a panel discussing how Kentucky’s opioid response can be adapted by other states.
- SouthON members mentored several southeastern states on their applications to NIOSH for state-based OSH surveillance. For example, Mississippi, and Tennessee were newly funded state-based surveillance states while Virginia (an unfunded state) calculated 20 of the 24 of the OHIs with the data they currently collect.
- During the 2020 SouthON meeting, presentations on suicides at work resulted in the joint collaboration by the Kentucky Occupational Safety and Health Surveillance program and the Florida Occupational Safety and Health Surveillance program on workplace deaths by suicide. Programmatic tools such as hazard alerts and a toolkit will be produced.
- Four state health departments were funded by the CARERC for development and administration of a survey to first responders on exposure to opioids: “Opioid Exposure Among First Responders — Kentucky, Virginia, Mississippi, and Georgia, 2017–2018.”

² Shire, J., Vaidyanathan, A., Lackovic, M., & Bunn, T. (2020). Association between work-related hyperthermia emergency department visits and ambient heat in five southeastern States, 2010–2012—A case-crossover study. *GeoHealth*, 4, e2019GH000241. <https://doi.org/10.1029/2019GH000241>.

- In collaboration with the University of North Carolina at Chapel Hill and the University of Kentucky and multiple state health departments, a [manuscript¹](#) on heat related illness: “Occupational heat-related illness emergency department visits and inpatient hospitalizations in the southeast region, 2007-2011.”

4. *Develop common priorities for development of occupational risk assessment, applied epidemiology, worksite interventions and occupational health practice.*

The SouthON network was established to provide vital OSH capacity building in the Southeastern US. The SouthON meeting allows for a diverse range of partners to hear about the work from other colleagues as well as to collaborate and develop partnerships to enhance current research and practice efforts. To highlight examples from the 2020 SouthON meeting, Lauralynn McKernan (Deputy Director, CIH, CDC/NIOSH) delivered a keynote speech on the different touchstones in the evolution of occupational health and safety throughout the years. In addition, several states (Florida, Georgia, Kentucky, and Tennessee) presented on their Occupational Health and Safety programs.

After the state occupational health program presentations, the 2nd half of the SouthON meeting consisted of various ERC Directors presenting overviews of their programs and relevant research topics and priorities for their organizations. The day concluded with a group session and post-meeting communication for the 2020 SouthON, with the goal of identifying possible topics/issues of interest for collaboration in the future. These priority focus areas identified for future collaborations included: motor vehicles, heat related illness, drug overdose, suicide economic impact of worker’s compensation, or research in practice.

Conclusion

Throughout the past five years, SouthON meetings have promoted collaboration among southeastern states in addition to NIOSH, ERCs, and academic partners, and resulted in intangible surveillance and research outputs, and outcomes. SouthON served as a critical vehicle for states to learn about grant funding opportunities, collaborate with new partners, and obtain new tools for the development or enhancement of state occupational health programs. In addition, many meeting attendees reported increased opportunities to address occupational health issues with new partners as well as greater mentorship on occupational health program development. SouthON meetings have provided a platform and a physical collaboration space for southeastern states to share pertinent information, build epidemiology and occupational health surveillance expertise, and establish more effective relationships among epidemiologists working in states and other agencies in a supportive environment. SouthON significantly contributed to, increased, and enhanced occupational health surveillance and research capacity among southeastern states and generated opportunities for collaboration.

E. Inclusion of Children

Not applicable

F. Materials available for other investigators

Not applicable

G. Inclusion Enrollment Report

Not applicable

¹. Harduar Morano L, Bunn TL, Lackovic M, Lavender A, Dang GT, Chalmers JJ, Li Y, Zhang L, Flammia DD. Occupational heat-related illness emergency department visits and inpatient hospitalizations in the southeast region, 2007-2011. *Am J Ind Med.* 2015 Oct;58(10):1114-25. doi: 10.1002/ajim.22504. Epub 2015 Aug 25. PMID: 26305997.

Publications

1. Harduar Morano L, Bunn TL, Lackovic M, Lavender A, Dang GT, Chalmers JJ, Li Y, Zhang L, Flammia DD. Occupational heat-related illness emergency department visits and inpatient hospitalizations in the southeast region, 2007-2011. *Am J Ind Med.* 2015 Oct;58(10):1114-25. doi: 10.1002/ajim.22504. Epub 2015 Aug 25. PMID: 26305997.
2. Shire, J., Vaidyanathan, A., Lackovic, M., & Bunn, T. (2020). Association between work-related hyperthermia emergency department visits and ambient heat in five southeastern States, 2010–2012—A case-crossover study. *GeoHealth*, 4, e2019GH000241. <https://doi.org/10.1029/2019GH000241>.
3. Brinker K, Jacobs T, Shire J, et al. Fatal Work-Related Injuries: Southeastern United States, 2008-2011. *Workplace Health & Safety.* 2016;64(4):135-140. doi:10.1177/2165079915607873