DOI: 10.1111/jrh.12791

THE JOURNAL OF RURAL HEALTH NRHA

COMMENTARY

# Rural health and rural industries: Opportunities for partnership and action

Kenneth A. Scott PhD,MPH[1] | K. C. Elliott MPH[2] | Jennifer Lincoln PhD[3] | Michael A. Flynn MA[3] | Ryan Hill MPH[4] | Diane M. Hall PhD,MSEd[5]

[1]National Institute for Occupational Safety and Health, Denver, Colorado, USA

[2]National Institute for Occupational Safety and Health, Anchorage, Alaska, USA

[3]National Institute for Occupational Safety and Health, Cincinnati, Ohio, USA

[4]National Institute for Occupational Safety and Health, Spokane, Washington, USA

[5]Office of Rural Health, Centers for Disease Control and Prevention, Atlanta, Georgia, USA

**Correspondence**
Kenneth A. Scott, NIOSH Western States Division, PO Box 25226, Denver, CO 80225.
Email: kscott4@cdc.gov

KEYWORDS
occupational health, occupational health services, rural health, rural health services, social determinants of health

A recent article in Morbidity and Mortality Weekly Report[1] describes the Fatalities in Oil and Gas Extraction (FOG) database—an industry-specific database created to help researchers understand patterns of deaths among US oil and gas extraction (OGE) workers. Among other strengths, the database includes detailed geographic data on fatal incidents–a feature lacking in other systems that track workplace fatalities. It is clear that the majority of OGE worker fatalities occurred in rural micropolitan and noncore counties (Figure 1). This finding may not be surprising to people in the industry. However, it does raise questions about relationships between work, health, and rurality that are rarely explored explicitly or systematically.

The uneven allocation of social and structural determinants of health (SDOH) across geographic space accounts for disparities in health outcomes among people living in urban and rural areas.[3] Employment is an SDOH that can impact health through working conditions, access to income, health insurance, a sense of meaning, and quality housing.[4–9]

In the 2023 Consolidated Appropriations Act, Congress provided funding for the Centers for Disease Control and Prevention (CDC) to establish an Office of Rural Health. The Office will coordinate across CDC programs, develop CDC's rural strategic plan, and provide leadership in rural public health. The National Institute for Occupational Safety and Health (NIOSH) has had a significant impact on rural health through its efforts to reduce risks in specific rural industries, including agriculture, commercial fishing, mining, and OGE (referred to herein as examples of "rural industries"). NIOSH has created systems to prioritize the needs of these rural industries through its strategic plan,[10] National Occupational Research Agenda Sector Councils,[11] industry-specific research agendas,[12] and extramural Centers.[13] These processes, though, have not typically focused on the rural contexts in which these particular industries operate. Likewise, with the exception of farming, rural health researchers and practitioners may not adequately account for work's influence on the health of the individuals and communities they serve. As findings from the FOG data suggest, a systematic focus on the nature of rural work is needed to account for cross-cutting safety and health issues common to rural businesses.

Rural worker health would benefit from increased collaboration between our 2 communities of practice specializing in OSH and rural health, respectively. Safety and health professionals have focused on OSH issues in rural industries for decades, demonstrating that rural working conditions can be improved with dedicated action.[14–16] We acknowledge, however, that our communities of practice have rarely recognized important contributions made by the other. Occupational hazards in rural industries are well-documented, but rural health care providers and their patients may lack practical information about workplace health issues and prevention strategies. Knowledge gaps may exist when available training materials are not utilized by all rural practitioners, as is the case with agricultural medicine,[17] and when specialized training and guidance are lacking, as is the case in OGE.[18] Conversely, aspects of rural health care and rural communities

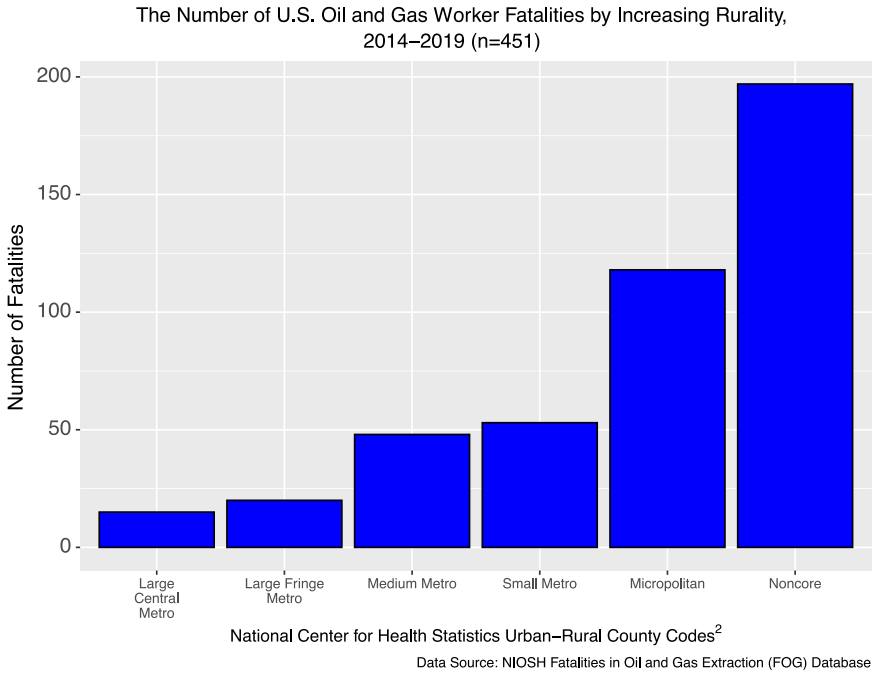


**FIGURE 1** The number of US oil and gas worker fatalities by increasing rurality, 2014-2019 (n=451). The Fatalities in Oil and Gas (FOG) database includes detailed geographic information about the location of each fatal incident. Fatal incidents were assigned to the counties where they occurred and counties NCHS Urban-Rural Classification Scheme codes[2] categorized incident levels of rurality. The number of deaths increased with increasing rurality.

that create opportunities or challenges for rural workers and that are well-known to rural health specialists may be unfamiliar to OSH specialists who have historically defined their scope of practice in terms of biological, chemical, and physical stressors rather than social ones.[19,20]

## RURAL INDUSTRIES, RURAL PLACES

Rural places are socioeconomically and demographically diverse. Many, though not all, rural communities depend on local natural resources. Communities reliant on the price of a single commodity or the success of a single company are vulnerable to changes in economic conditions. Without economic diversity, rural communities cannot as easily recover. For example, prior to the COVID-19 pandemic, rural employment rates had not yet fully recovered from the Great Recession, whereas urban rates had.[21,22] The pandemic only worsened rural employment trends.[21–23] Moreover, troubling patterns in "deaths of despair," including deaths by drug and alcohol poisoning, suicide, and chronic liver diseases and cirrhosis, among rural men in particular, are related to economic trends.[24–26]

People in rural places value health because it helps them work and maintain independence.[27] Incentives to work in rural industries are strong despite their high-risk environments.[28] Addressing hazards in rural industries has been a focus of NIOSH and its partners over the past 5 decades, resulting in measurable improvements in worker health.[14–16] Additionally, rural industries often involve outdoor work, increasing exposure to extreme weather, sun exposure,[14–16,29] vector-borne diseases,[30] and animal interactions.[31–33] Land-based OGE workers can be exposed to similar environmental conditions as agricultural workers, among whom heat is a well-recognized hazard.[34–36]

Rural places are often defined by low population density or proximity to a population center,[37] and traveling long distances is a fact of rural life.[38] Driving long distances increases exposures to motor vehicle crash (MVC) risk, including fatigue, resulting in high MVC death rates.[37,39,40] MVCs are a leading cause of occupational fatality across rural industries.[39–41] Rural industries also are more likely to use vehicles other than cars and trucks.[33] Tractors remain a leading cause of death in the agriculture industry.[42,43] Rural roads may also differ by lighting and design,[44] crash type,[45] and roadway hazards (eg, farm machinery and wildlife).[46,47]

Rural businesses and workers rely on local health care infrastructure which, like roads, is shaped by public and private investments.[48] A recent publication using FOG data described fatal cardiac events among OGE workers in remote locations,[49] suggesting that limited access to emergency care may have contributed to workers' deaths. Another study found workers in commercial fishing were nearly 40 times more likely to survive a ship sinking within 3 miles of shore, compared to further out at sea.[50] And OSH researchers have found high uninsured rates in rural occupations.[51] Rural health researchers have explored deep and abiding challenges with health care access in rural areas, including delayed emergency care,[52,53] health professional shortages,[54–56] and hospital closures.[57–59] Rural businesses have critical roles to play in improving rural health care access, including through health insurance benefits, emergency action plans,[60] and other mechanisms.

## RURAL POPULATIONS

Rural industries are woven into the fabric of rural communities, reliant on the health of rural residents, and influencing their health, in turn. Health disparities observed between workers in rural industries and other industries likely relate to rural/urban disparities generally, including high rates of suicide,[26,61] smokeless tobacco

use,[62,63] seatbelt nonuse,[62,64] overweight or obesity,[49,65] and drug overdoses.[26,66,67] Occupational health disparities have impacted rural workers in certain population subgroups for many years (eg, immigrants),[20] because OSH interventions are often inadvertently tailored to the experience of the normative group.[68] Disparities may persist or worsen without attention to the characteristics and values of rural populations. Advertisers have long-used themes of self-reliance and ruggedness to increase tobacco use among blue-collar workers.[69] The same values provide a fundamental basis for prohealth messaging to rural workers.[27,70]

## RURAL OPPORTUNITIES

We envision a future in which our 2 largely separate communities grow together to improve health in rural America. Rural health practitioners and researchers may benefit from familiarity with OSH topics, including hazards and health conditions, workers compensation, and workplace interventions. They may also benefit from exploring how employment and job characteristics, such as compensation, job security, and scheduling, impact rural population health. NIOSH extramural Centers are valuable resources that conduct research and offer continuing education programs, pilot grant opportunities, and subject matter experts in topics relevant to rural health.[13] Conversely, many universities are home to academic centers focusing explicitly on rural health.[71–73] Collaborations between these academic institutions are encouraged to help characterize how rurality circumscribes work-related benefits, risks, and outcomes and identify promising interventions. The field of implementation science, which is the systematic investigation of the use of strategies to enhance adoption, integration, and sustainment of evidence-based health interventions in clinical and community settings, could be especially useful in this collaborative effort.[74] Interventions that have not been evaluated in rural contexts may not effectively improve rural outcomes, requiring dedicated adaptation or, preferably, rural perspectives from the early stages of intervention design.

The health and safety of workers in rural industries would benefit from dedicated investments to improve rural communication technologies, health information systems, and public health infrastructure. Common public health data sources may not include variables which account for work or rurality.[75,76] Additionally, small sample sizes for rural places and industries require aggregation across larger areas or timeframes–a problem technology and dedicated attention to rural industries may help solve.[77–84] To this end, NIOSH has recommended all public health data systems should collect work information.[85]

Recent calls have been made for greater rural representation in decisions that impact rural health.[48,86] NIOSH has an infrastructure for incorporating rural priorities into its research agenda and funding priorities. We are eager to learn how we can better partner with people in rural areas, including residents, workers, clinicians, business owners, researchers, and policymakers, so that we may better serve rural America together.

## CONFLICT OF INTEREST STATEMENT

The authors report no conflict of interest.

## ORCID

*Kenneth A. Scott PhD,MPH* https://orcid.org/0000-0002-2192-5526
*K. C. Elliott MPH* https://orcid.org/0000-0002-4054-573X
*Jennifer Lincoln PhD* https://orcid.org/0000-0001-5395-9037
*Michael A. Flynn MA* https://orcid.org/0000-0001-5338-5360
*Ryan Hill MPH* https://orcid.org/0000-0001-9479-0004
*Diane M. Hall PhD,MSEd* https://orcid.org/0000-0002-6127-6532

## REFERENCES

1. Wingate KC, Ramirez-Cardenas A, Hill R, Ridl S, Hagan-Haynes K. Fatalities in Oil and Gas Extraction database, an Industry-Specific Worker Fatality Surveillance System—United States, 2014–2019. *MMWR Surveill Summ*. 2023;72(SS-8):1-15.
2. Ingram DD, Franco SJ. 2013 NCHS Urban–Rural Classification Scheme for counties. National Center for Health Statistics. *Vital Health Stat*. 2014;2(166):201.
3. Gong G, Phillips SG, Hudson C, Curti D, Philips BU. Higher US rural mortality rates linked to socioeconomic status, physician shortages, and lack of health insurance. *Health Aff (Millwood)*. 2019;38(12):2003-2010.
4. Silver SR, Li J, Quay B. Employment status, unemployment duration, and health-related metrics among US adults of prime working age: behavioral Risk Factor Surveillance System, 2018–2019. *Am J Ind Med*. 2022;65(1):59-71.
5. Silver SR, Li J, Quay B, et al. Visual representation of work as a social determinant of health: augmenting Silver et al., Employment status, unemployment duration, and health-related metrics among US adults of prime working age. *Am J Ind Med*. 2022;65(8):697-698.
6. Pratt DS. Occupational health and the rural worker: agriculture, mining, and logging. *J Rural Health*. 1990;6(4):399-418.
7. Mulloy KB, Moraga-McHaley S, Crandall C, Kesler DO. Occupational injury mortality: New Mexico 1998–2002. *Am J Ind Med*. 2007;50(12):910-920.
8. Peek-Asa C, Zwerling C, Stallones L. Acute traumatic injuries in rural populations. *Am J Public Health*. 2004;94(10):1689-1693.
9. Fullerton L, Olson L, Crandall C, Sklar D, Zumwalt R. Occupational injury mortality in New Mexico. *Ann Emerg Med*. 1995;26(4):447-454.
10. NIOSH Strategic Plan: FYs 2019–2026. Version 6. 2022.
11. NIOSH. Webpage: National Occupational Research Agenda (NORA) Sector Councils. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. Accessed March 23, 2023. https://www.cdc.gov/nora/councils/default.html
12. NIOSH. Webpage: National Occupational Research Agenda (NORA). U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. Accessed March 23, 2023. https://www.cdc.gov/nora/default.html
13. Robison WA, Williams DF, Grandillo P.*NIOSH Extramural Research and Training Program: Annual Report of Fiscal Year 2020*. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health; 2022.
14. Lincoln JM, O'Connor MB, Retzer KD, et al. Occupational fatalities in Alaska: two decades of progress, 1990–1999 and 2000–2009. *J Safety Res*. 2013;44:105-110.

15. Reynolds SJ, Groves W. Effectiveness of roll-over protective structures in reducing farm tractor fatalities. *Am J Prev Med*. 2000;18(4):63-69.
16. Myers M, Kelsey T, Tinc P, Sorensen J, Jenkins P. Rollover protective structures, worker safety, and cost-effectiveness: New York, 2011–2017. *Am J Public Health*. 2018;108(11):1517-1522.
17. Great Plains Center for Agricultural Health. Agricultural Safety and Health: The Core Course. Accessed May 12, 2023. 2023. https://gpcah.public-health.uiowa.edu/education/agricultural-safety-and-health-the-core-course/
18. Zimmerman SM, Scott KA, Wingate KC, et al. Working alone and/or in remote locations: opportunities to prevent the risk of fatality from cardiovascular events in oil and gas extraction workers. *J Occup Environ Med*. 2023;65(6):481-487.
19. Peckham TK, Baker MG, Camp JE, Kaufman JD, Seixas NS. Creating a future for occupational health. *Ann Work Expo Health*. 2017;61(1):3-15.
20. Flynn MA, Check P, Steege AL, Sivén JM, Syron LN. Health equity and a paradigm shift in occupational safety and health. *Int J Environ Res Public Health*. 2021;19(1):349.
21. National Academies of Sciences, Engineering, and Medicine. Population Health in Rural America in 2020: Proceedings of a Workshop. Washington, DC: National Academies Press; 2021.
22. USDA. Rural Employment and Unemployment. Accessed January 11, 2023. https://www.ers.usda.gov/topics/rural-economy-population/employment-education/rural-employment-and-unemployment
23. Mueller JT, McConnell K, Burow PB, Pofahl K, Merdjanoff AA, Farrell J. Impacts of the COVID-19 pandemic on rural America. *Proc Natl Acad Sci U S A*. 2021;118(1). Electronic article e2019378118. https://doi.org/10.1073/pnas.2019378118
24. Case A, Deaton A. Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century. *Proc Natl Acad Sci U S A*. 2015;112(49):15078-15083.
25. Stein EM, Gennuso KP, Ugboaja DC, Remington PL. The epidemic of despair among White Americans: trends in the leading causes of premature death, 1999–2015. *Am J Public Health*. 2017;107(10):1541-1547.
26. Ivey-Stephenson AZ, Crosby AE, Jack SPD, Haileyesus T, Kresnow-Sedacca MJ. Suicide trends among and within urbanization levels by sex, race/ethnicity, age group, and mechanism of death—United States, 2001–2015. *MMWR Surveill Summ*. 2017;66(18):1-16.
27. Gessert C, Waring S, Bailey-Davis L, Conway P, Roberts M, VanWormer J. Rural definition of health: a systematic literature review. *BMC Public Health*. 2015;15:378.
28. BLS. *Data from: Fatal Occupational Injuries, Total Hours Worked, and Rates of Fatal Occupational Injuries by Selected Worker Characteristics, Occupations, and Industries, Civilian Workers, 2021*. Census of Fatal Occupational Injuries; 2022.
29. Loney T, Paulo MS, Modenese A, et al. Global evidence on occupational sun exposure and keratinocyte cancers: a systematic review. *Br J Dermatol*. 2021;184(2):208-218.
30. Roome A, Gouli S, Yodsuwan R, et al. Tick magnets: the occupational risk of tick-borne disease exposure in forestry workers in New York. *Health Sci Rep*. 2022;5(2):e509.
31. Mode NA, Hackett EJ, Conway GA. Unique occupational hazards of Alaska: animal-related injuries. *Wilderness Environ Med*. 2005;16(4):185-191.
32. Spyres MB, Ruha AM, Seifert S, Onisko N, Padilla-Jones A, Smith EA. Occupational snake bites: a prospective case series of patients reported to the ToxIC North American Snakebite Registry. *J Med Toxicol*. 2016;12(4):365-369.
33. Khorsandi F, Ayers P, Denning G, et al. Agricultural all-terrain vehicle safety: hazard control methods using the Haddon matrix. *J Agromed*. 2021;26(4):420-435.
34. Bethel JW, Harger R. Heat-related illness among Oregon farmworkers. *Int J Environ Res Public Health*. 2014;11(9):9273-9285.
35. Mutic AD, Mix JM, Elon L, et al. Classification of heat-related illness symptoms among Florida farmworkers. *J Nurs Scholarsh*. 2018;50(1):74-82.
36. Spector JT, Krenz J, Blank KN. Risk factors for heat-related illness in Washington crop workers. *J Agromed*. 2015;20(3):349-359.
37. Bennett KJ, Borders TF, Holmes GM, Kozhimannil KB, Ziller E. What is rural? Challenges and implications of definitions that inadequately encompass rural people and places. *Health Aff (Millwood)*. 2019;38(12):1985-1992.
38. NHTSA. Rural/Urban Comparison of Motor Vehicle Traffic Fatalities. Traffic Safety Facts. 2022.
39. Retzer KD, Hill RD, Pratt SG. Motor vehicle fatalities among oil and gas extraction workers. *Accid Anal Prev*. 2013;51:168-174.
40. Table A-1. Fatal Occupational Injuries by Industry and Event or Exposure, all United States, 2021. U.S. Bureau of Labor Statistics. Fatal Publication Tables; 2022.
41. Shipp EM, Vasudeo S, Trueblood AB, Garcia TP. Single vehicle logging-related traffic crashes in Louisiana from 2010–2015. *J Agromed*. 2019;24(2):177-185.
42. Murphy DJ, Myers J, McKenzie EA Jr, Cavaletto R, May J, Sorensen J. Tractors and rollover protection in the United States. *J Agromed*. 2010;15(3):249-263.
43. Scott EE, Dalton DB. Agricultural fatalities in New York State from 2009–2018: trends from the past decade gathered from media reports. *J Agromed*. 2021;26(2):132-139.
44. Uddin M, Huynh N. Truck-involved crashes injury severity analysis for different lighting conditions on rural and urban roadways. *Accid Anal Prev*. 2017;108:44-55.
45. Cole NB, Barrett SM, Bolding MC, Aust WM. An analysis of fatal log truck crashes in the United States from 2011 through 2015. *Int J Forest Eng*. 2019;30(2):121-131.
46. Langley RL, Higgins SA, Herrin KB. Risk factors associated with fatal animal-vehicle collisions in the United States, 1995–2004. *Wilderness Environ Med*. 2006;17(4):229-239.
47. Clark DE, Fulton G, Ontengco JB, Lachance T. Moose-motor vehicle collision: a continuing hazard in Northern New England. *J Am Coll Surg*. 2019;228(6):941-947.
48. Probst J, Eberth JM, Crouch E. Structural urbanism contributes to poorer health outcomes for rural America. *Health Aff (Millwood)*. 2019;38(12):1976-1984.
49. Zimmerman SM, Scott KA, Wingate KC, et al. Working alone or remote: opportunities to prevent the risk of fatality from cardiovascular events in oil and gas extraction workers. *J Occup Environ Med*. 2023;65(6):481-487.
50. Lucas DL, Case SL, Lincoln JM, Watson JR. Factors associated with crewmember survival of commercial fishing vessel sinkings in Alaska. *Saf Sci*. 2018;101:190-196.
51. Boal WL, Li J, Sussell A. Health insurance coverage by occupation among adults aged 18–64 years - 17 states, 2013–2014. *MMWR Morb Mortal Wkly Rep*. 2018;67(21):593-598.
52. Branas CC, MacKenzie EJ, Williams JC, et al. Access to trauma centers in the United States. *JAMA*. 2005;293(21):2626-2633.
53. Jarman MP, Hashmi Z, Zerhouni Y, et al. Quantifying geographic barriers to trauma care: urban-rural variation in prehospital mortality. *J Trauma Acute Care Surg*. 2019;87(1):173-180.
54. HRSA. Health Workforce Shortage Areas. Department of Health and Human Services. Accessed March 23, 2023. https://data.hrsa.gov/topics/health-workforce/shortage-areas
55. Cummings JR, Wen H, Ko M, Druss BG. Race/ethnicity and geographic access to Medicaid substance use disorder treatment facilities in the United States. *JAMA Psychiatry*. 2014;71(2):190-196.
56. Kisner J. Piled Bodies, Overflowing Morgues: Inside America's Autopsy Crisis. The New York Times. February 26, 2020. https://www.nytimes.com/2020/02/25/magazine/piled-bodies-overflowing-morgues-inside-americas-autopsy-crisis.html

57. Zahnd WE, Hung P, Shi SK, et al. Availability of hospital-based cancer services before and after rural hospital closure, 2008–2017. *J Rural Health*. 2023;39(2):416-425.
58. Ramesh T, Tsai TC. Hospital closures in rural communities of color: a double dose of inequality. *J Rural Health*. 2023;39(1):88-90.
59. Khushalani JS, Holmes M, Song S, et al. Impact of rural hospital closures on hospitalizations and associated outcomes for ambulatory and emergency care sensitive conditions. *J Rural Health*. 2023;39(1):79-87.
60. OSHA. Emergency Action Plans. 29 CFR § 1910.38. Accessed August 18, 2023. https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.38
61. Peterson C, Sussell A, Li J, Schumacher PK, Yeoman K, Stone DM. Suicide rates by industry and occupation—National Violent Death Reporting System, 32 States, 2016. *MMWR Morb Mortal Wkly Rep*. 2020;69(3):57-62.
62. Yeoman K, Sussell A, Retzer K, Poplin G. Health risk factors among miners, oil and gas extraction workers, other manual labor workers, and nonmanual labor workers, BRFSS 2013–2017, 32 states. *Workplace Health Saf*. 2020;68(8):391-401.
63. Cornelius ME, Loretan CG, Wang TW, Jamal A, Homa DM. Tobacco product use among adults—United States, 2020. *MMWR Morb Mortal Wkly Rep*. 2022;71(11):397-405.
64. Beck LF, Downs J, Stevens MR, Sauber-Schatz EK. Rural and urban differences in passenger-vehicle-occupant deaths and seat belt use among adults—United States, 2014. *MMWR Surveill Summ*. 2017;66(17):1-13.
65. Matthews KA, Croft JB, Liu Y, et al. Health-related behaviors by Urban-Rural County Classification—United States, 2013. *MMWR Surveill Summ*. 2017;66(5):1-8.
66. Tiesman HM, Konda S, Cimineri L, Castillo DN. Drug overdose deaths at work, 2011–2016. *Inj Prev*. 2019;25(6):577-580.
67. Ramirez-Cardenas A, Wingate KC, Pompei R, et al. Fatalities involving substance use among U.S. oil and gas extraction workers identified through an industry specific surveillance system (2014–2019). *J Occup Environ Med*. 2023;65(6):488-494.
68. Tamers SL, Streit J, Pana-Cryan R, et al. Envisioning the future of work to safeguard the safety, health, and well-being of the workforce: a perspective from the CDC's National Institute for Occupational Safety and Health. *Am J Ind Med*. 2020;63(12):1065-1084.
69. Tobacco Control Monograph No. 19. The Role of the Media in Promoting and Reducing Tobacco Use. U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute; 2008.
70. Teske TD, Case SL, Lucas DL, Forrester CL, Lincoln JM. Have you met Angus? Development and evaluation of a social marketing intervention to improve personal flotation device use in commercial fishing. *J Safety Res*. 2022;83:260-268.
71. University of Arizona. Arizona Center for Rural Health (AzCRH). Accessed April 25, 2023. https://crh.arizona.edu/
72. University of Minnesota. University of Minnesota Rural Health Research Center. Accessed April 25, 2023. https://rhrc.umn.edu/
73. University of North Dakota School of Medicine and Health. Center for Rural Health. https://ruralhealth.und.edu/
74. Guerin RJ, Glasgow RE, Tyler A, Rabin BA, Huebschmann AG. Methods to improve the translation of evidence-based interventions: a primer on dissemination and implementation science for occupational safety and health researchers and practitioners. *Saf Sci*. 2022;152:105763.
75. Ahonen EQ, Fujishiro K, Cunningham T, Flynn M. Work as an inclusive part of population health inequities research and prevention. *Am J Public Health*. 2018;108(3):306-311.
76. BLS. Handbook of Methods. Web-Based Documentation. U.S. Department of Labor, Bureau of Labor Statistics. Accessed April 11, 2023. https://www.bls.gov/opub/hom/cfoi/home.htm
77. Gutilla MJ, Davidson AJ, Daley MF, Anderson GB, Marshall JA, Magzamen S. Data for community health assessment in rural Colorado: a comparison of electronic health records to public health surveys to describe childhood obesity. *J Public Health Manag Pract*. 2017;23:S53-S62.
78. Syron LN, Case SL, Lee JR, Lucas DL. Linking datasets to characterize injury and illness in Alaska's fishing industry. *J Agromed*. 2021;26(1):31-44.
79. Case SL, Lincoln JM, Lucas DL. Fatal falls overboard in commercial fishing—United States, 2000–2016. *MMWR Morb Mortal Wkly Rep*. 2018;67(16):465-469.
80. Almberg KS, Halldin CN, Friedman LS, et al. Increased odds of mortality from non-malignant respiratory disease and lung cancer are highest among US coal miners born after 1939. *Occup Environ Med*. 2023;80(3):121-128.
81. Hall NB, Nye MJ, Blackley DJ, Scott Laney A, Mazurek JM, Halldin CN. Respiratory health of American Indian and Alaska Native coal miners participating in the Coal Workers' Health Surveillance Program, 2014–2019. *Am J Ind Med*. 2022;65(3):162-165.
82. Scott E, Weichelt B, Lincoln J. The future of U.S. agricultural injury surveillance needs collaboration. *J Agromed*. 2023;28(1):11-13.
83. Beseler CL, Rautiainen RH. Assessing nonresponse bias in farm injury surveillance data. *J Agric Saf Health*. 2021;27(4):215-227.
84. Weichelt B, Scott E, Burke R, et al. What about the rest of them? Fatal injuries related to production agriculture not captured by the Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI). *J Agromed*. 2022;27(1):35-40.
85. Steege A, Silver S, Mobley A, Haring-Sweeny M. Work as a Key Social Determinant of Health: the Case for Including Work in All Health Data Collections. *NIOSH Science Blog*. 2023. Accessed May 12, 2023. https://blogs.cdc.gov/niosh-science-blog/2023/02/16/sdoh/
86. Kozhimannil KB, Henning-Smith C. Improving health among rural residents in the US. *JAMA*. 2021;325(11):1033-1034.


**How to cite this article:** Scott KA, Elliott KC, Lincoln J, Flynn MA, Hill R, Hall DM. Rural health and rural industries: Opportunities for partnership and action. *J Rural Health*. 2024;40:401–405. https://doi.org/10.1111/jrh.12791