

Solar Eclipses: Planning Resources

Updated: March 2024

On August 21, 2017, a total solar eclipse was visible in a path across the U.S. from Oregon to South Carolina, from early morning through the afternoon. It was expected that millions would travel to locations across the country to view this rare event. A [study from the University of Michigan](#) later revealed that 216 million American adults watched the total solar eclipse either electronically or in person.



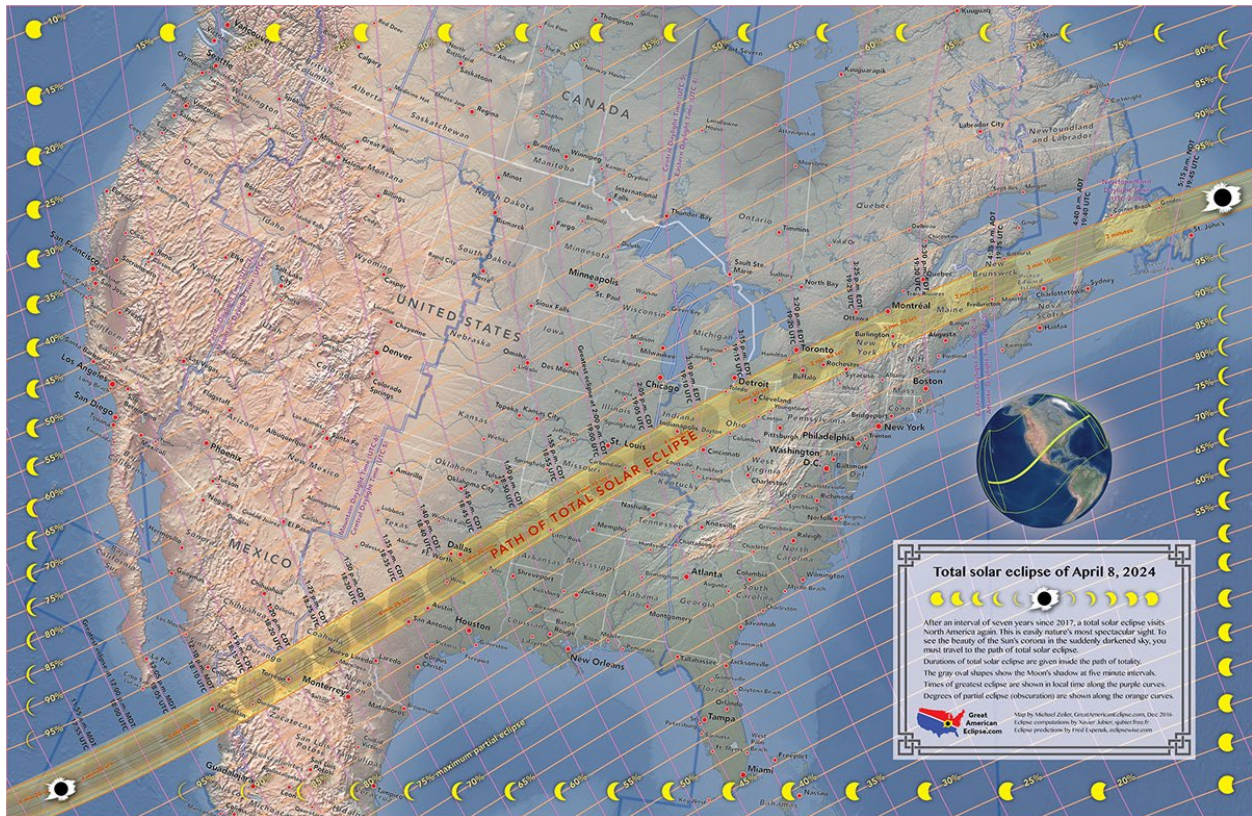
Source: <https://eclipse.gsfc.nasa.gov/SEmono/TSE2017/TSE2017.html>

Many of these locations were rural with limited health care infrastructure, and since these sites were not (yet) officially sponsored, the typical augmentation of resources that accompanies planned mass gatherings did not take place.

The next solar eclipse is expected to occur on April 8, 2024, and will be visible across Central and North America passing over Mexico, through the U.S. from Texas to Maine, and then

through parts of Canada. It expected to last up to 4 minutes and 27 seconds, which is almost double the duration of the 2017 solar eclipse.

This document includes resources collected to address planning and response concerns and help local emergency health care providers plan for these gatherings. It was updated in March 2024 to include lessons learned from the 2017 eclipse and new information and resources pertaining to the April 2024 solar eclipse.



Source: <https://solarsystem.nasa.gov/eclipses/future-eclipses/eclipse-2024/#otp> where will it happen?

The following ASPR TRACIE Topic Collections contain related guidance and resources (listed in alphabetical order): [Active Shooter and Explosives](#); [Burns](#); [Hospital Surge Capacity and Immediate Bed Availability](#); [Mass Gatherings/Special Events](#); [Natural Disasters](#); [Risk Communication/Emergency Public Information and Warning](#); [Rural Disaster Health](#); and [Utility Failures](#).

Quick Links

NOTE: Resources in sections 1 through 6 are specific to the eclipse event. The remaining sections include general resources related to planned mass gatherings.

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13. [Lessons Learned: Rural Areas](#)
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1. Eclipse Eye Safety

American Academy of Ophthalmology. (2023). [Solar Eclipse Eye Safety](#).

This webpage describes solar eclipses and provides information on how to safely view them and eye protection tips.

American Astronomical Society. (2022). [How to View a Solar Eclipse Safely](#).

This webpage provides information on how to safely view a solar eclipse and provides eye protection tips.

American Optometric Association. (2017). [Protect Those Peepers: 4 Tips for Safe Solar Eclipse Viewing](#).

This webpage includes important information on how to safely view an eclipse.

Cofield, C. (2017). [How to View a Solar Eclipse without Damaging Your Eyes](#).

The author shares tips and links to resources specific to eclipse viewing eye protection.

Eclipse2024.org. (2022). [Eye Safety!](#)

This webpage includes information on how to protect eyes while watching an eclipse.

Fulco, C. (2017). [Eclipses and Eye Safety: Dispelling Myths About Viewing Eclipses.](#)

The author explains the difference between direct and indirect methods of observation and provides related helpful links.

National Aeronautics and Space Administration (NASA). (2017). [Eclipse 101: How to View the 2017 Solar Eclipse Safely.](#)

This webpage provides eye protection safety tips related to viewing an eclipse.

2. Eclipse Eye Injury Treatment

Chen, K., Jung, J., and Aizman, A. (2013). [Solar Retinopathy: Etiology, Diagnosis, and Treatment.](#) Retinal Physician.

The authors provide an overview of solar retinopathy, the difference between acute and chronic retinopathy, and prognosis and treatment challenges.

Drake-Casanova, P., Bolivar-de-Miguel, G., Castro-Rebello, M., et al. (2007). [Eclipse Retinopathy: Three Cases Report.](#) Archivos de la Sociedad Espanola de Oftamologia. 9(82): 575-578.

The authors discuss observational case series of three children who were cared for in the emergency department 48 hours after a solar eclipse. They discuss symptoms, treatment, and outlook for retinopathy.

Gregory-Roberts, E., Chen, Y., Harper, C., et al. (2015). [Solar Retinopathy in Children.](#) (Abstract only.) Journal of the American Association for Pediatric Ophthalmology and Strabismus. 19(4): 349–351.

The authors discuss observational case series of three children who were cared for in the emergency department after having directly viewed the sun during the transit of Venus (2012), or the partial eclipse of the sun (also 2012). Despite treatment and relatively good visual recovery, the authors found that solar retinopathy can cause persistent damage to multiple retinal layers.

Khatib, N., Knyazer, B., Lifshitz, T., and Levy, J. (2014). [Acute Eclipse Retinopathy: A Small Case Series.](#) Journal of Optometry. 7(4): 225–228.

The authors share case studies of four young patients who observed a total eclipse in 2011 without appropriate eye protection. While acute solar retinopathy can be reversed, in some cases, permanent visual loss is still a possibility.

Lee, A. and Lai, T. (2010). [Central Serous Chorioretinopathy after Solar Eclipse Viewing](#). Journal of Ophthalmic & Vision Research. 5(3): 193-195.

A male patient developed a sudden-onset unilateral scotoma after viewing a partial solar eclipse in Hong Kong. Tests revealed “features compatible with central serous chorioretinopathy.” An initial increase in the amount of subretinal fluid was spontaneously resolved 10 weeks after the onset of symptoms. The authors emphasized the need for more research.

3. Federal Resources

American Astronomical Society. (2022). [Eclipse America 2023-2024](#). National Science Foundation.

This website provides information on the October 14, 2023 eclipse (when the moon will pass directly between the earth and the sun) and on the total solar eclipse occurring on April 8, 2024. It also includes links to eye safety and related strategies and products used for safely viewing eclipses.

NASA Science. (2022). [Eclipse 2024 Future Eclipses-NASA Solar System](#)

This website provides information on resources pertaining to the upcoming April 8, 2024 total solar eclipse. Imagery, locations, and timetables are noted.

U.S. Department of Transportation, Federal Highway Administration. (2022). [Planned Special Events: Checklists for Practitioners](#).

While this reference pertains to the transportation aspects of preparing for special events, the formula used for the planning process and checklists can be adapted to health and medical concerns.

U.S. Department of Transportation, Federal Highway Administration. (2017). [2017 SOLAR ECLIPSE Transportation Fact Sheet for State and Local Departments of Transportation](#).

This webpage includes links to state-specific information and lists considerations for state and local departments of transportation (e.g., advanced planning, event schedules, traveler behavior).

4. Lessons Learned from the 2017 Solar Eclipse

American Astronomical Society. (2023). [Solar Eclipse Planning Workshop, June 9-10, 2023, Albuquerque, New Mexico.](#)

The American Astronomical Society Solar Eclipse Task Force hosted a solar eclipse planning workshop in New Mexico on June 9-10, 2023. This webpage provides links to the various presentations conducted at this workshop and other relevant resources.

Heitzinger, K., Thoroughman, D.A., Johnson, B.D., et al. (2020). [The 2017 Solar Eclipse: Implementing Enhanced Syndromic Surveillance on the Path of Totality in Kentucky.](#) Cambridge University Press.

The Kentucky Department for Public Health implemented an enhanced syndromic surveillance system to detect increases in emergency department (ED) visits and other health care related needs near Hopkinsville (KY) which was the point where the greatest eclipse occurred. Results indicated that there were 44 potential eclipse-related visits to the ED, which consisted of minor injuries, gastrointestinal illness, and heat-related illness. First-aid stations were provided on site, and EMS personnel commonly attended to patients with pain and heat-related illness.

National Operations Center of Excellence (NOCoE). (2018). [Coming Up Next: Planning for 2024 Solar Eclipse, Incorporating Lessons Learned from 2017 Solar Eclipse for 2024 - NOCoE Virtual Peer Exchange.](#)

In April 2018, NOCoE hosted a virtual meeting in which representatives from 10 agencies highlighted their lessons learned from the 2017 solar eclipse. This webpage includes links to the meeting recording, speaker bios, slides, plans, and after-action reports.

Ngeni, F., Mwakalonge, J., and Siuhi, S. (2022). [The 2017 Total Solar Eclipse in the United States: Traffic Management and Lessons Learned.](#) Transportation Research Interdisciplinary Perspectives. Volume 13.

The authors of this study assessed the impact of the 2017 total solar eclipse on traffic operation and management, which included preparations and traffic predictions before, during, and after the event. They also summarize lessons learned from the event which can help emergency medical services staff plan for future events accordingly.

5. Locally Developed Resources

Eastern Idaho Public Health. (2017). [Eastern Idaho Public Health Feverishly Planning for the Solar Eclipse.](#)

This press release provides information for individuals planning to view the eclipse (e.g., food safety, drinking water safety, and general preparedness tips).

Idaho Tourism. (2017). [Idaho 2017 Eclipse Community Planning White Paper.](#)

This resource includes information on traffic enforcement, eye safety, fire safety, and space considerations.

Kentucky Cabinet for Health and Family Services, Office of Communications. (2017). [Eclipse Eye Safety.](#)

Dr. Connie White shares information on eye safety measures for properly viewing the eclipse on August 21, 2017.

Kentucky Cabinet for Health and Family Services, Office of Communications. (2017). [Eclipse Safety Kit.](#)

Dr. Anna Yaffee lists items that should be part of an “Eclipse Safety Kit” (e.g., sunscreen, water, hand sanitizer, insect repellent, and antibacterial ointment).

Kentucky Emergency Management. (2017). [2017 Solar Eclipse.](#)

This webpage provides planning and exercise information and links to two eclipse-related videos.

Kentucky Emergency Management. (2017). Kentucky Eclipse 2017 Plan. (Contact [ASPR TRACIE](#) for this resource.)

This plan details how state and county agencies will use mutual aid to support the communities affected by the expected surge in visitors for the 2017 total solar eclipse.

Kentucky Emergency Management. (2017). Exercise Summary: Total Eclipse. (Contact [ASPR TRACIE](#) for this resource.)

This report summarizes a functional exercise conducted by Region 2 for coalition partners, mainly directed toward hospital engagement, with the goal of preparing for the August 2017 total eclipse.

Oregon Office of Emergency Management. (2018). [The 2017 Great American Eclipse: After-Action Report Plan.](#)

This after-action report identifies the successes and areas for improvement during the planning and response efforts for the 2017 solar eclipse event taken by the Oregon Office of Emergency Management and the State Emergency Coordination Center.

6. News Articles

Ellgren, N. (2017). [Eclipse Emergency Committee Forms Traffic Plan.](#) News-Press Now.

This article highlights the work that has been done by the Missouri Department of Transportation and other agencies to prepare for the eclipse-related influx in visitors.

Hollenhorst, J. (2017). [Idaho, Wyoming Prepare for Eclipse Invasion.](#) KSL.com.

This article discusses state and jurisdictional emergency preparedness and mass gathering activities, including guidance from incident commanders, public health officials, and local law enforcement.

Johnson, B. (2017). [Emergency Planners Brace for Crowds During Total Solar Eclipse.](#) Smoky Mountain News.

This article highlights the challenges with estimating the number of visitors expected in the Jackson County (North Carolina) area. The author discusses the planning committee and a Homeland Security-funded tabletop exercise that highlighted planning gaps and how they are being addressed.

Sherburne, M. (2018). [A Record Number of Americans Watched the 2017 Solar Eclipse—and Sought Science Afterward.](#) University of Michigan. Michigan News.

The University of Michigan conducted a survey study on American adults to gather data on the number of people who viewed the 2017 solar eclipse either virtually or in person. Other information collected included the number of times people sought out information related to the solar eclipse via various means such as searching online and going to libraries.

The Sentinel Record. (2022). [Thousands Expected for Eclipse.](#)

An Arkansas tourism leader discusses expected issues during the upcoming 2024 eclipse in Hot Springs where nearly 2 million people are expected, including overcrowding and cellular/internet service disruptions.

USA Today. (2017). [Total Solar Eclipse Expected to Bring Thousands to Western Kentucky](#). UCA News.

This press release outlines how state and local emergency preparedness agencies are planning for the event and includes travel and eclipse-watching tips for residents and visitors.

Wyoming News Now. (2017). [Yellowstone Expects Heavy Visitation for Solar Eclipse](#).

This article reviews expected mass gathering challenges within Yellowstone during the eclipse and provides considerations to help visitors and officials prepare.

7. Education and Training

Baez, A. and Sztajnkrzyer, M. (2015). [Basic Principles of Mass Gathering Medical Care. Supercourse Lectures #17951](#). The Department of Emergency Medicine, Mayo Clinic College of Medicine.

This PowerPoint presentation provides a brief overview of medical care aspects of mass gatherings. It includes nine planning elements (e.g., triage, personnel, data collection, and crowd size); a planning timeline; anticipated conditions by event; and lessons learned from past events. The authors emphasize the use of incident command, but readers should note that the charts they include are neither National Incident Management System (NIMS) compliant nor mass-gathering related.

Federal Emergency Management Agency. (2013). [IS-15.B: Special Events Contingency Planning for Public Safety Agencies](#).

This web-based course teaches first responders about pre-event planning, forming the planning team, event hazard analysis, and responding to incidents during special events in their community.

Northwest Center for Public Health Practice. (2010). [Mass Gatherings: Are You Prepared?](#) (Free membership required.)

This free 90-minute course focuses on mass gathering preparation. The course is based on a hypothetical three-day music festival and includes various scenarios and case studies. Users can also access the print version of the course from this site.

8. Education and Training: Rural Areas

Rural Domestic Preparedness Consortium. (2023). [Course Catalog](#).

This website provides resources and links to numerous online training courses for rural first responders and health care workers. The site also includes a “responder toolbox” which includes links to additional resources.

Rural Domestic Preparedness Consortium. (2023). [Emergency Operations Plans for Rural Jurisdictions](#).

This 8-hour in-person course can help rural planners develop plans suited to their jurisdictions.

Rural Health Information Hub (RHHub). (2022). [Rural Emergency Preparedness and Response](#).

This organization’s website discusses the challenges rural communities face when preparing for large-scale emergency incidents and provides guidance for preparedness efforts as well as links to additional disaster response resources.

9. General Guidance: Planned Mass Gatherings

Environmental Surveillance Section, Environmental Health Service, Department of Health (Australia). (2006). [Guidelines for the Management of Public Health & Safety at Public Events](#).

This document provides background information and guidance on pre-event planning, communications, event (and health) promotion, environmental health, emergency services, and first aid. Appendices that cover specific scenarios (e.g., needle stick injuries) are also included.

Grant, W.D., Nacca, N.E., Prince, L.A., and Scott, J.M. (2010). [Mass-Gathering Medical Care: Retrospective Analysis of Patient Presentations over Five Years at a Multi-Day Mass Gathering](#). (Abstract only.) *Prehospital Disaster Medicine*. 25(2):183-7.

The authors reviewed the data from patients seen during the New York State Fair over five years to identify the range and nature of injury and illness. The most common reason for seeking medical assistance was dehydration, primarily by females.

Kollek, D. (2014). [An Introduction to Mass Gatherings](#). The Centre for Excellence in Emergency Preparedness.

The author provides an overview of mass gatherings and the related medical strategies (surveillance, prevention, and diversion) and interventions planners can use to prepare for these events. Guidance on staffing and command and control is included and a question-based initial analysis is used. Table 2 provides a summary of risks and issues for all events.

Locoh-Donou, S., Guofen, Y., Welcher, M., et al. (2013). [Mass-Gathering Medicine: A Descriptive Analysis of a Range of Mass-Gathering Event Types](#). (Abstract only.) American Journal of Emergency Medicine. 31(5): 843-846.

The authors reviewed cases from two years' worth of planned mass gathering events to determine the nature of illness/ injury. They found most cases were mild; the average patient age was 33 years old and female.

Oregon Health Authority. (2017). [Preparing for the Solar Eclipse Outdoor Mass Gathering Guidance](#).

This resource provides information on anticipated mass gathering challenges during the 2017 eclipse in Oregon. Guidance includes considerations for addressing water supply and distribution needs; maintaining site drainage and sewage demands; as well as refuse storage, among others.

Schwartz, B., Nafziger, S., Milsten, A., et al. (2015). [Mass Gathering Medical Care: Resource Document for the National Association of EMS Physicians Position Statement](#). Prehospital Emergency Care. 19(4).

This position statement includes definitions, a literature review, an overview of the role of the medical director, and strategies for determining on-site medical resources. The authors emphasize the need for "the consistent use and further development of universally accepted consistent metrics" to streamline the planning process.

World Health Organization. (2015). [Public Health for Mass Gatherings: Key Considerations](#).

This guidance document incorporates lessons learned from past mass gatherings across the globe and includes 18 chapters on topics such as: planning, command and control, communications, event medical services, surveillance and outbreak response, preventing and controlling infection, and use of modern technology in planning and operations.

10. General Guidance: Rural Emergency Preparedness

McLaughlin, C., Riutta, O., and Busko, J. (n.d.). [Rural EMS Workforce: A Call to Action. National Rural Health Association](#). (Accessed 8/1/2023).

This policy resource outlines the function of EMS in rural locations as well as the challenges faced. It includes opportunities for change and policy recommendations.

National Rural Health Association. (2011). [National Rural Health Association Policy Brief: Rural Health Preparedness](#).

This policy brief lists several guiding principles for rural emergency medical personnel that can help ensure effective response to all types of hazards.

Trockman, S., Meit, M., and Stebbins, S. (2018). [Rural Emergency Preparedness. What All Rural Responders Must Know About Public Health Emergencies](#). NANOPDF.Com.

This textbook—while focused on the State of Pennsylvania—comprehensively covers many of the components associated with rural emergency preparedness. Information is presented in seven chapters: Emergency Public Health Functions; Public Health and Emergency Management; Mass Care; Risk and Crisis Communication; Powers and Authorities; Disaster Mental Health Issues; and Protecting Yourself, Your Family, and Others from Infectious Diseases.

11. Guidance: Helicopter Rescue

California Association of Air Medical Services. (2009). [Landing Zone Set-Up and Safety Guidelines](#).

This slide deck provides information on how to reduce on-scene response hazards for EMS helicopters and includes operational considerations for a variety of scenarios.

Delisio, D. (1998). [Helicopter Landing Zones: Setup & Safety](#). Firehouse

The author shares 11 guidelines related to setting up a landing zone and ensuring on-scene safety.

Greenspun, P. (2006). [Preparing a Helicopter Landing Zone](#).

The author lists the “Four Ws and Four Ss”—considerations for helicopter pilots to take when off-airport landing is called for.

Spell, J. (2020). [Landing a Helicopter: What Firefighters Need to Know](#). FireRescue1.

The author explains several universally accepted landing zone procedures: site selection, marking and lighting, eye contact (with the pilot), and safe approach.

12. Lessons Learned: Planned Mass Gatherings

Centers for Disease Control and Prevention. (2000). [Public Health Aspects of the Rainbow Family of Living Light Annual Gathering: Allegheny National Forest, Pennsylvania, 1999](#). Morbidity and Mortality Weekly Report. 49(15): 324-326.

Nearly 20,000 attended this event, held in a remote location that was not accessible by vehicle and did not have sanitary facilities. The festival provided alternative medical care and local public health employees were permitted to visit the site daily (but were requested to keep their interactions informal). Local emergency department staff asked all patients seeking care during a certain time period if they had attended the festival. Of the 115 recorded attendees seeking health care, one death was reported, as were a variety of infections, musculoskeletal injuries, insect/dog/snake bites, and other conditions.

Sonneman, A. (2016). [Special Events and Mass Gatherings: A Preparedness Perspective](#). National Association of County and City Health Officials.

This article provides information on pre-incident planning for National Special Security Events and provides an overview of challenges, lessons learned, and considerations.

The Lancet: Infectious Diseases. (2012). [Mass Gatherings Health](#).

This webpage provides links to articles on mass gathering health. Articles on the Hajj pilgrimage, disease prevention, non-communicable disease risks, and crowd and environmental management are included.

13. Lessons Learned: Rural Areas

Cliff, B. (2007). [A Study of Disaster Preparedness of Rural Hospitals in the United States](#). Western Michigan University. Dissertations.

The author used a model of disaster preparedness to examine seven elements of preparedness. She also examined risk perception and Health Resources and Services Administration funding. She categorized rural hospitals as "moderately prepared overall" with high preparedness in education/training isolation/decontamination.

Respondents perceived higher risk from natural disasters and vehicular accidents than from human-caused incidents.

Fisher, S., Biesiadecki, L., Schemm, K. (2014). [Responding to Medical Surge in Rural Communities: Practices for Immediate Bed Availability.](#)

The focus of this report is on immediate bed availability in rural health care settings. The authors conducted a literature review and synthesized data collected during interviews with representatives in four areas: Mississippi, Southwest Utah, Virginia, and Southeast Texas.

Mason, W., Randolph, J., Boltz, R., et al. (2014). [Rural Coalition Development and Immediate Bed Availability.](#)

This 90-minute webinar reviews the unique challenges of building and operating health care coalitions in rural settings. Speakers discuss policy and partnership lessons learned from a disaster in Arkansas; bed surge and mass fatality support and coordination best practices from a Greyhound bus disaster in Pennsylvania; Community Assessment Tool (CAT) implementation in Nebraska; and rural health care coalition development strategies used in Missouri.

National Operations Center of Excellence. (2018). [Missouri: Lessons Learned from 2017 Solar Eclipse.](#)

This website provides the findings and observations documented by the Missouri Department of Transportation during the 2017 Solar Eclipse.

U.S. Department of Health and Human Services, Administration for Strategic Preparedness and Response. (2017). [HPP In Action: Stories from the Field.](#)

Many of the posts on this webpage include lessons learned from health practitioners and emergency managers in rural areas and American Indian/Alaskan Native communities.

14. Plans, Tools, and Templates

Bulson, J. (2013). [Large Gathering Medical Plan Template.](#)

Emergency medical services planners and other health care providers can tailor this template to their facility and event. It includes sample forms and schematics for several injuries and scenarios.

Dvorak, G. and Williamson, B. (Eds.). (2011). [All-Hazards Preparedness for Rural Communities.](#)

This guide can help emergency planners, families, and individuals who live in rural communities prepare businesses take the necessary steps to prepare for, respond to, and recover from natural disaster and human-caused events. While not geared towards healthcare practitioners, it does include threat-specific information templates, checklists, and links to related resources for families and businesses.

Federal Emergency Management Agency. (2010). [Special Events Contingency Planning.](#)

This job aid manual groups information into five chapters: pre-event planning; event operational considerations; incident command and control; additional planning; and post-event actions.

Federal Emergency Management Agency. (2012). [Operational Templates and Guidance for EMS Mass Incident Deployment.](#)

The goal of this comprehensive report is to share detailed model policies and practices and help emergency medical services (EMS) deploy more effectively to planned and spontaneous mass care incidents. Case studies and event templates for scheduled and unscheduled events are included that can help EMS planners develop local plans and conduct activities.

Minnesota.gov. (2015). [Special Event and Mass Gathering Medical Care Planning Guideline.](#)

This event classification matrix was developed to help local emergency health care providers develop medical plans for large events based on risk.

Oregon Department of Human Services, Public Health Division. (n.d.). [Regulations Governing Health and Safety at Outdoor Mass Gatherings.](#) (Accessed 3/7/2024.)

Though written specifically for the State of Oregon, these rules can be used as a model for other jurisdictions when planning for a mass gathering. The document specifies rules for emergency medical facilities, fire protection, security personnel, traffic control, water supply, drainage, sewer facilities, trash storage and disposal, and sanitary food service.

Oregon Health Authority. (2017). [Preparing for the Solar Eclipse Outdoor Mass Gathering Guidance.](#)

This resource provides information on anticipated mass gathering challenges during the 2017 eclipse in Oregon. Guidance includes considerations for addressing water supply

and distribution needs; maintaining site drainage and sewage demands; as well as refuse storage, among others.

Pennsylvania Emergency Management Agency. (2015). [Special Event Emergency Action Plan Guide.](#)

This document outlines the recommended procedures for creating an Emergency Action Plan for a special event.

San Francisco EMS Agency. (2013). [Mass Gathering: Report of Treatment by Event Medical Resources.](#)

This form can be used by health care providers to track and report a summary of injury and health-related problems that occur during a mass gathering event.

State of New Hampshire. (2014). [Mass Gathering Standard Operating Guideline Template.](#)

This standard operating guideline published by the State of New Hampshire can be customized to meet the needs of other states during mass gathering EMS resource planning. The template covers all areas that need to be addressed and includes a scoring matrix helpful to predict risk and coverage needs.

Tennessee Department of Military. (2017). [2017 Solar Eclipse: Eclipse Coordination Plan.](#)

This plan documents the state's emergency preparedness and coordination efforts for the 2017 solar eclipse event. It included chapters on threats and assumptions and a concept of operations, followed by related resources.

U.S. Department of Transportation, Federal Highway Administration. (2022). [Planned Special Events: Checklists for Practitioners.](#)

While this reference pertains to the transportation aspects of preparing for special events, the formula used for the planning process and checklists can be adapted to health and medical concerns.

Ware County Board of Health. (2011). [Risk Communication in Rural Settings.](#)

Health care practitioners in rural areas can use the strategies in this toolkit to communicate with their community during a variety of disasters including natural, biological, chemical, radiological, and mass vaccination/medical events.

15. Surge Planning (from Urban to Rural Areas)

Meit, M., Briggs, T., Kennedy, A., et al. (2007). [Spontaneous Evacuation Following a Dirty Bomb or Pandemic Influenza: Highlights from a National Survey of Urban Residents' Intended Behavior](#). NORC Walsh Center for Rural Health Analysis.

The authors highlight results from a national survey that measured urban residents' plans to evacuate after two potential disasters. Responses differed by several variables; the potential effect of this movement on infrastructure in rural communities (including the health care system) is significant and plans must be adjusted.

Meit, M., Briggs, T., and Kennedy, A. (2008). [Urban to Rural Evacuation: Planning for Rural Population Surge](#).

The authors conducted a literature review and a quantitative analysis of survey data to assess the likelihood of urban evacuation to rural areas and to provide recommendations for rural planning and response. The last section of the report contains a set of policy and planning recommendations.

Meit, M., Redlener, I., Briggs, T., et al. (2011). [Rural and Suburban Population Surge Following Detonation of Improvised Nuclear Device: A New Model to Estimate Impact](#). Disaster Medicine and Public Health Preparedness. 5. Supplement 1.

The authors describe a “push-pull” model that estimated the evacuation from Manhattan to counties within a 150 mile radius after a nuclear detonation. This model predicted that arriving evacuees could increase the population needing services by between 50 and 150 percent.

University at Albany, State University of New York, School of Public Health and Health Professions, Center for Public Health Preparedness. (2016). [Mass Evacuation to Rural Communities II](#).

This webinar recording highlights concerns expressed by leaders in rural communities—areas to which large numbers of evacuees might travel in a disaster. Specific concerns included sustaining the water supply, septic systems, and receiving and treating people with special needs. One speaker shared lessons learned from a tabletop exercise, particularly managing self-deployed volunteers.

*This document was updated in March 2024. It was comprehensively reviewed in July 2017 by: **Dick Bartlett**, B.S., Med, Emergency Preparedness/Trauma Program Coordinator, KY Hospital Association, and Khref; and **L. Corey Sloan**, M.A., M.S., EMT-P, Deputy Chief of EMS, NTA EMS Rescue, Bethany, MO.*