

HEALTH RISK ASSESSMENT STATE REPORT

Prepared by the Center for Threat Preparedness

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List of Acronyms and Terminology

All-Hazards Planning: All-Hazards Planning is based on the concept that jurisdictions should develop, exercise and revise core plans that address all hazards, whether natural, accidental, negligent or intentional.

Assistant Secretary for Preparedness and Response (ASPR): Administers the Hospital Preparedness Program (HPP) grant. Developed and published the Healthcare System Preparedness Capabilities. (*DHHS, Federal*)

Behavioral Health Center: Includes any office/center whose primary mission is to provide behavioral health care. Behavioral health is defined as the blending of substance (alcohol, drugs, and tobacco) abuse and mental health disorders prevention and treatment for the purpose of providing comprehensive services. (*West Virginia*)

BPH: Bureau for Public Health (*West Virginia*)

CDC: Centers for Disease Control and Prevention (*DHHS, Federal*)

Community Resilience: The ongoing and developing capacity of the community to account for its vulnerabilities and develop capabilities that aid that community in (1) preventing, withstanding, and mitigating the stress of a health incident; (2) recovering in a way that restores the community to a state of self-sufficiency and at least the same level of health and social functioning after the health incident; and (3) using knowledge from a past response to strengthen the community's ability to withstand the next health incident.¹

Continuity of Operations Plan: [Continuity of Operations](#) (COOP), as defined in the National Continuity Policy Implementation Plan (NCP/IP) and the National Security Presidential Directive-51/Homeland Security Presidential Directive-20 (NSPD-51/HSPD-20), is an effort within individual executive departments and agencies to ensure that Primary Mission Essential Functions (PMEFs) continue to be performed during a wide range of emergencies, including localized acts of nature, accidents and technological or attack-related emergencies.

County Assessment: The process used by each of West Virginia's 49 local health departments to collect data from West Virginia's 55 counties for the HRA. (*West Virginia HRA*)

County Health Risk Assessment Toolkit: Collection of documents used by local health departments to conduct their County Assessments. The Toolkit includes the data collection instruments (Workshop Participant Tool(s) and Public Health Narrative) and additional supporting resources to conduct the assessment. (*West Virginia HRA*)

County HRA Report: Reports of county-level HRA results and recommendations sent to each county. (*West Virginia HRA*)

CTP: Center for Threat Preparedness. State agency located in the BPH, DHHR. (*West Virginia*)

Data Collection Instrument: The term used to describe the data collection component of a JRA Tool. West Virginia's data collection instruments are the Workshop Participant Tool and the Public Health Narrative. (*West Virginia HRA*)

DHHR: Department of Health and Human Resources (*West Virginia*)

DHHS: Department of Health and Human Services (*Federal*)

DHS: Department of Homeland Security (*Federal*)

¹ Chandra A, Acosta J, Stern S, Uscher-Pines L, Williams MV, Yeung D, Garnett J, and Meredith LS, *Building Community Resilience to Disasters: A Way Forward to Enhance National Health Security*, Santa Monica, California: RAND Corporation, TR-915-DHHS, 2010 (http://www.rand.org/pubs/technical_reports/TR915.html).

Emergency Management Performance Grant (EMPG): DHS/FEMA grant to states to build and sustain local preparedness. In West Virginia, many EMPG funds are distributed to local emergency management agencies.

FEMA: Federal Emergency Management Agency (*DHS, Federal*)

Jurisdictional Risk Assessment (JRA): CDC requires jurisdictions “Identify the potential hazards, vulnerabilities, and risks in the community that relate to the jurisdiction’s public health, medical, and mental/behavioral health systems, the relationship of those risks to human impact, interruption of public health, medical, and mental/behavioral health services, and the impact of those risks on the jurisdiction’s public health, medical, and mental/ behavioral health infrastructure.”² This process is called a jurisdictional risk assessment. (*CDC, Federal*)

JRA Tool: The term for the products developed by states, academic institutions, and other agencies nationwide to collect, analyze and report data for Jurisdictional Risk Assessments.

Hazard: Source of danger.

Health: State of physical, mental and social wellbeing and not merely the absence of disease or infirmity; condition of being sound in body, mind or spirit.

Health Risk Assessment (HRA): West Virginia’s term for its Jurisdictional Risk Assessment.

Individuals with access and functional needs: Individuals who may have greater difficulty accessing the public health and medical services they require following a disaster or emergency. At-risk individuals have needs in one or more of the following functional areas: communication, medical care, maintaining independence, supervision, and transportation. At-risk groups may include children, senior citizens, and pregnant women as well as people who have disabilities, live in institutionalized settings, are from diverse cultures, have limited English proficiency or are non-English speaking, are transportation disadvantaged, have chronic medical disorders, or have pharmacological dependency. Individuals with access and functional needs have also been referred to as “at-risk,” “special needs” or “vulnerable” populations.³

LHDs: Local Health Departments (*West Virginia*)

Local Emergency Planning Committee (LEPC): In 1986, Congress passed the Superfund Amendments and Reauthorization Act (SARA) of 1986. Title III of this legislation requires that each community establish a [Local Emergency Planning Committee](#) (LEPC) to be responsible for developing an emergency plan for preparing for and responding to chemical emergencies in that community. These committees have expanded in many jurisdictions to include all-hazards planning.

Local Health HRA Profile: County-level reports of workshop hazard identification and ranking data, the greatest impacts of the highest ranked hazard on public health, public health mitigation data, county mitigation data, and Public Health Narrative data. (*West Virginia HRA*)

Memorandum of Understanding (MOU): A document describing a bilateral or multilateral agreement between parties (including private, public and non-governmental). MOUs for preparedness planning are often developed between partners to identify and agree upon resource engagement in an emergency situation.

Metropolitan Statistical Area (MSA): A metropolitan statistical area is a designation given by the U.S. Census Bureau to a large population nucleus, together with adjacent communities having a high degree of social and economic integration with that core.

² Centers for Disease Control and Prevention (CDC). 2011. Capability 1: Community Preparedness. *Public Health Preparedness Capabilities: National Standards for State and Local Planning*.

³ Assistant Secretary for Preparedness and Response (ASPR) (April 23, 2012). At-Risk Individuals. In *Public Health Emergency*. Retrieved April 30, 2012 from <http://www.studygs.net/citation.htm>.

Mitigation: The strategies and resources used by agencies, individuals and communities to eliminate or reduce the frequency, magnitude or severity of a hazard event.

Public Health Emergency Preparedness (PHEP) and Hospital Preparedness Program (HPP)

Cooperative Agreements: Awarded to states and other jurisdictions by the CDC and the ASPR to provide technical assistance and resources that support state, local, territorial, and tribal public health departments and healthcare systems/organizations in demonstrating measurable and sustainable progress toward achieving public health and healthcare preparedness capabilities that support prepared and resilient communities. (*CDC, ASPR, DHHS, Federal*)

Public Health Narrative: Supplemental data collection instrument included in the County Health Risk Assessment Toolkit for local health departments. The Narrative includes open-ended questions on local health's role in hazard mitigation; any unique planning considerations; and other information specific to local health that was not captured in the Workshop Participant Tool.

Risk: Expected loss; probability of the hazard occurring multiplied by the impact of the hazard minus the measures in place to mitigate the hazard's impact.

State Health Risk Assessment: A) The process used to develop, implement and evaluate West Virginia's jurisdictional risk assessment, including the County HRA Toolkit and assessment process, and B) the application of the results from the county-level assessments to form state-level recommendations (described in this report). (*West Virginia HRA*)

Strategic National Stockpile (SNS): CDC's Strategic National Stockpile (SNS) has large quantities of medicine and medical supplies to protect the American public if there is a public health emergency (terrorist attack, flu outbreak, earthquake) severe enough to cause local supplies to run out. Once Federal and local authorities agree that the SNS is needed, medicines will be delivered to any state in the U.S. in time for them to be effective.⁴ West Virginia has plans to receive and distribute SNS medicine and medical supplies to local communities as quickly as possible. Local health departments have plans to receive SNS medicine and supplies from the state and distribute to their counties.

Threat and Hazard Identification and Risk Assessment (THIRA): The THIRA is a tool that allows a jurisdiction to understand its threats and hazards and how the impacts may vary according to time of occurrence, season, location, and other community factors. (*FEMA/DHS, Federal*)

Vulnerability: Open to attack, damage or being wounded. "Vulnerability is the pre-event, inherent characteristics or qualities of a social system that create potential harm. Vulnerability is a function of exposure (who or what is at risk) and sensitivity to the system (the degree to which people and places can be harmed)".⁵

Workshop Participant Tool: The workshop data collection instrument included in the County HRA Toolkit. This includes 5 sector-specific participant tools: 1) the Public Health Participant Tool, 2) the Hospital Participant Tool, 3) the Primary Care Participant Tool, 4) the Behavioral Health Participant Tool and the 5) Other Agency Participant Tool. Each of the participant tools includes 4 Sections: 1) Hazard Identification and Ranking, 2) Impact Discussion and Planning, 3) Community Mitigation Assessment, and 4) Agency Mitigation Assessment. (*West Virginia HRA*)

⁴ Centers for Disease Control and Prevention (CDC). 2008. Strategic National Stockpile. Accessed October 5th, 2012 at www.cdc.gov/phpr/stockpile/stockpile.htm

⁵ Cutter, Susan L., Lindsey Barnes, Melissa Berry, Christopher Burton, Elijah Evans, Eric Tate, and Jennifer Webb. 2008. A place-based model for understanding community resilience to natural disasters. *Global Environmental Change*, 18(4), 598-606.

1. Background

The Centers for Disease Control and Prevention (CDC) allocates funding for preparedness activities to state and local public health departments through the Public Health Emergency Preparedness (PHEP) cooperative agreement. The Assistant Secretary for Preparedness and Response (ASPR) allocates funding for preparedness activities to hospitals and other health systems through the Hospital Preparedness Program (HPP) cooperative agreement. These two cooperative agreements complement each other and strengthen state, regional and local response to all types of threats affecting the public's health while building more resilient communities and agencies. To guide state and local health and medical preparedness planning CDC published and adopted 15 [Public Health Preparedness Capabilities](#) and ASPR published and adopted 8 [Healthcare Preparedness Capabilities](#) in the spring of 2011.

To meet Public Health Preparedness Capability 1, *Community Preparedness*, each awardee is required to conduct a jurisdictional risk assessment. A jurisdictional risk assessment, or JRA, is described in Capability 1 as including, at a minimum: a definition of risk; use of Geospatial Information System (GIS) or other mechanism to map locations of at-risk populations; evidence of community involvement in determining areas for risk assessment or hazard mitigation; and an assessment of potential loss or disruption of essential services such as clean water, sanitation, healthcare, and public health services. The JRA should also seek to identify: potential hazards, vulnerabilities, and risks to the community related to the public health, medical, and mental/behavioral health systems; the relationship of these risks to human impact and to the interruption of public health, medical, and mental/behavioral health services; and the impact of those risks on public health, medical, and mental/behavioral health infrastructure. HPP Capability 1, *Healthcare System Preparedness*, requires awardees to participate in and support these assessments.

The Center for Threat Preparedness (CTP), in the Bureau for Public Health, Department of Health and Human Resources, is the awardee of both the PHEP and HPP grants and is responsible for the grants' administration and management. In May 2011, the CTP conducted a process to prioritize Public Health Preparedness Capabilities in order to plan activities for the five year grant period. PHEP Capability 1, *Community Preparedness*, was identified as a priority for West Virginia. To develop this Capability, the CTP included the JRA as an activity in the 2011/2012 grant application. The CTP renamed the JRA as a "Health Risk Assessment" or HRA, to distinguish it from the assessments conducted by emergency management.

The purpose of this report is to describe:

- The process CTP followed to develop the HRA data collection tool and to support the tool's use in county workshops
- The aggregate results of the HRA local public health department and county data
- The aggregate evaluation results of the HRA data collection tool and county workshop model
- The limitations and challenges of this type of assessment
- Initial next steps and recommendations based on the assessment process and results

Figure 1: Purpose of this Report

2. HRA Tool Development and Implementation

Advisory Committee

In December, 2011, the CTP held an initial Advisory Committee meeting composed of representatives from the Bureau for Public Health's Office of Environmental Health Services, Office of Emergency Medical Services, Division of Infectious Disease Epidemiology, Division of Local Health and Center for Threat Preparedness; the Bureau for Behavioral Health and Health Facilities; and two local health departments. The purpose of the Advisory Committee was to guide the HRA project at both the local and state level, including at which levels data analysis, collection and reporting would be conducted. This committee met four times prior to the county HRA assessments and will continue to meet to provide oversight on the implementation of recommendations from the HRA.

Literature Review

Because of the recent creation and publication of the Public Health Preparedness Capabilities, there were few resources on public health risk assessments when CTP began to plan its risk assessment process. CDC provided states with the *Hazard Risk Assessment Tool* created by the University of California, Los Angeles (UCLA), the only public health tool publicly available. Searches by the project manager and a recent MPH graduate yielded additional tools built for hospital preparedness and emergency management. A literature review was also conducted on keywords and concepts including *resiliency, environmental risk assessments, vulnerability, mitigation, hazard analysis, threat analysis and probability*. Key documents consulted during initial planning and tool development were as follows:

- Threat and Hazard Identification and Risk Assessment (THIRA) – *Federal Emergency Management Agency (FEMA)*
- Public Health Preparedness Capabilities – *Centers for Disease Control and Prevention (CDC)*
- Homeland Security Core Capabilities – *Department of Homeland Security (DHS)*
- Health System Preparedness Capabilities – *Hospital Preparedness Program (HPP)*
- Hazard Risk Assessment Tool – *University of California, Los Angeles (UCLA)*
- Understanding Community Resiliency in the Context of National Health Security – *RAND Corporation*
- Risk and Vulnerability Assessments for Rural Communities – *Rural Domestic Preparedness Consortium (RDPC)*
- The CDC/ATSDR Public Health Vulnerability Mapping System: Using a Geographic Information System for Depicting Human Vulnerability to Environmental Emergencies – *Agency for Toxic Substances and Disease Registry (ATSDR)*
- Preparedness Story Activity Template – *Office of Public Health Preparedness and Response (OPHPR) at the Centers for Disease Control and Prevention (CDC)*
- Hazard Vulnerability Assessment – *Kaiser Permanente*

In concert with the release of the Capabilities, CDC funded ten Metropolitan Statistical Areas (MSAs) to conduct risk-based pilot projects including developing, implementing and evaluating jurisdictional risk assessment tools during the 2011-2012 grant year. These tools were under development but were not complete when the CTP initiated its planning for the statewide HRA. Through online

research, two additional states– Oregon and Florida – were identified as being in the process of developing JRA Tools. Each of these tools contained data collection instruments as well as data analysis and reporting features.

In addition to reviewing the key documents consulted in the literature review and the materials available from the pilot projects, informational interviews were conducted with the following:

- Jeffrey Kaliner, *Oregon Health Authority*
- Dale Thompson, *Kaiser Permanente*
- Thomas Hunt, *Texas Department of State Health Services*
- Jennifer Williams, *Florida Department of Health*
- Andrew McMahan, *New York City Department of Health and Human Hygiene*
- Judy Crabtree, *Kanawha Coalition for Community Health Improvement*
- Jennifer Horney and Rachel Wilfert, *University of North Carolina Center for Public Health Preparedness*
- DeeAnn Bagwell, Brandon Dean, Sinan Khan, *Los Angeles County Department of Public Health*
- Dianna Yassanye, *CDC Office of Preparedness and Emergency Response*
- Joie Acosta and Anita Chandra, *RAND Corporation*

Findings from Literature Review

The ability of a data collection instrument to incorporate and/or collect quality data is critical. The UCLA tool provided by CDC for the JRA, and the tools under development in the MSAs receiving risk-based funding, relied heavily on the assumption of available data from previous incidents to measure impact and hazard probability. These tools were also focused primarily at the state level, with much of the data prefilled for local jurisdictions using data from state and national level databases.

While a tool based on historical, verified data was seen as ideal, data on hazard probabilities and impact is extremely limited and is unavailable, even at a national level, for many of the hazards included in the tool. Data on hazard impact in West Virginia is even more limited, due to limited reporting systems and a lack of data integration. In addition, in contrast to the funded MSA's, West Virginia had only a single, dedicated staff person for this project; no contracted or comprehensive university or private sector support; and a limited timeframe of nine months to complete the assessment, with six months to complete the assessment data collection instrument.

Because of these data challenges, the Advisory Committee viewed the assessment as an opportunity to collect baseline data from the field that could be used in both preparedness program planning and packaged as a broader needs assessment on the collection, analysis, sharing and storage of public health and medical preparedness data. In addition, it was essential to create a data collection instrument that all local health departments could utilize, and to construct questions that would provide meaningful results for local health departments and their partners. Thus, instead of a top-down assessment, the Advisory Committee supported the CTP's interest in developing a local, workshop-based model. The Committee identified significant benefits supporting a workshop approach:

Multiple Perspectives

To utilize the **collective experience** of health and preparedness organizations in each county, rather than relying on a single perspective

To utilize **local subject matter expertise** to build the data for the state assessment, recognizing the utility of a bottom-up rather than top-down report

Communication

To **identify** assumptions and perceived risks. A key aspect to preparedness planning is learning how to work with estimates and uncertainty. Assumptions are a necessary part of the planning process.

To **question** assumptions. A workshop encourages discussions between agencies about planning assumptions, particularly concerning agency responsibilities in hazard-specific response scenarios.

Partnership

To **collect data** from partners outside of public health in order to identify shared strengths, resources and training needs.

To **share data** with partners outside of public health in order to develop a shared situational awareness and to collectively prioritize exercise and planning goals.

Figure 2: Benefits of a Workshop Approach

The development and publication of the PHEP and ASPR capabilities provided a foundation for establishing and measuring public health and health system preparedness in states and other jurisdictions. However, the performance indicators for the PHEP Capability 1, *Community Preparedness*, had not yet been developed. Using the Capabilities as a guide, the Advisory Committee recommended creating a simplified list of indicators to measure preparedness in West Virginia, emphasizing both agency preparedness (agency-specific plans, exercises, etc.) and community preparedness (coalitions, responses, etc.).

However, several members of the Advisory Committee raised concerns that a standardized, quantitative data collection instrument would fail to capture the diversity of resources and planning considerations in the counties. Thus, the Committee determined that the instrument should be

supplemented with a public health preparedness narrative, guided by specific questions, to capture additional information on each county.

The Advisory Committee also emphasized the importance of providing health departments with a tiered approach to ensure an adaptable data collection instrument that accommodated the different resources and sizes of local health departments. While community participation was seen as important, a tiered approach would encourage participation without penalizing health departments that were unable to engage participants. The tiered approach was seen as leading to a baseline set of public health data with additional layers of partner agency data, depending on levels of participation.

In addition, the Advisory Committee wanted a data collection instrument that could be built upon and used to reassess hazard risk, impact and mitigation measures related to public health. A sustainable instrument was defined as one that would stimulate and sustain discussion among local partners; engage new partners in the health preparedness process; and function as part of the ongoing planning process at the local level. Providing local health departments with county-specific reports with recommendations and resources for improvement was highlighted as a way to continue momentum after the data collection concluded.

There are 55 counties in West Virginia but only 49 local health departments. Of the 49, 47 serve a single county (including associated municipalities) while 2 serve multiple counties. The Wetzel-Tyler Health Department serves the counties of Wetzel and Tyler. The Mid-Ohio Valley Health Department serves the counties of Calhoun, Pleasants, Ritchie, Roane, Wirt and Wood. While the Advisory Committee recognized it would be a challenge for the two multi-county health departments to collect county-level data, collecting data from the same jurisdictional level across the state was seen as important for building a standard, state-wide dataset for health preparedness. It was thought that regional data could be developed from county data, providing regional data for each of West Virginia's 8 public health preparedness regions, of which Mid-Ohio Valley Health Department is one.

Finally, the Advisory Committee expressed concern regarding the distinction between this jurisdictional risk assessment and the assessments conducted annually by local emergency management. Hazard Vulnerability Analyses (HVAs), the type of assessment used by emergency management until 2011, identified hazards in a county and how these hazards would affect critical infrastructure and assets. These assessments also included the economic and business impact of the hazard on the community and individual building assessments.

In April 2012, the Federal Emergency Management Agency (FEMA) released guidance for conducting Threat and Hazard Identification and Risk Assessments (THIRA). The THIRA replaced the HVA as the process for identifying risk in jurisdictions funded by the Emergency Management Performance Grants (EMPG). Thus, local emergency managers were transitioning from HVAs to THIRAs during the same time period as the release of the JRA. In addition, many hospitals in West Virginia had conducted or were in the process of conducting HVAs for their facilities as part of the Joint Commission Standards. There was, therefore, a significant possibility for confusion in communications to emergency managers, hospitals and the public around the distinctions between a JRA, a HVA and a THIRA. To mitigate this confusion, the Advisory Committee adopted the name of Health Risk Assessment (HRA) to replace Jurisdictional Risk Assessment (JRA) in communications materials.

Tool Development

The concept for West Virginia's HRA was developed using the literature review (including disciplines such as environmental health, hospital preparedness and emergency management); informational interviews with other state health departments and academic institutions; and continuous partner feedback and evaluation from both the state and local levels. The CTP adopted an integrated, tiered approach to the HRA, with data from assessments in the 49 local health jurisdictions, in 55 counties, used to provide a baseline data set to drive local, regional and state public health and medical preparedness planning. A goal and objectives for the HRA were developed early and revised throughout the process:

Goal: *To create an HRA process that is accessible, replicable, timely and meaningful for use in preparedness planning at both the local and state level. The process should:*

1. Address and incorporate all functions under PHEP Capability 1: Community Preparedness (**a.** *Determine risks to the health of the jurisdiction, b.* *Build community partnerships, c.* *Engage community organizations and d.* *Coordinate training for preparedness*).
2. Ensure that methods for conducting HRAs are usable by all local health departments in West Virginia, regardless of their size and resource constraints
3. Produce a baseline health preparedness dataset for use in planning and exercises at the local and state levels
4. Ensure that the HRA process is replicable and can be used to drive future HRAs
5. Identify and recommend opportunities for increased efficiency in CTP's collection, analysis and reporting of public health and healthcare preparedness data

Figure 3: HRA Goal and Objectives

County Health Risk Assessment Toolkit

Subject matter expertise and partner support and input were critical to the development and implementation of West Virginia's HRA. In order to develop the data collection instruments for the county assessments, the CTP convened a Working Group of state and local staff including: representatives from the BPH Office of Environmental Health Services (three), Division of Infectious Disease Epidemiology (one), and Center for Threat Preparedness (two); the Bureau for Behavioral Health and Health Facilities (two); local health departments (five); and local hospitals (two). This group met twice in-person to develop the data collection instruments and also held conference calls in small groups to work on specific sections of the data collection instruments. In addition, multiple additional partners were engaged to participate as reviewers throughout the HRA's development.

The County Health Risk Assessment Toolkit, developed by the HRA Advisory Committee and Working Group was used by local health departments to conduct their county-level HRAs. The Toolkit included data collection instruments (the Workshop Participant Tool and Public Health Narrative) and additional supporting resources to conduct the assessment. The Workshop Participant Tool consisted of four sections: 1) Hazard Identification and Ranking, 2) Impact Discussion and Planning, 3) Community Mitigation Assessment, and 4) Agency Mitigation

Assessment. Separate workshop participant tools were designed for the public health, behavioral health, primary care, and hospital sectors with an additional tool for agencies that did not fall into one of these four sectors. The Public Health Narrative included 10 open-ended questions on local health preparedness to give health departments an opportunity to highlight additional challenges and resources not captured in the Participant Tool.

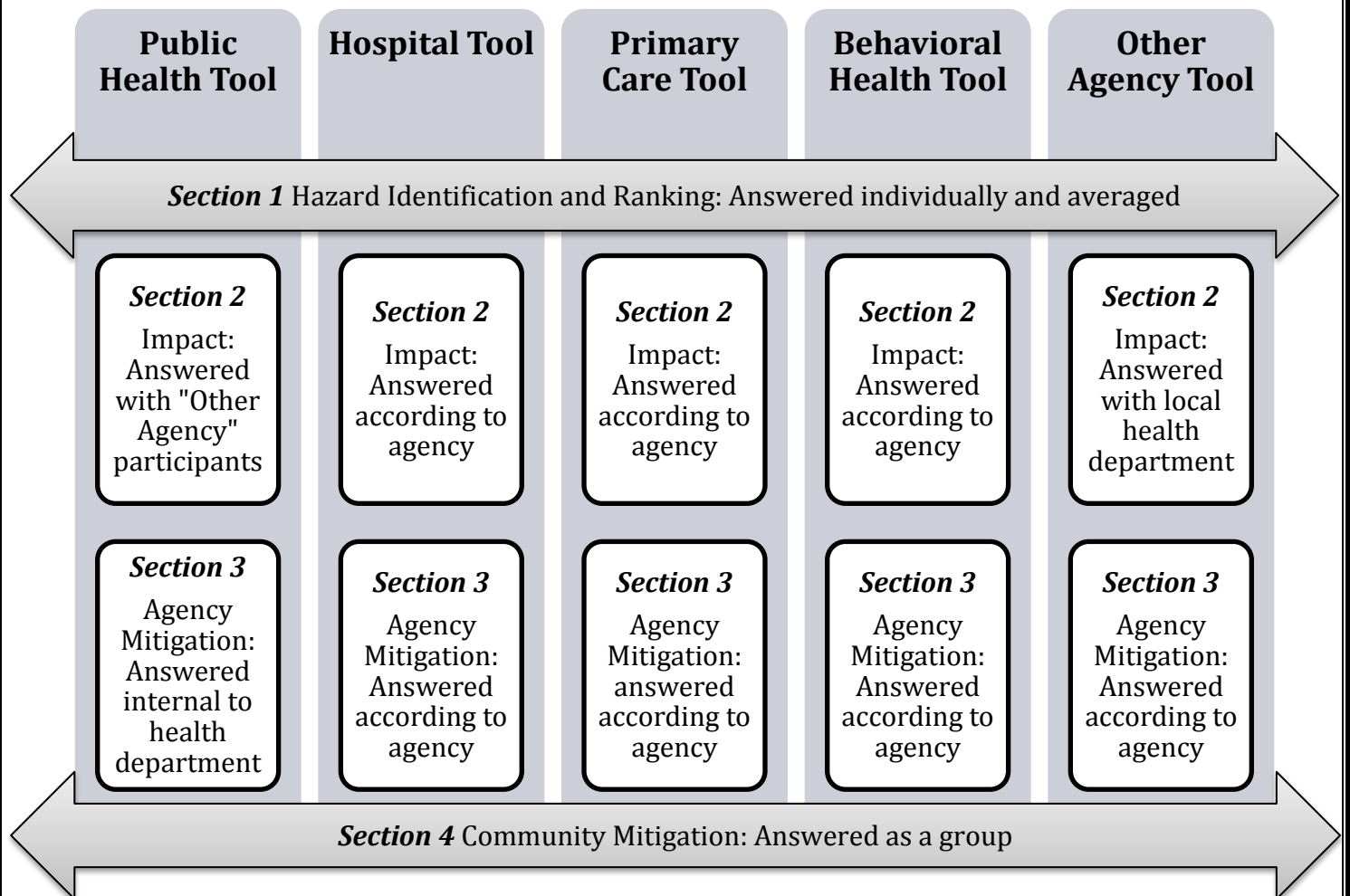


Figure 4: HRA Workshop Participant Tool

Local participants were expected to use the sector-specific tools to rank hazards that could affect public health and health systems in their counties based on probability, impact, and existing mitigation; reflect on the impact that the highest ranked hazard would have on the public's health and health systems; and provide feedback on the ways in which their counties and agencies are working to reduce the impact of hazards on health and health systems. The concept of the Workshop Participant Tool relied heavily on tools developed by the State of Oregon, Kaiser Permanente and UCLA as these tools were the most fully developed when the planning process was initiated. Ideas from the 10 MSA tools were also incorporated as they became available. However, none of the available tools utilized a workshop approach.

The Narrative was developed in part using CDC's Office of Public Health Preparedness and Response (OPHPR) Preparedness Story Activity Template. Questions drawn from Working Group and Advisory Committee members were also included.

After the Working Group had finalized the draft Workshop Participant Tool and Public Health Narrative, the HRA Program Manager circulated the Tool and Narrative to state and local partners. Partners who reviewed the Workshop Participant Tool included the West Virginia State Police, the American Red Cross West Virginia Region, the West Virginia Division of Primary Care, the West Virginia Primary Care Association, the West Virginia Hospital Association, the West Virginia Division of Rural Health and Recruitment, and other state and local staff with preparedness subject matter expertise.

Data Collection Tool Pilot: While a phased pilot of the Workshop Participant Tool with local health departments would have been ideal, the grant deliverable timeline did not allow for a lengthy trial phase. Accessibility of the Tool was seen as the most critical aspect to test and was defined as the ability of the participants to understand and complete the Tool in a limited timeframe. The Working Group had two primary concerns with accessibility: 1) Section 1: Hazard Identification and Ranking of the Tool required some basic math and included multiple definitions and ranking scales and 2) the overall structure of the Tool included multiple sections and directions. Both of these factors were seen as potentially challenging to local participants and facilitators.

In order to test accessibility, the Advisory Committee looked for a group that had little background in public health or emergency management. A sanitarian in the Cabell-Huntington Health Department offered his students in Marshall University's undergraduate class *ISC 247: Public Health and Man* as a test audience. The HRA Project Manager, the CTP Emergency Planner and a partner from the Bureau for Behavioral Health and Health Facilities facilitated the pilot which included a presentation developed to train local facilitators on how to implement the tool; going through the tool section by section; and leading discussion questions to evaluate the sections of the Tool.

The 36 students completed Section 1: Hazard Identification and Ranking in less than 15 minutes, including reading the instructions, scales and definitions and completing the required math. Students rated the Tool 3.8/5 for overall accessibility. Both the feedback collected during discussions and the additional comments from the written evaluation were incorporated into edits of the Tool. Specific edits included revising directions to increase clarity and changing the format of sections of the Tool to make the sections more user-friendly.

Data Reporting Pilot: Three staff in the Division of Local Health piloted the data entry process to compare the paper-based Tool with the entry fields in SurveyMonkey. The purpose of this pilot was twofold: 1) to identify any discrepancies between the paper and the electronic data entry and 2) to time the process so that local health departments would have an estimate of time for completion of data entry. Each staff member was given five (5) participant forms to input into SurveyMonkey and asked to time their data entry and provide feedback. The average time for data entry was 40 minutes. Several discrepancies were identified and corrected.

Facilitator Training: Over a period of 10 days, the HRA Project Manager delivered eight (8) regional facilitator trainings to 99 local health department staff across West Virginia. Using a PowerPoint presentation, the project manager guided facilitators through each step in the HRA workshop including the 4 sections of the Workshop Participant Tool. Each facilitator was given a binder with

the following: a CDRW with supplementary materials to assist with the process (described in *Figure 5*), hard copies of the HRA FAQ, the HRA Workshop Facilitator presentation, the Workshop Participant Tool (including the sector-specific Tools), the Public Health Narrative and the HRA Facilitator Checklist. Knowledge checks and question/answer breaks were incorporated throughout the presentation. Participant evaluations were handed-out and collected at the end of each facilitator training. Facilitators who indicated a two out of five (2/5) or less of comfort level with any section of the Tool were contacted directly to address any additional technical assistance needs. All facilitator questions at each session were collected (46 in total) and questions were answered and disseminated to all facilitators after the final training session. Participants were encouraged to contact the HRA Project Manager with any questions, concerns or to request additional technical assistance materials.

Workshop Guidance: Local health departments were required to invite at least five (5) external partners from preparedness and/or healthcare organizations in their counties to participate in their HRA. The Working Group developed and provided a list of suggested agencies to invite as well as specific roles within those agencies (i.e. hospital preparedness coordinator, medical examiner/county coroner). At a minimum, local health departments were required to invite their emergency manager (s) and representatives from any hospitals, primary care centers and/or behavioral health centers located in their jurisdiction. Template letters of invitation targeted to primary care centers, behavioral health centers, free clinics, and emergency managers were provided to local health facilitators. Each of these letters described sector-specific grant language requiring participation in preparedness processes. The Working Group also supplied a general letter of invitation for other agencies. In order to encourage local participation, the CTP worked with state partners in the Bureau for Behavioral Health and Health Facilities, the Division of Homeland Security and Emergency Management, the West Virginia Hospital Association and the BPH Division of Primary Care to send e-mails of support for the HRA process to their grantees in each county and to encourage grantee involvement.

Local participants were encouraged to bring any plans or data from previous assessments for use in identifying and ranking hazards. In addition, counties with Hazard Vulnerability Analyses (HVAs) were encouraged to refer to their HVA reports during their HRA processes, particularly when determining the probability of a hazard occurring in their county. Health departments were also provided with a list of data sources on hazard probability from national data sources.

While health departments were encouraged to hold workshops to collect data for the county assessment, they were also supplied with guidance on how to collect the data virtually or in one-on-one interviews with partners in their counties. The HRA Project Manager also suggested partnering with neighboring health departments to share facilitators and other staff and discussed the option of conducting a single regional HRA with different round-table discussions for each county.

Initially, local health departments were given six (6) weeks to complete the HRA process, including data entry. However, the timing of the process coincided with other significant deadlines, pre-planned staff vacations of participating agencies, and a federally declared disaster affecting 45/55 counties in West Virginia (the June 29th, 2012 *Derecho*). Thus, the timeline for submission of data was

extended by two (2) weeks. The CTP was closely involved in local level processes and provided ongoing technical assistance. The HRA Project Manager and Working Group developed and disseminated the following materials to support local workshop facilitators:

Pre-Workshop Materials	Workshop Materials	Post-Workshop Materials
Template letters of invitation customized to each of the 3 target sectors as well as a general invitation	Customized workshop participant tools for each of the 4 target sectors and a general participant tool	The Public Health Narrative questions and directions on how to complete and submit the Narrative
A template press release highlighting the HRA process at the local level	A sample confidentiality agreement for participants in the workshop	
An FAQ on the HRA	An Excel worksheet formatted with formulas to average individual responses for hazard ranking	
A list of data sources on hazard probability	An HRA PowerPoint presentation to guide participants through the workshop process	Instructions and links for submitting workshop data into SurveyMonkey
A spreadsheet including the name and contact information for all behavioral health centers, primary care centers and hospitals in the state, by county	A Facilitator PowerPoint presentation to guide facilitators through the steps of data collection and submission	
A list of suggested participants for the HRA workshop	A workshop sign-in sheet to capture participant contact information	
E-mails sent by state emergency management, primary care, behavioral health and hospital leadership to their local grantees to encourage participation	<i>A Participant Guide to the HRA Process</i> explaining the assessment and how to complete it in-person and/or remotely	HRA Workshop Participant Certificate
A workshop planning checklist including actions that facilitators should take prior to, during and after the workshop		

Figure 5: HRA Technical Assistance Materials

Data reporting

While the workshop approach was seen as critical to partnership-building, reducing data error while ensuring minimal time spent on data entry posed a challenge. Worksheets were provided electronically and in paper form to increase flexibility in data collection. SurveyMonkey was identified as the best platform for data reporting because it was used regularly by health departments and was seen as being accessible for local health department reporting and for analysis and tracking at the state level. The Working Group developed detailed guidance on how to enter the data into

SurveyMonkey. The Working Group also added a requirement to submit both the original worksheets (either in hardcopy or scanned and e-mailed) and the data through SurveyMonkey so that the data could be assessed for completeness and validity.

3. Data Analysis

County Reports

Local health departments were required to submit data from their county assessments using SurveyMonkey links provided by the CTP. One link requested summary data from the county assessment including the date, facilitator name and contact, number of participants, hazards prioritized and hazard impacts identified (Sections 1 and 2 of the Workshop Participant Tool). Additional survey links were provided for agency mitigation (Section 3 of the Participant Tool – by sector), community mitigation (Section 4) and the Public Health Narrative. Counties were also asked to submit the hard copies of their completed workshop forms.

The CTP partnered with the Office of Environmental Health Services (OEHS) to develop a database and conduct data analysis. An OEHS database administrator transferred the data from SurveyMonkey into an Access database and then into Excel spreadsheets for each county. The HRA project manager used the Excel reports to populate 55 county reports. The Excel reports were also cross-referenced with the SurveyMonkey data and paper workshop forms to increase data accuracy.

The template for the County Report (in Microsoft Word) was developed by a small group of three staff – the HRA Project Manager, a CDC Public Health Advisor and a behavioral health research analyst. The Report incorporated data from the Workshop Participant Tool and from the Narrative and was divided into four sections, reflecting the four sections of the Tool. Each section of the report included a summary page with the purpose of the section, limitations of the section, and ideas on how to use the data from the report in health preparedness planning at the local level. The sections were described as follows:

- *Section 1: Hazard Identification and Ranking* – The five hazards identified by local participants as posing the greatest risk to the health and health systems in the county
- *Section 2: Hazard Impact* – How the top-ranked hazard would affect the health of the county’s citizens and the county’s health and public health systems services and infrastructure
- *Section 3: Agency Mitigation* – What measures county agencies have in place to mitigate against this hazard
- *Section 4: Community Mitigation* – What measures the county/community has in place to decrease hazard impact including:
 - Outreach to and engagement with vulnerable or at-risk populations
 - Volunteer and donations management

Appendices with definitions of terms and the scales used to rank hazard risk, impact and mitigation were also provided. In addition, sections of the report included applicable responses from the Public Health Narrative.

In addition to a report of their assessment results, local health departments received the Resource and Training Guide for Hazard Planning and Mitigation. This guide offered options for consideration on how to interpret assessment results and how to use the results in preparedness planning, exercise

development, and partnership-building. The guide also provided counties with hazard-specific and multi-hazard training resources, planning and exercise templates, and guidance and sector-specific preparedness resources for health departments to share with partners.

The county report was also accompanied by county data in an Excel workbook as well as a checklist for facilitating a follow-up meeting with local partners. The checklist included talking points and referenced the Training Guide and sections of the County Report. Local health departments were encouraged to hold follow-up meetings with partners to discuss the results and to incorporate them into preparedness planning.

State-Level Report

The state report (this document) summarizes themes from aggregate public health sector and community mitigation data using descriptive analysis conducted primarily through SurveyMonkey and Excel. While there are only 49 local health departments, data was collected and is reported by county (denominator 55) in order to capture unique jurisdictional characteristics. Access and GIS were used to identify and map (see Attachments 5-10) the highest ranked statewide. No formal qualitative analysis software was utilized for analysis of the qualitative data from the public health narratives; instead, themes were identified by a single reviewer through color-coding and scanning responses. State-level, sector-specific partner reports were developed and disseminated to the West Virginia Hospital Association, the West Virginia Primary Care Association, the Division of Rural Health and Recruitment, the Division of Primary Care and the Bureau for Behavioral Health. These reports included participating agencies and aggregate results for each sector.

The mapping component of the HRA was developed in partnership with both the Bureau for Public Health, Office of Environmental Health Services (OEHS) and the University of North Carolina (UNC) Chapel Hill, North Carolina Preparedness and Emergency Response Research Center (NCPERRC). OEHS staff mapped the highest ranked hazards identified statewide through the local assessments. These maps were developed for both the state as a whole and for each public health preparedness region. To meet the requirement to “map locations of at-risk populations” the CTP used an existing partnership with the North Carolina PERRC. The PERRC had developed an application for North Carolina, which mapped at-risk populations using the domains of socioeconomic status, household composition/disability, minority status and language, and housing and transportation. This application was revised for use in West Virginia and will be incorporated by the OEHS into the broader data portal being developed for West Virginia’s health preparedness data.

4. Workshop Participation

Counties used a variety of methods to complete their data collection including in-person interviews and/or workshops (including one joint workshop), phone discussions, e-mail, fax and mail. Of the 55 counties, 32 completed the assessment by the initial deadline of June 29th and an additional 13 by the extended deadline of July 13th. The remaining 10 counties completed their assessments between July 16th and August 30th. Of the two regional health departments, Mid-Ohio Valley (six counties) did not hold any workshops while Wetzel-Tyler (two counties) held a joint workshop. Thus, of the 49 local health departments, 33 or 67% held a workshop. The remaining agencies completed their HRAs using a mix of e-mail, one-on-one discussions and mail.

Local health departments were required to invite at least five (5) partner agencies to participate in the HRA process, including hospitals, emergency management, behavioral health and primary care. Across the state, more than 450 people participated in the assessments with a range of 1-30 participants per county. An average of eight (8) people participated per county (median seven (7)), five-and-a-half (5.5) of which, on average, were from partner agencies (median five (5)). Four (4) counties had no external partners participate while an additional 23 had fewer than five (5) external partners participate.

By sector, 35/42 (83%) of counties reported at least one hospital participating in their process.⁶ Emergency management and 911 centers also had significant participation (43/55 or 78%). One or more healthcare organizations (rehabilitation, long-term care and primary care centers) participated in 29 out of 55 or 53% of assessments and behavioral health centers participated in 27 out of 55 or 49% of assessments.

Because counties used a variety of methods to complete their data collection including in-person interviews and/or workshops, phone discussions, e-mail, fax and mail, the extent to which each individual participated in the local process varied by county. Health departments were required to submit workshop sign-in sheets. However, several counties both held a workshop and conducted follow-up data collection either from attendees or from partners who were unable to attend the workshops. Thus, sign-in sheets did not reflect the full extent of participation. Of the 55 counties, 62% (34 counties) held an assessment workshop. To determine participation more accurately, the project manager followed-up by e-mail with the counties that conducted a multi-phased process to identify participants that may not have signed the sign-in sheet. Participation was defined broadly as *partners and local health department staff who contributed to any part of the county assessment*.

⁶ Only 42 of West Virginia's counties have a hospital.

5. Results: Hazard Identification, Ranking and Impact

Hazard Identification and Ranking

The Working Group relied on the Kaiser Permanente Hazard Vulnerability Analysis to create Section 1: Hazard Identification and Ranking. The Kaiser HVA was a worksheet including nine columns: a column listing different types of hazards; a column to rank hazard probability for each hazard; three columns to rank different types of impact; three columns to rank different types of mitigation; and one column to generate results from the ranking. The worksheet columns were designed to follow Kaiser's equation for risk (*Figure 6*). The worksheet formulated a risk for each hazard and, in a second step, ranked the hazards according to that risk.

While the Working Group used the general form of Kaiser's worksheet, including the formula for risk, the Group renamed and defined the different columns for impact and mitigation. The HRA hazard impact column headings were renamed as human impact, public health and medical infrastructure impact, and public health and medical services impact. The HRA hazard mitigation column headings were renamed as internal mitigation, external mitigation and community mitigation. Thus, this first section of the Participant Tool was a self-contained risk assessment and served as both an accessible summary to identify hazard risk and as the basis for more detailed analysis of hazard impact and mitigation using the other steps in the Tool.

The HRA worksheet included detailed instructions, a list of hazards, a list of hazard definitions, definitions for each column of impact and mitigation, and definitions for the 0-4 ranking scale that was used to rank each hazard. Hazards included in the worksheet were identified and defined by one of our subcommittees and were drawn from multiple data sources including the Houston, TX MSA tool. Several hazards were excluded because of either the community-based nature of the Tool (i.e. hazards that were specific to infrastructure such as generator failure) or because of the geography of West Virginia (i.e. tsunami). There was also an option for participants to fill-in up to two additional hazards not identified in the list of hazards provided.

The worksheet was designed to be used in one of two ways: 1) filled-out by each participant and averaged for the group or 2) filled-out as a group. The HRA Working Group recommended using the group average approach for two reasons: 1) there was some concern that a single workshop participant might monopolize the discussion and 2) a discussion-based approach would limit the time available for completing the rest of the assessment. However, counties were encouraged to discuss any additional hazards prior to starting the worksheet and to discuss the results of the spreadsheet throughout the workshop.

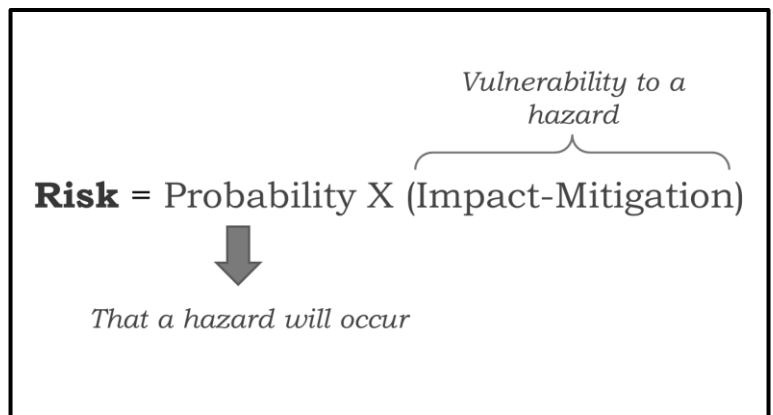


Figure 6: Definition of Risk

The hazards identified as having the highest risk to public health and health systems across the state were determined by isolating the hazards that appeared most frequently in the list of top five (5) hazards for each county. These hazards were:

Table 1: Hazards with the Highest Risk to Public Health and Health Systems

Hazard	Number of Counties Listing Hazard in Top 5	
	%	#
Flooding	56%	31
Communications/Information Technology Failure	49%	27
Severe Winter Storm	42%	23
Dam Failure	36%	20
Tornado/Windstorm	35%	19
Power Failure	35%	19

These hazards correspond with the hazards identified in the latest version of [West Virginia’s State Emergency Operations Plan](#), specifically natural disasters and dam failures.

Hazard Impact

Due to concerns regarding feasibility and time constraints for workshop participants, the impact section of the Workshop Participant Tool was designed to examine detailed impacts related to the top hazard only. Impact indicators were drawn from several tools including tools developed by the states of Oregon and Michigan and the University of California, Los Angeles. Indicators were different according to the different sector Workshop Participant Tools (Hospital, Public Health, etc.) and were organized according to the three impact areas used in Section 1 – Human Impact, Infrastructure Impact and Services Impact. Definitions and ranking scales were provided for all indicators.

To fill-out this section of the Workshop Participant Tool, participants were asked to break into groups according to agency/sector. To the extent possible, the Working Group wanted the indicators to be answered by subject matter experts. However, Working Group members also agreed that a baseline number of impact indicators for the top hazard had to be completed. To manage this tension, the public health indicators were developed as the baseline with additional indicators added based on the participation of health system partners at the local level. Participants from primary care, hospital and behavioral health sectors were asked to complete their indicator worksheets in conjunction with any other representatives from their agency. If these sectors were not represented, the impact for that sector would not be completed. For example, participating hospitals were asked about the impact on ER visits to their facilities but this indicator was not answered if a hospital was not present. If more than one hospital was represented, this indicator was answered separately, according to agency.

Public health and “other” non-health care agencies (emergency management, law enforcement, etc.) were asked to answer the impact section for public health as a group. Indicators for public health human impact included: water quality, food security, infectious disease, fatalities, chronic disease, mass care, sheltering, family assistance, community resources and at-risk individuals. Indicators for

infrastructure impact included: public health facilities and public health communications. Indicators for impact to services included: public health services, public health personnel, public health surge, time to resume essential services, pharmacy/dispensing, and emergency transport. These indicators were chosen from the extensive lists included in the JRA tools identified in CTP's literature review and were chosen after significant discussion within the Working Group and with other subject matter experts.

The Working Group was concerned with providing clear and consistent guidance to participants. All indicators were defined in detail, with attention paid to rankings that included percentages to ensure that ranking categories did not overlap. However, participants were instructed to record the higher number for impact if they were unsure of the impact of a particular indicator. For example, if they were choosing between 3 = *Sheltering and mass care exceed capacity of local authority; must call on surrounding counties for aid* and 4 = *Sheltering and mass care needs overwhelm county, requiring significant state and/or federal resources*, participants were instructed to record "4".

Because these impact indicators were hazard and county-specific, they are not discussed in the body of this report. However, local health departments and their participating partners received their individual results in their county reports, including options for consideration on how to utilize the impact scores and measures to improve preparedness and target mitigation strategies.

6. Results: Public Health Mitigation

West Virginia's 49 local health departments serve 55 counties. The public health agency mitigation section of the Workshop Participant Tool asked local health departments to consider each county in their jurisdiction. This is a limitation to data validity as some questions are targeted to the agency while others ask about the specific community (in this case, county) that the agency serves. However, in the data analysis, answers for the health departments serving more than one county were compared and found to be different, depending on the county served. Thus, to interpret these results, it should be assumed that while an agency may serve more than one county, each county's level of public health mitigation was considered separately.

Public health plans

The rankings used to assess planning required some awareness of and familiarity with agency plans. The validity of this ranking was thus limited by the awareness of agency representatives contributing to the process. Each public health representative was asked to rank their agency's preparedness plans including: Crisis and Emergency Risk Communications Plan (CERC), Continuity of Operations Plan (COOP), Smallpox Plan, Pandemic Influenza Plan, Strategic National Stockpile (SNS) Plan, All-Hazards Plan.⁷

Plans should be reviewed and updated annually and exercised according to the Homeland Security Exercise and Evaluation Program (HSEEP) as part of a Multi-Year Training and Exercise Plan (MYTEP). However, plans are difficult to assess in West Virginia because a) of the lack of standardized templates or required planning approaches,⁸ b) the varied structure of response plans (regional, county, municipal and county, etc.), c) a given plan may include components of another plan (i.e. SNS plans contain CERC guidance for SNS scenarios) and d) planning priorities from the federal level continue to evolve, including guidance on the extent to which agencies are advised to maintain plans for specific events (i.e. Smallpox, Pandemic Influenza).

Of the five local health department plans assessed, the most used plan was the Strategic National Stockpile Plan with 76% (42) of counties reporting exercising the plan and/or using it in a real event in last 5 years. Local health departments are required to conduct a full-scale SNS exercise once in the five-year grant period. According to the HSEEP process, this would include building progressive exercises over time and culminating with the full-scale exercise. Thus, it is not surprising that the SNS Plan would be the most frequently used plan.

Because the All-Hazards and Continuity of Operations Plans are an agency's core response plans, it makes sense that these plans would also be frequently used in real events and exercises in the last five (5) years. The high percentage of health departments reporting using their Pandemic Influenza

⁷ Local health departments were also asked whether or not they had an annex in their All-Hazards Plan specific to the top hazard identified by their county HRA process. The results for this question are not included in this report. In aggregate, the answers would be misleading, as health departments structure their plans differently – not all have an annex structure.

⁸ FEMA's [Comprehensive Preparedness Guide 101 Version 2.0](#) describes the different planning approaches a jurisdiction may follow. Plans may be hazard-specific, have hazards included as annexes, be arranged by emergency support functions, or any combination of these options.

Plans most likely reflects the H1N1 pandemic response, which had occurred less than 5 years prior to this assessment.

The Smallpox Plan was the least used local health department plan with only 9% (5) of counties reporting exercising the plan and/or using it in a real event in the last 5 years. In addition, a significant percent (24% or 13 counties) reported not having a Smallpox Plan. Following the terrorist events of September 11th, 2011, Smallpox was initially a major planning concern. However, emphasis on Smallpox planning as a grant requirement has decreased over the years, which may be reflected in this lower percentage. In addition, there is ongoing tension in federal guidance between building plans for all-hazards scenarios versus plans for specific hazards. Thus, some health departments may have incorporated Smallpox planning into All-Hazards Plans. This may also be true of CERC. While 9% (five (5)) counties also reported not having a Crisis and Emergency Risk Communications Plan, this may be due to the fact that many All-Hazards Plans and Strategic National Stockpile Plans include crisis and emergency risk communications either as an annex or in the body of the plan.

Table 2: Local Public Health Planning

Plan Ranking	All Hazards Plan		Strategic National Stockpile (SNS) Plan		Pandemic Influenza Plan		Smallpox Plan		Continuity of Operations (COOP) Plan		Crisis and Emergency Risk Communications (CERC) Plan	
	%	#	%	#	%	#	%	#	%	#	%	#
0: My agency has no plan.	0	0	0	0	2%	1	24%	13	0	0	9%	5
1: My agency has a written plan.	11%	6	11%	6	18%	10	47%	26	7%	4	13%	7
2: My agency has a written plan, and it has been reviewed in the past 12 months.	29%	16	13%	7	15%	8	20%	11	20%	11	20%	11
3: My agency has a written plan which has been reviewed in the past 12 months and exercised in the last 5 years.	18%	10	38%	21	15%	8	7%	4	45%	25	29%	16
4: My agency has a written plan which has been reviewed in the past 12 months	42%	23	38%	21	51%	28	2%	1	27%	15	29%	16

and used in a real event in the last 5 years.												
Total	100% (55) <i>(Note: Percentages rounded to the nearest whole percentage point. Due to rounding, totaled percentages do not always equal 100%).</i>											

Volunteer Engagement

Volunteers are critical to many responses and to community and agency preparedness. All local health departments are required to develop and maintain volunteer teams and to utilize the West Virginia REDI system⁹ to credential health and medical volunteers. These teams can provide surge capacity during events for local health departments as well as for their partner agencies.

Rate the volunteer groups in your community, as a whole, which your public health agency can rely on. Groups may include, but are not limited to, the American Red Cross, Salvation Army, MRC, CERT, Volunteer Organizations Active in Disasters (VOAD), faith-based groups, Boy Scouts/Girl Scouts/4-H, etc.

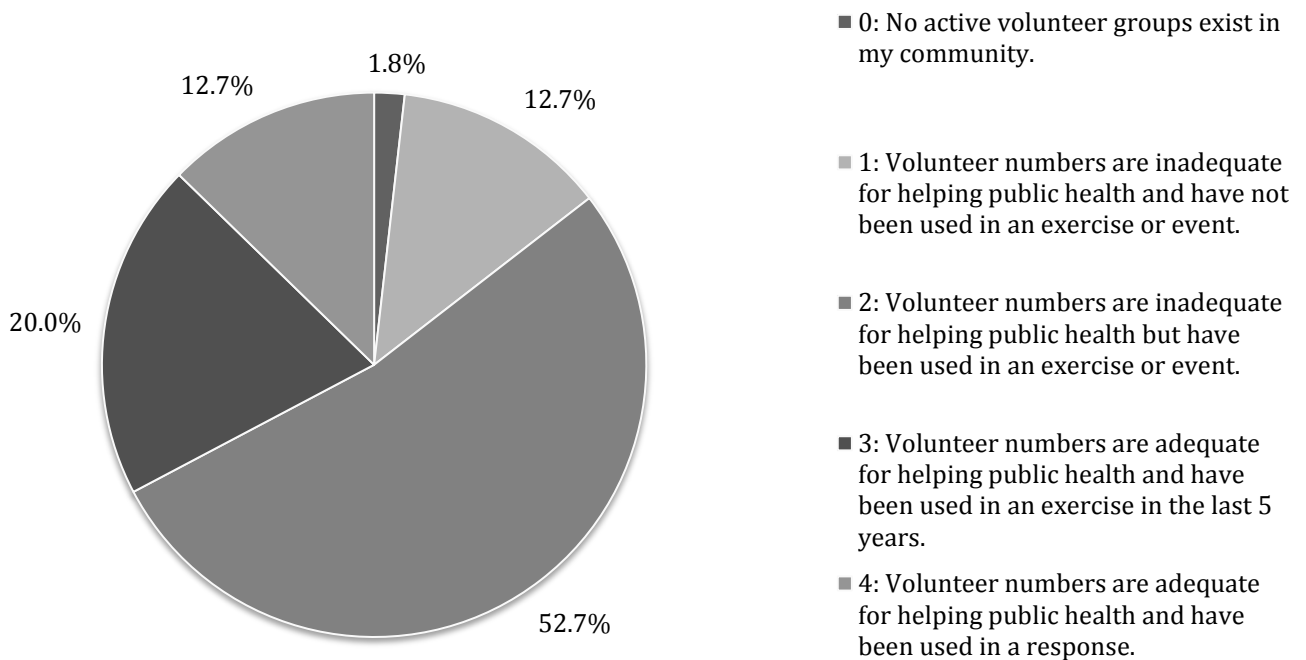


Figure 7: Local Public Health Volunteer Capacity

More than 50% (29) of counties reported that volunteer numbers were inadequate for helping public health but had been used in an exercise or real event. An additional 12.7% (7) of counties reported that there were inadequate numbers of volunteers to support public health and that these volunteers had not been used in an exercise or event. However, more than 30% of counties reported adequate volunteer numbers and engagement of volunteers in preparedness activities in the last 5 years.

⁹ West Virginia REDI is a web-based system for credentialing and alerting volunteers in case of an emergency. This system is West Virginia’s Emergency System for Advance Registration of Volunteer Health Providers (ESAR-VHP), a federal requirement for all states.

Incident Command System (ICS) training

Every agency receiving federal funds that is engaged in preparedness and response is required to utilize the National Incident Management System (NIMS). As a key component of this requirement, staff should be trained in the Incident Command System, a tool used for the organization and coordination of single or multi-agency response to an incident. The level of staff training required depends on staff responsibility in an event but all local health department staff should complete ICS 100 and 700 at a minimum.

Rate the level of Incident Command System (ICS) Training your public health staff have completed

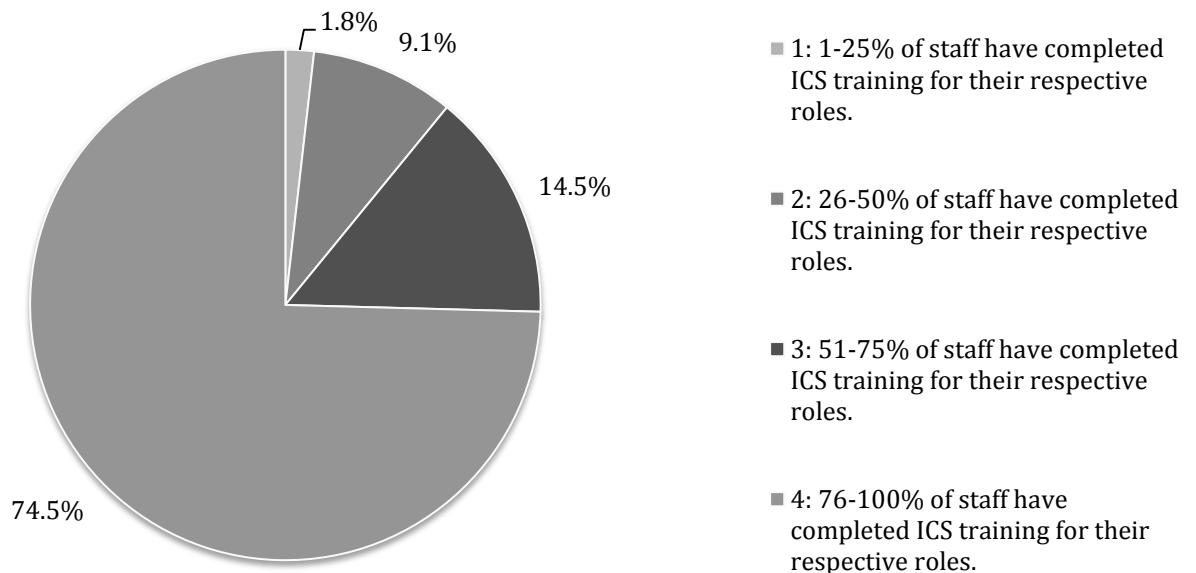


Figure 8: Local Public Health ICS Training

Overall, local health department staff members reported high levels of training in ICS. All counties reported that at least some of their local health department staff had completed the ICS training required to support their role in a response. In addition, nearly 75% (41) reported that 76-100% of their local health staff had completed the required ICS training. While staff turnover may be responsible for lower levels of training among the remaining 14 counties, ICS training should be part of new employee orientation programs for any local health staff that have been identified as having a role in response activities.

Public health activities

Preparedness involves not only practice and exercises but real event response, hands-on application of equipment, and staff expertise. Each local health department was asked a series of questions to determine a general profile of preparedness and capacity for response.

Table 3: Local Public Health Activities

Question	Yes		Examples
	%	#	
<i>In the past 5 years has your health department...</i>			
Required additional staffing for an event?	91%	50	H1N1, flooding, outbreak clinics, sheltering operations, full-scale exercises, 2012 <i>Derecho</i> , planned community events
Implemented Memorandums of Understanding (MOUs) with partners?	85%	47	Regional public health MOUs, MOUs with closed POD partners, H1N1, 2012 <i>Derecho</i> , for redundant communications
Been a partner in shelter set-up and/or management?	60%	33	2012 <i>Derecho</i> , flooding, winter storms, tornado 2012, hurricane
Conducted an emergency notification drill for staff?	98%	54	Quarterly call-down drills, notifications for real weather events, notifications for volunteers
Communicated emergency information to the public?	96%	53	Health Alert Notices, H1N1 education, disaster public information (boil water notices, etc.)
Utilized volunteers for a real event?	84%	46	H1N1, planned events, sheltering, cooling stations
Used radios in a drill, exercise or event?	87%	48	Quarterly drills, exercises, H1N1, power outages related to 2012 <i>Derecho</i>
Shared your MOUs with relevant partners? (i.e. to assess overlap of services)	51%	28	H1N1, closed PODs, 2012 <i>Derecho</i> , monthly meetings with partners
<i>Does your health department have...</i>			
A public information officer?	98%	54	

Overall, local health departments reported significant preparedness and response activity across West Virginia’s 55 counties. While Mass Care is one of the 15 Public Health Preparedness Capabilities, local health departments are not required by the CTP to assist with sheltering activities during a response. Instead, each county develops their own plan, including roles and responsibilities. However, 33/55 local health representatives reported their agencies involvement in sheltering activities, suggesting significant local health involvement across West Virginia.

Sharing Memorandums of Understanding (MOUs) with partners was a challenge for local health departments. Only 28/55 local health representatives reported that their agencies had shared/discussed Memorandums of Understanding (MOUs) with county partners. While sharing MOUs is challenging due to legal constraints, revisions, and other considerations, it is critical to share this information in planning meetings to ensure a coordinated and effective response.

Community partnerships

Partnerships are a critical component of effective and efficient planning and response activities, allowing for shared situational awareness and resources and reducing duplication of effort. Local

health departments were instructed to rate their partnerships with other agencies in their counties. Rankings were as follows:

0: My agency does not meet or communicate with this group.

1: My agency has met or talked with this group.

2: My agency has a written understanding with this group, which has been reviewed in the past 12 months.

3: My agency has a written understanding which has been reviewed in the past 12 months and exercised in the last 5 years.

4: My agency has a written understanding which has been reviewed in the past 12 months and activated in a real event in the last 5 years.

Table 4: Local Public Health Partnerships

Partner ¹⁰	0 Ranking		1 Ranking		2-4 Ranking		Total
	%	#	%	#	%	#	
County/City Solid Waste Authority	35%	19	47%	26	18%	10	55 (100%) <i>(Note: Percentages rounded to the nearest whole percentage point. Due to rounding, totaled percentages do not always equal 100%).</i>
Local Funeral Homes/Mortuary Services	31%	17	47%	26	22%	12	
Local Public Service Districts	24%	13	49%	27	27%	15	
Local Primary Care Centers/Health Centers	13%	7	42%	23	45%	25	
Local Pharmacies	13%	7	37%	20	50%	28	
Local Hospitals	13%	7	33%	18	54%	30	
Local long-term care facilities	9%	5	44%	24	47%	26	
Local Fire Department	7%	4	36%	20	57%	31	
American Red Cross, WV Region	5%	3	62%	34	33%	18	
Local Behavioral Health Centers	5%	3	58%	32	37%	20	
Local Emergency Medical Services (EMS)	5%	3	33%	18	62%	34	
Local Schools/Colleges/Universities	4%	2	36%	20	60%	33	
Local Emergency Planning Committee (LEPC)	4%	2	33%	18	63%	35	
City/County/State Law Enforcement	2%	1	35%	19	63%	35	
Regional Environmental Health	2%	1	38%	21	60%	34	
Local Emergency Management Authority/Office of Emergency Services	2%	1	27%	15	71%	39	
Regional Epidemiologist	0	0	24%	13	76%	42	

Partnerships are ranked from lowest to highest according to the “zero” ranking, indicating that there is no established relationship between the local health department and the indicated sector.

¹⁰ Health departments had the option to list and rate additional partnerships. These included the West Virginia Department of Transportation, federal agencies including the Internal Revenue Service and the US Coast Guard, and the West Virginia Army National Guard.

Generally, local health departments had strong partnerships with regional public health staff, emergency management, law enforcement, Local Emergency Planning Committees, fire departments, schools, pharmacies, emergency medical services and hospitals. Partnerships were weaker with solid waste authorities, public service districts and funeral homes.

The solid waste authority is a critical partner in debris management and prevention of disease during disasters. Disposal of spoiled food during the 2012 *Derecho* windstorm was a significant factor in response and prevention efforts. Thus, while MOUs between health departments and solid waste authorities may not be necessary, a relationship for situational awareness, shared planning and emergency communications to the public would be beneficial.

Local funeral homes and mortuary services are clear partners for the development of Public Health Preparedness Capability 5: Fatality Management. The first function under this capability is to “determine the role of public health in fatality management.” While the majority of activity for this capability is conducted at the state level in West Virginia, local mass fatality incidents such as the Upper Big Branch mining disaster in 2010 emphasize the need for coordination at the local level between public health and funeral homes and mortuary services. In addition, the many high profile mass gatherings that take place in West Virginia on an annual basis must include mass fatality planning.

Public service districts are significant partners in the public health system and regional environmental engineers, as well as the state Office of Environmental Health Services, work closely with these districts on capacity-building, water quality monitoring and certification and training. Local health departments must work closely with public service districts on boil water notices in case of water system failure and water quality is clearly a significant concern during disasters for public health sanitation.

7. Results: Community Mitigation

For community mitigation, county plans, outreach and communication to vulnerable populations, and deployment of resources in a response were identified by the Working Group and Advisory Committee as areas contributing to preparedness and community resiliency. The purpose of including the Community Mitigation Assessment was to support a whole community view of preparedness capacity including sharing resources, identifying responsibilities under different county planning annexes and increasing situational awareness among partners. Workshop participants were expected to discuss and provide answers to this worksheet as a group. This section also provided evidence of community involvement in determining areas for hazard mitigation.

County preparedness planning

Counties were asked to indicate the level of their planning in the following areas: pet sheltering, large animal sheltering, donations management, volunteer management, and fatality management. These planning areas were included as they had been discussed as potential gaps at local and state meetings and/or are promoted by the public health preparedness capabilities. The purpose of including these planning areas in the Participant Tool was to a) spur discussion at the local level about increasing planning levels in these areas and b) provide data at the state level to address gaps through training and exercises. In addition to the 0-4 ranking scale, an “other” option was included. This option was included as there was concern in the Working Group that if emergency management were not present, county planning levels could not be accurately assessed.

Rankings were as follows:

Other: Participants are not aware of this plan

0: My county has no plan

1: My county has a written plan

2: My county has a written plan, and it has been reviewed in the past 12 months

3: My county has a written plan which has been reviewed in the past 12 months and exercised in the last 5 years

4: My county has a written plan which has been reviewed in the past 12 months and used in a real event in the last 5 years

Table 5: County Plans

Plan or Annex to Plan	Other		0 Ranking		1 Ranking		2 Raking		3-4 Ranking		Total
	%	#	%	#	%	#	%	#	%	#	
<i>Fatality management</i>	13%	7	18%	10	24%	13	24%	13	22%	12	<i>(Note: Percentages rounded to the nearest whole percentage point. Due to rounding, totaled percentages do not always equal 100%).</i>
<i>Volunteer management</i>	10%	5	15%	8	31%	17	16%	9	29%	16	
<i>Donations management</i>	20%	11	27%	15	24%	13	22%	12	7%	4	
<i>Large animal sheltering</i>	16%	9	33%	18	22%	12	16%	9	13%	7	
<i>Pet sheltering</i>	5%	3	22%	12	27%	15	29%	16	16%	9	
55 (100%)											

All of the plans and annexes assessed had substantial gaps with 15-33% of counties reporting that they did not have at least one of the five plans in place. The most used plans were Fatality

Management (46%), Pet Sheltering (45%) and Volunteer Management (45%). Writing, reviewing and exercising plans is important. However, communication of the plans to stakeholders is also critical. Eleven counties (20%) reported being unaware of whether or not their county had a plan to manage donations during an event while nine (9) counties (16%) reported being unaware of whether or not their county had a plan for sheltering large animals.

Exercises and Coalitions

By encouraging diversity in county preparedness planning and exercising, responses to events should become more effective and efficient. Counties were asked whether they had involved the following groups in coalitions and/or exercises in the past five (5) years (yes or no/year): older adults, children, persons with disabilities, persons with chronic conditions, persons with limited English, ethnic minorities, incarcerated persons, persons with behavioral health needs, transient populations (i.e. migrant workers, temporary workers, university students, homeless), the private sector, and faith communities. These groups were included either because they were considered to have an access or functional need (i.e. incarcerated) or because they represented a non-traditional but critical partner in preparedness planning (i.e. the private sector). A blank row was also provided in the worksheet so that local health departments could fill-in additional populations they may have involved in coalitions and exercises.

Table 6: County Coalitions and Exercise Partnerships

Population ¹¹	Coalition included this population in the past 5 years		Exercise included this population in the past 5 years	
	%	#	%	#
Older adults	69%	38	60%	33
Children	65%	36	65%	36
Persons with disabilities	62%	34	53%	29
Persons with chronic conditions	53%	29	45%	25
Persons with limited English proficiency	11%	6	18%	10
Ethnic minorities	7%	4	15%	8
Incarcerated persons	31%	17	24%	13
Persons with behavioral health needs	58%	32	36%	20
Transient populations	44%	24	27%	15
The private sector	64%	35	60%	33
Faith communities	69%	38	47%	26

The term “coalition” was not defined. Thus, counties answered the question on coalition participation according to different definitions. Answers were heavily dependent upon agency representation and participation and it is highly unlikely that this assessment captured all active coalitions across the

¹¹ In addition to the populations included in the question, 13 counties listed additional coalition partners and 11 listed additional exercise partners.

state. Because the question required a yes/no answer, no incorporated both “unknown” and “not applicable”.

Overall, counties reported good levels of engagement with a variety of populations in their jurisdictions. A majority of counties reported involving older adults, children, persons with disabilities, persons with chronic conditions, persons with behavioral health needs, the private sector and faith communities in a coalition. However, fewer counties had involved these partners in preparedness exercises. Federal guidance increasingly emphasizes the importance of including individuals with access and functional needs in exercise planning and implementation. The Federal Emergency Management Agency’s Whole Community approach to preparedness also highlights the utility of engaging non-governmental partners in preparedness exercises.

While low levels of engagement were reported with persons with limited English proficiency, ethnic minorities and incarcerated persons, the validity of these results is limited by the distribution of these populations across the state. Of West Virginia’s 55 counties, only 23 have a correctional facility located in their county and only a small number of counties have significant ethnic diversity.¹²

Additional Planning and Response Capabilities

Participants were asked whether, in the last five (5) years, their county had opened a family assistance center and whether their county had opened a shelter. These questions were included to identify the extent to which counties had experienced mass casualty/mass fatality incidents and the extent to which counties had been involved in mass care activities. Participants were also asked specific questions concerning local responses and whether they have developed a system to pre-identify at-risk individuals. “Family assistance center” was defined in the impact section of the Tool: *Family assistance typically involves a range of services provided by local, state, and federal agencies as well as nonprofits and private organizations.* Neither “shelter” nor “at-risk individuals/special populations registry” were defined at any point in the tool. Thus, some counties may have defined these terms differently. “Shelter” may have included day shelters as well as overnight sheltering. The registry may have included both electronic and paper-based systems. “Community assistance center” may also have been defined as a location to support families in identification of loved ones during mass casualty events.

¹² According to the US Census Bureau, 94% of West Virginian’s identified themselves as “white alone” in 2012. Accessed from <http://quickfacts.census.gov/qfd/states/54000.html> on October 25, 2013 at 10:02am.

Table 7: Additional County Planning and Response Capabilities

Indicator	Yes		Types of events
	%	#	
In the past 5 years, has your county opened a shelter?	89%	49	Blizzard, flood, power outage, extreme heat, fire, ice storm, natural gas outage, ice storm
In the past 5 years, has your county opened a family assistance center?	45%	25	Windstorm, winter storm, flooding, mining disaster, power outage, fire
Does your county have an at-risk individuals (special populations) registry?	42%	23	Not applicable

Mass care is clearly a capability that has been used regularly, with 49/55 counties reporting setting-up a shelter in the past five years. While more than half of counties reported opening a family assistance center in the past 5 years, it is likely that this question was answered according to a broad definition (i.e. connecting families affected by all types of hazard events with resources) rather than the more specific definition of a center for reunification, counseling and identification of human remains. Identifying a methodology to alert and engage individuals with access and functional needs in preparedness and response remains challenging. Counties were asked to report on one method, a special populations’ registry, and 23/55 reported operating this type of registry.

Many counties listed additional factors that enhanced their ability to mitigate hazard impacts. Partnership was the most commonly listed asset. Other assets listed included:

- Stockpiles of supplies for sheltering, decontamination, and mass casualty incidents
- Stores of water, power supplies, and gas for emergency vehicles
- Response teams including: HAZMAT, Swift Water Rescue, Critical Incident Stress Management (CISM), Regional Response Teams (RRT), Community Emergency Response Teams (CERT), Medical Reserve Corps (MRC) teams, mitigation teams, and amateur radio communications teams
- Infrastructure for sheltering, mass dispensing, alternate care and other event needs
- Public information and education prior to events
- Public warning systems and back-up communications systems
- Mobile kitchens and mobile command centers
- Partnerships with private and faith-based organizations to provide supplies and staffing
- Mutual Aid Agreements with surrounding counties and states
- Flood plain ordinances and buy-out programs

8. Results: Public Health Narrative

Using a “story template” developed by CDC’s Office of Public Health Preparedness and Response and guidance from the Advisory Committee, the Working Group developed a narrative for local health departments to answer as a supplement to their workshop results. The Narrative included the following topic areas:

Table 8: Public Health Narrative Overview

Question Topic	Justification
An opportunity to explain impact and mitigation scores	To capture county-specific vulnerabilities and strengths
An opportunity to describe local best practices	To share with local health departments across the state
An opportunity to capture training needs	To provide data for Multi-Year Training and Exercise Plans
Public health responsibilities related to prioritized hazards	To provide local jurisdictions with data to discuss roles and responsibilities in hazard response <i>and</i> to provide CTP with insight into the extent to which the PHEP capabilities resonate with local health departments.
Emergency management versus public health roles in preparedness in each county	To provide local jurisdictions with data to discuss roles and responsibilities for preparedness activities <i>and</i> to provide CTP with insight into the extent to which the PHEP capabilities resonate with local health departments.
Use of PHEP funds and consequences of reduced funding for public health preparedness in each county	To provide local jurisdictions with talking points on the value of their preparedness programs and to provide CTP with qualitative data on the return on investment of PHEP dollars.

Public health emergency planning

What factors limit your ability to mitigate the hazards you prioritized (i.e. staffing, funding)?

The most significant factors limiting local health departments’ ability to mitigate prioritized hazards were staffing (41) and funding (38). Staffing included lack of trained volunteers for response. Funding included resources and supplies. Health departments also reported lack of control over the hazard (i.e. lack of control over an active shooter situation), rural and difficult terrain, lack of training and/or infrastructure, and lack of buy-in from community partners as limiting factors.

An example from a local health department response to this question:

“Staffing and funding. Our health department covers a large geographic, rural area. We currently have 6 Full Time Equivalent (FTEs). Funding also impacts the ability to purchase supplies and equipment to support efforts. Technology changes rapidly and equipment becomes outdated quickly.”

What is unique to your county that complicates your preparedness planning (for example, some counties may host designated federal COOP sites)?

Most of the factors identified by counties as complicating factors related to the demographics and terrain of West Virginia. Lack of adequate staffing (11) and lack of participation by critical partners (13) were both highlighted as issues. Staffing of key response positions by volunteers, while valuable,

was also seen as a complicating factor as many volunteers staffed multiple positions in addition to full-time employment. Lack of participation by critical partners was most often linked to large private infrastructure or federal infrastructure. Demographic factors included high numbers of visitors to specific events or areas, the large number of commuters to certain areas, wide dispersal of citizens in remote areas, an aging population and poverty. Infrastructure factors included lack of viable transportation or communication systems during responses due to terrain; lack of resources to reach remote areas; lack of critical health infrastructure (hospital and/or behavioral health services); and hazard-specific concerns such as chemical plants, gas wells, dams, chemical transports on waterways, roads and trains, and critical infrastructure that could be targeted by terrorism. Coordination of services and responsibilities with border-states was also listed as a complicating factor.

An example from a local health department response to this question:

"Small county, few resources. Most people wear numerous hats. We have no interstate system nearby and are often cut off from the rest of the world during weather emergencies. Thus our communications through internet/phone are often down and the roads can be impassible."

What steps have you taken to collaborate with local partners to mitigate the hazards you prioritized?

Nearly all counties (52/55) mentioned collaboration with community partners as the most significant component of their mitigation strategies. Of the 52, 36 specifically mentioned a Local Emergency Planning Committee or a local emergency manager as partners. Counties also listed sharing plans with partner agencies, conducting community outreach and education, and participating in drills and exercises as steps they had taken to mitigate hazards.

An example from a local health department response to this question:

"We hold public health partner meetings every 6-8 weeks with representatives from municipalities, fire departments, local law enforcement, emergency management, regional jail and correctional facility, hospital, nursing home, rehabilitation center, home health, 911 communications, extension office, schools, housing authority, hospice, national organization on disabilities, solid waste authority, non-profit agency, and department of transportation. These meetings are designed to keep partners abreast of threat preparedness activities, as well as maintain our ability to stay current with preparedness activities and opportunities happening throughout the county."

Public health preparedness training

What additional training do you need related to the hazards you prioritized?

There was a wide variety in the training needs identified by local health departments. Training needs included Continuity of Operations Planning (COOP), redundant communications and information technology systems, risk communications, hazardous materials, water systems in disasters, the National Incident Management System, mass care, active shooters, weather spotting, personal preparedness for volunteers, and how to request state assets. The most common theme was intra and inter-agency collaboration on drills and exercises (20). However, 11 counties stated that they did not have any identified training needs.

An example from a local health department response to this question:

"We have attended many trainings over the past several years relating to different hazards but I think that we need more direction/drills that are directed/hosted by the local Office of Emergency Services."

Please list any preparedness trainings/best practices that you would be willing to share with other counties in the state:

Of the 55 counties, 17 listed specific trainings that they would be willing to share, many of which had been developed either through regional public health department collaboration or with local emergency management and other partners. Trainings included Community Emergency Response Team (CERT); volunteer management, recruitment and retention; National Incident Management System and command and control; social media and risk communications; Points of Dispensing Sites (PODS); radio communications; disease transmission; personal preparedness for public health responders; Continuity of Operations Plan exercises; the Tucker All hazards Conference Training; radiation awareness training; shelter in place; and category A agent training, among others. An additional 14 counties mentioned best practices related to building partnerships that they would be willing to share.

Public health role in emergencies

What roles do public health and emergency management, respectively, have in emergency preparedness?

Local health departments highlighted the different roles of emergency management and public health in a variety of ways. Collaboration and partnership were emphasized as were the joint responsibilities of educating the public on preparedness; complying with the National Incident Management System for exercises, planning and responses; and protecting the health and safety of the public. Many health departments highlighted the specific roles and responsibilities of public health in preparedness and response including: sanitation; disease surveillance and control; inspection of shelters; educating the public prior to, during and after an event; providing health and medical subject matter expertise; Points of Dispensing Sites for vaccination and mass-prophylaxis; responder safety and health; water quality; alternate care sites; and providing health and medical volunteers. However, many health departments also emphasized the similarities between public health and emergency management planning and response activities.

Two examples from local health department responses to this question:

"Emergency management should develop plans which include all agencies' input and meet with them on a regular basis to train. Public health should be prepared to respond to an event in which there is a direct impact upon public health. Plans for response should be in place and be included in the overall county response plan."

"Prevent epidemics. Prevent environmental hazards. Prevent injuries. Respond to disasters and assist communities in recovery. Monitor and identify community problems. Investigate health problems and health hazards. Inform, educate, and empower people. Mobilize community partnerships to solve health issues and health hazards. Develop community plans to support community efforts. Enforce laws and regulations."

Please list any emergency incidents that employees who are paid with PHEP funds have responded to in the last 5 years:

Local health departments listed multiple incidents during the past five years that utilized PHEP funding for response. Incidents included: H1N1 (2009-2010), the *Derecho* (2012), Hurricane Sandy (2012), Winter storms (2010), outbreaks (meningitis, pertussis, legionella), various hazardous material incidents including white powder and chemical spills, floods (multiple years), water system outages, industrial fires, power outages, extreme heat, Tornado (2012), Potassium Iodine (KI) Distribution (2008), anti-viral distribution, special event staffing (including football games, county fairs, etc.). Health department activities related to these responses included: distribution of public health information to the public; shelter set-up, inspection and staffing; cooling station set-up and staffing; subject matter expertise and technical assistance; distribution of antivirals; outbreak response, testing, surveillance, follow-up and reporting; mass vaccination; special event food vendor and water system inspections and permitting; distribution of food, water and other supplies to members of the public.

It should be noted that there was a significant error to the wording of the question that limits the validity of these results. While the paper version of the Narrative, and the electronic version of the Narrative included in the CDRW HRA Toolkit were the same, the wording on this question in the SurveyMonkey was incorrect. Instead of “*Please list any emergency incidents (for example flooding, outbreaks) that employees paid with PHEP funds responded to in the last 5 years*” the SurveyMonkey version read “*Please list any emergency incidents (excluding flooding, outbreaks) that employees paid with PHEP funds responded to in the last 5 years.*” This was a small but significant error and likely resulted in significant under-reporting of local health department emergency response activities. While some health departments listed responses to floods and outbreaks, four (4) health departments responded “nothing to report.” These four (4) counties likely participated in responses that they did not report, possibly due to the miswording of the question, particularly given the fact that the H1N1 response occurred in 2009, which was within the 5 year period.

Varied role across counties and for different hazards

Local health departments were also asked to describe their specific role in each of five hazards they prioritized through their HRA process. Local health roles varied from county to county regardless of the hazard. However, there were consistent roles related to emergency risk communications, situational awareness, coordinating with emergency management, conducting surveillance and investigation for infectious disease and assisting with shelter set-up and management.

Consequences of loss of funding

Local health departments were asked to list the top two consequences to their counties’ citizens of reductions in public health emergency preparedness funding. The purpose of this question was to assist health departments in justifying the need for public health preparedness in their counties.

Several health departments noted that existing funding was too low to support full preparedness programs. However, the majority focused on how preparedness would change if funding were further reduced. While some health departments viewed preparedness as a separate program, most saw it as

an integral component of daily operations and as a funding source that allowed the essential functions of public health nursing, environmental health and disease investigation to continue during disasters and supported the full recovery of these services in a timely manner.

Consequences of reduced funding included increased illness and death due to reductions in community preparedness and epidemiological investigation; decreased ability to support emergency response due to lack of staffing and expertise; decreased citizen preparedness; increased recovery time from disasters; decreased communications with vulnerable populations during response; and generally an increased vulnerability to all hazard types. Several health departments also saw preparedness as the program driving much of the volunteer activity, preparedness outreach and partnership building in their communities. The inability to stay abreast of changing technology and best practices related to preparedness and response was also emphasized.

Several examples from local health department responses to this question:

“Reduction of public health services during time of emergencies.”

“Loss of staff causing inability to carry out core public health functions.”

“Prompt intervention to reduce incidents of disease outbreak will be impossible.”

“Lack of ability to promote and educate on emergency preparedness to the citizens of the county.”

“Reduced staffing would impact public health's ability to foster relationships with community partners.”

9. Evaluation

Participant Evaluations

Each health department was asked to send lists of their HRA participants, with e-mail addresses, to the HRA Project Manager. Using this list, the Project Manager sent 400/468 participants an evaluation via SurveyMonkey. A total of 68 evaluations were not sent due to lack of e-mail address, late submission and/or data error. Also, in several cases, participants represented two agencies or contributed to more than one county HRA process. Between 6/15/2012 and 10/23/2012, 233 participants completed the survey. 46/55 counties were represented by the respondents; 50% were public health staff, 11% emergency management, 11% hospital staff and the remaining 28% were from behavioral health, primary care, education and other sectors. The change in denominator from question to question is due to participants answering “not applicable” and/or participants who skipped the question. Quantitative results are displayed in Table 9 below:

Table 9: HRA Participant Evaluation Results

Question	Agree or Strongly Agree		Disagree or Strongly Disagree	
	%	#	%	#
Overall, participating in the Health Risk Assessment process was valuable for my agency.	84%	196/233	3%	7/233
The Health Risk Assessment helped me to identify gaps in my agency's planning.	77%	180/233	5%	11/233
The Health Risk Assessment helped me to identify strengths in my agency's planning.	80%	186/233	2%	5/233
I plan to use what I learned in the Health Risk Assessment for preparedness planning in my agency.	85%	199/233	3%	7/233
I plan to use what I learned in the Health Risk Assessment for exercise planning for my agency.	81%	171/210	3%	6/210
The Health Risk Assessment process was useful in meeting and/or identifying new partners in my county.	76%	168/222	8%	17/222

Participants were also asked what they found most and least useful about the Health Risk Assessment process. Participants emphasized the following benefits of the HRA: awareness-building among partners, networking, discussion and dialogue about hazards, questioning assumptions, situational awareness on each agency’s planning efforts and response roles, community perception of risks, and identification of resources held by each community partner. Participants also identified the following challenges associated with the HRA: more time was needed to both prepare for the assessment and to complete the workshop; more expertise was needed to understand the process; more participation was needed from community agencies.

The Workshop Participant Tools were identified as both a strength and a weakness of the process, as was participation of community agencies.

Facilitator Evaluations

Facilitator evaluations were sent to 58 local health department staff, 44 of whom completed the evaluations. As recommended in the facilitator trainings and in the HRA facilitator materials, many counties used more than one facilitator/staff member to assist with the workshops. 38/55 counties were represented in the completed evaluations. The change in denominator from question to question is due to participants answering “not applicable” and/or participants who skipped the question. Key quantitative results are displayed in Table 10 below:

Table 10: HRA Facilitator Evaluation Results

Question	Agree/Strongly Agree		Disagree/Strongly Disagree	
	%	#	%	#
The Facilitator Training Session prepared me for facilitating the HRA Workshop.	66%	26/39	2%	1/39
The support provided by CTP staff for the HRA process was helpful.	91%	31/34	6%	2/34

Facilitators were asked the minimum amount of time their health department would need in order to complete the HRA process (planning, workshop and data entry). 55% (22) stated that they could complete the process in less than 3 months; 33% (13) in 6 months; and the remaining 12% (5) stated they would need more than 6 months to complete the process in the future.

Facilitators evaluated the technical assistance materials they received. Of the 17 documents evaluated, facilitators found the Excel tools for hazard prioritization (80%), the facilitator checklist (70%) and the facilitator presentation (50%) most useful. Least useful were the Health System Address/Contact List (5%) and the HRA Press Release Template (5%). The Health System Address/Contact list was most likely only useful for counties with new preparedness staff/staff new to the county. The HRA Press Release Template may not have been utilized as local health departments may not have wanted to widely promote this new, and unfamiliar, assessment process.

Facilitators were asked what was most useful and what should be changed about each of the four sections of the participant tool. Answers to these questions will be used to edit and revise the toolkit for future use. Overall, the main challenges listed were: completing the process within the allocated time, gaining participation and buy-in from partners, and some frustrations with the assessment methodology. The main strengths listed were: networking and partnerships and giving partners a process to discuss preparedness and hazards and inform planning.

Long-term Evaluation

While facilitators were asked about their intent to use HRA data, CTP conducted a long-term follow-up evaluation to determine the extent to which HRA data was actually used by local health departments. In the 2014 Third Quarter Progress Report (April 2014) for the 2013-2014 Public

Health Emergency Preparedness (PHEP) grant, local health departments were asked a series of questions related to their use of the HRA County Report and associated data. These evaluations were sent to the Regional Leads who coordinated the completion of the reports for the LHDs in their regions. Responses were submitted by LHD Administrators and Threat Preparedness Coordinators. All 49 local health departments completed the evaluation.

Table 11: Long-term Evaluation Results

Question	Yes		No	
	%	#	%	#
Have you shared the Health Risk Assessment (HRA) County Report with your community partners?	80%	39	20%	10
Has your health department used the results from the HRA in exercise planning?	49%	24	51%	25
Has your health department used the results from the HRA in agency plans?	59%	29	41%	20
Did the HRA process help to create any new preparedness planning groups in your jurisdiction? If yes, please explain.	12%	6	88%	43
Did the HRA process help to revive any preparedness planning groups in your jurisdiction? If yes, please explain.	16%	8	84%	41
Did you use the results from your HRA to assist with budget justification for the 2013-2014 PHEP Grant?	18%	9	82%	40

Of the health departments that had not shared their County HRA Report with partners, three (3) health departments mentioned staff turnover, either directly or indirectly, as a reason that reports had not been shared. Three (3) health departments that reported sharing the County HRA Report specifically mentioned sharing the report with their Local Emergency Planning Committees (LEPCs).

While 49% of local health departments reported using the HRA in their exercise planning and 59% in their agency plans, 65% (32/55) reported using the HRA in at least one or the other. These results cannot be compared directly with the results from the Participant Evaluation because this evaluation was directed to local health departments only (not the full participants from the HRAs). However, they do show that a majority of health departments have applied HRA results at the local level.

Only a small percentage of local health departments reported new or revived preparedness planning groups in their jurisdictions as a result of the HRA. However, two (2) health departments reported specifically that the HRA led to the reestablishment of Local Emergency Planning Committees in their jurisdictions.

Few health departments reported using the HRA results in their budget justifications for the 2013-2014 PHEP Grant. However, two (2) local health departments reported that they would have used the results in the 2012-2013 PHEP Grant budget justification rather than the 2013-2014 PHEP Grant budget justification. Budget justifications from local health departments are generally due to CTP in April of each year. The earliest completed HRA was May 31, 2012. Thus, results from the HRA would have been incorporated, if at all, into the 2013-2014 Grant budget justification.

Overall, these questions were asked to assess the impact of participating in the HRA on local health department preparedness. Key responses, in addition to the quantitative results, include¹³:

“Emergency Services Manager put the HRA in the county Emergency Operations Plan Annex”

“Reviewed and revived sheltering requirements as well as creating specific preparedness information for our county. Developed and produced a dining placemat emphasizing functional needs registry and emergency information which has been distributed to all county restaurants.”

“From the HRA we continue to work to improve our county-wide emergency broadcasting with WHFI. We have recruited and trained volunteers to take leadership roles in CERT as a result of learning that too few people wear too many hats in the HRA. We have updated and renewed all MOAs with county partners.”

“We now participate in a taskforce developed to bring together gas well industries with other local governmental offices for planning purposes.”

“Identified Active Shooter scenario as a risk and working with county Office of Emergency Management to gear exercise to event.”

“Supply chain issues were reevaluated in the County Strategic National Stockpile Plan.”

“The health department created a new partnership in preparation for the Boy Scouts [the 2013 National Boy Scout Jamboree]”

“Several community partners assisted in the HRA process. All took the information back to their facilities/agencies to incorporate into their planning. Most agreed that stores of water should be increased. New County Emergency Manager added to his resource lists sources for potable water. Work continues for cooperation between the 12 public service districts in the county.”

“Sheltering and Preparedness Information subcommittees of the Local Emergency Planning Committee were created.”

“Communication was the topic in our HRA. The LEPC and health department are upgrading our IRP radio status.”

¹³ Quotes have been de-identified

“Our HRA exercise took place just shortly before the 2012 Derecho and reinforced the need to better organize. Then we had Super Storm Sandy. It truly served as the springboard to reestablish the dormant Local Emergency Planning Committee.”

“Conducting the HRA brought many community partners together which helped lead up to the reestablishment of our Local Emergency Planning Committee. Since the summer of 2012 the LEPC has met almost every month, developing plans, setting up and training for shelters, and greatly improving disaster mitigation and preparedness for the county. This in turn has led to the development of a vulnerable populations list in which volunteers will check on folks during disasters and power outages, as well as the site selection, preparation, planning, training, and exercising for the first ever human and animal disaster shelters in the county.”

10. Limitations

Resources

Staffing: The lead agency for this assessment (CTP) had only a single staff member dedicated to developing, managing and completing the analysis and reports for the HRA. Local partners also had significant staffing constraints, as highlighted by the responses to the Public Health Narrative. Of West Virginia's 49 local health departments, only 9 had full-time staff dedicated 100% to preparedness.¹⁴

Time: The local HRA activity was due to be completed by the end of the twelve-month PHEP grant cycle. The grant period ran July 31st-August 8th but the HRA project manager was hired in October leaving nine months to complete the county data collection, submission and analysis. The ability to complete the project within the grant period was further impacted by the June 2012 *Derecho*, which involved many state and local partners in the response. Of the nine-month timeframe, six months were devoted to developing the County HRA Toolkit, with only three months remaining for data collection and analysis.

Data: While the HRA project manager identified several potentially valuable datasets at the state and local levels, the data was not usable for this project due to a) differing data formats and permissions and b) the lack of a team to conduct data collection and analysis in the limited timeframe. In addition, critical data on specific hazard impacts, hazard probability and existing mitigation measures had not been collected. While the lack of data limited the evidence-base for the Tool, it also highlighted a need for baseline datasets – one objective of this assessment at the state level.

Because of the lack of comprehensive datasets from previous studies and assessments, participating partners identified hazards and their impacts through a subjective process utilizing local expertise and experience. This lack of standardization limits the validity and comparability of the results among counties.

HRA Workshop Participant Tool: Good assessment tools for highly rural, decentralized states, with few datasets are not available. The lack of an evidence-based assessment tool, combined with the lack of data, resulted in CTP developing and utilizing a new tool created through a local-state working group. Thus a critical limitation of the assessment is the tool used for data collection. However, the extensive evaluation throughout the assessment process and planned revisions should mitigate the limitations of the tool and increase the validity of the assessment for future iterations.

Concept

Counties were utilized as the geographic area to assess hazard impact and mitigation. This was a necessary decision to accomplish the assessment objective of having a baseline data set for all counties. However this jurisdictional distinction is arbitrary and would change significantly in a response due to the nature of cross-county and cross-border partnerships and agency organizational structures. Two (2) of West Virginia's local health departments operate in multi-county jurisdictions;

¹⁴ Includes work on the Cities Readiness Initiative grant and medical countermeasures

many border counties in West Virginia coordinate with counties in surrounding states for response; and many healthcare and behavioral health systems operate regionally rather than by county.

The validity of the HRA results is limited by the breadth of expertise that was available in each county HRA and, to some extent, by the structure of some of the assessment questions. “Don’t know” was not an answer type and the assessment questions required in-depth knowledge of the types of impacts a given hazard would have on a county’s health systems and public health; county and agency planning efforts; and historical knowledge of preparedness and response efforts in, at a minimum, the past five (5) years.

Several steps were taken to mitigate this limitation. To prepare local health departments and participating partners for the assessment, CTP provided extensive technical assistance and guidance documents on how to conduct and/or participate in the assessment, including the regional facilitator trainings. To reduce the subjectivity of the assessment, all counties were encouraged to use data from existing reports and assessments and were provided with a list of websites with hazard-specific data (although this data was extremely limited). To encourage the participation of subject matter experts, CTP coordinated with state partners to send e-mails to all emergency managers, behavioral health facilities, primary care centers and hospitals in the state to encourage them to participate in the county HRAs. Finally, the Workshop Participant Tool was built to reduce the need for participants to answer questions on areas they were unfamiliar with (i.e. to prevent public health from answering questions on how a given hazard would affect a particular hospital in their county). However, despite these efforts, participant comfort with and knowledge of the assessment varied across counties.

Finally, reporting bias may affect the validity of the results. Data was self-reported and, while the CTP emphasized that the results of the assessment were not directly tied to funding and would only be used for technical assistance, local health departments and their partners may have been hesitant to report challenges to local mitigation planning.

Section 1: Hazard Identification and Ranking

To determine hazard rankings, an abbreviated method to identify hazards was adopted. In Section 1 of the Participant Tool, local participants ranked hazards using the equation $\text{Risk} = \text{Probability} * (\text{Impact-Mitigation})$. This one-page worksheet used broad, but well-defined, impact and mitigation categories, and a simple scaling system to rank hazards according to impact and mitigation as well as the level of hazard probability. The simplicity of this ranking system, using a subjective process that relied on subject matter experts, may have limited the ability to rigorously and comprehensively identify hazards and their impacts. This is particularly true given the varying levels of subject matter experts who participated in assessments from county to county and the potential for mathematical error.

Detailed scenarios for each hazard were not developed because of the diversity of infrastructure, industry, and geography across the state. Detailed scenarios would have led to consistency but would not have been applicable in all settings. In addition, not all counties followed the same process to arrive at their top five hazards – some counties utilized consensus and some used a group average of hazard scores. Thus data comparability between counties is limited.

Section 2: Hazard Impacts

Due to the short timeframe of the assessment and the focus on creating a participatory process, the assessment was limited to the specific impacts of the highest ranked hazard on public health, hospitals, primary care centers and behavioral health centers. While each of these impact areas was only answered if a subject matter expert was in attendance, the impact indicators had several limitations. First, workshop participants were instructed to separate baseline conditions from hazard specific impacts. However, baseline data was not available except through local knowledge and expertise, making it difficult for participants to differentiate between baseline and hazard-specific impacts. Second, lack of a detailed scenario made it difficult to measure the impact of a given hazard on a county. Finally, many participants were not familiar with this type of assessment and/or did not view themselves as having the subject matter expertise to gauge the impact of a given hazard on their facilities and services.

Section 3: Agency Mitigation

As preparedness is an emerging field, research on effective mitigation measures is limited. While the mitigation indicators included in this assessment were drawn from available literature and subject matter expertise, the indicators were not exhaustive and were limited in scope. While options were included to write-in additional mitigation measures, there may be critical indicators missing from the assessment. In addition, the indicators chosen for mitigation were, for the most part, broad measures of preparedness, rather than hazard-specific.

The mitigation ranking scales also had significant limitations. The scales utilized to assess agency plans, for example, required some awareness of and familiarity with those plans. The validity of this ranking is thus limited by the awareness of agency representatives participating in the process. Standardized rankings were utilized to assess partnerships between agencies. However, not all of the ranking categories fit the various agency relationships. For example, for partnerships, evidence of a “written understanding” was required in order to rank the partnership a 2, 3 or 4. However, not all partnerships require a written understanding. In addition, counties were asked to rank the hazard specific annex for the top hazard identified by the group. This ranking may be more or less applicable, depending upon the structure of plans (i.e. whether or not an agency/county uses an annex driven planning model) and depending on whether emergency management was able to participate. Finally, “not applicable” should have been included as an option for partnerships as, in many instances, agencies in the “other” category had to rank their partnerships with themselves.

Section 4: Community Mitigation

While a list of potentially at-risk populations/populations with access and functional needs was included in the Participant Tool, not all populations were applicable to each county. For example, while the Tool asked specifically about involvement of incarcerated populations in coalitions and exercises, not every county has an incarcerated population. However, “not applicable” was not included as an option. In addition, while counties were asked the extent to which they had engaged these populations in coalitions, “coalition” was not defined.

As with Agency Mitigation, the counties were asked to rank several annexes in their plans. This ranking may be more or less valid depending upon the structure of the county plans (i.e. whether or not the agency/county used an annex model). This ranking also depended on the extent to which county emergency management was able to participate, as emergency managers have the greatest insight into/knowledge of county plans.

Workshop

It was clear from the facilitator evaluations and from the Public Health Narrative that participation from outside agencies in public health preparedness activities is one of the most significant challenges for building capacity. Participation in the HRA varied significantly from county to county and also by degree. Some agencies committed to participating but were unable to due to their response and recovery roles in the *Derecho*. Other agencies did not complete all of their paperwork or, particularly if the paperwork was sent via mail or e-mail, did not spend the time necessary to return a thoughtful analysis. In addition, the different approaches counties took related to the workshop (mail, e-mail, in-person; one-on-one interviews vs. group settings; group consensus vs. individual vs. agency-specific completion of worksheets) affect the validity of this statewide, aggregate analysis.

Specifically, participation was limited by the following factors:

- *Short timeframe*: health departments initially had six weeks to complete the assessment including holding the workshop and submitting their data, with an additional two weeks added due to the *Derecho*.
- *Summer vacations*: because health departments were trained on how to conduct the assessments late in the grant year, many local partners had pre-scheduled summer plans.
- *Derecho*: the *Derecho*, a high velocity windstorm with straight-line winds, affected West Virginia on June 29th, 2012 and caused extensive damage to power lines and infrastructure across the state. The *Derecho* resulted in a state disaster declaration for all 55 counties and a federal disaster declaration for 53 counties. 32 counties completed their assessments prior to the *Derecho*.

Because counties used a variety of methods to complete their data collection including in-person interviews and/or workshops, phone discussions, e-mail, fax and mail, the extent to which each individual participated in the local process varied by county. Health departments were required to submit workshop sign-in sheets. However, several counties both held a workshop and conducted follow-up data collection either from attendees or from partners who were unable to attend the workshops. Thus, sign-in sheets did not reflect the full extent of participation. Of the 55 counties, 62% (34 counties) held an assessment workshop. Of the two regional health departments, Mid-Ohio Valley (6 counties) did not hold any workshops while Wetzel-Tyler (2 counties) held a joint workshop. Thus, of the 49 local health departments, 33 or 67% held a workshop. To determine participation more accurately, the HRA Project Manager contacted the counties that conducted a multi-phased process to identify participants that may not have signed the sign-in sheet. Participation was defined broadly as partners and local health department staff who contributed to any part of the county assessment.

While the use of multiple Workshop Participant Tools was valuable as it allowed for a tiered analysis, it also led to confusion in implementation. Facilitators expressed frustration with how each of the Tools fit together and how the Tools should be introduced to participants. This tiered approach may also have resulted in over and/or under representation of certain sectors. For example, for Part I: Hazard Identification and Ranking, every participant was asked to complete the worksheet individually, even if multiple participants were from the same agency.

The lack of experience of local facilitators with this type of assessment was also a limitation of the workshop. As part of the SurveyMonkey data submission, local HRA facilitators were asked how long they had been responsible for public health preparedness. While 80% (44) had been responsible for public health preparedness in their health department for more than two (2) years, it is noteworthy that three (3) local health preparedness coordinators had been in their positions only one to three (1-3) months at the time of data submission. Regardless of tenure, the novelty of the process posed a significant challenge as local health departments were expected to serve as subject matter experts on an assessment they had not encountered previously. While the facilitator training sessions and targeted technical assistance helped, it was challenging for facilitators to be both learning and teaching a new process/concept.

Data submission and analysis

SurveyMonkey was utilized to submit data to the HRA Project Manager, via multiple links. The use of multiple links was confusing for some facilitators. In addition, the ability to monitor data quality was made more difficult by the process of data submission, as was the handling of data for analysis. During initial planning, it was believed that having separate data submission links for each agency would enhance participation in the assessment, as agencies unable to participate in the workshop could simply be sent the link for data collection. However, links were never used for this purpose, as CTP did not want to confuse the messaging on the importance of participation in the full process.

Several inconsistencies were identified in hazards reported to CTP. These discrepancies were most likely due to the use of separate survey links for the workshop data and the Public Health Narrative, both of which included questions related to the top five (5) ranked hazards. Where hazards were listed in a different order, or different hazards were listed between the two surveys, local health department facilitators were consulted and paperwork was reviewed. However, because of staff turnover at the local level and lack of documentation, not all of these discrepancies could be resolved by talking with the local health department and/or reviewing their paperwork. In cases where inconsistencies could not be resolved, hazards reported in the *Public Health Narrative* were used as these hazards included specific roles and responsibilities of public health.

The amount of data collected and the short timeframe available for data analysis (with limited staff) made in-depth statistical analysis for this report unfeasible. Lack of statistical analysis is a significant limitation, as it could have contributed to validation of the data.

Several factors may have impacted the data quality, utility, and comparability between and among counties. There were multiple opportunities for data error and a limited quality assurance program. Local health departments were advised to use form checkers to ensure that participant math was

correct on Section 1: Hazard Identification and Ranking and to check other participant forms for completeness. Automated spreadsheets were also provided to reduce mathematical errors during the hazard ranking process. However, due to a) low staffing numbers and b) unfamiliarity with the process (including the spreadsheets) not all county assessments utilized form checkers or the spreadsheet tools. In addition, several county assessment facilitators remarked that they were skeptical as to whether certain participants had taken the assessment seriously (i.e. marking one number across all categories for the hazard ranking or ranking their agency the highest possible score in each category of mitigation for each hazard).

The transition of data from the paper forms into SurveyMonkey provided another opportunity for data error that limits the validity of the assessment results. Every facilitator was required to mail or scan and e-mail the paper forms as well as complete the SurveyMonkey links for data entry. This allowed the HRA Project Manager to cross-check the paper forms against what was entered in SurveyMonkey. The Project Manager contacted local facilitators with questions regarding inconsistencies between paper and SurveyMonkey entries. While many of these issues were resolved, it is likely that data errors remain.

A specific limitation of the transition from paper to SurveyMonkey was identified with the Public Health Narrative data. While the paper version of the Narrative, and the electronic version of the Narrative included in the CDRW HRA Toolkit were the same, the wording on one question in the SurveyMonkey was incorrect. Instead of “*Please list any emergency incidents (for example flooding, outbreaks) that employees paid with PHEP funds responded to in the last 5 years*” the SurveyMonkey version read “*Please list any emergency incidents (excluding flooding, outbreaks) that employees paid with PHEP funds responded to in the last 5 years.*” This was a small but significant error and likely resulted in substantial under-reporting of local health department emergency response activities.

In addition, several of the limitations highlighted in previous sections may have impacted data quality. These limitations include: inconsistency in application of the Workshop Participant Tool at the county level; the varied processes utilized by counties to collect data for their HRAs (i.e. workshops with many participants vs. individual interviews); the issues identified with the ranking scales in the different parts of the Workshop Participant Tool; and comprehension of what the goal and processes associated with the assessment were.

Finally, the timing of the assessments limits comparability among counties. The high velocity windstorm (*Derecho*) that affected all 55 counties in West Virginia in June of 2012 may have caused significant bias in hazard identification and ranking for counties who conducted their assessments after the storm. In addition, differences among counties regarding whether they had opened a shelter in the past five years, conducted emergency notifications, etc. were certainly influenced by whether the county conducted the assessment prior to or after the *Derecho*.

11. Value and Conclusions

Despite limitations to the Workshop Participant Tool and the HRA process, the CTP met its goal to create a HRA process that is accessible, replicable, timely and meaningful for use in preparedness planning at both the local and state level. Individual objectives were also met, as described below:

1. Address all functions under PHEP Capability 1, Community Preparedness

Table 12: Links between the HRA and PHEP Capability 1

Function	HRA component linked to function:
<p>1. Determine risks to the health of the public health jurisdiction</p>	<p><i>Workshop Participant Tool:</i> The Tool included a process to identify and rank hazards in each county that posed the greatest risk to public health.</p> <p><i>County Assessment:</i> The County Assessment process engaged partners in multiple health and preparedness disciplines to determine risk of different hazards to the jurisdiction, as well as the services currently in place to mitigate those risks.</p> <p><i>County Reports:</i> Reports included guidance for using the top five (5) ranked hazards in county and agency exercises, to prioritize trainings and to edit plans.</p> <p><i>State Report:</i> The top-ranked hazards to public health and health systems statewide are being used to develop exercises for the CTP and have contributed to Homeland Security reports such as the State Preparedness Report.</p> <p><i>GIS:</i> The CTP worked with the North Carolina Preparedness and Emergency Response Research Center to pilot an application to map vulnerable and at-risk populations. This application is in the process of being refined and will be used in future assessments. The CTP worked with the WVBPH Office of Environmental Health Services to map the highest ranked hazards at both the state and regional levels.</p>
<p>2. Build community partnerships to support health preparedness</p>	<p><i>County Assessment:</i> The HRA required health departments in each county to invite at least five (5) outside participants, including their emergency manager and any primary care centers, behavioral health centers and hospitals in their county/serving their county. In addition, the community mitigation questions asked about coalitions and exercises in which the county had engaged individuals with access and functional needs, as well as other target partners.</p> <p><i>County Reports:</i> These reports identified populations that had not been included in county exercises and coalitions, as well as weak partnerships among individual agencies. The reports gave options for consideration on how to engage with new partners and strengthen existing partnerships.</p> <p><i>State-level Communications:</i> The CTP leveraged partnerships at the state level to support participation in the local HRAs. Grant administrators responsible for preparedness funding to local behavioral health centers, primary care centers,</p>

	<p>hospitals and emergency management agencies sent e-mails to their grantees encouraging participation in the process.</p> <p><i>Evaluation:</i> 76% (168/222) of local participants responding to the evaluation stated that the HRA was useful in meeting and/or identifying new partners in their county. Two (2) local health departments stated specifically that the HRA restarted their county Local Emergency Planning Committees, which had previously been inactive.</p>
<p>3. Engage with community organizations to foster public health, medical, and mental and/or behavioral health social networks</p>	<p><i>County Engagement:</i> The HRA was completed with an average of five-and-a-half (5.5) (median five (5)) external partners in each county. By sector, hospitals had the highest participation with 35/42 (83%) of counties reporting at least one hospital participating in their process.¹⁵ Emergency management and 911 centers also had significant participation in 43/55 (78%) of counties. 29/55 (53%) had at least one healthcare organization¹⁶ participate and 27/55 (49%) had at least 1 behavioral health center participate.</p> <p><i>County Evaluation:</i> Many of the qualitative comments on the participant evaluations highlighted how much participants learned about local preparedness processes and systems. Two (2) of the workshops were held on the day that the 2012 <i>Derecho</i> impacted West Virginia, and participants noted the value of the workshop to their response efforts.</p> <p><i>State-level Engagement:</i> CTP engaged partners across state government and in voluntary organizations to review the Workshop Participant Tool. While many of these partners routinely contribute to working groups and work products sponsored by the CTP, several were new contributors.</p>
<p>4. Coordinate training or guidance to ensure community engagement in preparedness efforts</p>	<p><i>County Reports:</i> The county reports developed by CTP using local HRA data and distributed to each county included options for consideration to address the results of each of the four parts of the Workshop Participant Tool (Hazard Identification and Ranking, Hazard Impact, Agency Mitigation and Community Mitigation). The companion Resource and Training Guide supplied the links and descriptions to trainings, databases, guides to community engagement and other resources to support an iterative process and to emphasize a whole community approach to preparedness.</p> <p><i>Public Health Narrative:</i> Results from the Public Health Narrative are being used at the state level to determine training needs and have been shared with state-level homeland security for incorporation into the state's Multi-Year Training and Exercise Plan.</p>

¹⁵ Only 42 of West Virginia's counties have a hospital.

¹⁶ Healthcare organizations did not include public health or hospitals and included rehabilitation centers, primary care centers (free clinics, federally qualified health centers, etc.), nursing care facilities and others.

2. Engage community partners and build community information-sharing

The HRAs complemented the work of local emergency managers and provided valuable information for planning and exercise development related to health and health systems, including the Threat and Hazard Identification and Ranking Assessment (THIRA) required under the Emergency Management Performance Grant. At the local, regional and state levels, partners from multiple sectors and agencies were engaged in both the HRA data collection and data reports and are critical partners in the implementation of recommendations from the results.

Each local health department was provided with an in-depth report of their county's results, including agency-specific and group results (County HRA Report). The report incorporated data from the Workshop Participant Tool and from the Narrative and was divided into four sections, reflecting the four sections of the Tool. Each section of the report included a summary page with the purpose of the section, limitations of the section, and ideas on how to use the data from the report in health preparedness planning at the local level.

In addition to a report of their assessment results, local health departments received the Resource and Training Guide for Hazard Planning and Mitigation. This guide offered options for consideration on how to interpret assessment results and how to use the results in preparedness planning, exercise development, and partnership-building. The guide also provided counties with hazard-specific and multi-hazard training resources, planning and exercise templates, and guidance and sector-specific preparedness resources for health departments to share with partners.

The county report was also accompanied by county data in an Excel workbook as well as a checklist for facilitating a follow-up meeting with local partners. The checklist included talking points and referenced the Training Guide and sections of the county report. Local health departments were encouraged to hold follow-up meetings with partners to discuss the results and to incorporate them into preparedness planning.

3. Ensure that methods for conducting HRAs are usable by all local health departments in West Virginia, regardless of their size and resource constraints

Creating and implementing a usable Workshop Participant Tool for data collection was a priority for both the Advisory Committee and the Working Group. The pilot of both the data collection and submission processes; the regional facilitator training sessions; the more than 20 templates and other documents disseminated to support the county assessments; and the ongoing technical assistance (in-person, e-mail and phone) throughout the project period ensured that all local health departments were able to complete the HRA. In spite of the significant time and resource limitations, the majority of local health departments completed the assessment within the allotted timeframe. In addition, while the evaluations from facilitators and participants included suggested changes to the HRA for future iterations, evaluations were positive concerning the value of the assessment.

4. Produce a baseline health preparedness dataset for use in planning and exercises at the local and state levels

The HRA created a single, integrated dataset with questions that could be asked consistently over the long-term to determine progress on and changes to the public health and medical preparedness in

West Virginia. The dataset has been shared with state partners to inform their planning and exercises (for example, for inclusion in the State's Multi-Year Training and Exercise Plan) and was used to determine the state action items described in Sections 12 and 13 of this report.

In addition to this report, the dataset has been used to create multiple state-level reports including:

- a. *Aggregate Hospital Report*: Summarizes aggregate hospital participation and mitigation results. Shared with the West Virginia Hospital Association and the Division of Rural Health and Recruitment (West Virginia Bureau for Public Health).
- b. *Aggregate Primary Care and Health Center Report*. Summarizes health center and primary care participation and results. Shared with primary care partners including the West Virginia Primary Care Association, the Division of Primary Care (West Virginia Bureau for Public Health) and the Division of Rural Health and Recruitment (West Virginia Bureau for Public Health)
- c. *Aggregate Behavioral Health Report*: Summarizes behavioral health center participation and mitigation results. Shared with the West Virginia Bureau for Behavioral Health and Health Facilities.
- d. *Public Health Preparedness Profiles*: Three-page summaries of all public health data for each of the 55 counties.

5. Ensure that the HRA process is replicable and can be used to drive future HRAs

Due to the evaluation plan and investment by the CTP in a long-term program of HRAs, the assessment will be revised to increase its usability and will be part of an iterative process at the local and state levels. Two of the critical recommendations (*Creation of a data portal for public health and medical preparedness data* and *Coordination with state emergency management to align and integrate the HRA with the THIRA*) will support the continued use of components of the Workshop Participant Tool in future assessments. In particular, the whole community workshop component of the HRA, with partners meeting to share planning challenges and strengths, will be used as a model to expand the THIRA to agencies outside of emergency services. The public health and medical focus of the HRA will also continue to be a focus, although it may be integrated into an overall risk assessment for both emergency management and community partners with preparedness roles.

6. Identify and recommend opportunities for increased efficiency in CTP's collection, analysis and reporting of public health and healthcare preparedness data

Because CTP had never attempted a project with such expansive, diverse data collection and reporting, this process was used as a pilot to identify opportunities for increasing CTP's data management capability. The multiple systems used for data collection, analysis, storage and reporting highlighted the need for a comprehensive data management plan for CTP, as well as a web-based portal for data collection, storage, analysis and reporting. This portal is currently under development.

12. Critical Findings and State-level Recommendations

The HRA was developed to deliver both actionable results at the local level (through the HRA County Reports) and at the state level by using both county-specific results and different combinations of aggregate results to identify risks, preparedness challenges and priorities and existing areas of strength that can be shared and sustained. Results from the local assessments were used to inform CTPs PHEP and HPP grant applications. Critical recommendations are described below. However, the HRA data will continue to be mined and insights from the data will be used in exercise development, plan revision, training delivery and prioritization of preparedness activities at the state level through 2017 (for the remainder of the five (5) year PHEP-HPP grant cycle).

Coalitions

In the Public Health Narrative, partner engagement was listed as both the most significant resource for mitigation and one of the greatest barriers to mitigation – particularly the relationship between local health departments and local emergency management. While some populations with access and functional needs were well-represented in local coalitions, there was less representation in local exercises. The majority of local health departments had assisted with sheltering and mass care activities but there are few resources currently provided by CTP for mass care activity. The majority of counties also reported sheltering activities in the last five (5) years, with nearly half of counties reporting having set-up a family assistance center in the last five (5) years. Local health departments listed many training needs, some of which could be provided through homeland security and emergency management courses but state-level homeland security and public health and medical training programs have not been aligned. Volunteer engagement is a requirement for local health departments and a necessity for many agencies. However, most local agencies reported significant barriers to volunteer engagement.

Critical Recommendation 1: CTP and non-governmental organizations currently co-chair the Access and Functional Needs (AFN) Workgroup which includes state-level partners representing access and functional needs populations. This workgroup should be sustained with membership continuously evaluated and expanded as needed to ensure adequate representation from key groups. State-level exercises should include members of this workgroup on the exercise planning teams to ensure integration of access and functional needs into exercise objectives. In addition, this workgroup should provide guidance to local agencies on incorporating individuals with access and functional needs into exercises and planning meetings.

Critical Recommendation 2: CTP jointly chairs a Mass Care (Emergency Support Function 6) Workgroup with the Bureau for Behavioral Health and Health Facilities, the Division of Homeland Security and Emergency Management and West Virginia Voluntary Organizations Active in Disasters. This group should assess local and state level capacity to deliver mass care services and develop an inventory of mass care supplies. This group should also partner with the Office of the Chief Medical Examiner to develop and disseminate guidance regarding local family assistance centers.

Critical Recommendation 3: CTP participates in both a Senior Advisory Committee (composed of essential state-level preparedness partners) as well as the Committee's Workgroup. CTP should use these forums to develop and provide joint preparedness trainings for local and regional preparedness

staff (including, at a minimum, emergency management, public health and hospital staff) and align and, if possible, integrate preparedness training processes.

Data Management:

While time and resource constraints significantly limited the speed, depth and ease of data analysis, the lack of a sophisticated data management system that could draw from multiple databases was the main challenge to data quality. The limited mapping capability (static maps, manually generated) also resulted in significant delays and error. In addition, while the University of North Carolina Preparedness and Emergency Response Research Center began development of an application to map vulnerable and at-risk populations in West Virginia, the application had limited functionality. Finally, while feasible, conducting major project management using individual Microsoft Word documents and Excel spreadsheets is inefficient.

Critical Recommendation 1: Expand the partnership with the Office of Environmental Health Services to develop the Center for Threat Preparedness Data Portal, a web-based, redundant system that will be used by CTP staff and partners to collect, report, map, monitor, summarize/analyze and manage data that supports the mission of CTP for Threat Preparedness. This portal should be used to develop, pilot and roll-out health and medical preparedness applications including interactive mapping of the HRA results.

Critical Recommendation 2: Develop a comprehensive data management plan for CTP including identifying and evaluating the systems CTP currently uses to collect, store, analyze and report data. This plan should include a phased roll-out of recommendations that have been developed with staff input and should be flexible enough to reflect the changing structure of public health and medical preparedness in West Virginia due to funding cuts.

Critical Recommendation 3: Sustain CTP's partnership with the University of North Carolina Preparedness and Emergency Response Research Center to implement a revised mapping application for at-risk and vulnerable populations. This interactive application will include the 2010 and 2000 Social Vulnerability Index data for West Virginia's eight (8) public health preparedness regions, six (6) emergency management regions, seven (7) and hospital and EMS regions, as well as data for all 55 counties. CTP should also regularly assess and revise resources provided through this application and add resources, as necessary, to ensure that counties and regions are receiving relevant guidance to assist in their outreach to and planning for at-risk and vulnerable populations.

Increasing Efficiency through Shared Resources and Alignment

Preparedness funding to West Virginia is anticipated to decline and has already been cut to several key programs. The capacity of local and state agencies to conduct large projects (like the HRA) with multiple stakeholders and data elements is increasingly challenging, as highlighted, in part, by the Limitations section of this report. The whole community approach to preparedness has been linked to increasing coordination and effectiveness during a response, but it is also an approach that can be harnessed to increase efficiency in meeting grant deliverables and building preparedness programs. Different federal grant streams require similar assessments, plans, exercises and other NIMS requirements. However, few of these processes are actively aligned or communicated. For example, there are three sets of preparedness capabilities (for public health, health systems and emergency

management) and while these capabilities clearly complement each other, no alignment guidance has been formally cleared and released to states. In addition, federal and national agencies have not communicated the differences and similarities between the Threat Hazard Identification and Risk Assessment (required for emergency managers), the Jurisdictional (Health) Risk Assessment (required for public health and health systems) and individual agency Hazard Vulnerability Analyses (required for hospitals by the Joint Commission). Finally, while two (2) West Virginia Universities were engaged at discrete stages of the HRA development process, there is no formal relationship between CTP and universities in the state for internships, student engagement and faculty support.

Critical Recommendation 1: Work with state partners to align communications and provide standardized guidance to local and regional staff with preparedness responsibilities under different grant streams. Activities should include: alignment of the three (3) sets of preparedness capabilities and communication of this alignment to local health departments, emergency managers and hospitals; alignment of preparedness grant deliverables under different preparedness grant streams; identification and dissemination of best practices related to preparedness coalition development at the local, regional and state levels; discussion of how different grant streams can be leveraged to improve efficiency and effectiveness of preparedness programs in the face of decreasing funding; and participation in the development and publication of the state's Homeland Security Strategy.

Critical Recommendation 2: Coordinate with state emergency management to align and/or integrate the HRA with the THIRA and to communicate the importance of the assessment process to preparedness staff at the local, regional and state levels. The THIRA has specific benefits that were identified as lacking in the HRA process including that it references preparedness capabilities and includes hazard-specific scenarios to gauge potential impact. However, the County HRA Toolkit also has benefits that the THIRA lacks, including that it requires invitations to external participants and creates a forum for different sectors to share and discuss agency and community mitigation challenges and strengths. Different local response depending on county, as was clear from the Public Health Narrative.

Critical Recommendation 3: Develop formal partnerships with West Virginia's universities to begin a formal internship program and to identify areas that university faculty could help to support CTP on future projects. A specific activity is to partner with universities to create county profiles of available health and medical preparedness data that can be accessed through the Center for Threat Preparedness Data Portal. This data could be used in future risk assessments, both as a reference and to inform equations of hazard risk and impact.

13. Results with Recommendations and Associated Capabilities

Table 13: HRA Results and Recommendations

#	Result	Recommendations	PHEP Capability
1	Non-hospital health care organizations (53%) and behavioral health centers (49%) had relatively low participation in the HRA	<ul style="list-style-type: none"> • Continue to build relationships with state-level associations and to provide training opportunities on the integration of other health system partners in preparedness and response • Provide education and information to healthcare partners regarding the CMS Emergency Rule 	1, 6, 10
2	Top 5 hazards: flooding, communications/IT failure, severe winter storm, dam failure, tornado/windstorm, power failure	<ul style="list-style-type: none"> • In partnership with emergency management, identify mitigation projects to protect health systems from these hazards • Increase focus on continuity of operations planning, including working with local health departments on their continuity plans • Integrate different types of redundant communications more fully into CTP exercises, including amateur radio • Create inventories of public health and medical preparedness equipment across the state (generators, radios, etc.) • Identify specific risks to responders based on these hazards and describe appropriate mitigation measures 	1, 2, 14
3	<p>Local Health Department (LHD) Plans exercised or used in a real event in last 5 years:</p> <p>60% (33) All-Hazards Plan 76% (42) Strategic National Stockpile 66% (36) Pandemic Influenza Plan 72% (40) Continuity of Operations Plan 58% (32) Crisis and Emergency Risk Communications Plan 9% (5) Smallpox Plan</p>	<ul style="list-style-type: none"> • Educate LHDs on plans including explaining the different formats that LHDs can use (i.e. independent plans versus annexes to county plans) • Educate LHDs on how different plans can be integrated (i.e. SNS plan includes a CERC plan that can be used in non-SNS events) • Provide additional exercise support from state level on using PHEP and HPP capabilities in HSEEP compliant exercises • Partner with state emergency management to identify LHD staff to train as HSEEP instructors 	1, 2, 4, 8, 9, 11

#	Result	Recommendations	PHEP Capability
4	<p>More than 50% (29) of counties reported that volunteer numbers were inadequate for helping public health but had been used in an exercise or real event. An additional 12.7% (7) of counties reported that there were inadequate numbers of volunteers to support public health and that these volunteers had not been used in an exercise or event. In addition, 50/55 LHDs required additional staffing for an event in the last 5 years.</p>	<ul style="list-style-type: none"> • Continue to identify, collect and disseminate best practices for volunteer recruitment and retention and coordinate with other statewide volunteer groups • Identify strategies for promoting sharing of volunteers and increasing alignment with other volunteer groups • Develop a long-term, state-level strategy for credentialing and use of volunteers in public health and medical response • Identify best practices in other rural states related to surge staffing and volunteer reception 	14, 15
5	<p>However, more than 30% of counties reported adequate volunteer numbers and engagement of volunteers in preparedness activities in the last 5 years.</p>	<ul style="list-style-type: none"> • Continue to focus on Responder Health and Safety for volunteers, specifically deployment and demobilization planning 	14, 15
6	<p>Nearly 75% (41) of LHDs reported that 76-100% of their local health staff had completed the required ICS training.</p>	<ul style="list-style-type: none"> • Support LHDs by providing guidance on preparedness program onboarding (NIMS, radio operation, etc.) • Create and disseminate an abbreviated NIMS training plan • Provide public health ICS training for local and regional preparedness staff and for state Health Command staff 	3
7	<p>33/55 LHDs had been a partner in shelter set-up or management. Sheltering was also listed frequently in the Public Health Narrative as a public health role related to prioritized hazards. Finally, 89% (49/55) of counties reported opening a shelter within the last 5 years.</p>	<ul style="list-style-type: none"> • Identify and provide resources for public health related to shelter set-up and management (particularly public health nursing and sanitation) • In partnership with the state-level ESF-6 Workgroup, assess local and state level capacity to deliver mass care services and develop an inventory of mass care supplies. 	7
8	<p>28/55 of LHDs had shared MOUs with partners to assess overlap of services</p>	<ul style="list-style-type: none"> • In partnership with emergency management, develop and disseminate guidance related to sharing agency MOUs • In partnership with emergency, identify and disseminate standard MOU templates for common agreements 	1, 3
9	<p>35% (19) of LHDs had never spoken to their County/City Solid Waste Authority and 24% (13) had never spoken to their Local Public</p>	<ul style="list-style-type: none"> • Include public health sanitation and water system activities in state-level exercises • Identify opportunities for engaging state level 	1, 2

#	Result	Recommendations	PHEP Capability
	Service Districts	associations/partners related to waste disposal in preparedness activities	
10	31% (17) of LHDs had never spoken to their Local Funeral Homes/Mortuary Services	<ul style="list-style-type: none"> • Coordinate with the Office of the Chief Medical Examiner to communicate mass fatality plans to local agencies • Encourage LHD meetings with local mortuary services and emergency management to determine the role of LHDs in fatality management 	5
11	Minimal mapping of HRA and vulnerable populations data; time-consuming data analysis due to lack of adequate data collection and reporting system.	<ul style="list-style-type: none"> • Link CTP web portal mapping applications to databases with historical hazard information (I.e. emergency declarations) • Map best practices and strengths identified in Public Health Narrative • Map gaps identified in HRA including counties with limited planning, low volunteer engagement, etc. for use in technical assistance • Integrate UNC vulnerable population data and HRA coalition and exercise data to highlight and address gaps related to vulnerable populations • In partnership with state emergency management, explore the possibility of developing a joint HRA/THIRA application for data reporting and mapping 	1
12	All of the county plans and annexes assessed had substantial gaps with 15-33% of counties reporting that they did not have at least one of the five in place.	Coordinate with Division of Homeland Security and Emergency Management, the Office of the Chief Medical Examiner and the Department of Agriculture to provide materials to local emergency management to support development of key annexes to county preparedness plans	1, 5, 14, 15

HEALTH RISK ASSESSMENT

Attachments to the State Report

Attachment 1 Public Health and Healthcare Preparedness Capabilities

#	Public Health Emergency Preparedness Capabilities	Healthcare Preparedness Capabilities
1	Community Preparedness	Community Preparedness
2	Community Recovery	Community Recovery
3	Emergency Operations Coordination	Emergency Operations Coordination
4	Emergency Public Information and Warning	
5	Fatality Management	Fatality Management
6	Information Sharing	Information Sharing
7	Mass Care	
8	Medical Countermeasure Dispensing	
9	Medical Materiel Management and Distribution	
10	Medical Surge	Medical Surge
11	Non-pharmaceutical Interventions	
12	Public Health Laboratory Testing	
13	Public Health Surveillance and Epidemiological Investigation	
14	Responder Safety and Health	Responder Safety and Health
15	Volunteer Management	Volunteer Management

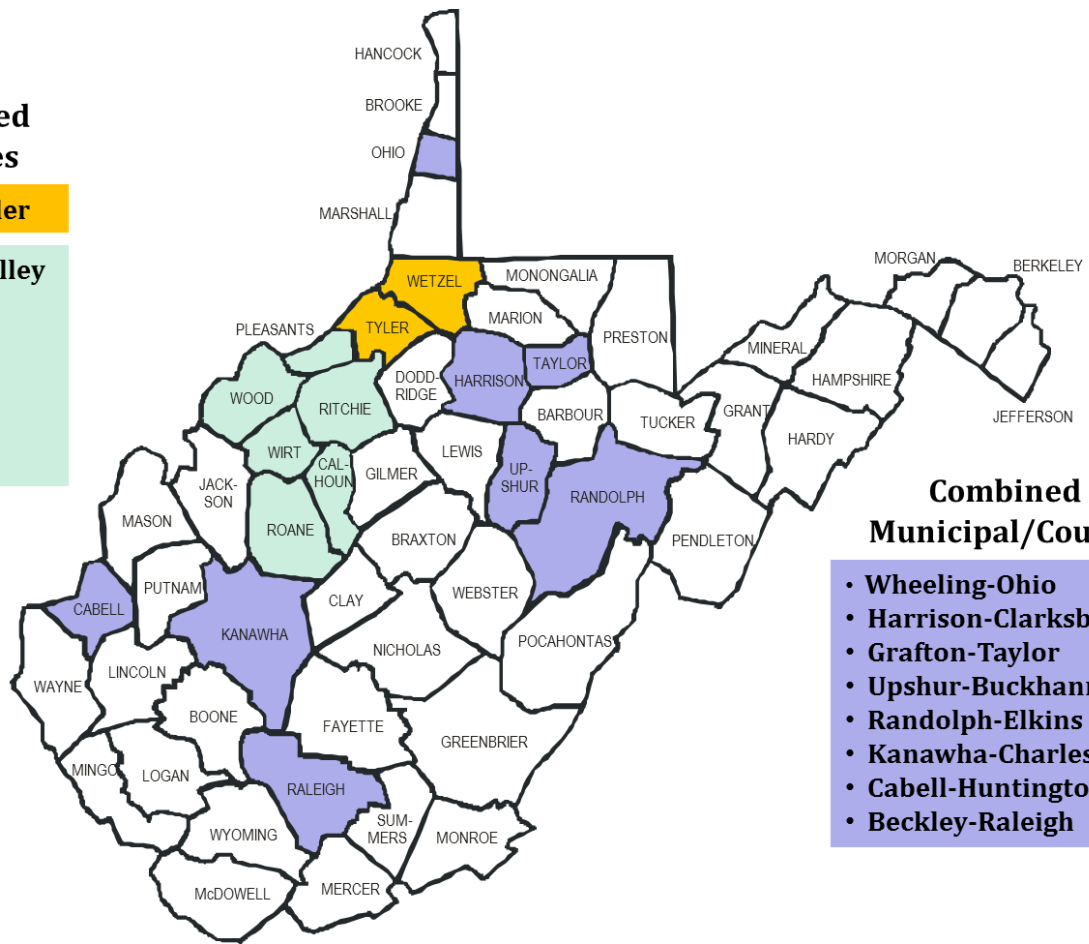
Attachment 2: West Virginia's 49 Local Health Departments

Combined Counties

Wetzel-Tyler

Mid-Ohio Valley

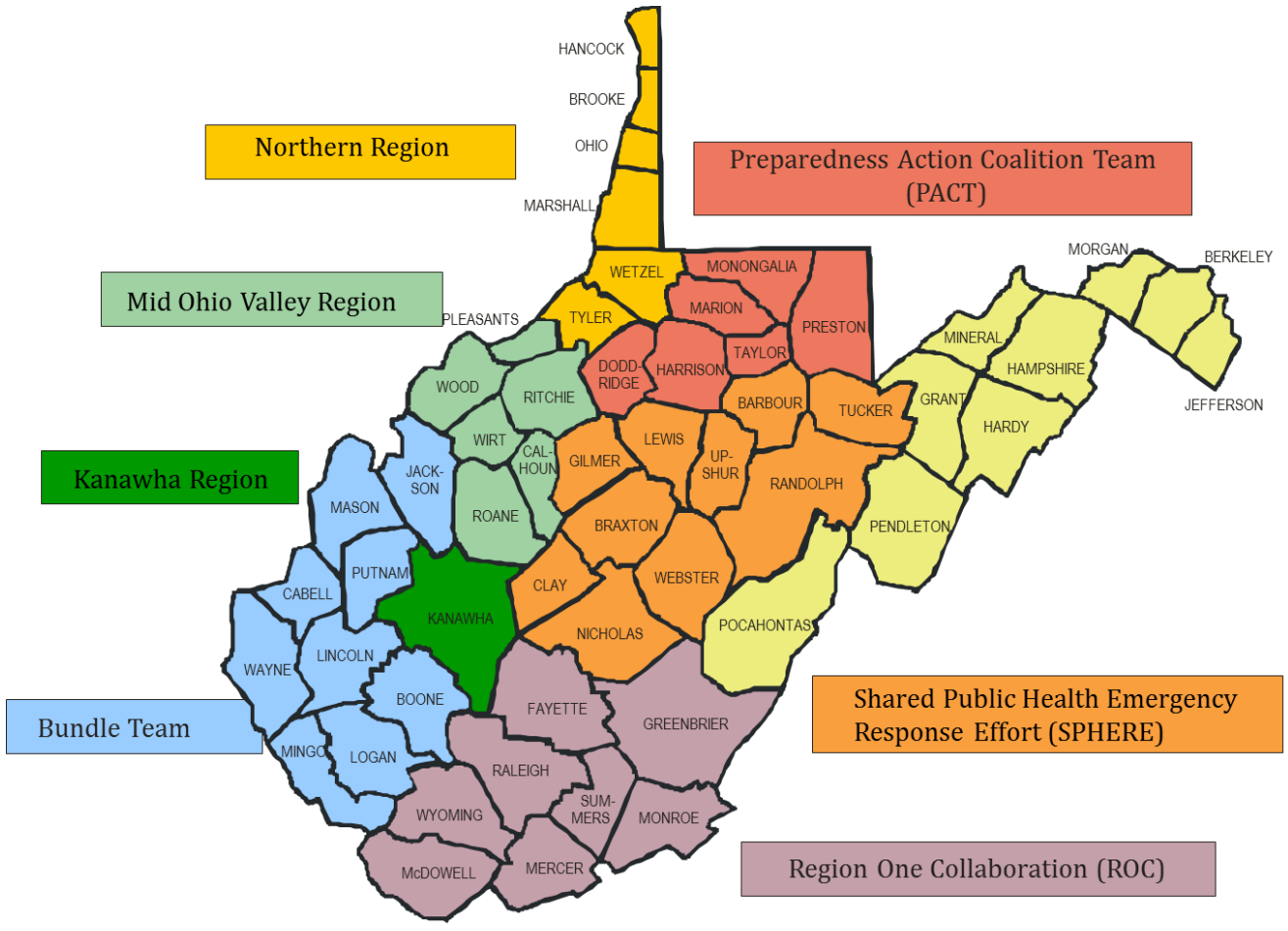
- Calhoun
- Pleasants
- Ritchie
- Roane
- Wirt
- Wood



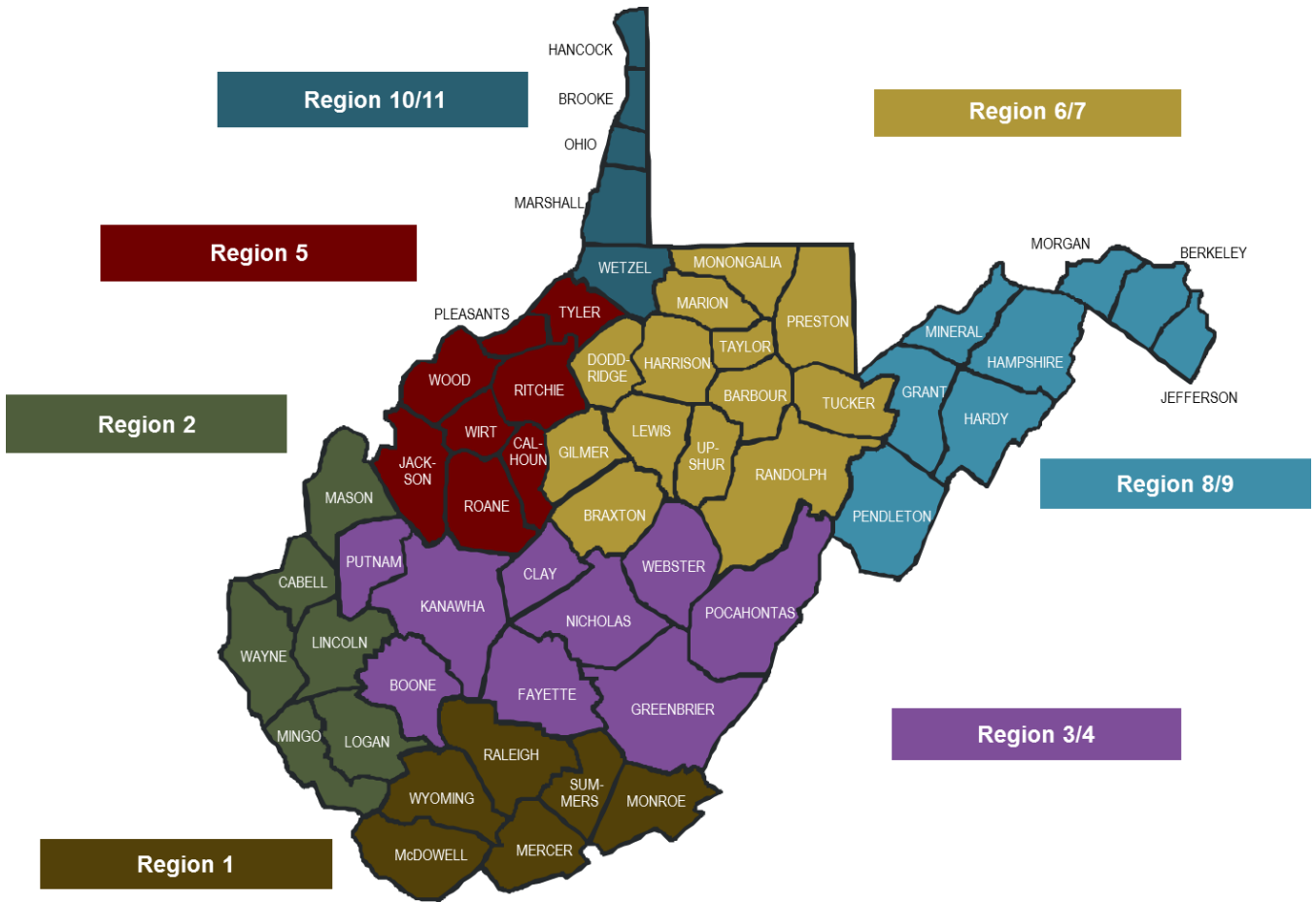
Combined Municipal/County

- Wheeling-Ohio
- Harrison-Clarksburg
- Grafton-Taylor
- Upshur-Buckhannon
- Randolph-Elkins
- Kanawha-Charleston
- Cabell-Huntington
- Beckley-Raleigh

Attachment 3: West Virginia Public Health Preparedness Regions

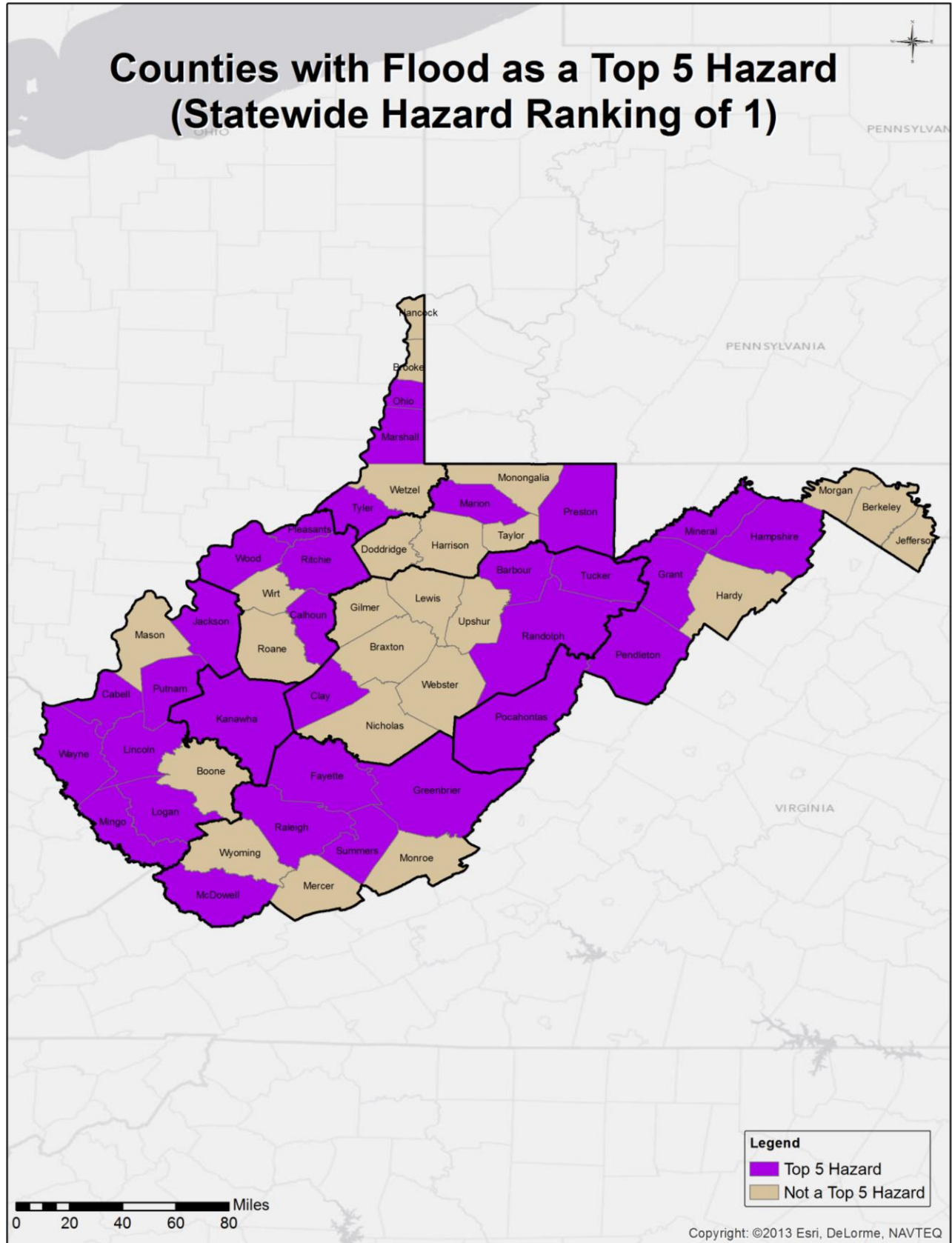


Attachment 4: West Virginia Hospital Regions



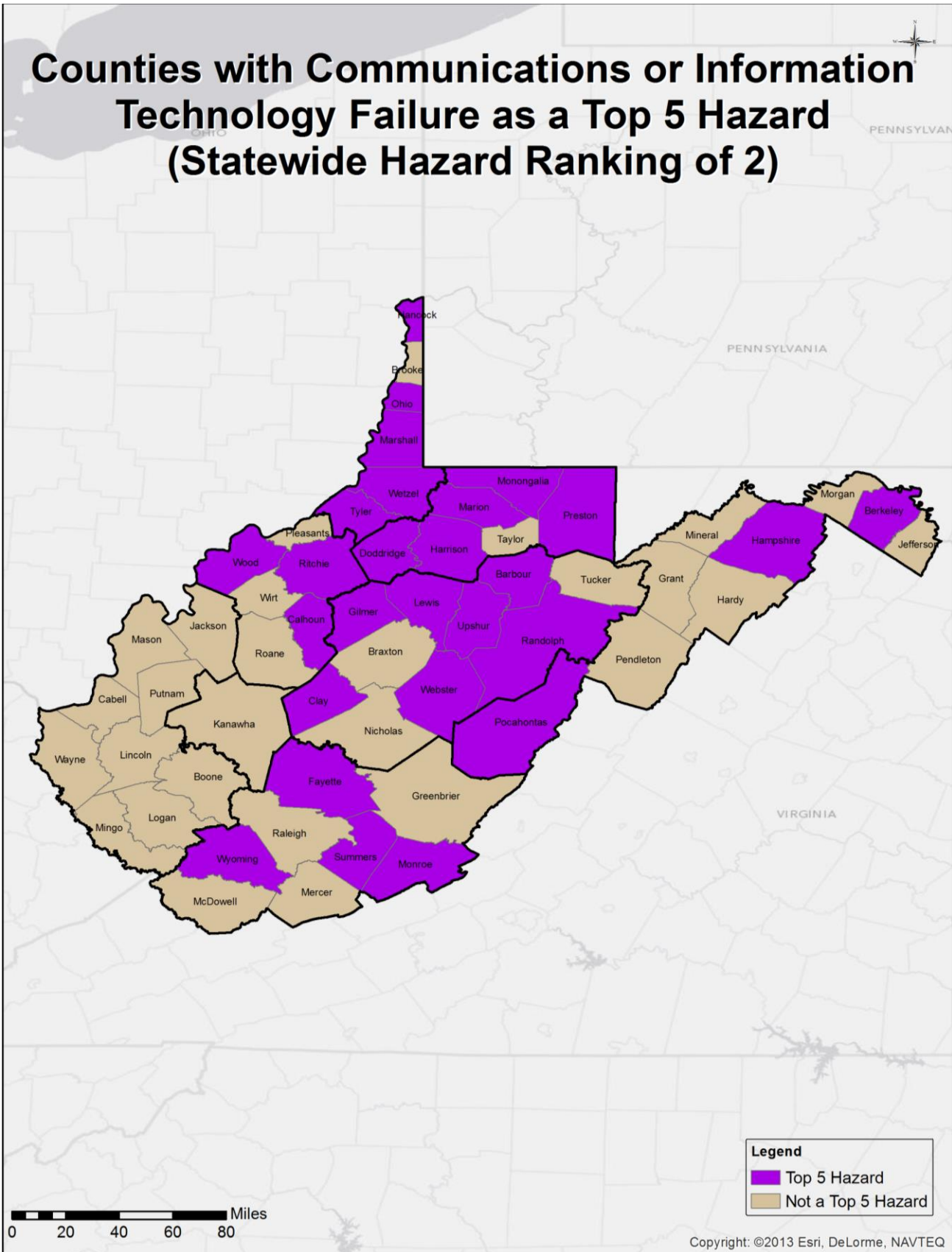
Attachment 5: Map of Highest Ranked Hazard

Counties with Flood as a Top 5 Hazard (Statewide Hazard Ranking of 1)



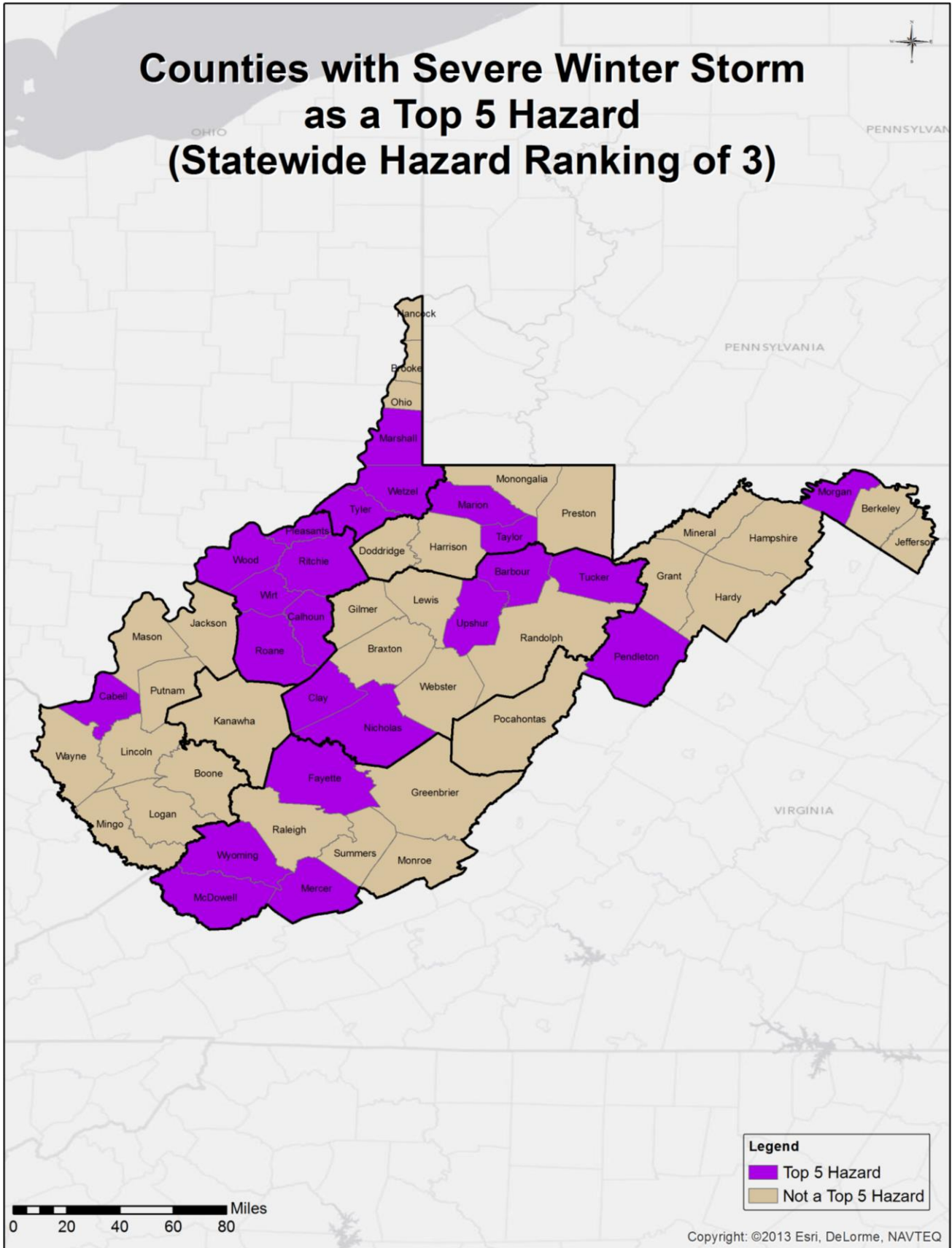
Attachment 6: Map of Second Highest Ranked Hazard

Counties with Communications or Information Technology Failure as a Top 5 Hazard (Statewide Hazard Ranking of 2)



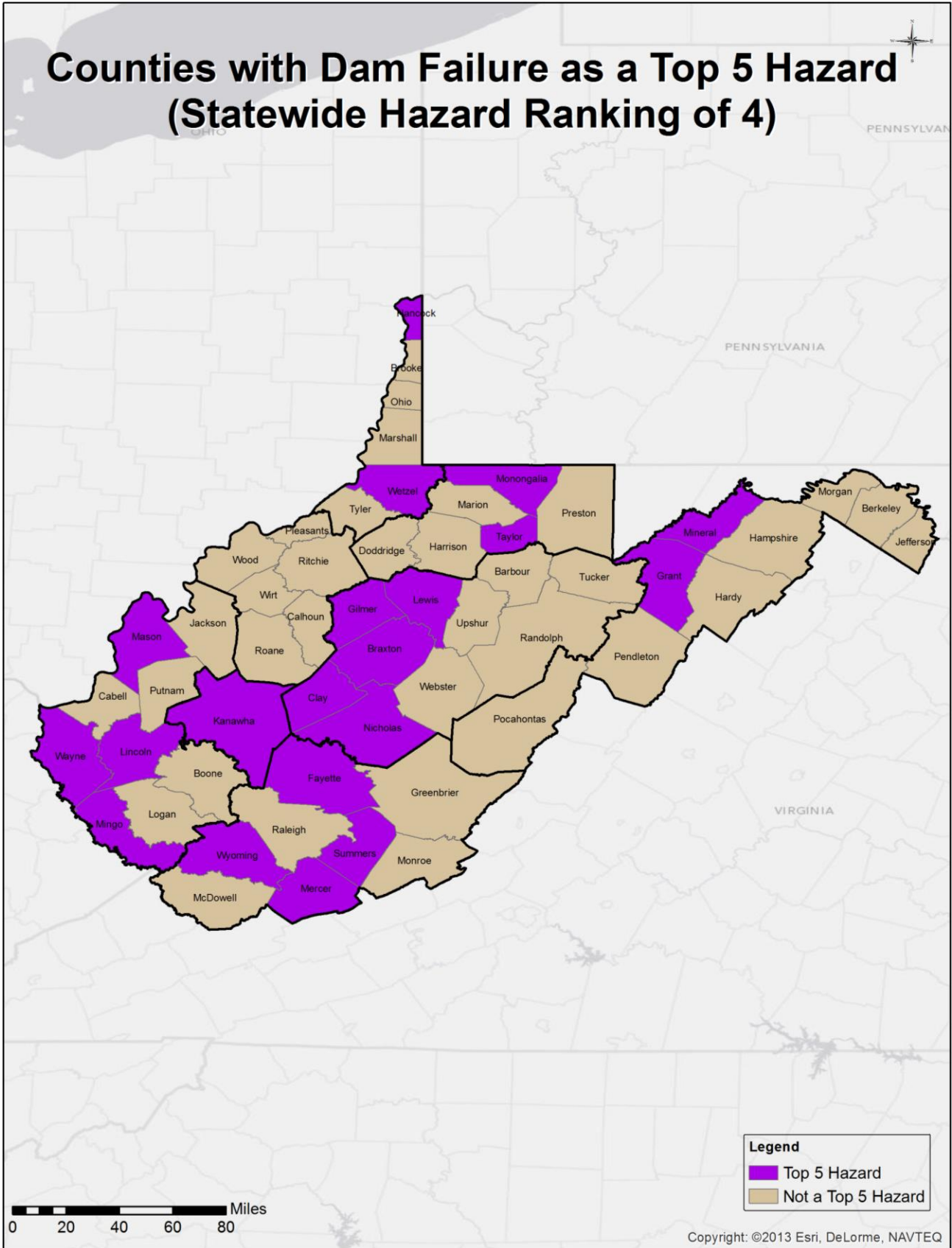
Attachment 7: Map of Third Highest Ranked Hazard

**Counties with Severe Winter Storm
as a Top 5 Hazard
(Statewide Hazard Ranking of 3)**



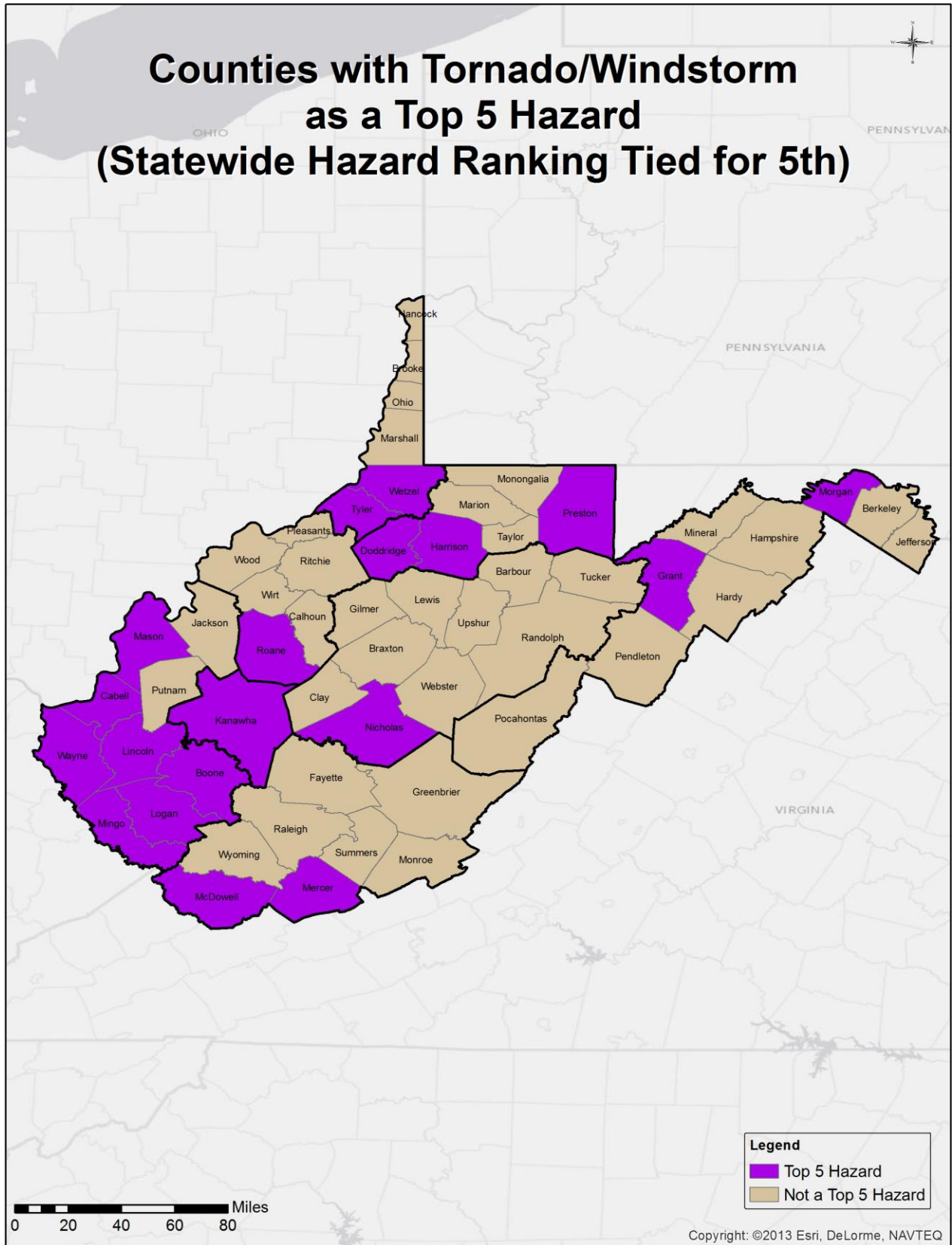
Attachment 8: Map of Fourth Highest Ranked Hazard

Counties with Dam Failure as a Top 5 Hazard (Statewide Hazard Ranking of 4)



Attachment 9: Map of Fifth Highest Ranked Hazard (Tied)

Counties with Tornado/Windstorm as a Top 5 Hazard (Statewide Hazard Ranking Tied for 5th)



Attachment 10: Map of Fifth Highest Ranked Hazard (Tied)

Counties with Power Failure as a Top 5 Hazard (Statewide Hazard Ranking Tied for 5th)

