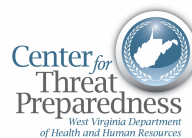


# 2018 West Virginia Jurisdictional Risk Assessment

## STATE REPORT

*PREPARED BY THE CENTER FOR THREAT PREPAREDNESS*



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## EXECUTIVE SUMMARY

The Centers for Disease Control and Prevention (CDC) Public Health Emergency Preparedness (PHEP) cooperative agreement requires states to conduct a jurisdictional risk assessment (JRA) every five years to advance a jurisdiction's capabilities to prepare for and respond to public health threats. In 2018, West Virginia conducted its second JRA.

More than 450 professionals from public health, health care, behavioral health, emergency management, and other agency sectors convened county-level risk assessment meetings from June to August 2018. A fully electronic tool comprised of three key steps was developed to engage preparedness stakeholders in risk data collection and analysis during JRA meetings; the goals of each step are described below:

### *STEP 1: HAZARD PRIORITIZATION*

Purpose: Consider how hazards apply specifically to county health and health systems and explore how impact, probability, and mitigation change risk calculations. Consider and discuss which hazards may be unique to the county or community.

### *STEP 2: IMPACT INDICATORS DISCUSSION*

Purpose: Discuss specific areas (health and public health services and infrastructure, physical and emotional health, etc.) that would be impacted by the top hazards. Consider the levels of resources and assistance needed to address the top hazards.

### *STEP 3: PREPAREDNESS AND MITIGATION SURVEY*

Purpose: Assess key county preparedness indicators. Identify partnership strengths and opportunities for improvement.

Top hazards in West Virginia were found to be diverse, spanning natural, technological, and human-causes. The top county hazards ranked by risk to public health and health systems included the opioid epidemic, cyberterrorism, biological or chemical agent terrorism, and active shooter. Inter-agency county discussions concerning hazards, impacts, and resource needs reflect a whole community approach to preparedness planning. This report makes recommendations to guide future public health-led risk assessments, with specific considerations made for West Virginia's unique demography and geography.

## INTRODUCTION

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. PHEP funds build and strengthen a jurisdiction's abilities to effectively respond to a range of public health threats. Preparedness activities funded by the PHEP cooperative agreement specifically target the development of emergency-ready public health departments. The Assistant Secretary for Preparedness and Response (ASPR) Hospital Preparedness Program (HPP) cooperative agreement complements PHEP programs, with a primary focus on strengthening health care delivery system readiness through the development and maturation of Health Care Coalitions (HCCs). To guide state and local health and medical preparedness planning, CDC published and adopted 15 Public Health Preparedness capabilities in 2011, and ASPR revised and published four Health Care Preparedness and Response capabilities in 2016.

Participation in or completion of a JRA at least once every five years is a joint grant requirement of the 2018 HPP-PHEP Cooperative Agreement for Budget Period 1 Supplemental.<sup>1</sup> As detailed in PHEP Capability 1, Community Preparedness, these public health-focused risk assessments 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. At a minimum, JRAs are required to include a definition of risk, use of Geospatial Informational 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 (i.e., clean water, sanitation, health care, public health services).<sup>2</sup> Awardees should also consider the functional needs of at-risk individuals.<sup>3</sup>

The West Virginia Department of Health and Human Resources (DHHR), Bureau for Public Health (BPH), Center for Threat Preparedness (CTP), is an awardee of the PHEP and HPP cooperative agreements and is responsible for the grants' management and subrecipient monitoring. CTP administers PHEP subrecipient grants to its 48 local health departments (LHDs), which serve the 55 counties in West Virginia. Of the 48 LHDs, 45 serve a single county (including associated municipalities) and three serve

multiple counties. The 55 counties are divided into eight public health preparedness regions which collaborate to complete grant activities and meet grant deliverables. Similarly, West Virginia's seven HCCs are divided into seven distinct regions throughout the State; LHDs are core members of HCCs, along with hospitals, emergency management, and emergency medical services.<sup>4</sup> Completion of the JRA was an included activity in the 2018-2019 Statement of Work (SOW) for LHDs. LHDs were required to ensure that Regional HCCs and other applicable county agencies (e.g., emergency management, faith-based partners, and mental/behavioral health services) were invited to, and had input into, county JRAs.

In 2011, CTP led an Advisory Committee and a Working Group to guide development of the State's first JRA, previously referred to as the Health Risk Assessment (HRA). The concept for West Virginia's first JRA was developed using a literature review, informational interviews with other state health departments and academic institutions, and continuous partner feedback and evaluation from both the state and local levels. A county JRA toolkit was developed by members of the JRA Advisory Committee and Working Group and was used by LHDs to conduct their county-level JRAs. The toolkit was pilot tested by Marshall University undergraduate students and the finalized tool was completed by all 55 counties during the summer/fall of 2012. HRA analysis and report writing activities continued into 2013/14. A detailed account of the 2012 process can be found in the State Health Risk Assessment Report.<sup>5</sup>

The purpose of this 2018 State JRA Report is to describe the methods employed by West Virginia to complete its second JRA and to present aggregate state results drawn from county-level JRA data. Analysis of these results, along with identified limitations and challenges of the JRA process, serve to inform recommendations for future state risk assessments. The 2018 JRA aimed to address all functions of PHEP Capability 1: Community Preparedness: determine risks to the health of the jurisdiction, build community partnerships, engage community organizations, and coordinate training of guidance to ensure community engagement in preparedness efforts. To accomplish this, the 2018 JRA was simplified to three key steps—Step 1: Hazard Prioritization, Step 2: Impact Indicators, and Step 3: Preparedness and Mitigation Survey—with inter-agency group discussions promoted throughout the entire process.

## METHODS

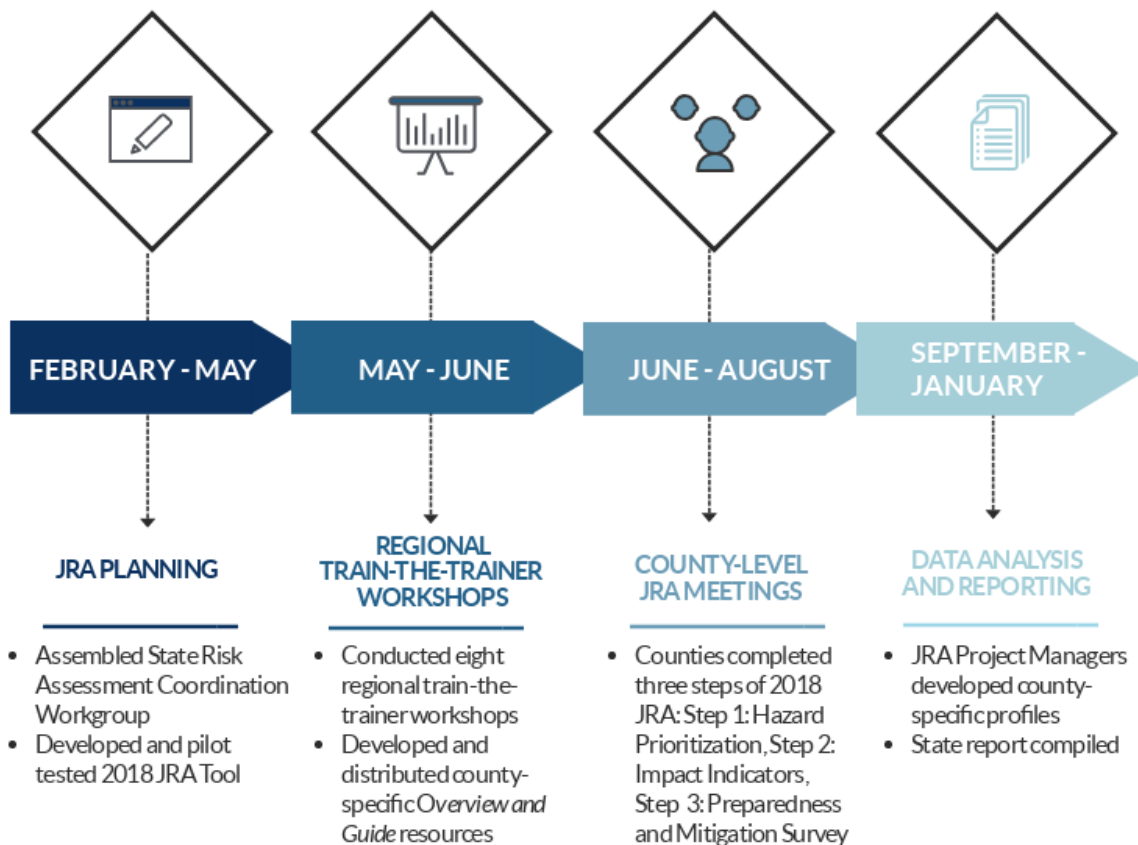
The 2012 Health Risk Assessment sought to ensure the process was replicable and could be used to drive future JRAs. Results from the 2012 HRA were published in the State HRA Report; key recommendations for future state-led risk assessment efforts were included in the report and used to guide 2018 JRA planning. Two designated Project Managers (a CDC Preparedness Field Assignee and a CDC Public Health Associate both embedded at CTP) led planning efforts at the state level, which commenced in February 2018. To increase interagency awareness of the 2018 JRA, preliminary information was shared with state partners [West Virginia Division of Primary Care, West Virginia Division of Homeland Security and Emergency Management (WV DHSEM), and DHHR's Bureau for Behavioral Health (BBH)] via email communications and verbal summaries. These summaries were delivered during standing state meetings (Public Health Threat Preparedness Oversight Committee and Senior Advisory Committee Workgroup meetings). State and regional partners were encouraged to inform their local stakeholders of the upcoming risk assessment. Project Managers also contacted the seven HCC Coordinators directly to encourage HCC engagement in the 2018 JRA.

A State Risk Assessment Coordination Workgroup was convened in early 2018 to align state assessments, minimize duplication of effort, and share risk assessment results. Workgroup members included representatives of CTP (including the Healthcare System Preparedness Director and the Director of Grants Management and Administration), West Virginia Hospital Association (WVHA), WV DHSEM, DHHR BBH and DHHR BPH Center for Local Health (CLH). Input from workgroup members facilitated integration of the JRA with the Threat and Hazard Identification and Risk Assessment (THIRA), an annual requirement of multiple grant funding streams from the Federal Emergency Management Agency (FEMA); county completion of the 2018 JRA fulfilled the community risk assessment component of a county's THIRA (Phase II).

To improve risk assessment data collection and storage and to reduce data entry errors, a fully electronic version of the JRA toolkit was developed, replacing the primarily paper-based tools used in 2012. The 2012 Workshop Participant Tool was condensed into three key components: Step 1: Hazard Prioritization, Step 2: Impact Indicators, and Step 3: Preparedness and Mitigation Survey. Microsoft Excel was used to develop the data collection tool for Step 1 and Step 2, and an electronic survey was created in SurveyMonkey for Step 3 (Appendix A). Instructions for completing each step were provided

on the first tab of the Excel document, and a Microsoft Word document containing detailed instructions (*Overview for Participants of the Jurisdictional Risk Assessment (JRA) Process*) was also developed. The electronic tool was vetted by Risk Assessment Coordination Workgroup members and pilot tested by BPH CLH personnel in the spring of 2018.

**Figure 1: 2018 Jurisdictional Risk Assessment Process**



Step 1: Hazard Prioritization was adapted from Kaiser Permanente’s Hazard Vulnerability Analysis tool.<sup>6</sup> In keeping with the 2012 HRA process, the formula  $Risk = Probability * (Impact - Mitigation)$  was used to calculate top jurisdictional hazards as ranked by risk. This formula was chosen due to its inclusion of mitigation and its relative simplicity for use in a community setting.<sup>5</sup> To facilitate discussion and reduce time needed to calculate rankings, county JRA participants were advised to complete Step 1 as a group; however, counties could average the results for each participant or groups of participants to compute their county’s scores. Values (range: 0-4) for probability, human impact, infrastructure impact, service

impact, internal mitigation, external mitigation, and community mitigation were entered for a defined list of 32 hazards. County participants could also choose to enter up to two additional “other” hazards. Impact scores were calculated by taking the sum of human, infrastructure, and services impact values and mitigation scores were calculated by taking the sum of internal, external, and community mitigation values. Hazards were ranked by risk score (range: 0-48). Negative values automatically defaulted to zero when impact was less than or equal to mitigation under the key assumption that the county was equipped to mitigate the hazard.

In Step 2, impact indicators were developed to identify specific areas (health and public health services and infrastructure, physical and emotional health, etc.) that would be impacted by top hazards. The tool was also designed to facilitate discussions concerning the levels of resources needed to address top hazards. Participants were asked to break into groups according to agency sector (public health and “other” non-health care agencies, hospital, behavioral health, and primary care/health centers) to complete the impact indicators tab of the JRA Excel tool as a group. Impact indicators remained the same as the 2012 HRA and were drawn from several tools, including Oregon<sup>7</sup> and UCLA.<sup>8</sup> Built-in definitions for each impact indicator were included.

The rating scale for each impact indicator was unique to the impact being assessed and was selected from a drop-down box; in general, a 0-4 scale was used as a framework, with 0 representing no impact and 4 representing catastrophic impact. A “NA” option was added due to concern over some impacts not being applicable to all hazards and participants were given space to enter free text or to explain any NA responses. At a minimum, participants were asked to complete Step 2 for at least one prioritized hazard, with columns available for up to three hazards. Counties could choose to prioritize hazards outside of the top ranked hazards from Step 1 if they felt it would be more beneficial for attendees to discuss a different hazard. Given that impact indicators were hazard and county-specific, results are not discussed in this aggregate report. However, LHDs received individual results of their Step 1 and Step 2 tool in their JRA county profiles and were encouraged to disseminate results with their county partners.

Step 3: Preparedness and Mitigation Survey consisted of 22 questions divided between two sections: Part A: Community Mitigation and Part B: Public Health Mitigation (Appendix A). Part A was to be completed by all JRA meeting participants collectively to assess key preparedness indicators, identify partnership strengths and opportunities for improvement, identify preparedness training needs, encourage inter-agency communication and sharing of plans and response expectations. Outreach to



and engagement with vulnerable or at-risk populations was also assessed. Part B was to be completed by LHD staff and was designed to assess the status of preparedness plans and the strength of public health's partnerships with volunteer and partner agencies. Public health plans/annexes self-reported in Part B were compared to plans/annexes uploaded to the State's SharePoint site as of June 30, 2018. For LHDs serving more than one county, respondents were only required to complete Part B of the survey once. Results were compared to 2012 HRA results.

Steps 1-3 of the JRA were completed during county-level JRA meetings, which were led by identified JRA facilitator(s). At a minimum, counties were required to extend invitations to local public health, emergency management, behavioral health, hospitals, and primary care facilities serving the county, as applicable. Counties were provided JRA meeting sign-in sheets and asked to collect contact details for all JRA participants; sign-in sheets were scanned and emailed or faxed to JRA Project Managers. Excel-based tools for Steps 1 and 2 were saved and emailed to JRA Project Managers. Results from Step 1 were analyzed using Microsoft Excel; the state ranking of risks was computed by averaging counties' probability, impact, and mitigation values and applying them to the formula  $Risk=Probability*(Impact-Mitigation)$ . Step 3: Preparedness and Mitigation Survey results were collected directly via SurveyMonkey. Survey results were cleaned in Microsoft Excel and imported into SAS (Version 9.4) for analysis. Individualized county profiles were developed using Visme<sup>9</sup> visual reports to provide a high-level overview of JRA results.

In-person regional training workshops were developed to assist JRA facilitators in leading their county JRA meetings. Regional Train-the-Trainer Workshops were led by JRA Project Managers. Regional Threat Preparedness Leads were responsible for ensuring that at least one public health representative from each of their region's counties attended the Regional Train-the-Trainer Workshop. Threat Preparedness Regional Leads were encouraged to reach out to county Threat Preparedness Leads or LHD administrators, as it was determined that these positions were most appropriate to facilitate county JRA meetings. A Doodle Poll was used to schedule regional training workshops. Training attendees (facilitators) were asked to provide their contact details on regional train-the-trainer sign-in sheets, which were collected by Project Managers and used for future communications.

JRA Project Managers developed and distributed county-specific *2018 Overview & Guide* binders to JRA facilitators during the regional trainings; two binders were distributed per county. Supplemental guidance materials included *Overview for Participants* document, *JRA Frequently Asked Questions*

document, *County JRA Meeting Sign-in Sheet*, *2018 Overview & Guide* PowerPoint presentation, a printed version of the Step 3: JRA Preparedness and Mitigation Survey, *template letters of invitation*, *Attachment 1: Scale Definitions for Hazard Prioritization (Step 1)*, *Attachment 2: Hazard Definition for Hazard prioritization (Step 1)*, county-specific National Oceanic and Atmospheric Administration (NOAA) Storm Events Data tables, and county-specific GIS maps and map descriptions. Electronic versions of all supplemental resources were sent to JRA facilitators following the regional training workshops. The *2018 Overview & Guide* PowerPoint presentation was delivered by Project Managers during the trainings, and a demonstration of the 2018 Excel-based tool was conducted.

A noted limitation of the 2012 HRA was that the risk assessment was primarily a subjective process, relying heavily on local expertise and experience; the lack of quantitative data and standardization limited the validity and comparability of the results. For the 2018 JRA, data from The National Centers for Environmental Information, NOAA Storm Events Database<sup>10</sup> were collated into county-specific tables, depicting 50-, 25-, and 10-years of historical weather events. Table variables included event type, event count, total number of injuries, total number of deaths, and estimated cost of total property damage. County historical data on event counts were intended to inform hazard probability estimates for Step 1: Hazard Prioritization; the number of injuries, deaths, and amount of property damage were included to assist counties in impact estimates. JRA participants were provided a link to access definitions for each event type, as used by the National Weather Service (NWS).<sup>11</sup>

Public Health Emergency Preparedness (PHEP) Capability 1: Community Preparedness requires jurisdictions undergoing risk assessments to include the use of GIS or other mechanism to map locations of at-risk populations.<sup>12</sup> ArcMap<sup>13</sup> was used to develop maps to assist counties in their hazard prioritization (Step 1) and impact indicator (Step 2) discussions. Maps included bordering counties, to guide counties in discussions surrounding memorandums of understanding (MOUs) (Step 3). Seven county-specific maps were created for the 55 counties using publicly available data sources, including the number of Electricity-Dependent Medicare Beneficiaries (emPOWER) data,<sup>14</sup> Social Vulnerability Index (Socioeconomic status, Household Composition, Race/Ethnicity/Language, and Housing/Transportation) data,<sup>15</sup> the West Virginia Flood Tool,<sup>16</sup> At-Risk Floodplain Structures,<sup>17</sup> and Mitigated Flood-Prone Buyout Locations.<sup>18</sup> Locations of interest (schools/higher education, hospitals, community health providers, nursing homes, and dams) were also included.

Two evaluation surveys were developed in SurveyMonkey: a 12-question JRA participant survey (Appendix B) and a 14-question JRA facilitator survey (Appendix C). Facilitators who also participated in their county's JRA were provided both survey links. A combination of Likert scale, yes/no, and free-text questions were used to assess facilitator and participant attitudes, likes/dislikes, and areas for improvement concerning the JRA process. Participants were also questioned on their attitudes concerning the electronic tool and supplemental resources. The facilitator survey included questions concerning the Regional Train-the-Trainer Workshops, and the degree to which facilitators felt supported and prepared to lead their county-level JRA meetings. Survey respondents could provide additional feedback under questions 12 and 14 of the participant and facilitator survey respectively. Respondents could choose to submit an anonymous survey.

## RESULTS

### *Train-the-Trainer Workshops and County JRA Meetings*

Between May 9, 2018 and June 1, 2018, seven Regional Train-the-Trainer Workshops were held across West Virginia's eight public health preparedness regions. Informal meetings and telephone calls with preparedness staff were used in lieu of a workshop in one region, due to the region being heavily burdened by an outbreak of Hepatitis A. In total, 54 JRA facilitators attended the workshops, with all 55 counties represented.

JRA county-level meetings were held in June, July, and August 2018. Two neighboring counties combined their JRA meetings and data, creating a denominator of 53 counties. 52 counties (98.1%) completed the JRA Tool for Step 1: Hazard Prioritization and Step 2: Impact Indicators. 50 counties (94.3%) completed Step 3: Preparedness and Mitigation Survey; two counties submitted partially completed surveys (Part A or B only) and one county did not submit a survey (neither Part A nor B). 44 counties (83.0%) returned sign-in sheets from county JRA meetings. Analysis of available sign-in sheets revealed 450 respondents across all eight preparedness regions participated in county JRA meetings; this is likely an underestimation of the true number of participants. The average number of participants per meeting was 12.2, with the number of participants ranging from 2-61. Some counties chose to combine their JRA meetings with standing preparedness meetings (i.e., WVHA Disaster Preparedness meetings, Local Emergency Planning Committee meetings) or combine neighboring county meetings;

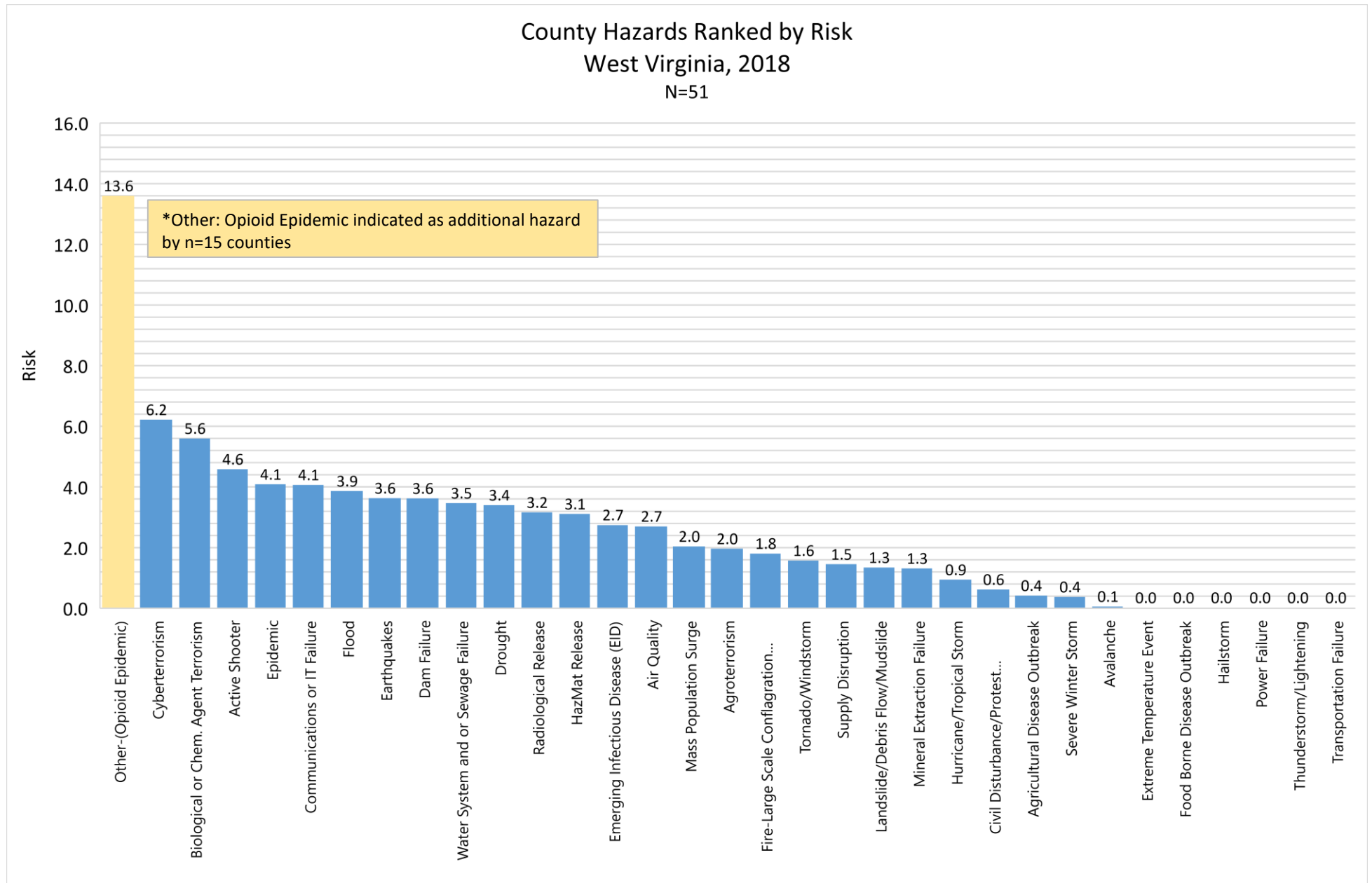
attendees from combined meetings were only counted once, despite potentially having input into more than one county's JRA.

Step 1: Hazard Prioritization values were averaged for 51 counties to calculate the top county hazards ranked by risk in West Virginia. One county did not submit data for Step 1 and one county's Step 1 results were excluded due to submitted values outside the allowable range (0-4) for probability, impact, and mitigation. Top county hazards ranked by risk are displayed in Figure 2. Fifteen counties wrote in drug addiction, opioid overdose, drug abuse, opioid epidemic, substance abuse, drug epidemic, and mass drug overdose as an "other" hazard in the JRA tool, and these were collectively coded as the hazard "opioid epidemic." Excluding opioid epidemic, the top 10 hazards ranked by risk to public health and health systems in West Virginia were: 1) cyberterrorism, 2) biological or chemical agent terrorism, 3) active shooter, 4) epidemic, 5) communications or IT failure, 6) flood, 7) earthquakes, 8) dam failure, 9) water system and/or sewage failure, and 10) drought.

The average time spent completing the Step 3: Preparedness and Mitigation Survey was 19 minutes.

Part A: Community Mitigation of the Preparedness and Mitigation Survey was completed by 51 counties. Counties were questioned on community groups involved in coalitions and/or exercises in the past five years (Table 1). 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 partner in preparedness planning (i.e., the private sector). In general, counties reported high levels of engagement with various populations in their jurisdictions; the majority of respondents (>50%) reported engaging older adults, children, persons with disabilities, persons with behavioral health needs, the private sector, and faith-based organizations in both exercises and coalitions during the past five years. Overall, the percentage of counties engaging these population groups in preparedness exercises in the past five years increased from the 2012 to 2018 survey rounds, while the percentage of population groups engaged in county coalitions in the past five years decreased or remained stable (Table 1).

Figure 2: Top County Hazards Ranked by Risk



Population	County coalition(s) included this population in the past 5 years (n, %)		County exercise(s) included this population in the past 5 years (n, %)	
	2018 N=51	2012 N=55	2018 N=51	2012 N=55
<b>Older Adults</b>	29 (56.7%)	38 (69.1%)	43 (84.3%)	33 (60%)
<b>Children</b>	29 (56.7%)	36 (65.5%)	38 (74.5%)	36 (65.5%)
<b>Persons with disabilities</b>	26 (51.0%)	34 (61.8%)	34 (66.7%)	29 (52.7%)
<b>Persons with chronic conditions</b>	20 (39.2%)	29 (52.7%)	32 (62.8%)	10 (18.2%)
<b>Persons with limited English proficiency</b>	8 (15.7%)	6 (10.9%)	10 (19.6%)	8 (14.5%)
<b>Private sector</b>	25 (49.0%)	35 (63.6%)	31 (60.8%)	33 (60.0%)
<b>Ethnic minorities</b>	4 (7.8%)	4 (7.3%)	5 (9.8%)	8 (14.5%)
<b>Incarcerated persons</b>	7 (13.7%)	17 (30.9%)	5 (9.8%)	13 (23.6%)
<b>Persons with behavioral health needs</b>	26 (51.0%)	32 (58.2%)	25 (49.0%)	20 (36.4%)
<b>Transient populations</b>	13 (25.5%)	24 (43.6%)	12 (23.5%)	15 (27.3%)
<b>Faith-based organizations</b>	30 (58.8%)	38 (69.1%)	32 (62.8%)	26 (47.3%)
<b>None of the above</b>	7 (13.7%)		4 (7.8%)	

The statuses of county preparedness plans are displayed in Table 2. Compared to the 2012 HRA (data not shown), the proportion of counties reporting having no plan (response=0) decreased for all plans assessed. However, gaps in planning remain, with less than a quarter of county respondents reporting use of plans in exercises (response=3) or real events (response=4) for all plans excluding volunteer management, for which 39.2% of county respondents indicated a response of 3 or 4. Counties were least familiar with the large animal sheltering plan, and 16 (31.4%) counties indicated they did not have a plan in place. In assessing additional community planning and response capabilities, 16 (31.4%) county respondents indicated their county had an at-risk individual (special populations) registry, compared to the 41.8% in 2012; however, three counties indicated they were in the process of developing registries. 39 (78%) county respondents indicated opening a shelter in the past five years; one county skipped this survey question. 14 (27.5%) county respondents reported opening a family assistance center in the past 5 years.

Overwhelmingly, the most commonly cited factors limiting counties' abilities to mitigate prioritized hazards were staffing and funding. When questioned on factors unique to the county which complicated mitigation activities, respondents largely reported factors relating to the variable demographics (e.g.,

transient populations, low income populations, elderly populations, isolated populations) and terrain of West Virginia. Concerns for critical infrastructure and resource availability during an incident were also commonly expressed. Counties identified a range of trainings needed to mitigate their prioritized hazards; while these were hazard-specific, commonly identified trainings included active shooter, HazMat, and cyberterrorism/IT trainings. Of concern, six respondents indicated that despite training availability, there remains a lack of trained personnel due to insufficient volunteer/staff numbers and/or availability of time to commit to training.

Survey Part B: Public Health Mitigation was completed by 51 counties, represented by 45 LHDs; 6 respondents indicated their LHD served more than one county and were prompted to only complete questions 16-22 of the survey once (Appendix A). Of the 45 unique responses, the majority (66.7%) of respondents reported 76-100% of public health staff having completed Incident Command System (ICS) training for their respective roles; only 3 (6.7%) respondents indicated fewer than 50% of staff having been trained. 43/44 respondents (95.6%) indicated their health department had an identified public information officer (PIO); however, one LHD indicated their designated PIO still needed training and one LHD skipped the question. In assessing volunteer numbers in the community, the majority (71.1%) of respondents indicated that volunteer numbers were inadequate for helping public health, and approximately half of all respondents reported needing additional staffing for an event in the past five years. However, over half (53.5%) of respondents reported use of volunteers in the past five years for a real event.

The statuses of public health plans are displayed in Table 3. Respondents reported a minimum of a written plan in place for all plans except the family reunification and smallpox plans; twelve LHDs (26.7%) indicated they did not have a written family reunification plan and six LHDs (13.3%) indicated they did not have a written smallpox plan. The most utilized plans (exercised or used in a real event in the past five years) were strategic national stockpile (SNS) plans (62.2%), crisis and emergency risk communication (CERC) plans (51.1%), all-hazards plans (46.7%), and continuity of operations (COOP) plans (46.7%). For family reunification plans, discrepancies existed between self-reported survey data and plans uploaded in the State SharePoint site (a deliverable for LHDs in the 2017-2018 SOW). However, for those LHDs that did not have an updated plan, it is possible that plans were added to SharePoint after June 30, 2018 and prior to the survey closing on August 31, 2018.

Plan or annex to plan	Response (n, %) N=51 counties					
	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 area event in the last 5 years	NA: Not applicable or my county is not aware of this plan
<b>Fatality Management</b>	5 (9.8%)	21 (41.2%)	15 (29.4%)	4 (7.8%)	3 (5.9%)	3 (5.9%)
<b>Volunteer Management</b>	6 (11.8%)	16 (31.4%)	8 (15.7%)	12 (23.5%)	8 (15.7%)	1 (2.0%)
<b>Donations Management</b>	11 (21.6%)	13 (25.5%)	12 (23.5%)	3 (5.9%)	6 (11.8%)	6 (11.8%)
<b>Large Animal Sheltering</b>	16 (31.4%)	16 (31.4%)	8 (15.7%)	3 (5.9%)	0 (0.0%)	8 (15.7%)
<b>Pet Sheltering</b>	7 (13.7%)	24 (47.1%)	9 (17.7%)	3 (5.9%)	1 (2.0%)	7 (13.7%)

Plan or annex to plan	Response (n, %) N=45 Local Health Departments				
	0: My agency has no plan	1: My agency has a written plan	2: My agency has a written plan, and it has been reviewed in the past 12 months	3: My agency has a written plan which has been reviewed in the past 12 months and exercised in the last five years	4: My agency has a written plan which has been reviewed in the past 12 months and used in area event in the last five years
<b>All-Hazards</b>	0 (0.0%)	0 (0.0%)	24 (53.3%)	11 (24.4%)	10 (22.2%)
<b>Strategic National Stockpile</b>	0 (0.0%)	1 (2.2%)	16 (35.6%)	26 (57.8%)	2 (4.7%)
<b>Pandemic Influenza</b>	0 (0.0%)	7 (15.6%)	25 (55.6%)	11 (24.4%)	2 (4.7%)
<b>Smallpox</b>	6 (13.3%)	21 (46.7%)	14 (45.2%)	4 (8.9%)	0 (0.0%)
<b>Continuity of Operations</b>	0 (0.0%)	2 (4.4%)	22 (48.9%)	17 (37.8%)	4 (8.9%)
<b>Crisis and Emergency Risk Communication</b>	0 (0.0%)	5 (11.1%)	17 (37.8%)	14 (31.1%)	9 (20%)
<b>Emerging Infectious Disease</b>	0 (0.0%)	3 (6.7%)	26 (57.8%)	8 (17.8%)	8 (17.8%)
<b>Family Reunification</b>	12 (26.7%)	11 (24.4%)	18 (40.0%)	4 (8.9%)	0 (0.0%)



## *Evaluation Results*

A total of 108 JRA participants responded to the JRA Participant Evaluation Survey. Surveys were distributed to all participants who provided an email address on JRA sign-in sheets via an emailed survey link; however, due to difficulties transcribing hand-written emails from JRA meeting sign-in sheets, the number of undelivered survey links could not be determined, and a response rate could not accurately be computed. Agency sectors of survey respondents included public health (34.3%), emergency management (19.4%), hospital (10.2%), primary care (5.6%), non-profit/volunteer organizations (7.4%), first responders (4.6%), education (2.8%), and other (15.7%).

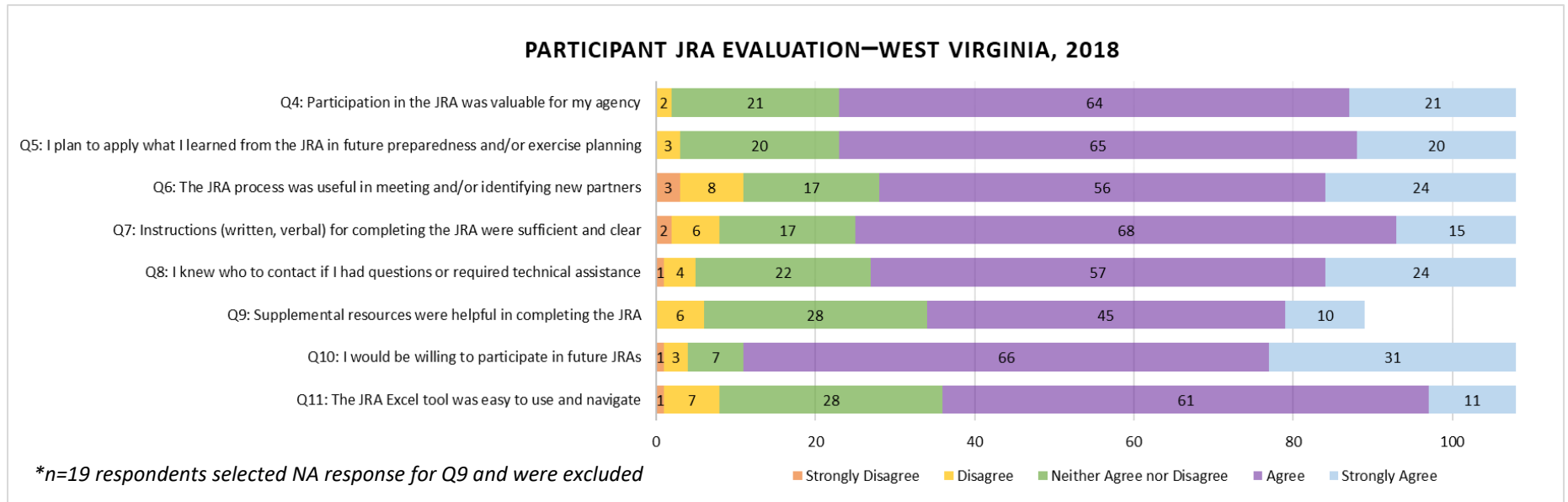
Fewer than half (45.4%) of participant respondents indicated past participation in the 2012 HRA. Results from the 5-point Likert scale questions are displayed in Figure 3. The median value for all Likert scale questions was four (Agree). Nineteen respondents were excluded from question nine: “Supplemental resources (GIS maps, NOAA storm event data) were helpful in completing the JRA process,” given that these respondents indicated not receiving supplemental resources. Of note, 78.7% of respondents indicated they agreed or strongly agreed with the statement that participation in the JRA was valuable for their agency, with only two respondents (1.9%) disagreeing. 97 (89.8%) respondents selected agree or strongly agree when asked if they would be willing to participate in future JRAs. In assessing participants’ attitudes concerning the electronic format of the JRA tool, 72 (66.7%) participants indicated they agreed or strongly agreed that the tool was easy to use and navigate, with only 7.4% disagreeing or strongly disagreeing.

In total, 30 out of 54 JRA facilitators responded to the JRA Facilitator Evaluation Survey, a response rate of 55.6%. Slightly over a third (36.7%) of respondents indicated prior experience facilitating the 2012 HRA. Results from the 5-point Likert scale are displayed in Figure 4. Three respondents did not attend the Regional Train-the-Trainer Workshop and were excluded from questions five and nine. The median value for all Likert scale questions was four (Agree). 22 respondents (81.5%) agreed or strongly agreed with the statement: “The Regional Train-the-Trainer workshop prepared me for facilitating the JRA county-level meeting.” Respondents were somewhat divided on whether the workshop could be delivered via an electronic format such as a webinar, with nine (30%) respondents disagreeing or strongly disagreeing and 16 (53%) respondents agreeing or strongly agreeing. However, the majority

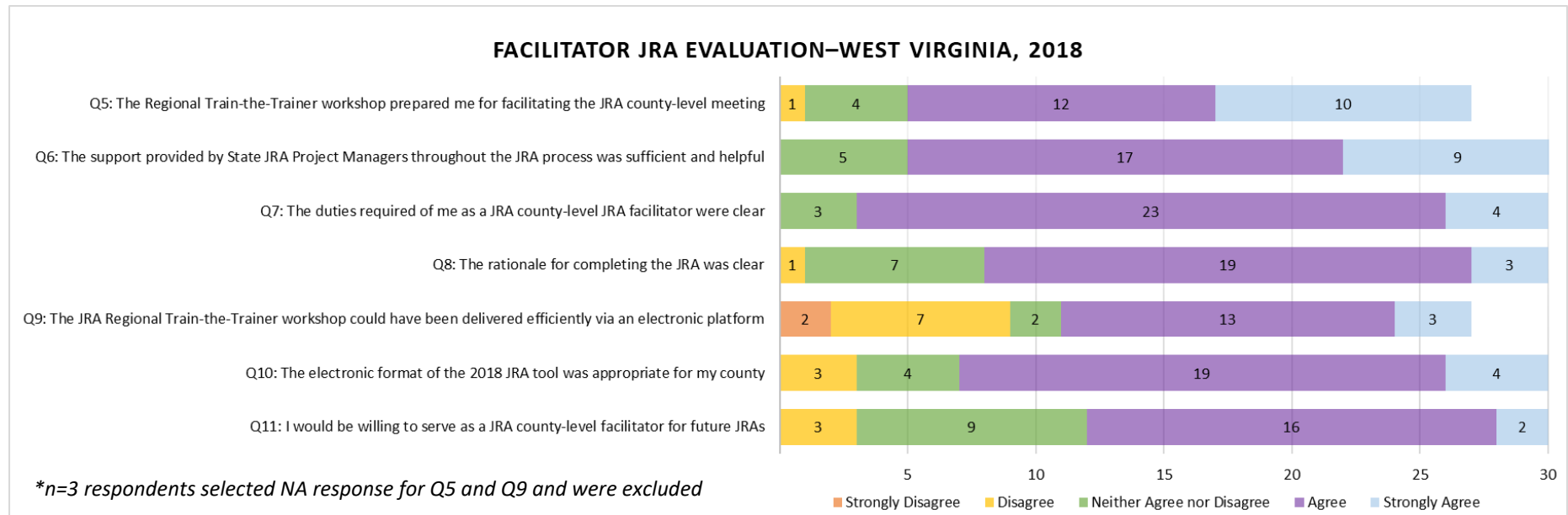
(77%) of respondents agreed or strongly agreed that the electronic format of the JRA tool was appropriate for their county(s).

In addition to inviting LHDs, hospitals, emergency management, behavioral health centers, and primary care centers to county-level meetings, JRA facilitator respondents also reported inviting Board of Education, fire departments, American Red Cross, long-term care facilities, nursing homes, hospice care, Division of Highways (DOH), and Local Emergency Management Planning Committee (LEPC) members, among others. Of supplemental resources provided to facilitators, respondents indicated that the most useful resources for conducting county-level JRA meetings were the *JRA Overview for Participants* (73.3%), *JRA 2018 PowerPoint* (56.7%), template letters of invitation (56.7%), and *JRA Frequently Asked Questions* (56.7%). Of the provided data-driven resources, only 8 (26.7%) and 7 (23.3%) respondents indicated that the county-specific GIS Maps and the NOAA storm event data tables, respectively, were useful in conducting county JRA meetings.

**Figure 3: JRA Participant Evaluation Survey Results**



**Figure 4: JRA Facilitator Evaluation Survey Results**



## DISCUSSION

The West Virginia 2018 JRA sought to condense the 2012 HRA process and reduce participant burden while preserving the framework of the State's first public health-focused risk assessment; this foundation was informed by a comprehensive literature review and expert interviews and was developed with West Virginia's unique geography and demography in mind. The resulting 2018 JRA tool was designed for use by LHDs to engage community preparedness stakeholders in risk data collection and analysis.

Over 450 individuals spanning public health, emergency management, hospitals, behavioral health, education, volunteer organizations, and other sectors participated in local risk assessments. This reflects FEMA's whole community approach, a key concept of emergency management which promotes widespread community engagement to enhance the overall resiliency and security of communities.<sup>19</sup> Inter-agency group discussions were promoted throughout all three steps of the JRA process to promote collective understanding, assess the needs of local communities, and determine the best ways to organize and strengthen communities' assets, capacities, and interests. Training and exercise needs were also discussed. Of note, approximately three-quarters of participants indicated that the JRA process was useful in meeting and/or identifying new partners.

The State's first fully electronic JRA was conducted in 2018. Results from the 2018 evaluation surveys revealed that the majority of participants found the electronic 2018 JRA tool easy to use and navigate, and over three-quarters of JRA facilitators indicated that the electronic format of the 2018 JRA process was appropriate for their county. However, a handful of counties did reach out to JRA Project Managers requesting paper-based tools, with one county indicating concern over limited internet coverage in their highly rural county. Furthermore, JRA facilitators were divided on whether Regional JRA Train-the-Trainer sessions could effectively be delivered via an electronic format (i.e., webinar); the rural status of much of the State, along with the workforce's wide range of technological skills, must not be overlooked when planning for future risk assessments.

The 2018 JRA assessed hazard risks in 51 counties and all eight preparedness regions in West Virginia. Individual JRA results from Step 1: Hazard Prioritizations were averaged to provide an overview of the top hazards, as ranked by risk, in the State. Of the top 10 hazards, three of the hazards (flooding, communications/IT failure, dam failure) were cited as top-5 hazards by counties in 2012.<sup>5</sup> However, the

differing methods used to derive top state risks (averaging county scores versus comparing frequency of hazards listed in the top-5 on county risk assessments) largely limit comparability between the years. Recent data from the CDC lists flooding, landslides/mudslides, and severe weather events as frequent public health emergencies in West Virginia.<sup>20</sup> Of these three hazards, flooding and droughts (a severe weather event) appeared on the top ten list of hazards as ranked by risk in West Virginia. Many of the top hazards identified via the JRA—including opioid crisis, flooding, cyberterrorism, and epidemic—were also included in West Virginia’s 2018 Unified Reporting Tool submission.

Community hazards can be categorized into one of three hazard types: natural hazards, technological hazards, and human-caused hazards.<sup>21</sup> All categories were represented in the top ten hazards, suggesting that threats in West Virginia are diverse. This diversity supports an all-hazard approach to preparedness planning, in which risk analysis assigns priority and resources to hazard mitigation.<sup>21</sup> Of the top hazards ranked by risk in West Virginia, the top three (cyberterrorism, biological or chemical agent terrorism, and active shooter) are human-caused hazards. Fifteen counties also chose to write-in and score the opioid epidemic as an “other” hazard during their risk assessment meetings. The high average risk score for opioid epidemic—and counties’ interests in discussing the hazard during their risk assessment meetings—is indicative of the burden the crisis has inflicted on West Virginia: In 2016, West Virginia had the highest rate of opioid-related deaths in the United States, at a rate of 43.4 deaths per 100,000 population.<sup>22</sup>

Many of the challenges reported by counties in the 2012 HRA—specifically staffing and funding—continued to be cited barriers to counties’ mitigation planning in 2018. Over half of county respondents reported using volunteers in the past five years for a real event—suggesting volunteers are critical for augmenting emergency responses. However, the majority of respondents (71.1%) indicated that volunteer numbers were inadequate, and approximately half of all respondents reported needing additional staffing for an event in the past five years. Six respondents also indicated a lack of trained personnel due to insufficient volunteer/staff numbers to be trained and/or availability of time to commit to training. Resource gaps are likely to remain a challenge to county mitigation practices in West Virginia, given the decrease in PHEP funding to the state since 2012.<sup>23</sup> In addition, fewer counties indicated having an at-risk individual, special population, or vulnerable population registry in 2018 compared to 2012. Respondents that did not have a registry reported challenges (e.g., difficulty

registering individuals, registry's website compromised) that resulted in cancelling registry contracts; these challenges support the decrease in the number of counties having an active registry.

### *Limitations and Recommendations*

The risk formula:  $Risk = Probability * (Impact - Mitigation)$  was selected for its simplicity and ease of use. To prevent negative values, the following key assumption was included: if impact is greater than or equal to mitigation, the county is prepared to mitigate the hazard, and therefore risk approximates zero. While counties were advised to select the higher mitigation score and the lower impact score when choosing between values to reduce the number of negative scores defaulting to zero, confusion over the assumption existed, specifically when a hazard's probability score was relatively high, yet the risk score approximated to zero. Furthermore, when taking the average of individual county risk scores to calculate the state ranking of hazards, hazards which appeared in a county's top ten hazards list (e.g., power failure) could still have a state average risk score approximate to zero; this not only reflected a limitation of the formula, but a major limitation of averaging values across heterogeneous counties. Future risk assessments could benefit from exploring additional risk formulas, especially those which may have been developed since the selection of this risk formula in 2012.

Evaluation survey analysis and anecdotal feedback provided to JRA Project Managers indicated some participant confusion regarding JRA Step 2: Impact Indicators. In converting the paper-based 2012 participant tool of the 2012 HRA to the electronic 2018 JRA tool, impact indicators and definitions remained the same, and an "NA" option was added to the scale definition. However, a major limitation of the JRA tool was that context descriptions (i.e., time, place, and conditions) in which threats or hazards might occur were not included; the impact of hazards can differ considerably given different hazard conditions.<sup>21</sup> While participants were instructed to separate baseline conditions from hazard-specific impacts to assess impact on health services and infrastructure, baseline data for jurisdictions were only available through local knowledge and expertise.

The 2018 JRA encouraged the use of various data sources to inform the quantification of probability, impact, and mitigation values and to guide risk assessment discussions. However, despite the inclusion of data-driven sources (i.e., county-level GIS maps, NOAA storm event tables), over a third of surveyed participants provided a response of three (neither agree nor disagree) or two (disagree) when questioned on how helpful these resources were in conducting county JRAs. Furthermore,

approximately 20 respondents reported not receiving the supplemental resources; one possible explanation for this is the low perceived usefulness of the resources indicated by JRA facilitators, with approximately only a quarter of facilitators indicating they found these supplemental resources useful. As such, JRA facilitators may have chosen not to share these resources with their county participants during risk assessment meetings. Future JRAs need to consider the acceptability and accessibility of provided resources for county JRA participants. Efforts to explore the use of novel platforms for displaying GIS data, such as ESRI Story Maps<sup>24</sup>—which can easily be disseminated to all JRA participants via shareable weblinks—should be considered and pilot tested with LHDs. The State should also invest in training personnel in GIS technology and encourage sharing of timely data across DHHR.

## CONCLUSION

The 2018 JRA process engaged a wide array of preparedness stakeholders across all preparedness regions in West Virginia. The State's first fully electronic tool reduced participant burden and promoted inter-agency discussions throughout all three steps of these public health-led risk assessments: Step 1: Hazard Identification, Step 2: Impact Indicators, Step 3: Preparedness and Mitigation Survey. Top hazards were found to be diverse, spanning natural, technological, and human-causes; this diversity supports an all-hazard approach to preparedness planning. The top hazards for West Virginia were opioid epidemic, cyberterrorism, biological or chemical agent terrorism, and active shooter. Future risk assessments should consider novel means of furthering integration of quantitative data—including GIS mapping and baseline measures for impact discussions.

## APPENDIX A: STEP 3: PREPAREDNESS AND MITIGATION SURVEY

### PART A: COMMUNITY MITIGATION

This survey assesses your county's current community and public health mitigation practices as they relate to the top hazards prioritized by your workgroup to guide future preparedness planning activities.

Part A: Community Mitigation is to be completed by JRA participants collectively as a county. Input from all agencies and sectors should be considered.

Part B: Public Health Mitigation is to be completed by public health participants/local health representative in your county.

1. Please nominate a scribe for your county and enter the following details:

Name	<input type="text"/>
Agency	<input type="text"/>
County	<input type="text"/>
Email Address	<input type="text"/>

2. In the past five (5) years, has your county held exercises with any agencies/advocates representing any of the following populations? Please select all that apply:

<input type="checkbox"/> Older adults	<input type="checkbox"/> Incarcerated persons
<input type="checkbox"/> Children	<input type="checkbox"/> Persons with behavioral health needs
<input type="checkbox"/> Persons with disabilities	<input type="checkbox"/> Transient populations (i.e. migrant workers, homeless, temporary workers, university students)
<input type="checkbox"/> Persons with chronic conditions	<input type="checkbox"/> Private sector
<input type="checkbox"/> Persons with limited English	<input type="checkbox"/> Faith-based organizations
<input type="checkbox"/> Ethnic minorities	<input type="checkbox"/> None of the above
<input type="checkbox"/> Other (please specify)	

3. In the past five (5) years, has your county formed coalitions involving agencies/advocates representing any of the following populations? Please select all that apply:

<input type="checkbox"/> Older adults	<input type="checkbox"/> Incarcerated persons
<input type="checkbox"/> Children	<input type="checkbox"/> Persons with behavioral health needs
<input type="checkbox"/> Persons with disabilities	<input type="checkbox"/> Transient populations (i.e. migrant workers, homeless, temporary workers, university students)
<input type="checkbox"/> Persons with chronic conditions	<input type="checkbox"/> Private sector
<input type="checkbox"/> Persons with limited English	<input type="checkbox"/> Faith-based organizations
<input type="checkbox"/> Ethnic minorities	<input type="checkbox"/> None of the above
<input type="checkbox"/> Other (please specify)	



4. Does your county have an at-risk individual (aka vulnerable population or special population) registry?

- Yes
- No
- Other (please specify)

5. In the past five (5) years, has your county opened a family assistance center?

- Yes
- No
- Other (please specify)

6. In the past five (5) years, has your county opened a shelter?

- Yes
- No
- Other (please specify)

7. Please select the status of your county plans:

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

NA: NA or not aware of this plan

Pet sheltering

Large animal sheltering

Donations management (Annex of Emergency Operations Plan)

Volunteer management (Annex of Emergency Operations Plan)

Fatality management (Annex of Emergency Operations Plan)

Other (please specify)

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

9. What additional training(s) do you need related to the hazards you prioritized?

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

11. Please list any emergency incidents (ex. flooding, outbreaks) or planned event that employees who are paid with Public Health Emergency Preparedness (PHEP) funds have responded to in the last 5 years:

Incident:	<input type="text"/>
Incident:	<input type="text"/>
Incident:	<input type="text"/>
Incident:	<input type="text"/>
Incident:	<input type="text"/>
Incident:	<input type="text"/>
Incident:	<input type="text"/>
Incident:	<input type="text"/>
Incident:	<input type="text"/>
Incident:	<input type="text"/>
Incident:	<input type="text"/>

12. What would be the top three consequences of reductions in public health emergency preparedness funding?

1:	<input type="text"/>
2:	<input type="text"/>
3:	<input type="text"/>

13. Please use this space to provide any additional, pertinent information identified during the JRA process

PART B: PUBLIC HEALTH MITIGATION

The following section is to be completed by public health agencies /local health department representative in your county. If your health department serves more than 1 county and you have previously completed this section, you do not need to complete Part B again—simply complete Questions 14 and 15.

14. Please nominate a scribe to represent the public health sector and enter the following details:

Name

Agency/local health department

County

Email Address

\*15. Does your local health department serve more than 1 county AND have you already completed Part B of this survey for another county?

Yes  No

16. Rate the percentage of Incident Command System (ICS) training your public health staff have completed:

17. Please select the status of your public health plans/annex:

0: My agency has no plan

1: My agency has a written plan

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

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

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

Please select

All-Hazards Plan	<input type="text"/>
Strategic National Stockpile (SNS) Plan	<input type="text"/>
Pandemic Influenza (Pan Flu) Plan	<input type="text"/>
Smallpox Plan	<input type="text"/>
Continuity of Operations Plan (COOP)	<input type="text"/>
Crisis and Emergency Risk Communication (CERC) Plan	<input type="text"/>
Emerging Infectious Disease Plan (EID)	<input type="text"/>
Family Reunification Plan	<input type="text"/>

18. Does public health have an identified public information officer (PIO)?

Yes  No

Other (please specify)

19. 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, etc.

- |  |   |
|--|---|
| <input type="radio"/> 0: No active volunteer groups exist in my community  | <input type="radio"/> 3: Volunteer numbers are adequate for helping public health and have been used in an exercise in the past 5 years |
| <input type="radio"/> 1: Volunteer numbers are inadequate for helping public health and have not been used in an exercise or event | <input type="radio"/> 4: Volunteer numbers are adequate for helping public health and have been used in a response                      |
| <input type="radio"/> 2: Volunteer numbers are inadequate for helping public health but have been used in an exercise or event     |   |

20. Prior to this JRA meeting, please indicate the partnerships public health had with the following groups:

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

1: My agency has met or talked with this group

2: Public health has a written understanding with this group, which has been reviewed in the past 12 months

3: Public health has a written understanding with this group, which has been reviewed in the past 12 months and exercised in the past 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

5: NA

Regional Epidemiologists	<input type="text"/>
Regional Environmental Health	<input type="text"/>
Local Primary Care Centers/Health Centers	<input type="text"/>
Local Emergency Management Authority/Office of Emergency Services	<input type="text"/>
City/County/State Law Enforcement	<input type="text"/>
Local Fire Department	<input type="text"/>
Local Emergency Medical Services	<input type="text"/>
Local Hospitals	<input type="text"/>
Local Pharmacies	<input type="text"/>
Local Behavioral Health Centers	<input type="text"/>
Local Schools/Colleges/Universities	<input type="text"/>
Local Public Service Districts	<input type="text"/>
County/City Solid Waste Authority	<input type="text"/>
Local Funeral Homes/Mortuary Services	<input type="text"/>
Local Emergency Planning Committee (LEPC)	<input type="text"/>
Local Long-term Care Facilities	<input type="text"/>
American Red Cross	<input type="text"/>

21. In the past five years, has public health:

	Yes	No	NA
Required additional staffing for an event?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Implemented Memorandums of Understanding (MOUs) with partners?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Been a partner in shelter set-up and/or management?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conducted an emergency notification drill for staff?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communicated emergency information to the public?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Utilized volunteers for a real event?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Used radios in a drill, exercise, or event?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. Please list any other mitigation measures in place specific to the hazards you prioritized which have not been addressed:

APPENDIX B: JRA PARTICIPANT EVALUATION SURVEY

**Thank you for your participation in the 2018 West Virginia Jurisdictional Risk Assessment (JRA) process. We would greatly appreciate your help in identifying how useful this process was for your agency and how we could improve it for future use.**

**Your answers are confidential, and you may choose to submit an anonymous survey by leaving Question 1 blank.**

1. Please enter your contact details (optional):

Name	<input type="text"/>
Agency	<input type="text"/>
Job Title	<input type="text"/>
County(s) served for JRA	<input type="text"/>

\* 2. Agency Sector

<input type="radio"/> Public Health	<input type="radio"/> Emergency Management/911
<input type="radio"/> Primary Care	<input type="radio"/> Education (school board, university, etc.)
<input type="radio"/> Hospital	<input type="radio"/> Non-profit/volunteer organization
<input type="radio"/> First Responder	
<input type="radio"/> Other (please specify)	
<input type="text"/>	

\* 3. Did you participate in the 2012 Jurisdictional Risk Assessment process, formerly known as the Health Risk Assessment (HRA)?

<input type="radio"/> Yes
<input type="radio"/> No

\* 4. Overall, participation in the Jurisdictional Risk Assessment process was valuable for my agency:

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 5. I plan to apply what I learned through the JRA process for future preparedness planning and/or exercise planning in my agency or county:

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 6. The JRA process was useful in meeting and/or identify new partners in my county:

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 7. Instructions (written, verbal) for completing the JRA were sufficient and clear:

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 8. I knew who to contact if I had questions concerning the 2018 JRA or required technical assistance:

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 9. Supplemental resources (GIS maps, NOAA storm event data) were helpful in completing the JRA process:

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

NA: I was not provided with the GIS maps and/or NOAA storm event data

\* 10. I would be willing to participate in future JRAs:

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 11. This question concerns the 2018 JRA Excel Tool, used to complete Step 1 (Hazard Prioritization) and Step 2 (Impact Indicators).

The JRA Excel Tool was easy to use and navigate:

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

12. Please provide any additional feedback for State JRA Project Coordinators (strengths, weaknesses, suggestions for improvement, etc.):



## APPENDIX C: JRA FACILIATOR EVALUATION SURVEY

**Thank you for participating in the 2018 West Virginia Jurisdictional Risk Assessment (JRA) process. We would greatly appreciate your feedback concerning your experience as a JRA Facilitator and as a Regional Train-the-Trainer Workshop attendee.**

**You may choose to submit an anonymous survey by leaving Questions 1 & 2 of the survey blank.**

1. Please enter your contact details (optional)

Name

Agency

Job Title

Email Address

2. Name of county(s) served as JRA County-level Facilitator (optional)

\* 3. Did you attend a Regional Train-the-Trainer Workshop (workshops ran from May 9th-June 1, 2018)?

Yes

No

\* 4. Did you previously serve as a County-level Facilitator during the 2012 JRA, previously known as the Health Risk Assessment (HRA)?

Yes

No

\* 5. The Regional Train-the-Trainer session prepared me for facilitating the JRA county-level meeting:

Strongly disagree

Disagree

Neither agree nor disagree

Agree

Strongly agree

N/A: I did not attend the JRA Regional Train-the-Trainer session

\* 6. The support provided by State JRA Project Managers throughout the JRA process was sufficient and helpful:

Strongly disagree

Disagree

Neither agree nor disagree

Agree

Strongly agree

\* 7. The duties required of me as a JRA County-level facilitator were clear:

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 8. The rationale for completing the JRA was clear:

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 9. The JRA Regional Train-the-Trainer Workshops could be delivered efficiently via an electronic platform (e.g., webinar, recording):

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	N/A: I did not attend the Regional Train-the-Trainer Session
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. The electronic format of the 2018 JRA tool (i.e., Excel tool and SurveyMonkey survey) was appropriate for my county:

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 11. I would be willing to serve as a JRA county-level facilitator for future JRAs:

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. Which supplemental resources did your county find useful in conducting the JRA (Please select all that apply):

- |   |   |
|---|---|
| <input type="checkbox"/> Template letters of invitation | <input type="checkbox"/> JRA 2018 PowerPoint          |
| <input type="checkbox"/> JRA Frequently Asked Questions | <input type="checkbox"/> County-specific GIS Maps     |
| <input type="checkbox"/> JRA Overview for Participants  | <input type="checkbox"/> NOAA Storm Event Data Tables |
| <input type="checkbox"/> Other (please specify)         |   |

\* 13. In addition to public health, please indicate which agencies your county extended invitations to for the JRA county-level meeting:

	My county invited this agency	My county did not invite this agency	NA: This agency does not serve my county
Hospital(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Behavioral Health Center(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Primary Care Center(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please include any other agencies invited to your county's JRA meeting

14. Please provide any additional comments concerning the Regional Train-the-Trainer session or your experience serving as a JRA county-level facilitator:

## REFERENCES

1. Centers for Disease Control and Prevention (CDC). *Hospital Preparedness Program-Public Health Emergency Preparedness Cooperative Agreement Department of Health and Human Services.*; 2018.
2. CDC. *Public Health Emergency Preparedness Cooperative Agreement: Performance Measures Specifications and Implementation Guidance.*; 2014.  
[http://www.cdc.gov/phpr/documents/PHEP\\_BP1\\_PM\\_At-a-Glance\\_v1\\_1.pdf](http://www.cdc.gov/phpr/documents/PHEP_BP1_PM_At-a-Glance_v1_1.pdf).
3. Assistant Secretary for Preparedness and Response. Hospital Preparedness Program Performance Measures Implementation Guidance. 2017:1-93.
4. Office of the Assistant Secretary for Preparedness and Response, Centers for Disease Control and Prevention. *2017-2022 Hospital Preparedness Program (HPP)-Public Health Emergency Preparedness (PHEP) Cooperative Agreement.*; 2017.
5. West Virginia Department of Health and Human Resources. *Health Risk Assessment State Report.*; 2014.
6. Kaiser Permanente. Hazard Vulnerability Analysis. <https://www.calhospitalprepare.org/hazard-vulnerability-analysis>. Published 2017.
7. Oregon Emergency Management (OEM). *OEM Hazard Threat Analysis Tool.*; 2011.
8. University of California Los Angeles (UCLA) Center for Public Health and Disasters (CPHD). *Hazard Risk Assessment Instrument.*; 2006. [https://fachc.memberclicks.net/assets/docs/Emergency-Management-Knowledgebase/hra\\_instrument\\_wbkucla.pdf](https://fachc.memberclicks.net/assets/docs/Emergency-Management-Knowledgebase/hra_instrument_wbkucla.pdf).
9. Visme. Visme. <https://www.visme.co/>. Published 2018.
10. National Oceanic and Atmospheric Association (NOAA) National Weather Service (NWS). Storm Events Database. <https://www.ncdc.noaa.gov/stormevents/pd01016005curr.pdf>. Published 2018.
11. National Oceanic and Atmospheric Association (NOAA) National Weather Service (NWS). *National Weather Service Instruction Storm Data Preparation.*; 2016.  
<https://www.ncdc.noaa.gov/stormevents/pd01016005curr.pdf>.
12. Centers for Disease Control and Prevention (CDC). *Public Health Preparedness Capabilities: National Standards for State and Local Planning.*; 2011.
13. ESRI. ArcMap. 2017.
14. Centers for Medicare & Medicaid Services (CMS), Office of the Assistant Secretary for Preparedness and Response (ASPR). HHS emPOWER Map 3.0. <https://empowermap.hhs.gov/>. Published 2018.
15. Agency for Toxic Substances and Disease Registry (ATSDR), Centers for Disease Control and Prevention (CDC). Social Vulnerability Index (SVI).
16. Federal Emergency Management Agency (FEMA). Flood Maps: Statewide Floodplain Polygons. <http://wvgis.wvu.edu/data/dataset.php?ID=373>. Published 2013.
17. U.S. Army Corps of Engineers. Flood (At-Risk Floodplain Structures). 2003.  
<http://wvgis.wvu.edu/data/dataset.php?ID=230>.
18. Federal Emergency Management Agency (FEMA), West Virginia Division of Homeland Security and

Emergency Management (WV DHSEM). WV Flood Hazard Mitigation Buyout Properties. <http://wvgis.wvu.edu/data/dataset.php?ID=457>. Published 2017.

19. Federal Emergency Management Agency (FEMA). *A Whole Community Approach to Emergency Management: Principles, Themes, and Pathways for Action.*; 2011. [https://www.fema.gov/media-library-data/20130726-1813-25045-0649/whole\\_community\\_dec2011\\_\\_2\\_.pdf](https://www.fema.gov/media-library-data/20130726-1813-25045-0649/whole_community_dec2011__2_.pdf).
20. Centers for Disease Control and Prevention (CDC). *Public Health Emergency Preparedness Cooperative Agreement (PHEP) Program.*; 2018. <https://www.cdc.gov/cpr/pubs-links/2018/documents/WEST-VIRGINIA2018.pdf>.
21. Federal Emergency Management Agency (FEMA). *Threat and Hazard Identification and Risk Assessment Guide: Comprehensive Preparedness Guide (CPG) 201.*; 2013.
22. National Institute on Drug Abuse (NIDA). *West Virginia Opioid Summary.*; 2018. [https://d14rmgtrwzf5a.cloudfront.net/sites/default/files/west\\_virginia\\_2018.pdf](https://d14rmgtrwzf5a.cloudfront.net/sites/default/files/west_virginia_2018.pdf).
23. Centers for Disease Control and Prevention (CDC). Public Health Emergency Preparedness (PHEP) Cooperative Agreement. <https://www.cdc.gov/cpr/readiness/phep.htm>. Published 2018.
24. ESRI. Story Maps. <https://storymaps.arcgis.com/en/>. Published 2018.