National Institute of Environmental Health Sciences

NIH Disaster Research Response Workshop Report

Boston, Massachusetts
July 19, 2016

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Background

The need for high quality and timely disaster research has been a topic of great discussion over the past several years. Recent high profile incidents have exposed gaps in knowledge about the health impacts of disasters or the benefits of specific interventions—such was the case with the 2010 Gulf Oil Spill, the recent events associated with lead-contaminated drinking water in Flint, Michigan, and the evolving health crisis related to Zika virus disease. An inability to perform timely research to inform the community about health and safety risks or address specific concerns further heightens anxiety and distrust. Since nearly all disasters, whether natural or man-made, have an environmental health component, it is critical that specialized research tools and trained researchers be readily available to evaluate complex exposures and health effects, especially for vulnerable sub-populations such as the elderly, children, pregnant women, and those with socioeconomic and environmental disparities. In response, the National Institute of Environmental Health Sciences (NIEHS), in collaboration with the National Library of Medicine (NLM), has initiated a Disaster Research Response (DR2) Program to create new tools, protocols, networks of researchers, training exercises, and outreach involving diverse groups of stakeholders to help overcome the challenges of disaster research and to improve our ability to collect vital information to reduce the adverse health impacts and improve future preparedness. (*Int. J. Environ. Res. Public Health* **2016**, *13*, 676; doi:10.3390/ijerph13070676).

Previous DR2 Workshops

Training a network of environmental health researchers that can effectively and safely contribute to post-disaster research efforts has been a cross-cutting imperative of the DR2 program. Central to this effort has been the execution of tabletop exercises in two locations, Los Angeles, CA and Houston, TX, that used scenarios based on local hazards and vulnerabilities. Local public health and academic organizations were asked to participate in the planning process. Prior to each exercise, DR2 team members met with local, state, and federal response officials and academic faculty to develop exercise objectives, conduct site visits to the "affected" areas, and discussed key issues in the exercise scenario.

NIEHS and its partners held the first DR2 Tabletop Exercise on April 7, 2014 in the Port of Long Beach, California. The goals of the first exercise were to test and gather feedback on the DR2 Concept of Operations (ConOps) and to introduce DR2 integration with state, local, private, and federal stakeholders. The exercise served to bring together these stakeholders to discuss the process of integrating research responders into the response system. NIEHS used the resulting feedback to revise the key components of the ConOps.

A second DR2 Tabletop Exercise was held in Houston, Texas on February 16, 2015. Like the 2014 exercise, participants for the second exercise were asked to consider potential procedures for including a research component in the larger emergency response following a disaster. All stakeholders contributed to a discussion on assessing and evaluating research capabilities and capacities, identifying mechanisms to engage federal partners, and exploring future partnerships between all stakeholders.

Each exercise had an average of 90 participants representing state, local, and federal partners from, public health, emergency management, public safety, academic centers, private industry, and community activists. Each exercise underwent an evaluation of its effectiveness in raising awareness of the need for disaster research. The exercises demonstrated the need for all stakeholders to collaborate before an event, as many of the potential disaster research responders had not met prior to the exercises. DR2 exercises also highlighted the importance of research efforts supporting public health practice and disaster response and recovery efforts.

To continue to improve the DR2, NIH hosted a third workshop in Boston on July 19, 2016 in Boston, Massachusetts at the Thomas P. O'Neill, Jr. Federal Building.

Boston Workshop

Introduction

Planning Committee

The Boston Workshop was developed by a planning committee from the local Boston area consisting of academic researchers, public health officials, and emergency managers. The committee met monthly with NIEHS staff to develop objectives and a reality-based scenario with injects that facilitated discussion of the exercise objectives. The city of Boston and Chelsea were selected as the host sites due to the interest of local disaster researchers, availability of a suitable venue, and willingness of the community, and state and local health departments. The Chelsea and Mystic Rivers were also included in the scenario because of the various industries located on those rivers and the existence of multiple vulnerable communities adjacent to both rivers.

Materials created for the exercise included:

- A participant manual
- An evaluation tool
- Scenario briefing slides

Pre-Workshop Engagement

During the months preceding the Boston Workshop, periodic teleconferences were held with local organizers, federal, state and local public health and emergency management officials, and the planning

committee. These teleconferences included representatives from the University of Massachusetts, Lowell, Harvard University, Department of Health and Human Services (HHS) Office of the Assistant Secretary for Preparedness and Response (ASPR) Region 1, HHS Office of the Assistant Secretary for Health (OASH) Region 1, HHS Agency for Toxic Substance and Disease Registry (ATSDR) Region 1, Brigham and Women's Hospital, Boston University, Boston Public Health Commission, Massachusetts Institute of Technology, Federal Emergency Management Agency (FEMA), Massachusetts Emergency Management Agency, Conference of Boston Teaching Hospitals (COBTH), and the Massachusetts Department of Public Health. Additionally, on May 17, 2016, DR2 Program representatives (Aubrey Miller, M.D. (NIEHS), Chip Hughes (NIEHS), and Kevin Yeskey, M.D. (MDB, Inc.)) conducted a site visit to meet with organizers and stakeholders and the planning committee to review site logistics and finalize exercise plans and materials. The site visit provided meaningful dialogue that impacted the scenario, format, and participant list.

Format

Similar to the previous two exercises, the Boston workshop brought together academia, government, and industry, local emergency responders, and the local community. Unlike past events, a representative from the FEMA was able to join the workshop to provide a briefing on the role that FEMA would play during certain points in the scenario, including how a mission assignment request is processed. In addition, a representative from the Massachusetts Emergency Management Agency (MEMA), academia (Boston University), and the community also provided a brief statement on their roles and requests during a research response. Participants assessed how a process, working off of the current infrastructure, might facilitate collaborations between the differing groups to come together to develop and implement needed research.

The Workshop engaged participants in a facilitated discussion about their organization's response to disaster research. The discussion was organized in two phases: in Phase I, *Development of Research Plan and Request for Federal Support*, and Phase II, *Implementation of Research Plan*. Following discussion as a large group, each phase had a breakout session. During each of these breakout sessions, participants split into 5 groups. Each breakout group was led by two facilitators for the approximately 32 participants selected from various affiliations (see Table 1) to help ensure balanced representation within the groups. Participants were asked to discuss the pre-written questions found in the participant manual. In Phase I, participants were asked to identify and assess organizational resource and capacity, understand research request process, identify efforts for collaboration and engagement, and develop a request for federal assistance in their breakout groups. In Phase II, participants were assigned a different breakout group from Phase I and were asked to identify collaborative efforts between federal, state, and local organizations, assess how data can be shared, and understand the process by which a research response can be implemented.

Workshop Objectives

Objectives for the workshop were to:

- Provide a scenario-based forum for all stakeholders to participate in the discussion related to conducting post-disaster research
- Discuss the decision-making process by which post-disaster research is initiated and conducted
- Assess the process by which research resources are identified, trained, coordinated, and deployed
- Describe how research protocols are developed, approved, and implemented
- Examine how data is managed and results shared with stakeholders
- Identify opportunities for integrating research into the emergency response infrastructure
- Enhance relationship building and knowledge sharing between local, state, and federal stakeholders

Scenario

The Scenario was based on a 2013 report written by the Boston Harbor Association called "Preparing for the Rising Tide," which describes flooding to Boston and its surrounding communities. In the workshop scenario, a Nor'easter makes landfall in Boston at high tide, bringing rain, strong winds and a 5-foot storm surge. The storm caused widespread damage and flooding. As a result, oil storage tanks and numerous chemical storage containers located along the Mystic River and inland were damaged and leaked into the Mystic and Chelsea Rivers and flood waters. Flooding moved debris, oil and chemical residue, and sediments into the homes of the community.

As a result of the health impacts caused by the disaster, community members in Chelsea and East Boston requested the health commission to investigate the hazardous exposures that might be causing symptoms and health effects, and the communities also wanted to be included in developing any health studies provided to affected populations.

Workshop

The Boston Workshop brought together approximately 160 local, state, and federal public health and emergency response offices, community members, worker organizations, private industries, and other stakeholders to better understand how long-term, large scale research is requested at the local and state level, and the process in which outside assistance research requests are managed. A breakdown of the participants and their affinity can be found in Table 1 below.

Table 1. Participant Affiliations

Affiliations	Number of Participants
Academic Institutions	38
Community	4
Federal Emergency Management	1
Federal Government	4
Federal Public Health	24
Hospital	10
Local Emergency Management	2

Affiliations	Number of Participants
Local Public Health	2
Local Public Service	5
Other	5
Private Industry	2
Staff	10
State Emergency Management	4
State Government	3
State Public Health	6
Worker Organization	40

Major Findings

This section highlights the major themes and findings from the breakout group discussions. Best practices reflect 'case studies' shared during the event.

Stakeholder Engagement

Affected community participation in a post-disaster research project should be solicited from the very beginning of the project and they should stay engaged throughout the project.

- Research should address the needs of the community and must provide actionable solutions to those health issues.
    - Research objectives, progress, and results should be communicated back to the communities in an easy to understand manner.
        - A webpage with content targeted towards different audiences can be created. Citizen scientists should also be consulted to translate the data and research to their community members.
        - Community health centers, schools, and other trusted sources can also be augmented during emergencies to help communicate research information back to communities.
        - Improving a community's health literacy can improve its ability to understand the importance of a research project and its objectives. Participants felt that there are long term health benefits of improved health literacy as well.
    - Mental health issues faced by individuals are long and short-term and should be included as part of a post-disaster research portfolio.
- Community organizations have unique knowledge about specific vulnerable communities. They can assist with accessing and recruiting those individuals into the research project.
    - Private industry, public health organizations, public safety organizations have the ability to assist with access to specific populations and data collection.
        - Private industries can also provide additional resources to support the disaster response, including safety and health training and provision of personal protective equipment to field researchers.
- Trust with vulnerable populations is viewed as a key component of a successful community engagement.

    - Rather than being told that researchers are requesting data, communities must be told that the research project will be collecting information that in turn will help them address key health issues.
    - Transparency, including sharing of all pertinent information, between all stakeholders, including public health departments and private industries is necessary to gain the trust of community members.
- Individuals from the community can assist with the research process.
    - ***Best Practice:*** The Community-based participatory research model should be emulated.
        - Community members can help with data collection, including providing translation services.
    - ***Best Practice*****:** Training and education should be provided to communities prior to disasters, including conducting community mapping exercises to identify possible hazards, improving science literacy, and introducing the concept of research. These trainings empower community members to become more resilient and sustainable against future disasters.
    - ***Best Practice:*** Community collaborations in past disasters have proven to be successful, such as the inclusion of arts and culture to educate Flint residents about safe water, and the "RESCUES" handbook that focuses on at-sea emergencies and fishing community fatalities.
    - ***Best Practice:*** Workers, local National Council for Occupational Safety and Health (COSH) groups, and worker unions should be considered in the research response process to collect data and/or inform communities, as they can communicate information in culturally appropriate manner, as well as provide information about their representatives.

Academic institutions have a role in disaster research, but require organization to best identify available skill sets and resources that can be employed to assist in a disaster research project. Academic institutions maintain subject matter experts, motivated/educated workforces that can collect and analyze data, have long-standing ties to their communities, and have familiarity with the research process that can support the efforts of public health departments who might be dealing with immediate public health issues and lack the capacity to engage in research in the immediate post-disaster timeframe.

- ***Best Practice:*** Boston academic institutions conducted several organizational meetings prior to the workshop to discuss how they might be able to best support research.

State and local public health and emergency management organizations are the lead organizations in post-disaster response and should coordinate research efforts to ensure that community priorities are being addressed and that resources and response/recovery efforts are used efficiently and effectively.

- State and local public health departments may lack the capacity to perform research of large and longitudinal magnitude, and recognize that external support is necessary to accomplish this important task.
- However, state and local public health departments have existing relationships with local communities and health institutions, and can help to establish relationships between the various stakeholders.
- Health care centers, hospital emergency departments, emergency medical service units, and other medical organizations can work with state and local public health departments in performing health impact research

Concept of Operations

Disaster research response should be integrated into the incident command structure in order to ensure a coordinated, integrated response and to maximize the use of limited resources. Incident management principles are the accepted methodology used by emergency management officials, so researchers must become familiar with these concepts and integrate their research into the ICS framework. Research must not interfere with the life-saving response efforts and researchers must demonstrate the capacity to work in the disaster environment as safely as practically possible.

- There is a need to communicate the utility of a research process to emergency management and how the research process fit into the response framework.
- ***Best Practice:*** Educate emergency management on the benefits of research through workshops and exercises. Researchers need to demonstrate their value to responders in the short term and long term.
- ***Best Practice:*** Emergency management officials can also provide very valuable training, such as incident command system (ICS), to academicians. Academic representatives who participated in the pre-deployment and ICS training session indicated the importance of such training to better understand the concept of operation during disasters.
- Researchers need health and safety training as well as appropriate personal protective equipment prior to being deployed to disaster sites.

A group of organizations that represents all stakeholders, such as an advisory board, should be created to define research needs, identify resources, and report back to community.

- ***Best Practice:*** This group, composed of various stakeholders, including community members, government representatives, private industry (if appropriate), state, and local stakeholders, can be used to review research plans.
- The roles of those who participate in this group will need to be clearly identified, including who will be in charge of the study and a possible structure for the research process.
- ***Best Practice:*** Organizations should use memoranda of understanding (MOUs) to partner with each other.

Data Collection

Collection of data is an essential component of any research project and there are various sources of data that need to be considered in a research project. Exposure data can be augmented with environmental data, mental health data should be collected along with physical health data using non-traditional data sources, and a multidisciplinary approach is highly recommended. Data collection tools are available on the NLM DR2 website.

- Collection of mental health data can be a challenge due to the stigma about mental health.
    - ***Best Practice:*** The use of non-traditional forms of data collection (e.g., incidence of divorce, alcoholism, depression, etc.) should be used to augment mental health data.
- Environmental exposure data should also be included in the research, so that communities can learn about what they have been exposed to, how to best protect themselves, and better prevent future events from occurring.
    - Community members should be trained to be citizen scientists to monitor and collect water, air, and soil samples. These trained community members can also help interpret and translate the data back to their communities in an understandable manner.
- Other data that should be considered collecting include biospecimens, water/air/soil monitoring, worker injury data, and worker shifts and work location and duration.

Organizations interested in disaster research should explore the readily accessible sources of data collection tools.

- Protocols and databases, from all stakeholders, including private industries, should be easily accessible in one place so that it can be easily accessed when necessary.
    - ***Best Practice:*** Use existing networks of data, such as health centers and health care facilities, health agencies information (e.g., State and CDC surveillance, NIOSH rostering data, etc.), and environmental data from various sources to collect baseline and new data.
- GIS mapping and other technology should also be used to collect data.

Challenges

Creation of a exposure registry is a difficult task for a variety of reasons related to transient populations, unreliable contact information, mistrust of participants, and language, to name a few. Use of community-based organizations can serve to minimize many of these challenges. Long-term follow-up remains a challenge for the same reasons.

- Rostering, tracking, and following up with evacuated community members, transient workers, such as day laborers, and undocumented workers can be difficult as evacuated community members and transient workers may not return to their homes, and undocumented workers may fear legal retribution .
- A way to coordinate spontaneous volunteers, including academic research centers, coming into the disaster area should be also considered.
- A method to capture baseline data can be challenging as well.
- The determination of who collects and stores the data, and where the data, including biospecimens, will be stored can pose a challenge to the researchers.
- The importance of maintaining data for a longitudinal study for future research and duration of the research should be considered.

Funding for disaster research can pose a challenge to the response process.

- Funding mechanisms prior to the disaster and following the disaster should be considered.
- To be even more effective, NIEHS was recommended to include disaster preparedness as a component of NIEHS request for grants, so that disaster research centers can have the flexibility to plan and perform research.

Federal, state, and local policies can pose a challenge to data collection

- Perceptions of policies (e.g., Health Insurance Portability and Accountability Act (HIPAA), State Privacy laws) may often impede programs to collect data. Researchers need to obtain clarity of local, state, and federal policies related to privacy and data collection.
- The IRB process can delay the research as different organizations require different IRB approvals.
    - ***Best Practice*****:** Organizations are encouraged to develop MOUs or reliance agreements to allow organizations to share IRB-approved protocols.
    - ***Best Practice:*** "Pre-approved" protocols are strongly encouraged that can be amended quickly to match the disasters.

- ***Best Practice:*** Clear confidentiality agreements that detail the research goals and projected outcome, prior to research are also strongly encouraged for research participants.

Lessons learned from previous disasters contain valuable information that could be used by others to learn best practices and barriers that impede research response. However, since there is no database for after action reports, access to those documents is difficult. Moreover, the effort to integrate the research response process into a national level should be considered, as many of the challenges of research response could be mitigated through the development of a national research response framework.

Evaluation

Participants were asked to provide input on the workshop through a written evaluation which asked them to evaluate various components of the session, including whether the workshop met the stated goals. Using a Likert Scale, participants were asked to rate the community tour, the pre-deployment and incident command training, the meeting logistics, the exercise (including venue and presentation), and whether the objectives of the exercise were met on a scale of 1 (strongly disagree/objective not met) to 5 (strongly agree/objective met). Also, participants had the chance to provide written comments regarding the above mentioned topics.

Sixty-five of 160 participants (40%) returned an evaluation survey. The demographic breakdown of respondents is as follows:

Affinity Group (self reported)	Number	Percent of total
Academia	28	43.8%
Community Organizations	3	4.7%
Federal Agency	11	17.2%
Local Agency	1	1.6%
State Agency	7	10.9%
Worker Representative	12	18.8%
Private Industry	2	3.1%

Results and Analysis

Responses were analyzed and summarized for each question. For a detailed evaluation feedback, please see Attachment A.

Discussion

Only sixty-five (40%) percent of participants returned an evaluation. This may be due to the fact that some participants left following the morning of the workshop.

The community tour received positive evaluations. Participants felt that the tour enhanced their understanding and experience to the workshop. "The Pre-deployment Safety and Health and Incident Command Training" also received positive feedback. Participants agreed that the quality of the

instruction was great and the topics covered were relevant to the workshop. This session was particularly helpful for those who had no previous experience working during disasters and noted that they had better clarity on the incident command system, at the local level. For those who had previous disaster response experience, they felt that the session did not add new perspective or knowledge.

Overall, the workshop received positive feedback from those who completed the survey. This year, the format of the workshop switched from discussions between the senior officials and key stakeholders at a main table (and limited opportunity for discussion by other participants) as had been used at the previous two exercises to a more participatory format via breakout groups discussions for all participants in Boston. Respondents were receptive to the format of the workshop. This new format allowed all participants a chance to voice their thoughts and experiences. The workshop also included brief presentations from the Massachusetts Emergency Management Agency (MEMA), a community stakeholder, and an academic institution on their "current" position and status during the specific time of the scenario. Respondents rated each presentation positively as it helped enhance their understanding of the scenario and the roles each stakeholder could possibly take to initiate a research response.

With regard to meeting the workshop objectives, evaluations were largely positive. Respondents agreed that the workshop did enhance relationship building and information sharing by providing the space to meet possible stakeholders. They also agreed that the workshop provided a forum for the discussion of disaster research response to occur. The workshop was partially successful in meeting the objectives of identifying opportunities for integrating research and assessing the process by which resources are identified, trained, coordinated, and deployed. Respondents noted that the discussions did not lead to the description of how research protocols are developed, approved, or implemented. These lower ratings could be due to the lack of time and the nature of the discussions in the breakout groups. In addition, facilitators may not have led the discussion toward the discussion of these objectives. While the participants were encouraged to try to answer the list of questions provided in the Participant Manual, they also had limited amount of time to answer many questions and hear from various stakeholders.

Appendix A.

Rating percentages and average scores for each Likert category were determined for each question. Responses were grouped as follows[1]:

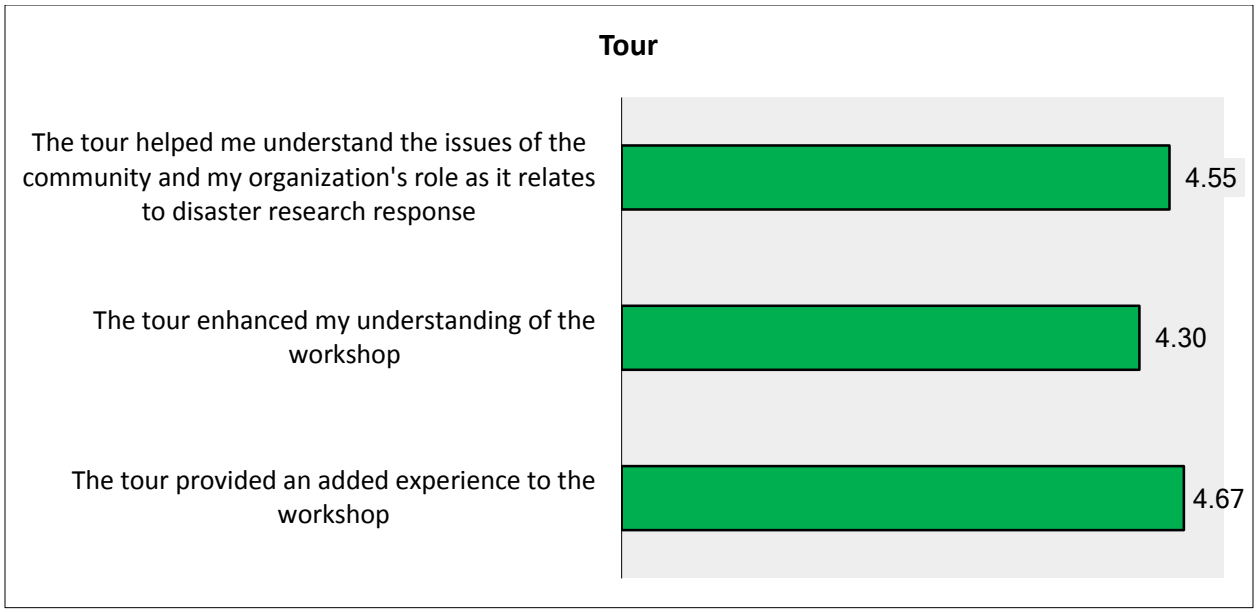
Successful (green) — average greater than 3.5 or more than 75% percent of responses in agree or strongly agree categories.

Partially Successful (yellow) — average between 3 and 3.75 or between 50 and 75% percent of responses in agree or strongly agree categories.

Not Achieved (red) — average less than 3 or less than 50 percent of respondents in agree or strongly agree categories or more than 50 percent in the strongly disagree category.

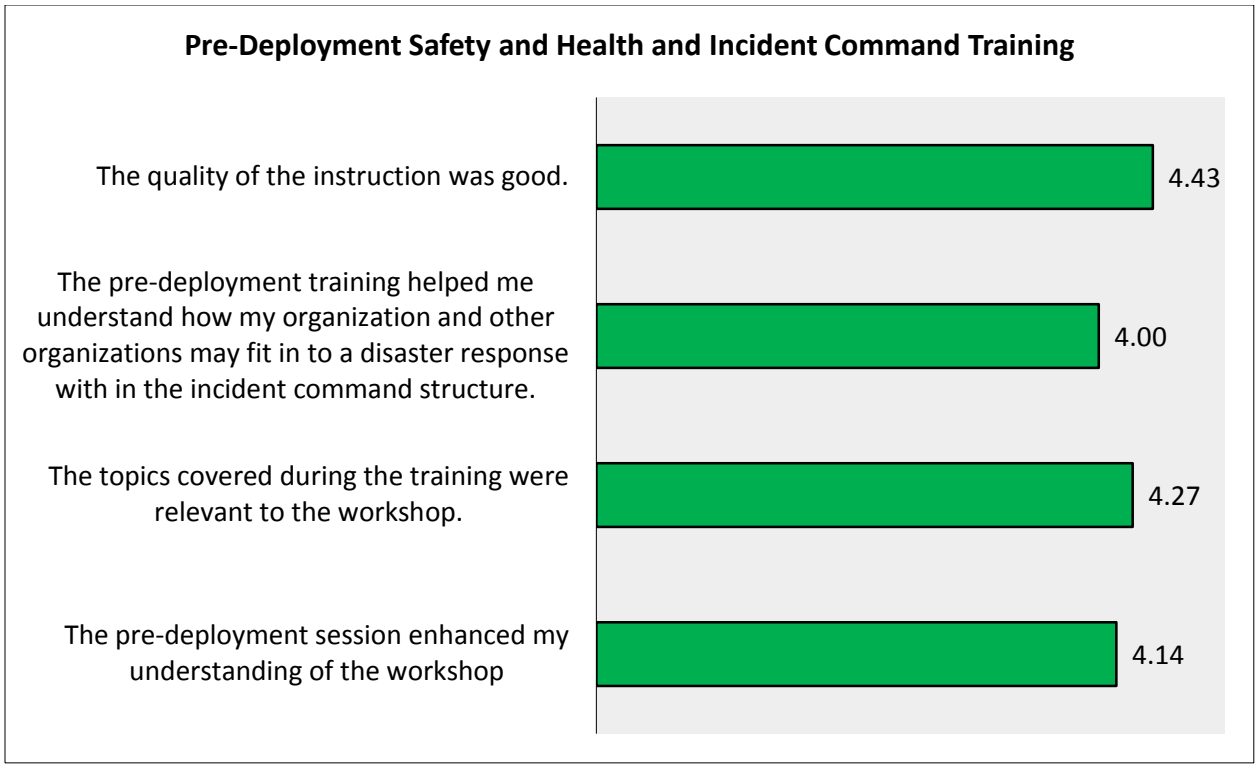
The following pages are the responses, per rating average and per response rating distribution per category.

[1] For evaluation purposes, numerical values 1-5 were assigned to the choices, with Strongly agreed category being 5 and strongly disagreed being 1.



	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The tour provided an added experience to the workshop.	3%	0%	0%	21%	75%
The tour enhanced my understanding of the workshop.	0%	3%	9%	42%	45%
The tour helped me understand the issues of the community and my organization's role as it relates to disaster research response.	0%	3%	3%	30%	63%

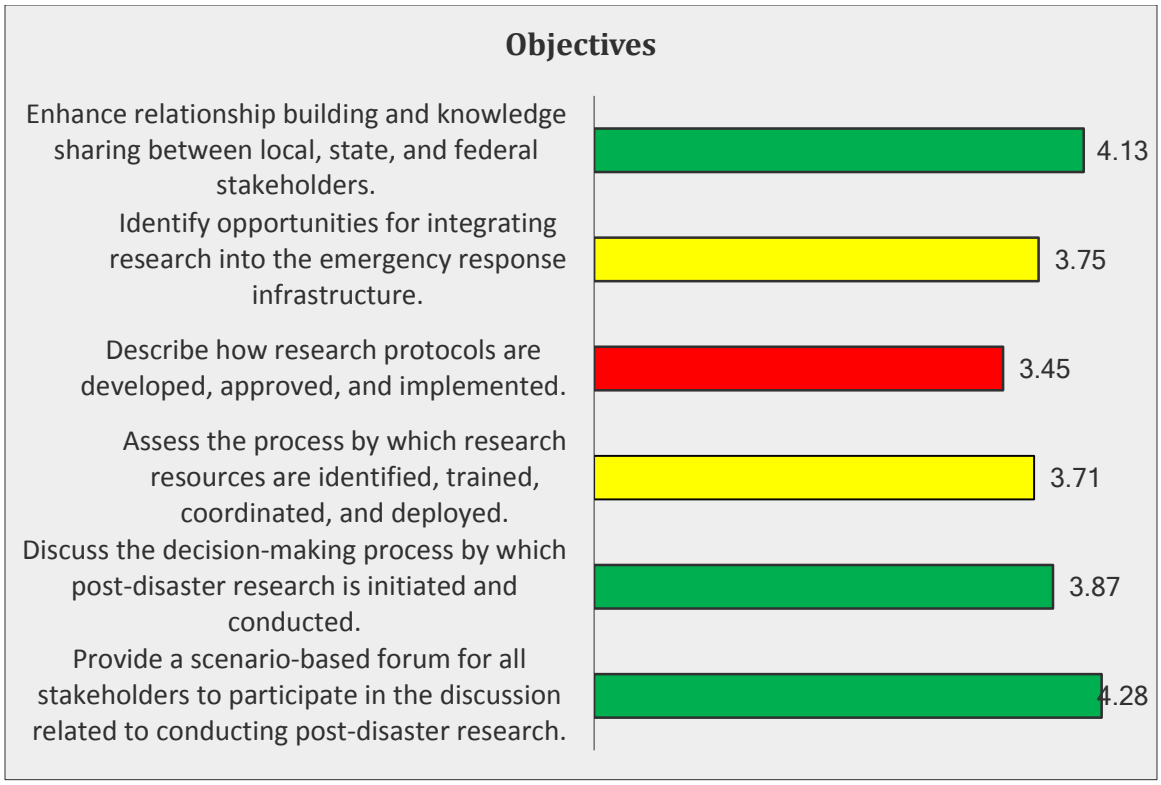
*Responses only include those who responded that have attended the community tour.



	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	N/A
The pre-deployment session enhanced my understanding of the workshop.	0%	3%	13%	44%	31%	9%
The topics covered during the training were relevant to the workshop.	0%	3%	11%	36%	42%	8%
The pre-deployment training helped me understand how my organization and other organizations may fit in to a disaster response with in the incident command structure.	0%	2%	27%	34%	30%	8%
The quality of the instruction was good.	0%	2%	5%	39%	48%	6%


Workshop
The workshop helped me understand my organization's role during a disaster research response.
3.81
The workshop helped me understand my organization's role in the request for health research during a disaster.
3.83
The format of the workshop was conducive to the discussion.
4.34
The introductory presentations from academia institutions enhanced the progression of the discussion.
3.84
The introductory presentations from community organizations enhanced the progression of the discussion.
4.25
The introductory presentation by the Massachusetts Emergency Management Agency helped me better understand the response and recovery structure during disaster.
3.88
The venue of the event was conducive to the workshop.
3.95
The Participant Manual contained information that was useful for the workshop.
4.32

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The Participant Manual contained information that was useful for the workshop.	2%	0%	6%	50%	42%
The venue of the event was conducive to the workshop.	2%	3%	21%	47%	27%
The introductory presentation by the Massachusetts Emergency Management Agency helped me better understand the response and recovery structure during disaster.	0%	3%	28%	48%	22%
The introductory presentations from community organizations enhanced the progression of the discussion.	0%	3%	9%	47%	41%
The introductory presentations from academia institutions enhanced the progression of the discussion.	0%	5%	19%	63%	13%
The format of the workshop was conducive to the discussion.	0%	3%	6%	45%	46%
The workshop helped me understand my organization's role in the request for health research during a disaster.	0%	9%	22%	46%	23%
The workshop helped me understand my organization's role during a disaster research response.	3%	6%	19%	48%	23%



	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Provide a scenario-based forum for all stakeholders to participate in the discussion related to conducting post-disaster research.	2%	3%	9%	38%	48%
Discuss the decision-making process by which post-disaster research is initiated and conducted.	3%	6%	13%	56%	22%
Assess the process by which research resources are identified, trained, coordinated, and deployed.	3%	6%	21%	56%	14%
Describe how research protocols are developed, approved, and implemented.	5%	14%	25%	44%	13%
Identify opportunities for integrating research into the emergency response infrastructure.	5%	5%	25%	42%	23%
Enhance relationship building and knowledge sharing between local, state, and federal stakeholders.	3%	3%	9%	47%	38%

Appendix B. Participant List

First Name	Last Name	Organization
Kathy	Ahlmark	NIEHS Worker Training Program
Scott	Alderman	Duke University
Arturo	Archila	Tony Mazzocchi Center/The Labor Institute
Michael	Baker	National Clearinghouse/MDB, Inc.
Clifton	Baldwin	NIEHS Worker Training Program
Sharon	Beard	NIEHS Worker Training Program
April	Bennett	NIEHS
Linda	Birnbaum	National Institute of Environmental Health Sciences and National Toxicology Program
Andrew	Burgie	Hunter College Center for Occupational & Environmental Health
Richard	Campbell	National Fire Protection Association
Lenita	Carmo	Brazilian Worker Center
Richard	Carroccino	City of Chelsea, Fire Department
Chee	Chang	International Brotherhood of Teamsters (IBT)
Susan	Cibulsky	HHS Office of the Assistant Secretary for Preparedness and Response
David	Coffey	The New England Consortium-CSEA UMass Lowell
Steve	Corbett	The New England Consortium-CSEA UMass Lowell
Judith	Daltuva	University of Michigan School of Public Health
Linda	Delp	UCLA Labor Occupational Safety & Health Program
Donald	Elisburg	National Clearinghouse
Thomas	Estabrook	The New England Consortium-CSEA
Douglas	Feil	National Partnership for Environmental Technology Education (PETE)
Michael	Fiore	Massachusetts Department of Public Health
Michael	Fitts	The New England Consortium-CSEA
Mike	Florio	Western Massachusetts Coalition for Occupational Safety & Health (COSH)
Jim	Frederick	United Steelworkers
Kristine	Freitas	Nova Southeastern University
David	Gaby	Western Massachusetts Coalition for Occupational Safety & Health (COSH)
Betsy	Galluzzo	National Clearinghouse/MDB, Inc.
Melissa	Genereux	CIUSSS de l'Estrie - Centre hospitalier universitaire de Sherbrooke
Michael	Gill	United Steelworkers Tony Mazzocchi Center
Bernard	Goldstein	University of Pittsburgh Graduate School of Public Health
Eric	Goralnick	Brigham and Women's Hospital
Stephen	Grant	Nova Southeastern University
Mark	Griffon	National Clearinghouse
Virginia (Ginger)	Guidry	NIEHS
Gary	Gustafson	CPWR - The Center for Construction Research and Training
Elizabeth	Harman	International Association of Fire Fighters (IAFF)
Neil	Hawley	The New England Consortium-CSEA
Heather	Henry	NIEHS Superfund Research Program

First Name	Last Name	Organization
Donald	Higginbottom	Texas Southern University
Darrell	Hornback	ICWUC Center for Worker Health and Safety Education
Sona	Hromulak	Nova Southeastern University
Joseph	Hughes	NIEHS Worker Training Program
Gary	Kleinman	HHS Office of the Assistant Secretary for Preparedness and Response
Koshy	Koshy	Rutgers School of Public Health
Angela	Laramie	Massachusetts Department of Public Health
Cleophus	Lee	OAI, Inc.
Joy	Lee	National Clearinghouse/MDB, Inc.
Paulette	Lynch	Texas Southern University
Jerry	Massey	Mission Support Alliance/HAMMER
Sheri	Massey	Lourdes Medical Center
Michael	Masucci	City of Chelsea, Fire Department
Barbara	McCabe	IUOE National Training Fund - National HAZMAT Program
Bruce	McClue	Dillard University, Deep South Center for Environmental Justice
Bridget	McGuiness	The New England Consortium-CSEA
Deborah	Merrick	Dillard University, Deep South Center for Environmental Justice
Kristi	Messer	Nova Southeastern University
Aubrey	Miller	NIEHS
Mark	Miller	NIEHS
John	Morawetz	ICWUC Center for Worker Health and Safety Education
Paul	Morse	The New England Consortium-CSEA UMass Lowell
Max	Neuberger	New York Coalition for Occupational Safety & Health
Thomas	Nunziata	LIUNA Training and Education fund
Kenny	Oldfield	Alabama Fire College
Lisa	Orloff	World Cares Center
Richard	Patrick	U.S. Department of Homeland Security
Jim	Petit	Videographer
Stacey	Pinnock	Nova Southeastern University
Alexander	Prentzas	OAI, Inc.
Richard	Rabin	Massachusetts Coalition for Occupational Safety and Health (COSH)
Raghav	Rao	The University of Texas at San Antonio
Jim	Remington	NIEHS Worker Training Program
Carol	Rice	Midwest Consortium
Ruthy	Rickenbacker	BU Superfund research Program
Kevin	Riley	UCLA Labor Occupational Safety & Health Program
Janelle	Rios	University of Texas School of Public Health
Cora	Roelofs	
Mitchel	Rosen	NJ NY Hazardous Materials Worker Training Center
Betsy	Rosenfeld	HHS Office of the Assistant Secretary and Health Region 1
Damas	Rugaba	LIUNA Training and Education fund
Henry	Ryng	inXsol

First Name	Last Name	Organization
Francisco Javier	Saracho Manzanedo	Rutgers/UMET
Madeleine	Scammell	Boston University School of Public Health and City of Chelsea Board of Health
John	Scardella	United Steelworkers Tony Mazzocchi Center
Spencer	Schwegler	CPWR - The Center for Construction Research and Training
Georgia	Simpson	HHS Office of the Assistant Secretary Region I
Eduardo	Siqueira	University of Massachusetts Boston
Darius	Sivin	International Union, United Automobile Workers
Craig	Slatin	The New England Consortium-CSEA UMass Lowell
Nancy	Smith	Boston Public Health Commission, Office of Public Health Preparedness
Bille Jean	Snyder	EHSS
Ron	Snyder	National Partnership for Environmental Technology Education (PETE)
Ervin "Roy"	Stover	Alabama Fire College
Patricia	Strizak	The New England Consortium-CSEA
Ebony	Turner	Dillard University, Deep South Center for Environmental Justice
Luis	Vazquez	ICWUC Center for Worker Health and Safety Education
Videographer sound guy	Videographer sound guy	Videographer sound guy
Kerri	Voelker	National Clearinghouse/MDB, Inc.
Angela	Weber	CDC, National Institute for Occupational Safety and Health (NIOSH)
Deborah	Weinstock	National Clearinghouse/MDB, Inc.
Elizabeth	Whelan	CDC, National Institute for Occupational Safety and Health (NIOSH)
Charmaine	Woolard	International Brotherhood of Teamsters (IBT)
Beverly	Wright	Dillard University, Deep South Center for Environmental Justice
Demia	Wright	NIEHS Worker Training Program
Robert	Zalewski	The New England Consortium-CSEA
Stacey	Arnesen	National Library of Medicine
Ann	Backus	Harvard T.H. Chan School of Public Health
Deborah	Barbeau	Harvard T.H. Chan School of Public Health
Paul	Biddinger	Massachusetts General Hospital
Meg	Blanchet	MDPH
Roseann	Bongiovanni	GreenRoots
Sarah	Carnes	National Library of Medicine, Disaster Information Management Research Center
Kate	Chang	Office of U.S. Congressman Capuano
Mary	Clark	Massachusetts Department of Public Health, Office of Preparedness and Emergency Management
Seth	Cooper	Northeastern University
Joan	Cromwell	City of Chelsea
Donald	Delikat	Massachusetts Department of Labor Standards
Douglas	Dockery	Harvard T.H. Chan School of Public Health, Dept. of Environmental Health
Mary	Dozois	Massachusetts Department of Labor Standards

First Name	Last Name	Organization
Nicholas (Nick)	Duncan	Conference of Boston Teaching Hospitals (COBTH)
Sophia	Dyer	Boston EMS
Bevin	Engelward	Massachusetts Institute of Technology Center for Environmental Health Sciences
Dan	Fowkes	United Steelworkers
Natalie	Grant	HHS Office of the Assistant Secretary for Preparedness and Response
Sam	Groseclose	CDC, Office of Public Health Preparedness and Response
Marissa	Hauptman	Boston Children's Hospital
Paul	Holloway	Massachusetts Emergency Management Agency
Heidi	Hurst	Harvard University
Jennifer	Johnson	City of Chelsea, Public Health Department
Katherine (Katie)	Kemen	Partners HealthCare
Robert	Knorr	Massachusetts Department of Public Health
Marc	Lafontaine	Health Canada
Jim	Landry	State Garden, Inc/ Olivia's Organics
Dan	Lawlor	Boston Medical Center
John	Lucero	New England Produce Center
Catherine	Maas	Chelsea Board of Health
Mike	Main	Massachusetts Emergency Management Agency - Region I
Frederick	Malaby	The New England Consortium-CSEA
Scott	Masten	National Toxicology Program
Justin	McClarey	Office of U.S. Congressman Capuano
Benjamin	McNeil	Boston Public Health Commission, Office of Public Health Preparedness
Marc	Nascarella	Massachusetts Department of Public Health
Ira	Nemeth	American College of Emergency Physicians
Therese	O'Donnell	The New England Consortium-CSEA
Christine	Packard	Massachusetts Emergency Management Agency
Geoffrey	Plumlee	U.S. Geological Survey
Luis	Prado	City of Chelsea, Health and Human Services Department
Steven	Ramsey	Social & Scientific Systems, Inc.
Betsy	Reilley	Massachusetts Water Resources Authority (MWRA)
Catherine	Ricciardi	Massachusetts Institute of Technology
Ian	Riley	Carney Hospital
Richard	Rosselli	Social & Scientific Systems, Inc.
Michael	Rourke	Brigham and Women's Hospital
David	Russell	Centre for Radiation, Chemicals and Environmental Hazards – Public Health England
Nick	Russo	Federal Emergency Management Agency (FEMA)
Kevin	Ryan	Boston EMS
Kurt	Schwartz	Massachusetts Emergency Management Agency
Tarah	Somers	CDC, Agency for Toxic Substances and Disease Registry (ATSDR)
Sofia Eleni	Spatharioti	Northeastern University
Frank	Speizer	Harvard T.H. Chan School of Public Health

First Name	Last Name	Organization
Kevin	Yeskey	National Clearinghouse/MDB, Inc.