Title: Employer Preparedness for Disasters: A Survey of Human Resource Managers' Perceptions

Running Head: Employer Preparedness for Disasters Survey

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Abstract:

Objectives: Our objective was to assess employer preparedness to protect their employees' health and safety and promote their well-being in the face of potential disasters in a sample of Northeast United States employers. We developed survey instrument and index based on our model of Total Worker Health® (TWH) Employer Preparedness.

Methods: We conducted a 40-question on-line survey with the membership of the Northeast Human Resources Association (US). Human resource managers reported their perceptions of their employers' preparedness in seven domains: planning, human resources policies, hazard reduction, training, staffing, communications, and resources for resilience. Respondents were categorized by size, sector and reach and their responses scored.

Results: Seventy-six individuals representing a diverse group of employers responded to the survey. Mean preparedness was "moderate," with almost an equal number reporting a high level of preparedness as no preparedness. Employers were most prepared for severe weather events and least prepared for acts of violence. There were no significant differences by sector, size, or reach, although the healthcare sector was more prepared than others.

Conclusions: There is a range of TWH® Employer Preparedness among Northeast US employers. The survey and model are important tools that can aid employers in the face of growing threats to "business as usual."

Keywords: employer preparedness, health and safety, emergencies and disasters, planning, Total Worker Health, human resources

Human Subjects Statement: Approved by the University of Massachusetts Lowell Institutional Review Board 2/21/18 (Exempt Determination).

I declare no conflicts of interest.

 doi:10.20944/preprints202101.0242.v1

Introduction

Disasters such as severe weather events, acts of terrorism, disease outbreaks, and chemical spills are becoming more common and pose obvious challenges to employers with respect to the protection of their employees. Some hazards, such as wildfires, snow storms, and earthquakes, are region-specific. Many, such as acts of violence, or disease outbreaks, can strike anywhere. Extreme precipitation, heat waves, and wind events are expected to become more frequent and severe in many regions of the US. Regardless of geography, most employers recognize that emergency planning is necessary, even as many acknowledge that they are underprepared.[1]

Preparedness practices for many businesses and public entities may focus on business continuity, however employers also need to plan for the protection of their employees.[2] In addition to worker protection actions in keeping with both ethical and legal obligations, employers should comprehensively address worker well-being in order to take into account the multiple ways in which their employees can be impacted by a disaster.[3,4] Total Worker Health (TWH)® is a comprehensive construct incorporating health and safety at work, and the promotion of employee health and well-being in the context of social determinants of health.[5] In a companion piece in this issue, I propose a model of TWH Employer Preparedness and provide more background. In this paper I report on a survey of human resource managers' perception of TWH Employer Preparedness among their employers in the Northeast US.

Methods

Following a literature review which revealed no precedents, nor standard questions in the domain of emergency preparedness with a focus on the well-being of employees, the investigator developed questions for a survey instrument based on our model of TWH Employer Preparedness. The aim of this instrument was to assess human resources professionals' perspectives on their company or agency's preparedness (Fig 1). The questions were reviewed for content validity and clarity by staff of the professional organization, the Northeast Human Resources Association (NEHRA). NEHRA participated as a project partner throughout the survey. Members of NEHRA were invited to take a 20 minute, 40 question on-line survey over one month in the spring of 2018. The survey included questions in each of the seven TWH Employer Preparedness domains: planning, human resources policies, hazard reduction, training, staffing, communications, and resources for resilience. The survey structure included demographic questions, closed-ended Likert scaled questions, and some open-ended response questions.

Over 2,000 NEHRA members were invited by the Director of Partnerships for NEHRA to participate in the survey in late April 2018. The link to the survey was provided in three direct emails to the membership as a whole and mentioned in a newsletter. The survey was open for four weeks. In order to boost participation, survey-takers were offered the opportunity to enter a drawing to win an Apple IPad. Human subjects participation in the research was approved by the University of Massachusetts Lowell Institutional Review Board.

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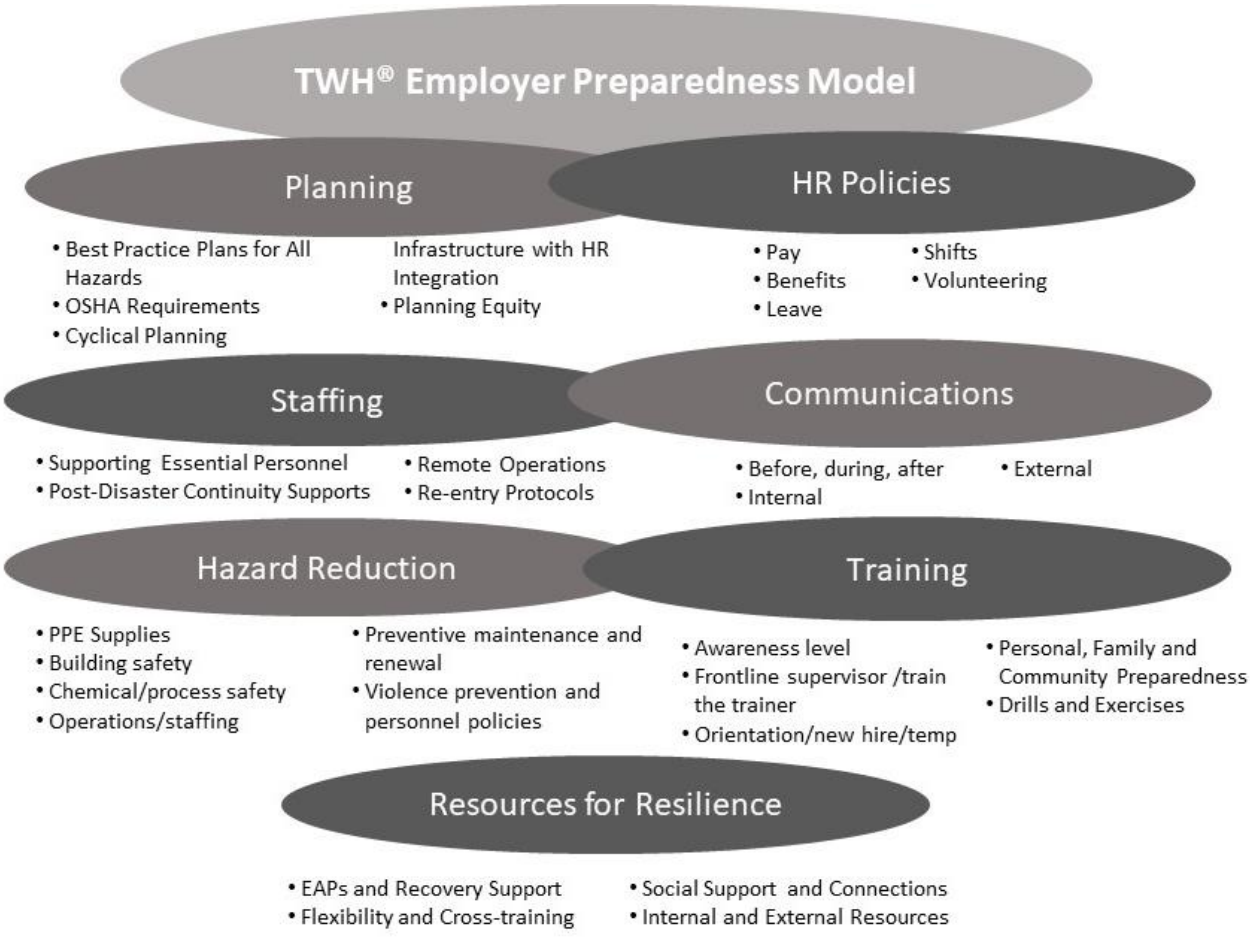
Figure 1 Total Worker Health Employer Preparedness Domain Components



Raw data were downloaded from Qualtrics to a data file and imported into SAS 9.4. For Job Title, Sector, and Employer Size, the text entry was standardized and categorized for consistent variables. Frequencies and means of response categories were calculated.

As shown in Table 1, a TWH Employer Preparedness Index was created to score each respondent on a scale of employer preparedness from 0 to 23 using their responses to a selected list of questions from the survey. The index was designed to facilitate the scoring of Employer Preparedness based on a few indicator questions in each domain, rather than a comprehensive weighting of all questions. A scale of No, Low, Moderate and High was also created to broadly characterize the TWH Employer Preparedness of the sample. Student t test and confidence intervals were calculated to determine if certain sectors were more or less prepared than the sample generally. Additionally, ANOVA estimates were made to test the relationship between employer size and reach with preparedness.

Results

Seventy-six human resource professionals participated in the survey. Eighty percent of participants had job titles suggesting that they were “decision-makers” in their HR departments, including as HR

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Table 1: TWH Employer Preparedness Index		
	Possible Points	
Domain 1: Planning		**8**
Preparedness for Specific Emergencies and Disasters	3[a]	
Action Plan	2[b]	
Inclusive Planning	1	
Plan elements	2[c]	
Domain 2: Staffing		**1**
Staffing	1	
Domain 3: Hazard Reduction		**2**
OSHA requirements	1	
Supplies and Personal Protective Equipment	1	
Domain 4: Preparedness Training		**5**
Personal Preparedness Training	1	
H&S Training	3[d]	
Drills	1	
Domain 5: Communication		**1**
Communication	1	
Domain 6: HR EP Policies		**4**
Pay When Operations Down	1	
Pay for Impacted Employee	1	
Leave Bank	1	
Benefits	1	
Domain 7: Resilience Support		**2**
Employee Assistance Program	1	
Recovery Resources	1	
		23
Scoring Key		
[a] Very Prepared for any 5 = 3; Moderately or Somewhat Prepared for any 5 = 2; Unprepared for any 5 = 0; Other = 1		
[b] Fully developed = 2; Moderately or Somewhat = 1; Not developed = 0		
[c] 10 or more = 2; 5 to 9 = 1; 4 or fewer = 0		
[d] 5 or more = 3 ; 3 or 4 = 2; 1 or 2 = 1; 0 = 0		

Table 2: Characteristics of Participants		
Employer Category	**N***	**%**
Private sector, for-profit	35	49
Private sector, non-profit	24	33
Public sector	11	15
Independent contractor/consultant	2	3
Employer Sector		
Social Services/Government	13	18
Manufacturing/Technology	13	18
Business Services/Telecomm	12	17
Healthcare	10	14
Education	9	13
Finance, Insurance, Real Estate	7	10
Sales	5	7
Construction/Engineering	3	4
Employer Size		
100-500 employees	33	49
<100 employees	17	25
>1000 employees	10	15
501-1000 employees	8	12
Employer Geographic Reach		
Global	24	34
North America	14	20
Local	13	19
Regional (Northeast)	12	17
State	7	10

Director. Table 2 describes the characteristics of the participants. Almost half worked for private, for profit employers; another third worked in the non-profit sector. Respondents worked for diverse sectors that were representative of employers in the northeast US; no one sector predominated. Employers of the respondents were also well-distributed in size with almost half in the 100-500 employee category and one-quarter with fewer than 100 employees. Larger employees made up the

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Table 3: Perspectives on Employer Preparedness Among Human Resources		
	N	%
Planning Domain		
*Hazards preparedness**		
Moderately prepared 5+	36	58
Very prepared 5+	10	16
Unprepared 5+	9	15
Mixed	7	11
Development stage of company/agency's plan?		
Moderately developed	18	29
Somewhat developed	17	27
Fully developed	13	21
Not developed	13	21
Don't know	2	3
Emergency response plans account for the needs of disabled staff?		
Moderately well	26	41
Somewhat well	12	19
Not well	12	19
Don't know	9	14
Very well	4	6
Number of Elements in the Plan?		
<=4 elements	61	80
5 to 9 elements	13	17
10+ elements	2	3

remaining quarter. The geographic reach of the companies or agencies for which the respondents worked was generally greater than the northeast; more than one third were global companies. However, almost one-fifth were companies with local scope.

Table 3 presents the survey results in the TWH Employer Preparedness domains. It begins with the Planning domain. Almost 20% reported no HR personnel involvement in emergency planning for the employer, while more than a third reported a lot or a moderate amount of involvement. From the list of specific emergency hazards, such as hurricanes and active shooters, participants were asked to indicate their perception of their employer's preparedness for each hazard from Very to Not Prepared and Don't Know. Sixteen percent ranked themselves as very prepared for five or more hazards while around the same percentage said that they were unprepared for five or more hazards. The majority thought that they were moderately prepared for five or more hazards. Winter storms, hurricanes and extreme heat were the most common emergency or disastrous potential hazards planned for by these respondents' employers. The hazards that appeared to have the least preparation were active shooters, acts of terrorism, and infectious disease outbreaks.

	Very or Moderately		Some or Unprepared		Don't Know	
Hazard-Specific Preparedness	**N**	**%**	**N**	**%**	**N**	**%**
Winter storm	57	89	7	11	0	0
Hurricanes	40	63	22	34	2	3
Tornado	25	39	36	56	3	5
Flooding	36	57	24	38	3	5
Extreme heat	40	63	21	33	2	3
Fires/explosions	36	56	25	39	3	5
Hazardous materials incident	34	53	25	39	5	8
Active shooter	18	28	42	66	4	6
Terrorism	11	17	46	72	7	11
Infectious disease outbreak	21	33	38	59	5	8

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Respondent Participation in Planning	%
A lot	13
Moderate	23
Some	45
None	19

About half of the participants reported that their company or agency's emergency action plan was either fully or moderately developed. Another quarter reported that the plan was not developed or they didn't know the status of the plan. Participants were asked if their company or agency's emergency action plans accounted for the needs of disabled staff – a measure of inclusiveness and equity in planning. Very few said that they did this "very well", although almost half said they did this either moderately or somewhat well. More than one third reported that their plans did not account for disabled staff or they didn't know if they did.

Elements Included in the Plan	N	%
Guidelines for closing and opening facilities	33	20
Telecommute	29	17
Access to closed facilities	19	11
Flex-time	19	11
Off-site facilities	16	10
Access to medical & mental health services	13	8
Temporary and contract employees	11	7
Additional pay	7	4
Meals	7	4
Temporary housing	5	3
Transportation assistance	4	2
Childcare and/or Eldercare	2	1
Other (alternative home base)	2	1
Staffing Domain		
Plan status for staffing following an emergency or disaster?	**N**	**%**
In development	21	33
Plan in place	21	33
No plan	19	30
Don't know	2	3
Hazard Reduction Domain		
Employer meeting OSHA requirements on emergency preparedness?	**N**	**%**
Very well	21	33
Moderately well	15	24
Don't know	10	16
Somewhat well	9	14
Not applicable	6	10
Not well	2	3

Respondents answered if any of 12 TWH Employer Preparedness-specific elements were included in the company or agency's emergency action plans. The most common TWH Employer Preparedness elements in the plans were guidelines for closing and opening facilities and for telecommuting. Less than 10% reported the following elements in their emergency action plans: access to medical and mental health services, temporary and contract employees, additional pay, meals, temporary housing, transportation assistance, and childcare and/or eldercare.

The index included one question related to the Staffing domain which asked about the degree of development of their employers' staffing plan following an emergency or disaster. One third reported that either there was no plan or they didn't know if there was, and the remaining two-thirds were divided between either "plan in development" or "plan in place."

In the Hazard Reduction domain, respondents were asked to assess their employer's degree of meeting OSHA emergency preparedness requirements. A majority reported that their employer was meeting these requirements either very or moderately well. With regard to their confidence that their workplace had emergency-related personal protective equipment and other supplies, few reported a high degree of preparedness.

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Emergency PPE and other supplies?		
Not well	18	31
Somewhat well	16	28
Moderately well	13	22
Don't know	7	12
Very well	4	7
Communication Domain		
Way to communicate with employees during and after disasters?	**N**	**%**
Yes	47	75
No	9	14
Don't know	7	11
Training Domain		
Offer programming about personal disaster preparedness?	**N**	**%**
No	39	67
Yes	12	21
Don't know	7	12
H&S Training Covering Disaster Topics		
No HS trainings	27	36
1 or 2 HS trainings	20	26
3 or 4 HS trainings	17	22
5+ HS trainings	12	16
Emergency exercises and drills beyond fire drills?		
No	36	62
Yes	18	31
Don't know	4	7
H&S Training Disaster Topics	**N**	**%**
Emergency response, generally	40	25
Fire/explosions	30	19
Extreme weather	26	16
Hazardous material incident	20	13
Infectious disease outbreaks	15	9
Active shooters/act of terrorism/violence	14	9
Heat waves	13	8

HR Policies Domain		
Employees are paid if employer is closed during/following disasters?	**N**	**%**
No	29	48
Yes	19	32
Don't know	12	20
Disaster leave? (Employer operational; employee unable to report)		
Yes	28	47
No	23	39
Don't know	8	14
Leave bank? (employees can donate and use)		
No	47	78
Yes	11	18
Don't know	2	3
Benefits continue during disaster? (Employer operational; employee unable to report)		
Yes	39	65
No	12	20
Don't know	9	15
Resilience Support		
Disaster assistance EAP?	**N**	**%**
Yes	43	73
No	12	20
Don't know	4	7
Recovery resources?		
Yes	28	47
No	24	41
Don't know	7	12

Our Communication domain question was very simple: do they have a way to communicate with employees during or after an emergency? Three quarters said yes. Three questions were asked related to the Training domain. About one fifth reported that their company or agency offered personal disaster preparedness training. Just under a third reported that their companies or agencies conducted drills. Many respondents reported that their company or agency included emergency preparedness topics in health and safety training, although it was as common for there to be no trainings as for there to be many trainings (more than 3). Most common training provided was general emergency preparedness and training on extreme weather. For hazard-specific preparedness training, violence and infectious disease outbreak preparedness were less common topics.

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The Human Resources Policies domain included four questions related to compensation and benefits following a disaster. In the case where an employer is closed due to a disaster, one third of respondents reported that employees would be paid and 20% said that they didn't know if they would be. Disaster-impacted employees who could not report to work would be able to take leave in half of the respondents' companies or agencies. Eighteen percent of respondents said that they had a "leave bank" that would allow employees to donate leave for disaster-impacted co-workers. Almost two-thirds of respondents said that employees at their workplaces would be able to continue to receive benefits following a disaster that impacted the employer.

The Resilience Support domain was represented by two questions in the index. We asked if their employer had an Employee Assistance Program that could be called upon for supporting employees impacted by a disaster and if they offered or would offer mental health or other resources to their employees in the event of a disaster. Almost ¾ felt their EAPs were on-call for disaster-related support and about half said that they could offer other resources to their employees.

Table 4: TWH EP Index Scores Distribution

Score Category	N	%
None (0)	13	17
Low (1-7)	22	29
Moderate (8-15)	32	42
High (>15)	**9**	**12**

Each company was scored from 0 to 21 on the TWH Employer Preparedness Index as described in Table 1. As shown in Table 4, there was large number that received a 0 score and a slightly smaller number that receive a high score, which we define here as a score greater than 15. The population was almost evenly divided between those that ranked as either not prepared or in a low level of preparation vs. those with a moderate or higher level of preparedness. The mean was a score of 8.8 which would rank as a moderate level of preparedness.

Table 5: Employer Preparedness by Sector, Size and Reach

	Mean		Sector Confidence Limits		
Sector (t test)	Sector	Others	Lower	Upper	p value
Business Services and Telecomm (n=12)	7.6	8.7	4.3	10.9	0.527
Manufacturing/Technology (n=13)	7.8	8.7	4.6	1.3	0.634
Healthcare (n=10)	11.6	8.0	7.4	15.7	0.057
Govt/Social Services (n=13)	9.0	8.4	5.1	12.9	0.730
Employer Size (employees) (ANOVA)		8.8			0.056
<100 employees (n=17)	6.1				
100-500 employees (n=33)	9.4				
>500 employees (n=18)	10.0				
Employer Reach (ANOVA)		8.8			0.409
Global (n=24)	7.4				
North America (n=14)	10.0				
Regional(Northeast) (n=12)	10.0				

We conducted T tests to ascertain if some sectors were more prepared than the total sample. We also used ANOVA tests to evaluate if an employer's size based on number of employees or geographic reach predicted different performance on the TWH Preparedness Index. Most likely due to our small sample size and limited number of respondents in each category, no significant differences were found between different types of respondents. However, the healthcare sector was marginally better prepared than other sectors. As shown in Table 5, more larger employers were prepared, however company/agency reach was not a predictor of likely preparedness.

 doi:10.20944/preprints202101.0242.v1

Discussion

This study was the first of its kind to explore the concept of TWH Employer Preparedness. Analysis of the responses suggests that employers may have many elements of preparedness in place, however a significant number may have very low levels of preparedness, and almost all have room to grow into greater preparedness. These northeastern US respondents indicated that employers are better prepared for storms than for acts of violence. Many employers have emergency plans, but these may not focus sufficiently on issues related to TWH. Recent disasters such as Hurricane Florence brought work-life conflicts into sharp relief. Respondents to the survey suggested that policies and practices that might minimize such conflicts, such as emergency child or elder care, may not be well developed in most employers' action plans. Bringing plans to life through training and drills is an important step toward effective preparedness. While some employers are diligent in their preparedness-related training, responses here indicated that employers should expand these activities, particularly in providing personal preparedness training for employees. We did not find significant differences between types of employers and their level of preparedness, although it is likely that healthcare and large employers have greater TWH Employer Preparedness.

The strengths of this study include operationalization of a TWH Employer Preparedness Model as a tool of assessing employer preparedness to protect employees and promote their well-being in the face of multiple, diverse potential disasters. This model was effectively integrated in a survey instrument which was comprehensive of the domains, yet easily completed in 20 minutes. The "draft" survey instrument developed for this study can be modified to assess specific employer practices and policies within or between organizational units.[1] Additionally, the survey can be used without the Index to provide specific and comprehensive assessment of Employer Preparedness. The Index can also be customized to weight questions or domains according to the priorities of the employer or association. The Index is most useful in comparing employers or sectors and, thus, can be modified for research studies and public health or other government preparedness assessments. Application of the survey can be complimented by qualitative program assessment strategies including key informant interviews to determine the barriers and opportunities for greater Employer Preparedness within and/or between employers.

The partnership with NEHRA was beneficial to both parties and holds promise for future collaborations. The respondents represented diverse employment sectors and they were generally experienced decision-makers. Indeed, some of the open-ended responses suggested that the survey stimulated novel thinking about these issues and may have induced respondents to take action on the issues included in the survey.

The major limitation of this study was the low response rate and number of responses. Email invitations to a large membership list may not be an effective means of enticing participation in such a survey. The incentive, which was essentially a raffle ticket, may have been inadequate to induce participation. Future efforts might include attendance at professional conferences where in-person solicitation may yield greater results. It is also possible that a longer period of time is necessary to collect survey responses. Because of the importance of TWH Employer Preparedness, and its potential for providing protection and enhancement of employee wellbeing, additional research and dissemination of the model is critical.

[1] The survey instrument is available at: XXXXXXX

Conclusion

This small study of Employer Preparedness to protect and promote Total Worker Health in the face of emergencies and disasters is the first of its kind. Significant effort has been applied to the development of public health preparedness to address the emergency medical care needs of disaster-impacted individuals and to assure adequate infrastructure for non-routine events. However, less attention has been paid to the needs of the individuals who are tasked with providing that response or toward the prevention of the work-related impacts of disasters. The accompanying article details many potential policies and concrete preparative action that can be initiated by employers to advance their preparedness.

During and following disasters, business and public demands may take priority over attention to the individuals' well-being who are tasked with response. More research is needed to determine best policies for protecting workers and promoting their well-being during and following disasters while meeting those demands. Additionally, many potential impacts can be avoided by focus on risk assessment and prevention. This study and the accompanying framework can renew attention to the well-being of workers and support for employers in promoting it.

Acknowledgements

I gratefully acknowledge the assistance of Carole Edson and Northeast Human Resources Association in conducting this research. I am also grateful to Rebecca Gore for her assistance with analysis. This work was funded by the Center for the Promotion of Health in the New England Workplace, with support from the U.S. National Institute for Occupational Safety and Health Grant number: U19-OH008857.

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