NYU SCHOOL OF GLOBAL PUBLIC HEALTH

NYU Center for Public Health Disaster Science

RAPID BEHAVIORAL HEALTH ASSESSMENT PROJECT:

SURVEY TOOLS FOR MEASURING THE MENTAL HEALTH EFFECTS OF A DISASTER

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CSTE Toolkit: Rapid Behavioral Health Assessment Project (NYU)

Introduction

Disasters and complex emergencies are becoming increasingly common and often lead to substantial economic and health impacts among exposed populations. The short and long-term population consequences of disasters can be significant: death and disability, as well as the disruption or destruction of personal property, social networks, markets, and whole ecosystems. In the aftermath of such events, public officials and community leaders have an interest in surveying their communities in order to understand the hazard's impact. This toolkit is designed to guide officials interested in understanding the behavioral and mental health effects of a disaster or complex emergency. In partnership with the Council of State and Territorial Epidemiologist and the Substance Abuse and Mental Health Services Administration, researchers at New York University's College of Global Public Health developed, tested, and validated a rapid behavioral assessment survey tool. This survey tool can be used to supplement other rapid survey efforts, such as the Centers for Disease Control and Prevention's Community Assessment for Public Health Emergency Response (CASPER), or it may be implemented as a stand-alone survey instrument. This is designed as an epidemiological instrument for assessing population health indicators, and is not presented as a clinical or diagnostic tool or screener.

Three versions of the survey are offered as part of this toolkit, illustrated in Appendix 1: the **26-item Core Behavioral Health Assessment (Core BHA)**, which takes about 5-10 minutes to administer in person; a **51-item Expanded Behavioral Health Assessment (Expanded BHA)**, which requires approximately 15-20 minutes to administer; and a **6-item Abbreviated Behavioral Health Assessment (Abbreviated BHA)**, which would require approximately 2 minutes to administer. *In most post-disaster settings, the Core BHA is likely to be the survey of choice*. However, practitioners and communities should consider whether they would like to explore the issues surrounding mental health in greater detail, in which case the Expanded BHA may be more appropriate, or whether they only have time to "piggyback" selected mental health items on an existing survey, for which the Abbreviated BHA may be more useful.

Public health practitioners and surveyors should be mindful of the challenges associated with any of these behavioral health field assessments. These include the logistical challenges of negotiating a chaotic environment; the ethical challenges of approaching recently traumatized or distressed populations and assuring mechanisms for referrals to diagnostic and therapeutic psychological resources; and the operational challenges of assembling and training a team, mounting a field data collection effort, and asking the right questions. Although this guidance document will reference a number of these challenges, its primary purpose is to assist practitioners in identifying the right questions to ask.

A number of rapid assessment and survey research instruments have been used to assess post-disaster mental health status, but to date there has not been a coordinated effort to systematically collect, validate, and catalogue behavioral health measures. This project addressed that gap by developing a standardized and validated behavioral health survey module (in three formats – Core, Expanded, and

Abbreviated) that can be used by public health practitioners to rapidly assess behavioral health burden and needs in post-disaster settings. Moreover, the project compared three different modes of survey administration, including in-person, over the telephone, and self-administered on an Internet platform. The recommended Behavioral Health Assessment modules in the Toolkit achieved comparable results across all three modes.

Project Approach

Development of the behavioral health modules and toolkit involved the following steps: (1) defining the domains of behavioral health within a conceptual framework; (2) reviewing the peer-reviewed literature and previous rapid assessments to identify appropriate measures of behavioral health associated with those domains; (3) selecting measures to include in a questionnaire for testing, mapped to the conceptual framework; (4) testing and validating these measures and items in two disaster-affected cohorts; (5) identifying measures and items for inclusion in the final module; and (6) creating a toolkit for broad dissemination which describes the module and how it can be used.

1. Define the domains of behavioral health within a conceptual framework

There are many potential factors associated with a population's mental health and well-being after a disaster, and it would be challenging to capture all of these in a post-disaster behavioral health assessment. The project team developed a conceptual framework of behavioral health (Figure 1) in order to achieve four primary objectives: (1) establish boundaries around the factors that could reasonably be captured in a rapid survey; (2) serve as a guide to assure that specific domains were measured; (3) illustrate a narrative of how and why mental health distress and disorders might surface in a community after a disaster; and (4) suggest points within the framework amenable to different types of interventions. The framework has been adapted from the Substance Abuse and Mental Health Services Administration (SAMHSA) definition of behavioral health, which focuses on the "mental/emotional well-being and/or actions that affect wellness." The SAMHSA conceptualization further refers to the link between stressors and psychological distress as a function of the disruption or threat to individual resources[1].

Beginning on the right side of the figure, the key behavioral health outcomes of interest include ***substance use disorders***, ***mental health disorders and distress*** related to depression and anxiety, ***post-traumatic stress symptoms***, and ***poor physical health***[2]. Clearly, there may be a relationship among each of these outcomes – for example, individuals with post-traumatic stress may self-medicate with alcohol or drugs, which may lead to substance use disorders. And poor physical health can precede or follow each of these outcomes. Nevertheless, each of these outcomes reflects a significant marker of concern for a community and its public health providers. A community which identifies a significant prevalence of such behavioral health outcomes might consider a set of interventions such as enhanced screening, referral, and treatment services.

[1] https://www.samhsa.gov/data/national-behavioral-health-quality-framework

[2] Recommended survey assessment scales or items are noted in brackets after each domain

The framework illustrates three general pathways to these behavioral health outcomes. The primary path begins with the disaster event itself, and presumes that this "disaster exposure" leads first and foremost to stress. Measuring the disaster exposure is beyond the scope of this rapid behavioral health assessment tool, although it may be included in a broader community survey of which the behavioral module is a part. The framework assumes that regardless as to the source of the stress, the generic experience of stress is a likely precursor to later mental health distress or disorders. Any number of

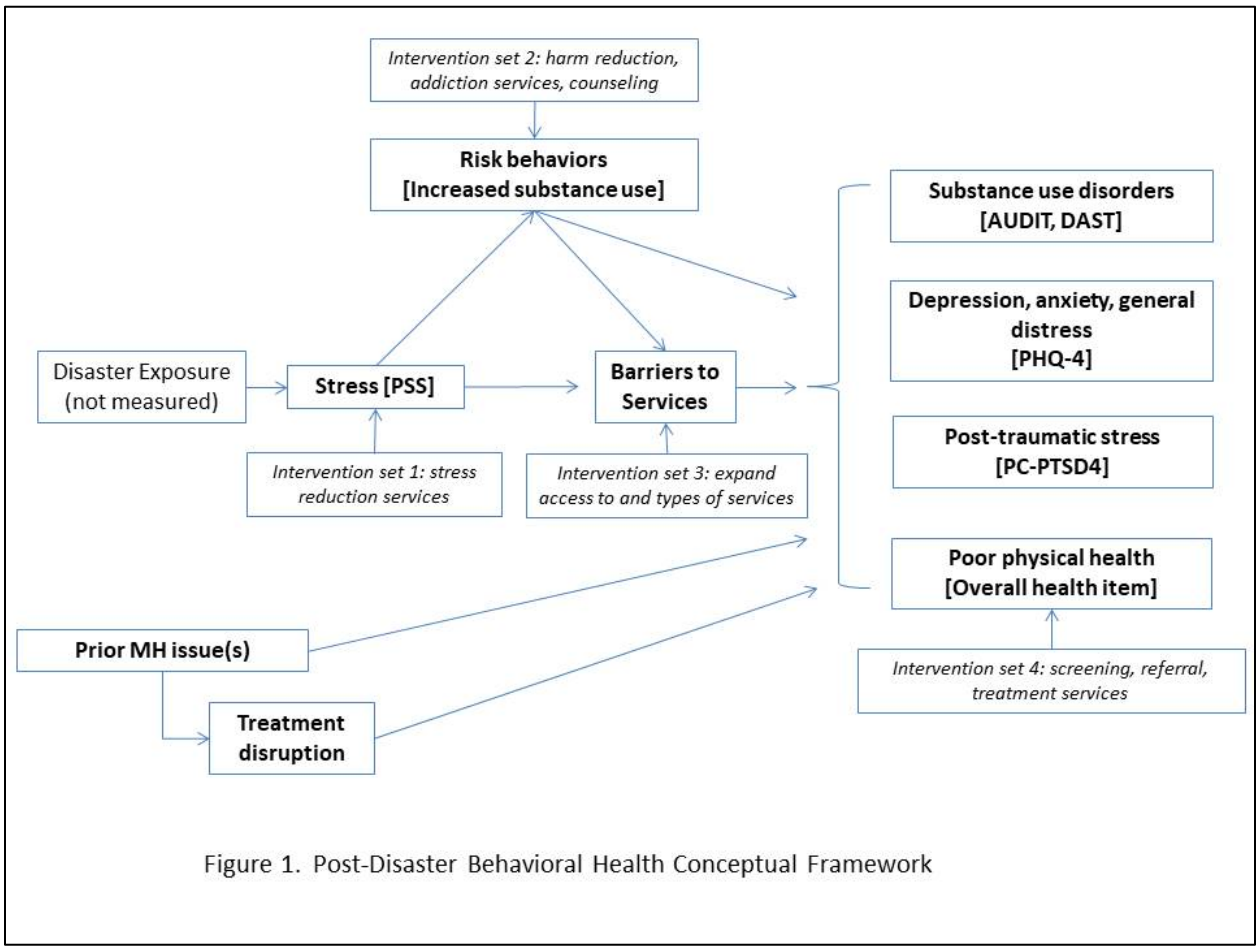

Figure 1. Post-Disaster Behavioral Health Conceptual Framework

stressors can be imagined: these could include disaster-related traumas which have led to injury or disability; economic hardships and constraints, including loss of job or socio-economic status; disruptions to social networks; displacement and loss of home; loss of cherished people, pets or possessions; or exacerbations of chronic health conditions or socio-economic disparities. Interventions considered within this domain could include stress-reduction techniques, or programs specific to mitigating or addressing these direct causes of the stress. The framework further considers that this experience of stress can lead directly to mental health distress and disorders, or it can be influenced by barriers within the health and human services systems that prevent or deter people from seeking or

receiving services[3]. Interventions addressing the barriers could include expansions of access and eligibility, inter-organizational coordination strategies, and data monitoring and evaluation techniques.

A second pathway operates through risk behaviors. These behaviors could include increased use of sensory- or cognitive-altering substances such as alcohol, illicit drugs, or medications used in ways not prescribed, and they may be a product of disaster-related stressors or they may be a response to other stressors and factors in people's lives. Interventions associated with this domain could include expanded addiction services, harm-reduction strategies, and counseling, among others.

The last major pathway features pre-existing mental health issues, which may continue to fuel the prevalence of mental health disorders in the community or be exacerbated as a result of the disaster and its consequences. Furthermore, there may be treatment or system disruptions secondary to the disaster that affect individuals with these pre-existing conditions, disorders, or issues. These could include interruptions to critical medication supply chains, or they could involve disruptions to addiction services, as two examples. Regardless, it may be important for communities to be able to distinguish, as much as possible, those mental health impacts which emerged after the event from those which predated it. By measuring the extent of prior mental health issues, communities will be able to estimate in very broad terms what portion of mental health distress may be a result of the disaster.

2. ***Review the peer-reviewed literature and previous rapid assessments to identify measures of behavioral health***

Previous rapid assessments and disaster studies for post-disaster behavioral health were examined – including Community Assessment for Public Health Emergency Response (CASPER) questionnaires – as was the peer-reviewed literature. The objective was to identify and systematically evaluate validated scales and stand-alone items that capture each behavioral health domain in the conceptual framework for inclusion in the questionnaire for testing. The matrix in Appendix 2 reflects the 27 major behavioral health scales and sentinel items collected, as mapped to the domains in the conceptual framework. These measures include validated multi-item scales, as well as items identified from prior post-disaster studies (the sentinel items, which are not drawn from validated scales).

3. ***Select measures to include in a questionnaire for testing***

From among the identified scales and sentinel items, a smaller number were chosen for a pilot survey instrument. This survey instrument was the basis for the data collection to conduct the validity testing. A number of criteria were applied to each candidate scale, including brevity (10 items or less), acceptable validity and reliability in previous studies, use in comparable national, state, or regional studies (in particular, national surveillance studies, from which baseline data may be extracted for comparison), accessibility (e.g., no fees or permissions required), and availability in different languages. For each scale, we also evaluated face and content validity, based on previous studies and expert knowledge of the construct captured by the scale. Although not included in the matrix, the sample

[3] For ease of readability, the conceptual framework figure does not include every potential pathway between a domain and an outcome. For example, the disaster exposure may lead directly a mental health outcome, such as post-traumatic stress symptoms, without "passing through" other domains first.

questionnaire included key demographic questions from the Behavioral Risk Factor Surveillance System (BRFSS) in order to describe the study sample. Several well-known scales were excluded because they were proprietary and might incur user fees (these included the Short Form Survey 12 and the Mental Health Inventory 5), others were excluded due to the number of items (such as the PTSD-Checklist), and others excluded for lack of domestic application or infrequent use in national surveys (included the Humanitarian Emergency Settings Perceived Needs Scale and Center for Epidemiologic Studies Depression scale). A total of 20 scales and sentinel items were selected for the pilot survey.

4. Test and validate these measures and items in two disaster-affected cohorts

The pilot survey was tested in a sample drawn of adults (18 years or older) from two previous study cohorts, one affected by Hurricane Katrina in 2005 (the Gulf Coast Child & Family Health Study, G-CAFH) and the other by Hurricane Sandy in 2012 (the Sandy Child & Family Health Study, S-CAFH). The Katrina and Sandy studies are population-based longitudinal studies of approximately 1,000 adults each. The Katrina cohort comprises individuals from Louisiana or Mississippi displaced for more than six months or greatly affected by the hurricane, and participants have been followed for five study waves over thirteen years since 2005. The Sandy cohort includes New Jersey residents exposed to Hurricane Sandy and has been followed over two study waves since 2014. Interviews for the pilot survey were conducted with study participants in New Orleans and New Jersey in April and May 2018, respectively. In addition, study subjects from the Katrina and Sandy cohorts were invited to refer an additional adult who had been exposed to the hurricane event. Participants completed an in-person assessment administered by a study team member and were also randomly assigned to complete the assessment in a second mode, either over the telephone or self-administered using a web-based survey shortly prior to or following the in-person survey, with the goal of examining mode differences. Interviewers obtained verbal informed consent at the beginning of each interview. Participants were offered $50 for each completed survey, and original Katrina and Sandy cohort members received an additional $10 for eligible referrals who completed the assessment. The study was approved by New York University Institutional Review Board. The objective in recruiting individuals from the Katrina and Sandy cohorts, and those adults whom they referred, was to create a disaster-exposed convenience sample for the purposes of psychometric item testing; the objective was not to develop a representative sample. A total of 101 individuals participated in the study, including 44 from the Katrina cohort and 57 from the Sandy cohort. Thirty-two participants completed an in-person and telephone assessment, thirty-four completed in-person and web-based assessment, eight completed a telephone assessment only, twenty-six completed a web-based assessment only, and one person completed all three modes. Among the 101 participants, 71 individuals were drawn from the original Katrina or Sandy cohorts.

5. Identify measures and items for inclusion in the final module

Descriptive statistics were calculated for all study variables, including frequencies and percentages for categorical variables and means, standard deviations, medians and minimum and maximum values for continuous variables using information from in-person interviews, if available, or from telephone or web-based assessments among those who did not complete an in-person interview. The prevalence of behavioral health outcomes (e.g., probable depression, alcohol use disorder) was estimated using

validated cutoff scores from the literature, and internal consistency reliability examined using standardized Cronbach's alpha. Concurrent, convergent and divergent validity was assessed by evaluating the correlation between scales, using total score for each scale and Pearson's correlation coefficients (r). Test-retest reliability across questionnaire administration mode, comparing in-person to telephone and in-person to web-based administration, was assessed using intraclass correlation coefficients (ICC) for scales and kappa and percent agreement for categorical/dichotomous items, among participants who completed interviews in two modes. Scales and stand-alone items were selected for the core module based on results from principal components analysis (PCA), in addition to feedback from study participants on clarity of specific questions and other considerations described above (e.g., brevity, use in other studies). Further description, analyses, and findings can be found at [INSERT JOURNAL CITATION].

Final survey instrument

Appendix 1 represents the three versions of the final survey instrument – the **Core Behavioral Health Assessment (BHA)**, the **Expanded Behavioral Health Assessment**, and the **Abbreviated Behavioral Health Assessment** – in one document. The survey has been formatted to help readers distinguish each version. The Core BHA is in standard Roman text, the Abbreviated BHA is in **asterisked bolded blue** text, and the Expanded BHA is in *grayed italic* text. Table 1, below, lists the scales in each survey version, as well as the estimated time required for each version as an in-person survey.

Table 1. Selected Scales and Items for Behavioral Health Assessments

SCALE/ITEM	# ITEMS	Core	Expanded	Abbreviated
Substance Use disorders				
AUDIT-C	3	✓		
AUDIT	10		✓	
DAST	10	✓	✓	
Increased Use Since Event	1	✓	✓	✓
Mental health disorders: anxiety, depression, general distress				
PHQ-4	4	✓		✓
PHQ-8	8		✓	
GAD-7	7		✓	
Post-traumatic stress symptoms				
PC-PTSD	4	✓	✓	
Other domains				
PSS	4		✓	
Prior mental health diagnosis	1	✓	✓	✓
Prior treatment and disruption	2	✓	✓	
Current reported mental health need and barriers	3		✓	
Self-reported health	1	✓	✓	
TOTAL ITEMS		**26**	**51**	**6**
Estimated time to administer in-person (~10-20 sec. per item), in min.		**5-10**	**9-18**	**1-3**

The Core BHA, estimated to require 5-10 minutes, is designed to capture all the behavioral outcomes in the conceptual framework, as well as the risk behaviors and prior mental health issues likely associated with the outcomes. This will likely be the most useful version of the survey for most public health practitioners and community surveyors. The Expanded BHA capitalizes on full versions of the PHQ-8 (anxiety) and GAD-7 (depression) scales, as well as the perceived stress and barriers scales and items, to provide data for estimating the full conceptual framework as well as distinct point prevalence estimates for anxiety and depression separately; by comparison, the Core BHA will provide for an estimate of the surveyed population with mental health distress or disorders, including anxiety and depression, rather than distinguishing each disorder individually. The Expanded BHA is likely to require 9-18 minutes to complete as an in-person survey. The Abbreviated BHA is only 6 items, and can be completed in a minute or two. This is ideal for surveyors who are already planning a survey effort and have limited time to include mental health questions. The Principal Components Analysis identified two primary components across all the 27 scales in the pilot survey – mental health and substance use disorders. For that reason, the Abbreviated BHA has been designed to pick up two factors – the PHQ-4 scale will provide estimates of mental health distress and disorder (including anxiety and depression) in a surveyed population, and the single-item Increased Substance Use measure will pick up incident drug and alcohol use since the event.

The pilot survey was tested using three different modes of survey administration, including in-person, as an online self-administered survey, and as administered by an interviewer over the telephone. Data from participants who completed two different modes were analyzed for how well their answers matched, regardless of survey mode. The intra-class correlation statistics for the scales reported in Table 1, which are the measures of reliability, were sufficiently high so as to confirm that data from any of the survey modes were equivalent to one another. As Table 2 illustrates, there are time differences between modes. Online, self-administered surveys were the shortest and the phone interviews were the longest. Readers should keep in mind that these times refer to the pilot survey, and not to any version of the BHA (all of which are considerably shorter than the pilot survey).

Table 2. Mean Survey Time of Pilot Survey by Mode of Administration, in minutes

In-person	34.9
Online, self-administered	29.4
Telephone interviewer	43.6

Note: This analysis excluded outliers whose time to completion was 2 or more standard deviations above or below the mean.

A few notes on reading and using the combined survey in Appendix 1:

- All the items in the Abbreviated BHA, in **asterisked bolded blue** text, are **also** part of the Core BHA;
- Instructions for interviewers are listed in brackets, such as [INSERT EVENT];
- Directions on scoring each scale are bolded and in brackets, for example: **[To score the PC-PTSD-4: Each individual item is scored 0 or 1. All items should be summed (Q1-4) for a maximum score of 4. Totals below 3 are no PTSD and totals above 3 are possible PTSD]**. Additional Stata coding for validated scales is provided in Appendix 4;

- All of the validated scales include the code associated with each value, in a parenthesis following the value response;
- Interviewers administering the survey should read all the way to a question mark ("?");
- This survey includes some basic introductory and connecting text to allow an interviewer to open the study and move smoothly from section to section. Survey designers are encouraged to consider customizing these sections, and adding any consent language as necessary;
- Suggested socio-demographic questions, drawn from the BRFSS, are included in Appendix 3. It is conventional survey practice to add such demographic questions at the end of the survey, after all the critical substance-specific data have been collected;
- Survey designers may wish to randomly rotate the sections within a survey. For example, the order of scales in the Core BHA in Appendix 1 is PTSD-4, PHQ-4, AUDIT-C, and DAST-10. A designer may wish to begin with the substance use questions (AUDIT and DAST) for half of the surveys;
- Survey teams should consider identifying appropriate referral resources prior to entering the field, and assuring that these mental health resources will be available during survey hours (and ideally after hours as well). One modification made in the Expanded BHA, similar to modifications made in many community-based surveys, is that PHQ-8 is used rather than PHQ-9. The excluded item is about a respondent's suicide ideation; this is often considered too challenging for a community interviewer, and is best reserved for clinical encounters rather than epidemiological investigations;
- There are no pre-defined triggers or red flags within the survey that dictate a mental health referral. Interviewers and survey managers should use their best judgment and diplomacy if a critical mental health issue is identified, including having clinically-trained personnel available to assist as needed. In addition, one good practice is to have updated mental health and substance use referral information available, and to distribute it to ALL respondents without having to distinguish who may or may not benefit from such material;
- "Best Practices" for survey interviewers include the following:
    - The cardinal rule of interviewing is to remember that you are acting as an objective recorder of each participant's experiences. Your personal beliefs and judgments have no place in the interview setting. As difficult as it sounds, leaving your convictions and criticisms at the door is imperative to the success of the interview.
    - The second principle for successful interviewing is to thoroughly know the purpose of the project. Your confidence in the work and your abilities will be apparent. In the first 15 seconds of your encounter potential participants decide whether or not they want to be a part of the study. If you don't know why you are there, or what your efforts will yield, neither will the respondents. This first impression is very difficult to change. Know the study's purpose and know its value before you knock on the door.
    - The goal is to accurately record the respondent's answers to the questions, while always adhering to the close-ended response sets. Never interpret a respondent's answer--probe to get him or her to clarify what s/he means and to ensure that the respondent actually chooses one of the responses outlined on the survey.

- Consider who will be asking the questions and who will be responding. It may not be appropriate to have neighbors canvassing within their own neighborhoods, or adolescents surveying seniors. Keep in mind that behavioral health issues often lead to personal disclosures, and may be very sensitive and stigmatizing. Interviewers need to be trained to ask questions in the most sensitive way possible: non-judgmentally, and in a non-confrontational manner;
- Lastly, allow respondents some time to vent. Often, participants in such post-disaster studies have experienced disturbing or challenging events without the opportunity to speak about it. This survey may be their first chance to talk about distressing events. Be professional (that is, don't reveal your own fears or experiences), but be sympathetic.

A Master Checklist

The checklist below represents the steps that public health officials and assessment teams should consider before entering the field. Sampling strategies and methods, although mentioned, are beyond the scope of this project. A particularly good resource for sampling considerations is the CDC CASPER website, https://www.cdc.gov/nceh/hsb/disaster/casper/ .

Table 3. Master Checklist Prior to Entering the Field

STEPS	CONSIDERATIONS
Determine the purpose of the survey	1. Use the conceptual framework figure (above) to guide a consideration of the overall study purpose. Consider the following: 2. Is it to identify behavioral health problems exhibited by a disaster-exposed population, as an estimate of point prevalence? IF YES, the stand-alone module is sufficient. 3. Is it to approximate impacts of exposure by comparing the disaster data to another data set? IF YES, consider the availability of comparable pre-event data for the same or a similar population. Consider the availability of secondary data sources with comparable data at local, regional, state, or national levels. 4. Is it to identify programmatic needs and barriers to access? IF YES, consider adding Perceived Stress Scale, and Barrier items.
Identify the population of interest	1. Consider the potential sampling biases inherent in different enrollment approaches, and the extent to which the sampled population is representative of a larger group. Potential sampling approaches include the following: 2. A convenience sample, such as individuals accessing Disaster Recovery Centers. This may be the easiest population to sample, but it is the least representative, with the greatest selection bias. 3. Institutional capture, in which the participants are drawn from a specific institution, such as a mass care shelter, or are members of a first response workforce. Findings may only be generalizable to that particular population. 4. Population sample of all those exposed or susceptible to the exposure, excluding those who were displaced or who evacuated from the community. 5. Population sample of all those exposed or susceptible to the exposure, including those who were displaced or who evacuated from the community.
Develop the research design	1. Consider whether the study should be cross-sectional (in which participants are recruited and surveyed at a point in time, but not re-contacted) or longitudinal (in which the same participants may be surveyed again, in order to determine a change over time). 2. Cross-sectional studies may acquire the data anonymously, since identifiers are

Table 3. Master Checklist Prior to Entering the Field

STEPS	CONSIDERATIONS
	not required for respondent follow-up. Data management and security are simpler than when handling personally identifiable information. 3. Longitudinal studies must collect identifiable information, so the survey would be confidential rather than anonymous. This requires more data security and greater human subjects protection.
Identify the survey design	1. Is the survey a stand-alone behavioral survey, or is it a module within a larger survey? 2. If a stand-alone, consider what additional data points are required for analyses. These could include socio-demographics, such as gender, age, race and ethnicity, as well as data on the disaster exposure itself. a. Reinforce that this should be embedded in larger process of assessing basic needs and making appropriate referrals
Develop a plan to protect human subjects	1. Consult with the appropriate Institutional Review Board about the requirements for developing and certifying a research protocol. 2. Consider referral mechanisms for participants who request additional mental health resources.
Assemble and train a data collection workforce	1. Consider recruiting interviewers from outside the area, who have not been directly affected by the event, and who are unlikely to know the respondents personally. 2. Allow time for interviewers to learn and be able to repeat the purpose of the study and to practice survey so that they can administer it fluently. 3. Train interviews to ask sensitive questions, and to identify critical mental health issues that require immediate attention. 4. Include debriefing sessions for field staff, who themselves may be greatly affected by the stories they hear and the scenes they witness.
Identify mode(s) of survey administration and technology needs	1. Although in-person surveys are often considered the "gold standard," consider who else could be included by adopting a multi-modal administration approach that includes telephone surveys and online self-administered surveys. This includes populations who have been displaced, those with access and functional needs, and younger populations, all of whom are often under-represented in conventional face-to-face surveys. 2. Computer-assisted survey technologies make data collection more reliable and efficient, but often require an initial investment in software and hardware technology. Such technology does afford a number of advantages: a survey designed for a tablet is often able to be re-purposed as an online self-administered instrument (with some modifications). In addition, interviewer-administered surveys on tablets or laptops can be turned in to self-administered surveys for particularly sensitive questions. 3. Even if all data collection are designed to be collected electronically, be prepared with pen-and-paper surveys should the technology fail.
Consider literacy, language, and cultural issues	1. Consider the preparation of laminated response cards that can be used by respondents during in-person surveys. That often facilitates quicker responses. 2. Consider whether translations are required for populations of interest in disaster-affected areas. 3. If feasible, consult with community leaders prior to entering the field about cultural norms among the populations to be surveyed. This can include norms around speaking to surveyors (for example, in some cultures women are unlikely to speak to interviewers who are unknown to them), as well as norms surrounding mental health.

After data collection –

Appendix 5 provides suggestions for reporting rapid assessment findings following data collection. Reporting should begin with a description of the study sample in terms of their sociodemographic (Table 1), disaster-related (Table 2), and behavioral health-related (Table 3) characteristics. Describing the sociodemographic characteristics of the sample will provide practitioners with a basic understanding of who was included in the assessment. The distribution of key demographic characteristics can also be compared to recent population-based survey or census data to evaluate how well the study sample reflects the target population. Disaster-related and behavioral health-related characteristics will provide information on the disaster experience, as well as the prior mental health status and current general behavioral health status of the population sampled. These factors may influence mental health outcomes and can serve as possible intervention points, depending on the programs available. It is important to note that these example reporting tables provide guidance but should be adapted to the specific context.

Next, specific behavioral health outcomes should be described. For scales, basic descriptive statistics including mean, standard deviation, median, minimum and maximum value can be reported, in addition to the frequency and proportion of the sample meeting criteria for these issues using validated cut points (see Appendices 1 and 3 for scoring and coding guidance). Cronbach's alphas should be calculated to evaluate internal consistency reliability of each scale included in the assessment. Importantly, prevalence of each behavioral health issue assessed can be described by sociodemographic, disaster-related, and behavioral health-related characteristics (e.g., by prior mental health diagnosis, Table 5). Estimating the prevalence of these behavioral health outcomes by smaller geographic area (e.g., counties, neighborhoods), when possible, is also warranted. Examining prevalence of behavioral health outcomes by prior mental health diagnosis specifically (Table 5) will also aid in identifying incident cases of behavioral health problems, potentially brought about by the event itself. This information will highlight subgroups disproportionately affected by the disaster and those with the greatest behavioral health needs, to inform targeted intervention and appropriate resource allocation.

Appendices

Behavioral Health Assessment

Legend:
Grey italic text =Expanded assessment
Black text =Core assessment (NOTE: All blue text is also part of the Core Assessment)
Blue text=Abbreviated assessment**

Intro

The purpose of this assessment is for [insert organization] to understand how our community is doing following [INSERT EVENT]. The questions will cover a range of topics that ask you how you have been doing since [INSERT EVENT].

Your participation is entirely voluntary, and you can decline to answer any question at any time. All the information we collect is kept private and confidential. We will not share your identifiable information with anyone, and your name will never appear in any private or public document produced by this project. The risks associated with this study are minimal. There are no direct benefits to your participation, although many people have appreciated the opportunity to speak about their experiences.

Are you ready to begin the survey?

- O Yes
- O No

Start of Block: General health

The first question is about your health.

Q1 Would you say that in general your health is—

- O **Excellent**
- O **Very Good**
- O **Good**
- O **Fair**
- O **Poor ?**
- O **Don't know / Refused**

Start of Block: PC-PTSD-4
[To score the PC-PTSD-4: Each individual item is scored 0 or 1. All items should be summed (Q1-4) for a maximum score of 4. Totals below 3 are no PTSD and totals above 3 are possible PTSD.]

Q1-4 Sometimes things happen to people that are unusually or especially frightening, horrible, or traumatic. For example:- a serious accident or fire- a physical or sexual assault or abuse- an earthquake or flood- a war- seeing someone be killed or seriously injured- having a loved one die through homicide or suicide

For the purposes of this survey we would like you think about [INSERT EVENT]

Since the event….

Q1 [Since the event] Have you had nightmares about [INSERT EVENT] or thought about [INSERT EVENT] when you did not want to?

- O Yes (1)
- O No (0)
- O Don't know / Refused

Q2 [Since the event] Have you tried hard not to think about [INSERT EVENT] or went out of your way to avoid situations that reminded you of the [INSERT EVENT]?

- O Yes (1)
- O No (0)
- O Don't know / Refused

Q3 [Since the event] Have you been constantly on guard, watchful, or easily startled?

- O Yes (1)
- O No (0)
- O Don't know / Refused

Q4 [Since the event] Have you felt numb or detached from people, activities, or your surroundings?

- O Yes (1)
- O No (0)
- O Don't know / Refused

Start of Block: Perceived Stress- Cohen's Perceived Stress Scale-4

[To score the Perceived Stress Scale -4: Each individual item is scored 0-4. Some items are reverse coded as indicated by the numbers next to each answer. All items should be summed (Q1-4) for a maximum score of 16. Those with higher values have higher perceived stress.]

Q1-4 Now, generally speaking, since the event...

Q1 [Since the event] How often have you felt that you were unable to control the important things in your life

- O *Never (0)*
- O *Almost never (1)*
- O *Sometimes (2)*
- O *Fairly often (3)*
- O *Very often (4) ?*
- O *Don't know / Refused*

Q2 [Since the event] How often have you felt confident about your ability to handle your personal problems

- O *Never (4)*
- O *Almost never (3)*
- O *Sometimes (2)*
- O *Fairly often (1)*
- O *Very often (0) ?*
- O *Don't know / Refused*

Q3 [Since the event] How often have you felt that things were going your way

- O *Never (4)*
- O *Almost never (3)*
- O *Sometimes (2)*
- O *Fairly often (1)*
- O *Very often (0) ?*
- O *Don't know / Refused*

Q4 [Since the event] How often have you felt difficulties were piling up so high that you could not overcome them

- O *Never (0)*
- O *Almost never (1)*
- O *Sometimes (2)*
- O *Fairly often (3)*
- O *Very often (4) ?*
- O *Don't know / Refused*

Start of Block: Depression- PHQ8
[To score the PHQ-8: Each individual item is scored 0-3. All items should be summed (Q1-8) for a maximum score of 24. Totals below 10 are no depression or mild depression and those above 10 are moderate to severe depression.]

Q1-8 The next set of questions are about how you felt in the past two weeks. How often have you been bothered by any of the following problems?

Q1 [In the past two weeks how often have you been bothered by] Little interest or pleasure in doing things.**

- O **Not at all (0)**
- O **Several days (1)**
- O **More than half the days (2)**
- O **Nearly every day (3) ?**
- O **Don't know / Refused**

Q2 [In the past two weeks how often have you been bothered by] Feeling down, depressed, or hopeless.**

- O **Not at all (0)**
- O **Several days (1)**
- O **More than half the days (2)**
- O **Nearly every day (3) ?**
- O **Don't know / Refused**

Q3 [In the past two weeks how often have you been bothered by] Trouble falling or staying asleep, or sleeping too much

- O *Not at all (0)*
- O *Several days (1)*
- O *More than half the days (2)*
- O *Nearly every day (3) ?*
- O *Don't know / Refused*

Q4 [In the past two weeks how often have you been bothered by] Feeling tired or having little energy

- O *Not at all (0)*
- O *Several days (1)*
- O *More than half the days (2)*
- O *Nearly every day (3) ?*
- O *Don't know / Refused*

Q5 [In the past two weeks how often have you been bothered by] Poor appetite or overeating

- O *Not at all (0)*
- O *Several days (1)*
- O *More than half the days (2)*
- O *Nearly every day (3) ?*
- O *Don't know / Refused*

Q6 [In the past two weeks how often have you been bothered by] Feeling bad about yourself — or that you are a failure or have let yourself or your family down

- O *Not at all (0)*
- O *Several days (1)*
- O *More than half the days (2)*
- O *Nearly every day (3) ?*
- O *Don't know / Refused*

Q7 [In the past two weeks how often have you been bothered by] Trouble concentrating on things, such as reading the newspaper or watching television

- O *Not at all (0)*
- O *Several days (1)*
- O *More than half the days (2)*
- O *Nearly every day (3) ?*
- O *Don't know / Refused*

Q8 [In the past two weeks how often have you been bothered by] Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual

- O *Not at all (0)*
- O *Several days (1)*
- O *More than half the days (2)*
- O *Nearly every day (3) ?*
- O *Don't know / Refused*

Start of Block: Anxiety- GAD7
[To score the GAD-7: Each individual item is scored 0-3. All items should be summed (Q1-7) for a maximum score of 21. Totals below 8 are no anxiety or mild anxiety and those above 10 are moderate to severe anxiety.]
[To score the PHQ-4: Each individual item is scored 0-3. All items should be summed (Q1-2 of PHQ-4 and Q1-2 of GAD-7) for a maximum score of 12. Totals below 6 are no mental health issue or mild and those above 6 are moderate to severe depression.]

Q1-7 Over the last 2 weeks, how often have you been bothered by the following problems?

Q1 [In the past two weeks how often have you been bothered by] Feeling nervous, anxious, or on edge.**

- O **Not at all (0)**
- O **Several days (1)**
- O **More than half the days (2)**
- O **Nearly every day (3) ?**
- O **Don't know / Refused**

Q2 [In the past two weeks how often have you been bothered by] Not being able to stop or control worrying.**

- O **Not at all (0)**
- O **Several days (1)**
- O **More than half the days (2)**
- O **Nearly every day (3) ?**
- O **Don't know / Refused**

Q3 [In the past two weeks how often have you been bothered by] Worrying too much about different things

- O *Not at all (0)*
- O *Several days (1)*
- O *More than half the days (2) (*
- O *Nearly every day (3) ?*
- O *Don't know / Refused*

Q4 [In the past two weeks how often have you been bothered by] Trouble relaxing

- O *Not at all (0)*
- O *Several days (1)*
- O *More than half the days (2)*
- O *Nearly every day (3) ?*
- O *Don't know / Refused*

Q5 [In the past two weeks how often have you been bothered by] Being so restless that it is hard to sit still

- O *Not at all (0)*
- O *Several days (1)*
- O *More than half the days (2)*
- O *Nearly every day (3) ?*
- O *Don't know / Refused*

Q6 [In the past two weeks how often have you been bothered by] Becoming easily annoyed or irritable

- O *Not at all (0)*
- O *Several days (1)*
- O *More than half the days (2)*
- O *Nearly every day (3) ?*
- O *Don't know / Refused*

Q7 [In the past two weeks how often have you been bothered by] Feeling afraid as if something awful might happen

- O *Not at all (0)*
- O *Several days (1)*
- O *More than half the days (2)*
- O *Nearly every day (3) ?*
- O *Don't know / Refused*

Start of Block: Alcoholism- AUDIT
[To score the AUDIT: Each individual item is scored 0-4. All items should be summed (Q1-10) for a maximum score of 40. Totals below 8 are low risk alcohol use disorder and those above 8 indicate a range of risk for alcohol use disorder.]
[To score the AUDIT-C: Each individual item is scored 0-4. All items should be summed (Q1-3) for a maximum score of 12. For men, totals above 4 suggest problem drinking. For women, totals above 3 suggest problem drinking.]

Q1 These next questions are about some behaviors you may engage in such as the use of alcohol or other substances.

How often do you have a drink containing alcohol?

- O Never (0) [SKIP TO DAST Q1 IF ANSWER IS NEVER]
- O Monthly or less (1)
- O Two to four times a month (2)
- O Two to three times per week (3)
- O Four or more times a week (4) ?
- O Don't know / Refused

Q2 How many drinks containing alcohol do you have on a typical day when you are drinking

- O 1 or 2 (0)
- O 3 or 4 (1)
- O 5 or 6 (2)
- O 7 to 9 (3)
- O 10 or more (4) ?
- O Don't know / Refused

Q3 How often do you have six or more drinks on one occasion

- O Never (0)
- O Less than monthly (1)
- O Monthly (2)
- O Weekly (3)
- O Daily or almost daily (4) ?
- O Don't know / Refused

Q4 How often during the last year have you found that you were not able to stop drinking once you had started

- O *Never (0)*
- O *Less than monthly (1)*
- O *Monthly (2)*
- O *Weekly (3)*
- O *Daily or almost daily (4) ?*
- O *Don't know / Refused*

Q5 How often during the last year have you failed to do what was normally expected from you because of drinking

- O *Never (0)*
- O *Less than monthly (1)*
- O *Monthly (2)*
- O *Weekly (3)*
- O *Daily or almost daily (4) ?*
- O *Don't know / Refused*

Q6 How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session

- O *Never (0)*
- O *Less than monthly (1)*
- O *Monthly (2)*
- O *Weekly (3)*
- O *Daily or almost daily (4) ?*
- O *Don't know / Refused*

Q7 How often during the last year have you had a feeling of guilt or remorse after drinking

- O *Never (0)*
- O *Less than monthly (1)*
- O *Monthly (2)*
- O *Weekly (3)*
- O *Daily or almost daily (4) ?*
- O *Don't know / Refused*

Q8 How often during the last year have you been unable to remember what happened the night before because you had been drinking

- O *Never (0)*
- O *Less than monthly (1)*
- O *Monthly (2)*
- O *Weekly (3)*
- O *Daily or almost daily (4) ?*
- O *Don't know / Refused*

Q9 Have you or someone else been injured as a result of your drinking

- O *No (0)*
- O *Yes, but not in the last year (2)*
- O *Yes, during the last year (4) ?*
- O *Don't know / Refused*

Q10 Has a relative or friend or a doctor or another health worker been concerned about your drinking or suggested you cut down

- O *No (0) (1)*
- O *Yes, but not in the last year (2)*
- O *Yes, during the last year (4) ?*
- O *Don't know / Refused*

Start of Block: Substance abuse- DAST-10
[To score the DAST-10: Each individual item is scored 0 or 1. All items should be summed (Q1-10) for a maximum score of 20. Totals below 2 are no substance use disorder and totals above 2 indicate substance use disorder.]

Q1-10 **In the past 12 months...**

Q1 Have you used drugs other than those required for medical reasons?

- O Yes (1)
- O No (0) [SKIP TO SERVICE BARRIERS Q1 IF ANSWER IS NO]
- O Don't know / Refused

Q2 Do you abuse more than one drug at a time?

- O Yes (1)
- O No (0)
- O Don't know / Refused

Q3 Are you unable to stop abusing drugs when you want to?

- O Yes (1)
- O No (0)
- O Don't know / Refused

Q4 Have you ever had blackouts or flashbacks as a result of drug use?

- O Yes (1)
- O No (0)
- O Don't know / Refused

Q5 Do you ever feel bad or guilty about your drug use?

- O Yes (1)
- O No (0)
- O Don't know / Refused

Q6 Does your spouse (or parents) ever complain about your involvement with drugs?

- O Yes (1)
- O No (0)
- O Don't know / Refused

Q7 Have you neglected your family because of your use of drugs?

- O Yes (1)
- O No (0)
- O Don't know / Refused

Q8 Have you engaged in illegal activities in order to obtain drugs?

- O Yes (1)
- O No (0)
- O Don't know / Refused

Q9 Have you ever experienced withdrawal symptoms (felt sick) when you stopped taking drugs?

- O Yes (1)
- O No (0)
- O Don't know / Refused

Q10 Have you had medical problems as a result of your drug use (e.g. memory loss, hepatitis, convulsions, bleeding)?

- O Yes (1)
- O No (0)
- O Don't know / Refused

Start of Block: Barriers to services

Next we would like to ask about help you may have needed and if you got that help.

Q1 Since [INSERT EVENT] have you needed any help with substance use or mental health issues?

- O *Yes [GO TO QUESTION 2A]*
- O *No [SKIP TO INCREASED USE QUESTION Q1]*
- O *Don't know / Refused*

Q2a Did you get help for substance use or mental health issues?

- O *Yes [SKIP TO INCREASED USE QUESTION Q1]*
- O *No [GO TO QUESTION Q2B]*
- O *Don't know / Refused*

Q2b What prevented you from getting help with your substance use or mental health issues? Please indicate all that apply…

- ☐ *Needed someone who speaks my language*
- ☐ *Hard time trusting in healthcare system or providers*
- ☐ *Goes against my beliefs*
- ☐ *No child care*
- ☐ *Not aware of resources*
- ☐ *No health insurance*
- ☐ *Too expensive*
- ☐ *Disabled or homebound*
- ☐ *No transportation*
- ☐ *Worried what others will think*
- ☐ *Other: [LEAVE OPEN ENDED OPTION]*
- ☐ *Don't know / Refused*

Start of Block: Increased substance use

Q1 In the months following [INSERT EVENT], did you start using or increase the use of alcohol, marijuana, prescription drugs not being used as prescribed, or other illicit drugs?**

- ☐ **Yes**
- ☐ **No**
- ☐ **Don't know / Refused**

Start of Block: Prior mental health status

We would like to know a little bit more about your mental health prior to recent events.

Q1 Has a doctor or health professional ever told you that you had depression, anxiety, or another mental health condition?**

- O **Yes**
- O **No**
- O **Don't know / Refused**

Q2 Prior to [INSERT EVENT] were you receiving treatment for mental health or substance use?

- O Yes
- O No [SKIP TO END OF SURVEY]
- O Don't know / Refused

Q2a Since [INSERT EVENT], was there a disruption to your treatment?

- O Yes
- O No Don't know / Refused

END: Thank you for completing this survey!

Appendix 2. Scales/items considered and selected for testing and inclusion in core module by behavioral health domain

Domain	Measure	Construct measured	Included in testing	Reason(s) for inclusion/exclusion in testing	Included in core module	Reason(s) for inclusion/exclusion in core module
Substance use disorders and risk behaviors	Alcohol Use Disorders Identification Test (AUDIT)	Harmful alcohol use	X	Strong validation in literature; brief		Suggested for extended module only; valid and reliable across modes
	Alcohol Use Disorders Identification Test (AUDIT-C)	Drinking frequency, problem drinking (first 3 AUDIT questions)	X	Strong validation in literature; brief	X	Captures problem drinking with few items; highly correlated with full AUDIT; reliable across modes; loaded on substance use factor; distinct from drug use
	Drug Abuse Screening Test (DAST-10)	Drug use disorder	X	Strong validation in literature; brief	X	Loaded on substance use factor; reliable across modes; distinct from alcohol use
	Increased use of alcohol, tobacco, marijuana, prescription drugs not as indicated, other illicit drugs following event	Increased substance use post-disaster	X	Brief; used in prior rapid assessments	X	Potential to assess new or increased use due to event; included as one question that combines all substances (excludes tobacco)
	World Health Organization (WHO) Alcohol, Smoking and Substance Involvement Screening Test (ASSIST)	Substance use and related problems		Excluded due to length; asks about several types of drug for each question		
	Drug Use Disorders Identification Test (DUDIT)	Drug use disorder		Excluded due to limited validation in existing literature		
	CAGE Questionnaire	Alcohol use disorder		Excluded due to limited validation in existing literature		
Mental disorders and psychological distress	Patient Health Questionnaire-8 (PHQ-8)	Depression	X	Strong validation in literature; used in state-based surveys including BRFSS		Suggested for extended module only; valid and reliable across modes

Domain	Measure	Construct measured	Included in testing	Reason(s) for inclusion/exclusion in testing	Included in core module	Reason(s) for inclusion/exclusion in core module
	Center for Epidemiologic Studies-Depression (CES-D) Scale	Depression		Excluded because not used in national or state-based surveys		
	Generalized Anxiety Disorder-7 (GAD-7)	Generalized anxiety disorder	X	Strong validation in literature		Suggested for extended module only; valid and reliable across modes
	Patient Health Questionnaire-4 (PHQ-4)	Anxiety and depression	X	Strong validation in literature; assesses symptoms of both depression and anxiety	X	Brief; valid and reliable across modes; PHQ-2 part of national surveys; performed equally well as PHQ-8 and GAD-7 and highly correlated with both
	Kessler non-specific distress scale (K6)	Serious psychological distress	X	Strong validation in literature; used in national and local surveys including NSDUH		Excluded because more items than PHQ-4; does not specifically screen for both depression and anxiety; cannot compare with PHQ-8 in BRFSS
	Short Form Survey-12 (SF-12)	Health-related quality of life		Excluded because proprietary; not used in national or state-based surveys		
	Mental Health Inventory-5 (MHI-5)	Mental health symptoms		Excluded because proprietary; not used in national or state-based surveys		
	Primary Care PTSD Screen (PC-PTSD)	Posttraumatic stress disorder (DSM-4 criteria)	X	Brief; strong validation in literature	X	Valid and reliable across modes; selected over PC-PTSD-5 because fifth item regarding “blame” found confusing to participants; almost perfectly correlated with PC-PTSD-5

Domain	Measure	Construct measured	Included in testing	Reason(s) for inclusion/exclusion in testing	Included in core module	Reason(s) for inclusion/exclusion in core module
	Primary Care PTSD Screen for DSM-5 (PC-PTSD-5)	Posttraumatic stress disorder (DSM-5 criteria)	X	Brief; strong validation in literature		
	Short PTSD Rating Interview (SPRINT)	Posttraumatic stress disorder	X	Strong validation in literature		Excluded because more items and weaker convergent validity compared to PC-PTSD
	PTSD Checklist (PCL)	Posttraumatic stress disorder		Strong validation in literature but excluded due to length		
	Trauma Screening Questionnaire (TSQ)	Posttraumatic stress disorder		Excluded due to length; limited validation in existing literature		
	Sheehan Disability Scale (SDS) - mental health	Impairment due to mental health	X	Brief		Excluded because mental health symptom severity picked up by other measures
Physical health	Sheehan Disability Scale (SDS) - physical health	Impairment due to physical health	X	Brief		Excluded because test-retest reliability lower for in-person vs. telephone; construct captured by general health item
	World Health Organization Disability Assessment Schedule 2.0 (WHODAS)	Impairment due to physical health		Excluded due to length; not used in national or state-based surveys		
	Self-reported general health status	General health status	X	Brief; use on prior rapid assessments; used in national, state-based, and local surveys	X	Brief; use on prior rapid assessments; reliable across modes
Other	Cohen's Perceived Stress Scale (PSS)	Perceived stress	X	Brief; one of few scales for perceived stress		Suggested for extended module only; valid and reliable across modes
	Brief Resilience Scale (BRS)	Resilience	X	Brief; used to assess divergent validity		Excluded because used to assess divergent validity only

Domain	Measure	Construct measured	Included in testing	Reason(s) for inclusion/exclusion in testing	Included in core module	Reason(s) for inclusion/exclusion in core module
	Perceived need for mental health or substance use treatment following event	Treatment need	X	Used in disaster research		Suggested for extended module only
	Barriers to mental health or substance use treatment	Treatment seeking	X	Used in disaster research		Suggested for extended module only
	Humanitarian Emergency Settings Perceived Needs Scale	Resources needed		Excluded due to lack of applicability in USA		
	Prior diagnosis of mental health condition	Psychiatric history	X	Brief; captures strong risk factor for behavioral health outcomes; Can help isolate incident behavioral health issues	X	Reliable across modes
	Prior mental health or substance use treatment and disruption to treatment following event	Treatment need	X	Brief; captures previous contact with behavioral health care, disruption in services post-disaster	X	Reliable across modes

BRFSS = Behavioral Risk Factor Surveillance System, NSDUH = National Survey on Drug Use and Health, DSM = Diagnostic and Statistical Manual of Mental Disorders

Appendix 3. Behavioral Risk Factor Surveillance System (BRFSS) Demographic Questions

Q1 What is your sex?

- O Male
- O Female
- O Don't know / Refused

Q2 What is your age?

_____

Q3 Are you Hispanic, Latino/a, or Spanish origin?

- O Yes
- O No
- O Don't know / Refused

Q4 Which one of these groups would you say best represents your race?

- O White
- O Black or African American
- O American Indian or Alaska Native
- O Asian
- O Native Hawaiian or Pacific Islander
- O Other
- O Don't know / Refused

Q5 What is the highest grade or year of school you completed?

- O Never attended school or only attended kindergarten
- O Grades 1 through 8 (Elementary)
- O Grades 9 through 11 (Some high school)
- O Grade 12 or GED (High school graduate)
- O College 1 year to 3 years (Some college or technical school)
- O College 4 years or more (College graduate)
- O Don't know / Refused

Q6 Is your annual household income is greater than or below $25,000

- O Below $25,000 [GO TO Q6a]
- O Greater than $25,000 [GO TO Q6b]
- O Don't know / Refused

Q6a Is your annual household income...

- O Less than $10,000?
- O Between $10,000 and $15,000
- O Between $15,000 and $20,000
- O Between $20,000 and $25,000
- O Don't know / Refused

Q6b Is your annual household income...

- O Between $25,000 and $35,000
- O Between $35,000 and $50,000
- O Between $50,000 and $75,000
- O More than $75,000
- O Don't know / Refused

Q7 What is your current legal marital status? Are you...

- O Married
- O Divorced
- O Widowed
- O Separated
- O Never married
- O A member of an unmarried couple?
- O Don't know / Refused

Q8 Are you currently...

- O Employed for wages
- O Self-employed
- O Out of work for 1 year or more
- O Out of work for less than 1 year
- O A homemaker
- O A student
- O Retired
- O Unable to work?
- O Don't know / Refused

Appendix 4. Stata coding of scales used in the Behavioral Health Assessment

```
*******************************************************************************
* Behavioral Health Assessment Toolkit
* Scoring Behavioral Measures in Stata-15
*******************************************************************************

//Patient Health Questionnaire-8 (PHQ-8)
*Question items are scored as: 0=Not at all; 1=Several days; 2=More than half the days; 3=Nearly
every day
generate phq8_score = phq8_1 + phq8_2 + phq8_3 + phq8_4 + phq8_5 + phq8_6 + phq8_7 + phq8_8
*Cut-off scoring
generate phq8_cutoff =.
recode phq8_cutoff (.=0) if phq8_score < 10 //No depression to mild depression
recode phq8_cutoff (.=1) if phq8_score >=10 //Moderate to severe depression


//Patient Health Questionnaire-4 (PHQ-4)
*Question items are scored as: 0=Not at all; 1=Several days; 2=More than half the days; 3=Nearly
every day
generate phq4_score = phq8_1 + phq8_2 + gad7_1 + gad7_2
*Cut-off scoring
gen phq4_cutoff =.
recode phq4_cutoff (.=0) if phq4_score < 6 //Normal to mild
recode phq4_cutoff (.=1) if phq4_score >=6 //Moderate to severe


//Generalized Anxiety Disorder-7 (GAD-7)
*Question items are scored as: 0=Not at all; 1=Several days; 2=More than half the days; 3=Nearly
every day
generate gad7_score = gad7_1 + gad7_2 + gad7_3 + gad7_4 + gad7_5 + gad7_6 + gad7_7
*Cut-off scoring
generate gad7_cutoff =.
recode gad7_cutoff (.=0) if gad7_score <8 //No anxiety disorder
recode gad7_cutoff (.=1) if gad7_score >=8 //Probable anxiety disorder


//Primary Care PTSD Screen for DSM-4 (PC-PTSD-4)
*Question items are scored as: 1=Yes; 0=No
generate pcptsd4_score = pcptsd_1 + pcptsd_2 + pcptsd_3 + pcptsd_4
*Cut-off scoring
generate pcptsd4_cutoff =.
recode pcptsd4_cutoff (.=0) if pcptsd4_score <3 //Does not have PTSD
recode pcptsd4_cutoff (.=1) if pcptsd4_score >=3 //Has PTSD


//Cohen's Perceived Stress Scale-4 (PSS-4)
*Question items are scored as: 0=Never; 1=Almost never; 2=Sometimes; 3=Fairly often; 4=Very often
generate cohen_score = cohen_1 + cohen_2 + cohen_3 + cohen_4
*Higher scores are correlated to more stress


//Alcohol Use Disorders Identification Test (AUDIT)
*Question items are scored as:
***Q1: 0=Never; 1=Monthly or less; 2=2-4 times/month; 3=2-3 times/week; 4=4 or more times/week
***Q2: 0=1 or 2; 1=3 or 4; 2=5 or 6; 3=7 to 9, 4=10 or more
***Q3-Q8:  0=Never; 1=Less than monthly; 2=Monthly; 3=Weekly; 4=Daily or almost daily
***Q9-Q10: 0=No; 2=Yes, but not in the last year; 4=Yes, during the last year
generate audit_score = audit_1 + audit_2 + audit_3 + audit_4 + audit_5 + audit_6 + audit_7 +
audit_8 + audit_9 + audit_10
*Cut-off scoring
generate audit_cutoff =.
recode audit_cutoff (.=0) if audit_score < 8 // Indicates low risk for alcohol addiction
recode audit_cutoff (.=1) if audit_score >= 8 // Indicates medium risk for alcohol addiction to
alcohol addiction likely
```

//Alcohol Use Disorders Identification Test-C (AUDIT-C)

```
*Question items are scored as:
***Q1: 0=Never; 1=Monthly or less; 2=2-4 times/month; 3=2-3 times/week; 4=4 or more times/week
***Q2: 0=1 or 2; 1=3 or 4; 2=5 or 6; 3=7 to 9, 4=10 or more
***Q3:  0=Never; 1=Less than monthly; 2=Monthly; 3=Weekly; 4=Daily or almost daily
generate auditc_score = audit_1 + audit_2 + audit_3
*Cut-off scoring
generate auditc_cutoff =.
recode auditc_cutoff (.=0) if auditc_score < 4 & sex == "Male" // Indicates low risk for alcohol
addiction for men
recode auditc_cutoff (.=0) if auditc_score < 3 & sex == "Female" // Indicates low risk for
alcohol addiction for women
recode auditc_cutoff (.=1) if auditc_score >= 4 & sex == "Male" //  Indicates medium risk for
alcohol addiction to alcohol addiction likely for men
recode auditc_cutoff (.=1) if auditc_score >= 3 & sex == "Female" //  Indicates medium risk for
alcohol addiction to alcohol addiction likely for women
```

//Drug Abuse Screening Test-10 (DAST-10)

```
*Question items are scored as 1=Yes; 0=No, except for Q3 for which 1=No; 0=Yes
generate dast_score = dast_1 + dast_2 + dast_3 + dast_4 + dast_5 + dast_6 + dast_7 + dast_8 +
dast_9 + dast_10
*Cut-off scoring
generate dast_cutoff =.
recode dast_cutoff (.=0) if dast_score <2 //No problems or low level problems related to drug use
recode dast_cutoff (.=1) if dast_score >=2 //Moderate to severe problems related to drug use
```

Appendix 5. Suggested Reporting Tables, Post-Data Collection

Table 1. Sociodemographic characteristics of the [INSERT STUDY NAME] sample		
	All participants (n=XXX)	
	N	**%**
Sociodemographic characteristics **[NOTE: These will vary based on what questions are asked in the survey. This is a way to understand the make-up of the population that you sampled and how that may be similar or different to population data you have in your geographic area. Categories listed here are for illustration purposes only and should be adapted to your area.]**		
Age in years (mean, SD)		
Female sex		
Race/ethnicity		
White		
African American/Black		
Hispanic		
Educational attainment		
Less than high school		
High school graduate/GED		
Some college (1-3 years)		
College graduate or more		
Household income		
Less than $20,000		
$20,000 or more		
Employment status		
Full-time		
Part-time or occasionally		
Unemployed		
Other		
Receives any public benefits		
Lives in public housing or receives Section 8 vouchers		
Marital status		
Married/cohabitating		
Divorced, separated or widowed		
Never married		
Lives alone		
Has computer and Internet in the home		

Table 2 . Disaster related characteristics of the [INSERT STUDY NAME] sample		
	All participants (n=XXX)	
	N	**%**
Disaster-related characteristics **[NOTE: These will vary based on what questions are asked in the survey. This is a way to understand the prior mental health status and disaster experience of your sampled population. These characteristics may be important moderators of mental health outcomes and can serve as possible intervention points depending on programs available].**		
Due to event:		
Home damaged		
Displaced		
Separated from friends/family		
You or household member injured or became ill		
Household member or someone you knew lost life		
Lost vehicle, income, job/business		

Table 3 . Behavioral health related characteristics of the [INSERT STUDY NAME] sample		
	All participants (n=XXX)	
	N	%
Behavioral health-related characteristics **[NOTE: These will vary based on what questions are asked in the survey. This is a way to understand the prior mental health status and general behavioral health status of the population sampled.. These characteristics may be important moderators of mental health outcomes and can serve as possible intervention points depending on programs available].**		
Prior diagnosis of mental health condition		
Diagnosed after event		
Prior to event, received mental health/substance use treatment		
Treatment disrupted after event		
Increased substance use after event		
Received help for behavioral health concerns after event		
Yes		
No, but didn't need help		
No, but needed help		
Fair or poor self-reported general health status		

Table 4. Behavioral health scale outcomes in the [INSERT STUDY NAME] sample							
Domain	**Scales Measure**	**Mean (SD)**	**Median (IQR)**	**Min, max**	**Cutoff score**	**N (%)***	**Cronbach's alpha (standardized)**
Substance use disorders	Alcohol Use Disorders Identification Test (AUDIT-C)						
	Drug Abuse Screening Test (DAST-10)						
Mental disorders	Patient Health Questionnaire-4 (PHQ-4)						
	Primary Care PTSD Screen (PC-PTSD)						

Table 5. Prevalence of mental health issues, by presence or absence of prior mental health diagnosis			
		With Prior Mental Health Diagnosis	**Without Prior Mental Health Diagnosis**
	Study size (n)		
Substance use disorders	Proportion above cut-off for Alcohol Use Disorders Identification Test (AUDIT-C)		
	Proportion above cut-off for Drug Abuse Screening Test (DAST-10)		
Mental disorders	Proportion above cut-off for depression/anxiety (PHQ-4)		
	Proportion above cut-off for PTSD symptoms (PC-PTSD)		

Appendix 6. Behavioral Health Assessment Citations

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