

CASPER

Community Assessment for
Public Health Emergency
Response **Toolkit**

Third Edition 3.2



Centers for Disease
Control and Prevention
National Center for
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Note for Accessibility

Complete explanations of figures with titles and formulas are in [Appendix O](#)

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For additional information, please contact

Centers for Disease Control and Prevention
National Center for Environmental Health
Division of Environmental Health Science and Practice
4770 Buford Highway, MS F-60
Chamblee, GA 30341
Email: CASPER@cdc.gov

The findings and conclusions in this toolkit are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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The Centers for Disease Control and Prevention, National Center for Environmental Health, Health Studies branch developed the first edition of the Community Assessment for Public Health Emergency Response (CASPER) Toolkit in 2009 followed by an updated second edition in 2012. Health Studies has now developed this third edition to address partner feedback, expand instruction, and refine methodological procedures including advancements in technology and updates to incorporate the broad scope of CASPER uses and potential impacts. Health Studies acknowledges the following individuals for their collaboration and commitment in the development of the third edition of the CASPER toolkit.

Primary Authors

Amy Helene Schnall MPH, Nicole Nakata MPH, Tesfaye Bayleyegn MD

Contributors and Critical Reviewers

Amy Wolkin DrPH, CAPT Joseph (Jay) Roth MPH, Jason Wilken PhD, Svetlana Smorodinsky MPH, Herminia Alva MPH, Jen Horney PhD, David Zane MS, Julia Shaffner MPH, Arianna Hanchey MPH, Rosa Lira CHES, Joli Weiss PhD, Tess Konan MPH, Livia Navon PhD, Melissa Morrison PhD, Dana Thomas PhD, Esther M. Ellis PhD, Dana Flanders PhD, David Olsen PhD, Stephanie Kieszak PhD, Myron Douglas MPH, Walter (Randolph) Daley DVM, Josephine Malilay PhD, CDR Tegan Boehmer PhD

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Executive Summary

The Community Assessment for Public Health Emergency Response (CASPER) is an epidemiologic technique designed to provide public health leaders and emergency managers household-based information about a community. It is quick, reliable, relatively inexpensive, and flexible. CASPER uses valid statistical methods to gather information and can be conducted throughout the disaster cycle (preparedness, response, recovery, mitigation) and in non-disaster situations. The information generated can be used to initiate public health action; identify information gaps; facilitate disaster planning, response, and recovery activities; allocate resources; and assess new or changing needs in the community.

The Centers for Disease Control and Prevention (CDC) published the first edition of the CASPER toolkit in 2009 and second edition in 2012 to provide those in the public health community a step-by-step guide on conducting a CASPER. We developed this third edition to address partner feedback, provide more detailed instructions, and incorporate the broad scope of CASPER uses and potential impacts. This toolkit is designed to be a general guideline.

Public health personnel, emergency management officials, academics, or others who wish to assess household-level public health needs will find this toolkit useful for rapid data collection for actionable decision-making during disaster or non-emergency situations.



1. Introduction

Every U.S. state and territory is at risk for one or more natural disasters. Disasters can occur without warning and cause significant infrastructure damage and devastating financial loss. They can pose health risks, including physical injuries, illnesses, potential disease outbreaks, short- and long-term psychological effects, and death. The destruction of homes, damage to local infrastructure such as the water supply, electricity, and health facilities, and the interruption of social support networks and services such as garbage pickup, can affect the well-being of a community¹. These disruptions often require rapid action by public health and local officials to mitigate the resulting adverse health effects, prevent as much damage as possible, and restore delivery of public services. Responding appropriately and effectively to the public health threats of disasters, whether natural or human-induced, requires timely and accurate information. Epidemiologic methods, including rapid needs assessments (RNAs), can provide reliable and actionable data²⁻³.

The Community Assessment for Public Health Emergency Response (CASPER) is a type of RNA designed to provide information about a community, allowing public health and emergency managers to make informed decisions. CASPER is *quick*, relatively *inexpensive*, *flexible*, and uses a *simple reporting format*. It can be used in disaster or non-disaster settings. It uses a valid sampling methodology to collect information at the household level on the health status and basic needs of a community.

1.1 History of CASPER

CASPER is a household-based public health RNA. It is a cross-sectional epidemiologic design; it is not surveillance. The CASPER methodology is an adaptation of epidemiologic techniques used by scientists in the World Health Organization's (WHO's) Expanded Programme on Immunization (EPI). In the 1970s, EPI implemented a two-stage design as the preferred method for rapid estimation of vaccine coverage in Africa⁴. In 1985, the WHO commissioned a study to statistically justify this EPI survey methodology⁵. And, in 1992, the EPI methodology was adopted for disaster response following the impact of Hurricane Andrew in Florida⁶. Because of the increasingly widespread use of the method for disaster response in the early 2000s, the National Center for Environmental Health (NCEH) at the Centers for Disease Control and Prevention (CDC) published a toolkit outlining the CASPER methodology in 2009, followed by the second edition in 2012. As part of the toolkit development process, CDC coined the term CASPER for the household-based two-stage cluster sample methodology to distinguish it from and avoid confusion with other RNAs such as the Federal Emergency Management Agency's (FEMA's) "windshield survey" which is typically conducted by car and records observed damages and hazards, periodically stopping to conduct interviews to provide anecdotal evidence related to insurance coverage, occupancy type, and other relevant notes⁷. In recent years, CASPER has been frequently used by public health and emergency managers in both disaster and non-disaster settings^{3,8-9}.

1.2 CASPER Use and Impact

A CASPER can be conducted when the public health needs of a community are not well known and population-representative data are needed. CASPER results are descriptive of the entire area of interest (called a sampling frame). While CASPER was originally designed to provide information during disaster response, it can also be used when population-representative data are needed during other disaster phases (preparedness, recovery, mitigation) and in situations unrelated to a disaster. For example, public health departments have used CASPER to identify household-level information about community health status; ascertain knowledge about emerging infectious diseases such as Zika virus and H1N1; and assess community awareness, opinions, and concerns on subjects such as coal gasification plants, healthy homes, opioid use, and radiation emergency preparedness¹⁰⁻¹⁵. Locations and topics of many CASPERs conducted by state, tribal, local, and territorial agencies are summarized on the CDC CASPER interactive map available at https://www.cdc.gov/nceh/hsb/disaster/casper/casper_map.htm.

There are many opportunities for CASPERs to influence public health. CASPERs have been shown to be useful for various evidence-based needs, including, but not limited to, the following:

- Allocating scarce resources
- Responding to the specific needs of the community for such items as supplemental oxygen or medications
- Providing valid information to elected officials, news media, and other leadership to confirm or dispel rumors or validate requests
- Targeting communication and education messages to the community
- Modifying emergency preparedness plans
- Supporting requests for funding or projects during recovery operations

CASPER can also be used as an evidence-based practice to satisfy Homeland Security Exercise and Evaluation Program (HSEEP) requirements and is highlighted in CDC's Center for Preparedness and Response Public Health Emergency Preparedness (PHEP) Capabilities as a recommended resource⁸. The CDC PHEP program provides funding to public health departments across the nation to maintain and continuously improve their ability to effectively respond to a range of public health threats. In addition to the aforementioned uses, information from a CASPER conducted during the preparedness phase can guide preparedness and response plans and can ready the workforce for conducting a CASPER during a disaster response, affording staff the opportunity to attend CASPER trainings, participate in field data collection, and incorporate lessons learned from after-action reports, discussions, and performance evaluations. [Appendix A](#) provides a one page fact sheet of CASPER.

2. Prepare for the CASPER

As you prepare to conduct a CASPER, there are many planning questions that should be addressed. Work with leadership, key stakeholders, and CASPER subject matter experts (SMEs) within your state or CDC to help plan and prepare (Figure 1). Keep in mind that preparing for a CASPER can take several hours

(e.g., during a response) or, if time allows, several months (e.g., in a non-disaster setting). The length of time to prepare is ultimately dependent on your CASPER objectives which will determine by when field work needs to be conducted.

Figure 1. Items to consider prior to conducting a CASPER: Know your **PURPOSE**, **SETTING**, and **RESOURCES**

KNOW THE PURPOSE

How is the CASPER information going to be used?

Understanding how the information is going to be used will help create a clear vision and narrow the scope of information collected. Having clear objectives is imperative to ensuring that the appropriate data are collected to generate useful information for public health action.

Who are your stakeholders?

Stakeholders will help inform the purpose and goals of the CASPER. Identifying who (e.g., emergency management; state, tribal, local, and territorial [STLT] health partners) will use the CASPER data is integral to both the development of the questionnaire and implementation of action items based on the results.

When should the assessment be conducted?

A CASPER can be conducted any time that the public health needs of a community, and the magnitude of those needs, are not well known, whether during a disaster response or within a non-emergency setting. During a response, factors such as safety of the interview teams in the impacted area, population displacement, changing community needs, and available resources may affect the timing of the CASPER. Therefore, the objectives of the CASPER and timing of the CASPER are closely linked and should complement each other.

KNOW YOUR SETTING

What is the population of interest? What is the area of interest (i.e., sampling frame)?

It is important to decide what area of the territory, state, county, or city you want the results to reflect when determining the sampling frame (i.e., area in which the sample is drawn) (Section 2.3)

What information is available from other assessments?

Obtain information from other assessments conducted (e.g., flyovers and area damage assessments, state or national surveys) because such information can be beneficial in determining your objectives and assessment area(s).

By when are the data needed?

Keep in mind your deadlines. A CASPER can be conducted in as short as 1-2 days in the field (Section 3.2) with results produced within 36 hours of completion of field data collection.

KNOW YOUR RESOURCES

What resources and approvals are needed?

Identify the resources and approvals necessary including interview team members ([Section 3.2](#)), headquarters location ([Section 3.2.2](#)), funding needed and corresponding paperwork, Institutional Review Board (IRB) determination form, and more.

What resources are available locally?

Determine what type and how many of the following resources are available locally: personnel, transportation, communication devices, Global Positioning System (GPS) devices, and computers with Internet access and Epi Info™ (or other statistical software). If sufficient resources are not available locally, determine what assets can be requested from other agencies (e.g., state agencies, federal agencies such as CDC) to conduct the CASPER successfully.

Who will identify the clusters for the first stage of sampling?

CASPER is a two stage cluster sampling methodology. In the first stage, clusters (traditionally 30) are selected with probability proportional to the estimated number of households within the clusters. Identify someone who can select the sample appropriately ([Section 2.5](#)). CDC SMEs are available for sampling and mapping assistance.

Who will conduct the CASPER data analysis, write the report, and disseminate the results?

After field data collection, the data will need to be entered, cleaned, and analyzed. Once analysis is complete, it is important to disseminate the results for prompt action ([Section 4.0](#)). The local lead of the CASPER is often the lead of this effort and helps coordinate the team members and actions involved throughout all phases of the CASPER.





2.2 CASPER objectives

CASPER is designed to rapidly obtain information about the status and needs of a community. Every assessment will have different objectives. Knowing the objectives will help determine if CASPER is the appropriate methodology, and, if so, the sampling frame and the questions to include on the questionnaire. For example, if the main objective is to survey a specific population (e.g., pregnant women, children, persons experiencing homelessness), then CASPER is likely not an appropriate methodology because CASPER is designed to be representative of the entire community. To target a specific population or subgroup, the sampling frame would need to be adjusted to represent that group (e.g., low income households, high level of social vulnerability).

In a disaster setting, the general objectives of a CASPER may be to

- determine the critical health needs and assess the impact of the disaster,
- produce household-based information and estimates for decision-makers, and/or
- evaluate the effectiveness of relief efforts through conducting a follow-up CASPER.

To accomplish these objectives, responders need to employ a timely and carefully constructed assessment design in a defined geographic area. When defining your objectives, it is important to remember that CASPER cannot establish current population estimates or determine why people are not returning. In addition, CASPER is not intended to provide direct services to residents (such as cleanup or home repair) or to deliver food, medicine, medical services, or other resources to the affected area. However, if households in need of services are identified by the CASPER, [referrals](#) can be made to the appropriate agencies.

2.3 The assessment area(s)

The assessment area(s) will serve as the CASPER sampling frame—that is, the population from which the sample is drawn (i.e., all households within a selected area). For the purpose of CASPER, a household includes the inhabitants of any dwelling that is intended for occupancy as separate living quarters. This can be a house, an apartment, a mobile home, a group of rooms, or a single room.

Therefore, each individual apartment in an apartment complex or unit of a duplex or triplex is considered a separate household. At the completion of the CASPER, the results will be descriptive of the entire chosen sampling frame provided there is at least an 80% completion rate (i.e., 168 interviews for a traditional CASPER) ([Section 4.3](#)). The sampling frame can be defined by political boundaries (e.g., county, district, city), by geographic boundaries (e.g., households located in a specific direction from a landmark, such as a road or a river), or by selection of a specific community (e.g., the most affected area or a community without local health services). A sampling frame can consist of a geographically contiguous area, or multiple, non-contiguous areas (e.g., several cities in a county). If desired assessment areas differ drastically by social or geographic vulnerability, by responding jurisdiction's needs, or by the extent of damage in a disaster situation, then separate sampling frames (i.e., separate CASPERs) for each specific area should be considered. As a general guide, a sampling frame should be no smaller than 800 households. For smaller sampling frames, consider conducting a full census of all households or using a non-clustered sampling method (e.g., simple random sampling, systematic random sampling).

The sampling frame should be decided based on your CASPER objectives. For example, in 2014, a foaming agent spilled into the Elk River contaminating the water supply for about 120,000 households. The West Virginia Governor declared a State of Emergency, and the local water company issued a "Do Not Use" water order for affected households in nine counties. The West Virginia Bureau for Public Health (WVBPH) conducted a CASPER to assess health symptoms experienced by community members and effectiveness of the emergency response efforts¹⁶. The objectives of the CASPER included the following:

- Provide WVBPH with information on household water use and practices before, during, and after the "Do Not Use" order
- Identify the community's preferred sources of information about the chemical spill
- Assess the perceived impact of the chemical spill on households to identify effective approaches for current and future events

WVBPB considered multiple sampling frame options: the city of Charleston where the spill occurred, all households within the nine counties impacted by the “Do Not Use” water order, or only the households under the “Do Not Use” water order within the nine counties. To meet the objectives, the selected sampling frame included only households directly under the “Do Not Use” water order.

2.4. First stage of sampling: Selecting clusters

CASPER uses a two stage cluster sampling methodology. In the first stage, clusters (traditionally 30) are selected with a probability proportional to the estimated number of households within the clusters and, in the second stage, interview teams use systematic random sampling to select seven households from each of the selected clusters (Section 3.4). A cluster is a non-overlapping section in the geographic area with a known number of households. Census blocks are the most commonly used clusters for CASPERs in the United States because they are pre-defined, non-overlapping, geocoded, and population data (i.e., the number of households per census block) are known. Clusters are selected with probability proportion to the number of households within them; therefore, clusters with more households have a higher chance of being selected.

Selecting a CASPER sample requires a list of all clusters within the sampling frame, including the number of households within each cluster. This can be obtained from the U.S. Census website (<http://factfinder2.census.gov>) or by using population-based files within Geographic Information System (GIS) software. The Census website provides both the number of occupied households and total households (the latter category includes both occupied and vacant houses). Determining which household variable to use depends on the assessment area (e.g., a high number of vacant houses, rental condos, or recreational areas, the amount of change since the last census) and the judgment of local authorities or leadership. For example, if the assessment area is known to have a high number of rental units, then it is recommended to use occupied households for sampling purposes.

Using GIS rather than the U.S. Census website provides more flexibility in the selection of a sampling frame by allowing the user to select portions of a county, city, or other available geopolitical area to assess. If GIS capabilities are not available, then the sampling frame is limited to the geographic units available on the Census website (i.e., entire county(ies) or other Census geopolitical subdivisions). Regardless of source (Census website or GIS), the next step in selecting the clusters is to create a list of all clusters (i.e., census blocks) in your sampling frame with the corresponding number of households. Using a software program such as Excel will make this task easier. Then, assign each cluster with a cumulative sum of the number of households. Finally, select your 30 clusters

by using a random number generator to randomly choose 30 numbers between 1 and the total number of households within your sampling frame and selecting the entire cluster in which that random number (i.e., household) is located (e.g., if the sampling frame has 300,000 households, you would identify 30 random numbers between 1 and 300,000; the clusters that incorporate those random numbers are selected). Some clusters may be chosen two or three times. In these situations, the interview team would conduct 14 (or 21) interviews in the selected cluster instead of the standard 7. Instructions for downloading the needed information from the Census website and selecting the sample are provided in Appendix F. For GIS sample selection, the Agency for Toxic Substances and Disease Registry (ATSDR) Geospatial Research, Analysis and Services Program (GRASP) in collaboration with CDC CASPER subject matter experts developed a GIS toolbox that can automatically select clusters and is available for those with GIS expertise. CDC also provides sampling and mapping support to requesting jurisdictions. Email CASPER@cdc.gov for CASPER sampling and mapping technical assistance.

2.4.1 Clusters with few households

A problem that may arise, especially in more rural areas, is that Census-based clusters may have very few households, making it difficult or impossible for teams to interview the needed number from that cluster. Generally, this is not a major issue as smaller clusters have lower probability of being selected and therefore clusters with few households will be kept to a minimum. However, if the sampling frame consists of a relatively high proportion of smaller clusters (i.e., fewer than 10-15 households), interview teams may have difficulty finding seven households to interview resulting in a low completion rate. To determine if this may be a problem, check the frequency of blocks with a low number of households within the chosen sampling frame prior to selecting clusters. If there appears to be many clusters with a small number of households, you may use the “block group” census variable or adjoin census blocks together using GIS software to create larger clusters. After joining census blocks or using the “block group,” select the 30 clusters as described above.

Regardless of cluster selection method (Census or GIS), clusters should be chosen without substitution – meaning that the clusters originally selected are the clusters that are assessed. While it is tempting to substitute a cluster if it is further away, accessibility may be an issue (e.g., gated community), a desired city or area is not selected, or a cluster is not where you hoped, doing so negatively affects the representativeness of the data. The next step is to create maps of the 30 selected clusters, including road names and key landmarks. These maps can be created on the Census website at https://tigerweb.geo.census.gov/tigerwebmain/TIGERweb_main.html (see Appendix G) or through any GIS software.

2.5 First stage of sampling: Modifications

Traditionally, a CASPER consists of 30 clusters and seven interviews within each cluster, for a goal of 210 total interviews. However, there are situations in which the traditional 30x7 cluster design may not be feasible or ideal and a change in methodology is warranted. Modified CASPERs are acceptable, but *must be described as modified* in the report(s).

2.5.1 Modification: Clusters with restricted access or potentially destroyed households

If you are concerned that one or more entire clusters may be inaccessible because of damage or restricted entries, you can consider increasing the number of selected clusters *a priori*. While it is tempting to select a substitution cluster once in the field, this is *not* recommended and it negatively affects the representativeness of the data. As stated above, clusters should be chosen *without substitution*—meaning that the clusters originally selected are the clusters that are assessed. While preparing for the CASPER, if you think that not all clusters in the sampling frame will be accessible, you may exclude inaccessible clusters from the sampling frame before selecting the 30 clusters (note that results will only represent the included clusters), or you can increase the number of clusters selected prior to going into the field. For example, you may decide to select 35 clusters instead of the standard 30. If this method is chosen, it is essential that teams then visit *all 35 clusters* and treat the design as 35x7 (sample size of 245), potentially requiring more time and resources to complete the CASPER. In this situation, rather than choosing “substitution” clusters, you are oversampling clusters to get closer to the desired sample size of 210. It is important to remember that oversampling does not improve response rates, but can increase the sample size (and thus power). It is also important to know that if a selected cluster is dropped because of inaccessibility or another issue during the assessment, then the survey will no longer be expected to be representative of the assessment area. Any *a priori* change in number of clusters selected (i.e., any number other than 30) is considered a *modified CASPER* and should be noted as such in the methodology section and throughout your reports. However,

meeting your CASPER objectives can usually be achieved without increasing the number of clusters and, therefore, the traditional 30x7 design is recommended.

2.5.2 Modification: Low number of households within sampling frame

There are some situations where a sampling frame is very small (e.g., rural area with few households, disaster that affected a limited number of households). In these situations, a cluster methodology may not be appropriate because there will not be enough clusters with more than seven households and combining clusters may make them too geographically large or limit the number of total clusters to less than 30. This often occurs in small floods or tornados when a fewer number of households may be directly impacted. In this case, a new sampling methodology, such as stratified sampling or systematic sampling, may be necessary. A departure from cluster sampling means that the assessment will *no longer be considered a CASPER or modified CASPER* and must not be described as such in any report (an option would be to report as a “rapid needs assessment” or “community assessment”). However, the same principles for implementation (e.g., questionnaire design, just-in-time training, interview team composition, tracking form) described in this toolkit can be used for different sampling methodologies.

2.5.3 Modification: Sampling frame that is both urban and rural

Many parts of the United States comprise both rural and urban areas. Because a traditional CASPER selects clusters proportional to size, it is likely that the majority of selected clusters will be from urban areas with higher household counts, leaving few selected clusters from the rural areas of the sampling frame. If you desire representation from both the urban and rural areas of the sampling frame, you may decide to conduct two separate CASPERs (one in the urban area, one in the rural area) or you may modify the CASPER methodology to a three-stage sampling design. In this situation, you would first stratify the sampling frame into “urban” and “rural” strata (or sections). In the second stage, you would select clusters from each of the strata (for example, 21 clusters from urban, 9 from rural) to assure that both areas



are represented. The number of clusters for each strata can be based on a variety of factors such as population distribution and leadership preference. In the third stage, teams will systematically select seven households within each cluster (as per the traditional CASPER approach) for a goal of 210 interviews. In such a three stage design, the weight calculation during the analysis will take into account the number of households and number of clusters selected in the two strata. Therefore, you will have two weights: (1) weight for strata A based on the total number of households in the first strata and (2) weight for strata B based on the total number of households in the second strata. This design is considered a *modified CASPER* as it still retains the cluster sampling and should be noted as such in the methodology section and throughout your reports.



2.5.4. Modification: Need for individual-level questions

CASPER is designed to be household-based and, therefore, all questions should be asked at the household level ([Section 2.6.2](#)). If individual-level questions are desired (e.g., “Over the last 2 weeks, how often have you been unable to stop or control worrying?”), consider whether CASPER is the best method to reach your objectives. If the majority (e.g., 90%) of your questionnaire is household-based but there are some questions that must be asked at the individual level (e.g., Behavioral Risk Factor Surveillance System [BRFSS] questions), it is acceptable to ask a *limited number* of questions at the individual level. To do so, you must take the following steps:

First, include a question on the questionnaire to quantify the number of adults living in the household. An example question is “Including yourself, how many adults (over age 18) are currently living in this household?”

Second, to decrease potential bias, randomly choose an adult in the selected household who will respond to the individual-level questions. This can be done either at the beginning of the questionnaire or right before asking the individual-level questions. One approach is to select the adult in the household with the next birthday during the introduction/consent script.

Third, during analysis, calculate the total number of adults to determine an “individual” weight in addition to the “household” weight described in [Section 4.2](#) (*NOTE: Individual weight analysis is described on CDC’s CASPER website. You can also contact CASPER@cdc.gov for guidance or more information.*).

This is considered a *modified CASPER* and should be noted in the methodology section and throughout your reports.

2.6 Consent form, questionnaire, and data collection options

Every CASPER requires the following forms and materials:

- Introduction letter with explicit request for consent
- Questionnaire
- Tracking form
- Confidential referral form
- Public health materials and resources

This section will discuss the first two: (1) introduction letter and (2) questionnaire. Details on the remaining forms and materials are in [Section 3.0](#).

2.6.1 Introduction letter and consent

When interview teams arrive at a household, they should be prepared to provide an overview of the CASPER purpose and obtain verbal consent. Survey participants must give explicit verbal consent to participate in the CASPER interview. It is helpful to have a prepared consent script written for the interviewers to read to potential respondents ([Appendix B](#)). Interviewers who are concerned about memorizing all the information or about rejection because of its length, should begin with a brief introduction to receive initial agreement, then ask “Do you mind if I read you a little more information about the survey we are conducting today?” After the initial approval, proceed with reading the entire introduction and consent script. A copy of the consent script should be printed on official letterhead and given to each selected household (regardless of participation status). The script should be kept as brief as possible and include the following elements:

- An introduction of the interview team members and the agency responsible for the CASPER (e.g., state, local, tribal, or territorial health department)
- An explanation of the purpose of the CASPER and potential benefits to the community
- A description of the interview and the amount of time it will take
- An explanation that the survey is anonymous and will not be linked to personally identifying information
- A statement that taking part in the survey is voluntary and that there will be no penalty or loss of benefits if household members do not wish to participate and that they can stop participating at any time with no penalty
- Name and phone number or e-mail address of the person(s) who the household member can contact if they have any questions about the CASPER or would like to verify interview team identification
- A clear participation request or invitation that requires an explicit answer (e.g., “Are you willing to participate in this survey?”)

Signed consent is typically not required for a CASPER because obtaining signatures leads to an increased confidentiality risk for the participant (i.e., the signed consent will be the only record linking the participant to the questionnaire, and such linkage could result in a breach of confidentiality). Agencies should refer to their own Institutional Review Board (IRB) for additional guidance on human subjects, the consent script, and other materials. In general, a full IRB review is not typically warranted for a CASPER as data are used for public health practice and not generalizable for research purposes.

2.6.2 Questionnaire

Local authorities, subject matter experts, and other key stakeholders should agree on the scope and nature of the key questions that the CASPER will seek to answer. With input from these partners, and guided by the objectives, the planning team should finalize the assessment questions and verify that the questionnaire will meet the critical information needs as quickly as possible. Always consider how data will be analyzed to help determine what variables are needed and thus, what questions should be included. To decrease analysis time and increase accuracy, avoid open-ended questions and request only information that will satisfy the objectives. In general, yes/no and multiple choice questions can capture the needed information more efficiently. All questions should have a response marked; therefore, always provide an option for “don’t know” and “refused.” CASPER sample questionnaires for different situations (e.g., flood, drought, Zika virus) are available in [Appendix C](#) and a preparedness template that can be used for disaster planning is available in [Appendix D](#). Additional questionnaires from previous CASPERs and Epi Info™ templates are available by request by emailing CASPER@cdc.gov. [Appendix E](#) provides tips for developing a CASPER questionnaire.

All questions are asked of the respondent at the household

level (i.e., each question is asked about all household members and not solely the individual(s) being interviewed). This is often forgotten by the respondent when answering questions pertaining to physical or behavioral health; therefore, training of interview teams should focus on reminding participants that questions are asked at the household, not individual, level (e.g., “have you or any member of the household had trouble sleeping since the storm?”). While developing the questionnaire, consider the comfort level of both the interviewer and the respondent; asking questions that are too personal may result in a lower response rate. This may especially be the case after a disaster when questions may evoke an emotional response. These questions still should be asked, but consider the placement within the questionnaire (e.g., toward the end) and ensure proper training of interview teams. After developing the CASPER questionnaire, conduct mock interviews (e.g., with coworkers, community members) to identify any confusing questions and to estimate the length of time it will take to complete the interview. This will also allow you to develop interviewer instructions and incorporate any feedback on wording, content, or format prior to implementation.

2.6.3 Data collection options

CASPER data can be collected via paper forms or electronic devices. Both the paper and the electronic formats have their advantages and disadvantages; therefore, it is important to carefully consider the options prior to making a decision and producing the questionnaire. Generally, a paper form can be labor-intensive during the data entry process, while the electronic form can be labor-intensive during the development stage. [Table 1](#) provides considerations for both options. Employing both paper and electronic simultaneously has shown to be the most effective in terms of timeliness and data quality. Regardless of the data collection option chosen, test your questionnaire prior to deployment in the field.





Table 1. Considerations for using paper versus electronic data collection forms

Paper Form Considerations	Electronic Form Considerations
Technical training of interview teams not needed	Technical training of interview teams required Potential to be awkward or slow for interviewers not accustomed to the technology
Relatively cheap supplies (although consider cost of printing and collating materials)	May be expensive to purchase the electronic devices May incur costs in the field if devices are broken, dropped, or otherwise damaged
Requires paper, pens, and clipboards in the field	Requires data collection devices and battery chargers in the field May need to consider field connectivity issues and offline database syncing
No maintenance of supplies	Necessitates maintenance and care of software and devices
Can be labor- and time-intensive to develop data entry database and enter data after fieldwork	Can be labor- and time-intensive to develop electronic questionnaire prior to fieldwork
Potential for error in manual data entry to electronic database	Can set up automated validation rules and real-time data quality checks
Relatively slow data management processes: requires manual data entry after fieldwork	Data management process is quicker; no data entry required after the fieldwork
No limitation on the number of interview teams (provided the necessary personnel are available)	Number of interview teams may be limited by availability of equipment



3. Conduct the Assessment

Prior to conducting the CASPER in the field, inform the community of the upcoming survey through press releases, official health department webpages, and social media accounts such as Facebook®, Twitter®, and Nextdoor®. Increased awareness of the CASPER can lead to increased participation. There are several advantages to conducting face-to-face interviews; these include a high response rate and the ability to distribute health information or other materials (such as resource lists) to the community ([Section 3.3](#)). Face-to-face interviews have the additional benefit of directly connecting the community to local staff, increasing the visibility of and trust in the health department. Interview teams can also provide anecdotal information (e.g., direct visual inspection of a disaster-affected area, common concerns overheard in the community not captured in the questionnaire) that can help guide response and recovery efforts, implementation of any recommendations or actions, and future plans.

3.1 Just-in-time training

Training the interview teams is one of the most important aspects of conducting a CASPER. Inconsistent systematic random sampling, incorrect or incomplete forms, and interviewer bias, can invalidate the results and misrepresent the needs of the community. A three to five hour just-in-time training should be conducted either one day in advance or the morning of the first day of data collection. Interview team members should be informed about the CASPER

objectives, roles and responsibilities of team members, how to select households to interview, safety instructions and potential hazards that may be encountered, and logistics such as when to contact headquarters while in the field and future meeting times. At the end of the training, the interview teams should be thoroughly familiar with the questionnaire and the information being elicited by each question, how to complete the tracking ([Section 3.5](#)) and referral ([Section 3.7](#)) forms, and any technology being used such as tablets, hand operated radios, or satellite phones. In addition to general safety concerns of conducting door-to-door surveys (e.g., domestic animals, entering households), a safety briefing provided by the local police department can also be helpful in identifying specific community safety concerns (e.g., how to identify households potentially involved in illegal activities).

3.2 Interview teams and data collection time

Approximately 20 to 30 people divided into 10-15 teams of two is ideal, but not required, for CASPER fieldwork. Always try to get the maximum number of teams possible to decrease the amount of time to conduct the CASPER. Typically, having fewer teams will require a longer time to collect the data, while more teams allow for a shorter data collection period. For a traditional CASPER, you can have up to 30 teams (one per cluster) but keep in mind the availability of equipment; larger numbers of interview teams require more equipment, such as vehicles and electronic devices (if used).

In addition to the number of interview teams, data collection time is impacted by several additional factors (e.g., time of day, day of week, season, geography). Typically, a CASPER with approximately 15 teams can be conducted within two midweek (e.g., Tuesday-Thursday) afternoons (e.g., 2pm-7pm) or about 10 hours of field data collection per team. Fewer teams, other days, or earlier hours will likely increase the needed hours of data collection.

It is important to consider the local community when determining the timing of data collection. For example, Friday nights in the fall may be challenging because of high school football schedules and summer weekends may pose difficulties as community members are more likely to be on vacation or outside enjoying family activities. Always keep in mind local and national holidays (e.g., Mother's day, July 4th, President's day) and festivals as these can affect availability of volunteers for interview teams as well as the likelihood residents are home and available to be interviewed. Conducting a CASPER in the morning hours could bias your sample to unemployed persons, retirees, or night-shift workers and could lead to frustration among the interview teams because of the large number of households with nobody home. Therefore, beginning CASPER fieldwork around 2pm and having teams leave clusters at sundown (and arriving back at headquarters at varying times) has proven to be most effective. Having teams arrive back at headquarters at varying times helps with the flow of check-in and maximizes the time teams are in the field. It is important to stress that teams should stay in the field as long as safely possible as most interviews are conducted in the late afternoon and early evening (e.g., after 4pm or 5pm).

It is also important to consider the geographical and land use makeup of the sampling frame (e.g., apartment complexes, rural neighborhoods, suburban blocks, mountain range) when estimating the amount of time needed for data collection. For example, assuming each survey takes approximately 15 minutes, an interview team may complete 2-3 surveys per hour in an apartment complex but only 1 survey per hour in a rural area because the distance between households is greater. You should roughly predict the number of team-hours needed given the length of the survey, geography, and land use of the selected clusters to help plan the time needed for data collection.

Teams can include state and local health department staff, students from local schools of public health or nursing, volunteers from organizations such as the Medical Reserve Corps or AmeriCorps, or volunteers from local community organizations. Ideally, field interview teams should comprise a mix of individuals (e.g., males with females, local personnel with those who may not be local, experienced individuals with non-experienced individuals, students with health professionals, monolingual speakers with multilingual speakers) for safety, maximizing local knowledge and experience, and increasing acceptance of interview team by residents. It is also important to be cognizant of mobility issues, allergies, and other health concerns that may affect a team member's ability to be in the field for long periods of time.

3.2.1 Interview team supplies



In general, resources for interview teams should include the following:

- Cluster maps ([Section 2.5](#); [Appendix G](#))
- Adequate data collection supplies
 - » If paper, eight copies of the questionnaire per cluster (e.g., if a team is assigned two clusters, the team should have 16 copies of the questionnaire) OR
 - » If electronic, enough devices so that each team has one, plus paper copies of the questionnaire in case of equipment failure and/or data quality checks
- At least one tracking form per cluster to document ALL households visited ([Section 3.5](#))
- Approximately 15 copies of the consent form per cluster
- Approximately five referral forms per team ([Section 3.7](#))
- Sufficient public health information materials to hand out to each contacted household, plus any community member interested in receiving information ([Section 3.3](#))
- Official shirts (preferably in bright color for safety), name tags, or badges from the state, tribal, local, or territorial health department
- Wireless communication devices (e.g., cell phone, satellite radio)
- Office supplies to facilitate data collection (e.g., pens, clipboards)
- Transportation (ideally one vehicle per team)
- Copy of helpful phone numbers such as CASPER headquarters
- Snacks, water, hand sanitizer, and first aid supplies

3.2.2 Headquarters logistics

While preparing for the CASPER, a headquarters location must be identified for the just-in-time training, for coordination of interview teams while in the field, and as a home base for interview teams. It is recommended to have one location for the entirety of the CASPER to avoid any confusion. The headquarters location should hold at least 30-40 people comfortably and be reserved for at least

one hour past the expected interview field time (e.g., if teams are told to leave their clusters at 7pm, the headquarters should be available until at least 8pm). Most available personnel should be in the field; only one or two people (typically the individual leading the CASPER) should remain at headquarters to track interview teams, troubleshoot any problems that may arise (e.g., questions from the field, media inquiries), and begin data entry on the second day of fieldwork. For safety and quality control, all interview teams should be monitored while in the field. [Appendix H](#) provides an example of an interview team tracking form.

The headquarters staff is responsible for assigning clusters to the interview teams. Typically each team will be assigned one or two clusters. It is beneficial to consider cluster assignments prior to the just-in-time training to save time, however often there will be last minute adjustments so it is important to remain flexible. When grouping clusters together for interview teams, keep in mind the location of the clusters (e.g., combine clusters that are close together to save time navigating between clusters), the size of the clusters (e.g., a larger cluster may take longer to navigate so should be the sole cluster assigned to a single team, if possible, or paired with a smaller cluster), and the makeup of the cluster (e.g., estimated number of households within the cluster, anticipated language spoken).

Interview teams should be instructed to call CASPER headquarters at specific times (e.g., when they arrive at the cluster, after completion of first or second interview) and when any questions or concerns arise. Keep in mind that contact with headquarters may be affected by the location of the selected clusters or by disaster-related impacts to cellular and other communication systems. Plans should be made to address potential communication difficulties (e.g., satellite phones, hand operated radios).



3.3 Public health materials

The ability to distribute public health materials to community members is a significant benefit of conducting a CASPER. Enough copies should be made so that the information can be given out to anyone who asks, regardless of participation status or household selection (such as potential respondents and community members

who approach interview teams to ask questions). These materials can be directly related to the CASPER or provide other public health information that the community may find helpful. Examples of potential materials include lists of relevant resources (e.g., location of shelters, phone number of the vital records office, mental health hotline); health education on carbon monoxide exposure, mold and mildew, or proper cleanup methods; or supplies such as insect repellent and sunscreen.

3.4 Stage II Sampling: Selecting seven households



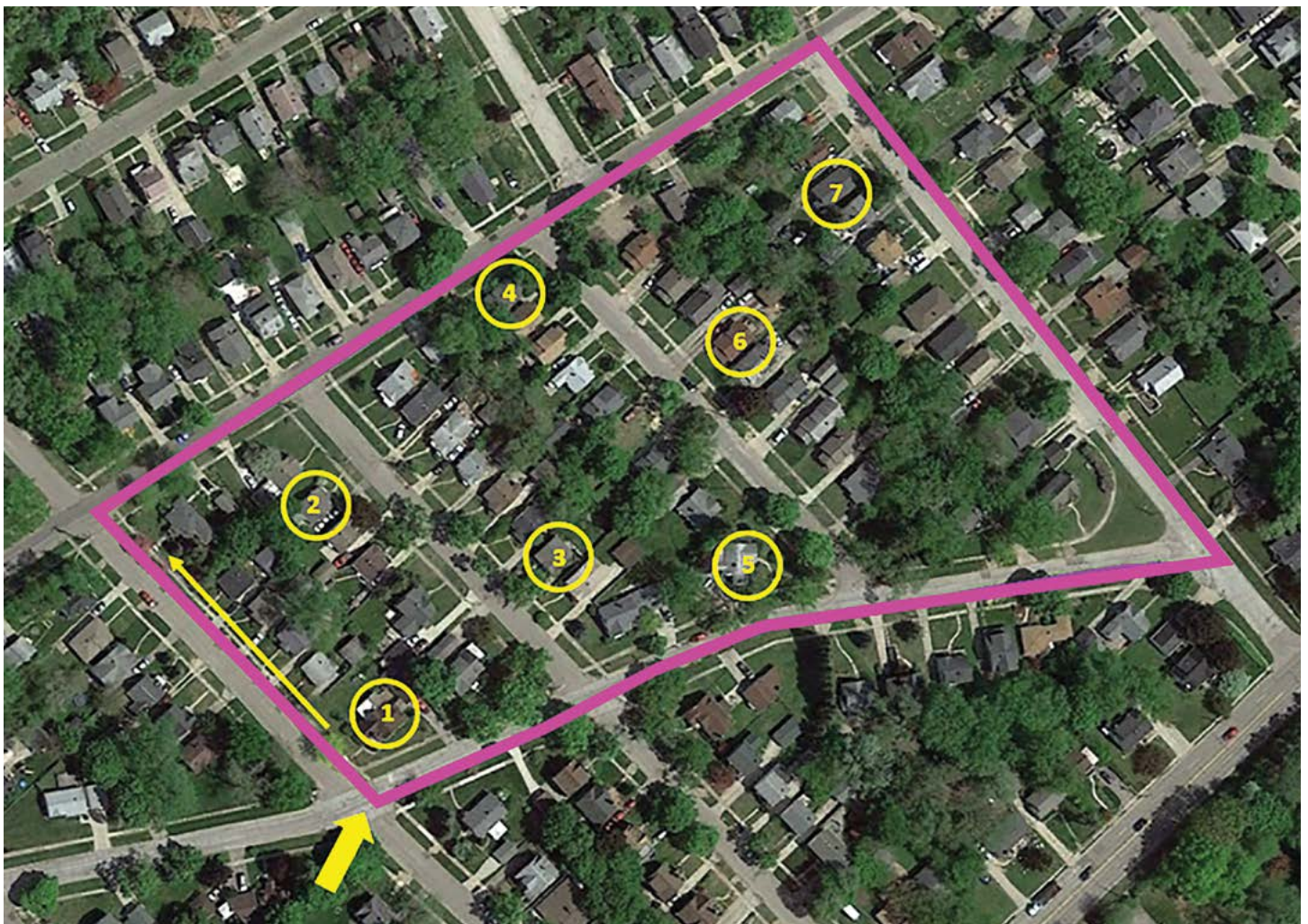
The second stage of sampling is one of the most important components of the CASPER. Typically, a single individual will conduct the first stage of sampling (choosing the 30 clusters, [Section 2.5](#)), but it is the responsibility of the CASPER interview teams to appropriately select the seven households within each cluster. In the second stage, seven households within each of the 30 clusters are randomly selected to be interviewed.

Random selection of households is important in CASPER methodology. The most scientific and representative way would be to select only seven households and to continue returning to the selected seven households until an interview is complete at each one. If a household is selected but no one answers the door, the interview team should plan on revisiting that household later in the day or the next day. Revisiting sampled households where the door was not originally answered will help reduce the amount of interviewed households taken as a sample of convenience, thereby improving the representativeness of the sample to the sampling frame. It also keeps the contact rates low. However, it is important to balance what is scientifically ideal with the real-world situation. Because data needs to be gathered within the allotted timeframe, some replacement of households may be necessary. Teams should *only* replace households if the selected household is clearly vacant, the respondent refused to participate, or after the third attempt with no answer. While there are different ways to select the seven households for interview, the CDC recommends systematic random sampling.

Systematic random sampling is done by counting (or estimating) the number of households within the selected cluster, dividing that number by 7 (this will be your N), then traveling through the cluster in a serpentine method to select every nth household for interview. Below are the steps for systematically selecting seven households to interview:

1. Before arriving at the selected cluster, choose a random starting point for your first interview (e.g., North corner of cluster) by using the printed CASPER map or GIS device.
2. Using the detailed map or upon arriving at the cluster, count or estimate the total number of households within the cluster. Ideally, this number will be provided to you on the CASPER cluster map.
3. Divide the total number of households in the cluster by 7; this will be your n .
Note: Do not get preoccupied in choosing the “correct” n ; any reasonable estimate for n is acceptable so long as the number that is chosen is kept consistent throughout the cluster.
4. Travel through the cluster in a serpentine fashion (i.e., walk up one side of the street and then turn and walk down the other side in such a manner that every house within the selected cluster is passed). See [Figure 2](#) for details.
5. Continue traveling through the cluster in a serpentine fashion, selecting every n th household until seven interviews are complete.
Note: If seven households are not selected by the end of the cluster, proceed through a second (or third) round of the cluster (e.g., to replace any households identified as clearly vacant, where the respondent refused to participate, or after the third attempt with no answer); continue to select every n th household, avoiding those that have already completed an interview or been replaced (e.g., if already marked as vacant or inaccessible)
6. The aim is for interviews to be geographically spread out across the cluster. We do not recommend identifying households to interview prior to arriving in the cluster as circumstances on the ground are often different than an aerial map view (e.g., new developments, misidentification of duplexes, trees covering households) and substitution of households becomes more complex.

Figure 2. Example of using systematic random sample to select seven households for interview



Remember, apartments should be treated as separate households. Interview teams can approximate the number of apartments by counting the number of units on one floor (or building) and multiplying by the number of floors (or buildings) and select your n as described above. There are some situations when clusters have both apartments and single family homes. Since the goal is to have interviews be representative of the cluster, teams should attempt the first interview at a random starting point among the single family homes before the apartment complex to help ensure representation from both types of households. For example, if a cluster has 5 single family homes and an apartment complex of 75 apartments, the total number of households in the cluster would be 80, for an n of 11. With a random starting point in the apartment complex, this would likely lead to all 5 single family homes being skipped over and, therefore, not represented.

To reduce bias, a large portion of the just-in-time training should be dedicated to training interview teams on selecting households appropriately. It is very important that these seven households are selected at random (e.g., systematic random sampling) and not by convenience (e.g., an individual was outside their home and available for interview), through targeted sampling (e.g., the interview team determined the household looked destroyed and therefore may have “interesting” results), or through sequential sampling (unless predetermined as necessary or there are less than 10 households in the selected cluster).

Most CASPERs do not reach the desired 210 total interviews because there may be fewer than seven completed interviews per cluster. This situation is accounted for in the data analysis process through weighting provided that a minimum completion rate of 80% (168 interviews in a traditional CASPER) is met ([Section 4.2](#)). Keeping the sample as complete and representative as possible requires sound judgment, quality training of interview teams, and excellent record keeping.

3.5 Tracking form

It is important to track every household that is sampled (i.e., selected for interview), even those that are inaccessible, did not answer, or did not complete an interview ([Appendix I](#)). The tracking form is used to monitor the outcome of every interview attempt. The tracking form is used to calculate response rates ([Section 4.3](#)). Interview teams should record each household that is selected in the field and the interview outcome (e.g., completed interview, refused, no answer). The second page (reverse side) of the tracking form should be used by the interview teams to identify households that need to be revisited or write any notes such as why the household is inaccessible or if there is a language barrier. The tracking form should be printed on bright colored paper (as a reminder for completion) and teams should use a separate tracking form in each cluster; some clusters may require use of more than one tracking form to include all the households visited, but every attempt should be made to limit to one form per cluster. When the CASPER is complete (i.e.,

all data has been entered and cleaned), all tracking forms should be destroyed so there is no way to link addresses to specific questionnaires. No other personally identifiable information is collected during a CASPER, therefore, no special requirements are needed to store and secure hardcopy or electronic data.

3.6 The CASPER interview

Prior to going to the field, interview team members should be assigned to specific roles (e.g., driving, navigating, completing the tracking form, interviewing, data recording). It is recommended that the local team member make the initial contact with the selected household. If more than one adult is present in the house, any adult can serve as the respondent or they can answer together. The selected household respondent(s) should understand that they are to respond on behalf of the entire household—not just for themselves. For safety purposes, it is reasonable to conduct the interview outside of the home; conducting the interview inside of a home is at the discretion of the respondent and interview team members. Standardization of interviews increases the reliability of data. It is important that interview teams ask the questions in the same order with the exact wording and do not prefill questions or finish respondent’s sentences. See [Appendix J](#) for interview tips.

At the end of the interview, interview team members should review the entire questionnaire before leaving the household to ensure that all questions have been answered. The team members should record any confusion or concern about questions and share that feedback with CASPER headquarters. Remember to thank the respondent and refrain from leaving in haste. Immediately after leaving, review the questionnaire again for missing information and complete the tracking form.

3.7 Confidential referral form

The confidential referral form is used to capture an urgent need. Interview teams must be prepared to respond if they come across an urgent need that presents an immediate threat to life or health. Teams that encounter a household with urgent needs should encourage or assist the household to call emergency services (911). In the event that calling 911 is not appropriate, interview teams should complete a confidential referral form ([Appendix K](#)). This form will contain personal identifying information and will not be linked to the CASPER questionnaire or tracking form. Because the form contains personal identifying information, the form should be kept confidential and not left in an area where others could view or take (e.g., car). Interview teams should provide the household with a general timeframe for expected response (e.g., 72 hours) and the information on the form should be immediately communicated to CASPER headquarters for triage and follow-up.

3.8 Considerations while in the field

Fieldwork often requires an astute awareness of the environment, the use of personal judgment, and a positive and flexible outlook ([Figure 3](#)).



Figure 3. Considerations for team members while in the field

Think safety

Despite all preparation, unexpected problems may arise. Provide interview teams with an overview of potential safety concerns such as downed power lines, domestic and wild animals, and other potential hazards during just-in-time training. Team members should use judgment when assessing a situation for safety and contact CASPER headquarters with any concerns.

Remain flexible

There are various responsibilities of interview team members that need to be shared such as driving, interviewing, and tracking. Plans can always change: interview teams may switch members, clusters may be swapped between teams, or a team may be asked to take on an additional cluster at the last minute. Remind interview team members to keep a positive attitude and remain as flexible as possible.

Adhere to the methodology

To ensure data quality and representativeness, it is imperative to adhere to the CASPER methodology. This includes selecting households within clusters as taught during the just-in-time training, tracking households appropriately, and conducting interviews in a standard, structured manner.

Be respectful

Interview team members should always be respectful to the respondents and the community; show empathy and respect, listen attentively, and allow the respondent to quit the interview if they request to do so. Cultural norms and practices should also be considered. Remember that the respondent is giving their time and may have recently experienced a disaster or other public health emergency.

Understand personal limitations

Interview team members should understand and accept their own personal limitations, whether those limitations reside in one's comfort level of entering a household, the time limitations of being in the field, or a physical condition. Take short breaks for water and food and recognize that their partner's limitations may differ from their own.



4. Enter Data, Conduct Analysis, and Interpret Results

Data from the questionnaire can be entered into any statistical software package that allows for multistage sample design weighting. We recommend using Epi Info™, which is user-friendly, does not require computer permissions for download, and is available free of charge. For tutorials and guidance on Epi Info™, visit <https://www.cdc.gov/epiinfo/index.html>. Data from the tracking form can be entered into any spreadsheet such as Microsoft Excel ([Section 4.3](#)).

4.1 Preparing CASPER data for analysis

Data entry, cleaning, and processing are necessary to ensure the highest quality data for analysis. A database for data entry (such as in Epi Info™) and table shells should be developed prior to the completion of field data collection to aid in a quick (i.e., 36 hour) turnaround. See [Appendix L](#) for tips on developing a form in Epi Info™ for data entry on a PC or tablet. Once data are entered, merge all files (if more than one) into a single database. Next, clean the data by reviewing any quality checks (e.g., testing if the total number of people within the household matches the sum of individual age ranges), ensuring skip patterns were properly entered, and categorizing any free text. [Appendix M](#) provides a list of common CASPER data cleaning steps. CASPER uses weighted frequencies and percentages to allow estimation of results to the entire sampling frame. Once all data are merged into the single electronic dataset and cleaned, a weight variable must be added to each surveyed household ([Section 4.2](#)).

4.2 Weighted analysis

Each household for whom an interview is completed is assigned a weight that is based on the household's probability of being selected. Analyses conducted without weighting will not represent the entire sampling frame; however, you must reach 80% completion rate to conduct weighted analysis ([Section 4.3](#)). If 80% completion rate is not reached, return to the field until 80% completion rate is obtained or conduct unweighted analysis with of sample data. Once the minimum of 80% completion is obtained, all CASPER data analyses should include a mathematical weight for probability of selection by use of the following formula (*for accessible formula, see [Appendix O](#)*):

$$\text{Weight} = \frac{\text{Total number of households in sampling frame}}{(\text{number of households interviewed within cluster}) * (\text{number of clusters selected})}$$

The numerator is the total number of households in the sampling frame; it will remain the same for every assessed household. The total number of households is the sum of all households in the sampling frame and can be calculated from the data downloaded from the Census website or GIS file described in [Section 2.5](#).

If data collection has been 100% successful and exactly seven households in all 30 clusters completed surveys, the denominator will be 210 (7*30) for every household. The sample, then, is self-weighting because all households had an equal probability of being selected. Likely, obtaining seven households in each of the 30 clusters will not be possible. When this occurs, *households from the same cluster will have the same weight, but weights will differ between clusters*. That is, each surveyed household will have a different denominator based on the cluster from which the household was selected. For example, if only five completed interviews occurred in a cluster, the denominator of the weight for each of the five surveyed households in that cluster would be 150 (5*30). Another cluster may have 180 (6*30) or 210 (7*30) as the denominator. In a traditional CASPER, the “number of clusters selected” will be 30, even if one or more clusters were selected twice or zero interviews were completed in one or more clusters. The only exception to using 30 clusters will occur if the decision to oversample was made a priori (see [Section 2.6.1](#)).

[Figure 4](#) displays a spreadsheet used for calculating sample weights for a CASPER conducted in an area with 43,214 households. In this example, teams conducted 201 interviews of the 210 goal. For the purpose of calculating the weight (column E, shown in blue), a “Completed interviews” column was added to represent the number of households interviewed within each cluster (column D, shown in green).

Note that if a cluster is selected more than once, the number of completed interviews would then be divided by the number of times the cluster was selected so that the “Completed Interviews” column is always a number between 0 and 7. For example, if Cluster 3 was selected twice (a goal of 14 interviews), and teams completed 12 interviews, then “Completed Interviews” column would be 6 for each of the 12 interviews in Cluster 3.

Figure 4. Sample spreadsheet of number of completed interviews per cluster and assigned weight for each household interviewed

	A	B	C	D	E	F	G	H
1	UniqueKey	Cluster	Interview	Completed	aWEIGHT	Team	Structure	Q1_Other
2	10	1	1	7	205.780952	Dolphin	Single family	
3	9	1	2	7	205.780952	Dolphin	Single family	
4	6	1	3	7	205.780952	Dolphin	Single family	
5	7	1	4	7	205.780952	Dolphin	Single family	
6	8	1	5	7	205.780952	Dolphin	Single family	
7	11	1	6	7	205.780952	Dolphin	Single family	
8	12	1	7	7	205.780952	Dolphin	Single family	
9	21	2	1	5	288.093333	Lobster	Single family	
10	22	2	2	5	288.093333	Lobster	Single family	
11	23	2	3	5	288.093333	Lobster	Single family	
12	32	2	4	5	288.093333	Lobster	Single family	
13	33	2	5	5	288.093333	Lobster	Single family	
14	20	3	1	7	205.780952	Gecko	Single family	
15	18	3	2	7	205.780952	Gecko	Single family	
16	19	3	3	7	205.780952	Gecko	Other	Duplex
17	35	3	4	7	205.780952	Gecko	Single family	

See formula for cell E2 at top.
NOTE: the weight value for clusters 1 and 3 is the same because teams completed the same number of interviews in both clusters.

Once weights are assigned, frequencies and their corresponding percentages can be calculated for each of the interview questions using Epi Info™ 7 Classic Mode; Epi Info™ 7 Visual Dashboard is also an option. First, read (import) the data file with the weight that was just created and check that the record count is correct. Complete the following steps in Epi Info™ 7 Classic Mode for each variable:

- Select “Complex Sample Frequencies” under “Advanced Statistics.” This accounts for the cluster sampling design effect and allows for the valid estimation of confidence intervals
- Choose each variable for which you would like results
- In the “Weight” section, select the weight variable that you previously created
- In the “Primary Sampling Unit” section, select the cluster variable (i.e., the cluster number of the surveyed household)
- Click “OK” (Figure 5)

Figure 5. Epi Info™ 7 “classic mode” data analysis

ILL	Freq	%
+	20	35%
-	37	65%
Total	57	100%

A report will be generated providing the sample frequency, weighted estimate (in parenthesis), weighted percent (Col %), and 95% confidence intervals which indicate the reliability of the weighted estimate (LCL %, UCL %) (Figure 6). Epi Info™ 7 Classic

Mode also allows for the option to write code similar to other statistical programs using the program editor at the bottom of the screen and selecting “Run Commands.”

Figure 6. Epi Info™ 7 output tables of selected variable

STRUCTURE	TOTAL
Multiple unit	67 (14165)
Row %	100.000
Col %	32.804
SE %	6.097
LCL %	20.334
UCL %	45.274
Other	3 (652)
Row %	100.000
Col %	1.509
SE %	0.843
LCL %	-0.215
UCL %	3.234
Single family	131 (28363)
Row %	100.000
Col %	65.687
SE %	6.068
LCL %	53.276
UCL %	78.098
TOTAL	201 (43180)

Weighted analysis and confidence intervals should only be presented for cells with ≥ 5 observations. As shown in the sample tables (Table 2), cells with < 5 are not shown in final presentation of results. CASPER results should be presented as weighted frequencies (“Estimated HH”) and weighted percentages (“% of HH”) with 95% confidence intervals (as shown in Table 2). Further analysis should be limited because of the limits of the CASPER methodology. Determination of statistical significance for comparison of CASPER data (e.g., between multiple CASPERs,

between CASPER data and other surveys) is based on 95% confidence intervals. Meaning that, weighted percentages that do not have overlapping confidence intervals are determined to be significantly different from each other. Any other estimates (such as stratifying the results by another variable) will likely be unstable and should be interpreted with caution. Please consult with your local statistician familiar with sampling methodology or reach out to CASPER@cdc.gov for technical assistance to discuss the feasibility of further analysis.

Table 2. Sample tables of CASPER results (n=201)

Type of structure	Frequency	Estimated HH	% of HH	95% CI
Single family home	131	28,363	65.7	53.3–78.1
Multiple unit	67	14,165	32.8	20.3–45.3
Other	3	—	—	—
Damage to home	Frequency	Estimated HH	% of HH	95% CI
None/minimal	67	14,213	32.9	24.4–41.5
Damaged	125	27,081	62.7	54.7–70.7
Destroyed	9	1,886	4.4	1.9–7.1
Household feels home is safe	Frequency	Estimated HH	% of HH	95% CI
Yes	176	37,733	87.4	82.0–92.8
No	22	4,795	11.1	6.1–16.1
Don't know	3	—	—	—

NOTE: HH = Household

It is important to note that weighted analysis does not account for the changes that may occur in the number of households in the sampling frame between the time of the census and the time of the assessment. Therefore, despite attempts to present unbiased estimates, the frequencies reported may lack precision, especially in years further away from the Census data collection.

4.3 Response rates

Calculating response rates helps indicate the representativeness of the sample to the population within the sampling frame. The information used to calculate response rates is collected by the interview teams on the tracking form (Appendix I). Thus, teams should be well-trained in using the tracking form to record information on all households selected for interview, including those for which no interview was completed or no contact was made.

To compile the tracking form data, tally the responses to each row on the tracking form. In some sections, it may be necessary to reconcile discrepancies. For example, an interviewer may appropriately select both “no answer” and “door was answered” for a single household because the interviewer returned to a household previously selected in which no one answered the door. Select only the final designation (“door was answered”) for tally and disregard the prior visits. These tallies can be entered into a spreadsheet (Figure 7). Each column should represent a single cluster. If more than one tracking form was completed per cluster, consider forms for the same cluster cumulative and tally them onto the same column in the spreadsheet. Once entered into the spreadsheet, calculate the totals across all clusters.

Figure 7. Sample tracking spreadsheet showing attempted and completed interviews per cluster

A	B	C	D	E	F	G	H	I	J	K
	Cluster	1	2	3	4	5	6	7	8	9
	Team Name	Dolphin	Lobster	Gecko	Crab	Dolphin	Kingfisher	Baracuda	Angelfish	Frog
ACCESS	House Accessible	12	7	11	8	8	9	17	11	10
	House Inaccessible	0	0	0	0	1	0	0	1	0
DWELLING	Single Family Home	11	7	11	6	7	7	2	9	1
	Apartment or Condo	0	0	0	0	0	2	15	0	9
	Other	1	0	0	2	1	0	0	2	0
ANSWER	Door was answered	8	6	9	7	7	8	7	8	9
	Appears Vacant	0	0	0	0	0	1	1	0	0
	Nobody Home	4	1	2	1	0	0	9	3	1
INTERVIEW	Language Barrier	0	0	0	0	0	0	0	0	0
	Refused to Participate	1	0	1	0	2	1	0	0	0
	Come Back Later	0	1	1	1	0	0	0	1	2
	Interview Not Finished	0	0	0	0	0	0	0	0	0
	Interview Completed	7	5	7	6	5	7	7	7	7

There are three separate response rates that are calculated for CASPER: the completion rate, the cooperation rate, and the contact rate (Figure 8).

Figure 8. Calculation of CASPER response rates (formulas)

Contact rate = $\frac{\text{Number of completed Interviews}}{\text{All HHs where contact was attempted}}$
 (including completed interviews, incomplete interviews, refusals, and non-respondents)

Cooperation rate = $\frac{\text{Number of completed Interviews}}{\text{All HHs where contact was made}}$
 (including completed interviews, incomplete interviews, and refusals)

Completion rate = $\frac{\text{Number of completed Interviews}}{\text{Number of interviews intended to complete}}$
 (usually 210)

The **contact rate** is the proportion of completed interviews out of all households the interview teams attempted to interview. It is calculated by dividing the number of completed interviews by the total number of households at which contact was attempted (e.g., inaccessible households, non-response, completed interviews, refusals, vacant homes). Higher contact rates indicate better representativeness of the sample to the population. Lower contact rates indicate that interview teams had to attempt interviews at many households (i.e., knock on many doors) to obtain the final number of completed interviews and the sample becomes more of a convenience sample at the second stage.

The **cooperation rate** is the proportion of completed interviews out of all households the interviews teams made contact with a person. It represents both the eligibility and the willingness of the community to complete the CASPER interview.

It is calculated by dividing the number of completed interviews by the total number of households at which contact was made (e.g., completed interviews, “come back later”, incomplete interviews, refusals, language barriers). The lower the cooperation rate, the more the sample becomes one of convenience.

The **completion rate** represents how close interview teams came to collecting the desired number of interviews (typically n=210). Completion rates below 80% result in an unacceptably low number of completed interviews (typically fewer than 168) to accurately represent the sampling frame. When planning a CASPER, you should allot enough time for teams to complete at least 80% of interviews. It is recommended to have a few interview teams available to return to low-responding clusters the following day(s) to finish data collection if teams were not able to reach 80% completion during the initial data collection period.





5. Share findings

Disseminating findings is a vital component of conducting a CASPER. Information from the CASPER will help partners better understand the needs and health status of the community. The preliminary findings should be shared with leadership and key stakeholders within 36 hours of the completion of field data collection; typically this is done through a slide presentation to promote discussion of key findings, implementation of any recommendations, next steps, and lessons learned. It is strongly recommended that partners and stakeholders be informed of the preliminary findings as soon as possible to ensure timely response and maximum transparency to the public. During a non-emergent setting (e.g., preparedness, non-disaster CASPER) there is often more time before preliminary findings are required, however, we recommend adhering to the 36-hour timeframe to gain practice for the quick turnaround needed during a disaster response.

A final report should be developed and distributed widely to all interested parties including state or local public health authorities, emergency operations centers, incident command staff, and other agencies. It may take weeks to months to write the report and get appropriate agency approvals before the report can be shared. Other methods for disseminating findings (e.g., a bulleted list of highlights, fact sheet with infographics of key findings, press release) should also be considered in conjunction with the report to ensure varying audiences (e.g., emergency managers, leadership, media, the public) get information in an easy, relevant format.

5.1 Preliminary and final reports

Several aspects of the preliminary and final reports can be completed during the preparation phase of the CASPER. These include writing background and methodology sections, creating table shells for presentation of results, and considering ideas for recommendations. Completing such aspects early will ensure more timely dissemination.

The preliminary report (or presentation) is a draft version of the final report; it should contain initial results and recommendations to share with leadership, decision makers, and, as appropriate, stakeholders, partners, and community organizations. This report should have limited distribution and note

that results are preliminary. It should include the following:

- An *introduction* which briefly describes the background (i.e., purpose) and objectives
- Explanation of *methods*, including a description of the sampling frame (including how many total households), the two-stage cluster design, the questionnaire, the number and training of interview teams, and the data analysis procedures (i.e., program used, weighted analysis conducted). Also include a map of the assessment area
- CASPER initial *results*, including the three response rates and key findings in table format
- A *discussion* concerning the main findings, limitations, and tangible, action-oriented recommendations based on initial results
- *Acknowledgements* of all individuals and organizations who helped with the CASPER

The final report should be based on the preliminary report, but may contain additional information and new or revised results. For example, the results section may include additional analyses not included in the preliminary report (i.e., qualitative data or analysis of open-ended questions) and corrected inaccuracies from the preliminary report (if any). The discussion section should incorporate feedback received from the preliminary presentation, final recommendations created in collaboration with partners, and any actions taken as a result of the CASPER (e.g., enhanced public health messaging). The final report is always a written format and publication in peer-reviewed journal or posting online is encouraged. [Appendix N](#) provides an example of a final report.

5.2 Report writing considerations

Written summaries of the findings of the CASPER require care and attention. As with any report, results should be in a simple, easy-to-read format that reflects the original objectives. If appropriate, graph the results. Critically review data presented in text, tables, and graphs for accuracy. [Figure 9](#) includes some considerations for report writing.



Figure 9. Considerations for writing the report

Who will draft the written report?

Designate a person who will be in charge of the report(s). This should be someone familiar with the entire process, including the CASPER preparation, to promote full comprehension of key objectives. Once designated, this individual can begin preparing the report(s) prior to completion of data collection (e.g., write background and methods, create table shells).

What are your deadlines?

The preliminary report should be presented within 36 hours of data collection to ensure timely decisions can be made to address any identified urgent needs. Deadlines for completing the final report should be agreed upon by stakeholders. See [Section 5.1](#) for more detail on preliminary and final reports.

Who is the audience? How will you present the data?

The target audience and stakeholders should always be considered when drafting a report. Will the report be sent to emergency managers, epidemiologists, elected officials, and/or the media? Knowing your audience will determine the format to use, how much information to include, the report length, and the technical level. Data should be presented in a simple, easy-to-read format in bullet, table, or graphic form that clearly reflects the original objectives.

How will in-field experience of interview teams be included?

After data collection, headquarter leadership should conduct a short debrief of interview team members to obtain observational information, anecdotes, or concerns that were not captured on the questionnaire but may be included in the report(s).

What action will be taken based on the results?

CASPER results should be presented so that they prompt action. During the preliminary report presentation, encourage conversation on how best to implement actions based on the initial results. Actions may include, but are not limited to, prioritization of resources, public health messaging, and new or improved programs, interventions, or plans.

CDC technical assistance and support

CDC provides leadership in disaster epidemiology to international, federal, state, tribal, local, and territorial partners to help them prepare for and respond to natural and human-induced disasters through consultation, technical assistance, and training. Upon request, CDC provides disaster epidemiology trainings (including CASPER) to increase emergency response capacity, improve disaster epidemiology skills, and share lessons learned. Trainings range from 1-2 days and PHEP program awardees can use them to help build and sustain preparedness and response capabilities.

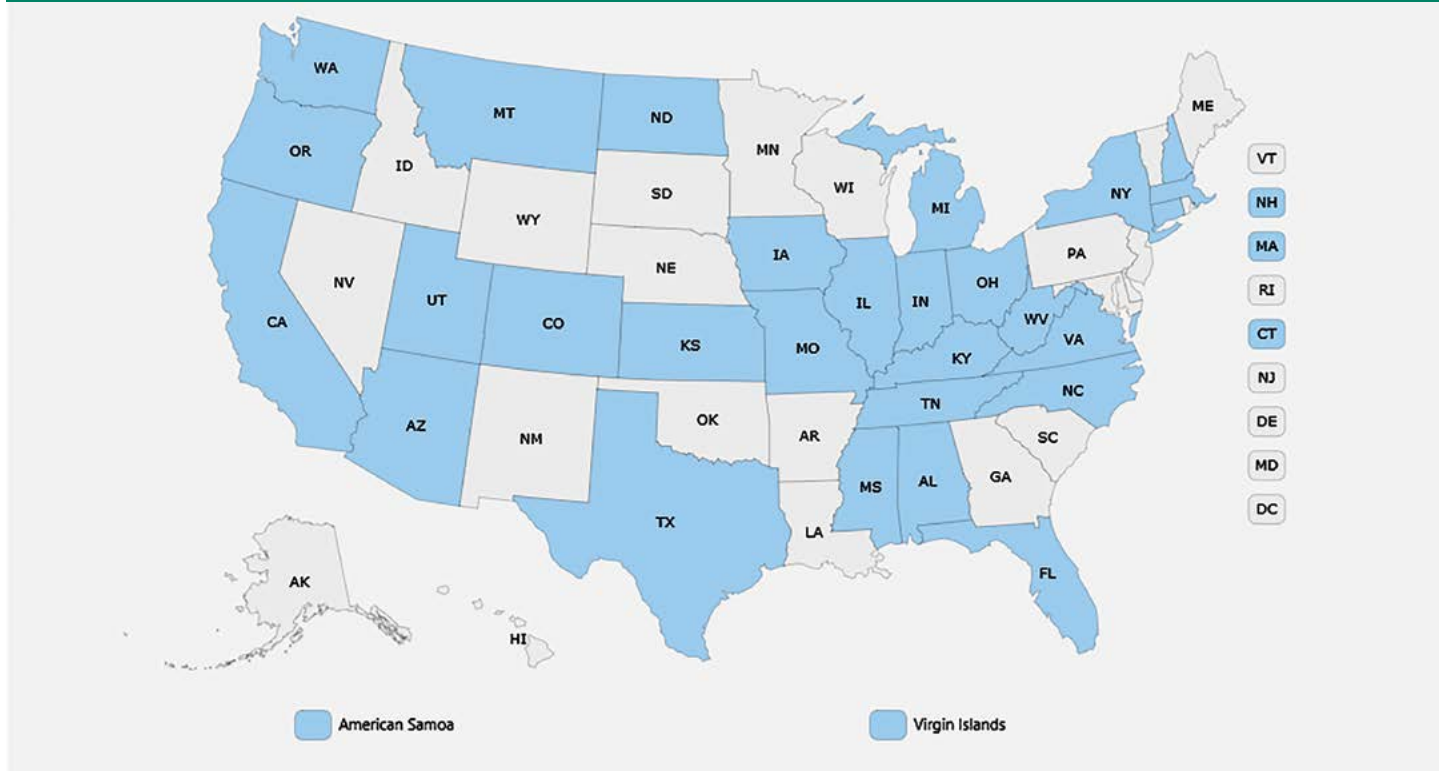
If you would like to be considered for a disaster epidemiology training, please complete the training request form available on the CDC CASPER training webpage (<https://www.cdc.gov/nceh/hsb/disaster/training.htm>). Additionally, CDC provides technical assistance remotely or in the field, as requested. You can email CASPER@cdc.gov for technical assistance with CASPER tips, how-to, and lessons learned; sampling methodology, including sampling strategies and sampling with GIS software; mapping of clusters; and data analysis and interpretation support.

Conclusion

CASPER has been shown to be a useful tool for assessing community needs throughout the disaster cycle and in non-disaster situations. To ensure data obtained are useful, it is important to adhere to the methodology described in this toolkit. Standardized questionnaires, training on selection of households, and tracking of households, are all necessary components to ensure the highest quality data. As you implement CASPERs

in your jurisdiction, share your successes, lessons learned, and findings through your agency website (i.e., posting reports, fact sheets), peer-reviewed publications, and other mechanisms such as YouTube videos and conferences. And don't forget to add your CASPER to the CDC CASPER interactive map (https://www.cdc.gov/nceh/hsb/disaster/casper/casper_map.htm).

Interactive Map of CASPERs



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Appendices

Appendix A: CASPER Overview One Page Fact Sheet

Accessible version available for download at https://www.cdc.gov/nceh/hsb/disaster/casper/pdf-html/casper_cap.html.

CASPER

Community Assessment for Public Health Emergency Response

A simple, flexible way to get information – fast

The Community Assessment for Public Health Emergency Response (CASPER) is a type of household survey designed by the Centers for Disease Control and Prevention (CDC) to provide information about a community, allowing public health and emergency managers to make informed decisions.

CASPER is *quick, inexpensive, flexible*, and uses a *simple* reporting format.

A valid and reliable methodology

CASPER uses a two-stage cluster sampling methodology. Thirty clusters (e.g. census blocks) are selected, then 7 households are interviewed from each cluster.

Useful in a variety of settings

CASPER can be used during disasters and in non-disaster settings.

- Gathering information during all phases of a disaster, including the preparedness, response, and recovery phases.
- Obtaining household-level information in non-disaster situations, such as learning about household health status, including chronic health conditions.
- Assessing community knowledge about emerging infectious diseases, like Zika and H1N1.
- Learning about community awareness, opinions, and concerns about important public health subjects such as healthy homes, new coal gasification plants, community health, and radiation emergency preparedness.

Used across the United States

CASPERs have been conducted throughout the United States. View CDC's interactive map at http://www.cdc.gov/nceh/hsb/disaster/casper/casper_map.htm

CASPERs provide needed answers for health departments to move forward

Information gathered from disaster-related CASPERs can help emergency managers make informed decisions, allocate scarce resources, respond to specific needs in the population, provide credible information to the news media to dispel rumors, support the need for funding for recovery efforts, and plan for future disasters.

CASPER data have also been used to target communication messages and community education programs, provide justification for grant proposals, and focus future research.

Where do I find more information about CASPER?

For more information on CASPER, visit <http://www.cdc.gov/nceh/hsb/disaster/casper/default.htm> or email CASPER@cdc.gov



How are CASPERs used in disaster settings?

Preparedness: focus on evacuation and household readiness plans, communications, and other information to tailor local emergency plans

Response: focus on the community's immediate needs and general health status

Recovery: assess long term and ongoing needs and can evaluate response efforts



National Center for Environmental Health
Division of Environmental Health Science and Practice



CS275170A

Appendix B: Example of CASPER Introduction Script/Consent Form

INSERT
LOGO HERE

[HEALTH DEPARTMENT NAME]

Community Assessment for Public Health Emergency Response

Hello, my name is _____ and this is _____.

We are with the *[insert name of local or state health department]*. We are talking to randomly selected households about the recent *[disaster, other event, CASPER topic]* in *[location]*.

- We are talking to residents about *[insert brief objective(s)]*
- We want to get an idea of how we can better serve your community
- Your house is one of 210 that has been randomly chosen to be in this survey
- If you agree to participate, we will not ask you any personal questions such as those about education or place of birth. The questions are about your ENTIRE household
- The survey should take approximately 20 minutes to complete. Your answers will be kept private and the survey is voluntary and anonymous
- We also have some information we would like to leave with you that may be of interest to you and your household *[Surveyor: Hand them public health material]*

If you have any questions about this survey, you may call the Department of...."

[Surveyor: Wait for respondent to clearly answer YES or NO after each question below]

1. Would you be willing to participate in this survey?
2. Do you live in this home?
 - a. If "no": Is there someone else who lives in this home that we can speak to?
3. Are you at least 18 years or older?
 - a. If "no": Is there someone else 18 years or older who lives in this home that we can speak to?

[IF NO TO ANY ABOVE, THANK THEM FOR THEIR TIME]

Appendix C: CASPER Questionnaire Examples

Full explanation of the sample CASPER Questionnaires is in [Appendix O](#). These forms are meant to be filled out manually.

Downloaded form at https://www.cdc.gov/nceh/hsb/disaster/docs/Appendix-C_Hurricane-P.pdf.

Hurricane

Community Assessment for Public Health Emergency Response (CASPER) – Hurricane Example	
DK=Don't Know Ref=Refused NA=Not Applicable HH=Household	
Date: ___/___/___	Cluster Number: ___ Interview Number: ___ Team name: ___
Demographics	
COMPLETE BEFORE BEGINNING SURVEY. Type of structure: <input type="checkbox"/> Single family <input type="checkbox"/> Multiple unit <input type="checkbox"/> Other _____	
Q1. Including yourself, how many people live in your HH? _____	Q3. What is the main language spoken in your HH? <input type="checkbox"/> English <input type="checkbox"/> Spanish <input type="checkbox"/> Creole <input type="checkbox"/> Other _____
Q2. Including yourself, how many people living in your HH are <2 yrs old? ___ 2-17 yrs? ___ 18-64 yrs? ___ 65+ yrs? ___ <input type="checkbox"/> DK <input type="checkbox"/> Ref	<input type="checkbox"/> DK <input type="checkbox"/> Ref
Now we are going to ask about your household's experience during the recent hurricanes.	
Q4. Did your HH evacuate your home at any time before or after the hurricane? <input type="checkbox"/> Before (Q4a) <input type="checkbox"/> After (Q4a) <input type="checkbox"/> No (Q4b) <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q11. Immediately after the hurricanes, did your HH have enough drinking water to last 3 days? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q4a. IF YES, where did you and members of your HH go? (Check all) <input type="checkbox"/> Friend/family (on island) <input type="checkbox"/> Friend/family (elsewhere) <input type="checkbox"/> Shelter <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q12. What is your HH's current source of drinking water? (Check ALL) <input type="checkbox"/> Unfiltered tap <input type="checkbox"/> Filtered tap water <input type="checkbox"/> Bottled <input type="checkbox"/> Cistern <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q4b. IF NO, what, if any, were the barriers to evacuating? (Check all) <input type="checkbox"/> No time <input type="checkbox"/> Didn't know where shelters were <input type="checkbox"/> No transportation <input type="checkbox"/> No need to go <input type="checkbox"/> Stayed with pets/animals <input type="checkbox"/> Fear of theft <input type="checkbox"/> Caring for person who could not evacuate <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q12a. IF CISTERN, how does your HH treat your cistern water? (Check ALL) <input type="checkbox"/> Bleach <input type="checkbox"/> Mosquito dunk <input type="checkbox"/> Filter <input type="checkbox"/> UV light <input type="checkbox"/> Boil <input type="checkbox"/> Other, _____ <input type="checkbox"/> Do not treat cistern <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q5. Does your household feel your home is safe to live in? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q12b. IF BOTTLED, where does your HH get your bottled water? (ALL) <input type="checkbox"/> Purchased <input type="checkbox"/> POD <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q6. How would you describe the damage to your home? (Check ONE) <input type="checkbox"/> None/minimal <input type="checkbox"/> Damaged, but repairable <input type="checkbox"/> Destroyed <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q13. Immediately after the hurricanes, did your HH have a 7 day supply of all the medications needed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q7. Has your HH seen mold or smelled a moldy/musty odor in your home? <input type="checkbox"/> Yes (go to Q7a) <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q13a. Did any member of your HH run out of medications at any time after the storms? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> None needed <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q7a. IF YES, what actions has your HH taken to remove the mold? (Check ALL) <input type="checkbox"/> Removed carpets/upholstery <input type="checkbox"/> Cleaned floors/walls <input type="checkbox"/> Removed appliances <input type="checkbox"/> Threw out clothes/toys <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q14. Currently, do you or any members of your HH need Food <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Water <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Medication <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Bed nets <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Tarps <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Other _____ <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q8. Does your HH currently have the following Running water <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Access to cistern water <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Access to functioning toilet <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref City electricity <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Working generator <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q15. Did your HH have an emergency supply kit prior to the hurricanes? <input type="checkbox"/> Yes (go to Q15a) <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q9. Has your HH used a generator at any time since the storm? <input type="checkbox"/> Yes (Q9a) <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q15a. IF YES, Did your HH use supplies from your emergency supply kit following the hurricanes? <input type="checkbox"/> Yes (go to Q15b) <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q9a. IF YES, does your household have a working carbon monoxide detector? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q15b. Did your HH need emergency supplies that were not included in your emergency supply kit? <input type="checkbox"/> Yes (go to Q15c) <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q10. Immediately after the hurricanes, did your HH have enough non-perishable food to last 3 days? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q15c. IF YES, what did your HH need? <input type="checkbox"/> Food <input type="checkbox"/> Water <input type="checkbox"/> Batteries <input type="checkbox"/> Medical supplies <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref
COMMUNICATIONS	
Q16. How has your HH received information from the Department of Health? (Check all) <input type="checkbox"/> Newspaper <input type="checkbox"/> Internet news or other website <input type="checkbox"/> Social media <input type="checkbox"/> TV <input type="checkbox"/> Radio <input type="checkbox"/> Friends/Family/Word of Mouth <input type="checkbox"/> Church/Place of worship <input type="checkbox"/> Other, _____ <input type="checkbox"/> None <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q18. Does anyone in your HH have any of the following that could be barriers to effective communication during an emergency? (Check all that apply) <input type="checkbox"/> Impaired hearing <input type="checkbox"/> Impaired vision <input type="checkbox"/> Developmental/cognitive disability <input type="checkbox"/> Difficulty understanding English <input type="checkbox"/> Difficulty understanding written material <input type="checkbox"/> None of the above <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q17. What health messages has your HH heard about hurricane recovery? (DO NOT READ RESPONSES – Check all that apply) <input type="checkbox"/> Mold/mildew cleanup <input type="checkbox"/> Cistern treatment <input type="checkbox"/> Food/water distribution <input type="checkbox"/> Medical care access <input type="checkbox"/> Department of Health (DoH) services <input type="checkbox"/> None <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q19. Since the storm, have you or members of your HH had difficulty accessing the radio, TV, or internet for communication messages? (Check all that apply) <input type="checkbox"/> Yes – Radio <input type="checkbox"/> Yes - TV <input type="checkbox"/> Yes - Internet <input type="checkbox"/> No – no difficulty accessing <input type="checkbox"/> DK <input type="checkbox"/> Ref

Community Assessment for Public Health Emergency Response (CASPER) – Hurricane Example

DK=Don't Know Ref=Refused NA=Not Applicable HH=Household

VECTORS

<p>Q20. Since the hurricanes, have you or members of your HH noticed an increase in rats/mice? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</p>	<p>Q23. Would your HH support any spraying for mosquitoes? <input type="checkbox"/> Yes (<i>go to Q23b</i>) <input type="checkbox"/> No (<i>go to Q23b</i>) <input type="checkbox"/> DK <input type="checkbox"/> Ref</p>
<p>Q21. Since the hurricanes, have you or members of your HH noticed an increase in mosquito biting? <input type="checkbox"/> Yes (<i>go to Q21a</i>) <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</p> <p>Q21a. IF YES, have you or members of your HH changed any daily activities because of the mosquitoes? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</p>	<p>Q23a. IF YES, which type(s) would you support (<i>Check all that apply</i>) <input type="checkbox"/> By hand <input type="checkbox"/> By truck <input type="checkbox"/> By plane <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref</p>
<p>Q22. Currently, how concerned are you and members of your HH about getting disease mosquitoes may carry? <input type="checkbox"/> Very concerned (<i>Q22a</i>) <input type="checkbox"/> Somewhat concerned (<i>Q22a</i>) <input type="checkbox"/> Not concerned at all <input type="checkbox"/> DK <input type="checkbox"/> Ref</p> <p>Q22a. IF VERY or SOMEWHAT, which other disease(s)? (DO NOT READ – Check all that apply) <input type="checkbox"/> Dengue <input type="checkbox"/> Chikungunya <input type="checkbox"/> Yellow Fever <input type="checkbox"/> Malaria <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref</p>	<p>Q23b. IF NO, why not? (DO NOT READ – Check all that apply) <input type="checkbox"/> Chemicals in the environment <input type="checkbox"/> Concern of asthma <input type="checkbox"/> Concern of water contamination <input type="checkbox"/> Do not want to kill bees/bugs <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref</p>

Health/Behavioral Health

<p>Q24. Were you or anyone in your HH injured as a result of the storms or during cleanup activities? (<i>Check all that apply</i>) <input type="checkbox"/> Yes – storm <input type="checkbox"/> Yes – cleanup <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</p>	<p>Q28. Since the storm, have you or any members of your HH experienced worsening of</p> <table border="0"> <tr> <td>Asthma/COPD</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No/NA <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> <tr> <td>Allergies</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No/NA <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> <tr> <td>Diabetes</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No/NA <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> <tr> <td>Hypertension</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No/NA <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> <tr> <td>Previous mental health condition</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No/NA <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> <tr> <td>Other _____</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No/NA <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> </table>	Asthma/COPD	<input type="checkbox"/> Yes <input type="checkbox"/> No/NA <input type="checkbox"/> DK <input type="checkbox"/> Ref	Allergies	<input type="checkbox"/> Yes <input type="checkbox"/> No/NA <input type="checkbox"/> DK <input type="checkbox"/> Ref	Diabetes	<input type="checkbox"/> Yes <input type="checkbox"/> No/NA <input type="checkbox"/> DK <input type="checkbox"/> Ref	Hypertension	<input type="checkbox"/> Yes <input type="checkbox"/> No/NA <input type="checkbox"/> DK <input type="checkbox"/> Ref	Previous mental health condition	<input type="checkbox"/> Yes <input type="checkbox"/> No/NA <input type="checkbox"/> DK <input type="checkbox"/> Ref	Other _____	<input type="checkbox"/> Yes <input type="checkbox"/> No/NA <input type="checkbox"/> DK <input type="checkbox"/> Ref				
Asthma/COPD	<input type="checkbox"/> Yes <input type="checkbox"/> No/NA <input type="checkbox"/> DK <input type="checkbox"/> Ref																
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Diabetes	<input type="checkbox"/> Yes <input type="checkbox"/> No/NA <input type="checkbox"/> DK <input type="checkbox"/> Ref																
Hypertension	<input type="checkbox"/> Yes <input type="checkbox"/> No/NA <input type="checkbox"/> DK <input type="checkbox"/> Ref																
Previous mental health condition	<input type="checkbox"/> Yes <input type="checkbox"/> No/NA <input type="checkbox"/> DK <input type="checkbox"/> Ref																
Other _____	<input type="checkbox"/> Yes <input type="checkbox"/> No/NA <input type="checkbox"/> DK <input type="checkbox"/> Ref																
<p>Q25. Has every adult in your HH had a tetanus (DTap/Tdap/Td) shot in the past 10 years? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</p>	<p>Q29. Since the storm, have you or members of your HH had</p> <table border="0"> <tr> <td>Difficulty concentrating</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> <tr> <td>Trouble sleeping/nightmares</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> <tr> <td>Loss of appetite</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> <tr> <td>Agitated behavior</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> <tr> <td>Witnessed firsthand violent behavior/threats</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> <tr> <td>Increased alcohol consumption</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> <tr> <td>Increased drug use</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> <tr> <td>Other _____</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> </table>	Difficulty concentrating	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Trouble sleeping/nightmares	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Loss of appetite	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Agitated behavior	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Witnessed firsthand violent behavior/threats	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Increased alcohol consumption	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Increased drug use	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Other _____	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref
Difficulty concentrating	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref																
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Other _____	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref																
<p>Q26. Since the storms, has anybody in your HH experienced</p> <table border="0"> <tr> <td>Rash</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> <tr> <td>Nausea/stomachache</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> <tr> <td>Diarrhea</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> <tr> <td>Cough</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> <tr> <td>Fever</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> <tr> <td>Red eyes</td> <td><input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref</td> </tr> </table>	Rash	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Nausea/stomachache	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Diarrhea	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Cough	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Fever	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Red eyes	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	<p>Q30. What is your HHs greatest need at this time?</p>				
Rash	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref																
Nausea/stomachache	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref																
Diarrhea	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref																
Cough	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref																
Fever	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref																
Red eyes	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref																
<p>Q27. Since the storm, has it been more difficult to get needed prescription medications for anyone in your HH? <input type="checkbox"/> Yes (<i>got to Q27a</i>) <input type="checkbox"/> No – got meds from Red Cross, hospital, etc. <input type="checkbox"/> No – got meds from usual source <input type="checkbox"/> No – No meds <input type="checkbox"/> DK <input type="checkbox"/> Ref</p> <p>Q27a. IF YES, Why? (<i>Check all</i>) <input type="checkbox"/> Usual clinic/physician closed <input type="checkbox"/> Usual pharmacy closed <input type="checkbox"/> Money/cost <input type="checkbox"/> Insurance problems <input type="checkbox"/> No transportation <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref</p>																	

Now we are going to ask about YOU as an INDIVIDUAL

Q31. Over the last **2 weeks**, how often have you had little interest or pleasure in doing things? (*Check ONE*)
 Not at all Several days More than half the days Nearly every day DK Refused

Q32. Over the last **2 weeks**, how often have you felt down, depressed or hopeless? (*Check ONE*)
 Not at all Several days More than half the days Nearly every day DK Refused

Q33. Over the last **2 weeks**, how often have you felt nervous, anxious, or on edge? (*Check ONE*)
 Not at all Several days More than half the days Nearly every day DK Refused

Q34. Over the last **2 weeks**, how often have you been unable to stop or control worrying? (*Check ONE*)
 Not at all Several days More than half the days Nearly every day DK Refused

Q35. Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the **past 30 days** was your mental health not good? #

Q36. Is there anything else you would like to tell the health department about your household?

Thank you!

Drought

Full explanation of the sample CASPER Questionnaires is in [Appendix O](#). These forms are meant to be filled out manually.

Download form at https://www.cdc.gov/nceh/hsb/disaster/docs/Appendix-C_Drought-P.pdf.

Community Assessment for Public Health Emergency Response – Drought Example	
DK=Don't Know Ref=Refused NA=Not applicable HH=Household	
Date: ___/___/___	Cluster No.: _____
Interview No.: _____	Team name: _____
Demographics	
Q1. Type of structure: <input type="checkbox"/> Single family <input type="checkbox"/> Multiple unit <input type="checkbox"/> Mobile home <input type="checkbox"/> Other _____	Q3. Including yourself, how many people live in your HH? ___ #
Q2. Does your HH own or rent your place of residence? <input type="checkbox"/> Own <input type="checkbox"/> Rent <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q4. Including yourself, how many people living in your HH are Less than 2 years old? ___ # 2-17 years? ___ # 18-64 years? ___ # 65+ years? ___ # <input type="checkbox"/> DK <input type="checkbox"/> Ref
Communications	
Q5. What is your HH's primary source of information about drought? <i>(check ONE)</i> <input type="checkbox"/> Newspaper <input type="checkbox"/> TV <input type="checkbox"/> Friends <input type="checkbox"/> Family members <input type="checkbox"/> AM/FM radio <input type="checkbox"/> Work <input type="checkbox"/> Internet/social media <input type="checkbox"/> Place of worship <input type="checkbox"/> Other, _____ <input type="checkbox"/> None <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q7. What is the main language spoken in your HH? <i>(check ONE)</i> <input type="checkbox"/> English <input type="checkbox"/> Spanish <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q6. What is your HH's most preferred method for receiving information about an emergency event? <i>(check ONE)</i> <input type="checkbox"/> TV <input type="checkbox"/> Radio <input type="checkbox"/> Text message <input type="checkbox"/> Cell phone call <input type="checkbox"/> Landline <input type="checkbox"/> Internet/social media <input type="checkbox"/> Word of mouth <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q8. Does anyone in your HH have any of the following that could be barriers to effective communication during an emergency? <i>(Check ALL that apply)</i> <input type="checkbox"/> Impaired hearing <input type="checkbox"/> Impaired vision <input type="checkbox"/> Developmental/cognitive disability <input type="checkbox"/> Difficulty understanding written material <input type="checkbox"/> Difficulty understanding English <input type="checkbox"/> None <input type="checkbox"/> DK <input type="checkbox"/> Ref
Water Sources	
Q9. Where did your HH water come from before the drought began last summer? <i>(Check ALL that apply)</i> <input type="checkbox"/> Town, city, or county water system <input type="checkbox"/> Bottled water <input type="checkbox"/> Private well <i>(go to Q9a)</i> <input type="checkbox"/> Cistern <input type="checkbox"/> Hauled water <input type="checkbox"/> Surface water (river, lake, spring) <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q11. Does your HH use tap water for drinking and/or cooking? <input type="checkbox"/> Yes, drinking only <input type="checkbox"/> Yes, cooking only <input type="checkbox"/> Yes, drinking and cooking <input type="checkbox"/> No <input type="checkbox"/> NA, currently no running water <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q9a. <i>If well</i> , in the last year, has your HH seen a decrease in water production? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q12. Is your household aware of any problems with the quality of your tap water? <input type="checkbox"/> Yes <i>(go to Q12a)</i> <input type="checkbox"/> No <input type="checkbox"/> Does not use tap water <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q10. During the current drought, where does your HH water come from? <i>(Check ALL that apply)</i> <input type="checkbox"/> Town, city, or county water system <input type="checkbox"/> Bottled water <input type="checkbox"/> Private well <input type="checkbox"/> Cistern <input type="checkbox"/> Hauled water <input type="checkbox"/> Surface water (river, lake, spring) <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q12a. If yes, what type of problems? _____ _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q13. Has your HH noticed a change in the color, clarity, odor, or taste of your water? <i>(Check ALL that apply)</i> <input type="checkbox"/> Color <input type="checkbox"/> Clarity <input type="checkbox"/> Odor <input type="checkbox"/> Taste <input type="checkbox"/> None <input type="checkbox"/> DK <input type="checkbox"/> Ref	
Drought Mitigation/Assistance Behavior	
Q14. In response to water shortages, have you or members of your HH Reduced water usage <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Created system to capture/reuse water <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Installed faucet aerators <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Repaired plumbing leaks <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Replaced appliances (washing machine) <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Replaced toilet with low-flush toilet <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Decreased washing HH laundry <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Reduced how often HH flushes toilet <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Shortened shower/bathing times <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Reduced how often shower/bathe <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Washed hands less or for shorter time <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Stopped washing hands with water <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Washed food less or for shorter time <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Drank less water <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Spent less time outdoors <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Reduced outdoor rec. time (skiing, boating) <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Reduced water use for lawn/landscaping <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Stopped gardening <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Quit farming or let land go fallow <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref Increased the use of chemical products <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q15. Are there other actions your HH has taken to use less water? _____ _____ <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref
	Q16. If the drought continues this summer, would your HH be able to further reduce water consumption? <input type="checkbox"/> Yes <i>(go to 16a)</i> <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref
	Q16a. <i>If yes</i> , how so? _____
	Q17. Has anyone in your HH looked for assistance related to the drought? <input type="checkbox"/> Yes <i>(go to Q17a)</i> <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref
	Q17a. <i>If yes</i> , what type of assistance did your HH need? <i>(Check ALL that apply)</i> <input type="checkbox"/> Well drilling <input type="checkbox"/> Drinking water <input type="checkbox"/> Health services <input type="checkbox"/> Utility or energy assistance <input type="checkbox"/> Financial help <input type="checkbox"/> Food assistance <input type="checkbox"/> Employment services <input type="checkbox"/> Wildfire mitigation <input type="checkbox"/> Other, specify _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref
	Q17b. What were the barriers to getting assistance? _____ _____ <input type="checkbox"/> No barriers <input type="checkbox"/> DK <input type="checkbox"/> Ref

Community Assessment for Public Health Emergency Response – Drought Example

DK=Don't Know Ref=Refused NA=Not applicable HH=Household

- Q18.** Have you or members of your HH planted drought resistant *(Check ALL that apply)*
 Crops Edible Garden Landscaping plants None DK Ref
- Q19.** Does your home have a fire resistant roof (asphalt, metal, or tile)? Yes No NA DK Ref
- Q20.** Have you or members of your HH established and maintained a defensible space around your structures by reducing flammable vegetation? Yes No NA DK Ref
- Q21.** Do you or members of your HH practice debris management by clearing roofs, eaves, and gutters? Yes No NA DK Ref
- Q22.** Are you or members of your HH aware of any wildfire mitigation assistance programs in the area? Yes No DK Ref

Drought Knowledge and Beliefs

Now, I am going to read you a set of statements about drought. Please tell me whether you or your HH members believe the statement to be TRUE (T) or FALSE (F) (DK = Don't Know, R = Refused)

- | | |
|---|--|
| Q23. There is an increased demand for water <input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> DK <input type="checkbox"/> R | Q29. Some people aren't cutting water use enough <input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> DK <input type="checkbox"/> R |
| Q24. There is poor water mgmt by the govt. <input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> DK <input type="checkbox"/> R | Q30. Droughts are caused by lack of rain/snow <input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> DK <input type="checkbox"/> R |
| Q25. There is poor water mgmt by the ag industry <input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> DK <input type="checkbox"/> R | Q31. Droughts are caused by climate change <input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> DK <input type="checkbox"/> R |
| Q26. There is overuse of water by cities <input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> DK <input type="checkbox"/> R | Q32. Droughts are caused by a "higher power" <input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> DK <input type="checkbox"/> R |
| Q27. Too much water is used to protect wildlife <input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> DK <input type="checkbox"/> R | Q33. Droughts increase wildfire risks <input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> DK <input type="checkbox"/> R |
| Q28. Too much water is used to maintain ranches/livestock <input type="checkbox"/> T <input type="checkbox"/> F <input type="checkbox"/> DK <input type="checkbox"/> R | |

Drought Observations

Please tell me whether you or your HH members believe the following to be TRUE (T) or FALSE (F)

- Q34.** Observed more wildlife in residential areas (such as deer, rattlesnakes, etc.) True False DK Ref
- Q35.** Observed more dead wildlife (such as bats, fish, etc.) True False DK Ref
- Q36.** Observed more mosquitoes True False DK Ref **Q37.** Observed more ticks True False DK Ref
- Q38.** Have concerns about swimming in recreational waters (due to "swimmers itch", algae, etc.) True False DK Ref
- Q39.** Observed changes in the landscape (such as smaller ponds, more aquatic plants, etc.) True False DK Ref

Health & Behavioral Health Impact of Drought

- | | |
|--|--|
| Q40. Has the drought negatively affected your HH's... <i>(Check ALL)</i>
<input type="checkbox"/> Property <input type="checkbox"/> Finances <input type="checkbox"/> Health <input type="checkbox"/> Peace of mind
<input type="checkbox"/> Other, _____ <input type="checkbox"/> None <input type="checkbox"/> DK <input type="checkbox"/> Ref | Q44. Has a healthcare professional ever diagnosed you or any members of your HH with depression or any other emotional or mental health condition? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref |
| Q41. What is the general health of you and members of your HH?
<input type="checkbox"/> Excellent <input type="checkbox"/> Very Good <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> DK <input type="checkbox"/> Ref | Q45. Does anyone in your HH need any of the following special medical equipment or supplies? <i>(Check ALL that apply)</i>
<input type="checkbox"/> Oxygen <input type="checkbox"/> Dialysis <input type="checkbox"/> Breathing treatment machine
<input type="checkbox"/> Ventilator <input type="checkbox"/> Feeding pump <input type="checkbox"/> Insulin <input type="checkbox"/> Other _____
<input type="checkbox"/> None <input type="checkbox"/> DK <input type="checkbox"/> Ref |
| Q42. Is anyone in your HH medically fragile, or been diagnosed with a chronic medical condition? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref | Q45a. <i>If yes to any, since the drought, has anyone in your HH experienced any increase in difficulty using or maintaining their equipment or supplies?</i> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref |
| Q43. Has the health of you or someone in your HH worsened because of the drought for the following conditions
Asthma <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref
COPD <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref
Emphysema <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref
Hypertension <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref
Heart disease <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref
Diabetes <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref
Mental health condition <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref
Other _____ <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref | Q46. Have you or a HH member sought additional medical attention outside of normal care because of the drought?
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref |
| | Q47. Does everyone in your HH currently have health insurance?
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref |

Other

- | | |
|---|---|
| Q48. Due to the drought, has anyone in your HH
Lost employment/reduced work hrs <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref
Had to change jobs <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref
Traveled further to find work <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref
Had decreased income <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref
Considered moving <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref
Cut size/skip meals because of cost <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref
Experienced more stress due to potential future impacts to their job, crops, land, or other <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref | Q49. Did you or members of your HH hear about this survey prior to us talking to you today? <input type="checkbox"/> Yes <i>(go to Q49a)</i> <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q49a. If yes, How did you or your HH members hear about it?
<input type="checkbox"/> Social media <input type="checkbox"/> Press release <input type="checkbox"/> E-mail
<input type="checkbox"/> Website <input type="checkbox"/> Family/friends/neighbor
<input type="checkbox"/> Other, _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref |
| | Q50. What is your households greatest need at this time? |

Thank you

ZIKA Virus

Full explanation of the sample CASPER Questionnaires is in [Appendix O](#). These forms are meant to be filled out manually.

Downloaded form at https://www.cdc.gov/nceh/hsb/disaster/docs/Appendix-C_Zika-P.pdf.

Community Assessment for Public Health Emergency Response (CASPER) – Zika Virus Example

DK=Don't Know Ref=Refused NA=Not Applicable HH=Household

Date: ___/___/___ Cluster Number: ___ Interview Number: ___ Team name: ___

Demographics	
Q1. Type of structure: <input type="checkbox"/> Single family <input type="checkbox"/> Multiple unit <input type="checkbox"/> Other _____	Q4. Including yourself, how many people living in your HH are Less than 2 years old? ___#___ 2-17 years? ___#___ 18-64 years? ___#___ 65+ years? ___#___ <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q2. Including yourself, how many people live in your HH? ___#___	Q5. What is the main language spoken in your household? <input type="checkbox"/> English <input type="checkbox"/> Spanish <input type="checkbox"/> Creole <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q3. Including yourself, are there any females living in your household between the ages of 15-44? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	
Communications	
Q6. Does anyone in your HH have any of the following that could be barriers to effective communication during an emergency? (<i>Check all</i>) <input type="checkbox"/> Impaired hearing <input type="checkbox"/> Impaired vision <input type="checkbox"/> Developmental/cognitive disability <input type="checkbox"/> Difficulty understanding English <input type="checkbox"/> Difficulty understanding written material <input type="checkbox"/> None of the above <input type="checkbox"/> DK <input type="checkbox"/> Ref	
Q7. Where has your HH heard information about Zika? (<i>check all that apply</i>) <input type="checkbox"/> Newspaper <input type="checkbox"/> TV <input type="checkbox"/> Radio <input type="checkbox"/> Friends/Family/Word of Mouth <input type="checkbox"/> Church/Place of worship <input type="checkbox"/> Internet/Social media <input type="checkbox"/> School <input type="checkbox"/> Community event <input type="checkbox"/> CDC <input type="checkbox"/> Department of Health <input type="checkbox"/> Other govt agency <input type="checkbox"/> Healthcare provider <input type="checkbox"/> Other, _____ <input type="checkbox"/> None <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q9. What messages has your HH heard about preventing Zika? <i>(DO NOT READ RESPONSES – Check all that apply)</i> <input type="checkbox"/> Wear mosquito repellent (DEET, picaridin, etc.) <input type="checkbox"/> Wear long sleeve pants and shirts <input type="checkbox"/> Avoid going outdoors during dusk and dawn <input type="checkbox"/> Drain standing water <input type="checkbox"/> Use condoms or abstain from sex <input type="checkbox"/> Delay pregnancy <input type="checkbox"/> Other _____ <input type="checkbox"/> Have not heard any messages <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q8. Of those, which does your HH trust the <i>MOST</i> for reliable information about Zika? (<i>check ONE</i>) <input type="checkbox"/> Newspaper <input type="checkbox"/> TV <input type="checkbox"/> Radio <input type="checkbox"/> Friends/Family/Word of Mouth <input type="checkbox"/> Church/Place of worship <input type="checkbox"/> Internet/Social media <input type="checkbox"/> School <input type="checkbox"/> Community event <input type="checkbox"/> CDC <input type="checkbox"/> Department of Health <input type="checkbox"/> Other govt agency <input type="checkbox"/> Healthcare provider <input type="checkbox"/> Other, _____ <input type="checkbox"/> None <input type="checkbox"/> DK <input type="checkbox"/> Ref	
Now, I am going to read you a set of statements about Zika. Please tell me whether you or your HH members AGREE (A) or DISAGREE (D) with the following (DK = Don't Know, R = Refused)	
Q10. Zika is an important issue in this community A D DK R	Q10c. Zika can spread from mother to unborn child A D DK R
Q10a. Zika can be prevented A D DK R	Q10d. Zika is spread by mosquitoes A D DK R
Q10b. Zika virus can be sexually transmitted A D DK R	Q10e. It's possible to control mosquitoes around the home A D DK R
Zika Knowledge and Opinions	
Q11. Where do you and members of your HH typically get bitten the most by mosquitoes? (<i>Check ONE</i>) <input type="checkbox"/> Home <input type="checkbox"/> Work <input type="checkbox"/> School <input type="checkbox"/> Recreational areas (e.g. park, beach) <input type="checkbox"/> House of friend/family/neighbor <input type="checkbox"/> Businesses/Restaurants <input type="checkbox"/> Other _____ <input type="checkbox"/> Don't see any <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q16. Who is most at risk of harm from Zika? (<i>DO NOT READ RESPONSES - Check ONE</i>) <input type="checkbox"/> Pregnant women <input type="checkbox"/> Women of childbearing age (15-44) <input type="checkbox"/> Adolescents (15-24) <input type="checkbox"/> People with disabilities <input type="checkbox"/> Unborn child <input type="checkbox"/> Children <input type="checkbox"/> Elderly/Older adults <input type="checkbox"/> Everybody – all have same risk <input type="checkbox"/> Nobody – there are no risks <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q12. When do you and members of your HH typically get bitten the <i>most</i> by mosquitoes? (<i>ONE</i>) <input type="checkbox"/> Day <input type="checkbox"/> Dawn/dusk <input type="checkbox"/> Night <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q17. What do you and members of your HH think could happen to a baby of a pregnant women w/Zika? (<i>DO NOT READ RESPONSES - Check all that apply</i>) <input type="checkbox"/> Not growing/developing in womb <input type="checkbox"/> Miscarriage <input type="checkbox"/> Stillborn <input type="checkbox"/> Premature birth <input type="checkbox"/> Microcephaly <input type="checkbox"/> Disability <input type="checkbox"/> Other _____ <input type="checkbox"/> No risks <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q13. Currently, how concerned are you and members of your HH about getting the Zika virus? <input type="checkbox"/> Very concerned <input type="checkbox"/> Somewhat concerned <input type="checkbox"/> Not concerned at all <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q18. In response to Zika, has anyone in your HH delayed pregnancy? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q14. Currently, how concerned are you and members of your HH about getting other diseases mosquitoes may carry? <input type="checkbox"/> Very concerned <input type="checkbox"/> Somewhat concerned <input type="checkbox"/> Not concerned at all <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q19. Is anyone in your household pregnant or planning to become pregnant within the next year? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q14a. If <i>VERY</i> or <i>SOMEWHAT</i> , which other disease(s)? (<i>DO NOT READ – Check all that apply</i>) <input type="checkbox"/> Dengue <input type="checkbox"/> Chikungunya <input type="checkbox"/> Yellow fever <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref	
Q15. What are the common symptoms of Zika? (<i>Check all that apply</i>) <input type="checkbox"/> Fever <input type="checkbox"/> Headache <input type="checkbox"/> Joint pain <input type="checkbox"/> Muscle pain <input type="checkbox"/> Rash <input type="checkbox"/> Red eyes <input type="checkbox"/> No symptoms <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref	
Prevention Behaviors	
In response to Zika, how often have you or members of your household done any of the following? ALWAYS (A), SOMETIMES (S), RARELY (R), or NEVER (N) (NA = Not Applicable, DK = Don't Know, Ref = Refused)	
Q20. Taken any actions to protect yourselves A S R N DK Ref	Q20e. Avoided areas of mosquito exposure A S R N DK Ref
Q20a. Worn mosquito repellent A S R N DK Ref	Q20f. Used condoms A S R N NA DK Ref
Q20b. Used bed nets A S R N DK Ref	Q20g. Burned mosquito coils/candles A S R N DK Ref
Q20c. Worn protective clothing A S R N DK Ref	Q20h. Use air conditioning A S R N NA DK Ref
Q20d. Avoided being outside at peak times (dusk/dawn) A S R N DK Ref	Q20i. Other, _____ A S R N DK Ref

Community Assessment for Public Health Emergency Response (CASPER) – Zika Virus Example

DK=Don't Know Ref=Refused NA=Not Applicable HH=Household

Q21. What, if any, are barriers to using mosquito repellent? (Check all) Too expensive Takes too much time Product not available
 Do not like how it feels/smells Concerned about health/safety Concerned about environment Prefer natural remedies
 Other, _____ No barriers DK Ref

Q22. Does your HH have any of the following? (Check all that apply)
 Air conditioning
 Undamaged screens on all windows
 Undamaged screens on all doors
 Water source that is uncovered/not screened
 Abandoned buildings nearby
 Objects (tires, pots, tarps, trash) that may collect rain water near the home (within 200 yards)
 None of the above DK Ref

Q23. What is your HH current source of water? (Check all that apply)
 WAPA Above ground cistern Underground cistern
 Rain barrel Bottled water Other _____ NA DK Ref

Q23a. If CISTERN, how does your HH treat the water?
 Bleach Mosquito dunk Filter Ultraviolet (UV) light
 Boil Other, _____ Do not treat cistern DK Ref

Q24. What is your HH current source of drinking water?
 Unfiltered tap Filtered tap water Bottled Cistern
 Other _____ DK Ref

Please tell me how often you or members of your household take any of the following actions to reduce or remove mosquitoes from your house or yard. NEVER (N), WEEKLY (W), MONTHLY (M), or QUARTERLY/FEW TIMES A YEAR (Q) (NA = Not Applicable, DK = Don't Know, Ref = Refused)

Q25. Clean clogged roof gutters	N	W	M	Q	NA	DK	R	Q25d. Use larvicides/mosquito dunks	N	W	M	Q	NA	DK	R
Q25a. Cut shrubs/grass	N	W	M	Q	NA	DK	R	Q25e. Clean yard/remove garbage	N	W	M	Q	NA	DK	R
Q25b. Empty standing water	N	W	M	Q	NA	DK	R	Q25f. Keep cover(s) on water source(s)	N	W	M	Q	NA	DK	R
Q25c. Spray/fumigate for mosquitos	N	W	M	Q	NA	DK	R	Q25g. Other action _____	N	W	M	Q	NA	DK	R

Q26. What barriers, if any, does your household face in controlling mosquitoes around your house or yard? (Check all that apply)
 Too expensive Too time consuming Don't own the home Don't have access to materials On neighboring property
 Physically too hard Too large of problem/impossible to control Unsure how Other _____
 No barriers DK Ref

Q27. What actions do your HH members believe the health department should take to prevent mosquito diseases? (Check all that apply)
 Inspection of property Spraying/fogging (**go to 27a**) Education Other _____ None DK Ref

Q27a. If SPRAYING, which type(s) would you support? (Check all that apply)
 By hand By Truck By plane Other, _____ DK Ref

Now, I am going to ask some questions about preparedness for Hurricanes and other emergency events

Q28. Does your household have any of the following emergency plans?

Emergency communication plan such as a list of numbers and designated out-of-town contact Yes No DK Ref

Designated meeting place immediately outside your home or close by in your neighborhood Yes No DK Ref NA

Designated meeting place outside of your neighborhood in case you cannot return home Yes No DK Ref NA

Copies of important documents in a safe location (e.g., water proof container) Yes No DK Ref

Multiple routes away from your home in case evacuation is necessary Yes No DK Ref

Q29. Has your household prepared an Emergency Supply Kit with supplies like water, food, flashlights, and extra batteries that is kept in a designated place in your home? Yes No DK Ref

Q30. Does your household have adequate drinking water (besides tap) for the next 3 days? (1 gallon/person/day) Yes No DK R

Q32. Does your household currently have a 7-day supply of medication for each person who takes prescribed meds?
 Yes No DK No prescriptions Ref

Q31. Does your household have adequate non-perishable food (e.g., protein bars, nuts) for the next 3 days? Yes No DK Ref

Other

Q33. Did you or members of your HH hear about this survey prior to us talking to you today? Yes (**go to 33a**) No DK Ref

Q33a. If yes, how did you or your HH member hear about it? (Check all that apply)
 Social media Website Press release E-mail Family/Friend/Neighbor Radio Other _____ DK Ref

Q34. What is your HH greatest need at this time?

Thank you

Appendix D: Preparedness Template

Full explanation of the sample CASPER Questionnaires is in [Appendix O](#). Meant to be filled out manually, the template is available for download at <https://www.cdc.gov/nceh/casper/docs/preparedness-template-P.pdf>.

Epi Info™ database available upon request (CASPER@cdc.gov)

Community Assessment for Public Health Emergency Response (CASPER) – Preparedness Template	
HH=Household DK=Don't Know Ref=Refused NA=Not Applicable	
Date: ___/___/___ Cluster Number: ___ Interview Number: ___ Team name: _____	
Demographic Information	
Q1. Type of structure <input type="checkbox"/> Single family <input type="checkbox"/> Multiple unit <input type="checkbox"/> Mobile home <input type="checkbox"/> Other _____	Q5. What race does the majority of your HH identify with? <i>(Check all that apply)</i> <input type="checkbox"/> American Indian/Alaska Native <input type="checkbox"/> Asian <input type="checkbox"/> Black or African American <input type="checkbox"/> White <input type="checkbox"/> Native Hawaiian or Other Pacific Islander <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q2. Including yourself, <u>how many</u> people live in your HH? ___#___	Q6. What is the main language spoken in your household? <i>(Check ONE)</i> <input type="checkbox"/> English <input type="checkbox"/> Spanish <input type="checkbox"/> Other _____ <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q3. Including yourself, <u>how many</u> people living in your HH are Less than 2 years old? ___#___ 2-17 years? ___#___ 18-64 years? ___#___ 65+ years? ___#___ <input type="checkbox"/> DK <input type="checkbox"/> Ref	
Q4. Do you or any members of your household identify as Hispanic or Latino? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q7. What is the marital status of your head of household? <input type="checkbox"/> Married/unmarried couple <input type="checkbox"/> Separated/Divorced <input type="checkbox"/> Widowed <input type="checkbox"/> Never married <input type="checkbox"/> DK <input type="checkbox"/> Ref
Communications	
Q8. What is your household's <u>main</u> source of information about a disaster or emergency event? <i>(Check ONE)</i> <input type="checkbox"/> Newspaper <input type="checkbox"/> TV <input type="checkbox"/> Radio <input type="checkbox"/> Internet/Online News <input type="checkbox"/> Friends/Family/Word of Mouth <input type="checkbox"/> Social media <input type="checkbox"/> Text message/Cell phone alert <input type="checkbox"/> Church/Place of worship <input type="checkbox"/> Other, _____ <input type="checkbox"/> None <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q9. Is your household aware of the following materials [<i>show materials, mention website/campaign, etc.</i>] to better prepare you and your family for a natural disaster or other significant event? <input type="checkbox"/> Yes <i>(go to 9a)</i> <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Q9a. If YES , was the information received helpful? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q10. Do you or does anyone in your household have any of the following? <i>(Check all that apply)</i> <input type="checkbox"/> Impaired hearing <input type="checkbox"/> Impaired vision <input type="checkbox"/> Developmental/cognitive disability <input type="checkbox"/> Difficulty understanding English <input type="checkbox"/> Difficulty understanding written material <input type="checkbox"/> None of the above <input type="checkbox"/> DK <input type="checkbox"/> Ref	
Physical and Behavioral Health	
Q11. Have you or a member of your household ever been told by a healthcare professional that he/she has Asthma/COPD/Emphysema <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Diabetes <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Developmental disability <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Hypertension/heart disease <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Immunosuppressed <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Physical disability <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Psychosocial/mental illness <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q13. How often in the past 12 months would you say your HH was worried or stressed about having enough money to buy nutritious meals? <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never <input type="checkbox"/> DK <input type="checkbox"/> Ref Q14. Do you or does any member of your household need Daily medication (<i>other than vitamins</i>) <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Dialysis <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Home health care <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Oxygen supply <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Wheelchair/cane/walker <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Other type of special care <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q12. How often in the past 12 months would you say your HH was worried or stressed about having enough money to pay your rent/mortgage? <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q15. In the past 5 years, have you or anybody in your HH taken training in first aid, CPR, or CERT? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref
Now, I am going to ask some questions about preparedness for [Hurricanes, tornadoes] and other emergency events	
Q16. Does your household have any of the following emergency plans? Emergency communication plan such as a list of numbers and designated out-of-town contact <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Designated meeting place immediately outside your home or close by in your neighborhood <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref <input type="checkbox"/> NA Designated meeting place outside of your neighborhood in case you cannot return home <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref <input type="checkbox"/> NA Copies of important documents in a safe location (e.g., water proof container) <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref Multiple routes away from your home in case evacuation is necessary <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	
Q17. Has your household prepared an <i>Emergency Supply Kit</i> with supplies like water, food, flashlights, and extra batteries that is kept in a designated place in your home? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	
Q18. Has your HH prepared a <i>first aid kit</i> with emergency supplies to take if your HH had to leave quickly? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q21. Does each person in your HH who takes prescribed medication currently have a 7-day supply? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> No prescriptions <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q19. Does your HH have enough drinking water (besides tap) for the next 3 days? (<i>1 gallon/person/day</i>) <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	Q22. If public authorities announced a <u>mandatory</u> evacuation from your community due to a large-scale disaster or emergency, would your household evacuate? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref
Q20. Does your HH have enough non-perishable food (such as nuts, canned goods) for the next 3 days? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> Ref	

Community Assessment for Public Health Emergency Response (CASPER) – Preparedness Template

HH=Household DK=Don't Know Ref=Refused NA=Not Applicable

Q23. If your household had to evacuate due to a disaster or emergency, where would your household go?

- Friends/family/2nd home outside your area
- Hotel or motel
- American Red Cross, church, or community shelter
- Vehicle/RV
- Other _____
- Would not evacuate

DK Ref

Q24. In an emergency, if your household was asked to evacuate, what would your household do with your pet(s)?

- take it/them with you
- Find a safe place for it/them
- leave behind with food and water
- would not evacuate because of pets
- would not evacuate
- Other _____

No pets DK Ref

Q25. What would be the **main** reason that may prevent your HH from evacuating if asked to do so? (**Check ONE**)

- Lack of transportation
- Lack of trust in public officials
- Concern about leaving property
- Nowhere to go
- Concern about personal safety
- Concern about leaving pets
- Concern about traffic jams
- Inconvenient/expensive
- Health problems
- Other _____
- No reason, would evacuate

DK Ref

Other

Q26. Did you or members of your HH hear about this survey prior to us talking to you today? Yes (**go to 26a**) No DK Ref

Q26a. If yes, how did you or your household member(s) hear about it? (**Check all that apply**)

- Social media
- Website
- Press release
- E-mail
- Family/Friend/Neighbor
- Radio
- Other _____

Thank you

Appendix E: Tips for Developing a CASPER Questionnaire

Available for download at https://www.cdc.gov/nceh/hsb/disaster/casper/docs/DevelopingQuestionnaires_20160224_508.pdf.

Developing CASPER Questionnaires

The Purpose

The Community Assessment for Public Health Emergency Response (CASPER) is a rapid needs assessment tool that enables public health officials and emergency managers to quickly assess the needs of their community. The focus of the CASPER is at the household-level. Development of the survey should include input from response partners. Please see the most recent version of the CASPER toolkit for complete instructions on developing a CASPER questionnaire.

The Basics

- **Determine your objectives!** Objectives will help determine if CASPER is the appropriate methodology, identify the sampling frame, and focus your questionnaire
- **Define the scope and nature of key questions:** Why ask the question? What do you already know?
- Identify the critical information needed: Is the question necessary? What ACTION will be taken?
- **Consider the design:** paper takes less time on the “front-end”. Electronic (e.g., smartphones) takes more time to develop and requires training, expertise, and electricity. You may use both!

The Structure

- **Introduction:** provide background information and gain consent. Verbal consent is all you need for CASPER! Follow your local IRB guidance
- **Body:** keep it short and begin with easy, non-intrusive questions
 - Be culturally sensitive
 - Use a logical order with appropriate transitions
 - Consider the best ways to facilitate recall
- **Closing:** thank for participation and offer how and when results will be available

The Questionnaire Items

Use existing items (if possible)

- **Saves time and allows for comparison with other data**
- **CASPER resources:**
 - CASPER toolkit
 - Previously used questionnaires (just ask!)
 - CSTE Disaster Epi Subcommittee
 - Disaster Epi Community of Practice (DECoP)
 - NIH Disaster Research Response Project (DR2)
- **CDC resources:** for example the Behavioral Risk Factor Surveillance System (BRFSS) or National Health and Nutrition Examination Survey (NHANES)
 - Remember! These will have to be modified to be *household* based

Use as few questions as possible

- **Keep it short and begin with easy, nonintrusive questions**
- **Outline your basic analysis (i.e., table shells).** This will help keep your questionnaire focused
- **Pre-test!** Even if it's just a coworker or friend
- **Always have a “Don't know” and “Refused” option for each question household based**

Use closed-ended questions whenever possible

- **Open-ended questions** do not have one definite answer and response categories are unknown, require elaboration, and are difficult to standardize and analyze in a timely manner
- **Closed-ended questions** have a finite set of answers from which to choose
- **Consider the wording of each question** for the appropriate reading/comprehension level and the ease of administration (and response)

Remember: CASPER questions should be asked at the HOUSEHOLD level!!!

National Center for Environmental Health
Division of Environmental Health Science and Practice



Appendix F: First Stage Sampling using U.S. Census Website (Step-by-Step)

In the first stage of CASPER sampling, 30 clusters (i.e., census blocks) are selected, with their probability proportional to the estimated number of households in each cluster.

Download Sampling Frame

Step 1: Obtain a list of all census blocks at U.S. Census website (<https://data.census.gov/cedsci/>) by typing “H3” into the search bar that says “I’m looking for…” and clicking on “Search”.

Step 2: Click on “Filter” on the top left above the Tables.

Step 3: Select “Geography” from the left-hand column under “Browse Filters”.

Step 4: Under “Geography,” click on “Block”.

Step 5: Select the state that your sampling frame falls within under “Within State” and then the appropriate county under “Within County”.

Step 6: Select the box next to “All Blocks in [your selected] County in [your selected state]” (e.g., “All Blocks in DeKalb County in Georgia”) and click the “Hide” down arrow in the top right.

Step 7: Click “View all tables” and select the H3 table for Occupancy Status by clicking its checkbox. It should be the first, and likely the only, table.

Step 8: Click “Download Selected (1)”. On the “Download/Print/Share” popup, confirm that the selections are from the appropriate Census table and year, and that CSV is the file type. Click the “Download” button.

Step 9: Then click the “Download Now” button on the next popup once your files are prepared. Note: It may take a few minutes to build the spreadsheet. This will provide a zipped folder which, upon extraction, will contain text (.txt) and comma-delimited (.csv) files.

Select 30 Clusters

Step 1: Open the .csv file with the name that contains “data_with_overlays” (e.g., “DECENNIALSSF12010.H3_data_with_overlays...”)

with any spreadsheet software such as Microsoft Excel.

Step 2: Save the file for future reference. If using Microsoft Excel, update the file to the latest file format (e.g., .xlsx). You will now have a file with five variables: GEO_ID, NAME, H003001 (Total), H003002 (Occupied), and H003003 (Vacant).

Step 3: Create two new variable columns: (1) Cumulative Households and (2) Random Number.

Step 4: Populate the “Cumulative Households” column. First, decide if your CASPER will be based on total (H003001) or occupied (H003002) households. Once determined, create a cumulative sum of the desired variable (total or occupied). In the example below, we chose occupied (H003002) and, therefore, our cumulative formula was =F3+D4.

Step 5: Note the total number of households in your sampling frame. This is the last cell of your “Cumulative Households” variable. This will be important for analysis.

Step 6: Populate the column “Random Number.” Use a random number generator (e.g., <https://www.random.org/s> random integer generator) to obtain 30 random numbers between 1 and the total number of households within your sampling frame determined in Step 5.

Step 7: Match each random number to the “Cumulative Households” row in which the random number would fall. Using the example table below, if a random number was 53,057, then census block 3002 within block group 3 in tract 27 would be selected as one of the 30 clusters because 53,057 is greater than 53,047 (row 1712) and less than 53,078 (row 1713 highlighted in yellow).

Step 8: Repeat the procedure until you have selected all 30 census blocks for your sample. Note, if two or more random numbers are within the range of the census block cumulative number, then that particular census block will be selected more than once (see line 1721).

For accessibility, find a full explanation of the Microsoft Excel sample form below in [Appendix O](#).

	A	B	C	D	E	F	G
1	GEO_ID	NAME	H003001	H003002	H003003		
2	id	Geographic Area Name	Total	Total Occupied	Total Vacant	Cumulative HH	Random #
1710	1000000U5530330027003000	Block 3000, Block Group 3, Census Tract 27, King County, Washington	23	21	2	53040	
1712	1000000U5530330027003001	Block 3001, Block Group 3, Census Tract 27, King County, Washington	8	7	1	53047	
1713	1000000U5530330027003002	Block 3002, Block Group 3, Census Tract 27, King County, Washington	33	31	2	53078	53,057
1714	1000000U5530330027003003	Block 3003, Block Group 3, Census Tract 27, King County, Washington	35	35	0	53113	
1715	1000000U5530330027003004	Block 3004, Block Group 3, Census Tract 27, King County, Washington	20	16	4	53129	
1716	1000000U5530330027003005	Block 3005, Block Group 3, Census Tract 27, King County, Washington	33	31	2	53160	
1717	1000000U5530330027003006	Block 3006, Block Group 3, Census Tract 27, King County, Washington	29	27	2	53187	
1718	1000000U5530330027003007	Block 3007, Block Group 3, Census Tract 27, King County, Washington	24	22	2	53209	
1719	1000000U5530330027003008	Block 3008, Block Group 3, Census Tract 27, King County, Washington	28	26	2	53235	
1720	1000000U5530330027003009	Block 3009, Block Group 3, Census Tract 27, King County, Washington	61	60	1	53295	
1721	1000000U5530330027003010	Block 3010, Block Group 3, Census Tract 27, King County, Washington	73	69	3	53364	53,299 53,301
1722	1000000U5530330027003011	Block 3011, Block Group 3, Census Tract 27, King County, Washington	15	13	2	53377	
1723	1000000U5530330027003012	Block 3012, Block Group 3, Census Tract 27, King County, Washington	45	37	8	53414	
1724	1000000U5530330027003013	Block 3013, Block Group 3, Census Tract 27, King County, Washington	47	43	4	53457	
1725	1000000U5530330027003014	Block 3014, Block Group 3, Census Tract 27, King County, Washington	41	36	5	53493	
1726	1000000U5530330027003015	Block 3015, Block Group 3, Census Tract 27, King County, Washington	13	13	0	53506	
1727	1000000U5530330027003016	Block 3016, Block Group 3, Census Tract 27, King County, Washington	14	13	1	53519	
1728	1000000U5530330027004003	Block 4003, Block Group 4, Census Tract 27, King County, Washington	42	37	5	53556	

Appendix G: Creating Maps with Census TigerWeb

Once 30 census blocks are selected, create the maps of the selected clusters including road names and key landmarks using U.S. Census TigerWeb at <https://tigerweb.geo.census.gov/tigerweb/>. For accessibility, find a full explanation of the screenshots shown below in [Appendix O](#).

Creating Maps

Step 1: Check “Transportation” to ensure all roads are labeled (left hand toolbar)

Step 2: Click the “Query” globe located at the top in the grey toolbar

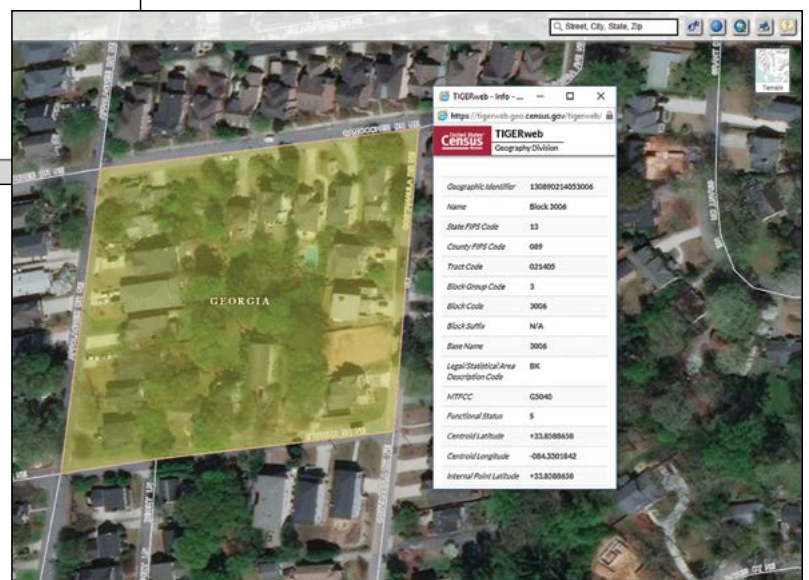
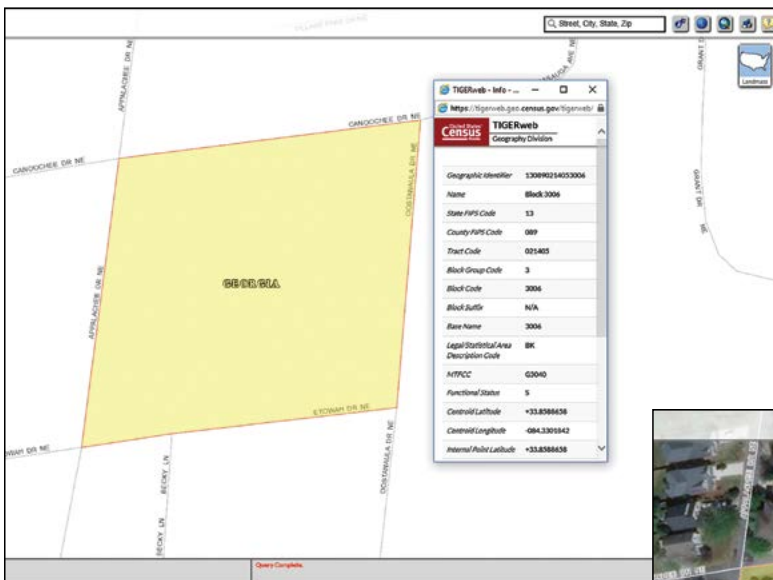
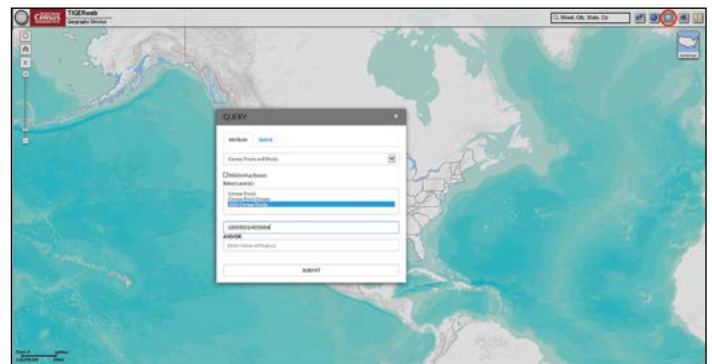
Step 3: Select “Census Tracts and Blocks” and then highlight the current census (e.g., “2010 Census Blocks”) under the Query tab

Step 4: Locate the GEO.id from your Excel file (Column A) of your first selected census block and copy the 15-digit number following the “US” (e.g., 130890214053006) into the “GEOID” box in the Query

Step 5: Click Submit Query. The selected block will now be displayed. *Note: You can change between a landmass map, satellite image, and terrain.*

Step 6: Click the “Print” icon at the top of the map. The print pop-up box will appear; title your map, and click “Print Map”

Step 7: Repeat the procedure until all 30 selected cluster (block) maps are saved and/or printed.



Appendix H: Sample CASPER Team Tracking Form

For accessibility, find a full explanation of the Microsoft Excel sample CASPER Team Tracking Form below in [Appendix O](#).

	A	B	C	D	E	F	G	H
1	Team	Team members	Contact numbers	Clusters	Departure	Tablet #	Return	Comments
2	ALLIGATOR							
3								
4	BARRACUDA							
5								
6	CRAB							
7								
8	DOLPHIN							
9								
10	EEL							
11								
12	FROG							
13								
14	GECKO							
15								
16	HYENA							
17								
18	IGUANA							
19								
20	JAGUAR							
21								
22	KANGAROO							
23								
24	LOBSTER							
25								
26	MONGOOSE							
27								
28	NARWHAL							
29								
30	OCTOPUS							
31								
32	PENGUIN							
33								
34	QUOKKA							
35								

Appendix I: Sample CASPER Tracking Form

For accessibility, find a full explanation of the Sample CASPER Tracking Form form below in [Appendix O](#).

Note: This is just an example, modifications are permitted.

Community Assessment for Public Health Emergency Response (CASPER): Tracking Form

Island: St Croix Cluster # (i.e., 1-30): 23 Houses in the Cluster 53 Team Name: dinosaur Date: 6/24/17

Instructions: Use one tracking form per cluster. Check where appropriate, but try to choose only one best option for each of the five categories. Go as far down the list as possible for each site you visit. Use neighbors to find information if no resident is available.

Sampled Households	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1) ACCESS																			
House is Accessible	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
House is Inaccessible	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) TYPE OF DWELLING																			
Single Family Home	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apartment/Condo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (e.g., duplex)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) ANSWER																			
Door was answered	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appears vacant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nobody home after...																			
1 st visit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 nd visit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 rd visit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) INTERVIEW																			
Language Barrier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Refused	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
"Come back later"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>[time - full info on back]</i>																			
Interview not finished	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interview Completed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Survey # (i.e., 1-7) from Questionnaire	<u>6</u>		<u>1</u>	<u>4</u>				<u>3</u>		<u>7</u>	<u>2</u>	<u>5</u>							

Community Assessment for Public Health Emergency Response (CASPER): Notes

Instructions: Use this page to keep notes on which houses may need return visits

Sampled Households

1. *2-story with green roof and rock garden — Spanish, come back after 5:30pm*
2. *3 big scary dogs w/no trespassing sign*
- 3.
4. *CALL TONIGHT 9:00pm - 123.555.4356*
5. *Red door, large gnome on the porch*
6. *McMansion on the corner*
7. *Dark brown with white awning*
- 8.
9. *Unique house w/columns in front & Christmas decorations still up*
- 10.
11. *12 flag in window (go hawks!) bamboo garden on side*
- 12.
- 13.
- 14.
- 15.
- 16.
- 17.
- 18.
- 19.

Appendix J: CASPER Interview Tips

Available for download at https://www.cdc.gov/nceh/casper/docs/casper_interview_tips-508.pdf.

CASPER Interview Tips

PREPARE for the interview

- **Practice with your partner!**
- **Dress appropriately:** wear comfortable, close-toed shoes; no extreme jewelry or perfume; no chewing of gum or eating/drinking, etc.

DURING the interview

- **Introduce yourself!**
- **Empathy and Respect**—good eye contact, confidence, convey empathy
- **Remind respondents that their responses are confidential and their participation is voluntary**
 - The interview can be stopped at any time and questions can be refused
- **Standardize! This increases the reliability of data and eliminates a source of bias and error**

ENDING the interview

- **Look over the entire questionnaire for completeness before you leave**
- **Thank the respondent**
- **Leave information and provide referral information where necessary**
- **Stop an interview anytime a respondent requests or you feel unsafe**
 - Ask if they want to continue if emotional stress is evident
- **Look over the questionnaire again when you have left**

Do's and Don'ts of Standardization

- **DO ask the questions in the same order with exact wording**
 - Changing wording = asking different questions
 - If respondent is having difficulty... PAUSE! Allow time to answer.
 - If respondent needs clarification... repeat the question first, then elaborate if needed (don't lead!)
- **DO read the entire question**
- **DO record answers verbatim**
- **DO be aware of the difficulties of standardization**
 - Situation is artificial
 - Using a script can be awkward
 - Tempting to change content
- **DO document any departures from standardization**
- **DON'T rephrase questions**
- **DON'T pre-fill questions**
 - Even if the respondent may have answered in another conversation, you should still ask the question and ensure that is their answer
- **DON'T finish sentences! Even if you think you know the answer**

Tips for a successful interview

- **Memorize your introduction**
 - This improves rapport
- **Remember to have empathy and respect**
- **Use calendar tools to help facilitate recall**
- **Encourage respondents and be confident**
- **Determine which team member is the better interviewer—this may change as the day progresses.**

National Center for Environmental Health
Division of Environmental Health Science and Practice



Appendix K: Sample CASPER Referral Form

Available for download at [https://www.cdc.gov/nceh/hsb/disaster/casper/docs/CLEARED Referral Form Sample.docx](https://www.cdc.gov/nceh/hsb/disaster/casper/docs/CLEARED_Referral_Form_Sample.docx).

Community Assessment for Public Health Emergency Response Confidential Referral Form

Date: _____ Time: _____ : _____

Cluster No.: _____

Interviewer's Initials: _____

Name: _____

Address: _____

Contact Information:

Home telephone: (_____) _____

Cell phone: (_____) _____

E-mail: _____

Summary of Need:

Referral Made: Yes No Referred to: _____

Appendix L: Tips for Developing a Questionnaire in Epi Info™

Background

Develop the CASPER questionnaire in Epi Info™ for data entry on a tablet or to enter data collected on paper forms. Ideally, the CASPER questionnaire will be no more than two printed pages (one page printed on both sides). This will help keep your interview time short (between 15-20 minutes). When developing the form in Epi Info™, it is helpful to keep the form as visually similar as possible. This will help reduce data entry errors. Regardless of the data collection format (paper or tablet), the same steps and tips for developing a questionnaire in Epi Info™ apply. A well-developed database will make data entry, cleaning, and analysis easier and less prone to errors.

Developing the Form

Step 1: Create a new project. Name your project (e.g., the CASPER location, event, date), select the desired save location, and name the form (this can be the same or different from project name)

Step 2: Create title and instructions. Right click on the form and select “New Field” to bring up field options. Select Label/Title to create the title to your questionnaire and any instructions (this is especially important for tablet use so all interview teams receive the same instructions). **Tip:** *Set the default and input (response) font style and size under Format in the toolbar.*

Step 3: Create your questionnaire variables. The variable type/form will depend upon the type of survey question. **Tip:** *Create variable names with question number and response option. For example, Q1_Structure, Q2_People, Q3_Less2, Q3_2to17, Q3_18to65, Q3_65plus, etc.* In general, we suggest the following variables:

- Title/label = Text only; not for any data entry. Can be instructions or the question portion of “check all that apply” options
- Date = Date. Option to restrict to a specific date range if desired
- Legal values = Check one. Use this for all questions in which only ONE option should be checked. To specify response options, click the “...” and type all options. Select “Do not sort” to keep the options in the order written; options will appear in a drop-down box
- Check box = Check all that apply. Use this variable for all questions in which more than one response may be chosen. Write the first response option in the Question or Prompt section and click OK. Repeat step until all options are listed
- Number = Numerical responses. Option to restrict the number of digits or the range.
- Text = Open-ended questions; use for open-ended questions such as specifying an “other” option

Note: Pre-developed Epi Info™ templates are available upon request by emailing CASPER@cdc.gov. These templates are designed to help standardize questionnaires and save time in questionnaire development. Templates may be modified by selecting specific variables and moving or deleting them.

Completing the Form

Once all your variables are entered into the form, you must check the Tab Order. The Tab Order determines the flow of the questionnaire (i.e., the order in which the questions are scrolled through or listed). This is especially important for those exporting to a tablet device. To Check the Tab Order, conduct the following steps:

- Right click on the form and highlight “Tabs” then “Show Tab Order”
 - » Numbers will appear on each question. RED boxes mean those questions will be skipped by tab (typically labels and titles); BLACK boxes are the order that your questionnaire will tab
- To change the order, right click on the form, highlight “Tabs” then “Start New Tab Order”
 - » Another option is to right click on the number you want changed and then click through the correct order of tabs

Once the form is completely final and all tab orders are complete, you must create the data table. Go to Tools in the finder bar, and scroll down to “Create Data Table.” Your Epi Info form is now complete.

To transfer to a tablet for mobile data entry, connect your tablet to your PC through a USB cord. As of publication of this toolkit, only Android devices are compatible with Epi Info™ mobile. Once connected, go to File and scroll to “Copy form to mobile device;” you will see an Android symbol to the left of the option. Disconnect your device and pilot test the questionnaire on your tablet. Ensure all options are in the correct order and all functions work properly.

For additional tips, visit the [Epi Info™ website](#)

Appendix M: Common CASPER Data Cleaning Steps

Background

Data entry, cleaning, and processing are necessary to ensure the highest quality data for analysis. A well-developed database will help with your data cleaning and processing efforts (see [Appendix L](#)). Once data are entered and merged into a single database, export the file into a spreadsheet for data cleaning and the creation of the weight variable (see [Section 4.2](#) for creating the weight variable). Always keep an original copy of the data in a separate spreadsheet or tab before beginning the data cleaning process. To clean your data, review all quality checks, ensure skip patterns were properly entered, and categorize any free text. Some common CASPER cleaning steps are described below.

Common CASPER Cleaning Steps

Note: Your questionnaire may not include all of these steps or may include additional items. Please review your questionnaire carefully to ensure all data cleaning is conducted

Cluster number

Ensure that all questionnaires have an associated cluster number; and that each cluster has the expected number of completed interviews. You can verify the correct number of interviews are accounted for in each cluster by checking the tracking form data. If there are any blanks, revisit your original version to add the cluster number. This is an essential step for calculating the weight variable.

Blanks/Missing variables

Review the spreadsheet to ensure there are no missing variables. All cells should have a response with the exception of skip patterns (see below)

- A simple way to check is to “filter” the variables. In Microsoft Excel, filter is under the Data tab, Filter & Sort section (it looks like a funnel). Then check each filter to ensure there are no “blanks” listed

Age variable

Check that the total number of people living in the household is equal to the sum of the reported number of individuals in each age category (e.g., less than 2, 2-17 years, 18-64 years, 65+). To do so, you can create a new variable and use a true/false equation

- For example, in Appendix D: Preparedness template, the equation would be $=Q2=SUM(Q3_Less2, Q3_2to17, Q3_18to64, Q3_65plus)$
- For those that are FALSE, revisit the original questionnaire to correct

Create a Yes/No variable for each age category. You will use this variable for your data analysis to report how many households have one or more persons in each category

“Check one” vs “Check All that apply”

Confirm that the “check one” variables are in one column and “check

all that apply” variables are in multiple columns. If the database is set up correctly, this should already be the case.

- For example, in Appendix D: Preparedness Template, Q1 would be a “check one” and should be all in one column while Q5 would be “check all” and therefore each race would be a separate column.

Skip patterns

Review your questionnaire for any questions that involve skip patterns (e.g., “If yes” or “If no”). For these questions, ensure that the sub-questions (a, b, c, etc.) only have responses for those for whom the question applies. This is where “blanks” are appropriate.

- For example, in Appendix D: Preparedness Template, Q9a is only asked to those who answered “Yes” to Q9. Therefore, there should only be responses (Yes, No, DK, Ref) for those who said “Yes” to Q9. For those who said “No”, “DK”, or “Ref” to Q9, Q9a would be blank.
- An easy way to clean this in Microsoft Excel is to use the filters and sort Q9
 - » First, sort Q9 to include “No”, “DK”, and “Ref” options. Go to Q9a and ensure that all cells are blank.
 - » Then, sort Q9 to include only those households responding “Yes”. Go to Q9a and ensure that there is a response in each cell

Categorization of open-ended questions

The majority of your CASPER questionnaire should be closed-ended questions. However, you may have some open-ended questions or “Other, specify” that will require categorization. When categorizing, create a new variable so you do not lose the original response(s).

- For example, in Appendix D: Preparedness Template, Q1 asks to specify the “other” option.

For analysis, you will need to standardize these open-ended, qualitative variables

- Ensure that all spelling and format is consistent. Any slight changes will result in Epi Info categorizing as two separate variables
 - » For example, “mobile home” and “Mobile home” would be considered as separate variables by Epi Info and must be edited to reflect only one spelling, including capitalization and spaces
- For some, you may need to classify or combine responses to create a fewer number of options and/or new variables
 - » For example, if you asked the standard CASPER open-ended question of “What is your households greatest need at this time?” to end your interview, you will likely have many answers.
- Some common categories often include “health-related”, “home improvement”, “supplies”, “money”, “nothing”, etc.

Individual questions

If your questionnaire included individual questions, there are additional cleaning steps that you must do before creating the individual weight variable

- Create an “Adult” variable for all adults (18 years of age or older) in the household. To do so, combine the age category variables above for “18 to 64” and “65 plus” so you have one variable that is Yes/No for all those in the household 18 years or older.

NOTE: Individual weight analysis is described on CDC’s CASPER website. You can also contact CASPER@cdc.gov for guidance or more information).

Likely, your CASPER individual questions are measuring the General Anxiety Disorder-2 (GAD-2), which measured anxiety, and Patient Health Questionnaire-2 (PHQ-2), which measures depression. If this is the case, you will need to calculate the GAD-2 and PHQ-2 scores for each individual. Similar steps are required for both as they use the same Likert scale

- Convert the Likert scale into the following numbers
 - » Not at all = 0
 - » Several days = 1
 - » More than half the days = 2
 - » Nearly every day = 3

- Calculate a total score for each respondent by adding the two scale questions together. The total score for each scale will be between 0 and 6
- Categorize the total score into “Less than 3”, “3 or more”, “don’t know”, or “refused”
 - » For both the GAD-2 and the PHQ-2, the optimal cutoff point is 3. Meaning that, if an individual scores 3 or more, generalized anxiety disorder (GAD-2) or major depressive disorder (PHQ-2) is likely

Another common individual question for CASPER is the Behavioral Risk Factor Surveillance System (BRFSS) mental health “Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?”

- Create a new variable to categorize the responses into “Less than 14 days”, “14 days or more”, “don’t know”, or “refused”

Appendix N: Sample CASPER Final Report

This is a sample report. While the information in this sample report is based on real events from a cleared CASPER report, it is not a complete account of the work conducted by the US Virgin Islands in response to the Zika virus outbreak

Community Assessment for Public Health Emergency Response (CASPER) addressing the ongoing response to Zika virus—U.S. Virgin Islands, 2017

Background

Zika virus infection (Zika) is an arthropod-borne flavivirus transmitted to humans through the bite of an infected *Aedes* species mosquito, primarily *Aedes aegypti*¹. In February 2016, Zika was declared a Public Health Emergency of International Concern by the World Health Organization (WHO) in response to widespread transmission in the Americas and associations with Guillain-Barré Syndrome in adults and birth defects, such as microcephaly². While many people with Zika are asymptomatic, among those who do develop symptoms, sickness is usually mild with symptoms that resemble those of other *Aedes*-borne arboviruses including chikungunya and dengue. The most common symptoms include rash, fever, conjunctivitis, arthralgia, myalgia, fatigue, and headache³. Those infected with Zika can transmit the virus to others via the bite of an *Aedes* mosquito, through sexual transmission by both males and females, and from a pregnant woman to her fetus, potentially causing serious birth defects such as microcephaly¹.

On 22 January 2016, the United States Virgin Islands (USVI) Department of Health received the first laboratory confirmation of Zika in a resident of St. Croix who had not traveled outside of the islands prior to illness onset⁴. On 10 February 2016, USVI Department of Health activated the Emergency Operations Center to respond to outbreaks of Zika occurring in the U.S. Virgin Islands. As of 11 July 2017, there have been 2,171 reported symptomatic cases of Zika in the territory, 1,021 of which have been confirmed positive⁵. While the number of new Zika cases in USVI has decreased since the outbreak peaked in the fall of 2016, new positive cases continue⁶.

In response to the ongoing Zika outbreak, the USVI Department of Health conducted a Community Assessment for Public Health Emergency Response (CASPER) to assess the community's knowledge and behaviors regarding Zika. CASPER is an epidemiologic technique designed to provide household-based information about a community's needs in a timely, inexpensive, and representative manner. The information generated can be used to initiate public health action, facilitate disaster planning, and assess new or changing needs during the disaster recovery period⁷. The specific objectives of the CASPER were the following:

- Assess residents' knowledge, attitudes, and practices pertaining to Zika prevention
- Identify information gaps and communication strategies for strengthening Zika education campaigns
- Assess household and environmental qualities associated with vector control
- Conduct community outreach to educate community members about Zika prevention

- Assess community preparedness for an emergency event (e.g., hurricane)

Methods

To accomplish these objectives, USVI Department of Health, with technical assistance from the Centers of Disease Control and Prevention (CDC), conducted a CASPER in the territory on 26-29 June 2017. We developed a two-page questionnaire (Appendix A). The questionnaire included questions on household demographics, communications, Zika knowledge and opinions, water sources and uses, and Zika prevention behaviors.

We applied the standard CASPER two-stage cluster sampling methodology to select a representative sample of households to be interviewed⁸. The sampling frame was defined as all occupied households (n=43,214) within US Virgin Islands according to the 2010 U.S. Census (Appendix B). Using the Geographic Information Systems (GIS) CASPER tool, 30 clusters (blocks) were selected with a probability proportional to the number of households within the clusters. In the second stage of sampling, interview teams used stratified systematic random sampling to select seven households from each of the selected clusters, with a goal of completing 210 total interviews (30 clusters of 7 households). Two-person interview teams were assigned one to two clusters on each island, provided with detailed maps and driving directions, and instructed to approach every *n*th household (where "*n*" is the total number of households in the cluster divided by seven) to select the seven households per cluster to interview. We generated multiple street level, topographical, and Google Earth paper and electronic maps of each of the selected clusters to aid interview teams in navigating clusters. Teams made three attempts at each selected household before replacement of a household.

On Monday, June 26, 2017, CDC provided a two-hour just-in-time training to the interview teams on the overall purpose of CASPER and review household selection methods, questionnaire content, interview techniques, safety, and logistics. There were a total of 12 teams on 26-27 June on St. Croix, 11 interview teams on 28 June in St. Thomas, and 12 interview teams on 29 June in St. Thomas. Teams conducted interviews between approximately 2:00 pm and 7:00 pm Eastern Time on all days. All potential respondents approached were given a copy of the consent sheet containing contact telephone numbers for USVI Department of Health. Teams also provided public health informational materials to all potential respondents and interested persons (e.g., community member who approached CASPER interview teams to ask questions) (Appendix C). Eligible respondents were 18 years of age or older and resided in the selected household. The interviewers were instructed to complete confidential referral forms whenever they encountered urgent physical or behavioral health needs.

We conducted weighted cluster analysis to report the projected number and percent of households with a particular response in the sampling frame. The weight was calculated to account for the probability that the responding household was selected. Data analysis was conducted in EpiInfo™ to calculate the unweighted frequencies, weighted frequencies, and weighted percentages with 95% confidence intervals. Comparable to previous reports, weighted analysis and confidence intervals were only calculated for cells ≥ 5 households, as shown in the tables. For all results, unless otherwise stated, the percentages in the text represent weighted percentages.

Results

Response Rates and Demographics

The interview teams conducted 201 interviews over four days for a completion rate of 93.8% (Table 1). Teams completed interviews in 48.4% of the houses approached. Of the households with an eligible participant answering the door, 62.6% completed an interview. Sixty-eight percent (68.3%) lived in a single family home (Table 2). Nine percent (9.1%) of households had one or more children under two years of age and 41.5% of households had one or more members aged 65 years or older. Approximately 40% of households had one or more women of childbearing age (15-44 years). The mean number of household members was 2.82, with a minimum of 1 and maximum of 8 people living in a household. The primary language spoken within the household was English (99.5%), followed by Spanish (5.4%) and Creole (4.2%).

Communications and Messaging

Respondents were asked about communication preferences and barriers (Table 3). Television (73.7%), radio (56.2%), and newspaper (45.7%), were the most common sources of Zika information used by households. Additionally, approximately a third of households use the Internet or social media (33.0%) and word of mouth through friends, family, or others (31.8%). Impaired hearing (8.6%) and impaired vision (6.2%) were the most frequently reported barriers to effective communication. Approximately 17% of households knew about the CASPER prior to teams arriving at their door.

When asked about messages their household has heard about preventing Zika infection, the most common response was related to draining of standing water (60.0%) (Table 4). Less than a quarter of households reported messaging related to use of mosquito repellent (24.6%) or wearing long sleeves or pants (14.9%).

Household Zika Virus Knowledge, Concerns, and Opinions

Almost half (48.9%) of households believed that fever is a common symptom of Zika, followed by joint pain (37.3%), and rash (32.4%) (Table 5). Yet, approximately a third of households (30.5%) reported that they did not know what the common symptoms of Zika were. When asked to name who was most at risk of harm from Zika, approximately 34% of households reported pregnant women. Children or babies were mentioned in 24.4% of households and 10.1% did not specify a definite group but said that everybody is at the same risk. Microcephaly was identified as something that could happen to a baby of a pregnant woman who had a Zika infection in 38.0% of households, with an additional 3.3% of household

identifying that the baby would have an abnormal head (e.g., large head). Other responses that households mentioned included a deformation such as an abnormal head (11.4%), birth defects (10.6%), disabilities (10.4%), and that the child would get sick or get Zika (10.0%). Approximately 13.2% of households reported that they did not know what would happen to the baby of a pregnant woman infected with Zika.

The majority of households reported that they were either very concerned (41.0%) or somewhat concerned (31.3%) about contracting Zika (Table 6). Similarly, approximately 80% of households said they were either very concerned (49.1%) or somewhat concerned (29.6%) about contracting other mosquito-borne diseases. When asked to specify which diseases, 42.7% reported dengue, 29.6% said chikungunya, 8.8% stated malaria, and 8.2% listed other diseases such as yellow fever, West Nile virus, HIV/AIDS, and Ebola.

We asked households if they agreed or disagreed with a list of statements about Zika transmission and prevention (Table 7). The majority of households (95.9%) agreed that Zika is spread by mosquitoes and that Zika can spread from mother to unborn child (90.1%). Households agreed that it is possible to control mosquitoes around the home (86.9%), Zika is an important issue in the community (84.5%), and Zika can be prevented (78.6%). Fewer than half of households (44.8%) agreed that Zika can be sexually transmitted.

Household Zika Virus Prevention Behaviors

In response to Zika, the majority of households reported that they always (46.7%) or sometimes (33.3%) take actions to protect themselves (Table 8). Forty-five percent (45.4%) of households said they always avoided areas of mosquito exposure. While 30.0% reported that they always avoided being outside at peak times such as dawn or dusk, 33.8% of households said that they never avoided those peak times. Similarly, 27.2% of households said they always wore mosquito repellent and 23.0% said they never wore mosquito repellent, with approximately 40% reporting they use it sometimes. When asked about the barriers to the use of mosquito repellent, almost half (49.1%) said there were no barriers. Few households always used air conditioning (18.6%), condoms (16.1%), mosquito coils (15.5%), protective clothing (15.0%), or bed nets (8.3%). Households' top three barriers to mosquito repellent use were not liking how it feels or smells (23.5%), concern about health and/or safety (19.4%), and preference for natural remedies (10.7%) (Table 9). Nine percent (9.2%) of households mentioned that they always do some type of home modification to help prevent Zika such as using fans, closing windows early, or keeping their doors closed (Table 10).

Household Mosquito Interactions, Prevention Characteristics, and Behaviors in Home or Yard

Half of households (50.6%) reported that they most often get bitten by mosquitoes at home. Recreational areas was the second most reported location (24.6%) (Table 11). When asked about the time of day they were bitten, more than half (52.7%) cited night and 39.8% said the daytime, which included dawn and dusk.

Approximately 64% of households reported undamaged screens

on all of their windows, 41.0% have air conditioning, and 39.9% have undamaged screens on all their doors (Table 12). About a quarter of households have features that potentially are mosquito breeding grounds such as objects (e.g., tires, pots, tarps, trash) that may collect rain water within 200 yards of the home (25.9%), abandoned buildings nearby (25.0%), and uncovered water sources (15.7%).

Households reported engaging in mosquito prevention behaviors with 84.2% cleaning their yard and/or removing garbage and 80.2% cutting shrubs/grass (Table 13). More than half of households reported they sprayed or fumigated for mosquitoes (61.6%), with over a third of households (38.8%) relaying they did so on a weekly basis (Table 14). Forty-one percent (41.0%) of households reported they clean clogged roof gutters a few times a year with approximately 5% cleaning them weekly. Over half of households (54.2%) said they keep cover(s) on their water source(s). Approximately 43% of households empty standing water on a weekly basis. Only 11.4% of households reported they use larvicides or mosquito dunks at least quarterly.

When asked about the barriers to controlling the mosquitoes around their house or yard, about two-thirds (67.2%) reported that there were no barriers (Table 9). The barriers most mentioned were that it was too large of a problem or impossible to control (5.9%), the mosquitoes were on a neighboring property (5.3%), or they did not own the home (5.0%).

Household Water Sources and Treatment

The majority of households use bottled water (88.2%) as a current source of water followed by underground cisterns (64.4%), and the U.S. Virgin Islands Water and Power Authority (WAPA) (46.4%) (Table 16; respondents could report more than one source of water). For those households who used either an underground or above ground cistern, 64.4% reported treating the water with bleach, 18.0% used a filter, and 6.4% boiled their water. Approximately 9% of households said they did not treat their cistern water, however less than 8% of households used their cistern water for drinking.

Household Emergency Preparedness

We asked households questions regarding preparedness for hurricanes or other emergency events. The majority of households (89.9%) reported having adequate drinking water (besides tap) for the next three days (1 gallon, per person, per day) as well as adequate non-perishable food such as protein bars and nuts (84.4%) (Table 17). More than half of households had prepared emergency supply kits with items like water, food, flashlights, and batteries (67.0%) and a 7-day supply of their prescribed medication (57.6%). With regard to evacuations, 63.2% of households had multiple routes away from their home in case evacuation was necessary, 37.5% had a designated meeting place outside of their neighborhood, and 32.1% had a designated meeting place immediately outside of their home or close by in neighborhood.

Greatest Need for Households

When asked about the current greatest household need, 18.4% reported needing financial assistance, 12.1% reported needing

home maintenance or improvement, and 10.3% reported needing some form of vector control (Table 18). Thirty-seven percent (37.4%) of households reported not needing anything.

Referral Needs

Interview teams submitted five referrals for additional needs or services directly to the local USVI CASPER lead. Four of the five referrals were for services related to vector control and were referred immediately to the USVI Vector Control lead. The fifth referral was the need for general human services (i.e., household identified many issues for an elderly, wheelchair-bound individual, recently living alone with signs of depression). USVI Department of Health contacted all referred households within the week to acknowledge the receipt of referral and provided them with an update on status.

Discussion

Five main topic areas formed the basis of this CASPER: 1) communications and messaging, 2) Zika knowledge, concerns, and opinions, 3) Zika prevention behaviors, 4) household water sources, and 5) household emergency preparedness. We compared demographic data from this CASPER to the most recent U.S. Census estimates for the U.S. Virgin Islands⁹. The average number of persons per household were similar, with recent census data showing an average of 3.12 persons per household in USVI and the CASPER reporting an average household size of 2.82 persons per household. According to the U.S. Census estimates from 2010, persons 65 years and over make up 33.3% of the population in USVI. The results from this survey show an overrepresentation of this age group as 41.5% of households reported at least one resident at least 65 years of age. The residents of the interviewed households may include an older, possibly retired resident more likely to be home during daylight hours when the CASPER was conducted.

We found that households received information regarding Zika from television, radio, and newspaper the most. Internet, social media, and word of mouth were also popular venues for receiving information. When asked about which source they trusted the most, households reported television. This was followed by the Department of Health, healthcare provider, Internet, social media, and radio, which were all similar in terms of households trust. However, only 17% of households heard about the CASPER prior to the interview even though a press release was published and messaging went out via the radio. Furthermore, while there have been multiple media campaigns with messages about preventing Zika, only draining of standing water was reported by over half of households and the majority of messages were reported by less than 10% of households.

These communications findings are important because USVI can use this information in targeted delivery of Zika transmission and prevention information and for emergency planning. As a trusted source of information, the Department of Health can relay their messages through the popular, and trusted, venues. They can also work closely with healthcare providers to ensure messages are consistent. Additionally, social media creates an opportunity to reach out to many people and allows the community to receive

information from whom they consider their trusted sources: the Department of Health, healthcare providers, friends and family. Although television remains the most common, the percentages of those using social media may be underestimated, as the population included in the interview (e.g., those at home during the day), may not reflect the preferences of younger populations or those less likely to answer the door (e.g., those with mobility issues or communications issues). Additionally, during an emergency response, television may not be available due to power outages. Therefore, it is important to use the other popular and trusted sources in those situations (e.g., radio, newspaper, Internet). These findings highlight the need for several communication channels for messaging during both non-emergency and emergency settings.

The majority of households reported a concern for contracting Zika or other mosquito-borne diseases. However, understanding of Zika transmission and prevention varied among the households. Households were unsure of the common symptoms of Zika with a third reporting they did not know. Only fever was reported by almost half of households. Additionally, there also is some variation in who households believe to be most at risk of Zika with responses ranging from pregnant women to children or babies to everybody. However, while microcephaly was correctly identified as the outcome of a baby of a pregnant woman with Zika, other households reported related outcomes such as deformation, birth defects, disability, abnormal head, or other similar results. Therefore, while households may not know the exact birth defect, they seem to understand the concept.

Knowledge of the sexual transmission of Zika virus is another area that could potentially be clarified and improved. More than half of households either disagreed (16.4%) or did not know (38.9%) that Zika could be sexually transmitted, very few (4.3%) of households heard messaging about the use of condoms or abstaining from sexual activity, and less than a quarter of households reported using condoms at all (either rarely, sometimes, or always). As Zika may be sexually transmitted for up to six months, it is important for the community to understand all the routes of Zika transmission, even if they are not actively trying to become pregnant, as nearly half of all pregnancies in the United States are unintended¹⁰.

However, knowledge about other transmission routes (mosquitoes, mother-to-child) seem to be understood by the community. And households appear to have an understanding of common actions to prevent Zika around the home such as keeping the yard and house gutters clean, removing garbage, cutting shrubs and grass, emptying standing water, and the like. Personal actions such as wearing mosquito repellent, wearing protective clothing, using bed nets, avoiding peak mosquito times, etc. may be understood but are not as commonly taken by households. This could be due to household members not liking the way these protective actions feel (e.g., mosquito repellent can be sticky, clothing can be hot) or the actions not being feasible (e.g., schedule requires them to be outside during peak times). Additionally, less than a quarter of households have heard messages regarding these actions.

When it comes to barriers to controlling mosquitoes, most households reported they did not have any. Those barriers that were mentioned were related to activities that were beyond the control of the household such as the perception of it being too large of a problem, the issue being on a neighboring property, or the household not owning their home.

Households currently use bottled water, cisterns, and WAPA as their sources of water, with the vast majority citing bottled water as one of the sources of their drinking water. Cisterns are potential breeding grounds for mosquitoes if uncovered and approximately 13% of households reported that they never kept cover(s) on their water source(s).

The majority of households are prepared for a disaster or emergency event with over 80% of households reporting having adequate food and drinking water for three days as well as copies of their important documents in a safe location such as waterproof containers. However, less tangible items, such as designated meeting locations, are an area that could potentially be improved upon as only about one-third of households reporting these preparedness plans.

Considerations

Based on the analysis of the data collected during the CASPER, the following suggestions were made to USVI Department of Health:

16. Develop awareness campaigns, host community workshops, or develop online material on topics such as the Zika prevention, especially with regards to personal actions, as well as the sexual transmission of Zika. Consider using various forms of communication to distribute these messages.
17. Promote the use of mosquito repellent while taking into account the reported barriers. While the majority of households reported no barriers, few households reported always using mosquito repellent. Additionally, the barriers that were reported (e.g., concerned about health, prefer natural remedies) can potentially be addressed via promotion of more natural mosquito repellents.
18. Promote household preparedness planning for disasters or emergency events. While the majority of households are prepared in terms of kits and supplies (e.g., food, water), improvement could be made on planning items such as designated meetings spots, evacuation routes, and communication plans. Align these activities with the Federal Emergency Management Agencies (FEMAs) Ready.gov activities¹¹.
19. Consider a follow-up CASPER if the current Zika outbreak continues.

Limitations

The data generated by the CASPER represent a snapshot in time, which should be considered when interpreting the results of an ongoing outbreak. The age distribution of the sample population may be skewed, with a greater proportion of individuals aged 65 years and older represented in the CASPER than reported by the U.S. Census. Therefore, survey responses may not be representative of USVI as a whole.

Conclusions

This CASPER was a successful collaboration between the USVI Department of Health and CDC, which helped characterize the ongoing Zika outbreak in USVI as well as actions households have taken to prevent transmission. The results may be useful in the allocation of resources in response to the Zika outbreak, evaluation of previous Zika community education efforts, and

information pertaining to future outbreak response, community outreach, education efforts, and ongoing mosquito control practices. These results could be used to improve the efficiency of future communication with communities about Zika and other mosquito-borne diseases as well as strengthen the emergency preparedness capacity of USVI.

Table 1. Questionnaire response rates—2017 USVI Zika CASPER

For accessibility, find explanation of the formulas Rate and Description columns below in [Appendix O, page 58](#).

Questionnaire response	Percent	Rate	Description
Completion¹	93.8	$\frac{201}{210}$	(Total completed) 210
Cooperation²	62.6	$\frac{201}{321}$	(Total completed) (Total contact made)
Contact³	48.4	$\frac{201}{415}$	(Total completed) (Total selected)

¹ Percent of surveys completed compared to the goal of 210

² Percent of surveys completed compared to total number of contacted households that were eligible and willing to participate

³ Percent of surveys completed compared to all randomly selected households

Table 2. Household (HH) demographics—US Virgin Islands Zika CASPER (n=201)

Type of structure	Frequency	Estimate	% of HH	95% CI
Single family home	137	29,495	68.3	57.3–79.2
Multiple unit	50	10,804	25.0	14.4–35.6
Other	14	29,15	6.8	1.4–12.1
Number of HH with members in each age category	Frequency	Estimate	% of HH	95% CI
Less than 2 years	19	3,910	9.1	4.4–13.8
2-17 years	64	13,438	31.2	22.7–39.8
18-64 years	162	34,743	80.8	73.6–88.0
65 years or older	82	17,780	41.5	33.1–50.0
Females in HH ages 15–44	Frequency	Estimate	% of HH	95% CI
Yes	82	40.8	17,416	40.3
No	119	59.2	25,798	59.7
Primary language spoken at home	Frequency	Estimate	% of HH	95% CI
English	180	38,659	89.5	85.3–93.7
Spanish	11	2,332	5.4	2.4–8.4
Creole	8	1,811	4.2	1.2–7.2
Other	2	—	—	—

Note: Executive summary, references, acknowledgments, remaining tables/graphs, and appendices removed for space.

Appendix O: Explanation of Figures for Accessibility

Figure 2. Example of using systematic random sample to select seven households for interview (page 19)

Overview—Shows an example of how to systemically select households for interview within a cluster.

Description—An aerial view of households in a neighborhood is shown. There is a yellow circle around every 7th household to indicate that is the house that should be selected for interview.

Formula in Section 4.2 Weighted analysis (page 22)

Overview—The formula for household weight is provided

Description—Weight equals begin fraction total number of households in sampling frame over open parentheses number of households interviewed within cluster close parentheses asterisk open parentheses number of clusters selected close parentheses.

Presentation—The formula is provided in a light green box with the numerator as “Total number of households in the sampling frame” and the denominator as “number of households interviewed within the cluster times the number of clusters selected”

Figure 2. Sample spreadsheet of number of completed interviews per cluster and assigned weight for each household interview (page 23)

Overview—Screenshot of sample data showing weight formula

Description—Excel sheet with Column A: UniqueKey, Column B: Cluster, Column C: Interview, Column D: Completed (highlighted in green), Column E: aWEIGHT (highlighted in blue), Column F: Team, Column G: Structure, Column H: Q1_Other.

Presentation—Excel sheet with columns and rows showing sample dataset

Figure 5. Epi Info™ 7 “classic mode” data (page 23)

Overview—Screenshot of EpiInfo 7 classic mode complex sample frequencies

Description—EpiInfo 7 Complex Sample Frequencies classic mode showing Frequency of Structure, Q6_Damage, Q4_HomeSafe; Weight variable of aWEIGHT; and Primary Sampling Unit of Cluster

Presentation—Screenshot of EpiInfo 7 classic mode complex sample frequencies

Figure 6. Epi Info™ 7 output tables of selected variables (page 24)

Overview—Screenshot of EpiInfo 7 classic mode complex sample frequencies output

Description—EpiInfo 7 Complex Sample Frequencies classic mode output showing the Structure (Multiple unit, Other, Single family) variable. Includes unweighted frequency, weighted frequency (in parenthesis), Row %, Column %, SE %, LCL %, and UCL% for each category.

Presentation—Screenshot of EpiInfo 7 classic mode complex sample frequencies output.

Figure 7. Sample tracking spreadsheet showing attempted and completed interviews per cluster (page 25)

Overview—Screenshot of a sample tracking form spreadsheet

Description—Excel sheet with Column A: Tracking Categories (Access, Dwelling, Answer, Interview), Column B: tracking subcategories, Column C–K representing clusters 1–9. A purple highlight at the bottom highlights the total interviews complete for clusters 1–9 (Columns C–K).

Presentation—Excel sheet with columns and rows showing sample dataset

Figure 8. Calculation of CASPER response rates (formulas)(page 25)

Overview—This figure shows the calculation for the Contact rate, Cooperation rate, and Completion rate

Description—The formula provided for Contact Rate calculation shows a numerator of “Number of Completed Interviews” and the denominator as “Number of HHs where contact was ATTEMPTED.” The formula provided for Cooperation Rate calculation shows a numerator of “Number of Completed Interviews” and the denominator as “All HHs where contact was MADE.” The formula provided for Completion Rate calculation shows a numerator of “Number of Completed Interviews” and the denominator as “Number of interviews intended to complete (usually 210).”

Presentation—Figure with formulas for the three rates: contact rate in blue, cooperation rate in green, and completion rate in red

Appendix C (page 34)

Overview—This appendix shows three example CASPER questionnaires: Hurricane, Drought, and Zika Virus. Each example questionnaire is 2 pages (designed to be printed on one page, back and front) and, as displayed, intended to print for manual completion

Description—The first example questionnaire, Hurricane, includes a CASPER demographics/background section (Q1-Q15c) which covers items like how many people living in the household, language, and experience during and after the hurricane (e.g., evacuation, utilities, food and water supplies, emergency kits). The next section covers communications (e.g., receiving messages, barriers to communication) followed by a section on Vectors (including information on increase in rats, mosquitoes, etc) and then health and behavioral health section that asks respondents about injuries and illnesses (including mental health) since the hurricane. The final section shows an Individual section for mental health that asks standard questions from PHQ-2, GAD-2, and BRFSS for comparison to other national surveys.

The second questionnaire, Drought, begins with standard CASPER demographics (Q1-Q4) then asks about communications (e.g., sources of communication, barriers). The questionnaire then discusses water sources (e.g., where water come from before the drought and during the drought, change in water quality). The next section is about drought mitigation and assistance behaviors asking the respondent if members of the household took various actions in response to water shortages and, if the drought continues, additional actions that could be taken. The following section asks about drought knowledge and beliefs followed by household

observations about the effect of drought on the community. The next section is on health and behavioral health impact of drought asking about potential health conditions (Asthma, COPD, hypertension, etc.) and behavioral health indicators. Finally, the survey ends with an “Other” section asking how the drought affected the household in terms of factors such as employment and income as well as asking household greatest needs.

The final sample questionnaire presented, Zika Virus, begins with the demographic information (household type, number of people in household, age including women of childbearing age, language) followed by general communication and Zika messaging (i.e., if they heard any messages). The questionnaire then discusses knowledge and options about Zika addressing potential myths and status of community knowledge of the spread of Zika, affects, etc. This section is followed by questions about Zika prevention behaviors. The final section changes topics to general hurricane preparedness asking about disaster plans and emergency kits. The final question is “What is your households greatest need at this time?” which is the standard question to end all CASPER questionnaires.

Presentation—Screenshot of example CASPER questionnaires for Hurricane, Drought, and Zika Virus

Appendix D (page 40)

Overview—This appendix provides a template of potential questions to ask for preparedness. The template is formatted similar to a CASPER questionnaire but has room for additional questions to be added by jurisdictions specific to their needs

Description—The template first section is on background and household demographics followed by a section on communication. The next question asks five questions on physical and behavioral health of the household. This is followed by 10 questions specific to preparedness for disasters or emergencies including questions on recommended FEMA emergency plans, emergency supply kits, and evacuation behaviors. The final section asks two questions: (1) did you or members of your HH hear about this survey prior to us talking to you today? And (2) What is your households’ greatest need at this time?

Presentation—Screenshot of CASPER Preparedness template formatted in a typical CASPER questionnaire manner

Appendix F (Figure)(page 43)

Overview—Screenshot of a sample spreadsheet downloaded from U.S. Census for households in cluster

Description—Excel sheet with Column A: Census GEO.id, Column B: Census GEO.id condensed format, Column C: Census Geography (i.e.. Block, Block Group, Tract, and County), Column D: Total households within the cluster, Column E: Occupied Households, Column F: Vacant Households, Column G (highlighted in green) is cumulative households, and Column H (highlighted in blue) is random number. Two rows are highlighted in yellow indicating selected blocks based on the random number.

Presentation—Excel sheet with columns and rows showing selection of clusters using U.S. Census data downloaded from <http://factfinder2.census.gov> for Dekalb County, Georgia

Appendix G (page 44)

Figure 1 (top right)

Overview—Screenshot of U.S. Census Tigerweb <https://tigerweb.geo.census.gov/tigerweb/> with the query box open

Description—Screenshot of U.S. Census Tigerweb <https://tigerweb.geo.census.gov/tigerweb/> with the query box open, Census block highlighted, and a sample Census Block Geold entered

Presentation—Screenshot of U.S. Census Tigerweb <https://tigerweb.geo.census.gov/tigerweb/> with the query box open, Census block highlighted, and a sample Census Block Geold entered

Figure 2 (bottom left)

Overview—Example cluster map created with U.S. Census TigerWeb

Description—Displays a block highlighted in yellow with plain white street view in background

Presentation—Displays a block highlighted in yellow with plain white street view in background

Figure 3 (bottom right)

Overview—Example cluster map created with U.S. Census TigerWeb

Description—Displays a block highlighted in yellow with an Earth view in background showing streets and houses from satellite viewpoint

Presentation—Displays a block highlighted in yellow with an Earth view in background showing streets and houses from satellite viewpoint

Appendix H (page 45)

Overview—Screenshot of CASPER team tracking form

Description—Excel sheet with Column A: Team name, Column B: Team members, Column C: Contact numbers, Column D: Clusters, Column E: Departure, Column F: Tablet #, Column G: Return, Column H: Comments. The team names (column A) are completed and the rest of the columns are left blank. This form is designed to help CASPER leadership track the teams in the field so they know who is in what clusters, what equipment they have, etc.

Presentation—Excel sheet with columns and rows showing an example team tracking form

Appendix I (page 46)

Overview—Screenshot of sample completed tracking form

Description—The CASPER tracking form is presented with blue “writing” on an example way of completion. The example is for a cluster 23 that has 53 households and completed by team Dinosaur on 6/24/17. The team went to 11 households (10 of which were accessible), all single family homes, 8 households eventually entered their doors, and they completed 7 interviews. The back side of the tracking form (next page) provides example notes of how teams can identify selected households to return if no answer.

Presentation—Tracking form is presented with blue writing completing the cluster number, houses in the cluster, team name,

and date and then X's checking off the boxes of the households the teams went to. The back has blue script of notes on teams returning to sampled households.

Glossary of Key Terms

Formula for Weight (page 62)

Overview—Provides the formula for household weight

Description—The weight equals the total number of households

in sampling frame over open parentheses number of households interviewed within cluster close parentheses asterisk open parentheses number of clusters selected close parentheses

Presentation—The formula is provided in a green box with the numerator as "Total number of households in the sampling frame" and the denominator as "number of households interviewed within the cluster times the number of clusters selected"

Glossary of Key Terms

Block—a subdivision of a census tract. A block is the smallest geographic unit for which the Census Bureau tabulates 100% data. Many blocks correspond to individual city blocks bounded by streets, but, especially in rural areas, blocks may include many square miles and may have some boundaries that are not streets

Block group—subdivision of a census tract. A block group is the smallest geographic unit for which the Census Bureau tabulates sample data. A block group consists of all the blocks within a census tract with the same beginning number

CASPER—Community Assessment for Public Health Emergency Response: an epidemiologic tool designed to provide quickly and a low cost household-based information about a community to decision-makers in a simple format

Census—the enumeration of an entire population usually with details being recorded on residence, age, sex, occupation, ethnic group, and marital status. The United States conducts a census every 10 years; at the time of publication of this document, the most recent census was in 2010

Census tract—a small, relatively permanent geographic entity within a county (or the statistical equivalent of a county) delineated by a committee of local data users. Generally, census tracts have between 2,500 and 8,000 residents and boundaries that follow visible features. When first established, census tracts are as homogeneous as possible with respect to population characteristics, economic status, and living conditions

Cluster—for the purpose of CASPER, a cluster is a small group of households, or occupied households, within a geographic unit (e.g., a block or block group) that is within the sampling frame being assessed

Cluster sampling—a form of probability sampling in which respondents are drawn from a sample of mutually exclusive groups (i.e., clusters) within a total population

Completion rate—a type of response rate; the number of completed interviews, with reporting units divided by the goal number of completed interviews (for CASPER, this goal is usually 210). See response rate

Contact rate—a type of response rate; the number of completed interviews divided by the total number of housing units at which contact was attempted. The denominator includes the number of completed interviews, incomplete interviews, refusals, and non-respondents (i.e., housing units in which no one was at home or that were unsafe to approach). See response rate

Confidence interval—the range around a numeric statistical value obtained from a sample, within which the actual, corresponding value for the population is likely to fall, at a given level of probability (e.g., 95%)

Confidentiality—condition or type of communication between two or more people in which the information is accessible only to those authorized to have access and may not be discussed or disclosed to third parties

Cooperation rate—a type of response rate; the number of completed interviews divided by all eligible housing units that were contacted. The denominator includes the number of completed interviews, incomplete interviews, and refusals. See response rate

Disaster—a serious disruption of the functioning of society, causing widespread human, material, or environmental losses that exceed the local capacity to respond and require external assistance

Disaster epidemiology—use of epidemiology to assess the short- and long-term adverse health effects of disasters and to predict consequences of future disasters (See epidemiology)

Disaster-related health effects

Direct—effects caused by the actual physical forces or essential elements of the disaster

Indirect—health effects caused secondarily by anticipation of the disaster or by unsafe/unhealthy conditions that develop due to the effects of the disaster

Eligible household—for the purposes of CASPER, a household within a selected cluster that is selected at random for interview and in which at least one adult (18 years or older) lives

Epidemiology—the quantitative study of the distribution and determinants of health-related events in human populations

Epi Info™—a statistical software package freely provided by CDC (<https://www.cdc.gov/epiinfo/index.html>) for entering and analyzing data

Household—a house, apartment, mobile home, group of rooms, or a single room that is intended to be occupied as separate living quarters; includes all the individuals who occupy the space as their usual place of residence

Natural disaster—ecological disruption causing human, material, or environmental losses that exceed the ability of the affected community to cope by using its own resources, often requiring outside assistance

Occupied household—a usual place of residence of the person or group of people living therein at the time of Census enumeration, even if the occupants are only temporarily absent

Probability weight—factor/value applied to each element in a sample in order to adjust for differences in the likelihood of selection. For CASPER, this is a value assigned to each household (i.e., each interview) that represents the inverse probability of its selection from the sampling frame, given the sampling

design. Results calculated by use of the probability weight are representative of the entire sampling frame

Random sample—probability sampling in which a subset of individuals (a sample) is chosen from a larger set (a population or sampling frame) randomly and entirely by chance, in such a way that each individual has the same probability of being chosen at any stage during the sampling process. See sampling

Representative sample—a sub-group representing the total population, or sampling frame

Response rate—the number of completed interviews divided by the total number of households sought or attempted. See contact rate, completion rate, and cooperation rate

Sampling—the selection of a subset of individual observations within a population of individuals intended to yield some knowledge about the population of concern; sampling can be random or non-random, and representative or non-representative. See also random sampling, stratified sampling, systematic sampling, and target sampling

Sampling design—the specification of the sampling frame, sample size, and the system for selecting and contacting individual respondents from the population

Sampling frame—the entire population within the selected assessment area from which a sample is drawn. The sample is a subset of the larger sampling frame

Stratified sample—a sample selected by grouping members of the population into relatively homogeneous subgroups and then applying random or systematic sampling within each stratum. See sampling

Systematic random sample—a sample in which the target population is arranged according to an ordering scheme, with elements of it then selected at regular intervals through that ordered list. See sampling

Target sample—a type of non-probability sample in which sample elements are chosen on the basis of some non-random characteristic (e.g., choosing the most severely damaged homes for interviews). See sampling

Weight—the inverse of the probability that a given household will be included in the sample due to the sampling design. For the purpose of CASPER, the weight is the total number of housing units (HUs) in the sampling frame divided by the number of clusters selected (e.g., 30), multiplied by the number of interviews completed within the cluster. For accessibility, find explanation of the formula for weight below in [Appendix O, page 58](#)

$$\text{Weight} = \frac{\text{Total number of households in sampling frame}}{(\text{number of households interviewed within cluster})^* (\text{number of clusters selected})}$$

Planning and Conducting a CASPER: Task List

Note: Completion of tasks not required before moving on to the next; many can be completed simultaneously.

These tables are intended to be filled out manually, checking boxes as items are completed, and filling in associated page number.

Check	Preparing for CASPER	Page #
<input type="checkbox"/>	Develop clear objectives	
<input type="checkbox"/>	Identify and engage stakeholders	
<input type="checkbox"/>	Secure necessary funding (e.g., travel, gas cards for personal vehicle use, supplies)	
<input type="checkbox"/>	Define sampling frame; consider modified sampling based on needs	
<input type="checkbox"/>	Set date for CASPER fieldwork; considering local community events, holidays, etc.	
<input type="checkbox"/>	Recruit staff and volunteers; consider anticipated language(s) spoken in area	
<input type="checkbox"/>	Reserve government vehicles or rental cars and/or confirm personal vehicle use	
<input type="checkbox"/>	Select 30 clusters with probability proportional to number of households within the cluster	
<input type="checkbox"/>	Create maps of selected clusters and large map of entire sampling frame	
<input type="checkbox"/>	Develop data collection instrument (consider paper vs. electronic collection methods)	
<input type="checkbox"/>	Identify location for CASPER headquarters. Consider central locations, large room for just-in-time training, parking, etc.	
<input type="checkbox"/>	Develop introduction/consent script for interview teams	
<input type="checkbox"/>	Test questionnaire (and electronic devices) with mock interviews; revise as needed	
<input type="checkbox"/>	Plan just-in-time training for interview teams and develop agenda. Topics include selecting households, interview tips, safety, communication, logistics, personal limitations, etc.	
<input type="checkbox"/>	Develop team tracking form and prepare sign-in sheets	
<input type="checkbox"/>	Inform community of CASPER through press release, social media, and/or other venues	
<input type="checkbox"/>	Develop safety and communication plan for interview teams	
<input type="checkbox"/>	Create database and table shells based on final questionnaire; create tracking form database	
<input type="checkbox"/>	Print tracking forms	
<input type="checkbox"/>	Print confidential referral forms	
<input type="checkbox"/>	Print and collate public health information/resource packets	
<input type="checkbox"/>	Develop initial plan for assigning clusters based on number of anticipated volunteers (e.g., allocate 1-3 clusters together based on size and geographic proximity).	
<input type="checkbox"/>	Create team packets of clusters (maps, questionnaires, consent forms, tracking forms, referral forms, other public health information) and compile in large folders	
<input type="checkbox"/>	Gather other field material such as clipboards, pens, team bags for materials, electronic data collection tools, credentials, health department shirts or vests, water, snacks, sanitizer, first aid supplies, sunscreen, flashlights, etc.	
<input type="checkbox"/>	Begin drafting preliminary report outline (e.g., background, methods, table shells)	
Check	CASPER Fieldwork	Page #
<input type="checkbox"/>	Conduct just-in-time training for data collection teams	
<input type="checkbox"/>	Assign interview teams to clusters	
<input type="checkbox"/>	Headquarters: Track interview teams, troubleshoot any issues	
<input type="checkbox"/>	Interview teams: Travel to assigned cluster(s), conduct systematic sampling within each assigned cluster, conduct interviews, track households	
<input type="checkbox"/>	Implement communications plan (i.e., check-ins at appropriate intervals)	
Check	After CASPER Fieldwork	Page #
<input type="checkbox"/>	Conduct debrief with staff/volunteers	
<input type="checkbox"/>	Enter (or upload) data into database and clean data (this can begin during fieldwork)	
<input type="checkbox"/>	Calculate and apply weighted frequencies, percents, and 95% confidence intervals	
<input type="checkbox"/>	Calculate response rates based on tracking forms	
<input type="checkbox"/>	Create and disseminate results through reports, presentations, fact sheets, etc.	

