Household Emergency Preparedness

Oakland County, Michigan

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Interview Teams

Survey Respondents

Executive Summary

Due to its location near the Great Lakes, Michigan is susceptible to extreme weather events such as ice/snow storms and tornadoes. Additionally Michigan is at risk for other emergency events such as power outages and chemical spills. Furthermore, Oakland County, Michigan, is also located approximately 50 miles north of the Fermi Nuclear Power Plant in Monroe County, Michigan. Proximity to this reactor creates the potential for radiation emergencies impacting Oakland County. Little is known about the prevalence of special needs in households in Oakland County and how prepared they are for response to a disaster. Additionally, little is known about how the community may react to a radiation emergency.

The Oakland County Health Division (OCHD) and the Michigan Department of Community Health (MDCH) requested the assistance of the Centers for Disease Control and Prevention (CDC) in conducting a Community Assessment for Public Health Emergency Response (CASPER) to assess the level of household emergency preparedness. The objectives of the CASPER were to assess the following: 1) the types of emergency preparations households have in place; 2) the frequency of households with residents who may have special medical needs in an emergency because of health conditions; 3) the most trusted and main sources of information for a household during a radiation emergency; 4) the likelihood that households would follow public health instructions following a disaster involving radiation; and 5) the frequency of households that would need to care for a pet or a non-household dependent during an emergency. A final objective was to provide knowledge transfer and capacity building for the state and local public health partners in terms of disaster preparedness and response epidemiology.

On September 10-13, 2012, OCHD and MDCH, with the assistance of CDC, conducted a CASPER in Oakland County. Interview teams were provided just-in-time training prior to collecting interviews over two half-days in the field. A total of 192 household interviews were conducted. The major findings of the survey were as follows:

- The most common health conditions reported by households were hypertension/heart disease, respiratory disease, and diabetes.

- The majority of households had basic emergency supplies of food (85.4%) and water (64.7%), first aid kit (67.1%) and emergency supply kit (66.7%); households had some training in first aid (40.4%) or cardiopulmonary resuscitation (CPR) (41.7%).
- Almost half of the households had a pet (48.8%).
- Over one-third of the households had a dependent outside of the home for whom they would have to provide help during an emergency (36.7%).
- The vast majority of households (>90%) would follow instructions from an official during a radiation emergency.
- During a radiation emergency, the local public health department would be the most trusted source of information and television would be the main medium of information.
- Over one-quarter of households had visited the OCHD website (27.6%).
- Of the choices given, the top three events for which households would seek information from OCHD were disease outbreaks, a radioactive material release into the community, and a chemical spill.

Based on these findings, the CDC has made recommendations in three areas to OCHD and MDCH as part of the follow-up to this CASPER.OCHD and MDCH should use the survey results to guide ongoing work around resource planning for community emergency preparedness.

1. OCHD and MDCH should establish community preparedness goals and objectives for Oakland County and Michigan, respectively, based on the baseline data of levels of household preparedness gathered during this CASPER.
2. OCHD and MDCH should develop radiation emergency communication plans based on the community's preferred spokespersons and sources of information.
3. OCHD and MDCH should use the survey results to develop public health emergency preparedness educational materials for specific awareness or preparedness gaps.

BACKGROUND

September is National Preparedness Month in the United States (U.S.), and according to the Federal Emergency Management Agency (FEMA) it represents a "time to get ready for emergencies" (1). As public health emergencies can require the response of local, and sometimes state and federal, agencies it is important for all levels of the public health infrastructure to collaborate during the planning, preparedness, response and recovery phases of an emergency. Household preparedness plans play a key role in a community's ability to cope with an emergency (2). Understanding household preparedness levels helps local and state emergency management planners appropriately address needs in their community before, during, and after an emergency (2).

Recent events in Michigan have highlighted the importance of emergency planning and public health response to disasters. In June 2008, the Governor of Michigan declared a State of Emergency for a tornado and associated severe weather affecting several counties in the state (3). In July 2010, an oil pipeline ruptured near Marshall, Michigan, releasing an estimated 844,000 gallons of heavy crude oil into the surrounding waterways (4). A large scale response was conducted to assess health risks from the oil exposure and to issue warnings and take other public health measures to reduce the risk of exposure.

In 2011, the Michigan Department of Community Health (MDCH) released a report, "*Public health and medical preparedness: a decade of achievement in Michigan*", highlighting the state's advancements in emergency preparedness over the last ten years (4). Significant gains had been made by the state since September 11, 2001 towards developing the public health and medical infrastructure in Michigan for responding to such events. The report states

the ‘future direction’ plans included adopting the Centers for Disease Control and Prevention’s (CDC) Public Health Preparedness Capabilities (5). The first ‘Preparedness Capability’ of that report is ‘Community Preparedness’, which includes four functions: (i) determine risks to the health of the jurisdiction, (ii) build community partnerships to support health preparedness, (iii) engage with community organizations to foster public health, medical, and mental/behavioral health social networks, and (iv) coordinate training or guidance to ensure community engagement in preparedness efforts.

As part of the ongoing efforts to develop disaster epidemiology capabilities in Michigan, the Oakland County Health Division (OCHD) and MDCH requ2ested the assistance of the CDC in conducting an assessment of household emergency preparedness in Oakland County, in September 2012. The focus of the assessment was on general emergency preparedness, such as owning emergency supplies, the frequency of households with additional needs, such as medical requirements or pet ownership, the preferred sources of information during a disaster, as well as emergency response to a radiation emergency. In addition, participation of OCHD and MDCH in the training, development and implementation of the assessment enabled disaster epidemiology knowledge translation and capacity development to strengthen the local and state level preparedness and response capability.

The objectives of this EpiAid were to provide knowledge transfer and capacity building for the state and local public health partners in terms of disaster preparedness and response epidemiology and to fulfill the specific objectives of the CASPER, which were as follows: 1) to determine the types of emergency preparations households in Oakland County have in place; 2) to determine the frequency of Oakland County households with residents who may have

special medical needs in an emergency because of health conditions; 3) to identify the most trusted and main sources of information for Oakland County households during a radiation emergency; 4) to assess the likelihood that households in Oakland County would follow public health instructions following a disaster involving radioactive material; and 5) to determine the prevalence of households in Oakland County that would need to care for a pet or a non-household dependent during an emergency.

METHODS AND MATERIALS

To accomplish these objectives, OCHD and MDCH with assistance from CDC conducted a CASPER in Oakland County on September 10-12, 2012.

The standard CASPER methodology described in the CASPER Toolkit Version 2.0 (6), was applied to define the households within Oakland County which then made up the sampling frame (a total of 527,255 housing units in the 2010 U.S. Census). Using the Geographic Information Systems CASPER tool, 30 Census Blocks (clusters) were selected with a probability proportional to the number of housing units within the clusters. Street level and Google Earth maps of each of the 30 clusters were generated. Two-person interview teams were assigned to one or two clusters and were instructed on how to systematically select seven housing units per cluster by selecting every n^{th} household (where 'n' is the total number of household units in the cluster divided by seven). Teams were instructed to make three attempts at each selected household before replacement. OCHD, MDCH and CDC developed a two-page data collection instrument (see Appendix I for the full questionnaire). The questionnaire addressed

household needs, emergency preparedness, response to a radiation emergency, and sources of information in emergencies.

We provided the interview teams with a three-hour training session on the overall purpose of the CASPER, household selection methods, questionnaire content, interview techniques, safety and logistics. There were a total of 17 teams on the first day and 15 teams on the second day, which primarily consisted of state and local public health staff, with assistance provided by CDC staff. Teams conducted interviews between 3pm and 8pm EST. Teams attempted to conduct seven interviews in each of the 30 selected clusters, with a goal of 210 total interviews. All potential respondents approached were given an information sheet with contact telephone numbers for OCHD, educational material from OCHD regarding emergency preparedness, an OCHD bag to store emergency supplies and other timely OCHD information on West Nile virus and flu shots. Eligible respondents were at least 18 years of age or older and resided in the selected household. Additionally, the interviewers were instructed to complete confidential referral forms whenever they encountered urgent physical or mental health needs.

A weighted cluster analysis, based on the total number of housing units in the sampling frame, the number of housing units interviewed within each cluster, and the number of clusters selected, was conducted to report the estimated percent and projected number of households with a particular response in the assessment area (Oakland County), based on survey responses. Analysis was performed in EpiInfo 7.0.8.3 (CDC, Atlanta, 2012) to calculate the unweighted and weighted frequencies, unweighted and weighted percentages, projected number of households, and the 95% confidence intervals of the weighted percentages. Chi-square tests of weighted proportions were used for comparisons of sub-analyses, where a

$p<0.05$ was considered statistically significant. Unless otherwise stated, percentages in the text represent the weighted percentages.

RESULTS

Interview teams completed 192 surveys over three days for an overall completion rate of 91.4% (Table 1). Teams completed interviews in 37.1% of houses approached. Of the households with an eligible participant answering the door, 56.5% completed an interview.

Household demographics (Table 2)

The majority of households were single family dwellings (78.5%), followed by multiple unit dwellings (21.4%). Over half of the households had one (21.0%) or two (35.7%) people living in the home. Fewer households had more than four people living in the home, with seven persons (0.7%) being the largest household size.

Household needs (Tables 3-4)

Respondents were asked about the presence of certain medical conditions in members of the household. The most common self-reported health conditions in Oakland County were hypertension/heart disease (32.0%), asthma/COPD/emphysema (24.2%), and diabetes (19.1%). Household health care needs were also assessed for resource planning in an emergency. Almost two-thirds of households (64.6%) reported at least one person in the household taking daily prescription medication, while no households reported needing dialysis and only two households (1.0%) reported supplemental oxygen use.

Emergency preparedness (Tables 5-12)

The frequency of households with emergency training in the last five years was (41.7%) for CPR, followed by First Aid (40.4%); training to be part of a Community Emergency Response Team (CERT) was significantly less common (3.1%). Two-thirds of households reported they owned a first aid kit (67.1%) or an emergency supply kit (66.7%).

In terms of components of a household emergency plan, having copies of important documents in a safe location was the most common component (70.7%). This was followed by having multiple routes away from home in case evacuation is necessary (69.9%), and having a communication plan (67.9%). Amongst households of two or more residents, 34.9% of those households had a designated meeting place during an emergency.

Most households reported having basic supplies to last three days in an emergency including non-perishable food (85.4%), water (1 gallon/person/day) (64.7%), and a way to cook food without utilities (76.4%). Single family households were significantly more likely to have each of these three supplies compared to households in multiple unit structures. In households where at least one person takes daily medication, 96.9% had a seven-day supply, and in households with a pet, 88.7% had a three-day supply of food and water for their pet.

Nearly all households reported that they have a working smoke detector (96.6%). Household self-report of having a working carbon monoxide (CO) detector was less common (64.2%). Almost three-quarters of households (74.4%) reported having a working fire extinguisher and over half (52.0%) reported a back-up heat source. Single family households were significantly more likely to have a working CO detector, a back-up heat source and a

generator compared to households in multiple unit buildings. Of households reporting a generator, over half said they had enough fuel for three days (56.4%). Of households reporting a generator, 94.4% also reported having a working CO detector.

Half of all households had at least one pet (48.8%), and the majority of households (88.0%) said they would take their pet with them during an evacuation. Of households that had someone outside of their home that would be dependent on them during an emergency (36.7%), the most common responsibility was to provide food and shelter (28.4%), followed by transportation (27.8%) and then medical care (22.0%).

The top three emergencies of concern among households were tornadoes (52.1%), ice/snow storms (26.3%), and floods (25.5%). Other emergencies of concern identified by at least one quarter of households included power outages (23.4%) and home fires (24.1%).

Radiation emergency (Tables 13-15)

Households in Oakland County had a very high willingness to follow instructions from officials in the event of "release of radioactive material that could affect your community." Most households were willing to go to a radiation screening center (93.3%), evacuate (96.0%), and shelter-in-place (91.8%) if told to do so by officials. With so few survey participants providing reasons for why they were not willing to follow instructions, it is difficult to extrapolate these responses to the community. These specific responses and their frequencies are given with Tables 13, 14, and 15.

Sources of information in a radiation emergency (Table 16)

From the list of sources of information during a radiation emergency, households said that the local public health department (36.5%) was their most trusted source of information. Local news (23.0%) was the next most trusted source. More than half of the households said they would rely on the television (55.8%) to keep up-to-date during a radiation emergency. Radio (18.4%) was the next most common source of information, and some respondents commented that this would be a better source, particularly if there was a power outage.

Use of Oakland County Health Division information (Table 17)

About one quarter of households (27.6%) said they had visited the OCHD website prior to the survey. In response to the question "..during which incidents are you likely to seek information from OCHD…", the top three incidents were disease outbreaks (75.3%), chemical spills (64.6%), and radioactive material releases (62.9%). Almost one-tenth said they would not seek information from OCHD (9.8%).

Discussion

The results of this CASPER provided a rapid assessment of household emergency preparedness in Oakland County from which OCHD and MDCH can further develop their public health emergency plans. In addition to the Oakland County specific knowledge generated from the results of the survey, implementation of the CASPER provided disaster epidemiology capacity-building for OCHD and MDCH.

Feedback on questionnaire

After each data collection period, interviewers reviewed their completed questionnaires with headquarters staff to ensure completeness and coherence of answers provided for subsequent data entry. At the same time, interviewers provided feedback on issues arising in the field regarding selection of households and administration of the questionnaire. Several of the issues brought forward were incorporated as additional data cleaning or analysis and were presented in the Results section. Other suggestions are noted here for consideration of the interpretation of these results and for future CASPER questionnaire development.

The frequency of households with emergency supply kits kept in a designated place in the home may be overestimated as interviewers noted that some respondents said 'yes' because they had the materials for the kit, but did not necessarily have them together in one designated location. Respondents also had different interpretations of the question on multiple evacuation routes. Some understood it to mean routes of escape from within the home, such as multiple doors or windows to exit, potentially overestimating the frequency of this component of a household emergency plan.

The question regarding households having dependents outside the home is intended to identify specific responsibilities households have for people living outside of their home. This frequency may be overestimated by several respondents who said "yes", meaning that they would "help generally", but did have a specific person in need of assistance.

Interviewers reported that respondents had difficulty generating their top three emergencies. Although a definition of "emergency" was provided in the introductory statement

to the section, many respondents listed events that would be personal emergencies, such as a house fire or having a fall, but would not constitute a community emergency. During the questionnaire development, there was discussion that respondents would say 'yes' to being concerned about all emergencies if provided a list, prompting the use of an open-ended question to identify their top concerns. However, this resulted in a broader definition of 'emergency' than what was intended by the question, reducing responses to the pre-selected emergencies listed. The free text 'Other' responses recorded by interviewers were coded and two new variable categories were created based on the most common responses, and the other free text remained as 'Other'.

The questions on the community's willingness to follow instructions in a radiation emergency found that over 90% of the community was willing to follow instructions from officials. However, during the exit interview, OCHD and MDCH commented that they were unsure if these results would be applicable in an actual radiation emergency setting. OCHD and MDCH also would have liked to have had a follow-up question that asked what households would do if an event had occurred, but no instructions from officials had been given yet.

Interviewers reported uncertainty about the question on sheltering-in-place as respondents said that they would be willing to shelter if they were at home, but would be less willing if they were away from home. This may have overestimated the frequency of households actually willing to shelter-in-place. Concern was expressed whether 'social desirability' bias was a factor for the question on the most trusted information source in a radiation emergency, as interviewers did identify themselves as being from OCHD. However, as respondents were

provided a list of options, it is unclear the extent to which this may have overestimated the results for 'local public health department'.

There was concern that the ordering of the last two questions may have caused confusion for respondents. By asking about the OCHD website first, respondents often interpreted the following question on "incidents for which your household would likely seek information from OCHD " to mean would they obtain information from the OCHD website, as opposed to all the ways in which to seek information, which may have reduced the overall responses to this question.

Oakland County CASPER Process

As with all emergency preparedness, it is important to consider the contextual factors of how this CASPER was implemented to better understand the overall outcomes. Efforts from OCHD and MDCH leading up to the EpiAid were a significant contributor to the success of the CASPER. For example, prior to the CASPER, OCHD alerted the community to the presence of interviewers in Oakland County through a news announcement which likely helped participation rates.

OCHD and MDCH were very successful in recruiting volunteers to participate as interviewers for the CASPER. The presence of 34 interviewers on the first day and 30 interviewers on the second day greatly assisted in the timely completion of data collection. Pairing OCHD employees with either an MDCH or a CDC employee also helped to provide teams with local knowledge of the area and to promote community awareness of the OCHD. It was noted that the consent information sheet left at households did not contain the OCHD logo or

their website or Facebook page, and that these would have been valuable additions to the form to improve recognition with the community and promote OCHD. Several interviewers commented that respondents appreciated receiving the OCHD emergency bag and educational materials. After the event, one respondent commented on the OCHD Facebook page their appreciation of having participated in the survey and how it had spurred an interest in preparing for an emergency.

During the week, CDC staff provided group and one-on-one CASPER training to MDCH staff regarding the process and analysis aspects of administering a CASPER. Data analysis was conducted with three MDCH staff for knowledge translation purposes. Preliminary results of the CASPER were discussed with the OCHD and MDCH collaborators prior to the exit interview for validation, feedback and input on recommendations. All of these activities contributed to the process of capacity building within OCHD and MDCH in terms of conducting community assessments in the future.

Results in the broader context of emergency preparedness

The results of this CASPER provide data from which to inform emergency planning for Oakland County. In order to extract and apply meaning from these data, all relevant stakeholders in Oakland County and Michigan should be involved in interpreting these results.

The frequency of reported health care condition reported by households in this CASPER appear to be within expected values for this population based on Michigan level rates of health indicators (7). While no direct measure of comparison was available, OCHD and MDCH

commented that the reported use of a wheelchair/cane/walker (11.2%) was somewhat higher than they had anticipated.

These results provide a baseline estimate of levels of preparedness for Oakland County. Population estimates of emergency preparedness were recently reported in an analysis of the Behavioral Risk Factor Surveillance System (BRFSS) household emergency preparedness measures administered in 14 states from 2006 to 2010, by English and Spanish respondents (8). In comparison to the English-language population results, Oakland County is similarly, or better, prepared in terms of supplies in an emergency.

	BRFSS, 2006-2010	**Oakland County CASPER, 2012**
3 day supply of food	83.2%	85.4% (78.4–92.5)
3 day supply of water	53.6%	64.7% (56.6–72.9)
3 day supply of medication*	90.6%	96.9% (93.9-99.9)**

* Of those requiring medication

**Seven-day supply of medication reported

In MDCH's 2011 preparedness report, the future direction of their preparedness and response plan will aim to have core elements of "diverse stakeholder engagement, redundant communications strategies, training and demonstrated competency, inclusion of all response

disciplines, integrated surveillance and laboratory systems, and written plans tested and evaluated through the spectrum of drills and exercises" (4). The planning and implementation of this CASPER provides training and builds competencies in disaster epidemiology, helps to develop and evaluate public health emergency plans and provides an exercise for OCHD and MDCH for implementing a response CASPER.

Recommendations

1. *Resource planning*

Information collected by this CASPER on the projected households with health care conditions and needs should inform resource planning for accommodating the community in an emergency. For example, medical needs such as the use of a wheelchair/cane/walker impacts the ability of these community members to evacuate or report to a radiation screening center, and emergency planning should consider means of accommodating these needs. With almost half of households in Oakland County owning a pet, and the majority indicating that they would take their pets with them if they had to evacuate, emergency shelter services should consider pet accommodation in their planning for shelters.

With over 90% of households willing to follow instructions from officials, emergency plans should be applied in such a way that they are able to accommodate all those who are asked to evacuate or report to a radiation screening center. Additionally, resource planning should consider how to accommodate those who are not willing to follow instructions.

Implementation of this CASPER utilized volunteers from OCHD and MDCH staff for data collection. Resource planning for implementing a CASPER in a response situation should consider alternate sources of volunteers for conducting interviews, such as university students, volunteer organizations, or individuals with Community Emergency Response Teams (CERT).

2. *Setting goals and objectives*

OCHD and MDCH should collaborate to identify their benchmark levels of preparedness for the county and for the state. For example, in 2007, the US Department of Homeland Security published their *Target Capabilities List, A Companion to the National Preparedness Guidelines* which set targets and annual increase guidelines for improving community preparedness (9). For community emergency preparedness such as having emergency supplies and training in basic first aid, their performance measure was to increase levels by 5% each year until 80% of the population is prepared.

As part of setting the overall emergency preparedness goals and objectives, specific consideration should be given to identifying, assessing and assisting vulnerable populations. Recent work on emergency preparedness in the U.S. has identified disparities amongst English versus Spanish language groups (8), and a 2009 FEMA report on personal preparedness found varying levels of preparedness by socio-demographic factors such as, age, gender, race, income, and education (2). The results of this CASPER show differences between households in single family homes versus multiple unit dwellings. Preparedness plans should include emergency planning specific to multiple unit property owners.

3. *Communication*

The results of the CASPER on the most trusted and main sources of information in a radiation emergency should be applied to communication planning. Identification of the local public health unit as being the most trusted source of information is an opportunity to lead communication with the public regarding radiation safety. Awareness that television is still the main source of information for over half of the households should inform communication planning and the need to develop and maintain relationships with local television stations.

On a broader scale, results of this CASPER should be disseminated with the larger public health community for knowledge translation. Future plans for this include sharing of this report to a wider audience, and subsequent scientific presentations and publications.

4. *Health messaging*

Results of this CASPER should be used to identify areas of public health messaging to increase awareness of emergency preparedness measures in the community. For example, while 93.7% of households with a generator self-reported that they had a working CO detector, almost 7% of all households were unsure whether they had a working CO detector. With 17.2% of households reporting having a generator, public health messaging regarding their safety and potential for CO exposure could reduce exposure to CO from generators. Additionally, based on the responses to the type of information households would seek from OCHD, emergency preparedness information on chemical spills and radiation emergencies from OCHD would be beneficial.

Table 1. Questionnaire response rates

	192/210
	192/340
	192/517

*Percent of surveys completed in relation to the goal of 210
†Percent of contacted households that were eligible and willing to participate in the survey
‡Percent of randomly selected households which completed an interview

Table 2. Household characteristics

	Frequency (n=192)	% of households	Projected number of households	Weighted % (95% CI)
Structure				
Single family dwelling	150	78.1	414,272	78.5 (64.6–92.6)
Multiple unit	42	21.9	112,983	21.4 (7.4–35.4)
Number in Households				
One	37	19.3	110,472	21.0 (11.2–30.7)
Two	71	37.0	187,971	35.7 (27.7–43.6)
Three	32	16.7	89,131	16.9 (10.6–23.2)
Four	37	19.3	99,342	18.8 (12.8–24.9)
Five	10	5.2	25,944	4.9 (1.6–8.2)
Six	4	2.1	10,880	2.1 (0.1–4.1)
Seven	1	0.5	3,515	0.7 (0.0–2.0)

Table 3. Household medical conditions

	Frequency (n=192)	% of households	Projected number of households	Weighted % (95% CI)
Hypertension/heart disease	56	29.2	168,805	32.0 (23.4–40.6)
Asthma/COPD/Emphysema	43	22.4	127,378	24.2 (15.7–32.6)
Diabetes	31	16.1	100,848	19.1 (9.7–28.6)
Physical Disability	29	15.1	75,322	14.3 (8.1–20.5)
Developmental Disability	6	3.1	15,064	2.9 (0.3–5.4)
Immunosuppression	5	2.6	12,972	2.5 (0.4–4.6)

Table 4. Household medical needs

	Frequency (n=192)	% of households	Projected number of households	Weighted % (95% CI)
Daily prescription medication	121	63.0	340,707	64.6 (56.0–73.2)
Wheelchair/cane/walker	23	12.0	59,002	11.2 (4.8–17.6)
Home health care	13	6.8	33,894	6.4 (3.3–9.6)
Other type of special care	7	3.7	18,831	2.0 (0.0-7.6)
Oxygen supply	2	1.0	5021	1.0 (0–2.3)
Dialysis	0	0	0	0

Table 5. Household emergency training

	Frequency (n=192)	% of households	Projected number of households	Weighted % (95% CI)
First Aid	78	40.6	213,078	40.4 (31.5–49.3)
CPR	81	42.2	220,024	41.7 (33.4–50.1)
CERT*	6	3.1	18,412	3.1 (0.3–6.7)

*Community Emergency Response Training

Table 6. Household emergency supplies

	Frequency (n=192)	% of households	Projected number of households	Weighted % (95% CI)
Owns a First Aid Kit	132	68.8	353,847	67.1 (57.6–76.6)
Owns an Emergency Supply Kit	128	66.7	351,754	66.7 (58.7–74.8)

Table 7. Household emergency plans

	Frequency (n=192)	% of households	Projected number of households	Weighted % (95% CI)
Copies of important documents*	135	70.3	372,677	70.7 (63.0–78.4)
Multiple routes away from home	132	68.8	368,576	69.9 (61.0–78.8)
Communication plan	128	66.7	358,031	67.9 (60.6–75.2)
Designated meeting place				
Of households with 2 or more people	56	35.9	146,627	34.9 (27.0–42.8)

*Stored in a secure location

Table 8. Household emergency supplies

	Frequency (n=192)	% of households	Projected number of households	Weighted % (95% CI)
3 days non-perishable food	163	84.9	450,510	85.4 (78.4–92.5)
Ways to cook food without utilities	145	75.5	402,806	76.4 (66.7–86.1)
3 days of water (2L/day/person)	122	63.5	341,293	64.7 (56.6–72.9)
7 days supply of medications	120	62.5	331,333	62.8 (55.7–69.9)
Of those taking daily medication*	116	96.6	321,290	96.9 (93.9–99.9)
3 days food and water for pets	77	40.1	226,192	42.9 (31.4–54.5)
Of those with pets **	77	87.5	226,635	88.7 (79.6–97.8)

*Of households taking daily medication (n=120)

**Of households with pets (n=88)

Table 8a. Comparison of household emergency supplies by type of household structure (weighted frequencies)

Structure	3-day Food*		3-day Water*		Ways to Cook*	
	Yes	Total	Yes	Total	Yes	Total
Multiple Unit	87,876	112,983	53,562	112,983	53,981	112,983
Single Family	362,634	414,272	287,731	414,272	348,825	414,272

***** Significant difference between multiple unit and single family households by chi-square test of proportions, p<0.05

Table 9. Household emergency power supply

	Frequency (n=192)	% of households	Projected number of households	Weighted % (95% CI)
Working smoke detector	185	96.4	509,261	96.6 (93.8–99.3)
Working fire extinguisher	140	72.9	392,345	74.4 (67.3–81.6)
Working CO detector	127	66.2	338,364	64.2 (52.9–75.5)
Back-up heat source	99	51.6	274,340	52.0 (37.6–66.4)
Generator	32	16.7	85,951	16.3 (9.9–22.7)
3 days fuel supply*	18	56.3	50,800	56.4 (40.8–72.0)

*Of households with a generator (n=32)

Table 9a. Comparison of emergency power supplies by type of household structure (weighted frequencies)

Structure	CO Detector*		Heat Source*		Generator*	
	Yes	Total	Yes	Total	Yes	Total
Multiple Unit	44,356	112,983	15,064	112,983	2,511	112,983
Single Family	294,007	414,272	259,276	414,272	85,951	414,272

***** Significant difference between multiple unit and single family households by chi-square test of proportions, p<0.05

Table 10. Household pets and evacuation

	Frequency (n=192)	% of households	Projected number of households	Weighted % (95% CI)
Pet Ownership	89	46.4	257,183	48.8 (38.5–59.1)
Evacuation plans*				
Take them with you	83	93.3	226,218	88.0 (74.2–100.0)

* Of those who own a pet (n=89).

Other evacuation plans (n)

- Find a safe place to leave their pet (3)
- Leave behind with food and water (2)
- Would not evacuate because of pet (1)

Table 11. Non-household dependents

	Frequency (n=192)	% of households	Projected number of households	Weighted % (95% CI)
Have non-household dependents	71	37.0	193,662	36.7 (29.1–44.4)
Household responsibilities for non-household dependents				
Food and shelter	54	28.1	149,724	28.4 (20.4–36.4)
Transportation	53	27.6	146,376	27.8 (19.9–35.6)
Medical care	42	21.9	115,829	22.0 (14.5–29.4)
Other	13	6.8	34,732	6.6 (3.0–10.2)

Table 12. Most common emergencies of concern

	Frequency (n=192)	% of households	Projected number of households	Weighted % (95% CI)
Tornado	97	50.5	274,758	52.1 (42.6–61.6)
Ice/snow storm	52	27.1	138,844	26.3 (17.9–34.7)
Flood	51	26.6	134,492	25.5 (19.0–32.0)
Power outage	48	25.0	123,445	23.4 (15.7–31.1)
Home fire	47	24.5	127,043	24.1 (14.3–33.8)
Forest fire/brush fire	31	16.2	83,273	15.8 (6.8–24.8)
Rain thunderstorm	24	12.5	61,513	11.7 (5.5–17.9)
High winds	21	10.9	72,560	13.8 (5.5–22.0)
Act of terrorism	15	7.8	39,084	7.4 (3.9–10.9)
Chemical spill	4	2.1	10,461	2.0 (0.1–3.9)
Earthquake	2	1.0	5,021	1.0 (0.0–2.3)
Other(s)*	117	60.9	306,980	58.2 (47.8–68.6)

* Includes 'Home Fire' and 'Power Outage'

Table 13. Household willingness to go to a Radiation Screening Center

	Frequency (n=192)	% of households	Projected number of households	Weighted % (95% CI)
Willing to go	179	93.2	491,937	93.3 (88.8–97.8)
Not willing to go	10	5.2	26,949	5.1 (1.3–8.9)

Reasons not willing to go (n)

- Want to go to own physician (1)
- "would just leave" (1)
- "do not want to leave" (1)
- "will go to police station" (1)
- "don't like medical health care" (1)

Table 14. Household willingness to evacuate

	Frequency (n=192)	% of households	Projected number of households	Weighted % (95% CI)
Willing to evacuate	183	95.8	503,821	96.0 (93.1–98.9)
Not willing to evacuate	5	2.6	12,972	2.5 (0.4–4.6)
Don't know if would evacuate	3	1.6	7,951	1.5 (0.0–3.2)

Reasons not willing to evacuate (n)

- Lack of transportation (1)
- Inconvenient/expensive (1)
- Other (1)

Table 15. Household willingness to shelter-in-place

	Frequency (n=192)	% of households	Projected number of households	Weighted % (95% CI)
Willing to shelter-in-place	175	91.1	484,154	91.8 (86.8–96.8)
Willing to shelter for 24 hours*	170	97.7	471,182	97.8 (95.7–99.9)
Not willing to shelter-in place	11	5.7	28,037	5.3 (1.5–9.2)
Don't know if will evacuate	6	3.1	15,064	2.5 (0.7–5.0)

*Of those willing to shelter (n=175)

Reasons not willing to shelter-in-place (n)

- Want to reunite with family (4)
- Want to leave the area as quickly as possible (3)
- Lack of trust in public health officials (3)
- Inconvenient (1)
- Concern about personal safety (1)
- Concern about pets (1)

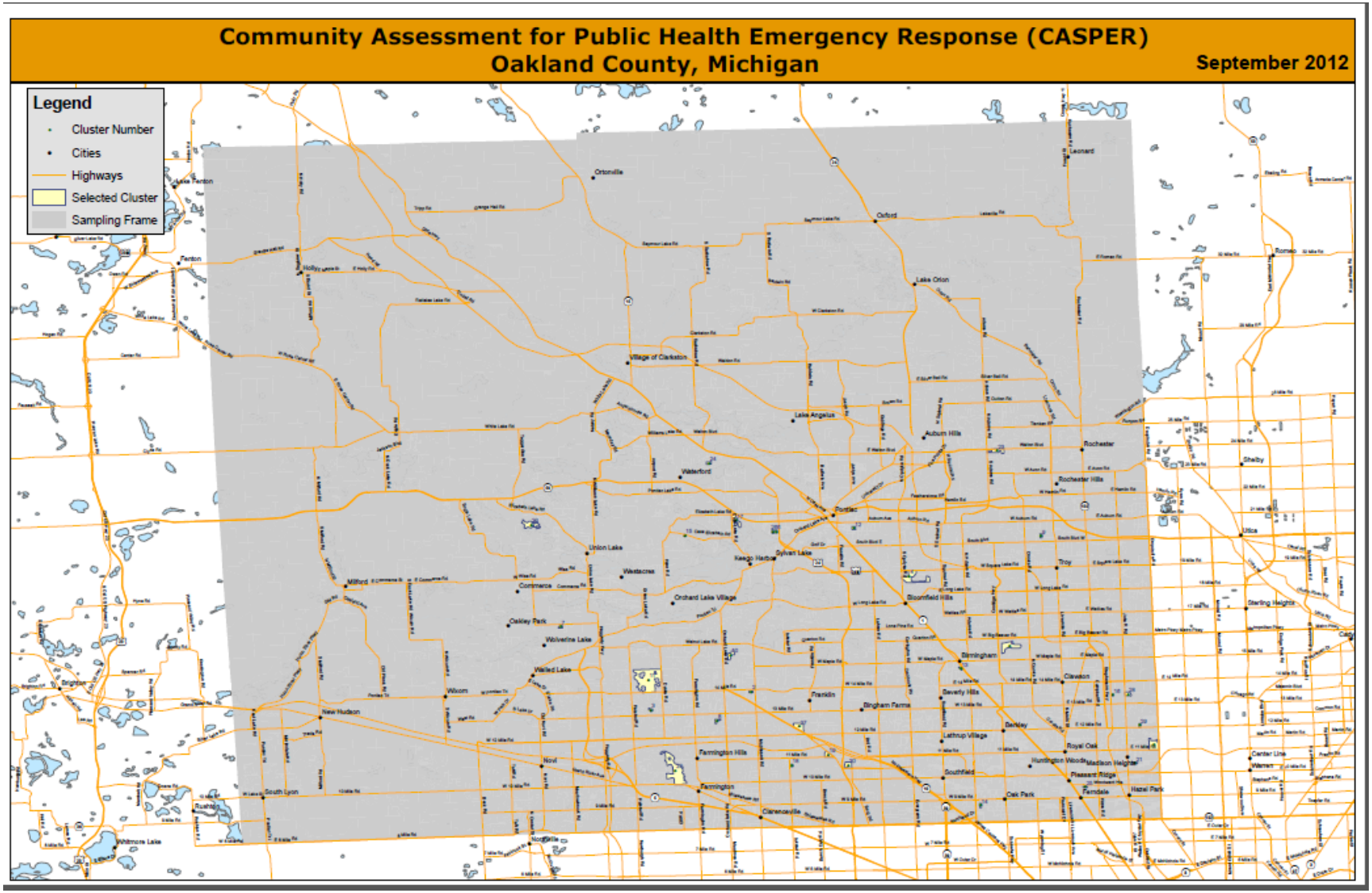
Table 16. Trusted and main source of information for radiation emergency

	Frequency (n=192)	% of households	Projected number of households	Weighted % (95% CI)
Most trusted source				
Local public health department	65	33.9	192,406	36.5 (28.3–44.7)
Local news	46	24.0	121,436	23.0 (16.6–29.5)
Physician	23	12.0	59,002	11.2 (5.7–16.7)
Family members	22	11.5	58,584	11.1 (5.2–17.0)
Governor's office	16	8.3	40,590	7.7 (3.8–11.6)
Other	14	7.3	38,498	7.3 (3.3–11.3)
Main source of information				
TV	104	54.2	294,259	55.8 (48.8–62.8)
Radio	37	19.3	96,831	18.4 (13.1–23.6)
Internet	28	14.6	71,556	13.6 (8.0–19.2)
Word of mouth	6	3.1	16,320	3.1 (0.7–5.5)
Text message	4	2.1	10,043	1.9 (0.1–3.7)
Automated call	3	1.6	7,950	1.5 (0.0–3.2)
Social media	1	0.5	3,515	0.7 (0.0–2.0)
Church	1	0.5	2,929	0.6 (0.0–1.7)
Local Newspaper	1	0.5	2,511	0.5 (0.0–1.5)
Other	7	3.7	21,341	4.0 (1.0–7.1)

Table 17. Use of Oakland County Health Division information

	Frequency (n=192)	% of households	Projected number of households	Weighted % (95% CI)
Have visited the OCHD website	53	27.6	145,623	27.6 (19.1–36.2)
Reasons for getting information from OCHD				
Disease outbreak	142	74.0	397,115	75.3 (67.4–83.2)
Radioactive material release	122	63.5	340,791	64.6 (54.9–74.4)
Chemical spill	119	62.0	331,585	62.9 (54.1–71.7)
Act of terrorism	80	41.7	214,417	40.7 (32.3–49.0)
Flood	60	31.2	164,621	31.2 (23.8–38.7)
Tornado	57	29.7	152,485	28.9 (23.4–34.4)
Prolonged power outage	50	26.0	135,329	25.7 (19.4–31.9)
Snow/ice storm	44	22.9	119,427	22.7 (17.0–28.3)
Would not seek info	19	9.9	51,888	9.8 (4.1–15.6)
Other	18	9.4	46,867	8.9 (3.1–14.7)

Figure 1. Sampling frame with urban/rural stratification and selected clusters



Appendix I: Oakland County CASPER Questionnaire – April 2012 OMB No. 0920-0008

To be completed by team BEFORE the interview

Q1. Date (MM/DD/YY):

Q2. Cluster Number:

Q3. Survey Number:

Q4.Team:

The first set of questions ask for some basic information about your household

Q5. Type of structure □ Single family □ Multiple unit □ Mobile home □ Other _____

Q6. How many people live in your household, including you? ___

Q7. How many people living in your household are *(list number)*

Less than 2 years old? _#_ 2-17 years old? _#_
18-64 years old? _#_ 65 years or more? _#_

□ DK □ Refused

Q8. In the past 5 years, have you or anybody in your household taken training in

First aid □ Yes □ No □ DK □ Ref
CPR □ Yes □ No □ DK □ Ref
CERT (Community Emergency Response Team) □ Yes □ No □ DK □ Ref

Q9. Have you or a member of your household ever been told by a healthcare professional that he/she has

Asthma/COPD/Emphysema □ Yes □ No □ DK □ Ref
Diabetes □ Yes □ No □ DK □ Ref
Developmental disability □ Yes □ No □ DK □ Ref
Hypertension/heart disease □ Yes □ No □ DK □ Ref
Immunosuppressed □ Yes □ No □ DK □ Ref
Physical disability □ Yes □ No □ DK □ Ref

Q10. Do you or does any member of your household need

Daily prescription medication □ Yes □ No □ DK □ Ref
Dialysis □ Yes □ No □ DK □ Ref
Home health care □ Yes □ No □ DK □ Ref
Oxygen supply □ Yes □ No □ DK □ Ref
Wheelchair/cane/walker □ Yes □ No □ DK □ Ref
Other type of special care □ Yes □ No □ DK □ Ref

The next set of questions asks about your household's plans for being prepared for an emergency. For these questions, we define "emergency" as an event that negatively affects the health and safety of your community for more than 24 hours. Examples include major flooding, winter storms, major chemical spills and tornadoes.

Q11. 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 in case you cannot return home □ Yes □ No □ DK □ Ref
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

Q12. Does your household currently have

Adequate drinking water (besides tap) for the next 3 days? (1 gallon/person/day) □ Yes □ No □ DK □ Ref
Adequate non-perishable food (e.g., protein bars, nuts) for the next 3 days □ Yes □ No □ DK □ Ref
A way to cook food (e.g., gas or charcoal grill) if you had no utilities □ Yes □ No □ DK □ Ref
A 7-day supply of medication for each person who takes prescribed meds □ Yes □ No □ DK □ N/A □ Ref
Adequate food and water for your pet(s) for the next 3 days □ Yes □ No □ DK □ N/A □ Ref

Q13. Has your HH prepared a first aid kit with medical supplies that is kept in a designated place in your home? □ Yes □ No □ DK □ Ref

Q14. Has your HH prepared an Emergency Supply Kit with supplies such as flashlights, radio, and extra batteries that is kept in a designated place in your home?
□ Yes □ No □ DK □ Ref

Q15. Does your household currently have the following

A working generator □ Yes □ No □ DK □ Ref
If YES, do you have a 3 day fuel supply □ Yes □ No □ DK □ Ref
A working smoke detector □ Yes □ No □ DK □ Ref
A working carbon monoxide detector □ Yes □ No □ DK □ Ref
A working fire extinguisher □ Yes □ No □ DK □ Ref
A backup heat source (e.g., kerosene heater, fireplace) □ Yes □ No □ DK □ Ref

Q16. What are the top three emergencies you feel are most likely to affect your household? *(Do not read list. Can clarify what "emergency" is based on above definition)* □ DK □ Ref

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□ Flood □ Chemical Spill □ Forest fire/brush fire □ Other_____
□ Tornado □ Earthquake □ Act of terrorism
□ High winds □ Ice/snow storm □ Rain/thunderstorm

Q17. Do you have a pet(s)? □ Yes □ No

Q17b. If *YES*, in an emergency if your household was asked to evacuate, what would you do with your pet(s)? *(check one)*

□ 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
□ DK □ Refused

Q18. Is there someone outside of your home who would be dependent on your help during an emergency (for example, an elderly neighbor)?

□ Yes □ No □ DK □ Ref

Q18b. If *YES*, would your household be responsible for *(check all)*

□ Transportation
□ Food and Shelter
□ Medical Care
□ Other_____

Continue on following page…

Now, we are going to ask about how you might protect yourself and your family if there was a release of radioactive material that could affect your community. For example, what if there was a release from a nuclear power plant in Michigan similar to what happened in Japan last year following the earthquake and tsunami, or a large release of radioactive material because of a nearby transportation accident.

Q19. If radioactive material was released and officials told you and your household to go to a radiation screening center, would you go there? □ Yes □ No □ DK □ Ref

Q19b. If *NO*, what is the main reason why your household would not? *(check only one)*
□ Prefer to go to hospital
□ Prefer to go to primary care physician
□ Fear of being exposed to radiation from other people
□ Other_____
□ DK □ Ref

Q20. If radioactive material was released and officials told you and your household to evacuate, would your household do so?
□ Yes □ No □ DK □ Ref

Q20b. If *NO*, what would be the main reason why your household would not evacuate? *(check only 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 (e.g., could not be moved)
□ Other_____ □ DK □ Ref

Q21. If radioactive material was released and officials told your household to shelter-in-place, that is, to remain in a safe location, would your household remain in place?
□ Yes □ No □ DK □ Ref

Q21b. If *YES*, would you and members of your household be willing to remain for up to 24 hours? □ Yes □ No □ DK □ Ref

Q21c. If *NO*, what is the main reason why you would not? *(check only one)*
□ Want to reunite with family members
□ Want to leave the area as quickly as possible
□ No access to sufficient food or water
□ No access to needed medications
□ Lack of trust in public health officials
□ Concern about personal safety
□ Inconvenient
□ Other_____ □ DK □ Ref

Q22. If radioactive material was released, who would you and members of your household most likely trust for reliable info? *(check only one)*
□ Governor's office □ Local public health department
□ Physician/med professional □ Family member/neighbor
□ Local news □ Other_____ □ DK □ Ref

Q23. If radioactive material was released in your community, what would be the main source of information for your household to keep up-to-date on the event? *(check only one)*
□ TV □ Radio □ Text message □ Automated call (e.g., reverse 911) □ Local newspaper □ Poster/flyer
□ Neighbor/friend/family/word of mouth □ Social Media (Twitter, Facebook, etc.) □ Internet (Other than social media websites) □ Church or other groups □ Other, _____ □ DK □ Ref

Finally we're going to ask you some questions that will assist Oakland County Health Division to respond to the community during an emergency.

Q24. Have you or anyone in your household visited the Oakland County Health Division website www.oakgov.com/health?
□ Yes □ No □ DK □ Ref

Q25. During which of the following incidents are you or members of your household likely to seek information from Oakland County Health Division? *(select all that apply)*
□ Prolonged Power Outage □ Snow/Ice Storm □ Flood □ Chemical Spill □ Tornado □ Act of Terrorism
□ Radioactive Material Released into the Community □ Disease Outbreak (e.g. Whooping Cough, Flu, etc.)
□ Other incidents_____ □ I wouldn't seek information from OCHD for any of these incidents
□ DK □ Ref
(The interview is complete. Please thank the interviewee for their time!)

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