An Evaluation of Select Seattle Emergency and Disaster Preparedness Education Programs

Seattle after the Nisqually Delta Earthquake, 2001
Photo courtesy of FEMA

A Report Prepared by:
Rudy Owens

Research Conducted in Fulfillment of Master of Public Health Degree Requirements for the University of Washington School of Public Health

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Table of Contents

Executive Summary 3
Main Findings 4
Background for Study 6
Who Attends OEM/SNAP Classes 7
Race/Ethnicity 8
Education and Income 9
Knowledge of Emergency and Disaster Preparedness 11
Disaster Supplies at Home and Levels of Preparedness 13
How Respondents Learn About Emergency and Disaster Preparedness 15
Trust in Emergency and Disaster Preparedness Information Messengers 16
Trust Issues 19
Implications and Recommendations 20
References 23
Appendices 24
About the Author 30

Executive Summary:

The City of Seattle Office of Emergency Management (OEM) is responsible for preparing the city and all of its residents for a wide range of potential disasters and emergencies. These possible incidents include earthquakes, winter and severe weather storms, terrorism threats, floods, mudslides, civil disruptions, and other natural and manmade occurrences. Hazard planners for the OEM cannot predict exactly which event will occur or when. However, OEM staff are tasked with ensuring that all residents, their families, and their workplaces are ready for disasters or emergencies and subsequent recovery efforts. A central premise of the OEM's planning model is to ensure the all residents "take care of each other," in order to ensure that the city utilizes its resources to address the highest needs when disasters occur.[1] The OEM notes, "The better you are prepared, the less you are scared."[1]

This report analyzes the OEM's emergency and disaster preparedness education for the general population, specifically its Seattle Neighborhoods Actively Prepare (SNAP) program. The research evaluates who the program targets, what they know, and who they trust for preparedness messaging. The OEM agreed to partner with the researcher, Rudolf Owens, who conducted surveys of a sample population of adult Seattle residents who attended courses taught by the OEM over a two-month period, from September to November 2011. The researcher administered surveys at four of OEM's SNAP courses and three of OEM's Disaster Supply Kit Workshop courses, all between September and November 2011. The OEM offered both courses on weeknights and on weekends at public libraries in Seattle. SNAP courses teach residents how to create disaster plans in order to be self-sufficient in their neighborhoods, while the supply kit courses cover similar issues, but focus more on how to prepare materials for use in the home, car, and workplace for all types of disasters.

The SNAP and supply kit classes are popular with residents, as seen in attendance levels that are at near or full capacity. A majority of attendees learned about the classes from SNAP or the OEM, and they have a high interest in preparedness planning. However, the classes may not be suitable for all vulnerable populations, which include persons with physical or mental disabilities, immigrant communities, people with limited English proficiency, and some minority groups (see appendix B). Findings from the questionnaires also suggest there is value in future research that examines residents' level of preparedness, their trust levels in preparedness messages and messengers, and their knowledge of emergency preparedness, in order to help planners develop programs that continue to educate residents and reach a wider audience through public education campaigns. A summary of comments from respondents how to become better prepared for emergencies and disasters is provided (see appendix A).

Main Findings:

More than one-half of the residents who attended the seven courses (n=94) completed the researcher's two-page questionnaire (see appendix C). A summary of the main findings is provided below:

Profile of Survey Respondents:

- Females made up more than two-thirds of the survey respondents (69%), confirming research indicating that women have higher levels of information-seeking behavior concerning preparedness and thus would be more likely to attend such classes.[2]
- The respondents surveyed over-represented whites and Asian Americans and under-represented all other racial and ethnic groups, in proportion to their overall representation in the city's population.
- Compared to the city's population, those surveyed were more educated and had higher incomes. All told, 73% of the respondents had at least a bachelor's degree, while 61% of the respondents' household income was $50,000 or higher.

Respondents' Readiness and Awareness Levels:

- A large majority of respondents, 79%, had seen, read, or heard messages encouraging them to prepare for emergency situations in the last 30 days, but only half, 52%, reported that they had prepared or re-supplied a kit with emergency supplies at home.
- Most respondents, 82%, reported having had an experience with a disaster or emergency.
- Few respondents, 23%, reported that they had made or updated an emergency plan, which is a primary message communicated locally and nationally by hazard planners.
- A small percentage of respondents, 13%, had practiced how to respond to an emergency at home.
- Most respondents reported having many disaster supplies at home. Only 14% reported having five or fewer recommended disaster supply items at home of 15 items frequently listed as important for disaster or emergency preparedness.
- The proportion of persons from middle- and upper-income households who were well-prepared for a disaster, as measured by the number of emergency supplies in their homes, was nearly double the proportion persons from households with low to moderate income.
- The top two ways respondents reported learning about emergency and disaster preparedness were through the SNAP program (65%) or from the OEM (42%).

Who Respondents Trust:

- Respondents had the greatest levels of trust in emergency responders (police, fire, and EMS professionals) and American Red Cross employees of 10 possible emergency and disaster preparedness messengers. Emergency responders were the most trusted messengers among all respondents. This finding confirms research showing that the public has a high degree of trust in first responders.[3]

- Respondents were the least trusting of federal government employees and elected officials among the 10 possible emergency and disaster preparedness messengers.
- Upper- and middle-income respondents had less trust in television and radio reporters than lower-income respondents.
- Lower-income respondents had less trust in federal government emergency and disaster preparedness messengers than middle- and upper-income respondents. This finding confirms research showing mistrust in government among low-income Americans following Hurricane Katrina, because they were the most disproportionately impacted by the ineffective disaster response.[4]

Background for Study:

The population for this survey (see attached copy in appendix C) was drawn sample of adult Seattle residents who attended courses taught by the Seattle Office of Emergency Management (OEM) over a two-month period, from September to November 2011. The researcher attended Seattle Neighborhoods Actively Prepare (SNAP) courses and Disaster Supply Kit Workshop courses, which are also organized and led by SNAP program educators. Both courses run one and a quarter hours and are offered on weeknights at public libraries in Seattle. The researcher attended four SNAP and three disaster supply classes to administer the questionnaire on the following dates and locations:

Disaster Supply Kit Workshop courses

Date	**Location**
October 27, 2011	Lake City Branch, Seattle Public Library
October 29, 2011	Ballard Branch, Seattle Public Library
October 29, 2011	Broadview Branch, Seattle Public Library

SNAP courses

Date	**Location**
September 14, 2011	Central Library, Seattle Public Library
October 13, 2011	Capitol Hill Branch, Seattle Public Library
October 18, 2011	Northgate Branch, Seattle Public Library
November 3, 2011	Southwest Branch, Seattle Public Library

The researcher consulted with OEM staff, who determined that the two courses would be targeting the same demographic of adult Seattle residents, with very similar goals of educating residents how to be prepared in an emergency or disaster. OEM's staff introduced the researcher as a master of public health student working on a research project. The researcher asked all individuals in the room if they would like to participate in a voluntary and anonymous survey that was being conducting on emergency preparedness communications and awareness in Seattle. All persons were informed the results could be used as part of the researcher's graduate research project at the University of Washington School of Public Health and that the results would be shared with the OEM. Individuals who consented to complete the two-page questionnaire were then given the document to fill out in the classroom meeting spaces. The researcher collected 94 valid questionnaires.

Variables and Measures:

The survey instrument (see appendix C) consisted of three parts:

1. Information concerning a subject's age, gender, household size, race and ethnicity, education, and income;
2. Information concerning a subject's knowledge of emergency and disaster preparedness (eight questions); and
3. Information concerning a subject's preparedness at home, how a subject learns about preparedness, and what messengers are the least and most trusted for emergency and disaster preparedness information.

Who Attends OEM/SNAP Classes:

Residents who attend the OEM's emergency preparedness courses (SNAP and disaster supply kit) are more likely to be middle-aged or older, white or Asian, college educated, and have a household income above $35,000 a year. The mean age of all participants was 52, and nearly two-thirds (62%) were 45 years of age and older. Women disproportionately outnumbered men at OEM courses by a more than two-to-one margin (69% vs. 31%). By comparison, men and women in Seattle both number 50% of the total population, as of 2010.[5]

Only 25% of the respondents lived in single-person households, compared to 75% who lived with one to three other household members. The mean household size of respondents (2.0) corresponded closely to the mean household size in Seattle (2.1), according to the U.S. Census Bureau estimate for 2005-2009.[5]

Table 1: Demographic Characteristics of Survey Participants (N=94)

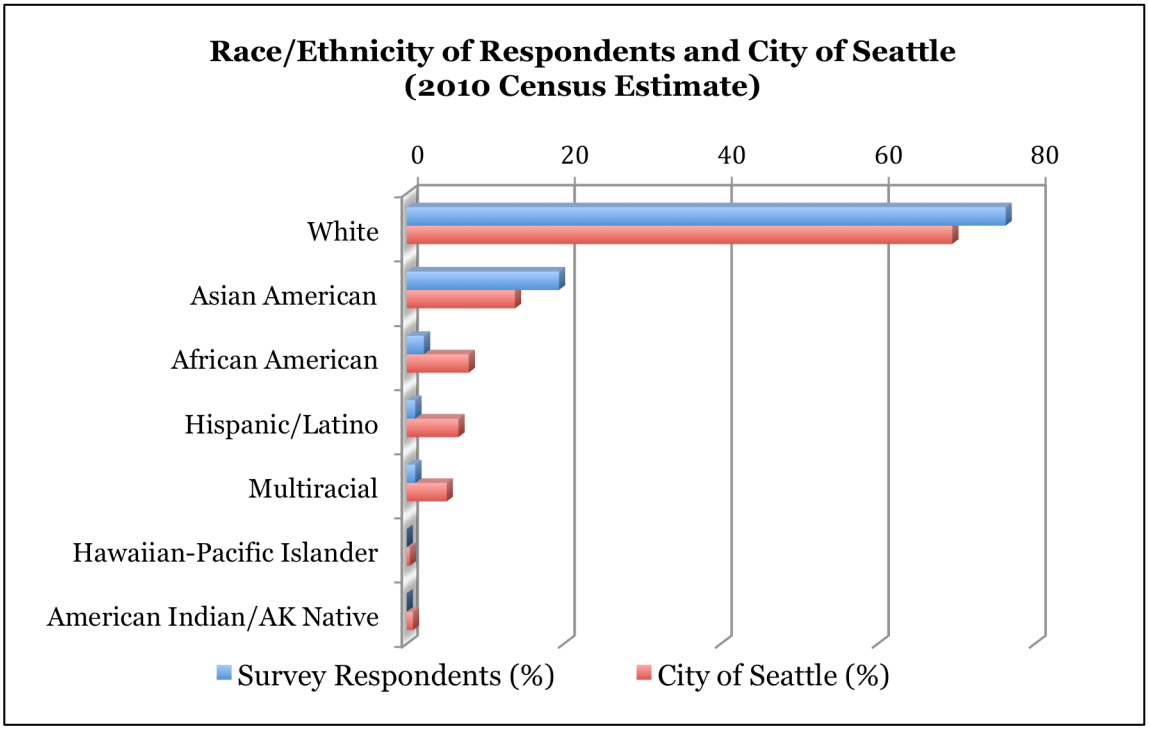
Characteristics	N	%
Age (Years)		
18-24	1	1.1
25-44	35	37.2
45-64	31	33.0
65 and older	27	28.7
Gender		
Male	29	31.2
Female	64	68.8
Missing	1	
Household Number		
1	23	24.5
2	55	58.5
3	8	8.5
4	8	8.5
5	0	0.0
6 or more	0	0.0
Race/Ethnicity		
White	71	76.3
Asian American	18	19.4
African American	2	2.2
Hispanic/Latino	1	1.1
Multiracial	1	1.1
Hawaiian-Pacific Islander	0	0.0
American Indian/Alaska Native	0	0.0
Missing	1	
Education		
Grade school/no schooling	2	2.1
Some high school	1	1.1
High school diploma/GED	6	6.4
Some college/trade school	16	17.0
College degree (BA, BS)	37	39.4
Advanced degree (MA, MBA, PhD, MS, etc.)	32	34.0
Income		
Less than $10,000	3	3.5
$10,000 to $14,999	4	4.7
$15,000 to $24,999	7	8.2
$25,000 to $34,999	8	9.4
$35,000 to $49,999	11	12.9
$50,000 to $74,999	20	23.5
$75,000 to $99,999	14	16.5
$100,000 or more	18	21.2
Missing	9	

Race/Ethnicity:

Audience members at SNAP and supply kit classes were most likely to be white or Asian American. Of the respondents' surveyed, 76% were white, 19% Asian, 2% African American, 1% Latino, and 1% multi-racial. Neither Hawaiian/Pacific Islander nor Native American/Alaska Native respondents were captured in the results. Compared to the 2010 U.S. Census Bureau estimates for the city of Seattle[5], the respondents surveyed over-represented whites and Asian Americans, and under-represented all other ethnic groups.

Table 2: Population Characteristics of Survey Respondents (N=94) and City of Seattle (2010 U.S. Census Bureau Estimate)

Race/Ethnicity	Survey Respondents (%)	City of Seattle (%)
White	76.3	69.5
Asian American	19.4	13.8
African American	2.2	7.9
Hispanic/Latino	1.1	6.6
Multiracial	1.1	5.1
Hawaiian-Pacific Islander	0.0	0.4
American Indian/Alaska Native	0.0	0.8

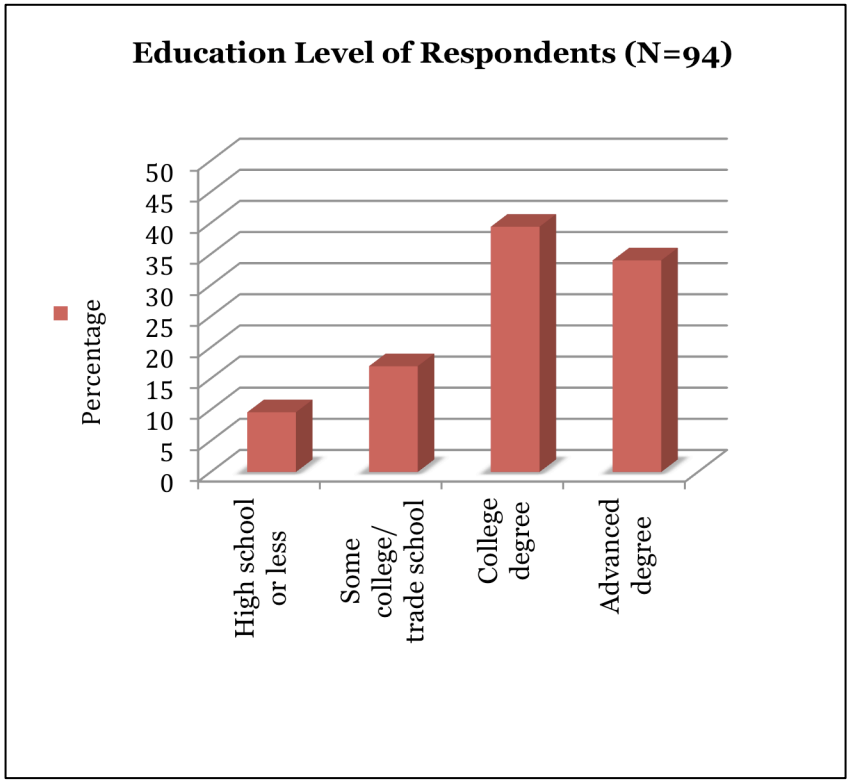


Education and Income:

The majority of adults who attended SNAP and supply kit courses were college educated and had middle- or upper-income households. Only 10% of the respondents had a high school degree or less, compared to 17% who had some college or trade school education, 39% who had a college degree, and 34% who had an advanced degree (master's level or higher). Among the respondents, the percent of persons who had at least a bachelor's degree was significantly higher (73.4%) compared to the percent of Seattle residents who have a four-year degree or higher (54.3%), according to the U.S. Census Bureau.[5]

Table 3: Education Level of Respondents (N=94)

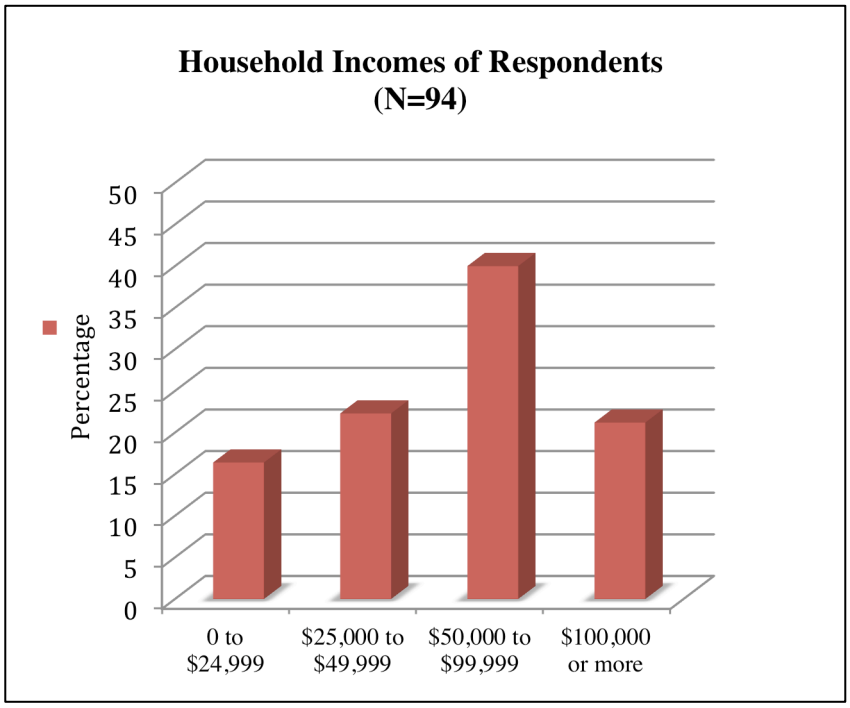
Education Levels	N	%
High school or less	9	9.6
Some college/trade school	16	17.0
College degree (BA, BS)	37	39.4
Advanced degree (MA, MBA, MS, PhD, etc.)	32	34.0



Respondents whose annual household incomes were $24,999 or less numbered 16%, compared to 22% with household incomes between $25,000 and $49,999, 40% with household incomes between $50,000 and $99,999, and 21% with household incomes above $100,000. The average incomes levels of respondents somewhat track U.S. Census Bureau income estimates for Seattle, for 2005-2009. Those estimates place Seattle median income at $58,990,[5] which compares to the income level category most common among the survey respondents ($50,000 to $74,999, N=20; see table 1).

Table 4: Household Incomes of Respondents (N=94)

Household Income Levels	N	%
0 to $24,999	14	16.4
$25,000 to $49,999	19	22.3
$50,000 to $99,999	34	40.0
$100,000 or more	18	21.2
Missing	9	



Knowledge of Emergency and Disaster Preparedness:

The respondents indicated a low to moderate level of awareness of emergency and disaster preparedness, as measured by eight survey questions, despite most of the respondents being exposed to disaster and emergency readiness messages. (See table 5.) The majority of respondents (79%) reported having seen, read, or heard messages encouraging them to prepare for emergency situations in the last 30 days. One-half (52%) reported having prepared or re-supplied a kit with emergency supplies at home and slightly less having a kit in their home, car, or office (45%) they could take if they had to leave quickly. More than four in five respondents (82%) reported having personally experienced a natural or man-made disaster or emergency, suggesting high motivation in the cohort to be prepared for emergencies. Yet, less than one-half of the respondents did not know how to find an emergency broadcast channel on the radio (42%) and slightly less (39%) had taken first aid training such as CPR in the last five years. Even fewer respondents made or updated an emergency plan (23%)—one of the three principal messages ("have a plan") communicated by disaster preparedness officials in Seattle and nationally. Of the respondents, a small number (13%) reported having practiced or drilled what to do during an emergency at home.

Table 5: Respondents' Knowledge of Emergency and Disaster Preparedness (N=94)

Question	Response	N	%
In the past 30 days, have you seen, read, or heard messages that encourage people to take steps to be prepared for emergency situations in your community?	**Yes**	**73**	**79.3**
	No	**17**	**18.5**
	Don't Know	**2**	**2.2**
	Missing	2	
In the last year, have you prepared or resupplied a disaster supply kit with emergency supplies like water, food and medicine that is kept in a designated place in your home?	**Yes**	**48**	**51.6**
	No	**45**	**48.4**
	Don't Know	**0**	**0.0**
	Missing	1	
Have you or a member of your household ever personally experienced a natural or man-made disaster or emergency, such as an earthquake, flood, fire, hurricane, tornado, severe storm, man-made accident (like car collision)?	**Yes**	**76**	**81.7**
	No	**17**	**18.3**
	Don't Know	**0**	**0.0**
	Missing	1	
Do you know how to find the emergency broadcasting channel on the radio?	**Yes**	**39**	**41.9**
	No	**51**	**54.8**
	Don't Know	**3**	**3.2**
	Missing	1	
In the last year, have you prepared or resupplied a small kit with emergency supplies that you keep at home, in your car, or where you work to take with you if you had to leave quickly?	**Yes**	**42**	**45.2**
	No	**50**	**53.8**
	Don't Know	**1**	**1.1**
	Missing	1	
In the last year, have you made or updated a specific plan for how your family would communicate and reunite in an emergency situation if you were separated?	**Yes**	**21**	**23.1**
	No	**70**	**76.9**
	Don't Know	**0**	**0.0**
	Missing	3	
In the last year, have you practiced or drilled on what to do in an emergency at home?	**Yes**	**12**	**13.0**
	No	**79**	**85.4**
	Don't Know	**1**	**1.1**
	Missing	3	
Have you taken first aid training such as CPR in the past 5 years?	**Yes**	**35**	**38.9**
	No	**54**	**60.0**
	Don't Know	**1**	**1.1**
	Missing	4	

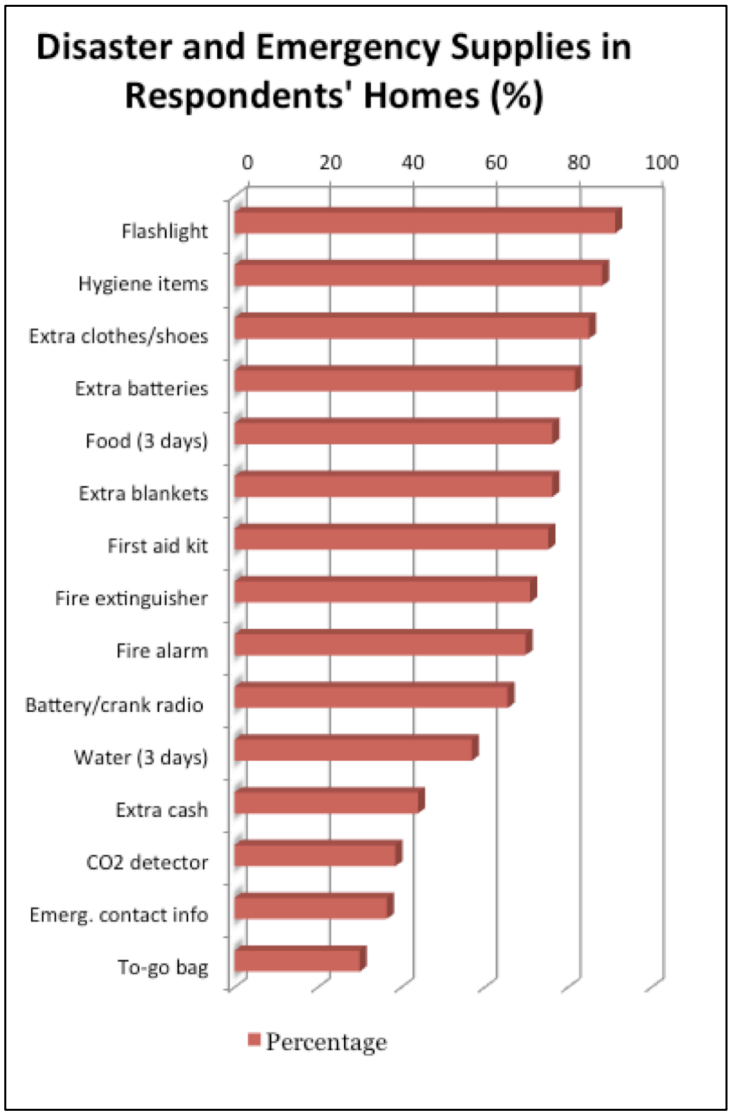
Disaster Supplies at Home and Levels of Preparedness:

SNAP and supply kit class attendees indicated they likely would be ready for an emergency and disaster at the household level. However, less than a third had their emergency or disaster supplies organized in one central place, like a " to-go" bag. The survey asked respondents, yes or no, if they had 15 common emergency and disaster supply items in their homes. The most common items respondents noted having were flashlights (91%), personal hygiene materials (88%), extra clothes/shoes (85%), and extra batteries (82%). The least common items were a to-go bag with supplies already packed (30%), emergency contact information (37%), a carbon monoxide detector (39%), and extra cash (44%).

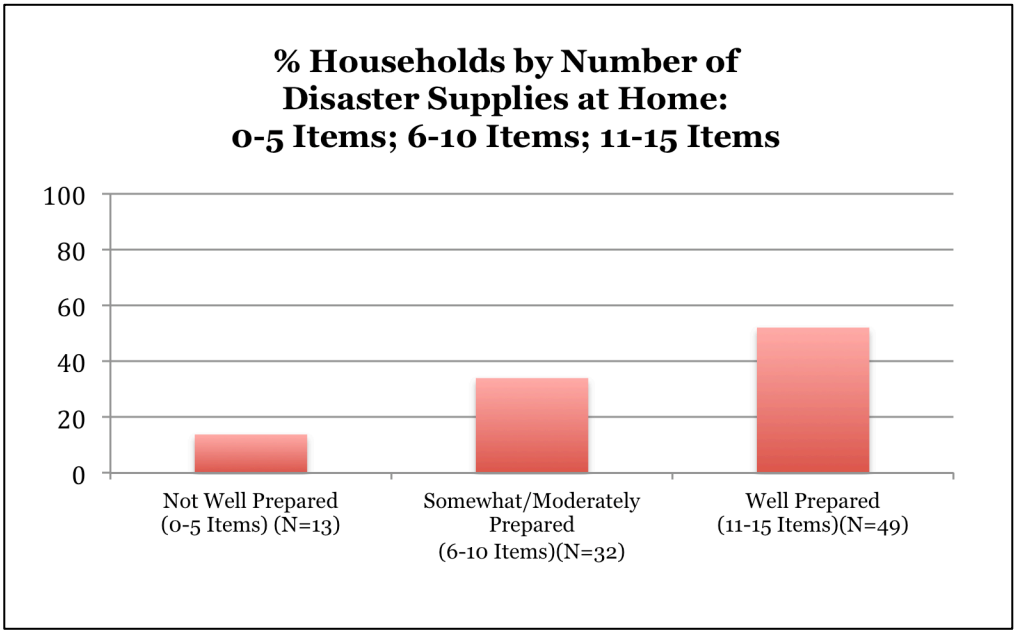
Table 6: Disaster Supplies in Respondents' Homes (N=94)

Disaster Supply	N*	%
Flashlight	85	91.4
Personal hygiene items	82	88.2
Extra clothes/shoes	80	85.1
Extra batteries	76	81.7
Non-perishable food to last 3 days without power	71	76.3
Extra blankets	71	76.3
First aid kit	70	75.3
Fire extinguisher	66	71.0
Fire alarm	65	69.9
A battery operated or crank radio	61	65.6
Bottled drinking water to last 3 days	53	57.0
Extra cash	41	44.1
Carbon monoxide detector	36	38.7
Emergency contact information	34	36.6
A "to go" bag (can include first aid kit, snacks, water, etc.)	28	30.1

**Indicates "yes" to having item*



Overall, SNAP and supply kit class attendees revealed their homes were well prepared for emergencies or disasters as measured by the number of emergency and disaster supply items. More than half of the respondents (52%) of the respondents had 11 to 15 items in their homes, compared to just 14% who had five or fewer items in their homes.



When the income levels of respondents were broken into three categories—low to moderate income, middle income, high income—the proportion of middle-income (58%) and upper-income individuals (56%) who were well-prepared was nearly twice as high as the proportion of persons with low to moderate income (32%). Upper-income respondents (52%) also more likely to have taken a CPR or first aid class in the last five years compared to middle-income (37%) and low-moderate income respondents (25%). Household income levels were defined as the following: low-moderate income, $0-$34,999; middle income, $35,000-$74,999; and upper income, $75,000 and higher.

Table 7:

	Disaster and Emergency Supplies (N=85*)			Taken First Aid or CPR in the Last Five Years (N=81*)	
	Not Well Prepared (0-5 items)	Somewhat / Moderately Prepared (6-10 items)	Well Prepared (11-15 items)	No	Yes
Low-Moderate Income, $0-$34,999	N=5 22.7%	N=10 45.5%	N=7 31.8%	N=14** 70.0%	N=5 25.0%
Middle Income, $35,000-$74,999	N=2 6.5%	N=11 35.5%	N=18 58.1%	N=19 63.3%	N=11 36.7%
Upper Income, $75,000 and Higher	N=5 15.6%	N=9 28.1%	N=18 56.3%	N=15 48.4%	N=16 51.6%

*(*All other cases missing)(**"Don't know," N=1/5%)*

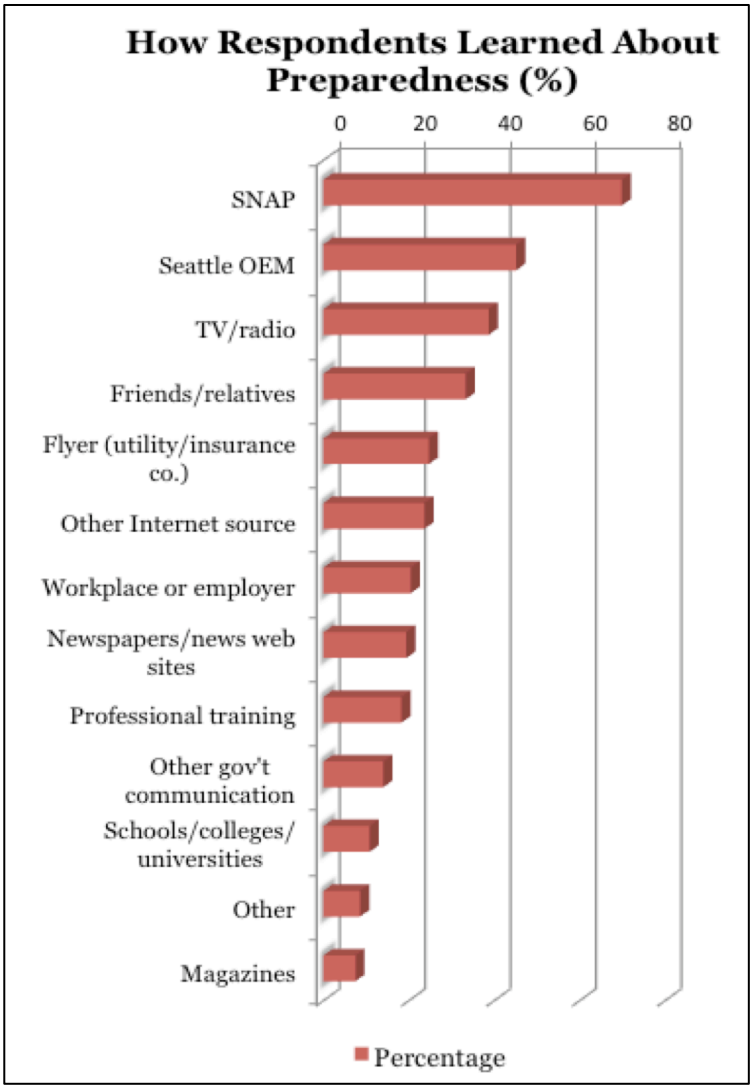
How Respondents Learn About Emergency and Disaster Preparedness:

Respondents learned about emergency and disaster preparedness from the SNAP office (70%), which is housed within the Seattle OEM, or directly from the OEM (45%). The OEM web site, at www.seattle.gov/emergency/, is the primary form of communication for its messages and the SNAP program.[6] SNAP also communicates through its own web page, and SNAP staff shares information and announcements about its classes via email updates and postcards from lists drawn from citizens who have contacted the office. This finding suggests that persons who learned about emergency and disaster preparedness from SNAP or the OEM have computer and Internet access. Television or radio (39%) and friends/relatives (33%) were the next most common ways respondents learned about preparedness. The results overall show that the OEM and the SNAP program were effective in motivating attendees to come to one of the two courses.

Table 8: How Respondents Learned About Emergency and Disaster Preparedness (N=94)

Information Source	N*	%
Seattle Neighborhoods Actively Prepare (SNAP)	65	69.9
City of Seattle Office of Emergency Management	42	45.2
Television or radio	36	38.7
Friends/relatives	31	33.3
Flyer from a utility or insurance company	23	24.7
Other Internet source (including social media like Facebook, YouTube, Twitter, etc.)	22	23.7
Workplace or employer	19	20.4
Newspapers (including news web sites)	18	19.4
Professional training (military, first responder, medical profession, etc.)	17	18.3
Other government communication	13	14.0
Schools/colleges/universities	10	10.8
Other	8	8.6
Magazines	7	7.5

**Missing cases, N=1*



Trust in Emergency and Disaster Preparedness Information Messengers:

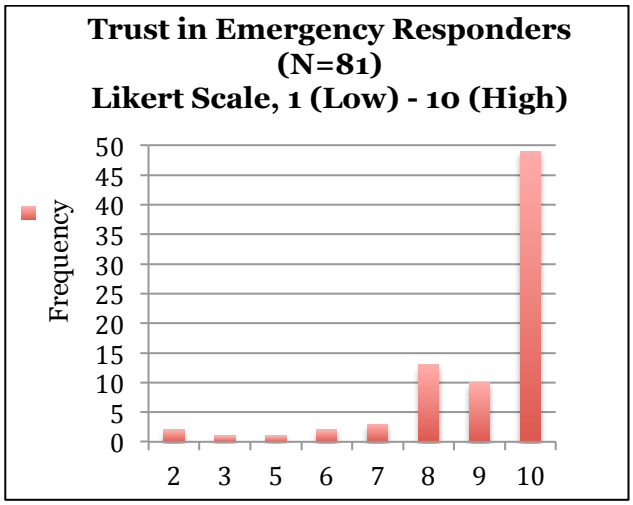
Research has found that for emergency and disaster information, the public has greater levels of trust in local officials compared to federal officials, as well as greater levels of trust in emergency responders than in elected officials.[3] Researchers also have noted that mass media, particularly television, are still considered to be the most dominant source of information for most people, even among minority groups.[2,7] While trust in television for information has been found to be low, trust in television-based information about emergencies runs higher during an emergency.[8]

Attitudes of respondents surveyed at SNAP and disaster supply kit courses corresponded with some of those found in preparedness research. Respondents' trust levels were highest for emergency responders (police, firefighters, EMS) in all measurements. Using a Likert scale of 1-10 (1 low, 10 high), respondents gave this group a mean score of 9. Among respondents, the group was the most frequently chosen among the 10 possible messengers for being the most trusted (49 persons gave this group a score of 10). Respondents rated American Red Cross employees as the second-most trust group (mean score 8.1; 19 persons gave this group a score of 10). Respondents somewhat trusted television/radio reporters, who received a mean score of 5.5; the greatest proportion of respondents (N=19) gave this group a rating of 5. Respondents were least trusting of federal government employees (mean score 5.1) and elected officials (mean score 4.0). Respondents were especially untrusting of elected officials; 21 persons gave this group a score of 1, or the greatest number of low scores recorded for all of the 10 messenger groups.

Table 9: Respondents' Trust Levels in Emergency and Disaster Preparedness Messengers; 1-10 Likert Scale: 1=Least Trustworthy, 10=Most Trustworthy (N=94)

Messenger	N*	Mean	Mode
Emergency responders—police, firefighters, EMS	81	9.0	10
American Red Cross employees	77	8.1	8
Local government employees	78	6.6	7
Survivors of disasters or emergencies	75	6.5	8
State government employees	74	6.1	7
Social service agency employees	75	5.9	7
Community leaders	74	5.9	5
TV/radio reporters	77	5.5	5
Federal government employees	75	5.1	5
Elected officials	73	4.0	1

**All other cases missing for each category*


Trust in Emergency Responders
(N=81)
Likert Scale, 1 (Low) - 10 (High)
Frequency
50
45
40
35
30
25
20
15
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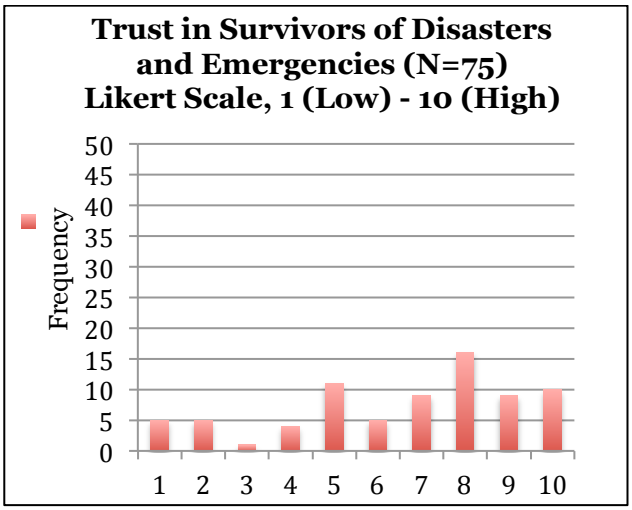
2 3 5 6 7 8 9 10


Trust in Survivors of Disasters
and Emergencies (N=75)
Likert Scale, 1 (Low) - 10 (High)
Frequency
50
45
40
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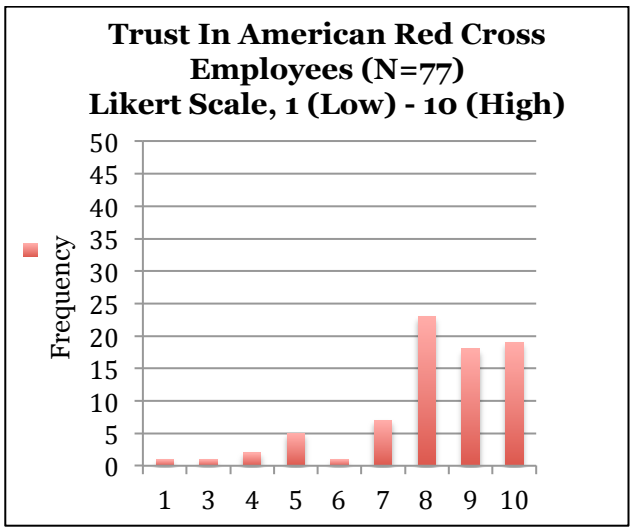
Trust In American Red Cross
Employees (N=77)
Likert Scale, 1 (Low) - 10 (High)
Frequency
50
45
40
35
30
25
20
15
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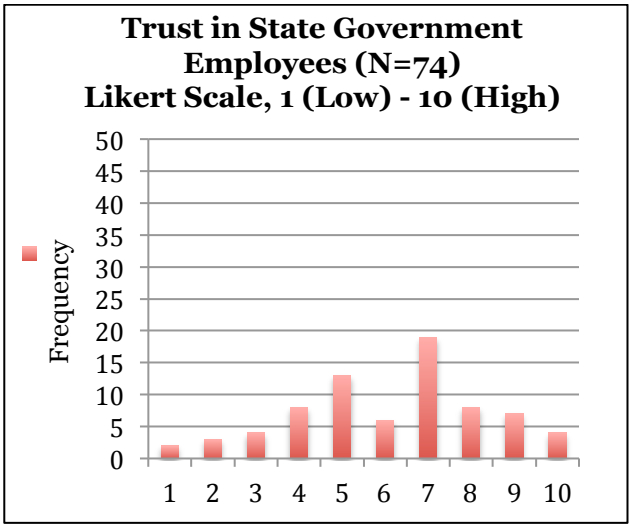
0
1 3 4 5 6 7 8 9 10


Trust in State Government
Employees (N=74)
Likert Scale, 1 (Low) - 10 (High)
Frequency
50
45
40
35
30
25
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10
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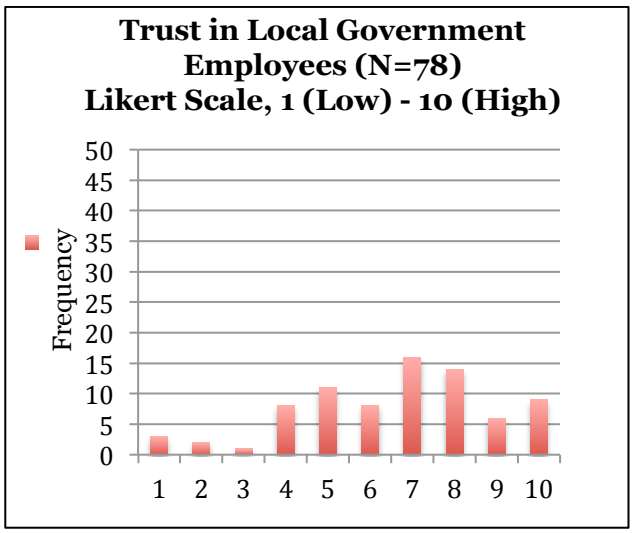
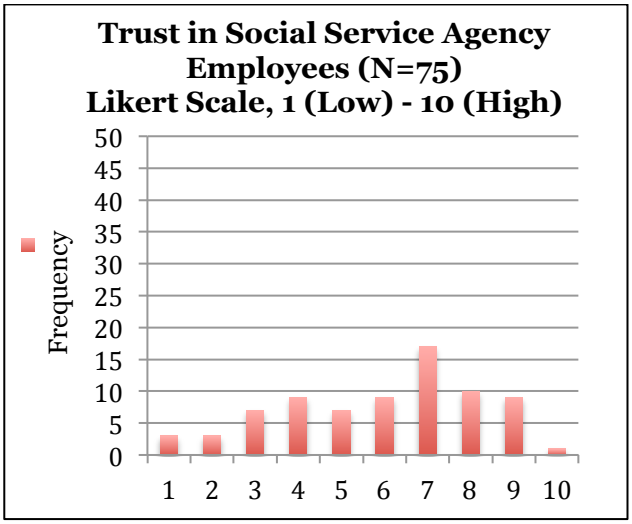
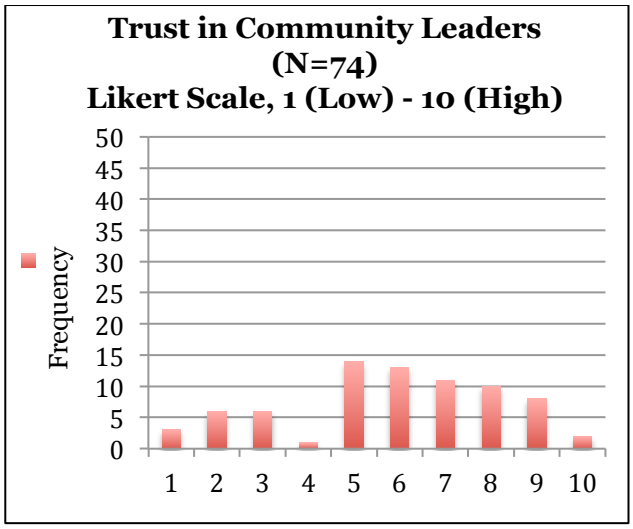
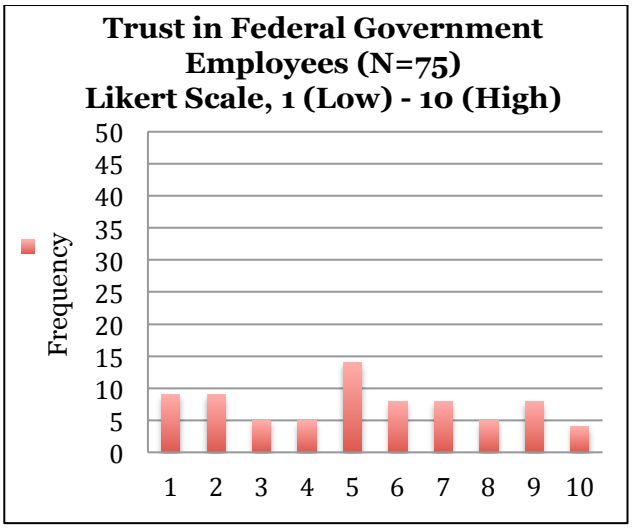
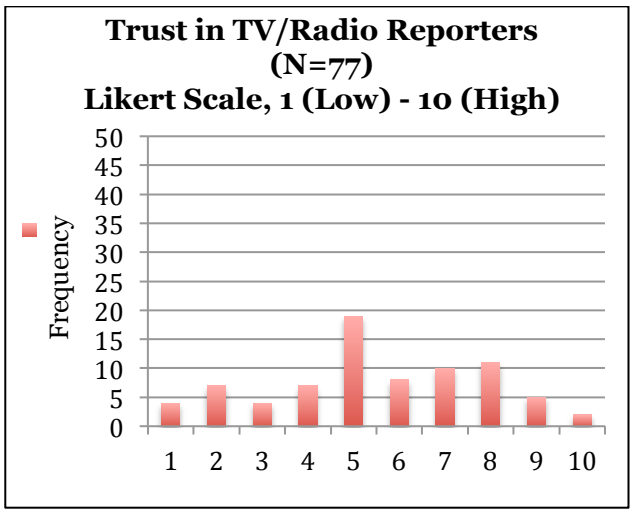
0
1 2 3 4 5 6 7 8 9 10

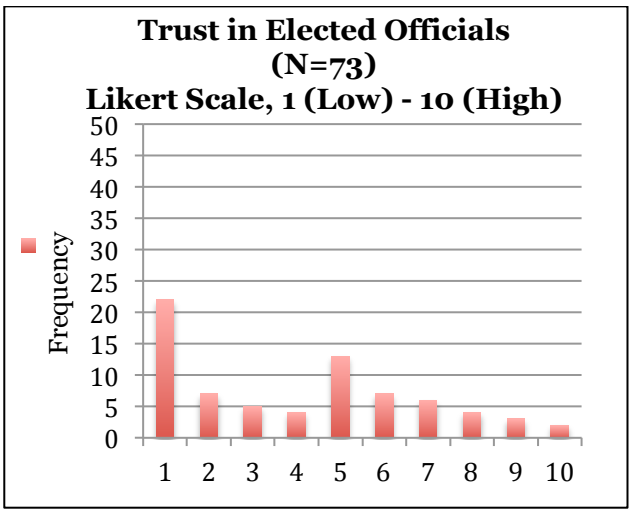

Trust in Local Government
Employees (N=78)
Likert Scale, 1 (Low) - 10 (High)
Frequency
50
45
40
35
30
25
20
15
10
5
0
1 2 3 4 5 6 7 8 9 10


Trust in Social Service Agency
Employees (N=75)
Likert Scale, 1 (Low) - 10 (High)
Frequency
50
45
40
35
30
25
20
15
10
5
0
1 2 3 4 5 6 7 8 9 10


Trust in Community Leaders
(N=74)
Likert Scale, 1 (Low) - 10 (High)
Frequency
50
45
40
35
30
25
20
15
10
5
0
1 2 3 4 5 6 7 8 9 10


Trust in Federal Government
Employees (N=75)
Likert Scale, 1 (Low) - 10 (High)
Frequency
50
45
40
35
30
25
20
15
10
5
0
1 2 3 4 5 6 7 8 9 10


Trust in TV/Radio Reporters
(N=77)
Likert Scale, 1 (Low) - 10 (High)
Frequency
50
45
40
35
30
25
20
15
10
5
0
1 2 3 4 5 6 7 8 9 10


Trust in Elected Officials
(N=73)
Likert Scale, 1 (Low) - 10 (High)
Frequency
50
45
40
35
30
25
20
15
10
5
0
1 2 3 4 5 6 7 8 9 10

Trust Issues:

The survey found that respondents who had low to moderate household incomes ($0-$34,999 annually) were more likely to trust television/radio reporters compared to respondents whose household incomes were middle income ($35,000-$74,999 annually) or upper income ($75,000 or higher annually). In addition, only 6% of low- to moderate-income respondents gave low-trust ratings (Likert scale 1-4) for television/radio reporters compared to 32% of middle-income and 39% of upper-income respondents who gave these messengers low-trust scores. The finding is consistent with outcomes from focus groups conducted in 2010 by Public Health-Seattle and King County on H1N1 vaccine outreach to some vulnerable communities in King County.[9] That research concluded television and radio were primary means for many groups to gather information on health issues.[9]

In the survey of OEM classes, a larger percentage of low-income respondents (47%) gave low-trust scores for federal government employees, compared to middle-income (38%) and upper-income (37%) respondents. This result could not confirm findings of research that has found trust is much lower for government among some minority groups[3,10], given the under-representation of all non-white ethnic and racial groups except Asian Americans in the sample population. However, the survey's results appear to confirm past findings that the federal government's response to Hurricane Katrina has exacerbated mistrust in government among some low-income Americans.[4]

Table 10: Likert Scale, 1-10 1=Low, 10=High

	Level of Trust in Television/Radio Reporters (N=69*)			**Level of Trust in Federal Government Employees (N=68*)**		
	Low Trust (1-4)	Medium Trust (5-7)	High Trust (7-10)	Low Trust (1-4)	Medium Trust (5-7)	High Trust (7-10)
Low-Moderate Income, $0-$34,999	N=1 6%	N=10 63%	N=5 31%	N=7 47%	N=5 33%	N=3 20%
Middle Income, $35,000-$74,999	N=8 32%	N=10 40%	N=7 28%	N=10 38%	N=8 31%	N=8 31%
Upper Income, $75,000 and Higher	N=11 39%	N=12 43%	N=5 18%	N=10 37%	N=14 52%	N=3 11%

*(*All other cases missing)*

Implications and Recommendations*:

How Well Are Select Disaster Preparedness Classes Reaching Residents:
Based on attendance levels that were near or full capacity at the seven SNAP and disaster supply kit courses attended by the researcher, the organization's classes are popular with Seattle residents, except younger adults. The respondents surveyed also have a high interest in preparedness planning and information. However, the classes may not be suitable for some vulnerable populations, which include persons with physical or mental disabilities, immigrant communities, people with limited English proficiency (LEP), and some minority groups (see appendix A for groups considered vulnerable). Seniors, however, are likely to attend, given 29% of those surveyed were 65 years of age or older. Still, low and moderate income and ethnic and racial minorities, with the exception of Asian Americans, were underrepresented in the courses surveyed suggesting they are unaware of the classes, they cannot access the Internet where course information is published by the OEM, or they have other barriers that prevent them from attending public meetings.

Recommendation: The OEM should continue planning programs at public libraries and public meeting spaces, such as Magnuson Park and neighborhood centers. The OEM also should collaborate with community-based organizations (CBOs) to organize basic SNAP classes at times and at venues that can attract some groups underrepresented at these courses according to this survey: African Americans, Latinos/Hispanics, American Indians/Alaska Natives, and Native Hawaiians/Pacific Islanders. The OEM's SNAP and disaster supply kit courses should also be offered during accessible hours at the community centers that serve the four largest public housing communities managed by the Seattle Housing Authority: Yesler Terrace, High Point, Rainier Vista, and NewHolly.

Trust—Obstacles and Opportunities:
Obstacles: Research has been conducted nationally and locally concerning on trust barriers for low-income, minority, and LEP groups with government agencies and personnel. However, the OEM has not had the opportunity to measure individuals' levels of trust concerning preparedness messaging with general populations who attend preparedness awareness and training courses and with vulnerable populations. Given the underrepresentation of lower-income and some racial minorities in this survey, there is insufficient information to assess which messengers are trusted and not trusted among these particular groups.
Opportunities: The questionnaire administered for this research found that there was very high trust for emergency responders and high trust for America Cross employees. This finding indicates preparedness messaging can be enhanced when promoted by the right messengers and partners.

Recommendation: The OEM should work with its preparedness partners to develop general public messaging campaign that incorporates trusted emergency responder professionals into public-service messages via multiple media channels that are used by the

* *See table 11 for a summary of the implications and recommendations.*

public to obtain preparedness information, including the Internet and television and radio. When possible, the OEM should collaborate with the American Red Cross at preparedness courses for the general public. The OEM should also continue using American Red Cross co-branded communications materials targeting the general public how to prepare themselves for emergencies and disasters—such printed materials are already being shared at SNAP courses.

Effectiveness of Primary Messages:

Though 79% percent of the respondents had seen, read, or heard messages encouraging them to prepare for emergency situations in the last 30 days, only 23% said they had made or updated an emergency plan and only 13% had practiced how to respond. Given most of the respondents in the survey had many disaster supplies at home, it is not clear why the "have a plan" message promoted by SNAP and other local and national preparedness messengers is not resonating with the public.

Recommendation: The OEM, in partnership with other emergency planners, may wish to have consultants conduct focus groups to explore barriers preventing the public from taking their awareness of disaster preparedness into activities strongly encouraged by disaster preparedness professionals. The OEM may wish develop a questionnaire that can be shared at its SNAP and disaster supply kit courses that focuses on barriers residents have to implementing the main recommendations. The questionnaire developed for this survey also could be adapted or used at future courses to help the OEM gather data that will help the OEM better track its audience, their level of preparedness and awareness, and the trust they place in messengers who convey preparedness information.

Communicating Preparedness:

Respondents indicated that, after the SNAP program and the OEM, television and radio were the means by which they learned about disaster preparedness. Respondents likely were self-selective and were attending the classes because they already were aware of SNAP's activities.

Recommendation: The OEM's communications to the public should continue using web-based messages. But Internet-based communications will be limited in the audience they reach. Research on communicating disaster preparedness to vulnerable populations has found that that placing information on web sites, even translated information, was not adequate to reach many lower-income minority groups, who need to be reached by other means.[7] The OEM may wish to consider broadcast media channels, if sufficient resources were available for a campaign designed to reach large audiences. In addition the OEM's communications plan should specifically target the print and broadcast media with the goal of generating annual news coverage—at least once a year and following any major disaster event of interest to the general public—that can encourage preparedness planning by residents. Such coverage could reach large segments of the city's population who access print, radio, and television media sources. Research conducted by Public Health-Seattle and King County in 2010 on H1N1 communications found that television and radio are also the most widely used communications methods used by vulnerable populations to gather health-related information.[9]

Table 11: Implications and Recommendations From Survey Results

Issue	Summary	Recommendations
Issue 1: How Well Are Select Disaster Preparedness Classes Reaching Residents	• SNAP and disaster supply kit courses are popular with the general public, especially women, but not younger adults. • Classes may not be suitable for some vulnerable groups: persons with some physical and cognitive disabilities, LEP groups. • Courses are not well-attended by low- to moderate-income persons and racial/ethnic groups except Asian Americans.	• Continue planning programs at public venues (libraries, neighborhood centers). • Collaborate with CBOs to promote SNAP and disaster supply kit classes that reach minorities undercounted in survey sample. • Program SNAP and disaster supply kit courses at four Seattle Housing Authority family housing community centers.
Issue 2: Trust—Obstacles and Opportunities	• *Obstacle*: Trust barriers hinder communications between government and low-income, minority, and LEP groups. • *Opportunity*: SNAP respondents have very high trust for emergency responders and high trust American Red Cross employees.	• Future public messaging should incorporate trusted messengers (emergency responders) into communications via multiple media channels. • The OEM should continue collaborating and co-branding its materials for the general public with the American Red Cross.
Issue 3: Effectiveness of Primary Messages	• Nearly four in five respondents had seen, read, or heard a preparedness mess in the last month. • Fewer than one in five respondents had practiced how to respond to a disaster or emergency.	• The OEM may wish to conduct focus groups to explore barriers preventing residents from moving from preparedness awareness to preparedness actions. • The OEM may wish to implement surveys at SNAP and disaster supply kit courses to identify barriers to becoming more prepared.
Issue 4: Communicating Preparedness	• Television and radio were the most common information channels respondents used to learn about disaster preparedness, following SNAP and OEM communications.	• The OEM should continue using Internet-based communications to motivate residents to attend preparedness classes. • To reach groups who don't use the Internet, the OEM should consider broadcast media messaging. • The OEM's communications plan should pro-actively seek broadcast and print media coverage of preparedness activities to boost public awareness.

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Appendix A:

Responses to question on questionnaire: "What would be most helpful for you and your family to be better prepared for an emergency?"

Better Preparedness at Home and in One's Neighborhood

- Out of town contacts, "to go" bags.
- To know more people.
- Get disaster kit together.
- We plan to organize our neighborhood, which would help a lot.
- Know the safe zones in my area; connect with a hub.
- Kit, plan, learn skills
- Workshops, connection to neighborhood hubs
- Taking the steps to become more prepared.
- Put together the disaster kit, plan and practice.
- Get a to-go kit prepared; I have a larger one—Red Cross.
- Communication with our landlord about the specific needs/concerns of our building in case of a disaster, especially an earthquake. It would be helpful if we knew our neighbors better.
- To make neighbors also aware of this information.
- Getting to know our neighbors—just moved!
- Getting the neighbors involved.
- To really feel we can trust an honest and organized community response.
- I need a kit.
- Remember to update contact plan. Restock disaster kit.
- Get kits ready. Work on a plan and a communication plan with family and nonlocal friends. Do it.
- To know what things to have in a preparation kit.
- Get together a plan.
- If we just get our act together and get prepared! (A kick in the butt … make it a priority.)
- To get together a kit with all the things we may need in an emergency.
- More money, food, and guns.
- Supplies and kits.
- Communication plan.
- Home team day to get a list together for each to get supplies purchased and in a container in a designated area.
- Plan!

More Education

- Classes like these. Simple instructions, regular drills. Being constantly reminded to prepare—TV, radio, mail, public-service announcements.
- Programs and classes like these.
- Continued SNAP class. Would help the community at large. Personally I think emergency hub training would help me the most.
- The emergency preparedness class was really helpful. Some kind of brief snapshot of where to go for information in the case of an emergency in hard copy would be good (and may well exist!). Maybe a card/handout at the library? (Again, that may be there and I haven't seen it.)
- More emergency preparedness classes.
- Regularly scheduled program to keep emergency information fresh and current.
- Workshops like this, practical, hands-on. Show how easy it can be. Like the skills

training. Would like the workshops on a different day. Can't make Thursdays (SNAP class).
• Events like this that bring people together. Making a disaster kit on your own can be daunting.
• First aid training; just taking the time and resources to collect it all.

More Public Messaging

• More preparedness information on radio, TV, newspapers. SNAP talks very informative and helpful.
• More city of Seattle information online. More organization by the neighborhood council.
• Continue to keep the information and encouragement in front of us.
• Communication.
• Communication x3.
• Emergency broadcasting channel # options.
• Better info on what media sources broadcast official info, and where in our neighborhood to go for help if 911 is not available.

Improving SNAP/Disaster Supply Kit Courses

• For this talk, spend less time telling us to be prepared and more on how. First half of time was preaching to the choir.
• Written guidelines, checklist.
• Specifics, and info/training on dealing with utilities.
• In case the house is not where we can stay, information where the nearest shelter will be, such as the nearest school.
• Less reliance on web sites since I have no computer.
• You said to stay at home, but how to pick up kids? How to get home if work is dangerous (I work in chemical research).

Other

• Knowing a one-stop place in Northgate area.
• A way to know if my landlord has made my building safe and retrofit.
• This kit planning is a great motivator to follow up for a disaster.
• We have a neighborhood watch group. Use these groups to disseminate information, gathering spots for help. First aid encouragement. Have an emergency block watch person.
• Enjoyed the SNAP meeting, very informative.
• I feel pretty informed.
• Just get it done.
• The knowledge.
• An emergency to happen.
• This presentation.
• Meetings

Appendix B:

The term "vulnerable populations," used by Seattle and King County public health and emergency preparedness specialists, refers to 16 separate groups of residents.[11]

Blind: Persons whose range of vision includes low vision, night blindness, color blindness, impaired depth perception, etc.

Chemically Dependent: Persons who are substance abusers, who would experience withdrawal, sickness, or other symptoms due to lack of access—i.e., methadone users.

Children: Persons who are below age of the majority and separated from parents/guardians—in child care; in Head Start; in before- and after-school programs; latch-key kids; and those in school, foster care, truancy, and the juvenile justice system.

Clients of the Criminal Justice System: Persons who are ex-convicts, parolees, people under house arrest, and registered sex offenders.

Deaf, Deaf-Blind, Hard of Hearing: Persons who are latent deaf or who experience situational loss of hearing or limited-range hearing.

Developmentally Disabled: Persons who are unable to safely survive independently or attend to personal care.

Emerging or Transient Special Needs: Persons who have needs and conditions created by an emergency or temporary conditions—i.e., loss of glasses, broken leg, tourists and visitors needing care.

Homeless and Shelter Dependent: Persons who are in shelters, on the streets, or temporarily housed—in transitional housing or in safe houses for women and minors.

Immigrant Communities: Persons who may have difficulty accessing information or services because of cultural differences.

Impoverished: Persons who have extremely low income and those without resources or political voice, limited access to services, and limited ability to address own needs.

Limited English or Non-English Proficient: Persons who have limited ability to speak, read, write or fully understand English.

Medically Dependent, **Medically Compromised**: Persons who are dependent on medications to sustain life or control conditions for quality of life—i.e., diabetic; weakened immune systems, those who cannot be in or use public accommodations.

Mentally Ill: Persons who have serious and persistent illness; includes being a danger to themselves or others.

Physically Disabled: Persons for whom full-time attendant care is required for activities of daily living and/or instrumental activities of daily living.

Seniors: Persons who are the frail elderly and people who have age-related limitations and needs, including those in nursing home or assisted-living care or who are living alone and not connected socially or to service providers.

Undocumented Persons: Persons who distrust authorities, political dissidents, and others who will not use government or other traditional service providers.

Appendix C: Copy of Survey

Dear Sir or Madam: My name is Rudy Owens. I am a graduate student at the University of Washington School of Public Health (UW SPH). I am currently working on a graduate research project examining emergency preparedness communications and emergency preparedness awareness in Seattle.

I would like to invite you to participate in this optional survey. The data I am collecting will be anonymous and may be included in the research paper submitted as part of the requirements to complete my Master of Public Health degree at the University of Washington School of Public Health in the spring of 2012. You also will be allowed to provide comments at the end. Thank you for your time and your participation.

Rudy Owens, Master of Public Health Candidate,
University of Washington School of Public Health
Tel: 206 782 2016, **Email**: rsdowens@uw.edu

PART 1: Please provide one answer for each question below:

What is your age: _____

What is your gender:
- ☐ Male
- ☐ Female

What is your race/ethnicity:
- ☐ White
- ☐ African American
- ☐ American Indian/Alaska Native
- ☐ Asian American
- ☐ Native Hawaiian/Pacific Islander
- ☐ Hispanic or Latino
- ☐ Multiracial

What best describes your annual family income level:
- ☐ Less than $10,000
- ☐ $10,000 to $14,999
- ☐ $15,000 to $24,999
- ☐ $25,000 to $34,999
- ☐ $35,000 to $49,999
- ☐ $50,000 to $74,999
- ☐ $75,000 to $99,999
- ☐ $100,000 or more

How many people live in your household:
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6 or more

What is your highest level of education:
- ☐ Grade school/no schooling
- ☐ Some high school
- ☐ High school diploma/GED
- ☐ Some college/trade school
- ☐ College degree (BA, BS)
- ☐ Advanced degree (MA, MBA, MS, PhD, etc.)

PART 2: Please describe your knowledge of emergency and disaster preparedness:

In the past 30 days, have you seen, read, or heard messages that encourage people to take steps to be prepared for emergency situations in your community:
- ☐ Yes
- ☐ No
- ☐ Don't know

In the last year, have you prepared or resupplied a disaster supply kit with emergency supplies like water, food and medicine that is kept in a designated place in your home:
- ☐ Yes
- ☐ No
- ☐ Don't know

Have you or a member of your household ever personally experienced a natural or man-made disaster or emergency, such as an earthquake, flood, fire, hurricane, tornado, severe storm, man-made accident (like car collision):
- ☐ Yes
- ☐ No
- ☐ Don't know

Do you know how to find the emergency broadcasting channel on the radio:
- ☐ Yes
- ☐ No
- ☐ Don't know

In the last year, have you prepared or resupplied a small kit with emergency supplies that you keep at home, in your car, or where you work to take with you if you had to leave quickly:

- ☐ Yes
- ☐ No
- ☐ Don't know

In the last year, have you made or updated a specific plan for how your family would communicate and reunite in an emergency situation if you were separated:

- ☐ Yes
- ☐ No
- ☐ Don't know

In the last year, have you practiced or drilled on what to do in an emergency at home:

- ☐ Yes
- ☐ No
- ☐ Don't know

Have you taken first aid training such as CPR in the past five years:

- ☐ Yes
- ☐ No
- ☐ Don't know

PART 3: Please check all that apply:

Which of the following items are in your house:

- ☐ Flashlight
- ☐ A battery operated or crank radio
- ☐ Extra batteries
- ☐ First aid kit
- ☐ Personal hygiene items
- ☐ Bottled drinking water to last 3 days
- ☐ Non-perishable food to last 3 days without power
- ☐ Extra clothes/shoes
- ☐ Extra blankets
- ☐ Extra cash
- ☐ A "to go" bag (can include first aid kit, extra medications, snacks, water, clothes, flashlight, batteries, radio, etc.)
- ☐ Emergency contact information
- ☐ Fire extinguisher
- ☐ Fire alarm
- ☐ Carbon monoxide detector
- ☐ Don't know

How have you learned about emergency and disaster preparedness:

- ☐ Television or radio
- ☐ Flyer from a utility or insurance company
- ☐ City of Seattle Office of Emergency Management
- ☐ Seattle Neighborhoods Actively Prepare (SNAP)
- ☐ Other government communication
- ☐ Other Internet source (including social media like Facebook, YouTube, Twitter, etc.)
- ☐ Friends/relatives
- ☐ Newspapers (including news web sites)
- ☐ Magazines
- ☐ Schools/colleges/universities
- ☐ Professional training (military, first responder, medical profession, etc.)
- ☐ Workplace or employer
- ☐ Other _____
- ☐ Don't know

On a scale of 1-10, rate for each group who you trust the most to communicate information about emergencies or disasters, with 10 being the most trustworthy and 1 being the least trustworthy.

___ Emergency responders—police, firefighters, EMS
___ American Red Cross employees
___ Local government employees
___ State government employees
___ Social service agency employees
___ Community leaders
___ Survivors of disasters or emergencies
___ Federal government employees
___ TV/radio reporters
___ Elected officials

What would be most helpful for you and your family to be better prepared for an emergency?

_____
_____
_____
_____
_____

About the Author:

Rudy Owens is a second-year master of public health (MPH) graduate student at the University of Washington School of Public Health (UW SPH). Owens has an MA in journalism from the University of North Carolina at Chapel Hill and a BA from Reed College. He will complete his MPH degree at the UW SPH in June 2012.