

A Survey on Emergency Preparedness of EU citizens

**Avgoustinos Filippoupolitis,
Lachlan MacKinnon and Liz Bacon**

University of Greenwich
Computing and Information Systems Department
Faculty of Architecture, Computing and Humanities
Old Royal Naval College, Park Row
London SE10 9LS, UK
{fa52, l.mackinnon, e.bacon}@gre.ac.uk

Keywords

Emergency preparedness, risk awareness, on-line survey

INTRODUCTION

The number of natural and man-made disasters has significantly increased in the past few decades (CRED, 2012). When such a disaster occurs, the populations of the affected countries are among the first victims. Population preparedness plays a crucial role in disaster management since it can help reduce the number of victims and restrict damage. In this paper, we present the preliminary results of an emergency preparedness survey conducted as part of the POP-ALERT project (POP-ALERT, 2015). The project aims to have a positive impact on the preparedness of the population and their first reactions, which would facilitate the work of the first-responders prior to their arrival onsite. Figure 1 depicts the basic concept behind the project: information needs to flow among all three actors as the effectiveness of the work coming from above (authorities and first-responders) depends on the preparedness of the actors directly affected by the situation (population). However, the preparedness of the population depends on the information and training given by the authorities and the first-responders and therefore the proposed approach combines both “Bottom-up” and “Top-down” information flows. As a first step towards achieving the project goals, we have designed a preparedness survey which aims to identify society’s understanding of large scale disaster events, their willingness to accept risk probabilities and engage in preparedness, and their behavioural responses to diverse risks and emergencies.

ABSTRACT

Population preparedness plays a crucial role in disaster management since it can help reduce the number of victims and restrict damage. Nevertheless, little work has been done at a European level towards preparing populations to learn how to cope with disasters and involving them in the disaster management process. In this paper we present the preliminary results of an on-line emergency preparedness survey circulated among EU citizens, which aims to identify and analyse people’s behaviour in terms of preparedness, first reaction, risk awareness and willingness to engage in preparedness actions. Our preliminary analysis, based on over 1200 participants, indicates that although EU populations have a high capability for participation in emergency response, their preparedness level is low. We also found that national differences are a significant factor affecting individual preparedness behaviour and awareness of risks.

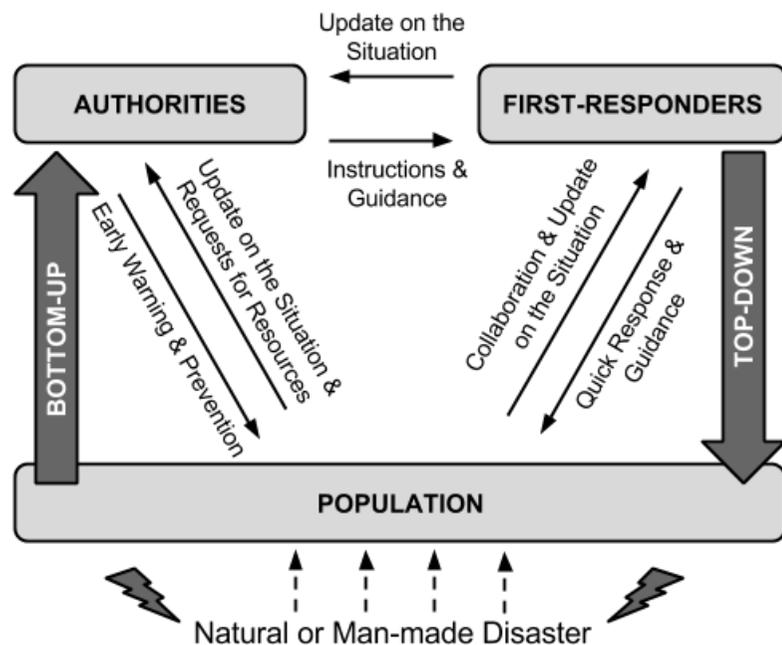


Figure 1. Information flow among crisis management actors

Preparedness is important since it allows populations to learn how to cope with disasters and involves them in the disaster management process (Perry and Lindell, 2003). In (Miceli, Sotgiu and Settanni, 2008) the authors investigate disaster preparedness of flood risk in a group of people living in an alpine valley in Italy. The participants responded to a structured questionnaire through telephone interviews and although the results indicated that they were fairly well prepared to deal with a flood disaster, the authors acknowledge that the results of the study refer to a very specific population and environmental context. The results of a study on flood risk in South Africa are presented in (Fatti and Patel, 2013), the authors used semi-structured interviews to investigate how risk perceptions influence the way local governments and residents manage disasters.

They concluded that local history and mistrust heavily influence the perspectives for building resilience. The authors in (Mishra, Mazumda and Suar, 2010) discuss how flood preparedness is influenced by place attachment in flood prone areas in India. Their observations, based on a paper based survey, highlight that economic and genealogical components enhance flood preparedness while religious place attachment did not influence preparedness behaviour. In (Burningham, Fielding and Thrush, 2008) the authors used survey data as well as focus groups and in-depth interviews to analyse UK public flood awareness. Their results indicate that that social class, flood experience, length of time in residence and the region in which people live have significant impact on flood awareness. Learning from this previous work, we have opted for a combination of desktop analysis, and an on-line questionnaire, offered initially in English, Dutch, French and Greek language versions, for collecting information on emergency preparedness and risk awareness. Our overall goal is to be able to answer queries related to location, preparedness and risk awareness by processing the respondents' answers.

The remainder of the paper is structured as follows: we begin with an overview of our research goal and survey method, followed by the results of the on-line preparedness survey. In particular, we comment on the results related to risk awareness, disaster perception and individual preparedness behaviour. Finally, we present our concluding remarks and future research plans.

RESEARCH GOAL AND SURVEY METHOD

The aim of the on-line survey is to allow us to give answers to questions related to risk awareness and preparedness levels of EU citizens. More specifically, we first address the issue of individual behaviour in terms of preparedness and first reaction. To this end, we have included questions on confidence regarding ability to prepare for a disaster, on preparatory activities such as CPR and First aid training and on emergency supplies and plans. We have also addressed topics such as reasons for delaying evacuation after a disaster, locations to gather in after a disaster event, and preparations while away from home. The answers to these questions will allow us to understand the drivers, constraints and complexities of population preparedness.

The second fundamental research question that we would like to investigate is individuals' perception of risks related to disasters. In order to achieve this, our

questionnaire includes questions on residence location, likelihood and impact of disaster events and familiarity with emergency provisions. This will allow us to identify and gain insight into society’s understanding of large scale disaster events and their willingness to accept risk probabilities.

One of the most critical factors that determine the number of responses to a survey is the way it is circulated to the target audience. Our approach is based on an on-line questionnaire. More specifically, we have used Google Forms to design and store our survey in the cloud. This choice has a number of benefits, including enhancing collaboration and feedback from project partners, facilitating the dissemination process and improving the data management and storage of results. The questionnaire was mainly disseminated by posting to relevant e-mail lists and through POP-ALERT consortium contacts.

In terms of the question format, in most cases we have opted for closed questions. This reduces the time needed to process the answers as each question has a predefined number of answers assigned to it. However, we have also included the option for free text (in the form of a "Other" answer) so that respondents are able to provide a different answer if they do not agree with any of the ones provided. When respondents were asked to provide a rating for a specific question, we have used five-level Likert scales.

At the time of writing this paper, the results correspond to 610 English participants, 483 French participants, 62 Dutch participants and 88 Greek participants. The total number of respondents is 1243 and it is expected to increase since the survey is still available on-line and is being actively disseminated by the POP-ALERT consortium members. The majority of the participants are between 25 and 44 years of age, 34% of the English participants and 43% of the French participants fall into this age category while this percentage for Dutch and Greek respondents is 58% and 77% respectively. The education level of the respondents is high, with the majority having an undergraduate degree. 58% of French participants hold a postgraduate title, while this is the case for 37% of English, 22% of Dutch and 68% of Greeks. The percentage of respondents with care and mobility issues is low. Only 4% of English participants, 7% of French and 10% of Dutch fall into this category. Finally, there are a large number of participants who reside in a country other than the one they were born. In Greek respondents this percentage reaches 36%, while

in English, French and Dutch respondents it is 23%, 11% and 7% respectively.

RISK AWARENESS AND PERCEPTION OF DISASTERS

The first part of the survey deals with how populations perceive threats, disasters and risks. Firstly participants were asked to respond on whether their residence is in area where a disaster might occur. Table 1 summarizes the respondents’ answers. As a general comment we should note that local conditions based on national differences and characteristics have affected the responses of the participants.

The English and French responses indicated that around 30% of the participants do not believe that their residence can be affected by disasters or other major threats. This belief is stronger (70%) among Dutch participants. On the contrary, Greek responses do not share this view with only 1% of participants stating their residence is not affected by disasters.

	English	French	Dutch	Greek
Earthquakes	7%	18%	0%	69%
Floods	35%	32%	16%	55%
Landslides	3%	8%	0%	8%
Forest Fires	5%	7%	2%	58%
Strong wind speed and gusts	41%	32%	11%	55%
Industrial major accidents	18%	24%	11%	15%
None of the above	37%	30%	69%	1%

Table 1. Responses to question on whether “Your residence is located in an area where the following may occur”

As we can note from Table 2, the most acknowledged threat among all respondents is extreme meteorological conditions (i.e. floods and strong wind speed), while industrial major accidents were also considered as a disaster which could occur in the vicinity of their residence.

National differences were evident when participants were asked if earthquakes

can occur in the area of residence. As we can note in Table 1, earthquakes were considered as the most significant risk for Greek respondents, with 69% answering this could occur in the area of their residence. Only 18% of French and 7% of UK respondents share this belief, while Dutch participants do not consider this a possibility. It is evident that the geographical location of Greece and its history of frequent and sometimes catastrophic earthquakes is reflected on the survey answers. A similar observation is valid for forest fires, with 58% of Greek respondents considering this a possibility, compared to only 5% of UK, 7% of French and 2% of Dutch participants.

	English		French		Dutch		Greek	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Extreme Meteorological Conditions	3.04	1.16	3.65	1.04	3.46	1.06	3.77	1.11
Vehicle Accidents	3.16	1.16	2.89	1.21	2.58	1.04	2.95	1.3
Forest Fires	1.72	0.91	2.50	1.17	1.93	0.98	2.94	1.26
Hazardous Materials Accidents	2.01	1.03	2.30	1.13	2.62	1.13	2.02	1.14
Terrorist Attack	2.00	1.91	1.97	1.07	1.85	0.97	2.24	1.29

Table 2. Responses to question on “How likely do you consider that the following events will occur in your immediate vicinity”

Finally, there was a lack of concern and awareness from all participants with respect to hazardous materials accidents and terrorist attacks. However, when asked to assess the impact of these threats, the participants gave answers that were uniformly distributed between no impact and high impact.

INDIVIDUAL BEHAVIOUR IN TERMS OF PREPAREDNESS AND FIRST REACTION

The majority of the respondents have not experienced a disaster. Over 55% of the Greek, French and Dutch participants and over 70% of UK participants answered that they have not been involved in a large scale disaster. When asked to rate their confidence in their ability to prepare for a disaster, the distributions of answers differed among respondents. The majority of English, French and Dutch participants gave neutral answers (on a Likert scale from 1 to 5) while the majority of Greek participants were not confident.

The results on preparedness intention are presented in Table 3. They indicate that the majority of the population are unprepared while a significant part of the population lacks willingness to prepare. 26% of the English participants answered that they do not intend to prepare while 41% answered they intend to. The situations for the Dutch (16% do not intend to prepare, 42% intend to prepare) and Greek (17% do not intend to prepare, 61% intend to prepare) are similar. French responses differ from the aforementioned trend, since only 4% stated that they do not intend to prepare while 33% stated they intend to.

	English	French	Dutch	Greek
I do not intend to prepare	26%	4%	16%	17%
I intend to prepare	41%	33%	42%	61%
I just started preparing	8%	32%	22%	6%
I am prepared	24%	29%	20%	15%

Table 3. Responses to question on “Which statement best represents your preparedness for a disaster”

The main reason behind the low preparedness level is lack of knowledge. When asked to specify the reason why participants are not prepared for a disaster, the majority answered that they do not know what to do. The second most popular answer was “I do not have time”, which also indicates lack of awareness.

An interesting contradiction to the preparedness intention can be seen in Table 4, when respondents were asked about disaster situations away from home. There is an element of situational awareness that affects the responses, with the majority of English and French respondents (47% and 57% respectively) stating they would consider preparing for a disaster occurring while on holiday. More than one third of Dutch and Greek participants also gave the same answer.

	English	French	Dutch	Greek
On a business trip	21%	34%	11%	18%
On holiday	47%	57%	35%	33%
Using public transport	40%	33%	25%	37%
None of the above	39%	29%	60%	44%
Other	3%	4%	4%	1%

Table 4. Responses to question on preparedness for disaster situations away from home

Although the previous answers indicate that the populations’ preparedness levels are low, the capability for first reaction and participation in emergency response is high as we can see in Table 5. A very high percentage of English, French and Dutch participants (over 65%) have done first aid training while 50% have done CPR training. The Greek respondents also exhibit significant emergency response capability, with more than 30% answering positively to the aforementioned questions.

	English	French	Dutch	Greek
CPR (Cardiopulmonary Resuscitation) training	49%	52%	60%	32%
First aid training	66%	75%	71%	31%
Discussed preparedness issues with members of your community	24%	46%	20%	21%
Attended meetings to learn how to prepare for a disaster	24%	43%	20%	12%
None of the above	25%	13%	20%	48%

Table 5. Responses to question on capability for first reaction and participation in emergency response

Regarding emergency supplies, most of the participants do have first aid kits and flashlights, but the percentages for battery operated radio, ID documents and protective clothing are comparatively low (between 30% and 38%).

The low population preparedness level is confirmed by the lack of an emergency plan involving household members. Excluding the 10%-20% of the participants who live alone, 70% to 80% of the respondents gave a negative answer.

Our survey investigated the knowledge of a school emergency plan for the participants who have dependent children living with them. Although most of the participants did not have children, the majority (more than 75%) of the ones that do have are not familiar with the emergency plan of their school.

The familiarity of participants with alerts and warning systems was relatively uniformly distributed between 1 (not familiar at all) and 5 (very familiar). The majority of respondents were not familiar with community evacuation routes, shelter locations, local radio station frequencies and getting help with evacuation. The situation is different when it comes to official sources of public information: most French and Dutch participants are either familiar or very familiar with them while the majority of English and Greek participants stated they are not familiar

with them. Table 6 summarizes the relevant results.

	English		French		Dutch		Greek	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Alerts and Warning Systems	2.92	1.37	3.12	1.45	3.38	1.37	2.93	1.35
Community Evacuation Routes	1.92	1.21	2.75	1.46	2.25	1.31	2.45	1.30
Shelter locations	1.73	1.18	1.84	1.23	2.33	1.41	1.39	0.75
Official sources of public safety information	2.55	1.44	3.05	1.55	3.24	1.46	1.88	0.98
Local radio stations frequencies	2.62	1.41	2.80	1.50	2.51	1.44	2.37	1.39
Getting help with evacuation	2.09	1.28	2.60	1.49	2.45	1.39	1.91	1.09

Table 6. Responses to question on “How familiar you are with the following emergency provisions”

When asked about their level of confidence with respect to knowing what to do in the first five minutes after a disaster, most French and Dutch participants were between confident and very confident. The English answers were uniformly distributed while the majority of Greek respondents were not confident.

Table 7 highlights the most popular reason for which participants would delay evacuating in an emergency, which is to wait for directions from emergency management agencies. The only exception to this are the Greek respondent, were only 15% stated this as a reason for delaying evacuation. Moreover, the answer “I would not delay evacuating” was most frequent in Greek participants among all four language variants of the survey.

	English	French	Dutch	Greek
Evacuate my pet(s)	34%	26%	29%	10%
Gather my personal belongings	34%	31%	16%	12%
Gain clarity in the unfolding event	47%	30%	53%	30%
Wait for directions from emergency management agencies	41%	58%	56%	15%
Personal mobility issues	5%	7%	13%	4%
Care for relative	42%	34%	44%	51%
I would not delay evacuating	17%	20%	27%	36%
I would not evacuate	2%	1%	2%	0%
Other	3%	2%	0%	0%

Table 7. Responses to question on whether “you would consider delaying evacuation for any of the following reasons”

The results in Table 8 highlight that the majority of English, French and Dutch participants stated they would gather at a friend’s or relative’s house and at the local emergency services. On the contrary, more than 80% of Greek participants selected an open space as their gathering place. This is correlated with Greeks stating earthquakes as the most significant risk while the rest of participants opting for severe weather conditions.

	English	French	Dutch	Greek
Friend's or relative's house	54%	55%	55%	20%
Local emergency services	42%	34%	49%	30%
Local church	31%	11%	16%	13%
Open space	45%	32%	40%	83%
Local cafe or public house	24%	20%	27%	1%
Shopping centre	12%	11%	7%	1%
I would not consider gathering	8%	10%	4%	5%
Other	8%	9%	5%	0%

Table 8. Responses to question on gathering location after a disaster

Most of the participants would rely on household members and emergency management services, however the sense of community is not strong since the majority of respondents answered they would not rely on people in their neighbourhood. Moreover, most of the participants have not registered as volunteers (90% of English and Greek and 70% of French and Dutch respondents). Finally, between 20%-25% of participants would be unwilling to train for emergency preparedness.

Technology solutions related to digital communications and networks were highly supported by participants as a mean to improve emergency preparedness. Emergency planning guides provided by local authorities were also considered beneficial by 75%-80% of participants.

CONCLUSION AND FUTURE WORK

We have presented the results of an on-line emergency preparedness survey which aims to give answers to questions related to risk awareness and preparedness levels of EU citizens. We have addressed issues of individual behaviour in terms of preparedness and first reaction as well as individuals' perception of risks related to disasters. Our preliminary results indicate that, while national differences are a

significant factor affecting individual preparedness, the majority of the population are unprepared and a significant proportion lacks willingness to prepare. Nevertheless, the capability for first reaction and participation in emergency response is high. The main reason behind the low preparedness level is lack of knowledge, which the POP-ALERT project proposes to address directly. Moreover, our results show that we managed to reach a large number of expatriates, immigrants and other non-local population groups, which were one of the target audiences of this survey. Looking at areas of future research, we are compiling surveys targeted to emergency services professionals and to school teachers in order to capture their priorities and requirements with respect to disaster preparedness. It would also be useful to proceed with a targeted dissemination of this survey to adult participants with either no formal education or high-school level education and to target more actively respondents with care and mobility issues, in order to better understand their preparedness level and behaviour with respect to emergencies.

REFERENCES

1. CRED (2012). The International Disaster Database. <http://www.emdat.be/> (accessed 10 Jan 2015).
2. POP-ALERT (2015). POP-ALERT project home page. <http://www.pop-alert.eu/> (accessed 10 Jan 2015).
3. Perry, R. W., & Lindell, M. K. (2003). Preparedness for emergency response: guidelines for the emergency planning process. *Disasters*, 27, 4, 336-350.
4. Miceli, R., Sotgiu, I., & Settanni, M. (2008). Disaster preparedness and perception of flood risk: A study in an alpine valley in Italy. *Journal of Environmental Psychology*, 28, 2, 164-173.
5. Fatti, C. E., & Patel, Z. (2013). Perceptions and responses to urban flood risk: Implications for climate governance in the South. *Applied Geography*, 36, 13-22.
6. Mishra, S., Mazumdar, S., & Suar, D. (2010). Place attachment and flood preparedness. *Journal of environmental psychology*, 30, 2, 187-197.
7. Burningham, K., Fielding, J., & Thrush, D. (2008). 'It'll never happen to me': understanding public awareness of local flood risk. *Disasters*, 32, 2, 216-238.

8.