

engage

Engage Society for
Risk Awareness and Resilience



Deliverable 2.1 – Expectations and needs to improve societal resilience

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Abstract: ENGAGE aims at linking the informal resilience naturally inherent in citizens with the formal work of authorities to prevent, prepare for, respond to, and recover from disasters. It brings together 14 partners from 8 countries aiming to show how individuals and local practices can interrelate effectively with planned preparedness and response, practitioners, and technology. In this deliverable, we identified the needs and expectations of emergency organizations and authorities from the population to better face a crisis. These needs cover four main constructs, authorities risk awareness, public capacities, communication and knowledge sharing capacities, and public perception of trust and responsibility. These needs and expectations are defined across seven countries, which make them vary to an extent based on the country and the profile of the responder.

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Executive summary

Background: All members of a population play a crucial role in the disaster management process. To fully leverage civilians' capacity in coping with crises, it is critical to strengthen the coordination and engagement of authorities and emergency organizations with civil society to react and recover from crises efficiently. To be able to do so, we must first understand and recognize what authorities and emergency responders need from members of their communities to properly manage a crisis. These needs vary in their characteristics and depend on the phase of a crisis (before, during, or after). They address a wide range of aspects; needs related to the resources to have during an emergency, others related to preparedness activities before a disaster occurs, others related to what information to share and which communication channels to use, others that extend to the relationships between community members and how these social bonds could help in crisis management.

Goal: The main objective of this deliverable is to identify what emergency responders and authorities need from their civil societies to better handle a crisis and to enhance the resilience level of the society. This is performed on a wide scale including first responders from six European countries (Spain, Sweden, Romania, Norway, Italy, and France) and Israel. This allows for capturing various experiences and different backgrounds that enriches the results and shows the differences and similarities across the countries and backgrounds. Additionally, this deliverable aims to explore the risk awareness level in each of the participating countries, as being risk-aware is part of being resilient.

Methodology: To collect the needed information and gather the authorities and emergency responders' needs and expectations we used two main methods; an online survey and semi-structured interviews. The online survey was hosted on SurveyMonkey for 45 days and it was launched in the seven countries participating in the project. We used snowball sampling to reach the targeted members of authorities and emergency organizations to fill in the questionnaire. Regarding the semi-structured interviews, we carried out 30 interviews, distributed across members of law enforcement organizations, governmental agencies, first responders, and members of health services. The interviews allowed the experts to talk more about their experiences and reflect on them while defining what is needed from the members of society to face a crisis. We used the data from the interviews to complement our findings from the survey and supplement our results.

Results: We obtained a different number of survey responses in each country; the maximum we got was 5154 in Romania, while the minimum was 17 in Sweden. In between, we have 227 from Israel, 186 from Norway, 173 from Spain, 36 from Italy, and 24 from France. These responses allowed us to come up with robust conclusions and results in Romania, Spain, Norway, and Israel, but unfortunately, we were not able to do the same in Italy, France, and Sweden due to the unrepresentative sample size. On the other hand, we had 30 interviews, five from Israel, Norway, and Romania, four from Spain, Sweden, and Italy, and only three from France. The combined results from both the questionnaire and the interviews indicate that authorities and emergency responders value the involvement of the members of society and volunteers in handling disastrous situations, but this should not come at the cost of the civilians' safety and wellbeing. Also, there are some differences and similarities between the needs and expectations depending on the country and the job profile. Regarding risk awareness level, authorities are more aware of the different types of risks more than other members of emergency organizations.

Conclusions: This deliverable identifies what different members of emergency organizations and government officials expect from society to better handle a crisis. This is done across seven countries with different characteristics. The results from this deliverable, first help to bridge the gap between what is needed by authorities and what is expected by the population (D1.2). It highlights what is needed so this could be used while developing solutions for crisis management and improving societal resilience. It also sheds the light on some of the similarities and differences between different countries, which could be useful when contextualizing solutions and defining policies to



enhance societal resilience. Finally, it provides information about which entities are trusted by the community which could help in designing messages and communication activities during crisis times; to use the trusted entities as the interface between emergency organizations and authorities, and the population.



1 INTRODUCTION

1.1 SCOPE OF THE DELIVERABLE

Individuals are a core component in crisis management. To maximize the utilities associated with their roles, it is critical to link their capacities with the needs and expectations of authorities and emergency organizations. The first step to do this is to identify these needs and expectations, and then bridge the gap between what is needed (authorities perception) and what is existing (citizens perception). To achieve the first goal, we used two techniques to gather this kind of information. First, a survey that is directed toward members of emergency organizations, officials, and authorities to identify and collect their needs and expectation from their fellow civilians. Second, semi-structured interviews, which target the same profiles, however, in a more open manner, that allows them to tell their experience and reflect this experience and knowledge on their needs and expectations. Then to reach the second objective (bridging the gap), we map the results we get from the survey and the interviews to the results obtained in WP1 (D1.2).

1.2 OBJECTIVES

The main objective of this deliverable is to identify what emergency organizations and authorities need and expect from civilians in their society to be more resilient and to better respond to a crisis. Moreover, we link their perception of needs and expectations with the ones obtained from the population (D1.2). Additionally, we identify the similarities and differences (of the needs and expectations) between the members of various organizations that play different roles in emergencies (authorities, law enforcement, emergency responders, and health services). This deliverable contributes to the findings from D1.2 and D2.4. D1.2 covers the risk perception, needs, and expectations of the population. D2.4 explains all of the communication channels and procedures that emergency responders and authorities use to connect with the public to enhance social resilience.

The specific objectives of this deliverable are:

- Identify authorities and emergency responders' needs and expectations from society to better handle a crisis.
- Determine the degree to which emergency response agencies and officials are aware of the threats that their countries face.
- Determine how similar the needs and expectations of the countries participating in the project are.
- Define to what extent the needs and expectations depend on the job of the responder.
- Map the needs and expectations of authorities and emergency organizations to the ones of the population.

1.3 SIGNIFICANCE

One of the main aims of the ENGAGE project is to capitalize on the inherent resilience of the members of society. This requires a thorough understanding of their capacities and a mapping between these capacities and what is needed by authorities and emergency responders to utilize their involvement in disaster management.



1.3.1 CONTRIBUTION TO THE FIELD OF STUDY

In this deliverable, we identify what emergency organizations and authorities need from society to better face a crisis. We do this through a large-scale online survey and semi-structured interviews that cover members of emergency organizations in six countries in Europe (Spain, France, Italy, Sweden, Norway, and Romania) and Israel.

Moreover, we analyse the communalities and differences between different countries and different job profiles regarding their needs and expectations from the population. Defining these similarities allows for generalizing the needs and expectations across other countries with similar characteristics. Also, identifying the similarities and differences between job profiles helps in developing solutions that serve the purposes and needs of multiple entities.

1.3.2 CONTRIBUTION TO THE ENGAGE PROJECT

This deliverable outlines the needs and expectations of emergency organizations and authorities from society in order to properly deal with a crisis. WP2 takes a top-down approach to assessing what authorities and emergency organizations need from people in their community to improve societal resilience and better face a crisis, while WP1 takes a bottom-up approach to evaluate the needs and expectations of the population.

This deliverable contributes to the first objective of the ENGAGE project "Understand, compare and nurture how citizens, communities and authorities contribute to societal resilience in different contexts in Europe".

The deliverable will also contribute to the following results of the project: R1: ENGAGE knowledge platform, R2: Model for assessing and methods improving societal resilience, and R4: Guide for engaging and empowering citizens in co-creating resilience-related research.

1.4 FIT WITHIN ENGAGE

The aim of this deliverable (D2.1) is to identify the needs and expectations of emergency responders and authorities from society to enhance societal resilience. This directly relates to and compliments deliverable (D1.2), D1.2 follows a bottom-up approach to assess how citizens' needs and expectations are satisfied while D2.1 follows a top-down approach identifying the needs and expectations of the emergency organizations and authorities. The results from this deliverable will be used in T3.1 in order to help in the selection of the most promising solutions based on the contextual factors and the needs and expectations from authorities and first responders.

1.5 DEFINITION OF THE MAIN TERMS

Term	Definition
Authorities	Officials at local, regional, or national level governments who are responsible for managing emergencies and disasters.
Emergency responders	Persons who received specialized training to be able to assist and handle an emergency. This category includes firefighters, civil defence, and members of the army.
Law enforcement	Officials who enforce the law in case of a crisis. This category includes police officers and coastguards.



Health services	Individuals with medical training who provide help in case of a disaster. This category includes medical staff, paramedics, and members of NGOs who work in a health-related emergency.
Needs and expectations	What authorities and emergency services require and demands from the civil society to better deal with crises.



2 SCIENTIFIC BACKGROUND

2.1 RESEARCH ABOUT NEEDS AND EXPECTATIONS

Disasters are becoming more and more complex. Emergency organizations all over the world grow in responsibility and personnel to deal with ever-complex disaster scenarios [1]. One thing is clear: it is not possible to efficiently deal with disasters without the help of society [2]. The involvement of the society has been extensively studied and stakeholders engagement is usually divided into reactive and proactive attitudes [3].

By adapting the definitions of proactive and reactive attitudes from other contexts [4], we can define proactive engagement as the act of anticipation and active waiting for building a society's readiness for dealing with disasters. As indicated by the word "anticipation" used in the definition we can indicate the proactive behaviour is typical of the planning and preparedness phases of a disaster [5][6]. Conversely, reactive engagement can be defined as the act of responding and bouncing back from unexpected or unprepared disruptive events. Again, the definition gives us a hint that reactive engagement is more common during the response and recovery phases [7].

Based on a literature review, this section reports on the view of society participation from the first-responders opinion and how they see the society can help their work [8]. Therefore, whatever is the attitude of the society (proactive or reactive), we will examine what the literature tells us about the expectations and needs of emergency teams to best fit into their work of saving lives and property.

We performed several searches in google scholar using terms related to society participation in disasters, interaction between first responders and citizens in disaster situations, societal resilience, and some others. With these searches, we did not aim to find all, but some of the most relevant publications that report on the needs and expectations of emergency teams in respect to the behaviour of citizens. We did not consider this set of searches an extensive literature review. Our main goal was to feed the survey with relevant insights from previous works to complement the results obtained in the survey.

Our first observation with the results of the search is that most documents report on the expectations but from the citizens in relation to first-responders [9]. In these documents the citizens are reported to have a passive attitude, expecting the emergency professionals to take care of their needs. Most interestingly, that view was the one emergency teams used to expect from the citizens [2]. They were either a victim in need of care or an observer that in most cases disturbing the emergency team's work.

That, however, was a view from the past [10] [11]. Nowadays, the help of volunteer organizations, for example, is seen as essential to deal with many types of disasters. Most important is the role of information providers played by citizens with the use of communication technologies, such as social media [12][13]. If the information is well-treated, and this is a real challenge, it is an essential resource to improve the work of emergency teams [14][15].

There are two main reasons for this change of attitude from both groups. From the citizens' perspective, there is a perception that emergency teams cannot do it all alone [16]; they need help particularly in tasks, which do not require special skills or can be performed under the training and supervision of emergency responders [17][18]. This same reason is shared by emergency teams. Also, there exist the means to provide this help without risking their lives by making use of technology, which is the delivery of information that otherwise would be missing [19], [20].

From the emergency organizations perspective, there is a recognition that some decisions, particularly those which are mutually exclusive, are better accepted if they involve all stakeholders who may be affected by their outcomes [21]. An example is, in the lack of enough resources on time, which are to give priority in case of wildfires [21].



Community resilience has been on focus for some time. It is considered an essential requirement for a better-prepared society facing disaster situations. Koliou et al. [22] analyse community resilience to natural hazards from multiple perspectives ranging from social to economics. It also lists several initiatives worldwide aimed at building/improving resilience with guidance or assessment methodologies.



3 METHODOLOGY

3.1 OVERALL METHODOLOGY

In this section, we describe the approach we used to identify what first responders and emergency organizations need and expect from the society to better face a crisis. First, we list down all research questions we are interested in addressing. Then, we explain the two methods we used to collect our data, namely a survey and interviews. After that, we mention how we handled the data privacy concerns in the survey and interviews.

3.2 STUDY QUESTIONS

Our main interest in this research is to define how the society could help in handling a crisis, from the point of view of emergency responders and authorities. This help could be either by capitalizing on some of the capacities and resources the members of a society have; such as being able to adapt to new situations and emergencies or having enough food to support them in case of a disaster. Or, by direct involvement of the society in disaster relief work and information sharing, and so on. We are also interested in studying to what extent these needs and expectations are similar across the different countries participating in the project, taking into account the diverse characteristics of these countries and their different risk profiles. Hence, we have the following research questions:

- Q1. What do emergency organizations and authorities demand from society in the face of a crisis?
- Q2. To what extent are emergency organizations and authorities aware of the risks their countries face?
- Q3. How similar are the needs and expectations across the countries participating in the project?
- Q4. In what way do the needs and expectations depend on the profile of the emergency responder?
- Q5. Do emergency responders and authorities believe that they are trusted by their society?
- Q6. Which entities are in charge of dealing with a crisis?

And we have the below hypotheses:

- H1. Emergency responders and authorities are aware of the true risks that their countries and societies face.
- H2. The needs and expectations of emergency organizations and authorities differ based on the characteristics of their countries.
- H3. The needs and expectations of emergency organizations and authorities depend on their job profile.
- H4. Emergency responders and authorities believe that they are trusted by the members of their society.
- H5. Emergency responders believe that authorities are the ones who should be held accountable in the face of a crisis.



3.3 SURVEY

The first tool we used to address our research questions is an internet-based survey. The survey has three main parts; it first covers the responders' risk awareness level; second, it includes questions about the requirements of emergency responders and authorities from society in case of emergency; third, some demographic information to give us an idea about the background of the person who is filling in the survey.

3.3.1 STUDY PROCEDURE

We designed an internet-based survey¹ to collect the needed data. The survey is hosted on SurveyMonkey² which is a cloud-based software as a service company that specializes in online survey creation. We first designed the survey in English (Appendix 10) and then we translated it into seven different languages corresponds to the mother tongue of the countries participating in ENGAGE. The languages are Spanish, Norwegian, Swedish, Italian, French, Romanian, and Hebrew. The survey includes 19 questions and is structured around three main parts:

Risk awareness: This section includes questions related to the assessment of the responders' risk awareness level. We covered five types of risks that were adopted from UNESCO's categorization of disasters [23]:

- extreme weather-related events (cyclones, heatwaves, flooding, etc.),
- nature-related events (earthquake, volcanic eruptions, etc.),
- social disruptions (terrorist attacks, riots, etc.),
- critical services dependencies (water, energy, etc.),
- and pandemics (contagious diseases).

This section includes just one question, which is a Likert scale that includes five Likert items, each item corresponds to a type of risk. For each item, the responders are asked to assess their risk awareness level on a 5 level scale ranging from 1 ("not at all") to 5 ("extremely aware").

Needs and expectations: This section is related to the needs and expectations of authorities and emergency organizations from society to improve societal resilience. This section is divided into 10 items that define societal resilience [24]–[29] social norms and sense of community, coping skills, resources to face a crisis, perception of trust, perception of responsibility, crisis knowledge, crisis communication, communication channels, information sharing, and preparedness.

Social norms and sense of community refer to the implicit norms that exist in the society when dealing with disasters as well as to what extent the society feels part of their community and helps their community in disaster situations. Coping skills covers the society's capacities to properly respond to a disaster. Resources to face a crisis relates to tangible resources such as food, water, medical supplies, etc. the society should have to deal with a crisis. Perception of trust represents the extent to which society trusts the entities responsible for dealing with crisis and in the same vein, perception of responsibility reflects which entities should be in charge in the face of a crisis.

Crisis knowledge refers to the types of information transmitted to and from society, and communication channels are the outlets used to communicate this information and knowledge. The item on information sharing focuses on assessing the essential factors when sharing information, and finally, preparedness applies to the capacities that society can have beforehand to cope with a crisis more effectively.

¹ <https://www.surveymonkey.com/r/K7TSVZR>

² www.surveymonkey.com



Each of the 10 items was covered by two questions: the first asks respondents to select the most relevant/appropriate options from a list of choices (represent the needs and expectations of emergency organizations and authorities from society). The second asks them to select the least important options, and the options that come in a middle priority are those that were not selected in any of the questions. We asked these two questions instead of just one because we wanted participants to prioritize the most relevant choices since all of them could be necessary to better deal with crises. In this way we also did not force them to have a strict rank, so we give them more space.

Demographics: This section includes 7 questions covering demographic data; country of work, gender, age, crisis handling experience, job, work level, and years of experience. The questions in this part follow a multiple-choice scheme.

Finally, one open-ended question to allow the responders to add other information that was not covered in the survey.

3.3.2 DATA COLLECTION

To be able to gather the needed data we hosted the survey on SurveyMonkey service. And then shared the survey link with our partners in the seven countries that form the project consortium. Each partner in each country disseminated the survey to their contacts from authorities and emergency responders, and we depended on these contacts to share the survey with their colleagues and contacts (snowball sampling). We tried to target members that have direct involvement in emergencies and come from different backgrounds; the 4 job profiles we were interested in are:

- 1) Health services: includes medical staff, paramedics, and members of NGOs who work in health-related emergencies.
- 2) Law enforcement: includes police officers and coastguards.
- 3) Emergency responders: includes firefighters, civil protection, and members of the army.
- 4) Authorities: includes members of local, regional, and national governments.

The survey was open for responses for 45 days.

3.3.3 STATISTICAL ANALYSIS

To investigate and study the collected data, we used several tools and analysis methods. We used Microsoft Excel and Python programming language to conduct our analysis. Within Python, we built our analysis scripts upon many libraries such as Pandas, Matplotlib, NumPy, and SciPy. We applied descriptive statistics and visualization techniques to summarize the results of the survey data. We also used t-test or Mann-Whitney's U test to compare the means of risk awareness perceptions. We applied similarity measures such as Euclidean distance to study the similarities and differences between different job profiles and different countries.

3.3.3.1 Scoring for each factor

As mentioned above, for each item in the survey we have two questions: the first asks respondents to select the most relevant/appropriate options from a list of choices (represent the needs and expectations of emergency organizations and authorities from society). The second asks them to select the least important options, and the options that come in a middle priority are those that were not selected in any of the questions. To merge the responses -per option- from the two questions we created a weighted score; the score considers the number of times the option is chosen as best, worst, or middle. Equation (1) shows how we calculate that weighted score. $Score_i$ represents the



overall score for option i , x represents the number of times an option was selected and w represents the associated weight. The sub-indices b, m, w represent best, middle, worse respectively. Hence, x_b is the number of times an option was selected as the most important/best and w_b represents the weight associated with the most important factor. The options ranked as most important are assigned a weight of 5, the options ranked as least important are assigned a weight of 1, and the ones not selected (middle ones), are assigned the weight of 3.

$$Score_i = w_b * x_b + w_m * x_m + w_w * x_w \quad (1)$$

3.3.3.2 Euclidean distance

In order to measure the extent of similarity or difference between the countries or the different job profiles, we used Euclidean distance as a similarity measure. Euclidean distance measures the distance between two (or more) points in a plane, as shown in Equation (2).

$$d_{x,y} = \sqrt{\sum_{i=1}^n (x_i - y_i)^2} \quad (2)$$

3.4 SEMI-STRUCTURED INTERVIEWS

The other technique we used to collect data about emergency organizations and authorities' needs and expectations is semi-structured interviews.

3.4.1 POPULATION AND SAMPLING

We conducted the interviews with members of authorities and emergency organizations in the seven countries representing the project consortium. The interviews served multiple aims:

- Identifying what emergency organizations and authorities need from society to better deal with a crisis (the results from this part are included in this deliverable D2.1)
- Identifying solutions to improve the interaction of emergency organizations and authorities with the society (the results from this part are included in Deliverables D2.2 and D2.3),
- Identifying communication channels and guidelines to reach the society (the results from this part are included in Deliverable D2.4)

To ensure that the results were diverse, participants were chosen from a variety of nationalities and backgrounds. We targeted the same profiles mentioned in section 3.3.2.

3.4.2 STUDY PROCEDURE

The interviews were carried out by members of the project consortium in each country. Before the interview, the interviewees received the interview script with the questions that would be addressed and discussed. The interviews were conducted online and they were recorded to be used afterward to extract the information needed. A template was created for the researchers to compile the information obtained from the interviews in a structured way, to ease the analysis process.



3.4.3 ANALYSIS

The analysis of the templates was done manually. We analysed each question separately analysing the answers, aggregating them, and finally making a summary of all the information gathered. We prioritize the issues that appear more times to emphasize the most important needs.

3.5 ETHICAL CONSIDERATIONS

The interview script was approved by the ethical committee in the Tel-Aviv University (approval number 0002752-1 dated 15 February 2021), appendix 10.1.

Both the interviews and the survey follow the ethical guidelines defined in Deliverable D6.1 (Data protection approvals). They meet the ethical criteria for the following reasons:

- Participants show their consent to participate in the study,
- Participants are free to withdraw from this study at any time without consequence,
- The data is anonymously collected.



4 SURVEY RESULTS

In this section, we will present the results we obtained from the survey. The idea was to first present the overall results from the seven countries participating in the project and then to present the data for each country separately. The problem is we cannot combine all the countries because of the sample sizes; the range of the number of responses varies from 17 (in Sweden) to 5154 (in Romania) (see Table 1). This would introduce a high bias in the results. To overcome this problem, we will introduce the results for each country separately, and we will only consider the responses from Romania, Israel, Norway, and Spain for the overall analysis. To eliminate the bias the Romanian data would introduce (due to the large sample size) we sampled 200 responses out of the 5154 so that there is no huge difference in the number of responses across the four countries.

Table 1 Number of responses per country

Country	Number of responses
Romania	5154
Israel	227
Norway	186
Spain	173
Italy	36
France	24
Sweden	17

After presenting the overall analysis across the four countries and each country separately, we will conduct an analysis of the results based on the job of the survey respondent. The part of the survey asking about the respondent job included 9 jobs; firefighters, health services, paramedics, police officers, coastguards, civil defence, local authority, regional authority, and governmental authority; there is also "other" option where the respondent can introduce their job if it is not in the list. We divided these jobs into four main profiles (see section 3.3.2) to which we will carry our analysis.

4.1 OVER ALL THE COUNTRIES

In this section, we show the survey results including the data from Spain, Romania, Israel, and Norway. We first start with the sample characteristics, the number of responses, the demographics questions (gender, age, job, years of experience, work level, and crisis experience). Then, we cover the risk awareness construct of the survey. We divide the rest of the survey constructs into 3 parts, one about public capacities which covers the results related to social norms, coping skills, resources and preparedness. The second is about the knowledge and communication sections of the survey. And, the last one includes the sections related to the perception of trust and responsibility.

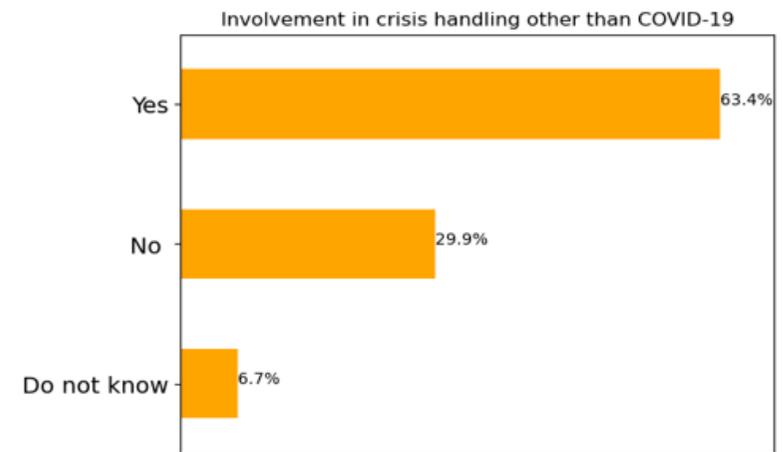
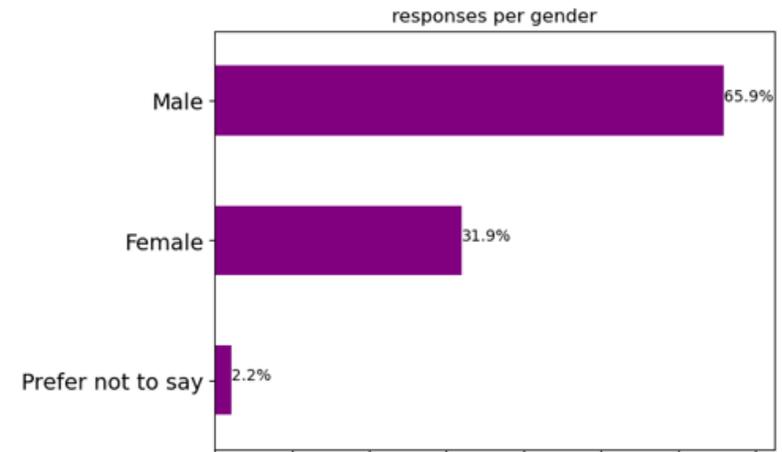
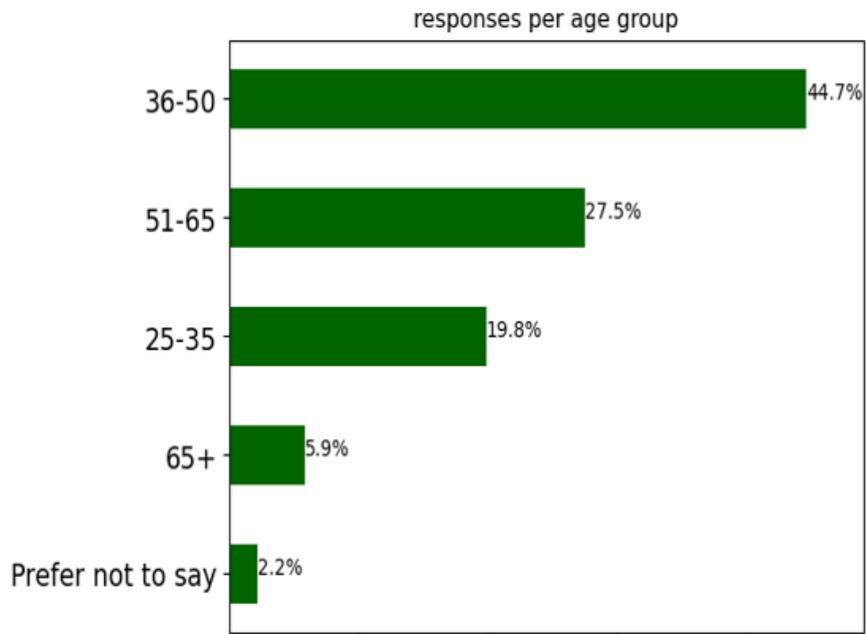
4.1.1 SAMPLE CHARACTERISTICS

We have 786 responses in this dataset, distributed as follows: 173 from Spain, 186 from Norway, 227 from Israel, and 200 from Romania. The responses to the demographic's questions are shown



in Figure 1. Almost two-thirds of the respondents are males (65.9%). The majority of the respondents are from the middle age group (36 to 50 years). Only a quarter of the respondents have up to five years of work experience, which aligns with the responses to the question about being involved in managing crises other than COVID-19. 31.2% of the respondents work in a job not listed in the survey, followed by firefighters which represent 21.9% of the participants.





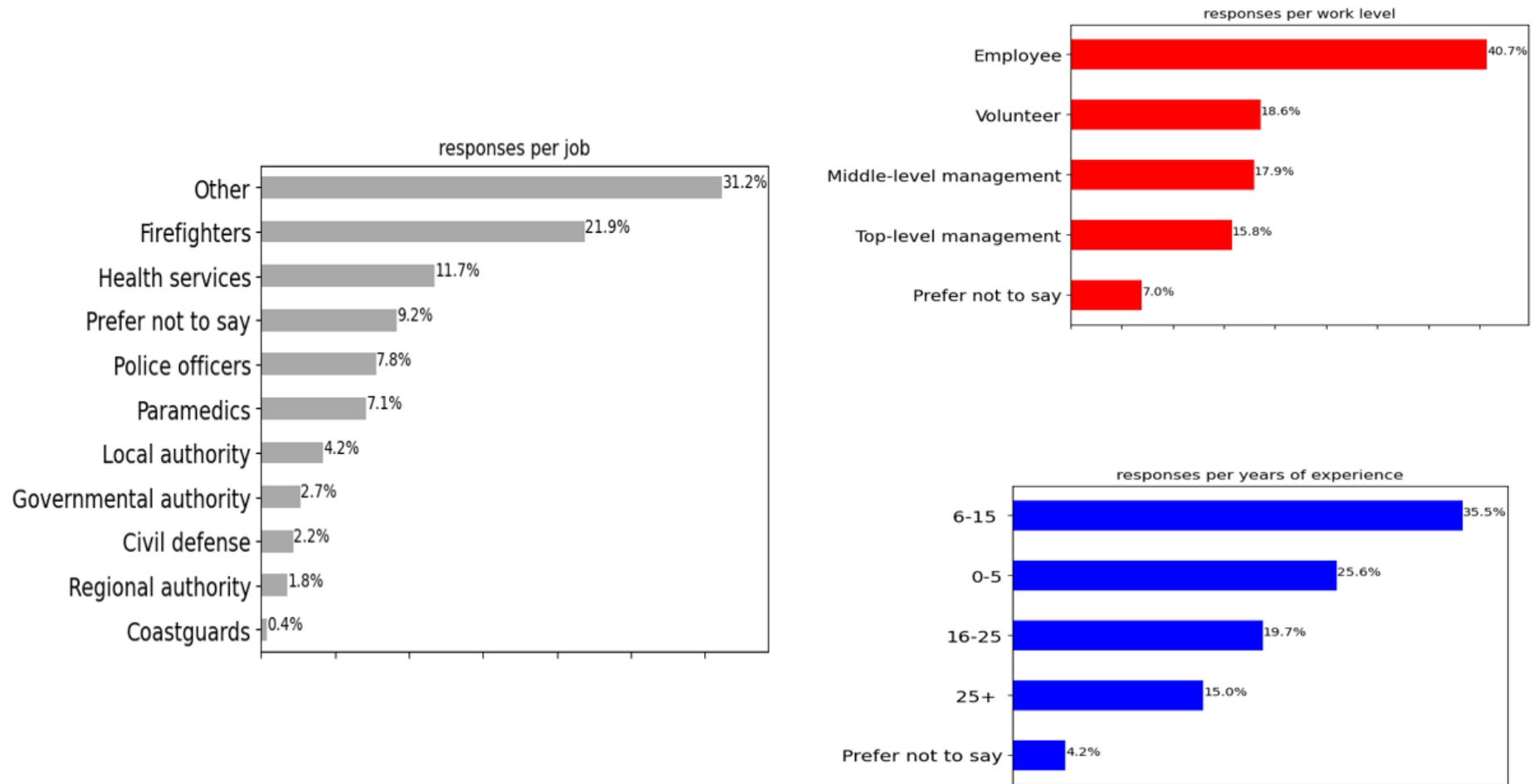


Figure 1 Demographics across all countries



4.1.2 RISK AWARENESS

We asked the survey participants about how they perceive the following risks; extreme weather events (cyclones, snow, flooding, droughts, and wildfires), nature-related events (earthquakes, landslides, tsunamis, volcanoes, and storms), social disruptions (terrorist attacks, cyber-attacks, massive human displacements, protests, and riots), critical services dependencies (water, energy, transportation networks), and, pandemics (infectious diseases). As we can see in Table 2, pandemics is the kind of risk that has the biggest mean (3.72), which makes perfect sense as it aligns with the current situation of the COVID-19. Following the pandemics, we can see that the participants are more aware of social disruptions. By investigating the distribution of the responses across awareness levels for each type of disaster (Figure 2), we can see that almost all the respondents are concerned about pandemics with only 3% of them not concerned at all, and the majority of the responses falling into the moderately and extremely concerned categories. This is not the case of the other risk types, the respondents are more relaxed about them, that we find more responses in the “not at all”, “slightly”, and “somehow” scales.

Table 2 Mean and standard deviation across risks

Type of risk	Mean	Standard deviation
Extreme weather	3.13	1.25
Nature related events	3.14	1.3
Social disruption	3.26	1.28
Critical services dependencies	3.19	1.27
Pandemics	3.72	1.16

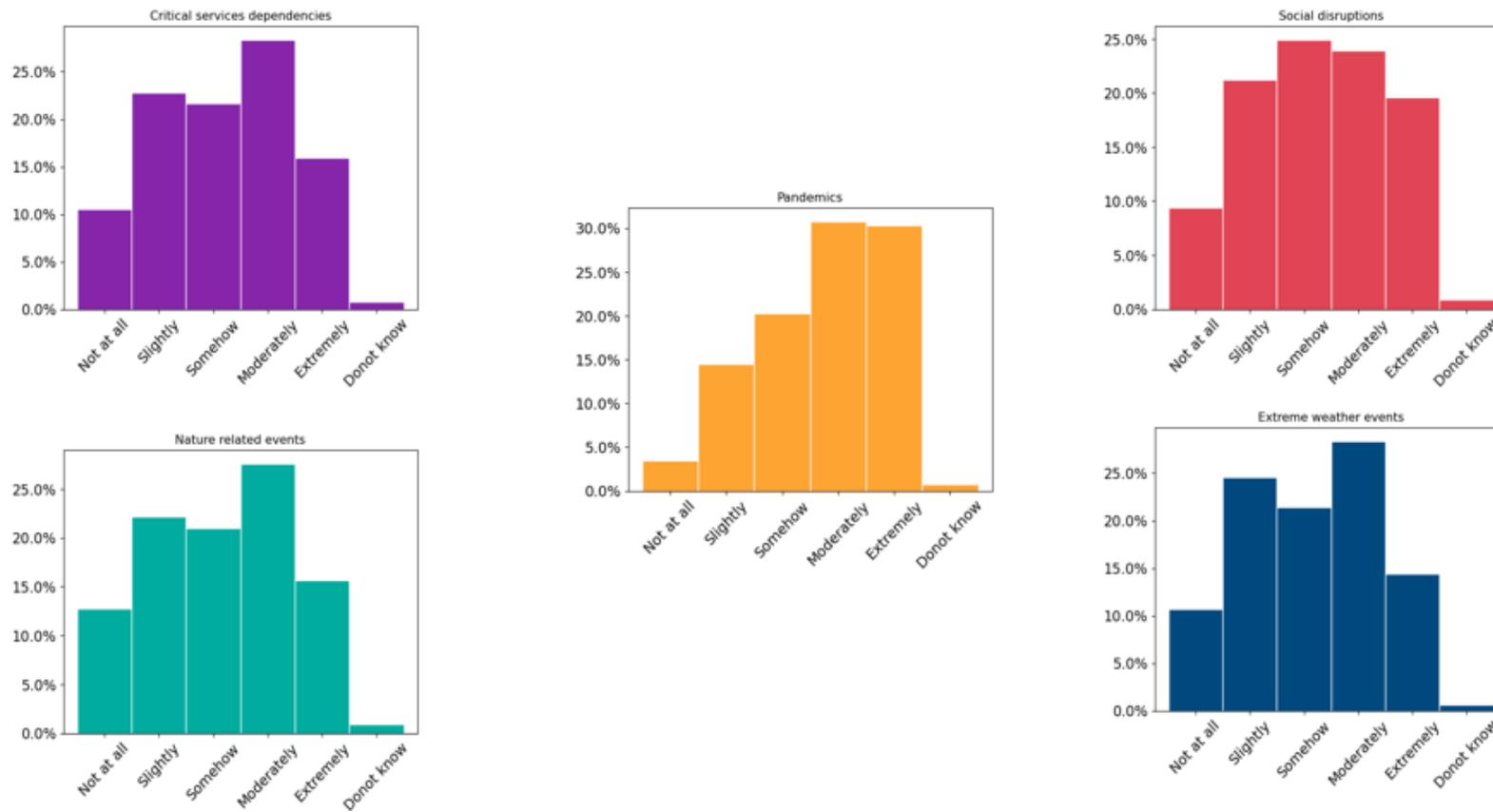


Figure 2 Awareness distribution across different types of risks



To analyse the difference that exists among the awareness level of different types of risks, we carried out the Mann-Whitney U analysis since we were not able to ensure the normality of the distribution of the results. Our initial hypothesis is that the population mean value of both types of risks is the same. Table 3 shows the results of this analysis representing the p-value. For p-values higher than 0.05 we accept the hypothesis that both types of risks have the same mean value. Based on the table we can confirm that pandemics is the risk that follows a completely different distribution than the other types of risks.

Table 3 Mann-Whitney U test results

	Extreme weather	Nature related events	Social disruption	Critical services dependencies	Pandemics
Extreme weather		0.8525	0.0558	0.3842	0.0000
Nature related events			0.0920	0.5085	0.0000
Social disruption				0.2976	0.0000
Critical services dependencies					0.0000
Pandemics					

4.1.3 PUBLIC CAPACITIES

In this section, we cover the segments of the survey related to social norms and sense of community, coping skills, resources to face a crisis, and preparedness capacities of the individuals. From Figure 3, we can see that there is no huge difference between the ranking of options for most of the capacities except for social networks and sense of community factors. The range of the values (maximum - minimum) for the "Coping skills" segment is $12.7 - 7.5 = 5.2$, for "Preparedness" = 5.6, for "resources" = 6.7 while it equals 11.5 for the "social networks and sense of community" question; the difference between the highest and smallest value, in this case, is almost the double, which indicates that there is a high consensus among the respondents about the importance of following authorities recommendations to better face a crisis. We can also see that society's participation is an important factor in all the questions; "social solidarity" ranks the second in "coping skills", "volunteering" comes in the first position in the item related to "preparedness" and "participation in recovery activities" is in the second rank in "social networks and sense of community" question. This confirms the idea that citizens represent a cornerstone for a resilient community, they play a huge role not only during the crisis but also in the preparation phase and after, in the coping phase.

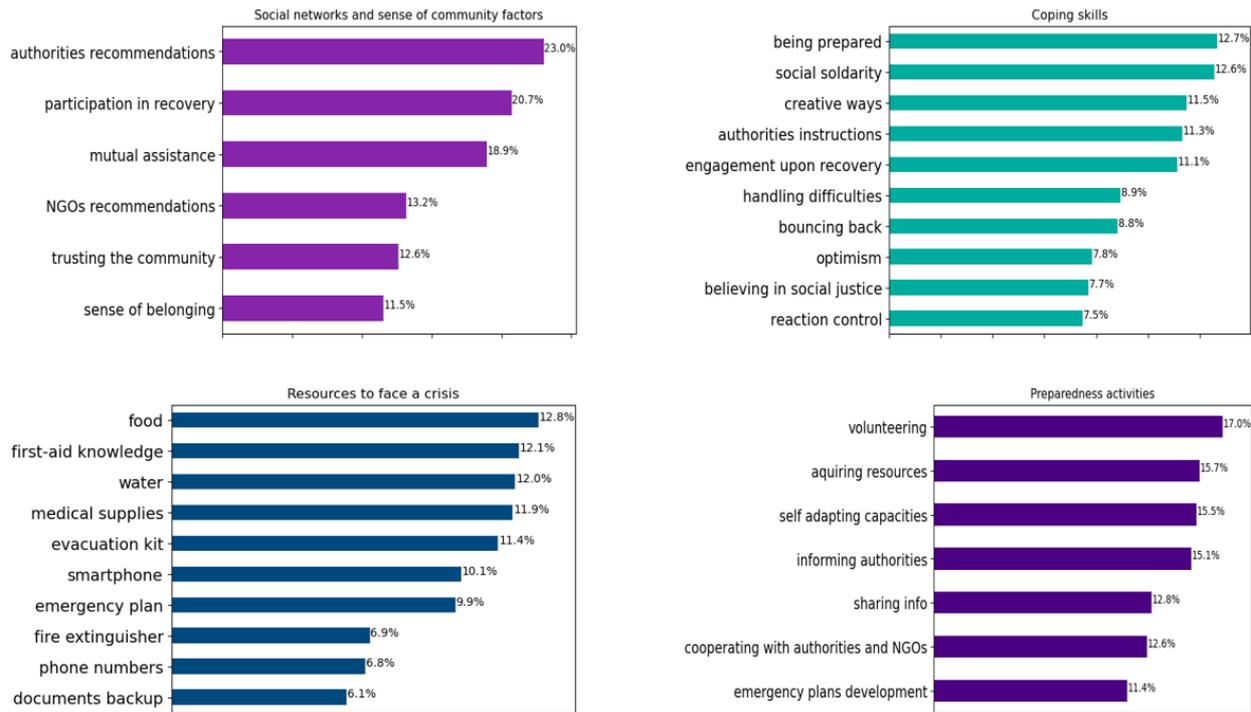


Figure 3 Public capacities over all the countries

4.1.4 KNOWLEDGE AND COMMUNICATION

This section contains the results of the questionnaire parts related to communication and knowledge sharing. By investigating Figure 4, based on the ranges of values in each question, we can find that there is a clear ranking of the options in each question and that there is an agreement among the survey participants about which options are highly relevant to their needs and which are not. The statistical range for each question is as follows:

- Needed information, this question corresponds to the type of information needed to be known by individuals in crisis times. The range equals 10.8.
- Information sharing, this part of the survey relates to the type of information needed to be shared by authorities and emergency responders with individuals. The range equals 15.
- Communication channels, here we were asking about which communication channels are the most important. The range equals 19.7.
- Communication characteristics, this question covers whether what information is shared in a time of a crisis, when it is shared, or how it is shared is the most important aspect. The range equals 16.3.

In the “needed information” question, we see that individuals knowing about the emergency plans and their ability to execute them, followed by knowing where to find updated information about the crisis are the two most important types of information that authorities and emergency responders expect society to know. Sharing credible information is a key for authorities to better build upon individuals' capacities in handling a crisis, while information that distracts the citizens' thoughts is the least important. Mobile communication channels, such as instant messaging applications and texts are the most important communication channel between individuals and emergency responders; they are followed by social media accounts, such as Facebook, Twitter, and Instagram. This proves that authorities and responders are aware of the behaviour of the citizens in their communities and adapting their needs to this kind of attitude and use of technology.

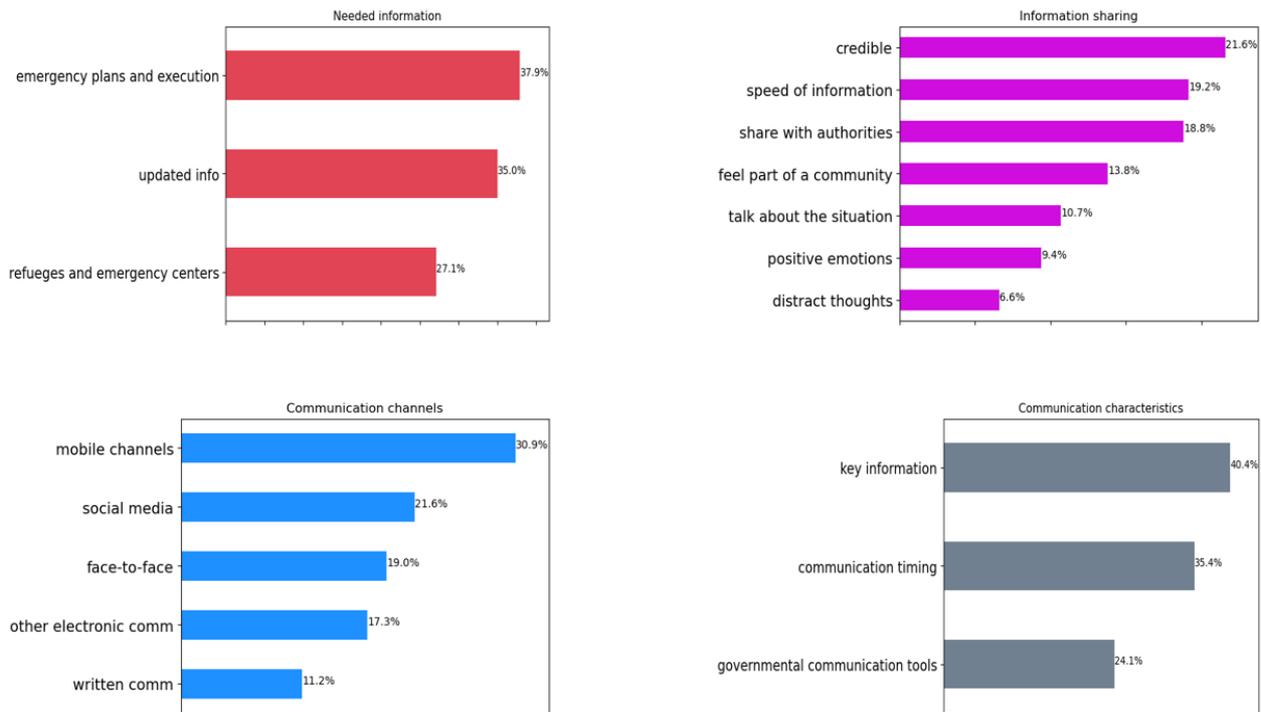


Figure 4 Communication and knowledge sharing across all the countries

4.1.5 PUBLIC PERCEPTION

In this section, we cover the two parts of the questionnaire related to the perception of trust and responsibility. Regarding trust, we ask survey participants to mention the entities they believe their society trusts the most. While in the case of responsibility, we ask them to choose which parties they believe should hold responsible in case of a crisis.

4.1.5.1 Perception of trust

Concerning the trusted entities, we can see that members of health services and firefighters are the ones who are trusted the most. While the media and coastguards are not trusted that much (Figure 5).

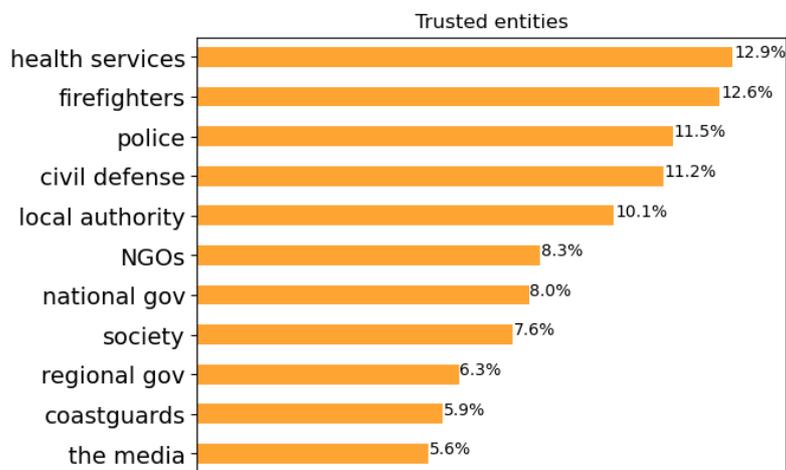


Figure 5 Trusted entities over all countries

We were also interested in the relationship between the job of the questionnaire responder and the trusted entities. As expected, we found that the majority of the participants believe that the public trust them the most, for example, police officers see themselves as the most trusted entity by the



public; this applies to all other jobs except for coastguards, regional authorities, and governmental (national) authorities (Table 4).

Table 4 Job VS trusted entities over all countries*

Job/ Trusted entity	National authority	Regional authority	Local authority	Civil defense	Firefighters	Police	Coastguards	Health services	NGOs	Society	The media
Firefighters	31.4	12.79	42.44	43.02	88.37	55.23	1.74	70.93	20.35	24.42	9.3
Health services	40.22	13.04	44.57	54.35	47.83	45.65	0	84.78	26.09	28.26	15.22
Paramedics	33.93	5.36	48.21	62.5	62.5	48.21	1.79	75	26.79	17.86	17.86
Police officers	27.87	18.03	32.79	37.7	63.93	86.89	1.64	81.97	16.39	19.67	13.11
Coastguards	66.67	33.33	66.67	33.33	66.67	66.67	33.33	33.33	0	0	0
Civil defense	29.41	17.65	58.82	100	64.71	47.06	0	52.94	11.76	5.88	11.76
Local authority	30.3	15.15	72.73	54.55	63.64	60.61	0	42.42	27.27	18.18	15.15
Regional authority	21.43	57.14	28.57	42.86	64.29	71.43	0	71.43	14.29	21.43	7.14
Governmental authority	19.05	14.29	57.14	71.43	47.62	42.86	0	76.19	38.1	14.29	19.05
Prefer not to say	23.61	4.17	37.5	66.67	70.83	47.22	5.56	79.17	23.61	22.22	19.44

*All the values are in percentage. The values highlighted in bold corresponds to the perception of trust associated with the responder's job and themselves. The values in red represent the most trusted entity by the members of a specific job.

4.1.5.2 Perception of responsibility

Authorities –whether national or local- joined with the police are the entities that the responders believe are the ones responsible in the face of a disaster.

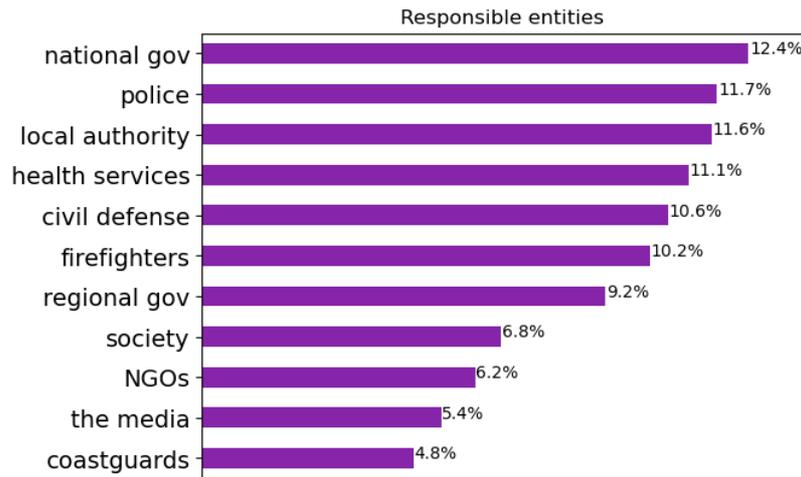


Figure 6 Responsible entities over all countries

Table 5 shows that the majority of the responders hold the authorities and themselves accountable for handling a disaster, except for coastguards who do not see themselves responsible at all. We believe that the inconsistency of results across coastguards and the other profiles is due to their rare representation in our study, we have three coastguards in the whole sample.

What is interesting here, that people not only believe that they are trusted (Table 4) but also believe that they are accountable (Table 5) in the face of a crisis; which shows a high sense of responsibility among first responders and authorities.

Table 5 Job VS responsible entities over all countries*

Job/ Responsible entity	National gov.	Regional gov.	Local authority	Civil defense	Firefighters	Police	Coastguards	Health services	NGOs	Society	The media
Firefighters	56.98	33.14	52.91	40.12	72.67	59.3	1.16	50	9.3	15.7	8.72
Health services	76.09	42.39	52.17	44.57	18.48	44.57	10.87	51.09	23.91	18.48	17.39
Paramedics	58.93	16.07	51.79	53.57	53.57	55.36	1.79	64.29	23.21	12.5	8.93
Police officers	83.61	57.38	65.57	24.59	18.03	60.66	1.64	44.26	3.28	16.39	24.59
Coastguards	66.67	66.67	66.67	100	33.33	0	0	0	33.33	33.33	0
Civil defense	88.24	64.71	82.35	70.59	11.76	23.53	5.88	23.53	0	11.76	17.65
Local authority	75.76	39.39	69.7	45.45	21.21	72.73	6.06	42.42	9.09	15.15	3.03
Regional authority	85.71	85.71	78.57	42.86	14.29	35.71	0	35.71	0	7.14	14.29



Governmental authority	52.38	42.86	61.9	76.19	23.81	33.33	9.52	61.9	4.76	14.29	19.05
Prefer not to say	62.5	23.61	58.33	56.94	47.22	43.06	5.56	51.39	18.06	23.61	9.72

**All the values are in percentage. The values highlighted in bold corresponds to the perception of responsibility associated with the responder's job and themselves. The values in red represent the most responsible entity by the members of a specific job.*

4.2 COMPARISON AMONG COUNTRIES

In this section, we will mention the same information we mentioned in the analysis across all countries but for each country separately comparing it to the other countries (in this case we have the seven countries France, Israel, Italy, Norway, Romania, Spain, and Sweden).

After listing the needs and expectations we will conduct a similarity analysis between the different countries to see which countries can be grouped together.

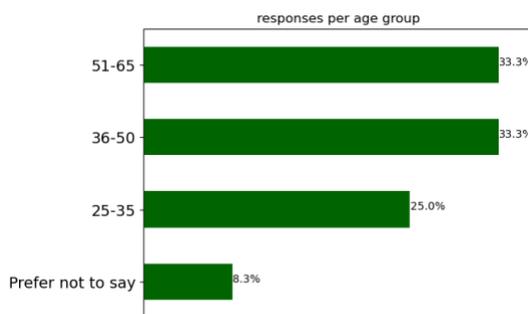
4.2.1 DEMOGRAPHICS

The number of responses across the countries is mentioned in Table 1. In the following sub-sections, we cover the responses associated with all the questions related to the demographics.

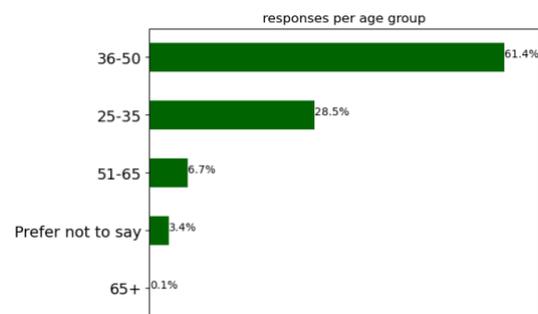
AGE

It can be seen in Figure 7 that the majority of the respondents from Romania, Israel, Spain, and Sweden are aged between 36 and 50 years (61.4%, 33.9%, 50.9%, and 52.9% respectively), whereas, in France, Italy, and Norway, most of the respondents are between 51 and 65 years old (33.3%, 33.3%, and 40.3% respectively).

France

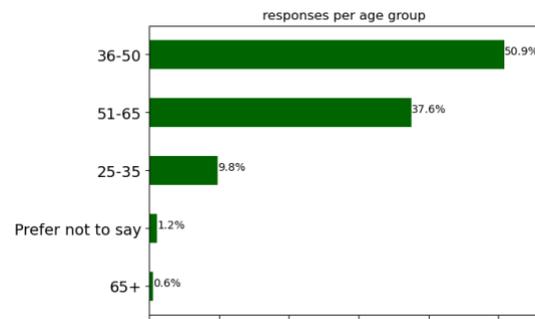
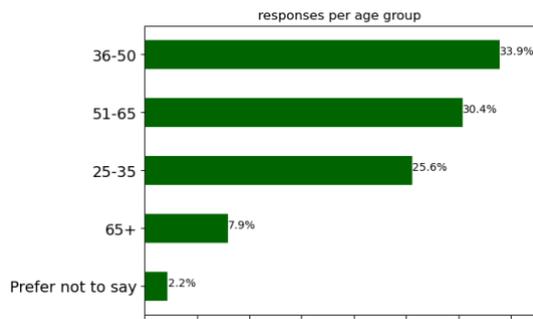


Romania:

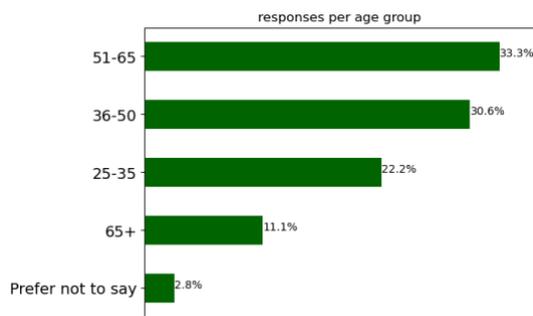


Israel:

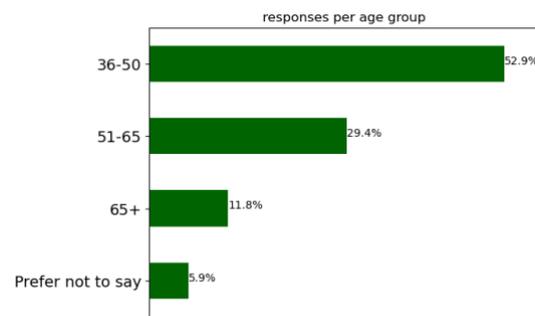
Spain:



Italy:



Sweden:



Norway:

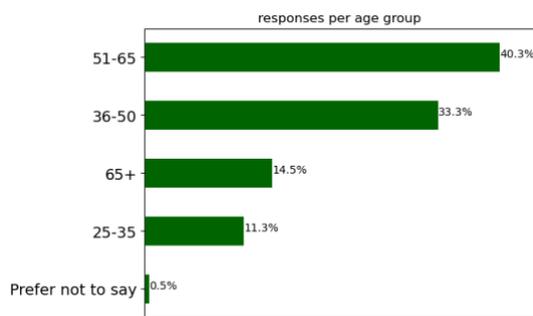
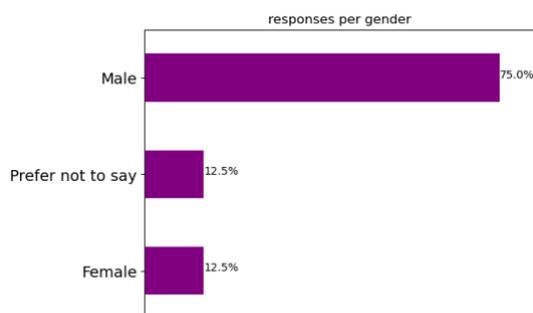


Figure 7. Age distribution

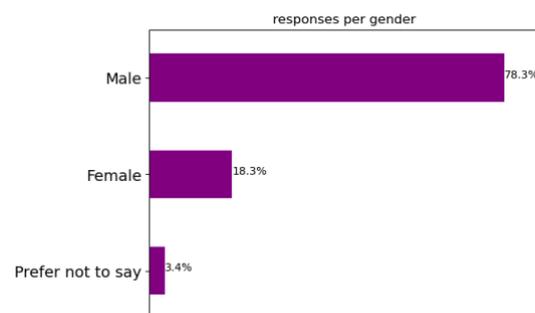
GENDER

The graphs in Figure 8 show the distribution per gender of the respondents. It can be seen that in all the countries the majority of the respondents are male, being the most in Romania (78.3%) and the least in Israel (55.5%).

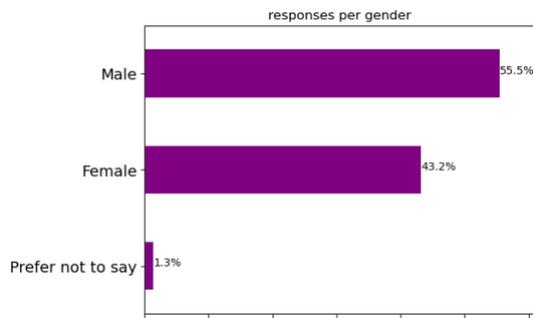
France:



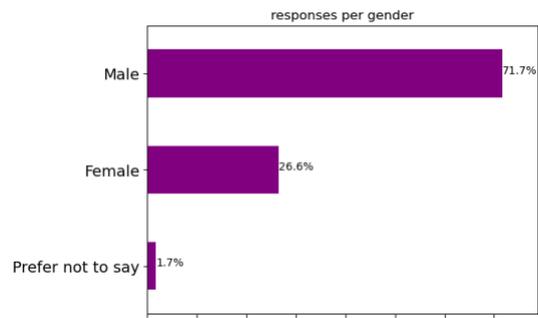
Romania:



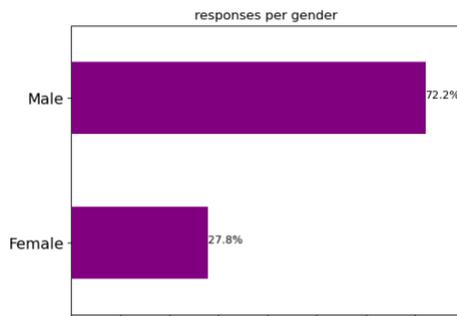
Israel:



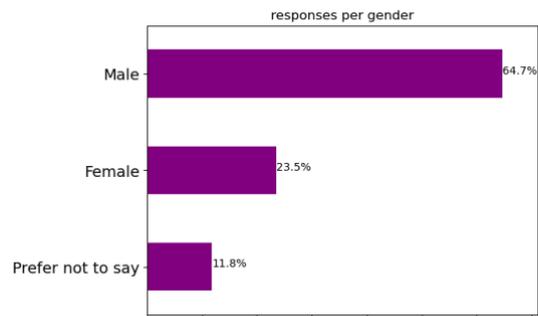
Spain:



Italy:



Sweden:



Norway:

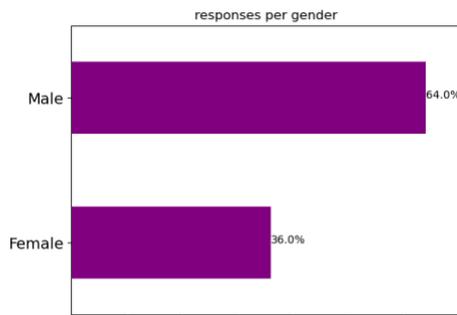
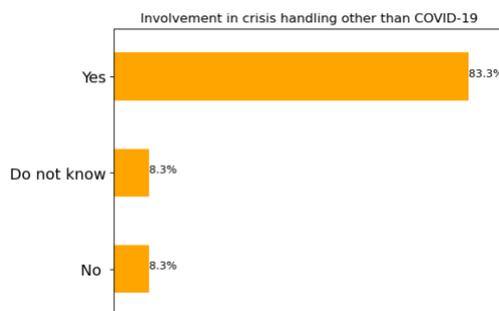


Figure 8. Gender distribution

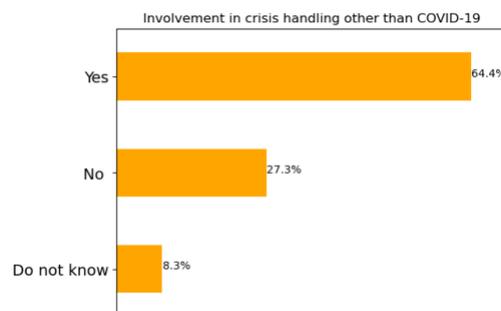
CRISIS HANDLING EXPERIENCE

In Figure 9 it can be seen that the countries show the majority of its respondents having experience in crisis handling. Those more experienced are the ones in France (83.3%), and on the other hand, the ones with less experience are in Norway (57.5%).

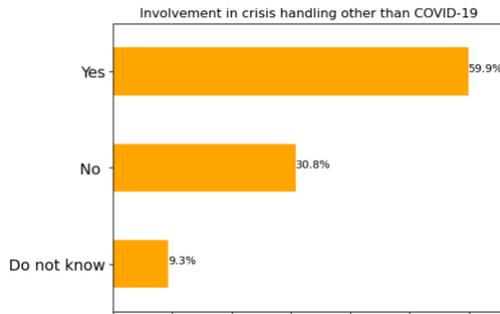
France:



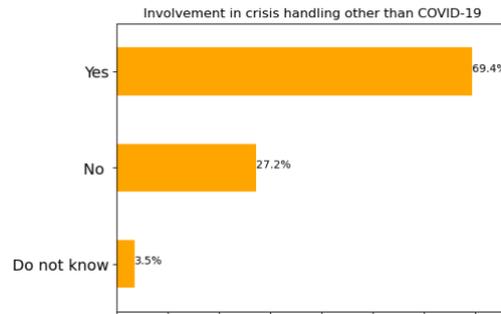
Romania:



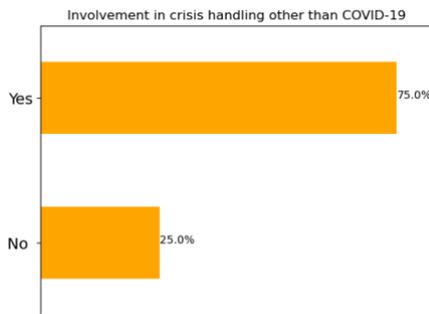
Israel:



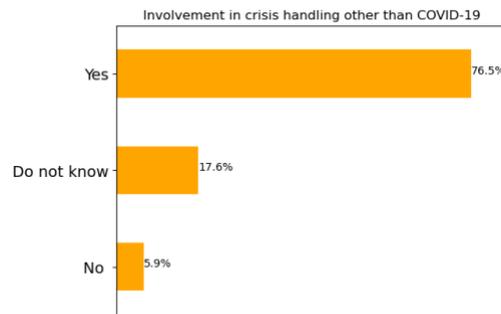
Spain:



Italy:



Sweden:



Norway:

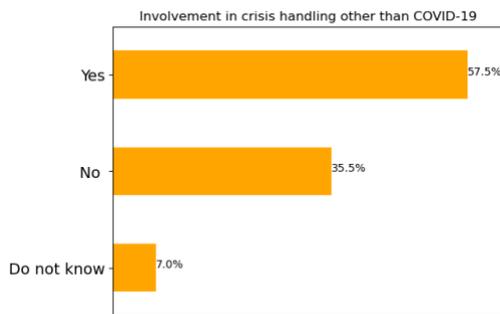
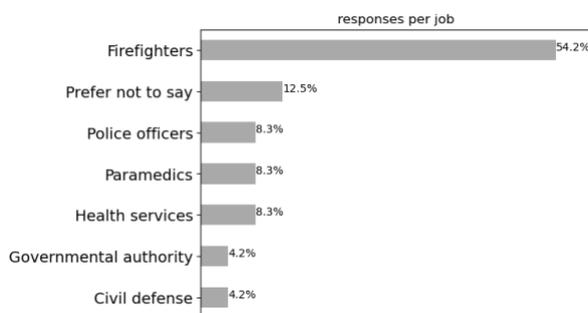


Figure 9. Involvement in crisis handling

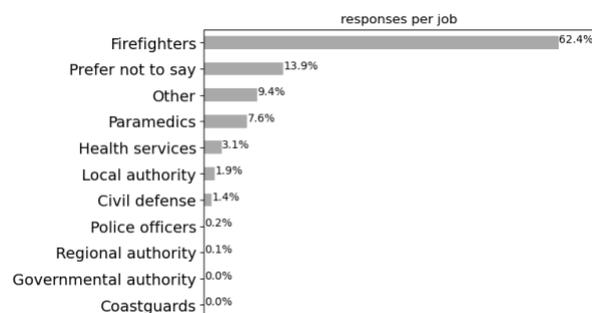
JOB

Continuing with the job the respondent has, Figure 10 shows that in France, Romania, and Sweden, most of them are firefighters (54.2%, 62.4%, and 35.5% respectively). On the other hand, in Italy, the majority of them are working in health services (22.2%). In Israel, Spain, and Norway most of them work in a job not listed in the survey. It should be noted the great difference that exists in Romania between the most chosen job and the next one. Firefighters come first with 62.4% of the respondents, and in the second place is Paramedics, with only 7.6%. The rest of the countries show more evenly distributed data.

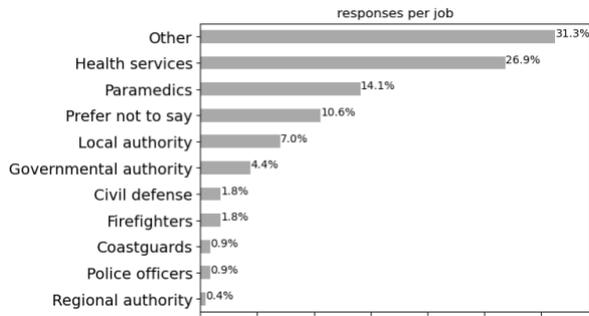
France:



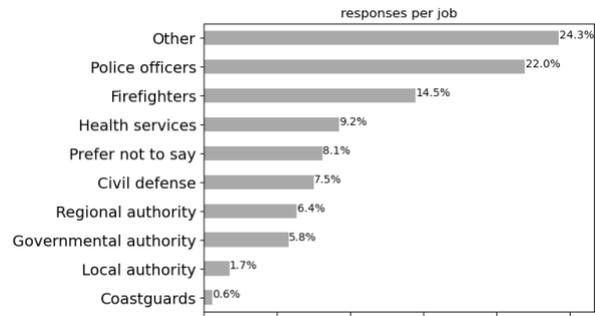
Romania:



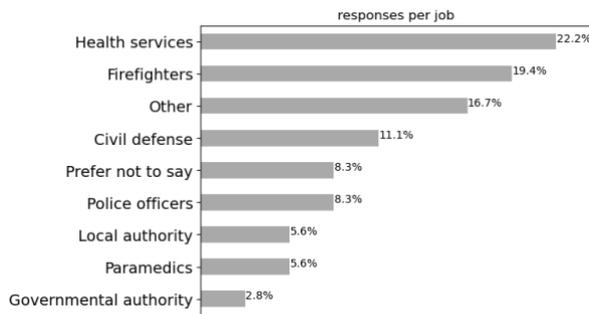
Israel:



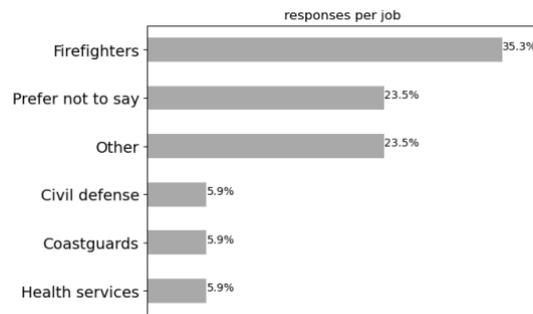
Spain:



Italy:



Sweden:



Norway:

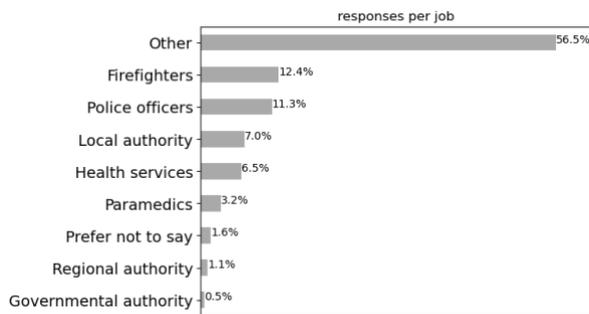
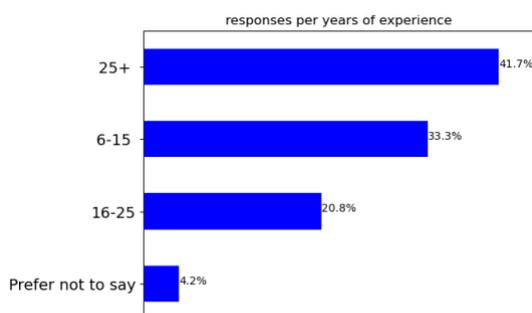


Figure 10. Job distribution

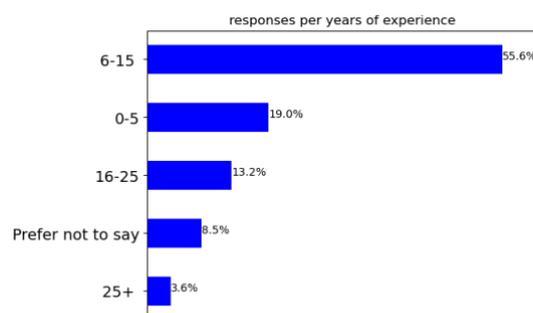
WORK EXPERIENCE

A variety of results can be seen in Figure 11. In France, the majority of respondents have more than 25 years of experience (41.7%). Following comes Spain and Italy, with the majority of them having between 16 and 25 years of experience (30.1% and 27.8% respectively). Later, it comes Romania, Sweden, and Norway, with most of the respondents having from 6 to 15 years of experience (55.6%, 41.2%, and 29.6% respectively). Those with less experience are respondents from Israel, having 43.2% of them with less than 5 years.

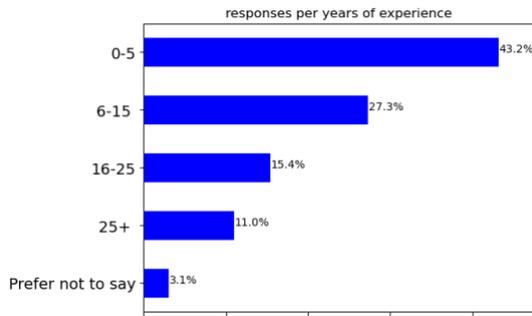
France:



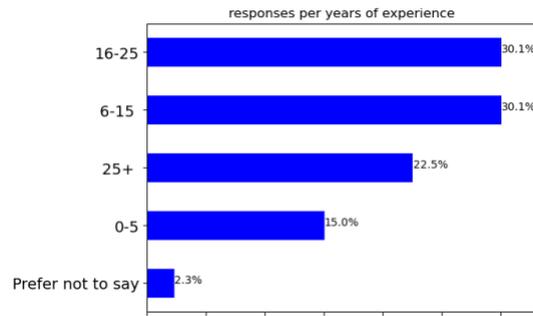
Romania:



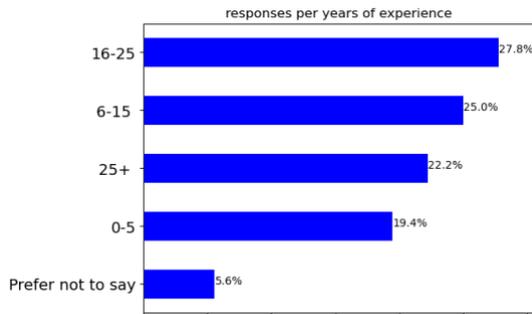
Israel:



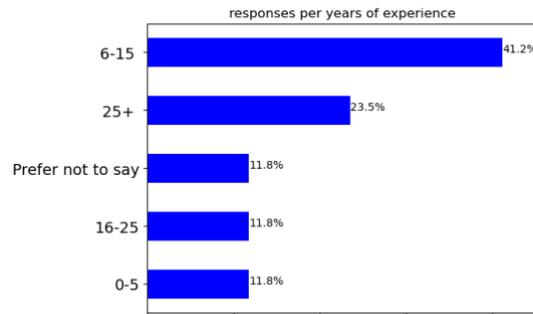
Spain:



Italy:



Sweden:



Norway:

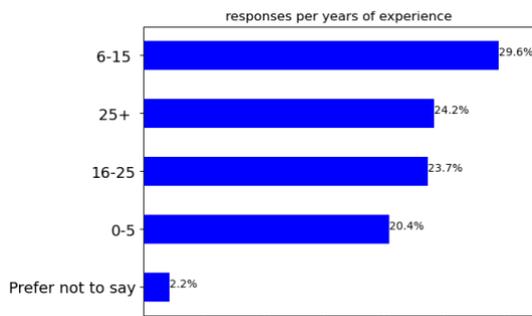
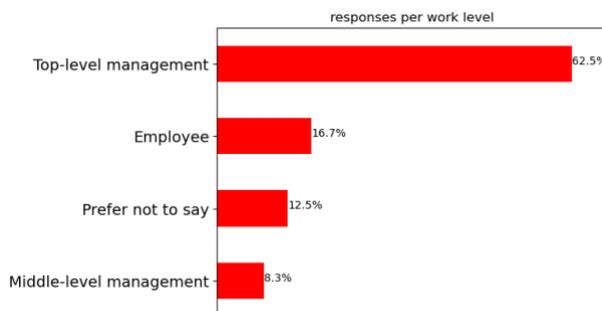


Figure 11. Years of experience distribution

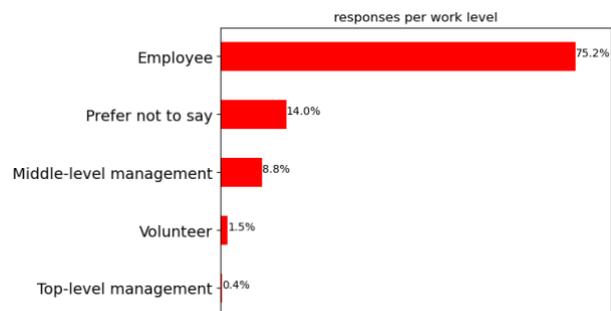
WORK LEVEL

The graphs in Figure 12 show the responses per work level. It can be seen that in Italy, Sweden, Norway, and Romania most of the respondents are employees (36.1%, 47.1%, 33.9%, and 75.2% respectively). On the other hand, in Israel most of them are volunteers (44.1%), in Spain, they are middle-level managers (39.9%) and in France, most of them are top-level managers. It should be noted that in Spain and Romania the minority of the respondents are volunteers (0.6% and 1.5%) compared with the 44.1% of Israel or the 25% of Italy.

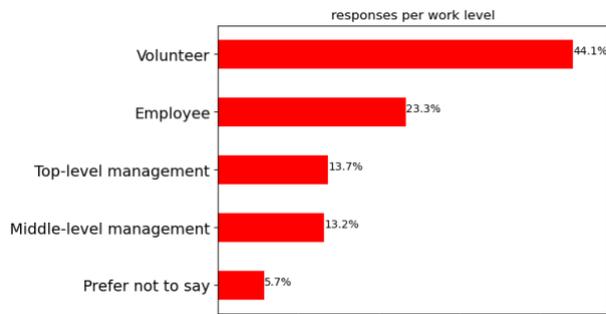
France:



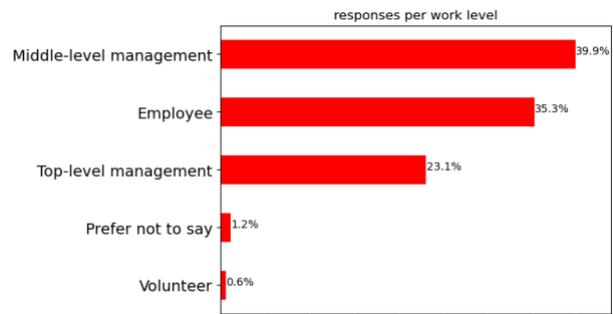
Romania:



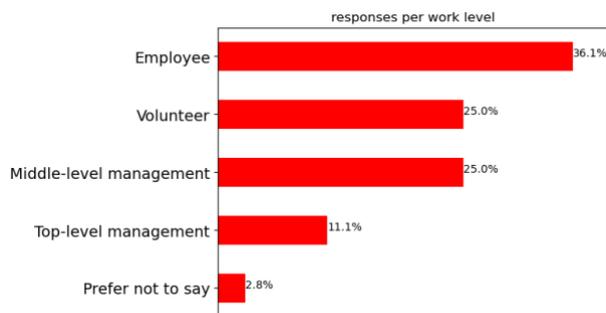
Israel:



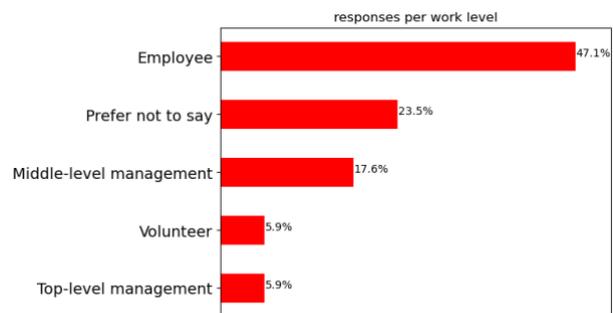
Spain:



Italy:



Sweden:



Norway:

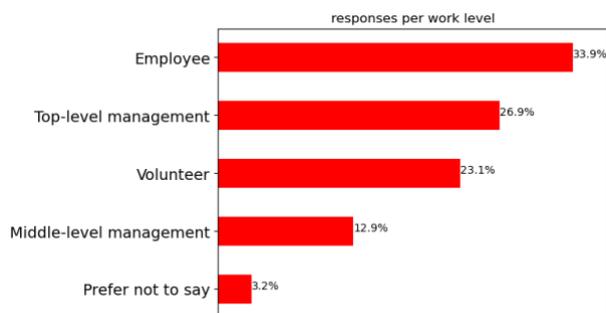


Figure 12. Responses per work level

4.2.2 RISK AWARENESS

In Figure 13 we present a summary table for each country, showing the risk type being evaluated by its mean (being 1 not aware and 5 the most aware) and the standard deviation of the responses. In orange, you will find highlighted the risk the respondents from each country are most aware of.

France:

Risk	Mean	Standard Deviation
Extreme weather	3.54	0.98
Nature related	3.25	1.19
Social disruption	3.83	1.05
Critical service	3.79	1.06
Pandemics	3.83	1.09

Romania:

Risk	Mean	Standard Deviation
Extreme weather	3.32	1.17
Nature related	3.51	1.29
Social disruption	3.3	1.36
Critical service	3.3	1.31
Pandemics	3.63	1.19

Israel:

Spain:



Risk	Mean	Standard Deviation
Extreme weather	2.6	1.2
Nature related	3.11	1.29
Social disruption	3.25	1.21
Critical service	3.05	1.26
Pandemics	3.55	1.15

Italy:

Risk	Mean	Standard Deviation
Extreme weather	3.75	1.08
Nature related	3.67	1.37
Social disruption	3.47	1.18
Critical service	3.03	1.21
Pandemics	3.75	1.34

Norway:

Risk	Mean	Standard Deviation
Extreme weather	2.94	1.15
Nature related	2.66	1.16
Social disruption	2.82	1.14
Critical service	3.03	1.15
Pandemics	3.44	1.0

Risk	Mean	Standard Deviation
Extreme weather	3.75	1.14
Nature related	3.28	1.27
Social disruption	3.62	1.22
Critical service	3.44	1.27
Pandemics	4.28	1.08

Sweden:

Risk	Mean	Standard Deviation
Extreme weather	3.24	1.3
Nature related	3.06	1.3
Social disruption	3.24	1.3
Critical service	2.94	1.2
Pandemics	3.47	1.46

Figure 13. Risk awareness means and standard deviations

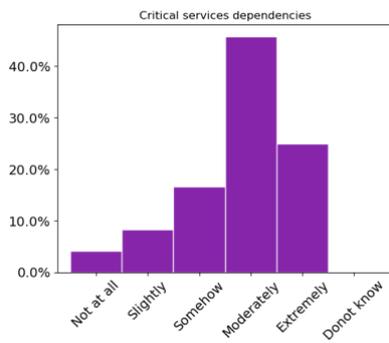
It can be seen that the risk which most concerns the respondents of all countries is "Pandemics", which, as it was mentioned in previous sections, makes perfect sense with the COVID-19 pandemic the world is dealing with at the moment. It can be noted that in France this first place is shared with social disruption, and in Italy with extreme weather conditions. We are also highlighting (in grey) the second type of risk the participants are aware of to reflect their concerns of risks other than the coronavirus. From the tables, we can also see that the respondents in Norway are more relaxed about risks in general than the other countries.

After this summary, in the next section, we will show in more detail how each country distributes its awareness in every risk evaluated. The horizontal axis shows if they are "not at all", "slightly", "somehow", "moderately", "extremely" or "do not know" aware of the risk. In the vertical axis, you can see the percentage of people in each case.

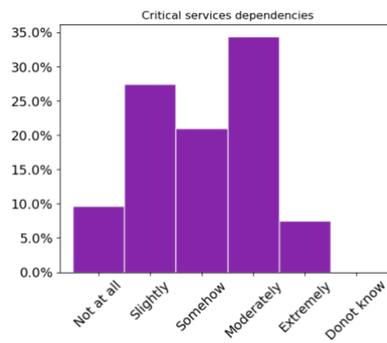
CRITICAL SERVICES DEPENDENCIES

The graphs in Figure 14 show the distribution of the risk awareness of the respondents about critical services dependencies.

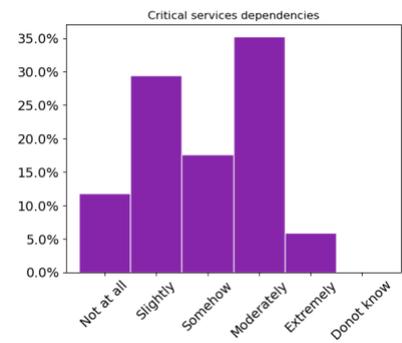
France:



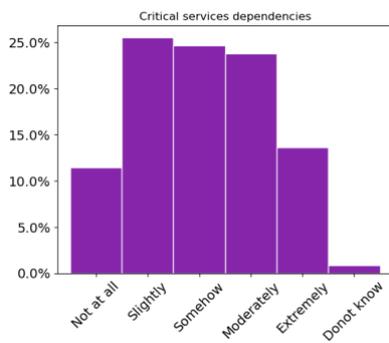
Norway:



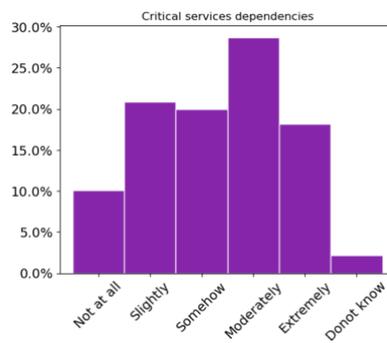
Sweden:



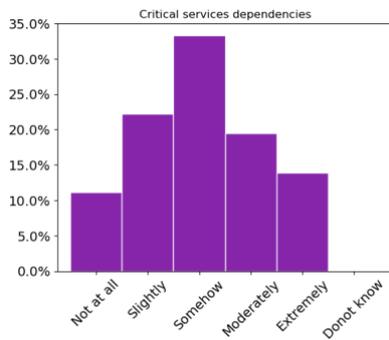
Israel:



Romania:



Italy:



Spain:

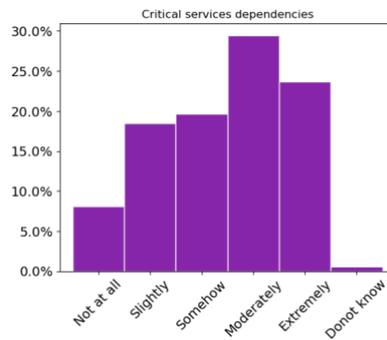
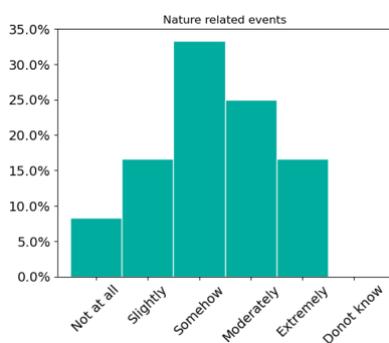


Figure 14. Critical service dependencies risk awareness

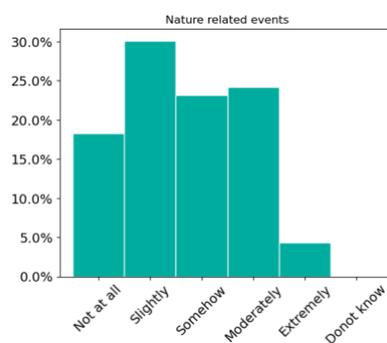
NATURE RELATED EVENTS

The responses for nature-related events risk awareness are shown in Figure 15.

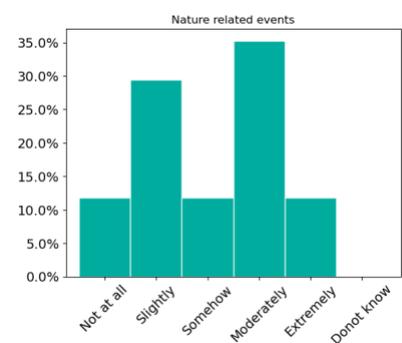
France:



Norway:



Sweden:



Israel:

Romania:



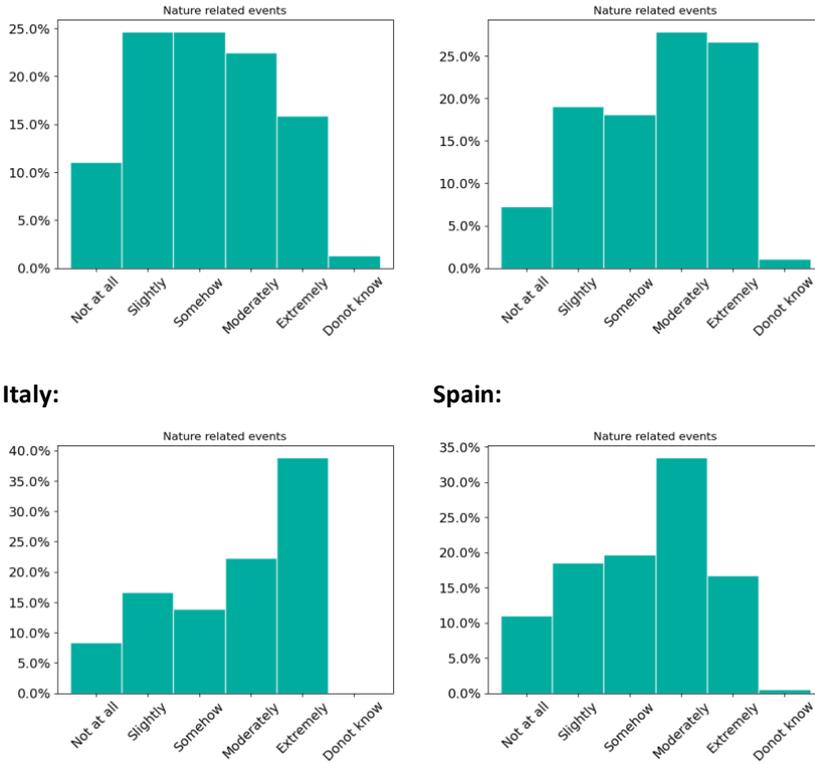
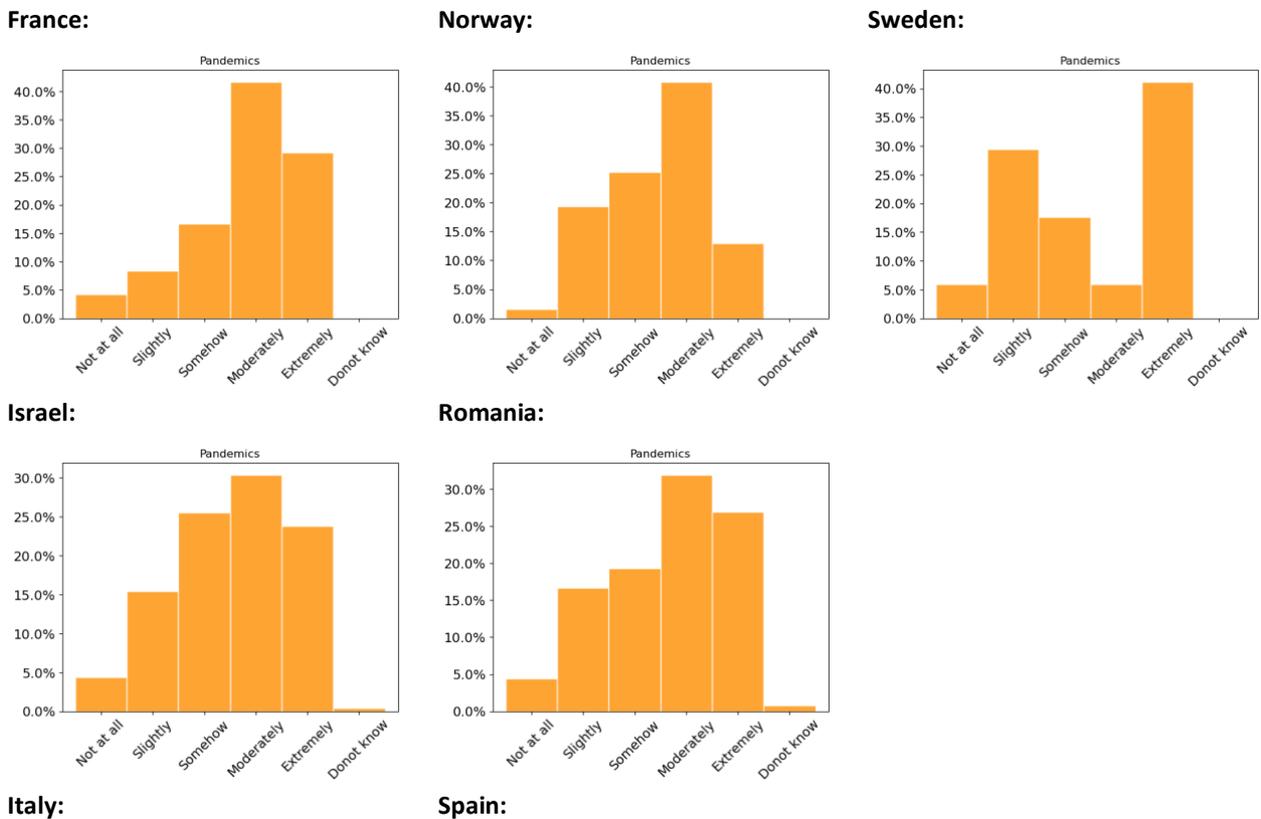


Figure 15. Nature related events risk awareness

PANDEMIC

In Figure 16, the pandemics awareness of the respondents can be observed.



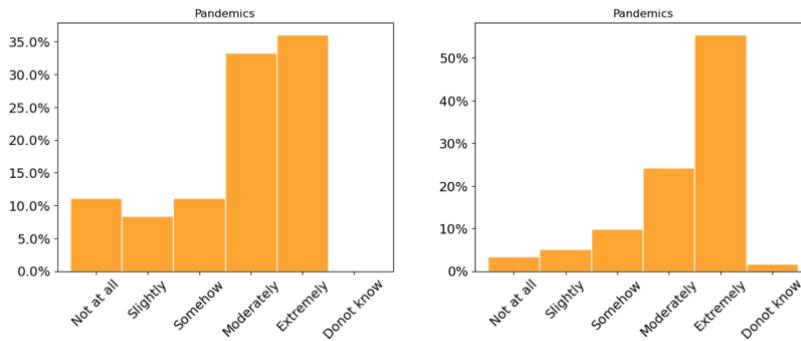
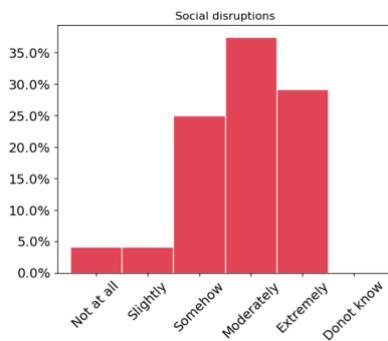


Figure 16. Pandemics risk awareness

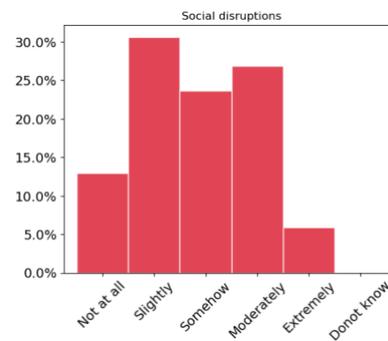
SOCIAL DISRUPTION

The following graphs presented in Figure 17 evaluate the risk awareness of the respondents about social disruption.

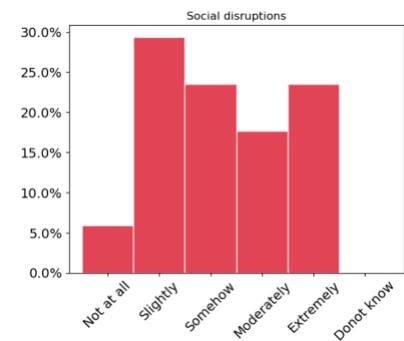
France:



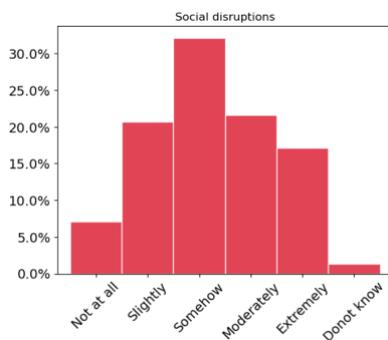
Norway:



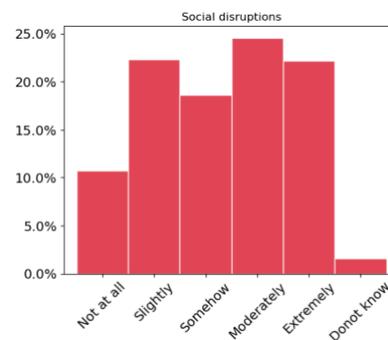
Sweden:



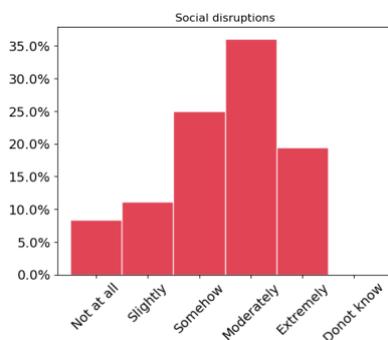
Israel:



Romania:



Italy:



Spain:

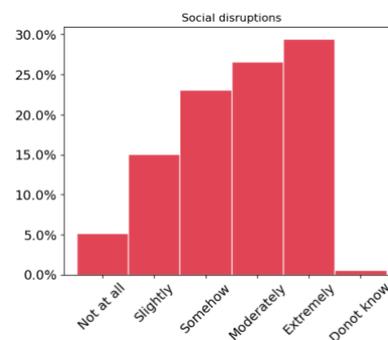
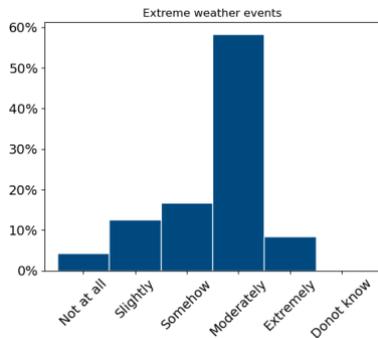


Figure 17. Social disruption risk awareness

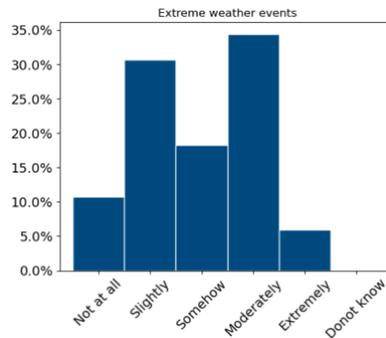
EXTREME WEATHER EVENTS

The data below presented in Figure 18 shows how aware the respondents are of extreme weather events.

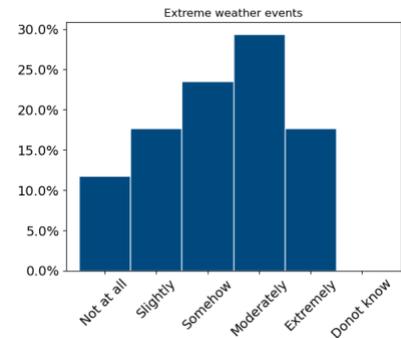
France:



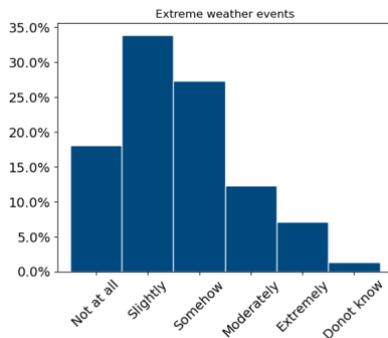
Norway:



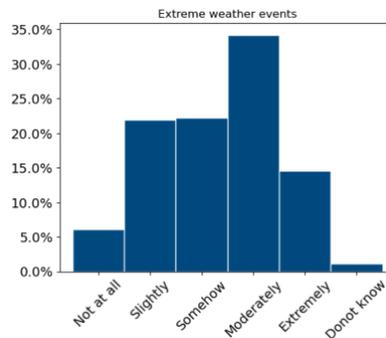
Sweden:



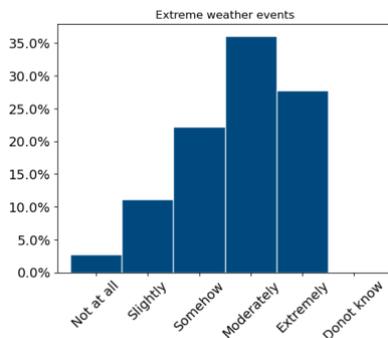
Israel:



Romania:



Italy:



Spain:

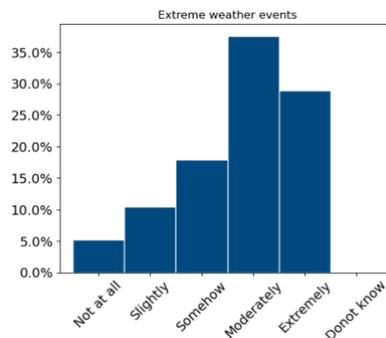


Figure 18. Extreme weather events risk awareness

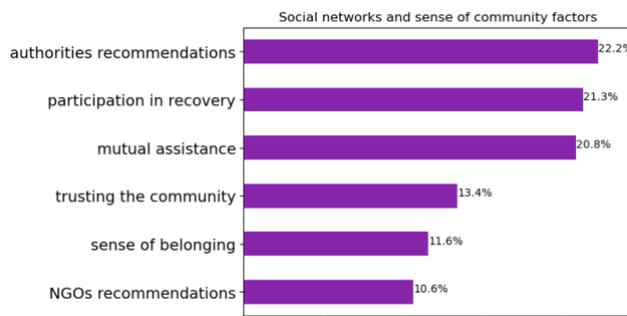
4.2.3 PUBLIC CAPACITIES

SOCIAL NETWORKS AND SENSE OF COMMUNITY FACTORS

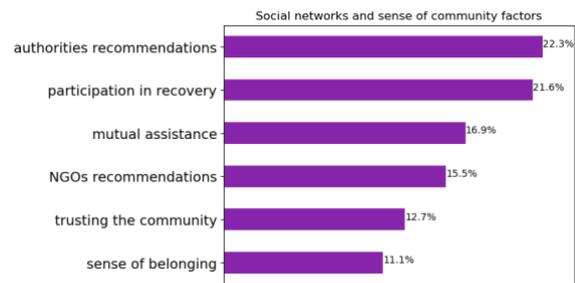
In Figure 19 it can be seen that the respondents agree that the most important factor of social network and sense of community is authorities' recommendations. The least important factor is divided into those who think it is the sense of belonging and those who chose NGOs' recommendations. The former are Romania, Israel, Sweden, and Norway, and the latter are France, Spain, and Italy. It can be noted that France's responses have a range of 11.6, while Italy has 14.5, which indicates that there is a higher consensus among the respondents about the prioritization of factors corresponding to social network and sense of community in Italy.



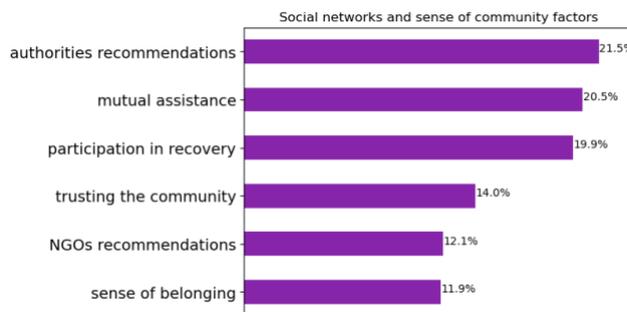
France:



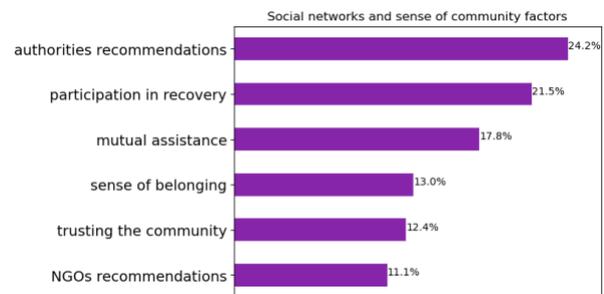
Romania:



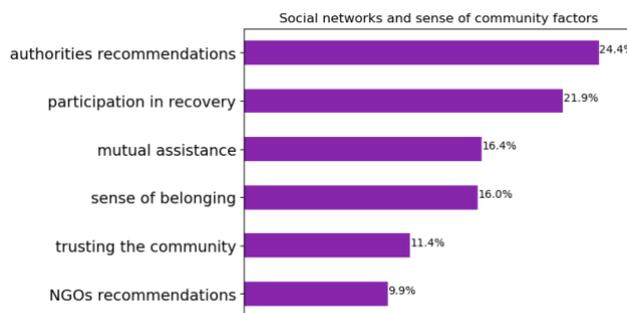
Israel:



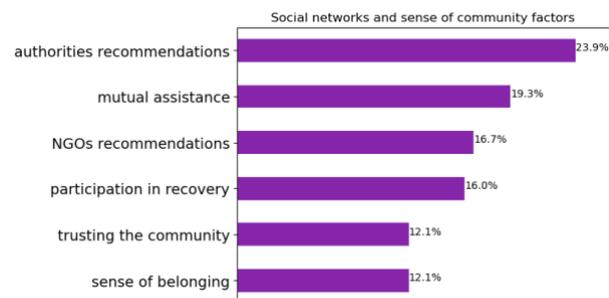
Spain:



Italy:



Sweden:



Norway:

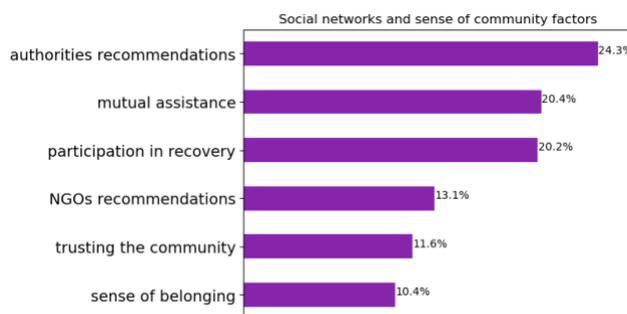


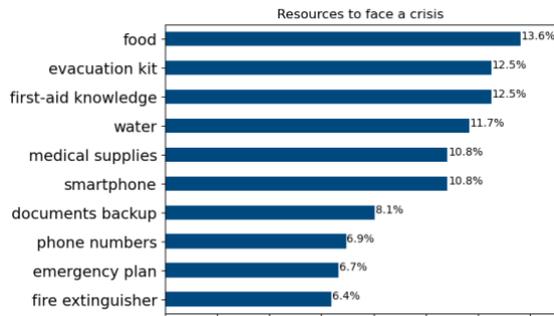
Figure 19. Social networks and sense of community factors

RESOURCES TO FACE A CRISIS

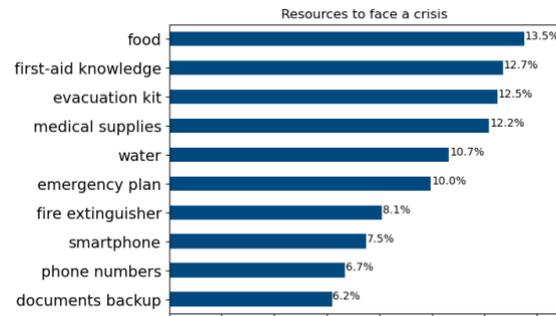
In Figure 20 the distribution of importance for the resources to face a crisis is shown. Two groups can be seen, one who list the most important resource to be food, and another who chose first-aid knowledge. The former is composed from France, Romania, and Israel, and the latter of Spain, Italy, and Sweden. Among all the countries it can be seen that there is not a big difference between the first and last chosen resources (less than 8% in all the cases). In addition, all the countries except France list document backup as one of the least two most important resources. The ranges of responses go from 5.7 (Italy) to 8.5 (Norway). As the difference is small, it means that there is a similar consensus among countries in what they consider the most important resource.



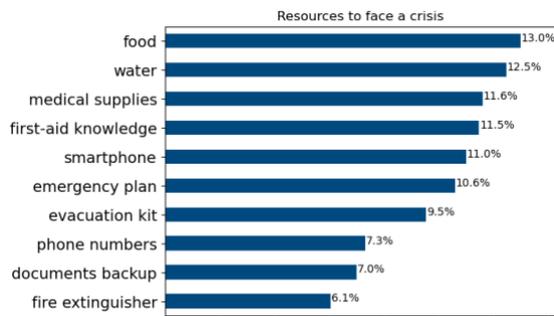
France:



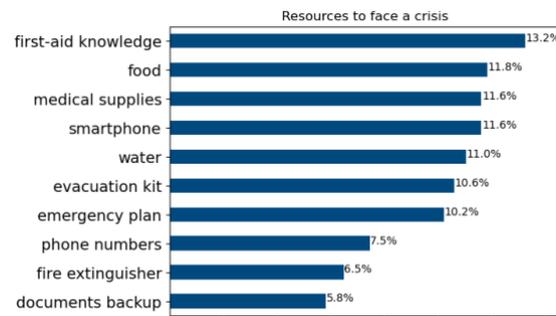
Romania:



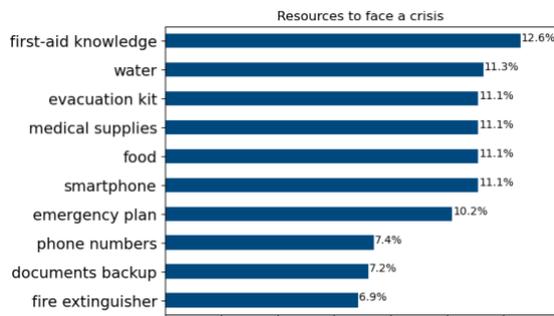
Israel:



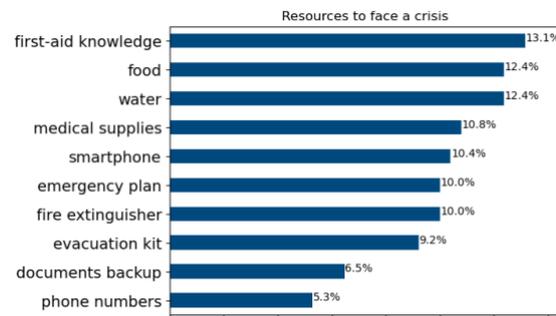
Spain:



Italy:



Sweden:



Norway:

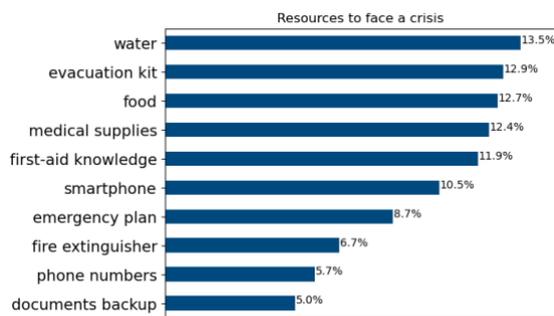


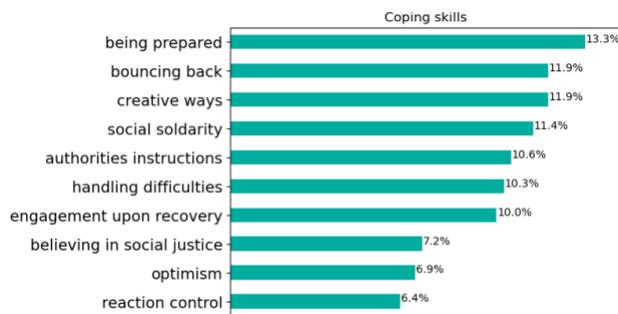
Figure 20. Resources needs and expectations



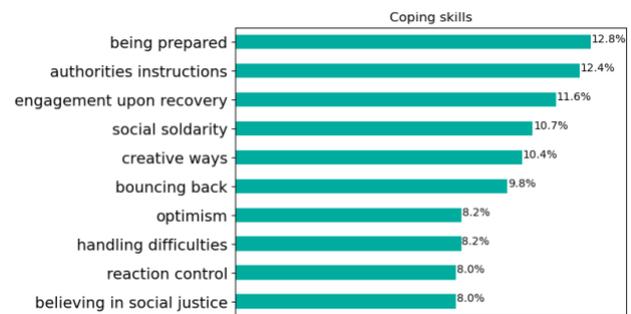
COPING SKILLS

Figure 21 shows the importance of several coping skills among the countries. All respondents from all countries except the ones from Norway agree that being prepared is one of the two most important skills. It can be noted that being optimistic is ranked among the last ones (the last one in Norway, the second last in Italy, Spain, and France, and the third last in Israel). In Norway, Sweden, Spain, and Israel they think social solidarity is really important (ranked first, first, second, and first respectively). The ranges of the responses go from 4.8 (Romania) and 8 (Spain). As these numbers are similar, it can be assumed that there is a near consensus among the countries regarding the most important coping skills.

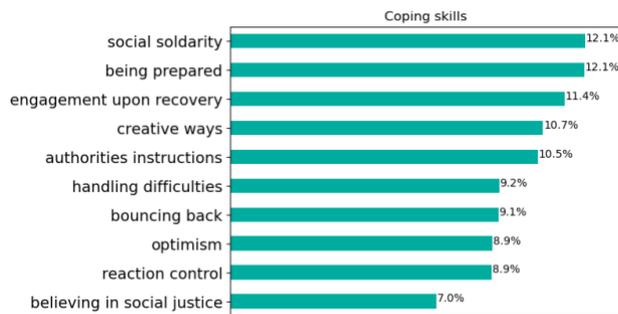
France:



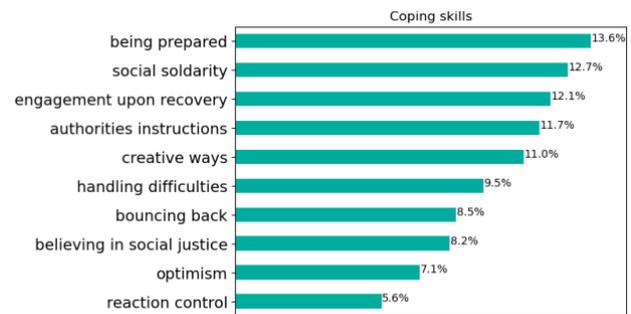
Romania:



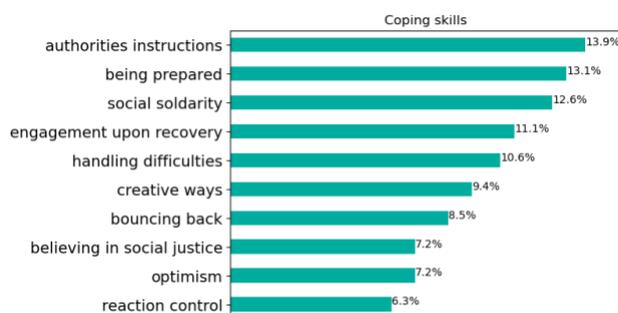
Israel:



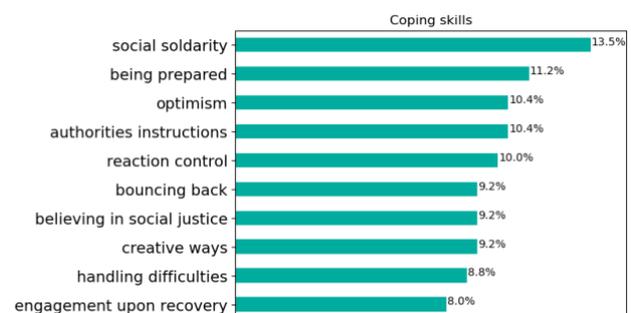
Spain:



Italy:



Sweden:



Norway:

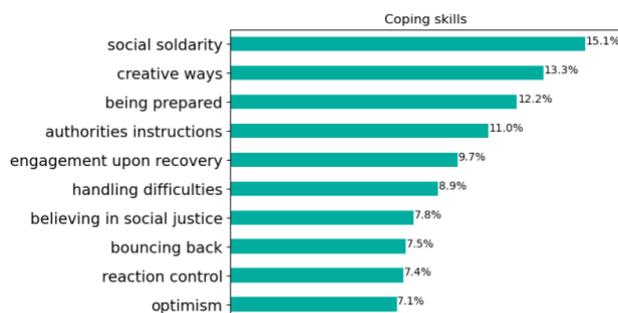
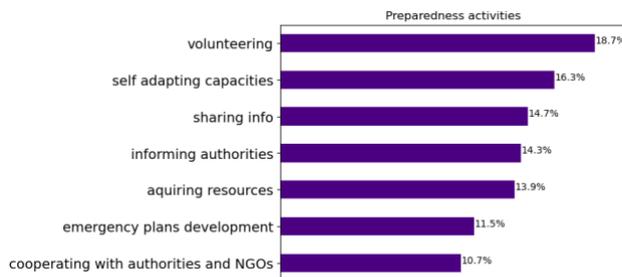


Figure 21. Coping skills

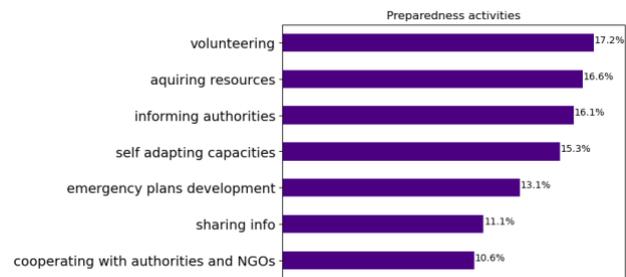
PREPAREDNESS ACTIVITIES

In Figure 22 we show the preparedness activities ranked by importance in each country. Volunteering is ranked the first one in France, Romania, Israel, Italy, and Norway (18.7%, 17.2%, 18.2%, 17.7%, and 18% respectively). On the other hand, Spain and Sweden think self-adapting capacities is the most important one (17.6% both). Cooperating with authorities and NGOs is listed as the least important one in France, Romania, Italy, and Norway. The ranges of the responses go from 6 (Spain) and 8.6 (Norway). As the difference between these numbers is quite small, it can be assumed that all the countries have a similar consensus regarding the most important preparedness activities.

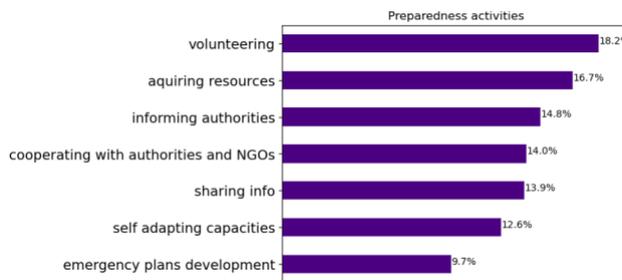
France:



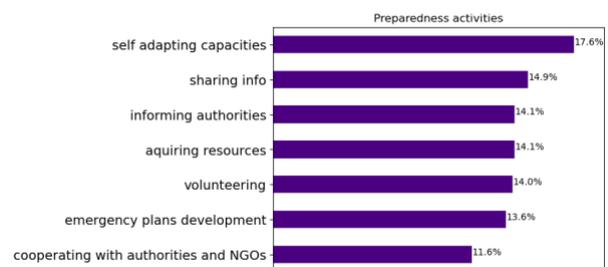
Romania:



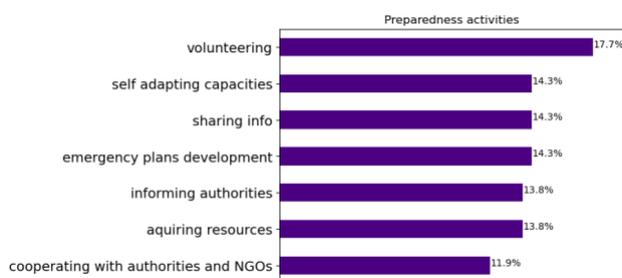
Israel:



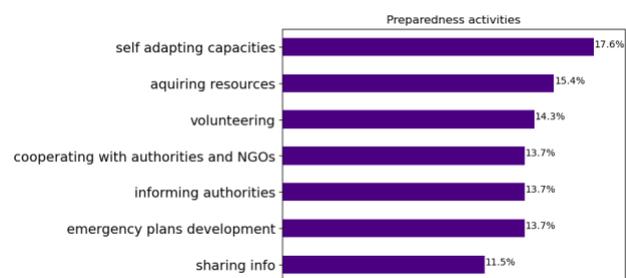
Spain:



Italy:



Sweden:



Norway:

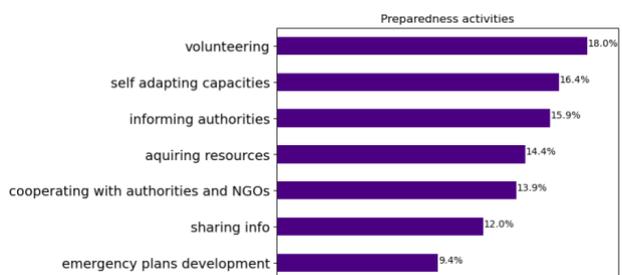


Figure 22. Preparedness activities

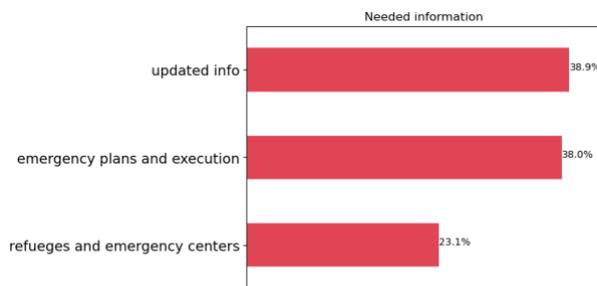


4.2.4 COMMUNICATION AND INFORMATION SHARING

NEEDED INFORMATION

Figure 23 shows the type of information needed to be known by individuals in crisis times, ranked among importance in the different countries. Some think that the most important information is updated information and others think it is more important to have emergency plans and execution. The former group includes responders from France and Norway (38.9% and 47.9% respectively) and the latter includes Romania, Israel, Spain, Italy, and Sweden (43%, 37.6%, 40.4%, 49.4%, and 38.6% respectively). On the other hand, they all agree that the least important information is the one related to the places that serve refugees and emergency centres information. The ranges of responses go from 7.4 (Israel) to 30.3 (Italy). This indicates that there is a much higher consensus among the respondents about the needed information in Italy.

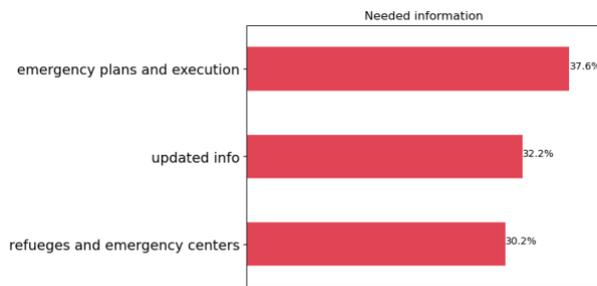
France:



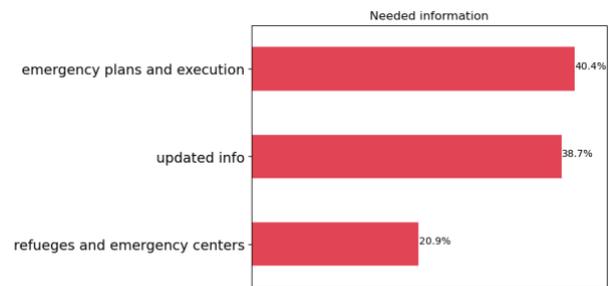
Romania:



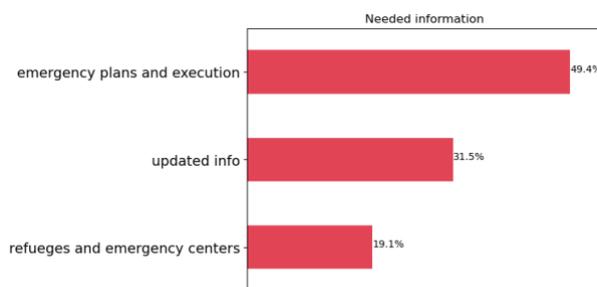
Israel:



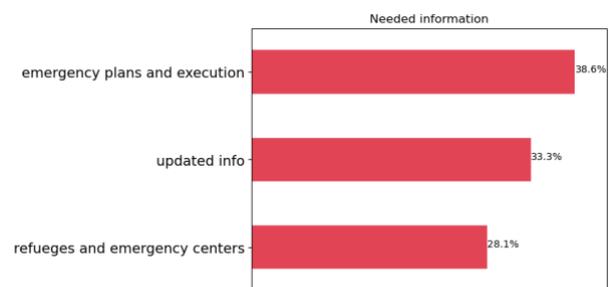
Spain:



Italy:



Sweden:



Norway:

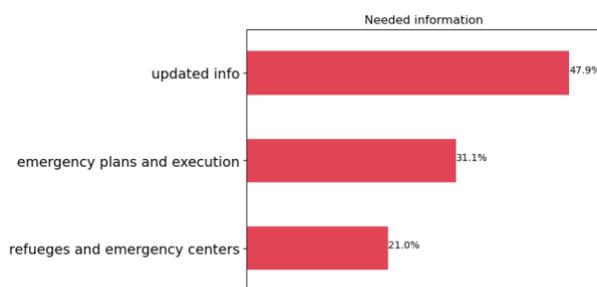
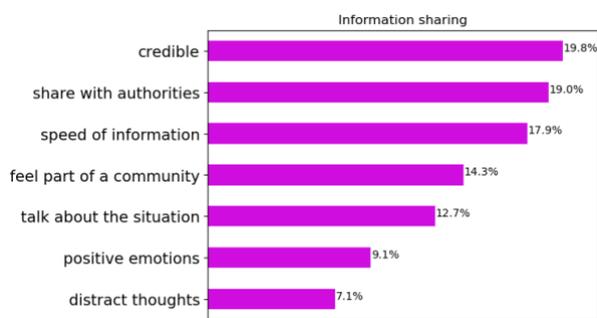


Figure 23. Needed information

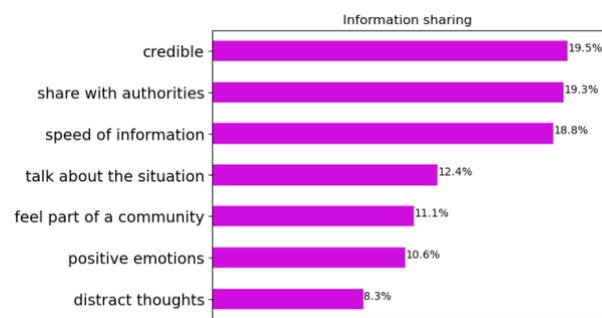
INFORMATION SHARING

Figure 24 presents the graphs corresponding to the type of information needed to be shared by authorities and emergency responders with individuals. All countries except Italy agree that the most important thing is for the information to be credible. In addition, France, Romania, Israel, and Spain agree that the second most important is sharing information with authorities, which is ranked first by Italy. On the other hand, all the countries except Sweden agree that the least important type is sharing distracting thoughts. Sweden ranked the information about positive emotions as least important. The ranges of responses go from 11.2 (Romania and Sweden) to 18.3 (Norway). This indicates that there is a higher consensus among the respondents about the type of information in Norway.

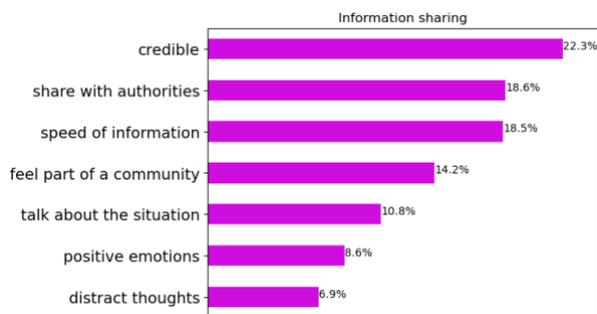
France:



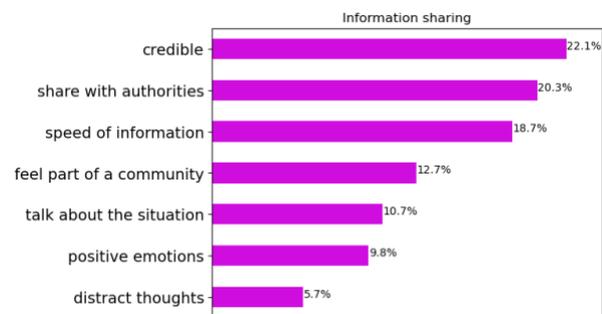
Romania:



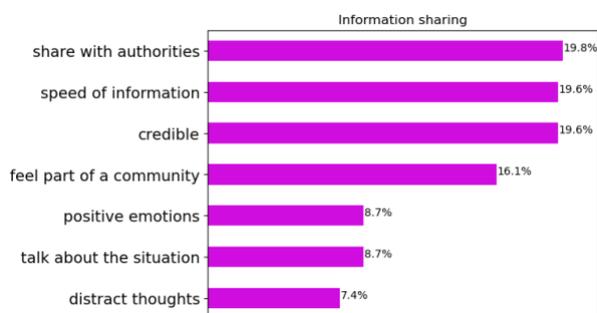
Israel:



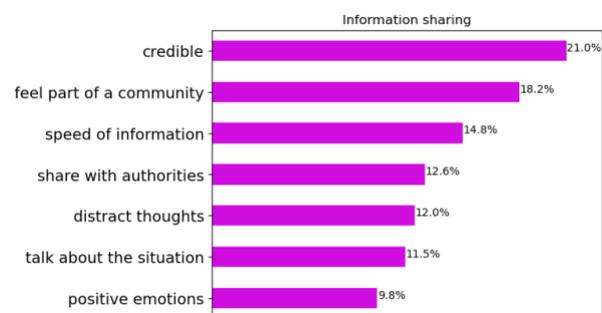
Spain:



Italy:



Sweden:



Norway:



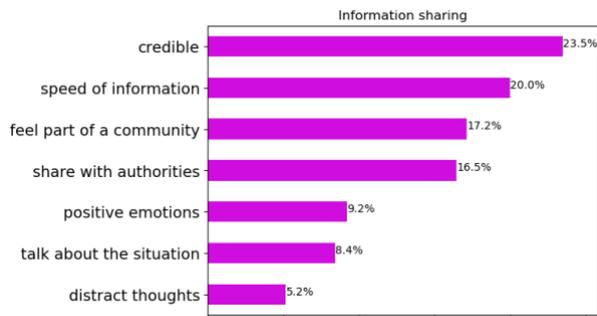
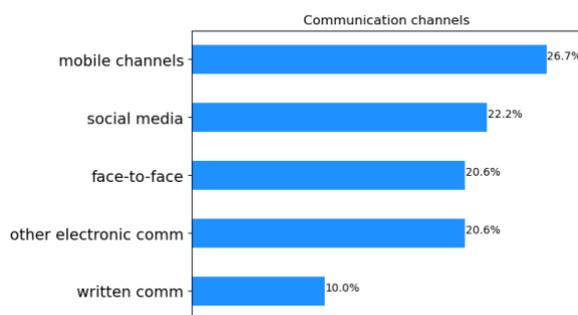


Figure 24. Information sharing

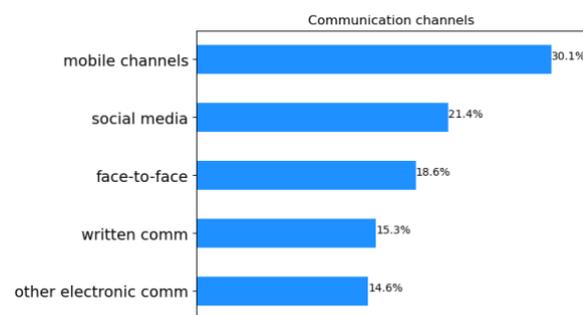
COMMUNICATION CHANNELS

In Figure 25 we present the responses for the communication channels which are the most important. All the countries agree that the most important channel is the mobile one. On the other hand, all of them except Romania agree that the least important is written communication. Romania listed this one as the second least important, only 0.7% above other electronic communication, which is the last one. The ranges of responses go from 9.4 (Sweden) to 22.5 (Norway). This indicates that there is a much higher consensus among the respondents about the most effective communication channels in Norway.

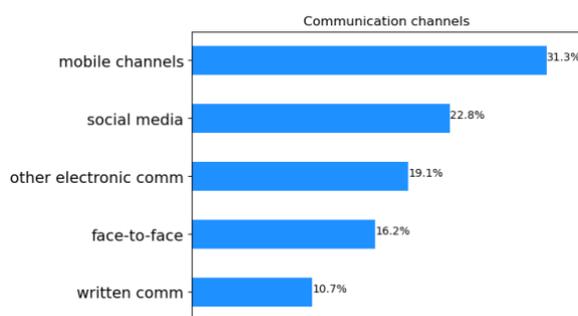
France:



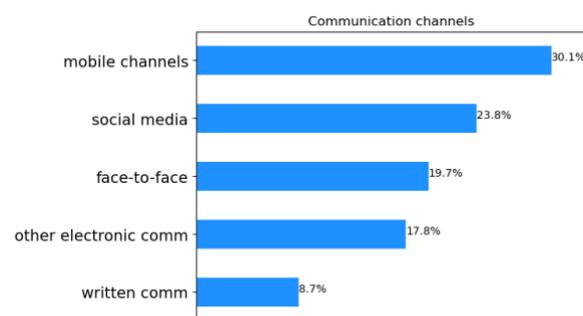
Romania:



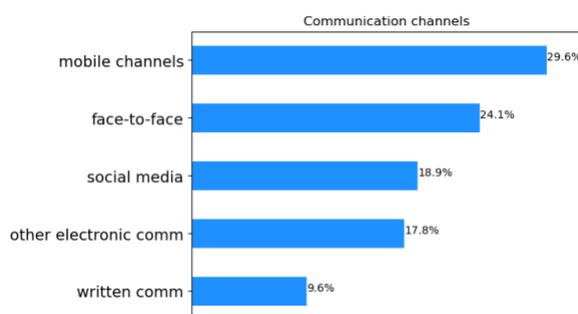
Israel:



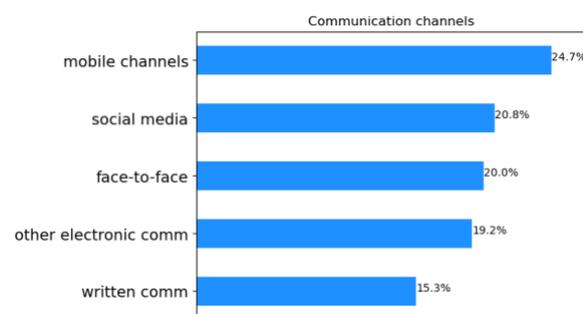
Spain:



Italy:



Sweden:



Norway:

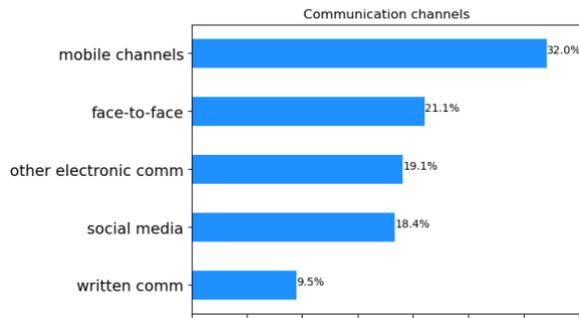
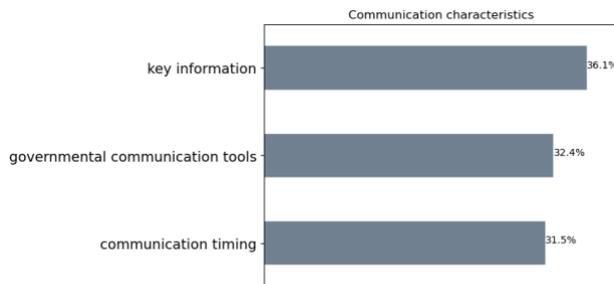


Figure 25. Communication channels

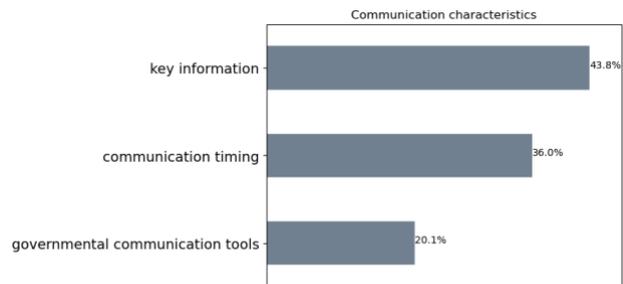
COMMUNICATION CHARACTERISTICS

Figure 26 shows the graphs for the question covering whether what information is shared in a time of a crisis, when it is shared, or how it is shared is the most important aspect. None of the respondents across all countries chose the acknowledgment of governmental information tools to be the most important factor. France, Romania, Spain, Italy, and Norway ranked key information to be the most important one (36.1%, 43.8%, 40.1%, 41.4%, and 39.2% respectively), whereas Israel and Sweden chose communication timing (39.8% and 38.6%). The ranges of responses go from 4.6 (France) to 23.7 (Romania). This indicates that there is a much higher consensus among the respondents about the communication characteristics in Romania.

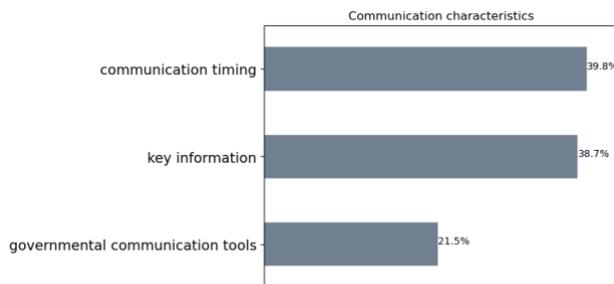
France:



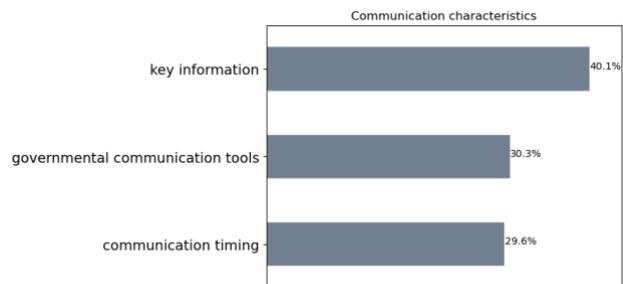
Romania:



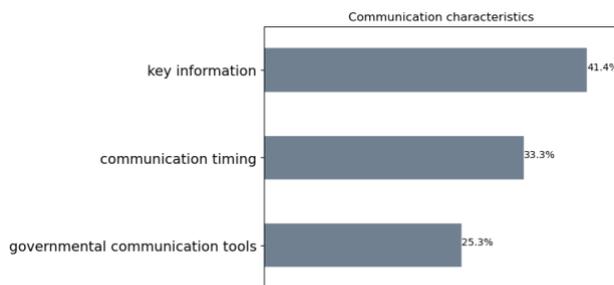
Israel:



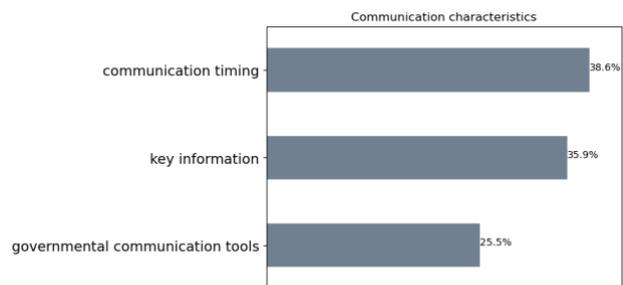
Spain:



Italy:



Sweden:



Norway:

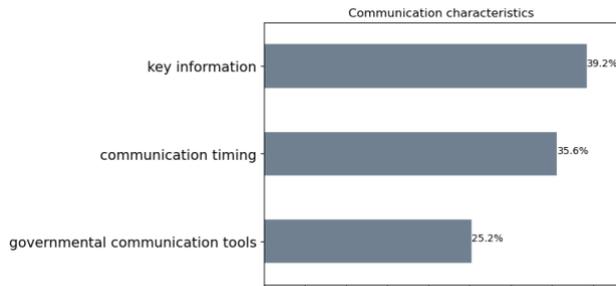


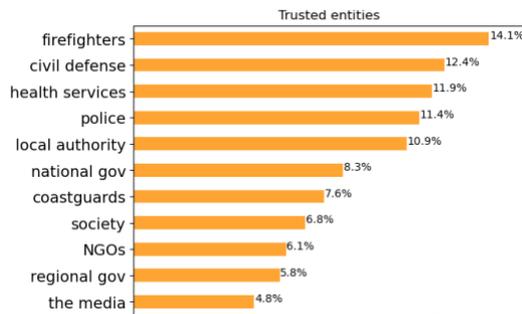
Figure 26. Communication characteristics

4.2.5 PUBLIC PERCEPTION

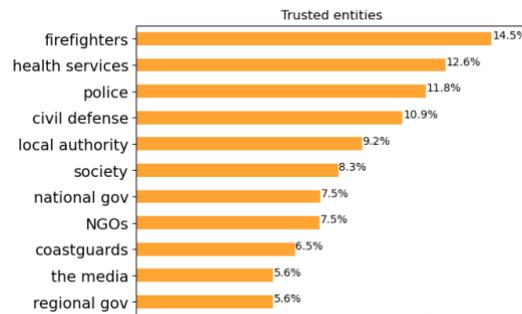
TRUSTED ENTITIES

In Figure 27 we show the entities distribution that respondents believe their society trusts the most. It can be seen that firefighters are trusted the most in France and Romania; health services in Israel, Spain, and Sweden; civil defence in Italy, and police in Norway. On the other extreme of the scale, media is the least trusted in all the countries except Romania and Israel, who have less trust in the regional government.

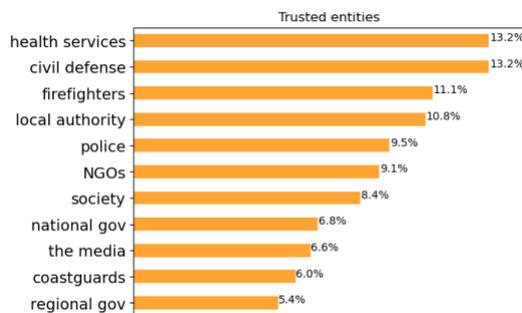
France:



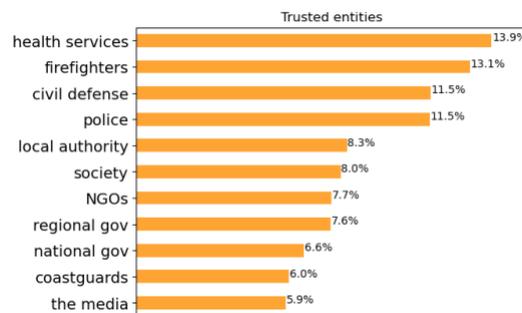
Romania:



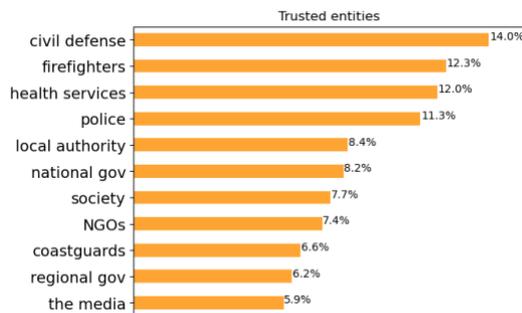
Israel:



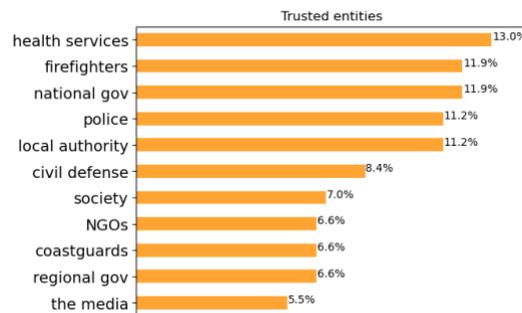
Spain:



Italy:



Sweden:



Norway:

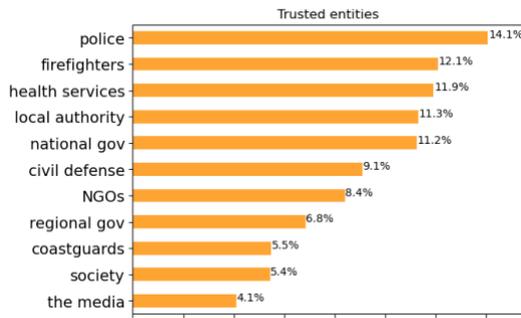
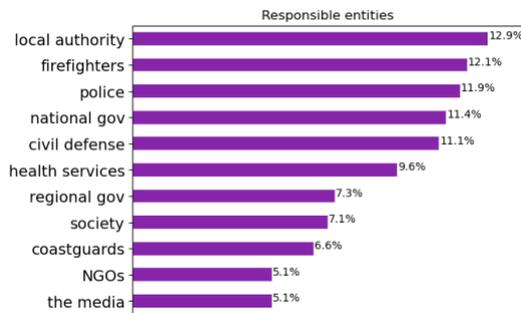


Figure 27. Trusted entities

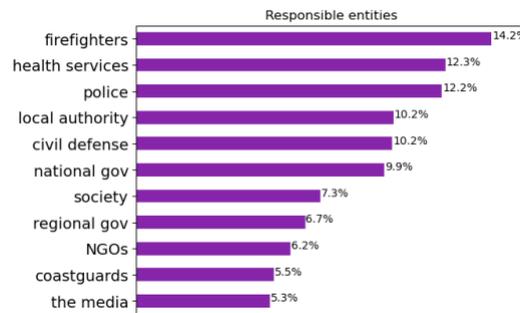
RESPONSIBLE ENTITIES

In Figure 28, we show the responses associated with the entities the respondents believe should be held responsible in case of a crisis. Romania chooses firefighters. France, Italy, and Sweden believe that the local authority should be the most responsible ones, while Israel ranked civil defence the first, Spain says the national government, and Norway, the police. The media and coastguards are ranked as those who should have less responsibility.

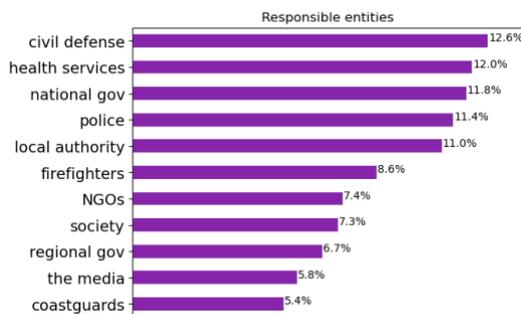
France:



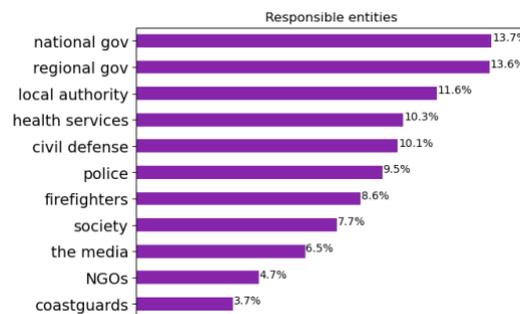
Romania:



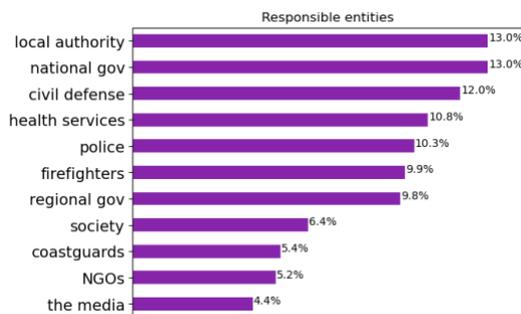
Israel:



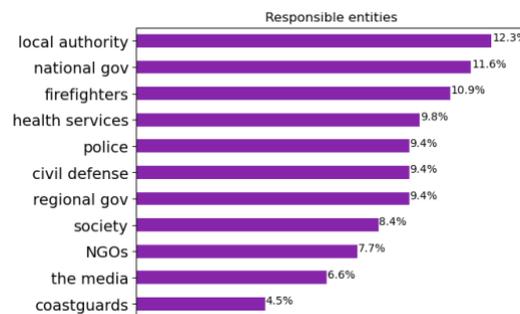
Spain:



Italy:



Sweden:



Norway:



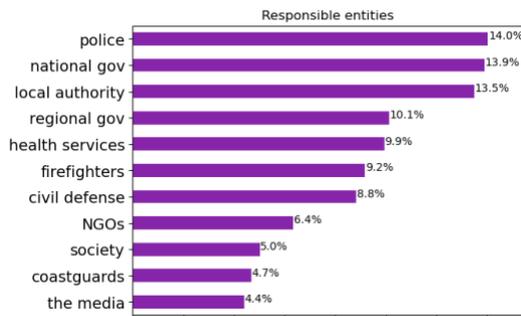


Figure 28. Responsible entities

4.2.6 PRELIMINARY DISCUSSION: SIMILARITIES AND DIFFERENCES

Here we show the similarities and differences between all the countries in the four main constructs of the survey; risk awareness, public capacities, communication and information sharing, and public perception. We use Euclidean distance to measure the similarity between the countries as mentioned in section 3.3.3.2.

For the first construct, risk awareness, we can see from Figure 29 that Italy and Romania are the most similar countries to each other, followed by Romania and Sweden. On the other hand, Norway and Spain (1.60) are the most distant ones. Also, there is a relatively big difference between Norway and France (1.57) and, Norway and Italy (1.48). We can say, that the risk perception of the participant from Norway (a Northern European country) is quite different than the perceptions of the members that come from Southern European countries such as, Spain and Italy, and a Western European country such as France. Furthermore, the nearest country to Norway is Sweden; both of them are Northern countries.

	Israel	Italy	Norway	Romania	Spain	Sweden
France	1.37	0.97	1.57	0.82	0.64	1.15
Israel		1.31	0.72	0.87	1.47	0.66
Italy			1.48	0.57	0.79	0.88
Norway				1.10	1.60	0.66
Romania					0.88	0.61
Spain						1.17

Figure 29 Distances between all countries based on risk awareness levels

Regarding the survey's second construct, public capacities, it can be noticed that Sweden is the country that is most dissimilar to other countries (Figure 30). Spain and Italy are the most similar countries when it comes to this part of the questionnaire.

	Israel	Italy	Norway	Romania	Spain	Sweden
France	9.75	10.86	10.25	11.11	9.73	14.86
Israel		11.53	9.72	10.70	11.15	12.74
Italy			12.90	11.59	7.40	14.94
Norway				11.19	10.90	12.48
Romania					10.61	12.00
Spain						12.92

Figure 30 Distance between all countries considering public capacities construct

Based on the participants' priorities for communication and knowledge sharing, we can see that Romania is the country that is most distant compared to the others (Figure 31). The most similar country to Romania is Israel.



	Israel	Italy	Norway	Romania	Spain	Sweden
France	18.54	18.60	17.69	27.24	8.76	16.82
Israel		20.61	21.89	16.01	18.67	14.51
Italy			25.86	22.63	15.71	21.14
Norway				34.22	17.72	23.21
Romania					26.22	21.27
Spain						20.86

Figure 31 Distance between all countries considering communication and information sharing construct

When it comes to public perception of trust and responsibility, the most similar countries to Italy, are France, Israel, and Spain. It is most distant from the Northern countries; Norway and Sweden (Figure 32).

	Israel	Italy	Norway	Romania	Spain	Sweden
France	8.23	6.11	9.36	6.09	10.18	8.26
Israel		6.84	11.62	8.54	10.06	10.00
Italy			9.50	8.55	6.95	9.08
Norway				11.29	10.66	8.29
Romania					11.09	9.29
Spain						9.55

Figure 32 Distance between all countries considering public perception construct

If we consider all the constructs in the survey, we can see that Spain and France are the closest countries overall, followed by Spain and Italy; Israel and Romania; and then France and Italy. The most dissimilar countries are Romania and Norway.

	Israel	Italy	Norway	Romania	Spain	Sweden
France	22.54	22.41	22.55	30.05	16.59	23.95
Israel		24.63	26.63	21.08	24.01	21.76
Italy			30.46	26.83	18.72	27.45
Norway				37.75	23.43	27.64
Romania					30.39	26.14
Spain						26.36

Figure 33 Distance between all countries considering all constructs

4.3 COMPARISON BASED ON THE JOB PROFILE

In this section, we compare the responses based on the job profiles identified in section 3.3.2. We conduct the comparison for each country separately. We will only include the results from Israel, Norway, Romania, and Spain only, because of the relatively big sample size compared to Italy, Sweden, and France.

4.3.1 ISRAEL

4.3.1.1 Demographics

In Israel, we have 227 responses, distributed across the four job profiles as shown in Figure 34. Given the small sample size of Law enforcement (4 responses) and emergency responders (8 responses) profiles, we are going to disregard the results associated with them and only consider the other two profiles, health services, and authorities.



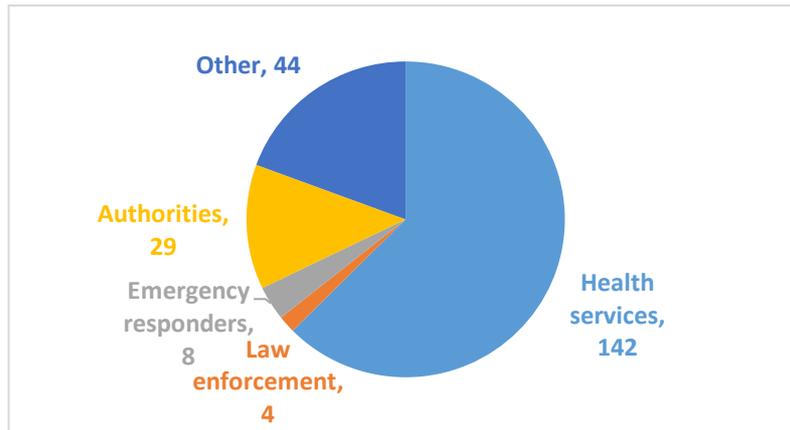


Figure 34 Number of responses across each job profile in Israel

Across the 142 responses we obtained from health services, 57% of them are males, 42.3% are females and 0.7% prefer not to say. Regarding the authorities, the majority are females representing 55.2% of the sample size, and males represent 44.8%. Hence, the first difference we encounter between these two profiles is that females represent the majority of the members of the authorities participating in the questionnaire while males are the majority of health services members. Another difference is the one that appears in Figure 35, the majority of the participants from health services are volunteers, while in authorities they are employees and middle-level management. Although the majority of responders across the two profiles were involved in handling crises other than COVID-19 (Figure 36), the percentage of the ones in the health services profile who were not involved in other situations is bigger, 33.8% in health services while only 13.8 in authorities. Combined with the information we get from Figure 35, we can infer that Israel depends to an extent on volunteers to face the Coronavirus situation.

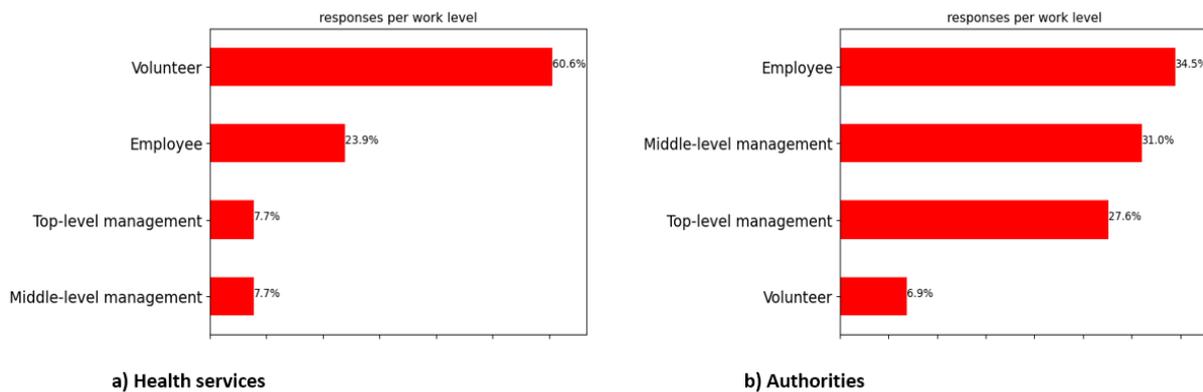


Figure 35 Comparison of work levels across job profiles in Israel

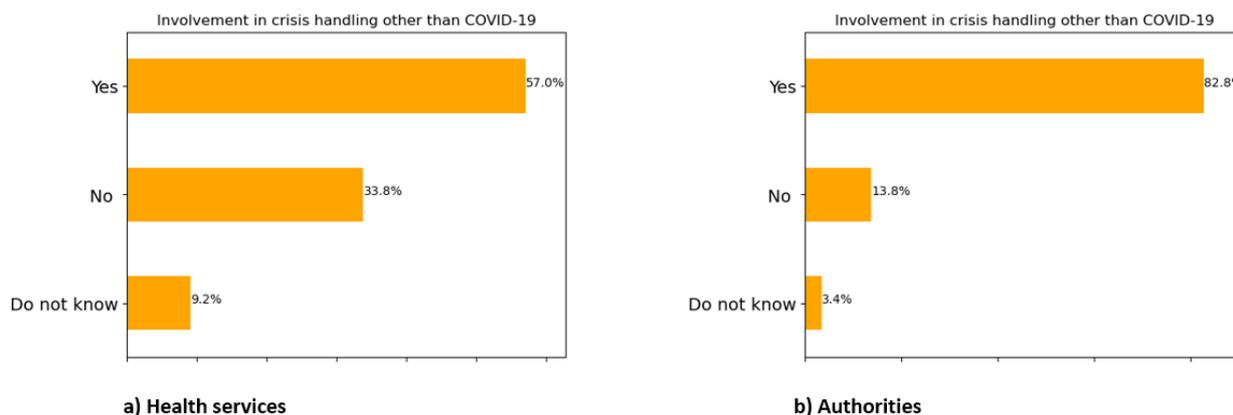


Figure 36 Comparison of crisis involvement across job profiles in Israel

4.3.1.2 Risk awareness

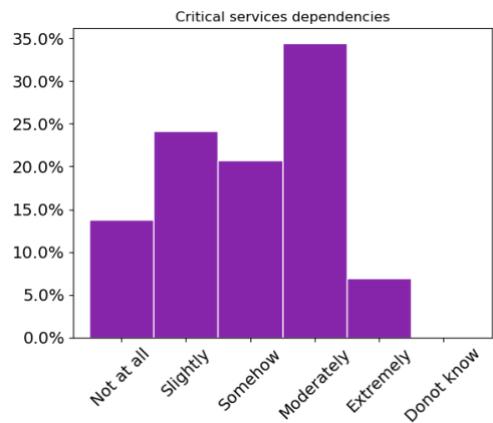
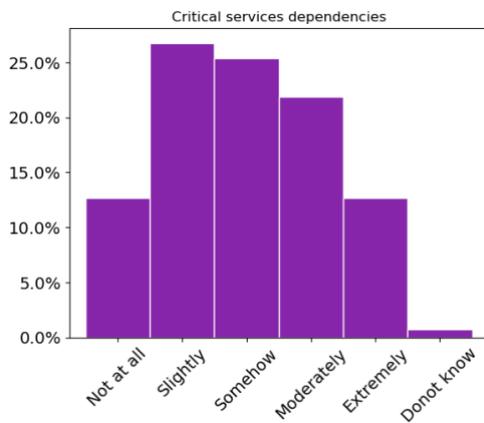
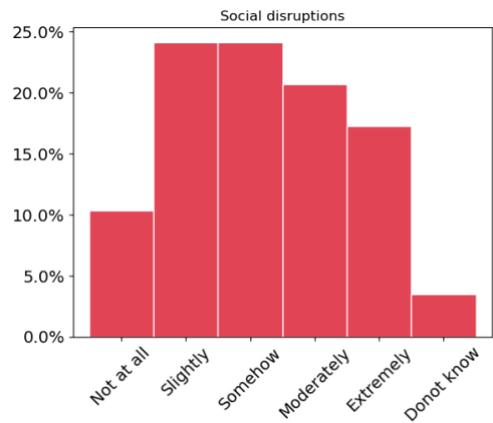
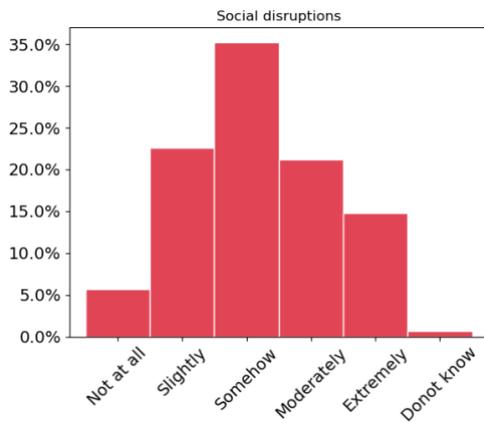
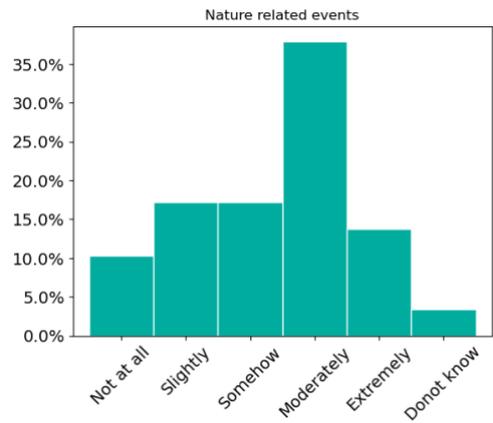
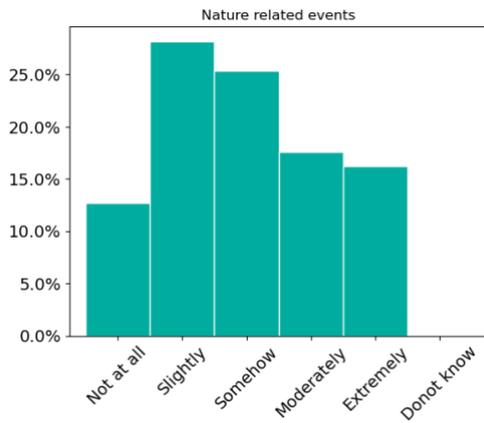
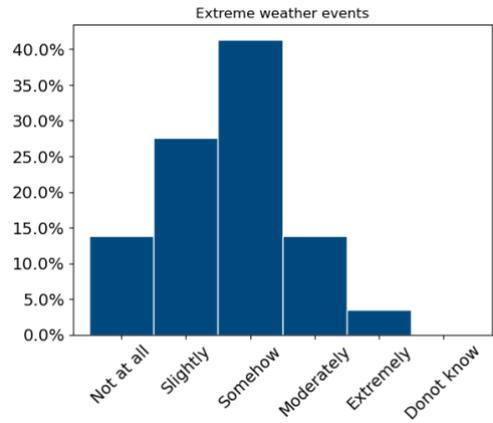
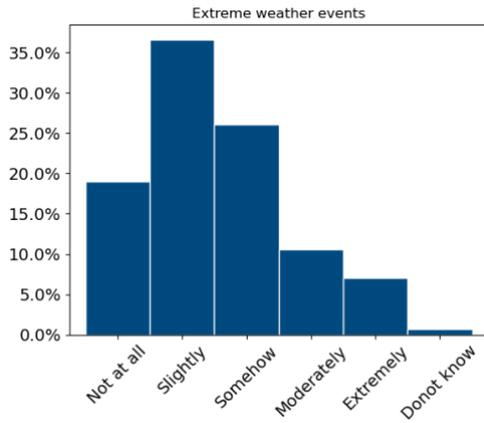
Table 6 presents the mean and standard deviation of the different types of risks across the two profiles. We can consider that authorities are more risk-aware about all types of risks, except for critical service dependencies, they are the same as health services (considering the mean value) and pandemics, where health services are more aware of them. Figure 37 shows the distribution of risk awareness levels across both profiles.

Table 6 Risks' mean and standard deviation across job profiles in Israel

Type of risk	Health services		Authorities	
	Mean	Standard deviation	Mean	Standard deviation
Extreme weather	2.52	1.17	2.66	1.01
Nature related events	2.96	1.27	3.38	1.32
Social disruption	3.19	1.14	3.21	1.37
Critical services dependencies	2.97	1.25	2.97	1.21
Pandemics	3.51	1.15	3.38	0.86
Average	3.03		3.12	

a) Health services

b) Authorities



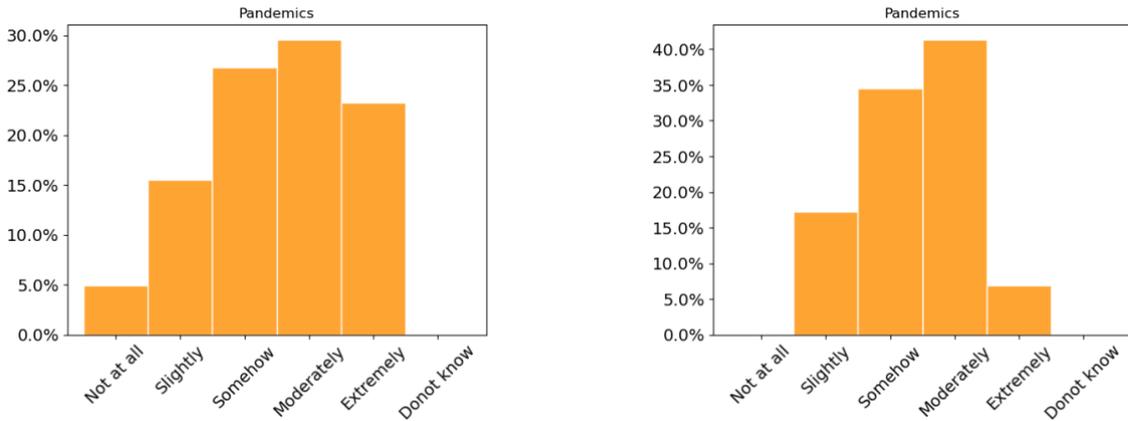
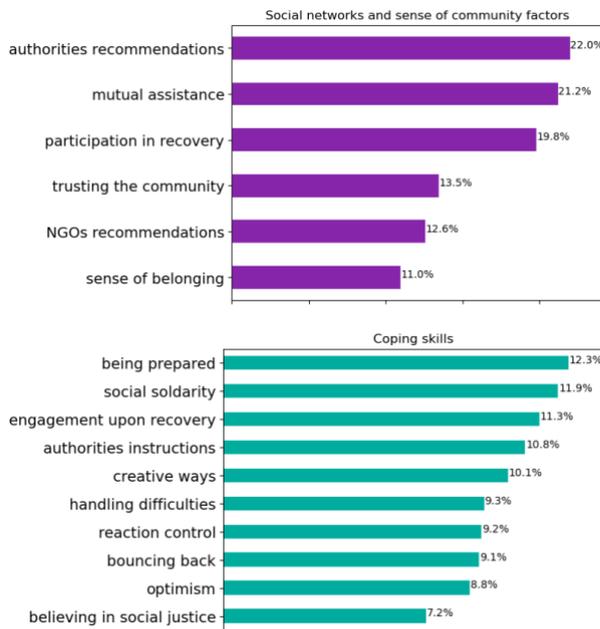


Figure 37 Risk awareness distribution across job profiles in Israel

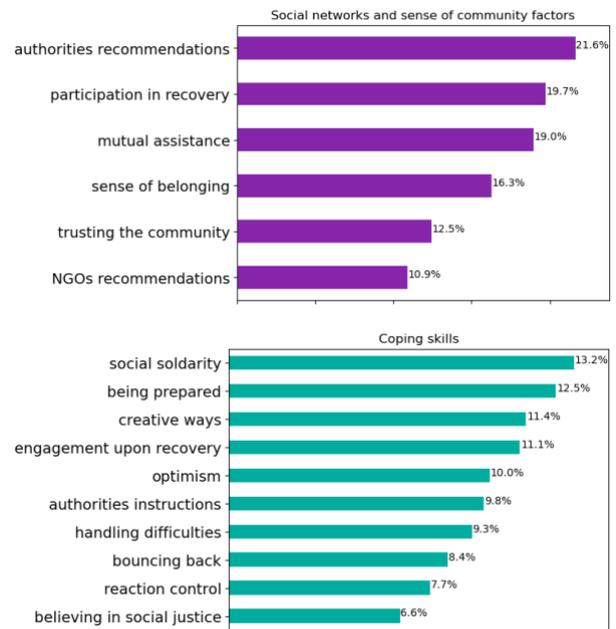
4.3.1.3 Public capacities

Figure 38 illustrates the health services and authorities' needs and expectations from individuals in four main parts of the survey, social networks and sense of community; coping skills; resources to face a crisis; and preparedness. There is no definitive thing we can say about the different points of view between the two profiles here, as the ranks have a lot of similarities and also the differences between each option in each rank are quite small. We are going to conduct a similarity analysis later so we can have more information about the similarities and differences between the two profiles in these aspects.

a) Health services



b) Authorities



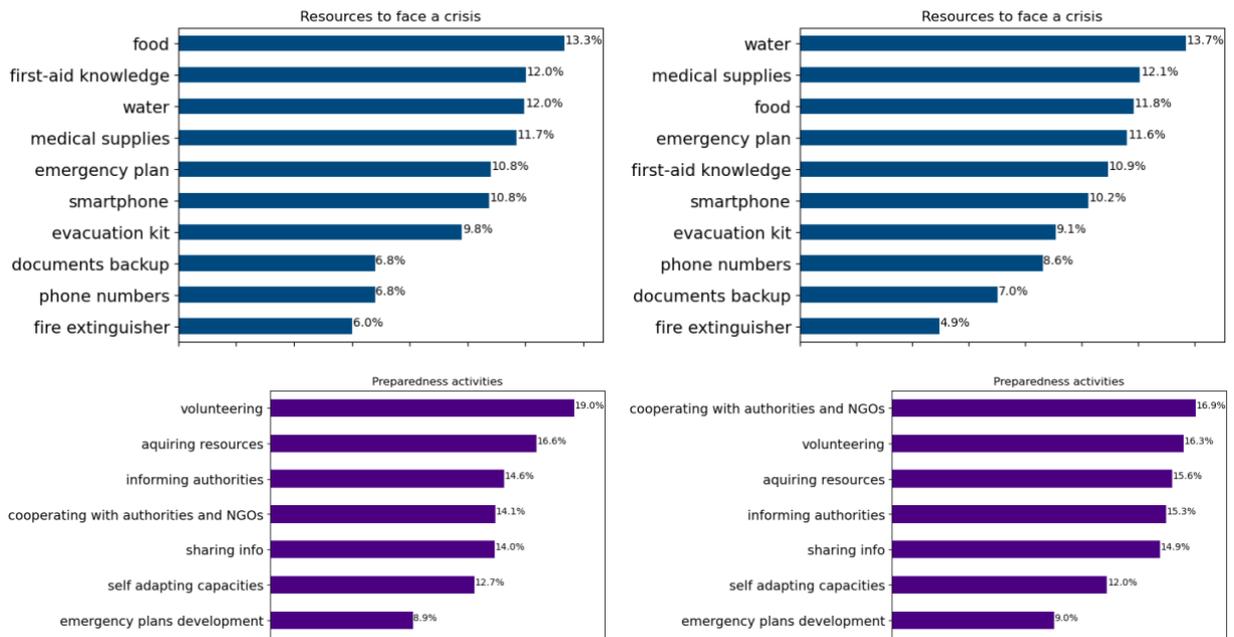
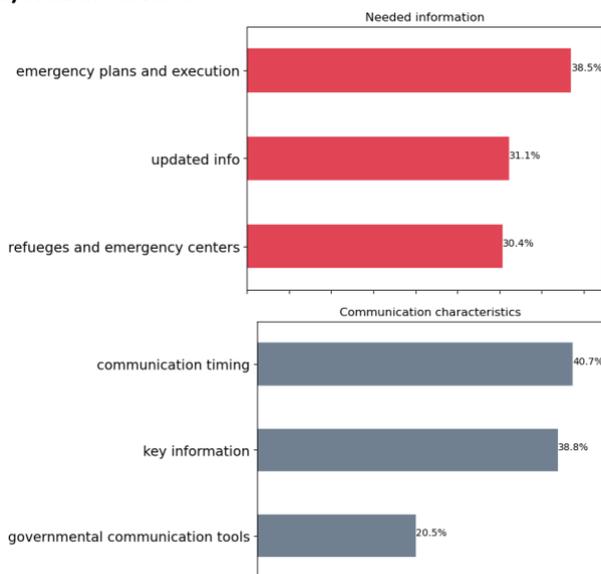


Figure 38 Public capacities across different job profiles in Israel

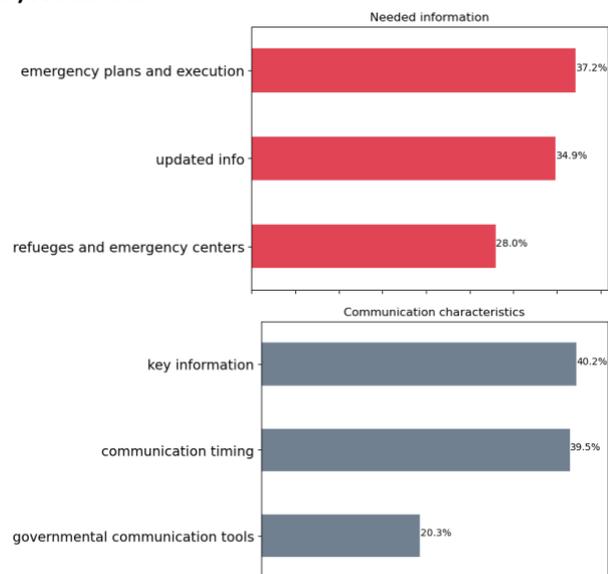
4.3.1.4 Communication and information sharing

Figure 39 shows the communication needs and expectations across the two profiles. We can see that there is a high level of agreement across all the aspects (needed information, communication characteristics, communication channels, and information sharing) between both profiles. In case there is a difference it is a minor one, for example in the case of "communication characteristics", health services see that the timing of communication is the most important aspect (40.7%) followed by the type of information provided (38.8%), on the other hand, authorities rank the type of information first (40.2%) and the timing of communication second (39.5%), the variance is small, nearly 1%.

a) Health services



b) Authorities



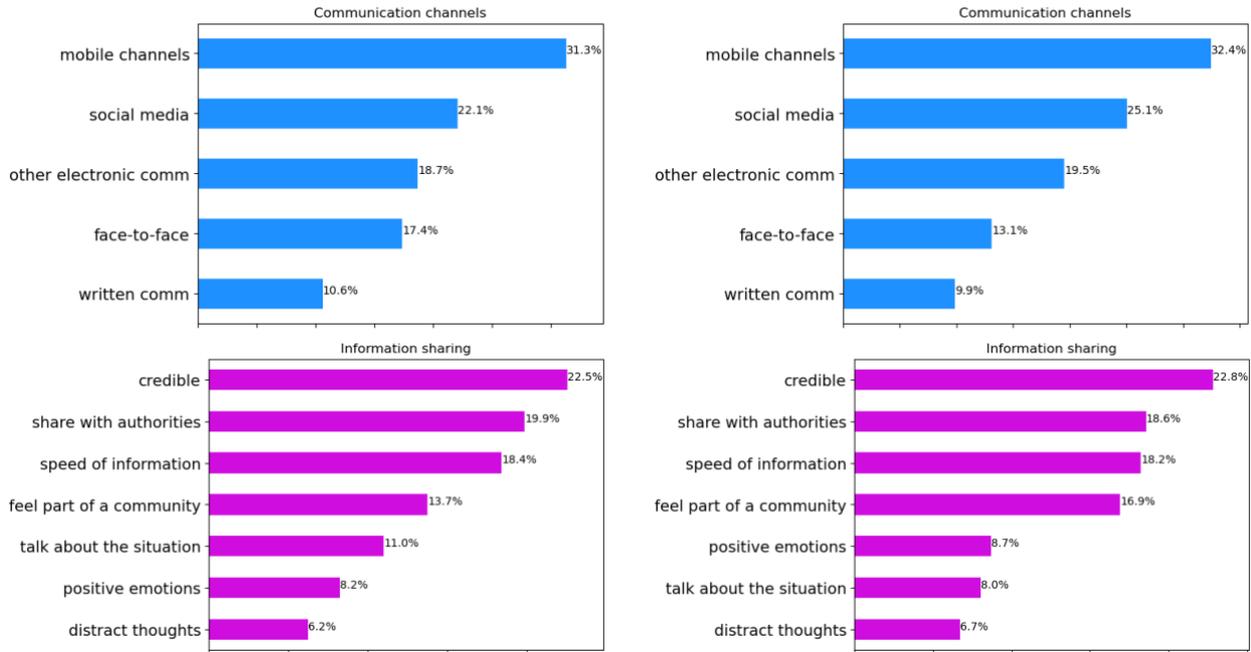


Figure 39 Communication and knowledge sharing across different job profiles in Israel

4.3.1.5 Public perception

From Figure 40, we can see that both profiles believe that the members of their organizations are the most trusted and at the same time the ones that should be held accountable when a crisis occurs.

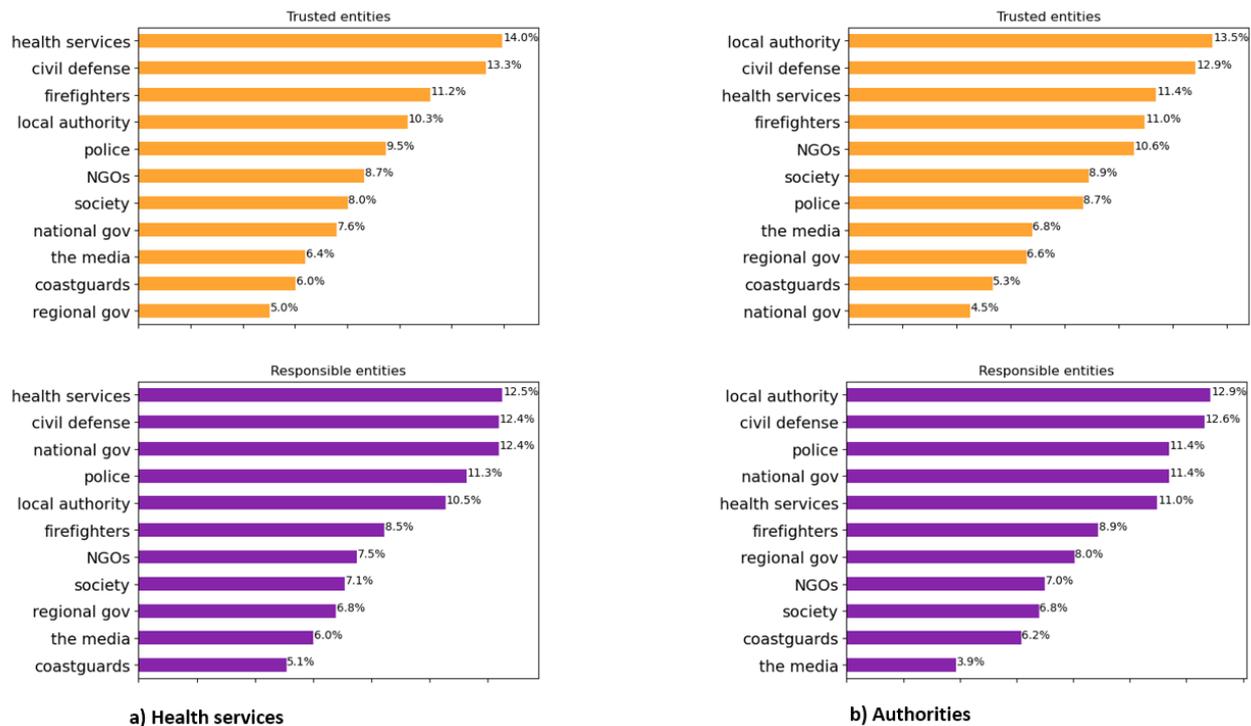


Figure 40 Perception of trust and responsibility across different job profiles in Israel

4.3.2 NORWAY

4.3.2.1 Demographics

We have 186 responses from Norway distributed across the four job profiles as shown in Figure 41. Around 58% of the responses come from the health services sector. Although the number of responses in the "authorities" and "law enforcement" profiles is relatively low - which could make the findings unreliable - we will include them in our review to provide a more complete picture and a comprehensive analysis.

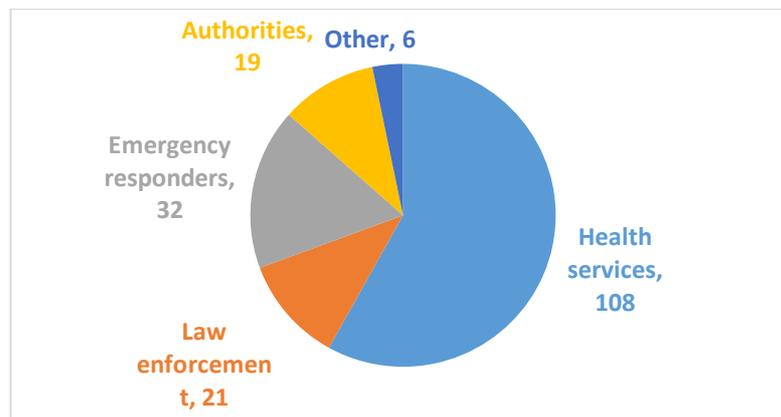


Figure 41 Number of responses across each job profile in Norway

Based on Table 7, we can see that the majority of the participants in each profile were males. The health services profile is the one that has the highest percentage of female participants (46.3%), while only 3% of the responders from emergency responders are females.

Table 7 Distribution of the gender of participants by job profile in Norway

Job profile	Male	Female
Health services	53.70%	46.30%
Law enforcement	66.70%	33.30%
Emergency responders	96.90%	3.10%
Authorities	73.70%	26.30%

Figure 42 shows the distribution of the responses per work level for each job profile. We can see that the distribution is extremely different, with the majority of volunteers in health services, middle-level management in law enforcement, top-level management in emergency responders, and employees in authorities.

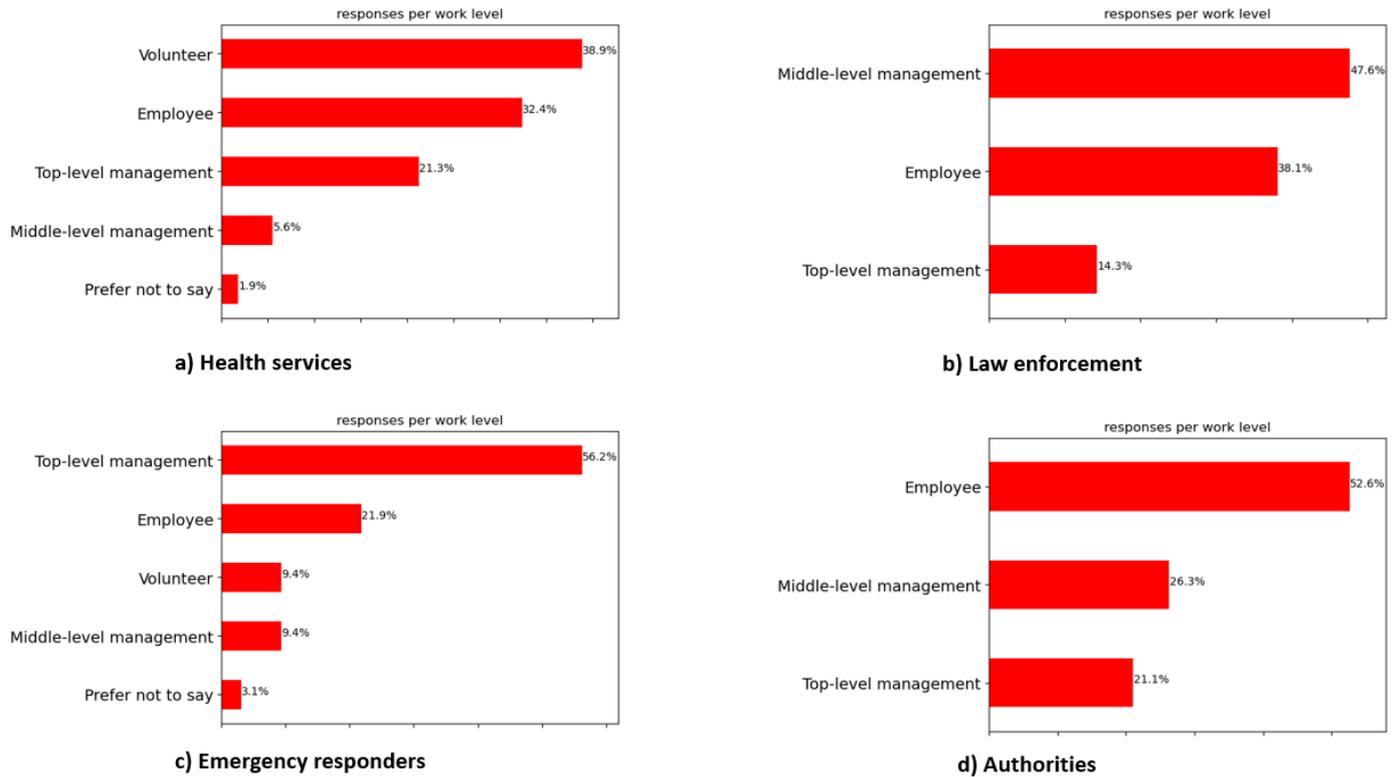
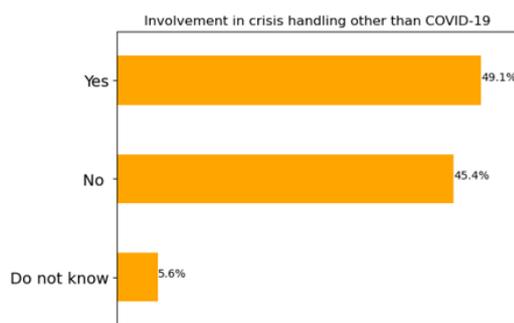
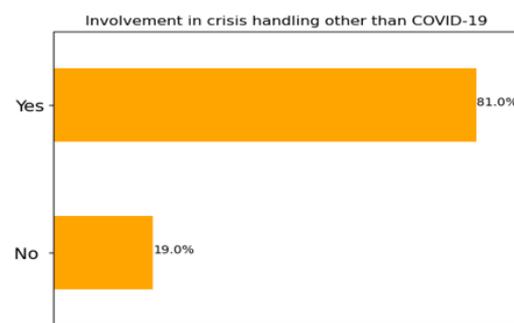


Figure 42 Comparison of work levels across job profiles in Norway

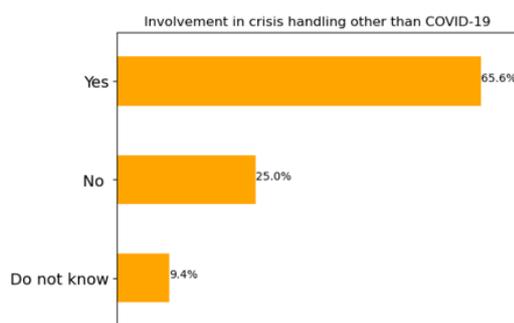
Figure 43 shows the distribution of responses across the four profiles considering the responder experience handling crises other than COVID-19. From the figure we find that the majority of responders across the four profiles were involved in emergencies other than the coronavirus, however, the percentage of the ones in the health services profile who were not is quite high (45.4%). Considering that the majority of these responders are volunteers (as seen in Figure 42), we can infer that the coronavirus situation pushed Norway to rely on volunteers with no experience to assist in the situation.



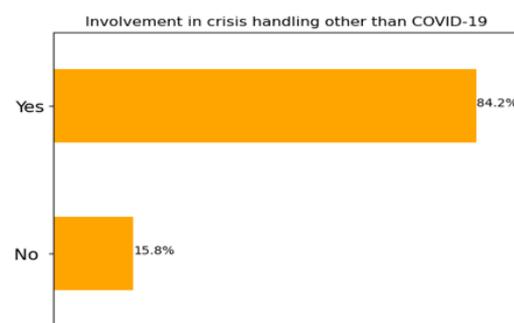
a) Health services



b) Law enforcement



c) Emergency responders



d) Authorities

Figure 43 Comparison of crisis involvement across job profiles in Norway

4.3.2.2 Risk awareness

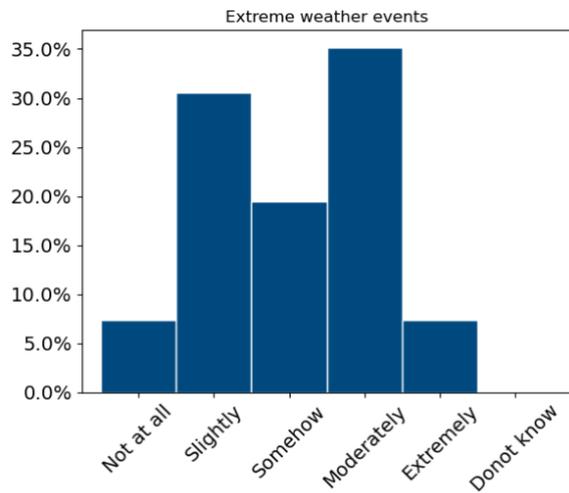
Table 8 shows that authorities and health services are generally more risk-aware than law enforcement and emergency responders. Furthermore, the table indicates that pandemics are the type of risk that all four profiles are most familiar with. Figure 44, Figure 45, Figure 46, Figure 47, and Figure 48 give more details by showing the distribution of risk awareness levels across the four profiles.

Table 8 Risks' mean and standard deviation across job profiles in Norway

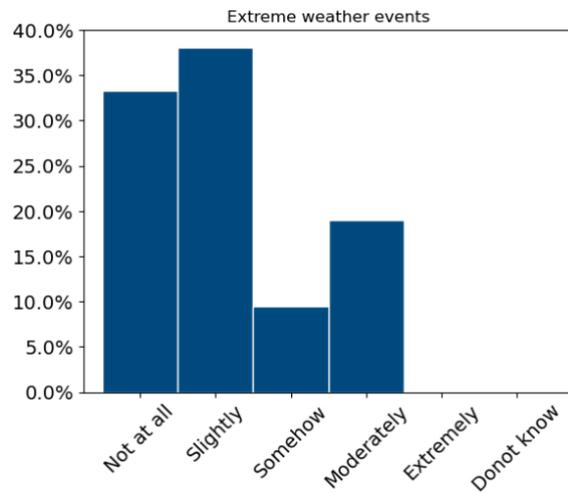
Type of risk	Health services		Law enforcement		Emergency responders		Authorities	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Extreme weather	3.05	1.12	2.14	1.11	2.75	1.08	3.32	1.2
Nature related events	2.75	1.17	2.33	1.15	2.38	1.13	2.79	1.03
Social disruption	2.75	1.21	2.67	0.91	2.75	1.02	3.21	1.18

Critical services dependencies	3.19	1.15	2.38	0.92	2.88	1.18	3	1.15
Pandemics	3.53	1.01	2.86	0.85	3.28	0.89	3.68	0.89
Average	3.05		2.48		2.80		3.2	

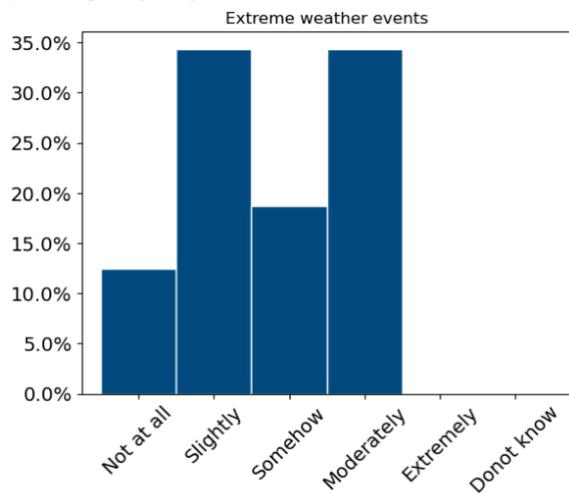
a) Health services



b) Law enforcement



c) Emergency responders



d) Authorities

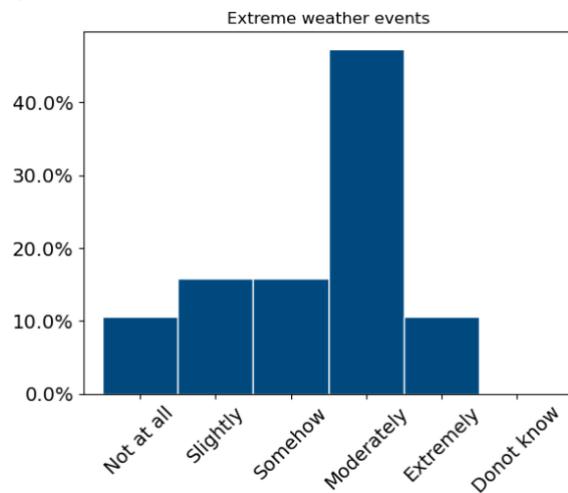
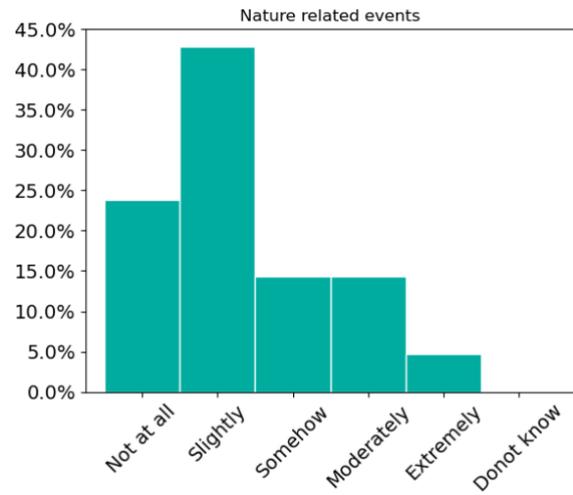
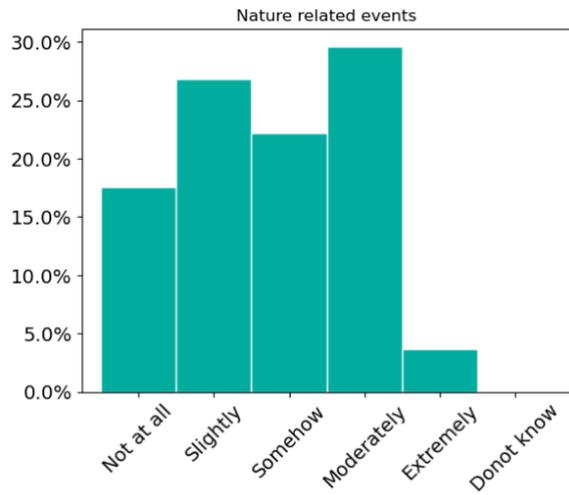


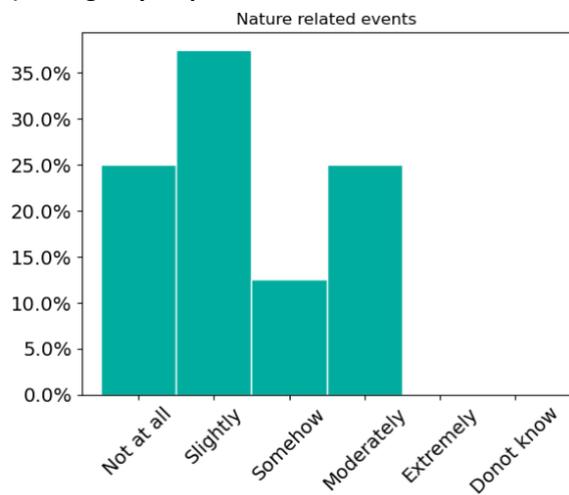
Figure 44 Weather-related events awareness distribution across job profiles in Norway

a) Health services

b) Law enforcement



c) Emergency responders



d) Authorities

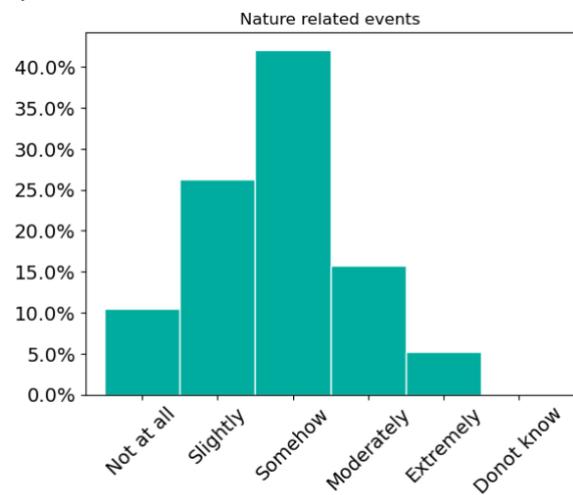
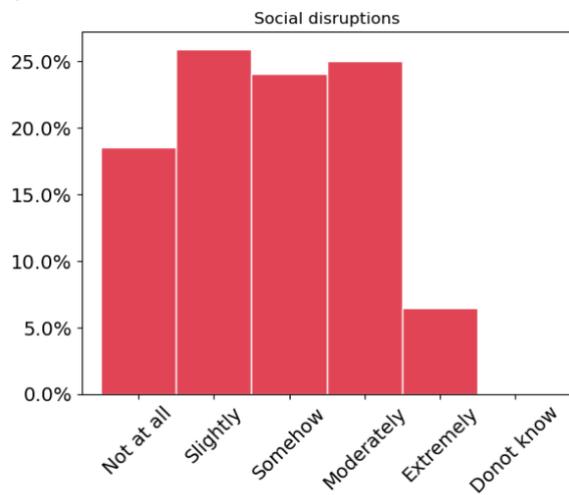
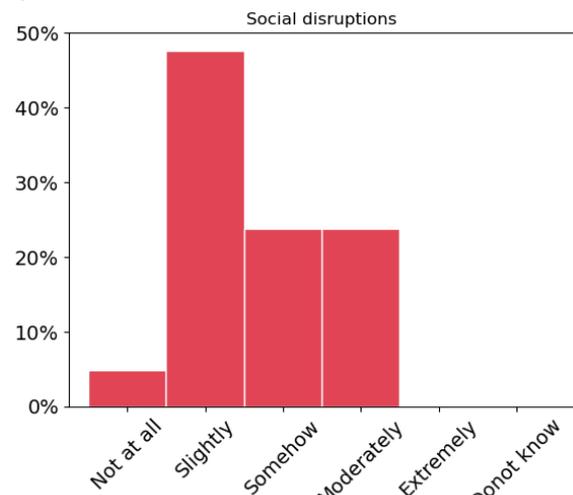


Figure 45 Nature-related events awareness distribution across job profiles in Norway

a) Health services



b) Law enforcement



c) Emergency responders

d) Authorities



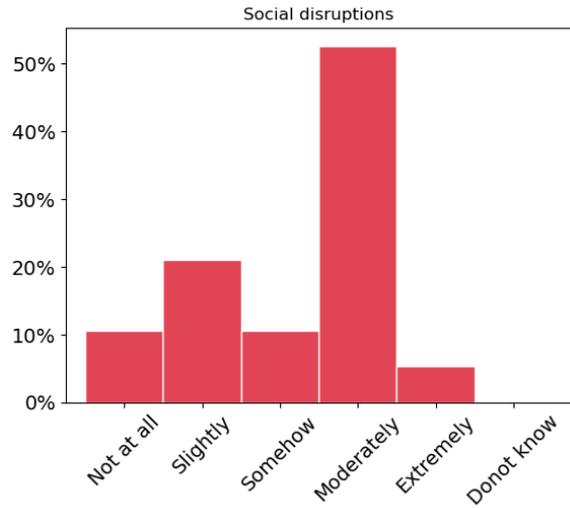
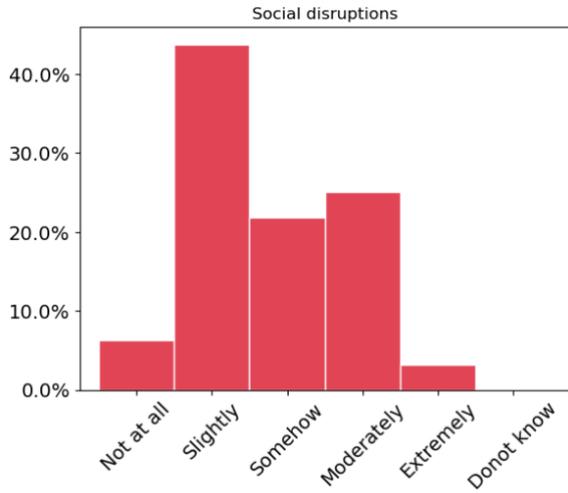
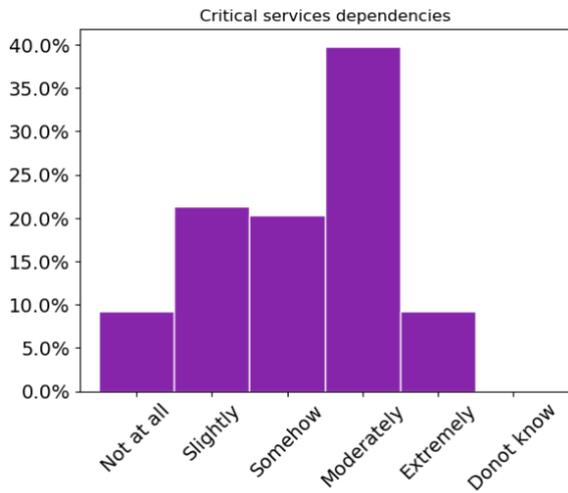
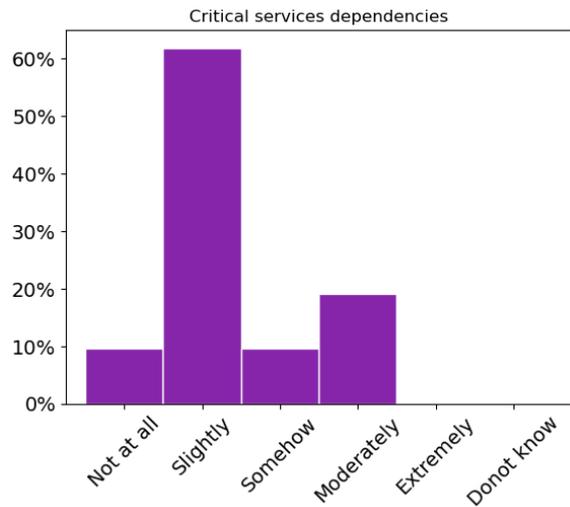


Figure 46 Social disruptions awareness distribution across job profiles in Norway

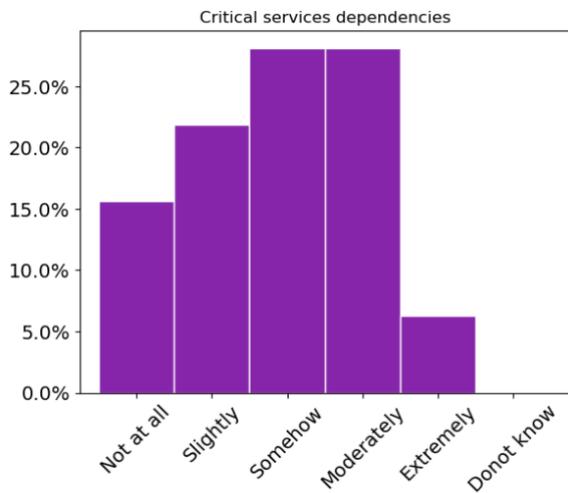
a) Health services



b) Law enforcement



c) Emergency responders



d) Authorities

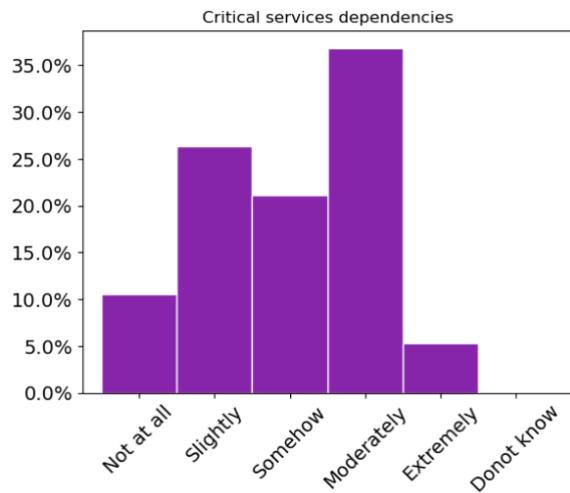
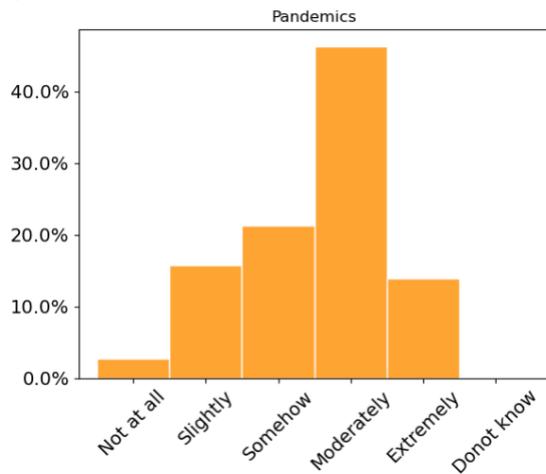
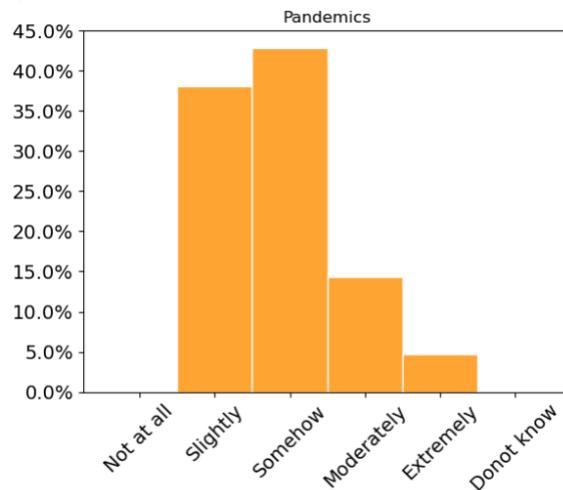


Figure 47 Critical service dependencies events awareness distribution across job profiles in Norway

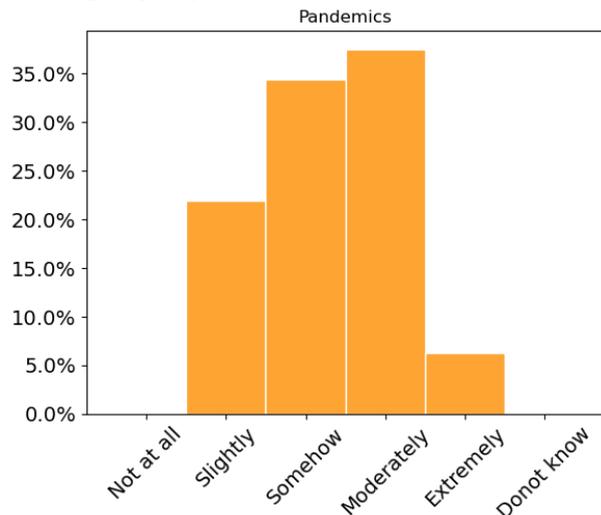
a) Health services



b) Law enforcement



c) Emergency responders



d) Authorities

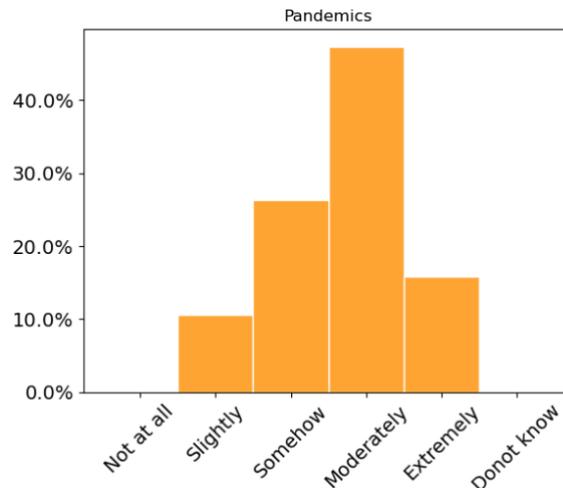
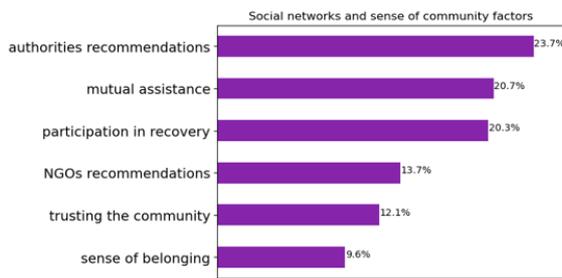


Figure 48 Pandemics awareness distribution across job profiles in Norway

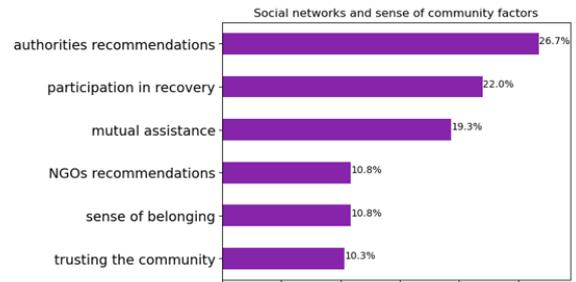
4.3.2.3 Public capacities

The different perspectives associated with the four job profiles regarding the capacities of the individuals presented by their sense of community, coping skills, resources to face a crisis, and their preparedness level are presented in figures Figure 49, Figure 50, Figure 51, Figure 52. In Figure 49 we can see that there is a consensus -across the four profiles- about the top three factors needed in the social networks and sense of community construct. They agree that following authorities' recommendations, people counting on each other, and people participating in the recovery process are the top three things they need and expect society to do in crisis times. The agreement about the needs and expectations continues to exist in the coping skills construct (Figure 50), except for the law enforcement profile. We can see that health services, emergency responders, and authorities have the same ranking for the first six options, however, the members of law enforcement only agree with them on the first one. Regarding the construct of the resources (Figure 51), the distribution of responses across the four profiles is quite different, but there is a near agreement that having a fire extinguisher, a list of vital phone numbers or a backup of important documents are insignificant. Moreover, concerning the preparedness activities (Figure 52), the members of the four job profiles agree that civilians participating in the development of the emergency plan is the least needed.

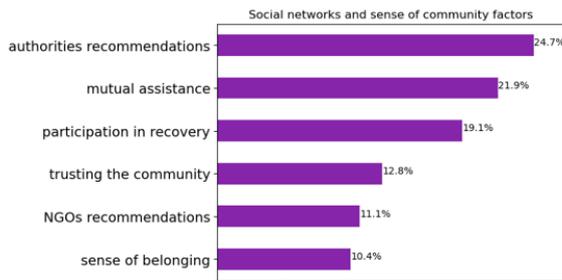




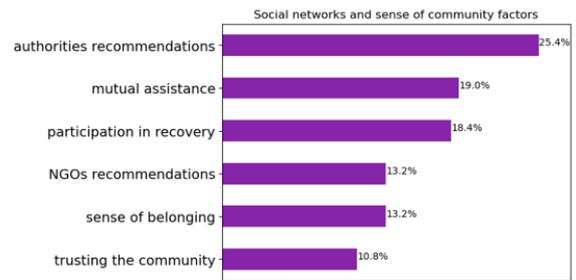
a) Health services



b) Law enforcement

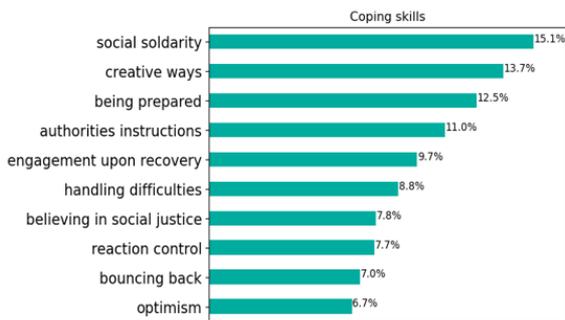


c) Emergency responders

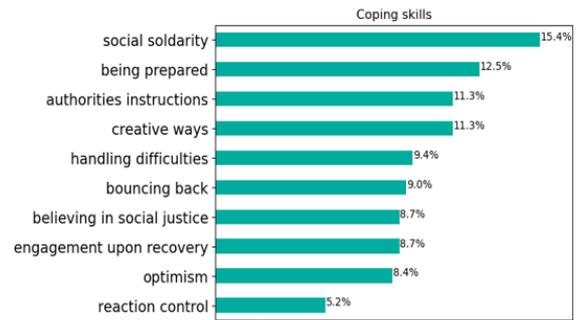


d) Authorities

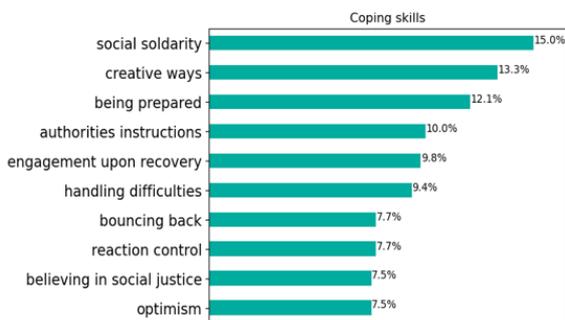
Figure 49 Needs about the sense of community and social networks across the job profiles in Norway



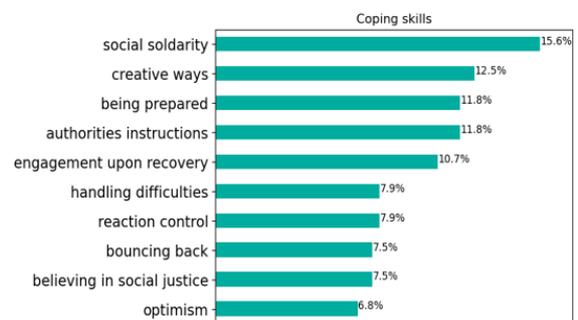
a) Health services



b) Law enforcement



c) Emergency responders



d) Authorities

Figure 50 Needs about coping skills across the job profiles in Norway



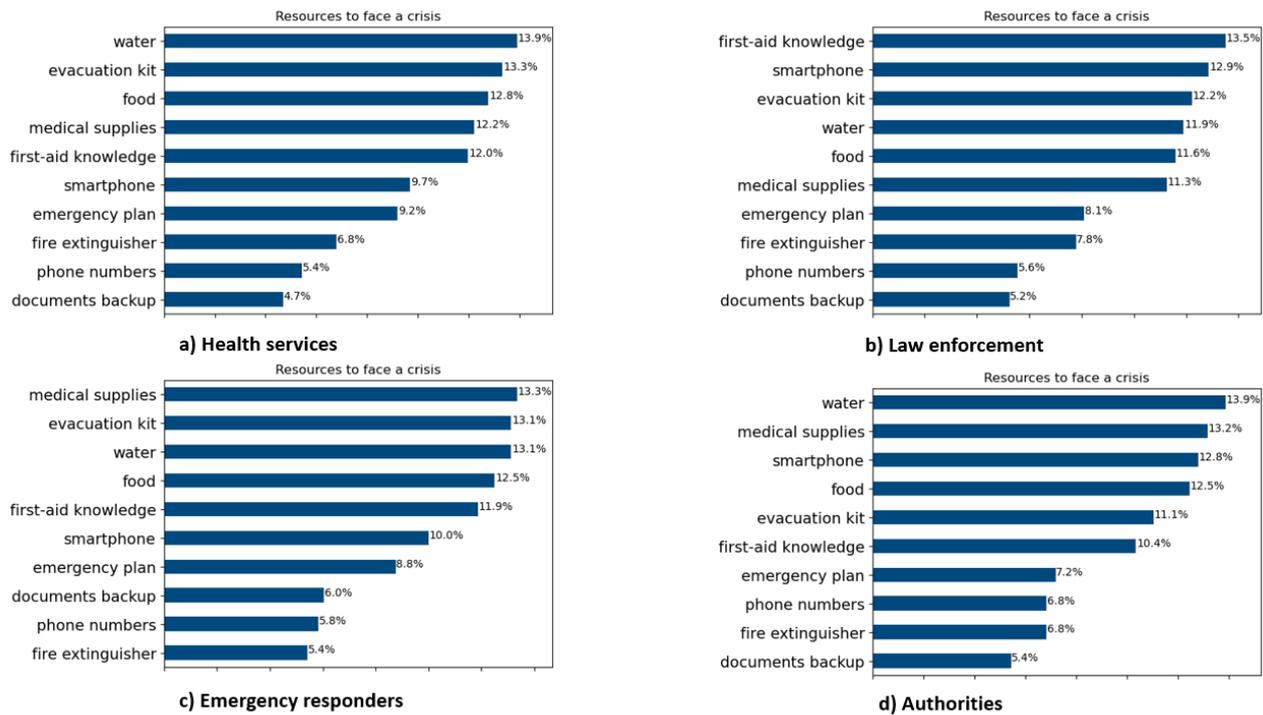


Figure 51 Needs of resources to face a crisis across the job profiles in Norway

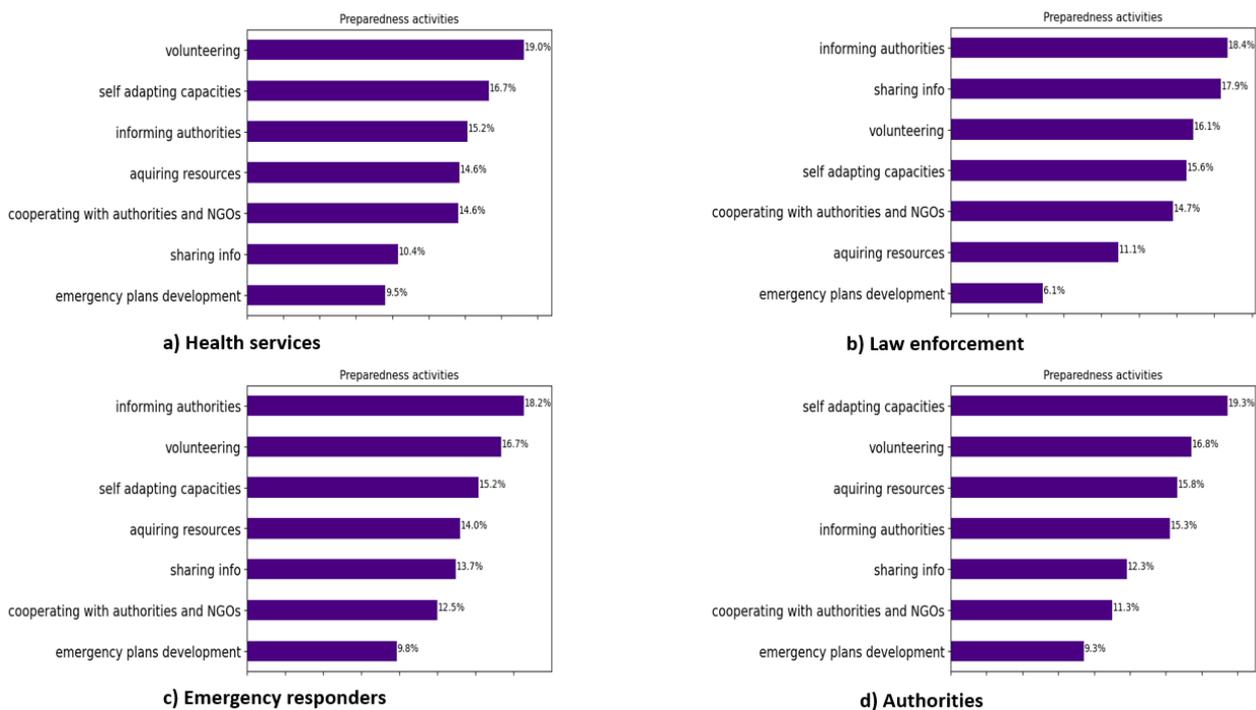


Figure 52 Needs of preparedness capacities across the job profiles in Norway

4.3.2.4 Communication and information sharing

Figure 53, shows that the four profiles are consistent in terms of the types of information they need their community to know in the event of a disaster.

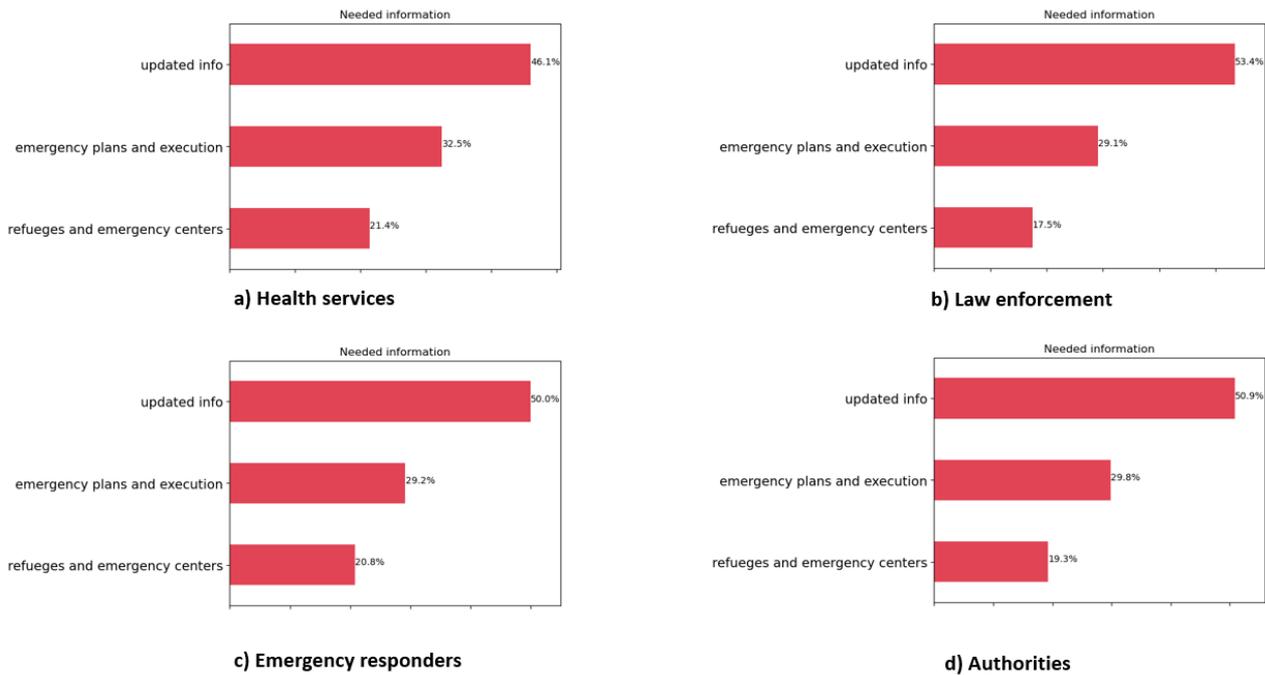


Figure 53 Needed information distribution across the job profiles in Norway

Regarding the communication characteristics (Figure 54), there is a near consensus among the ranking in all the profiles. Although for health services we find that communication timing comes before providing key information but the difference between both options is negligible, it is 0.4%.

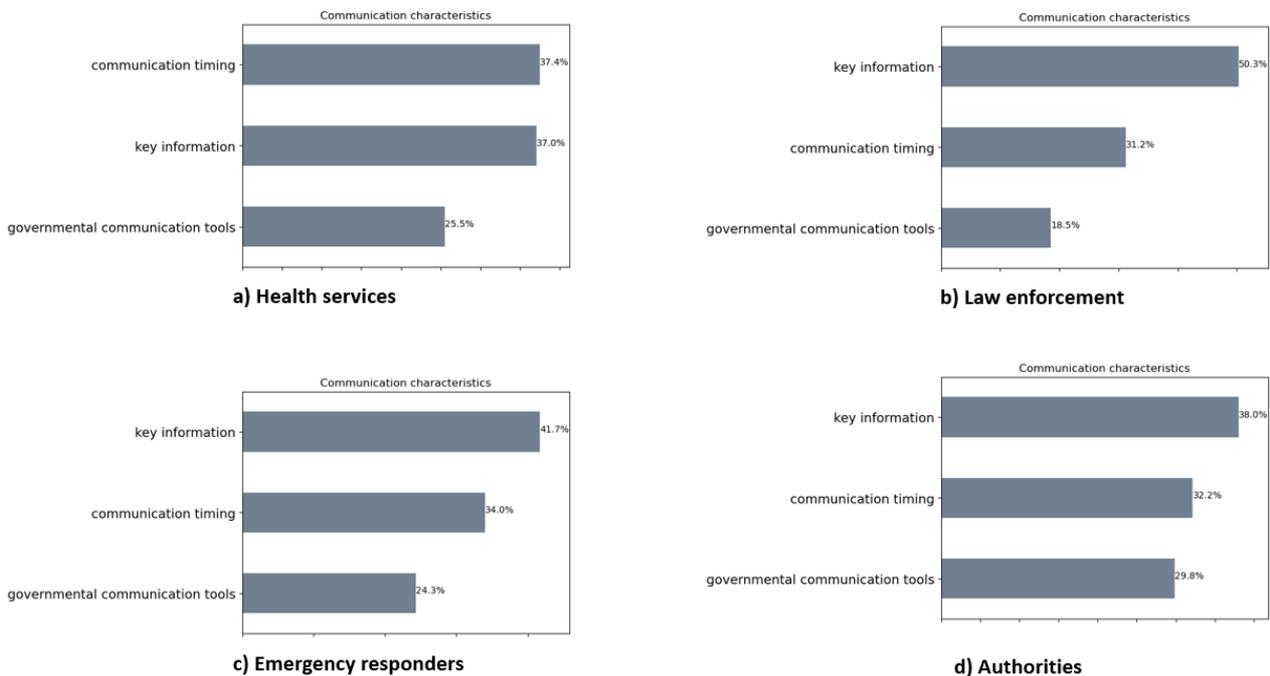


Figure 54 Communication characteristics distribution across the job profiles in Norway

For the communication channels (Figure 55), the four profiles agree that mobile channels are the most important mean of communication and written communication is the least important one. The importance of the other ways of communication varies across the job profiles.

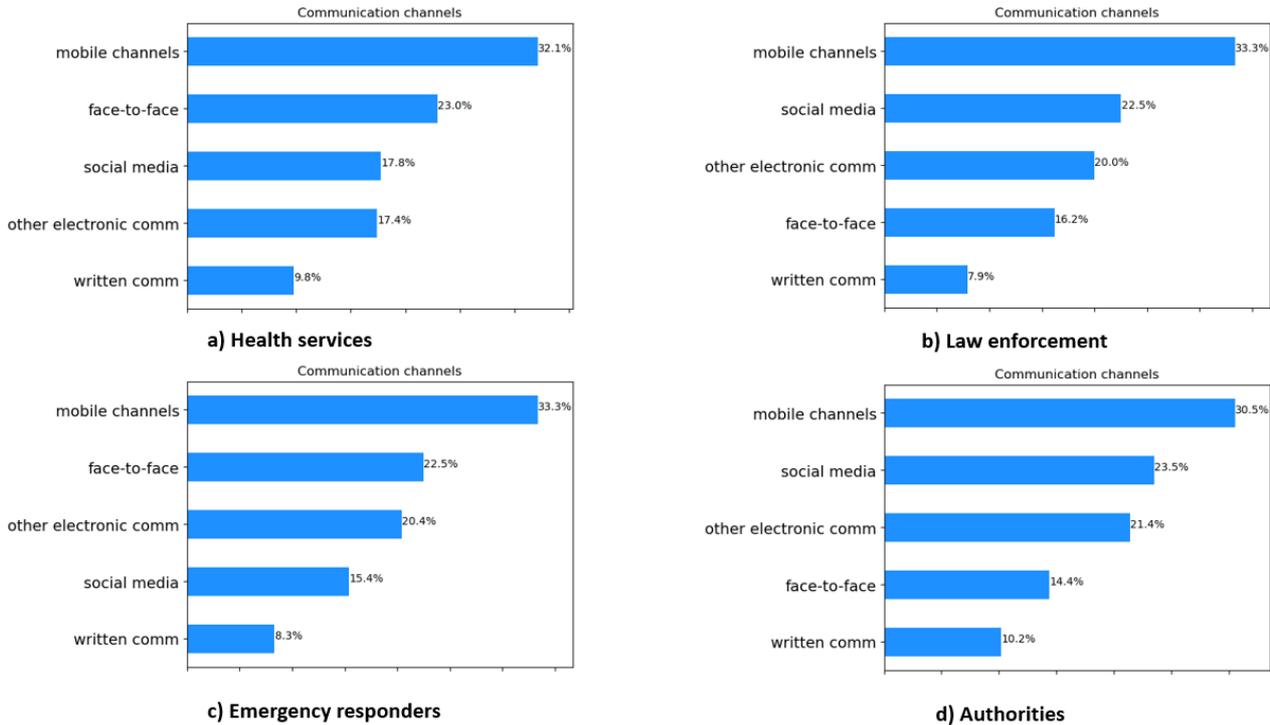


Figure 55 Communication channels distribution across the job profiles in Norway

Moreover, regarding the nature of information shared (Figure 56), we find that the credibility of information and the timing of sharing it, come in the first 2 places for all the job profiles. On the other hand, information to distract the thoughts of the population ranks the last across all the profiles.

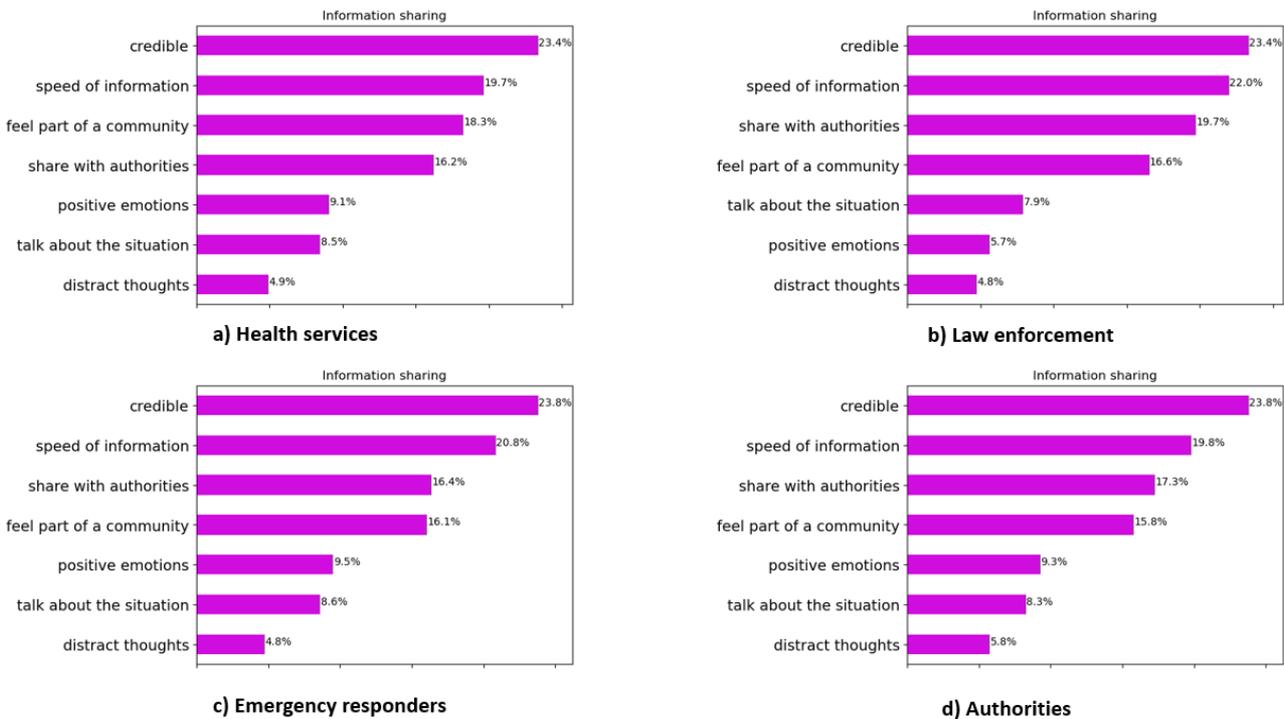


Figure 56 Information sharing priorities distribution across the job profiles in Norway

4.3.2.5 Public perception

With respect to the trusted entities (Figure 57), the rankings are quite different across the four job profiles, however, all of them believe that the media is the least trusted entity. Although the ranks differ across the profiles, the four of them believe that the local government, national government



(in different orders), and the police are the three entities that should be held responsible in case of a disaster (Figure 58).

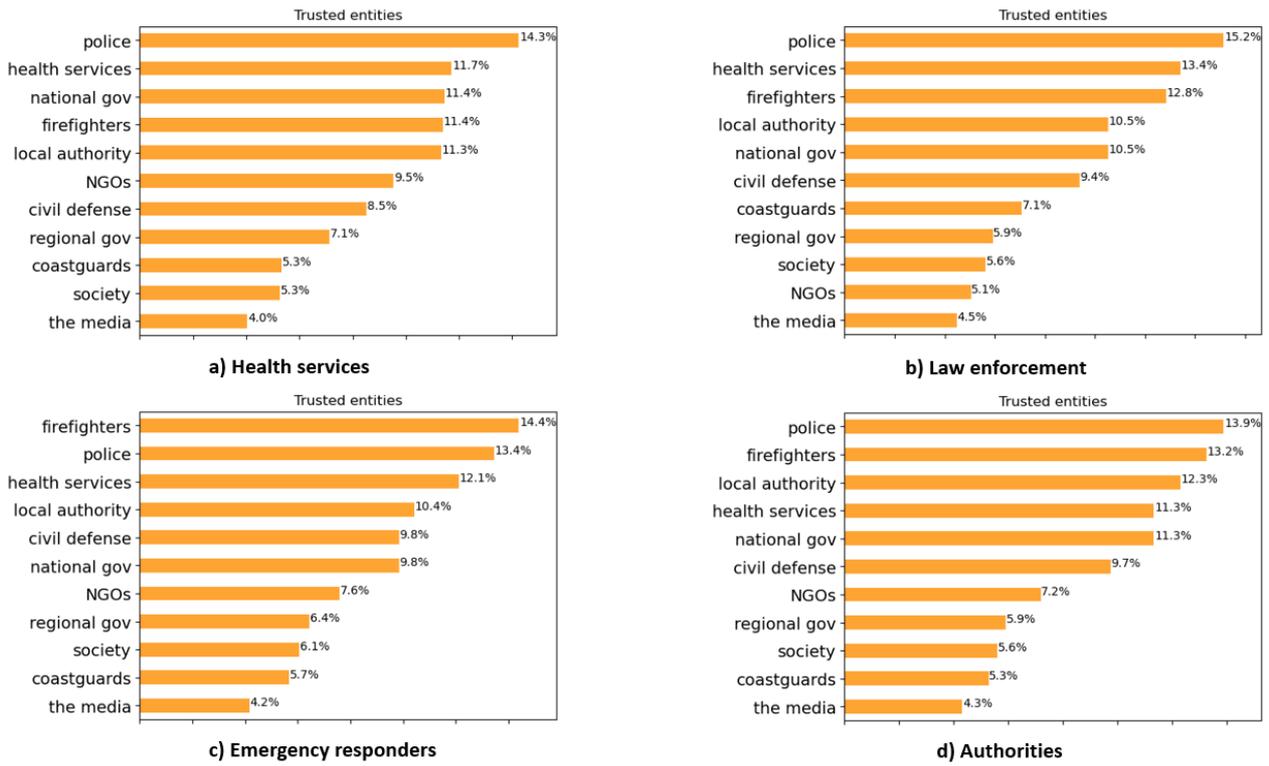


Figure 57 Perception of trust across different job profiles in Norway

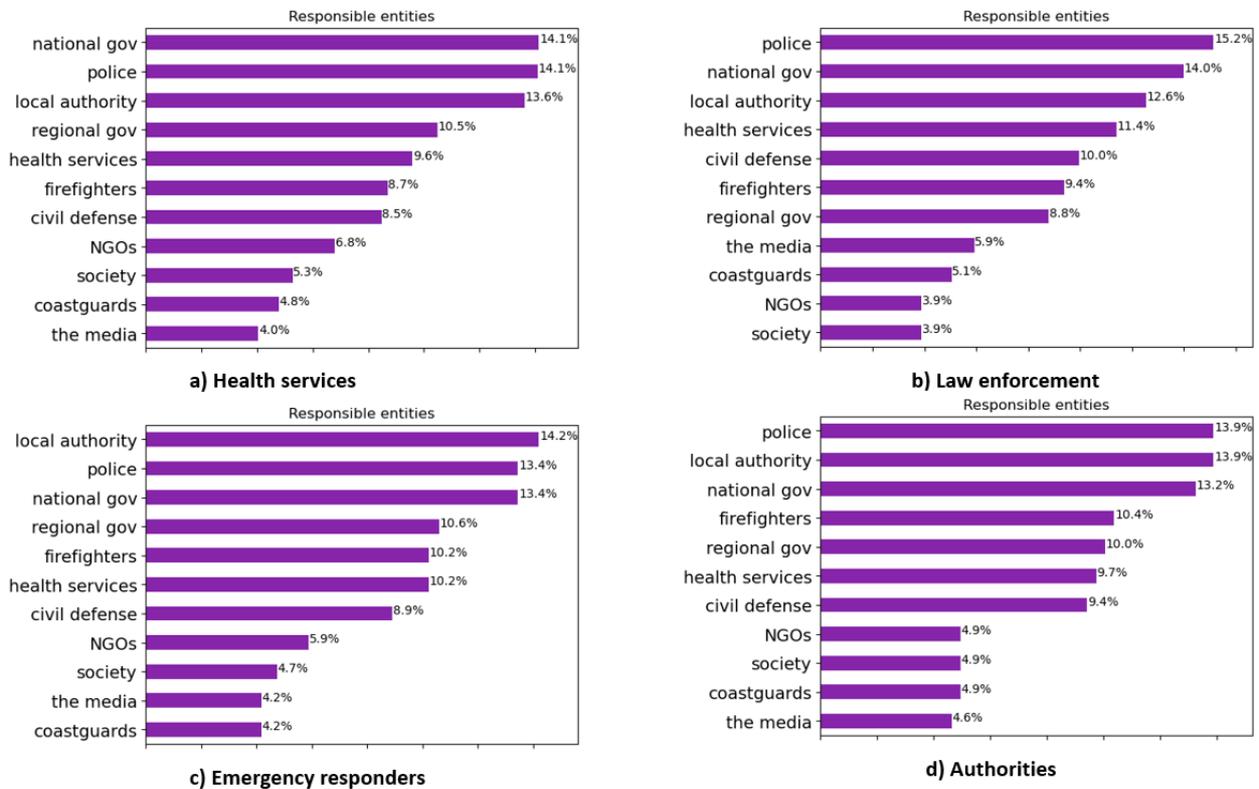


Figure 58 Perception of responsibility across different job profiles in Norway



4.3.3 ROMANIA

4.3.3.1 Demographics

In Romania, we have 5154 responses, distributed across the four job profiles as presented in Figure 59. We are not going to include the results related to the law enforcement profile given its small sample size (10 responses). Hence, we will consider authorities, health services, and emergency responders profiles only in this analysis. Until here, Romania is the country from which the majority of the survey participants fall into the emergency responders category; in Israel and Norway, the majority come from health services.

Table 9 presents the percentage of males and females in each profile. We can see that the responses from emergency responders' job profile will be biased toward males, with only 4% of females.

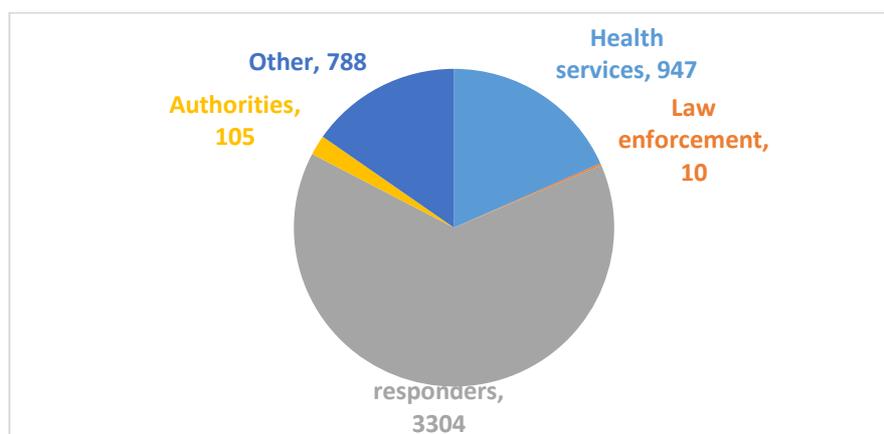


Figure 59 Number of responses across each job profile in Romania

Table 9 Distribution of the gender of participants by job profile in Romania

	Males	Females	Prefer not to say
Health services	47.40%	51.40%	1.20%
Emergency responders	95%	4%	1%
Authorities	61%	32.40%	6.70%

The majority of the participants in the questionnaire -across the three job profiles- work as employees (Figure 60). However, in the "authorities" profile, around 31.4% of the respondents are middle-level management, compared to 6% and 10.1% in "health services" and "emergency responders" profiles, respectively. The same pattern applies to the crisis involvement question (Figure 61), the majority of the participants are involved in handling other crises than the coronavirus, however, the percentage of the ones who are not, is the highest across the members of the "authorities" profile (43.8%).

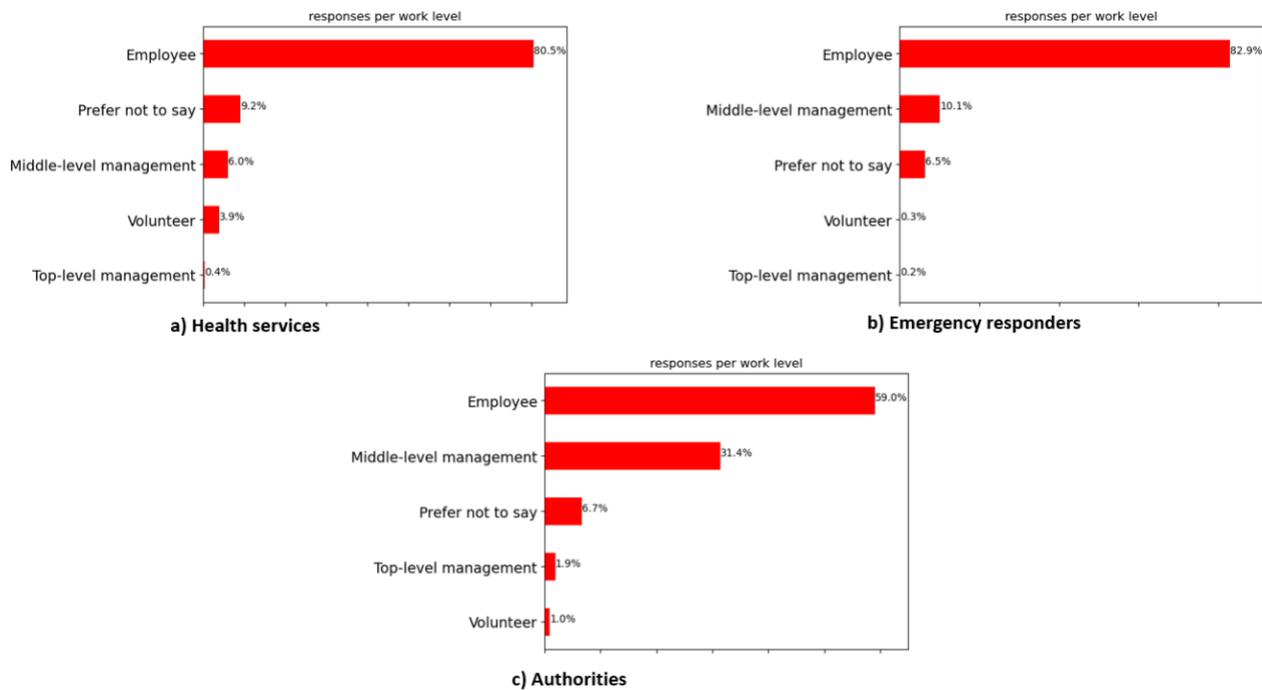


Figure 60 Comparison of work levels across job profiles in Romania

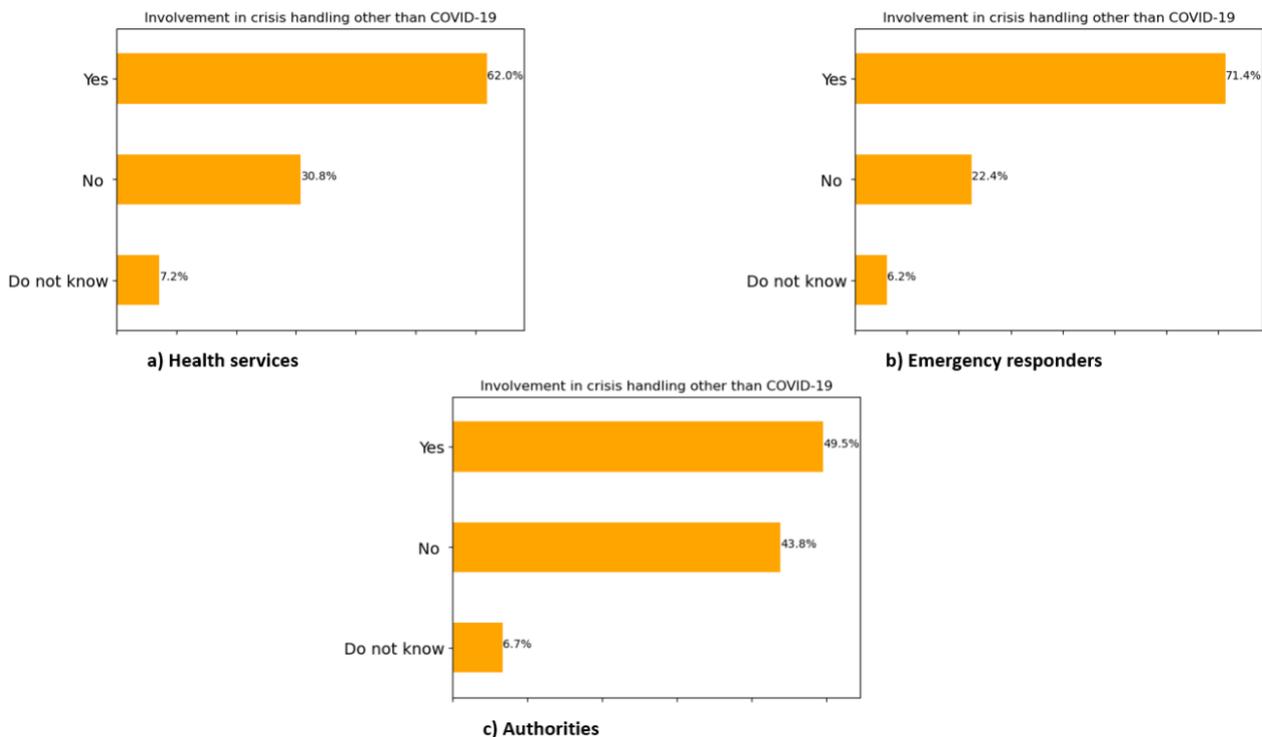


Figure 61 Comparison of crisis involvement across job profiles in Romania

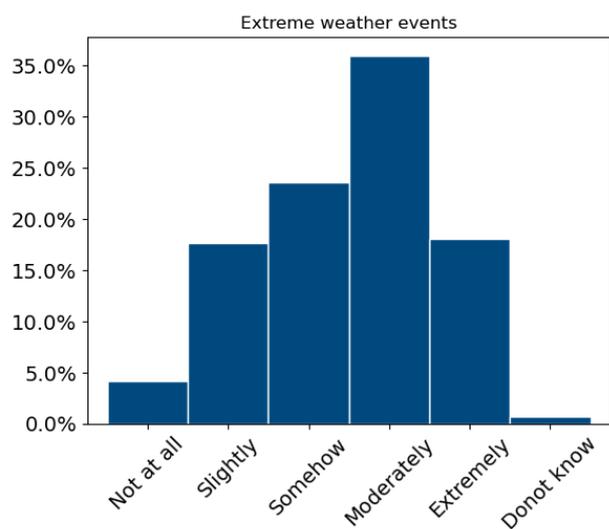
4.3.3.2 Risk awareness

Considering the mean value of the risk awareness level across the five types of risks included in this analysis, we see that all the profiles are mostly aware of pandemics. Nature-related events is the set of risks that comes in second place for the members of health services and emergency organizations, however, this does not apply to the members of authorities, who are more concerned about extreme weather events and critical services dependencies (Table 10). Also, the table shows that authorities are the ones with the highest level of risk awareness (considering the average row).

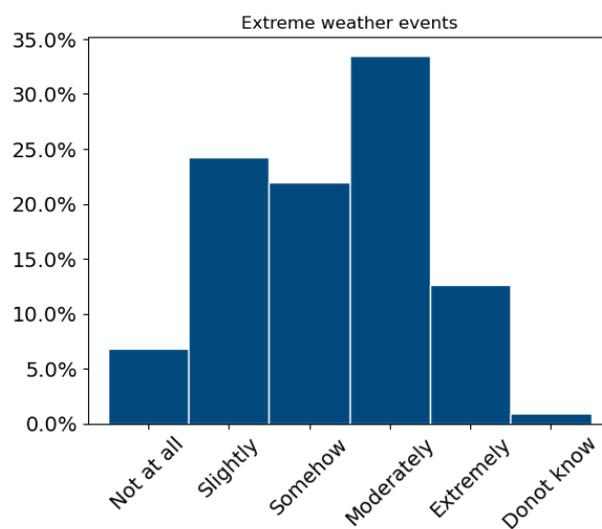
Figure 62, Figure 63, Figure 64, Figure 65, and Figure 66 give more details by showing the distribution of risk awareness levels across the three profiles.

Table 10 Risks' mean and standard deviation across job profiles in Romania

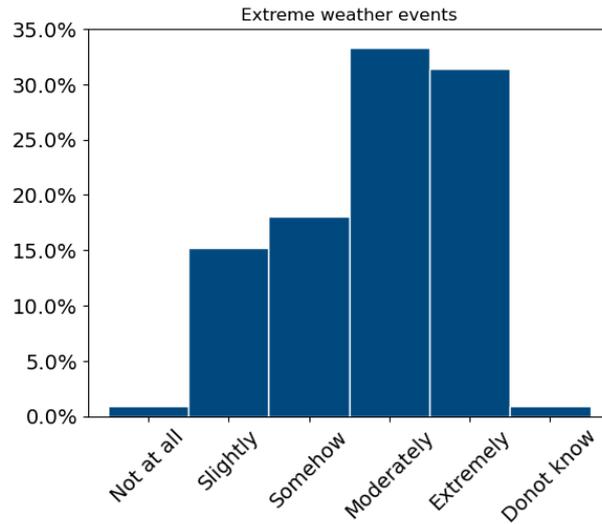
Type of risk	Health services		Emergency responders		Authorities	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Extreme weather	3.48	1.12	3.24	1.17	3.82	1.1
Nature related events	3.75	1.22	3.4	1.29	3.68	1.33
Social disruption	3.58	1.27	3.17	1.35	3.35	1.47
Critical services dependencies	3.56	1.26	3.17	1.32	3.82	1.23
Pandemics	3.86	1.09	3.51	1.2	4.25	
Average	3.64		3.29		3.78	



a) Health services

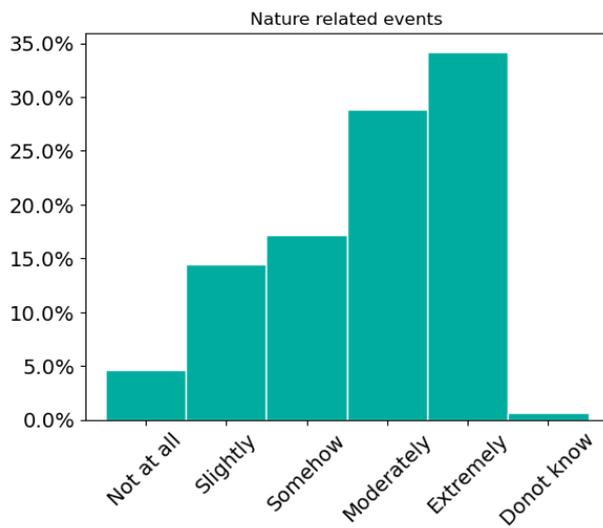


b) Emergency responders



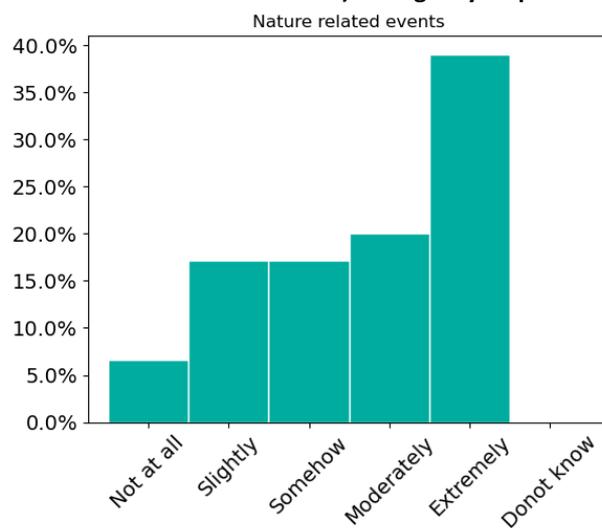
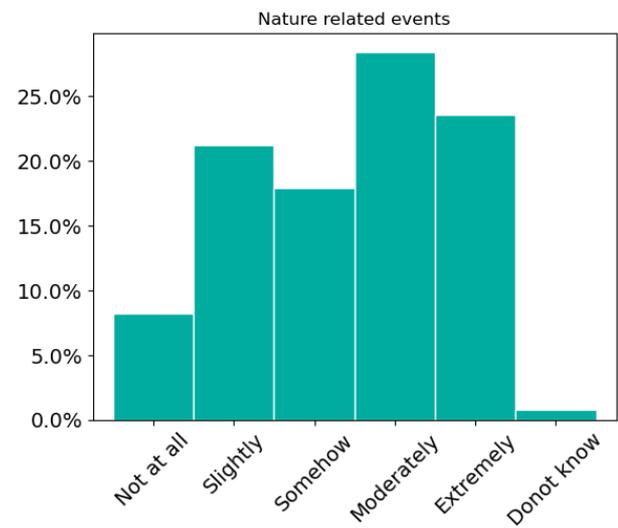
c) Authorities

Figure 62 Weather-related events awareness distribution across job profiles in Romania



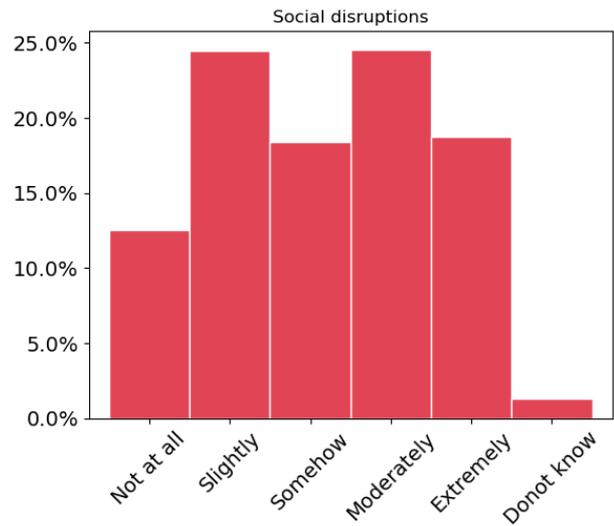
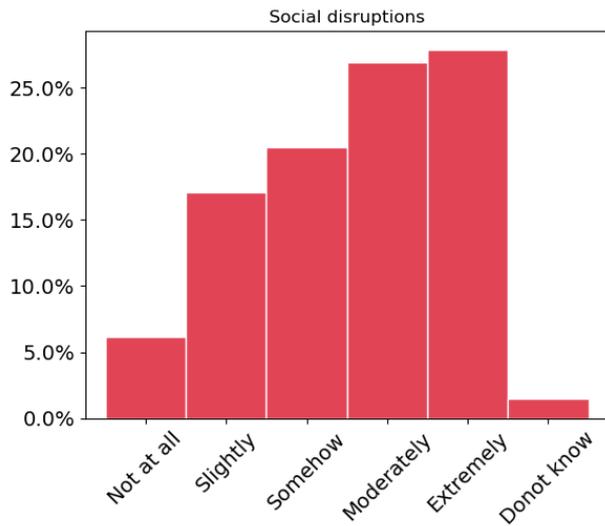
a) Health services

b) Emergency responders



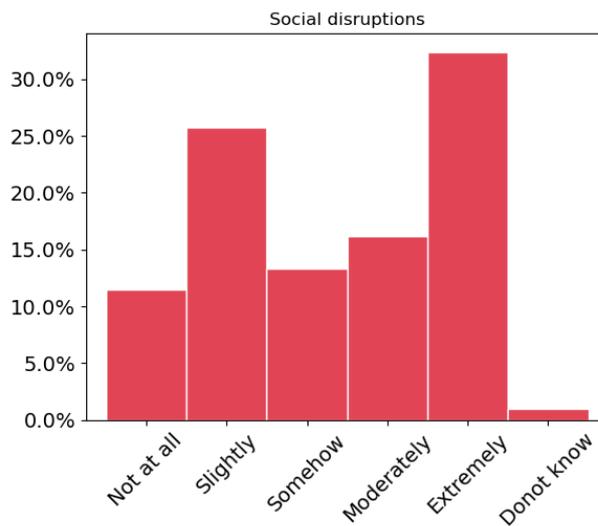
c) Authorities

Figure 63 Nature-related events awareness distribution across job profiles in Romania



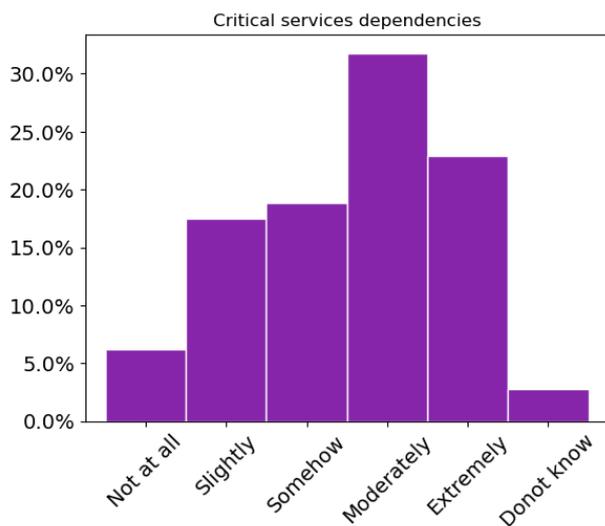
a) Health services

b) Emergency responders

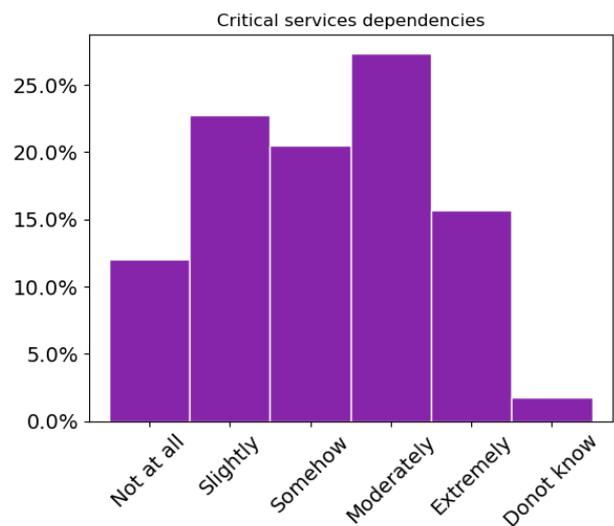


c) Authorities

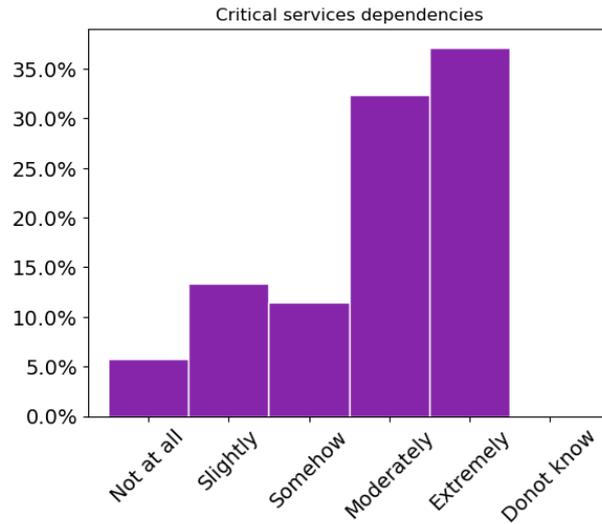
Figure 64 Social disruptions awareness distribution across job profiles in Romania



a) Health services

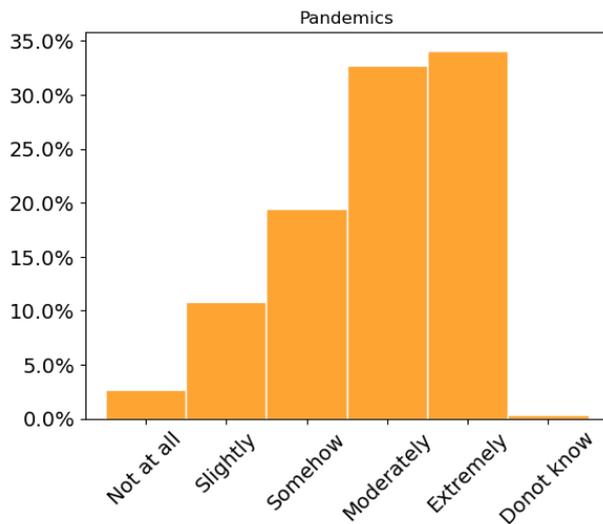


b) Emergency responders

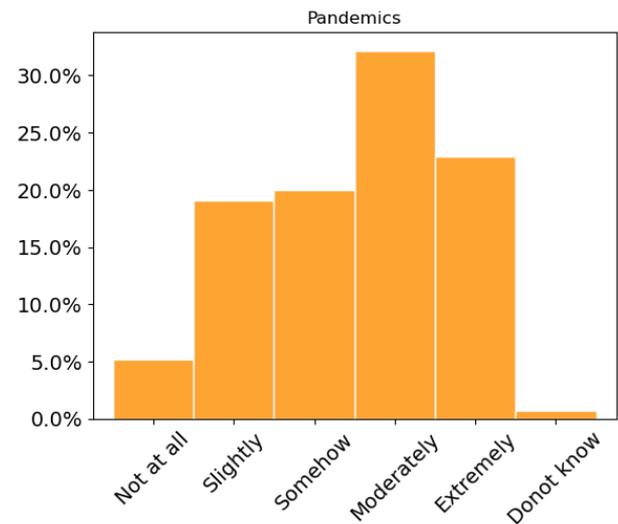


c) Authorities

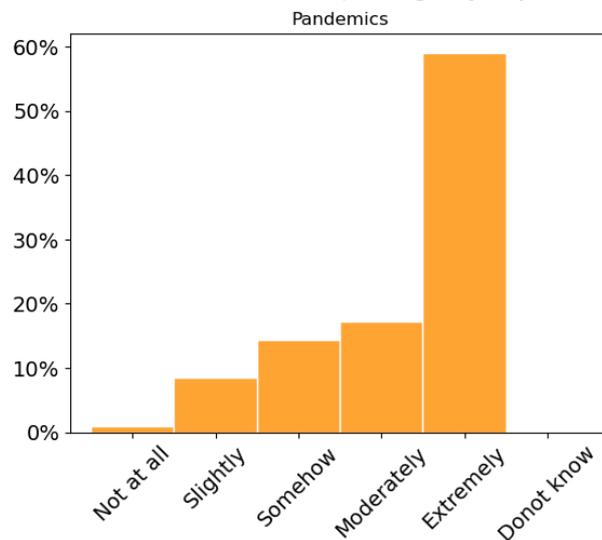
Figure 65 Critical service dependencies events awareness distribution across job profiles in Romania



a) Health services



b) Emergency responders



c) Authorities

Figure 66 Pandemics awareness distribution across job profiles in Romania



4.3.3.3 Public capacities

Figure 67 presents the ranking of the needs and expectations about the sense of community and social networks construct in the survey. From the figure, it is obvious that there is a full consensus about the ordering of the factors across the three profiles.

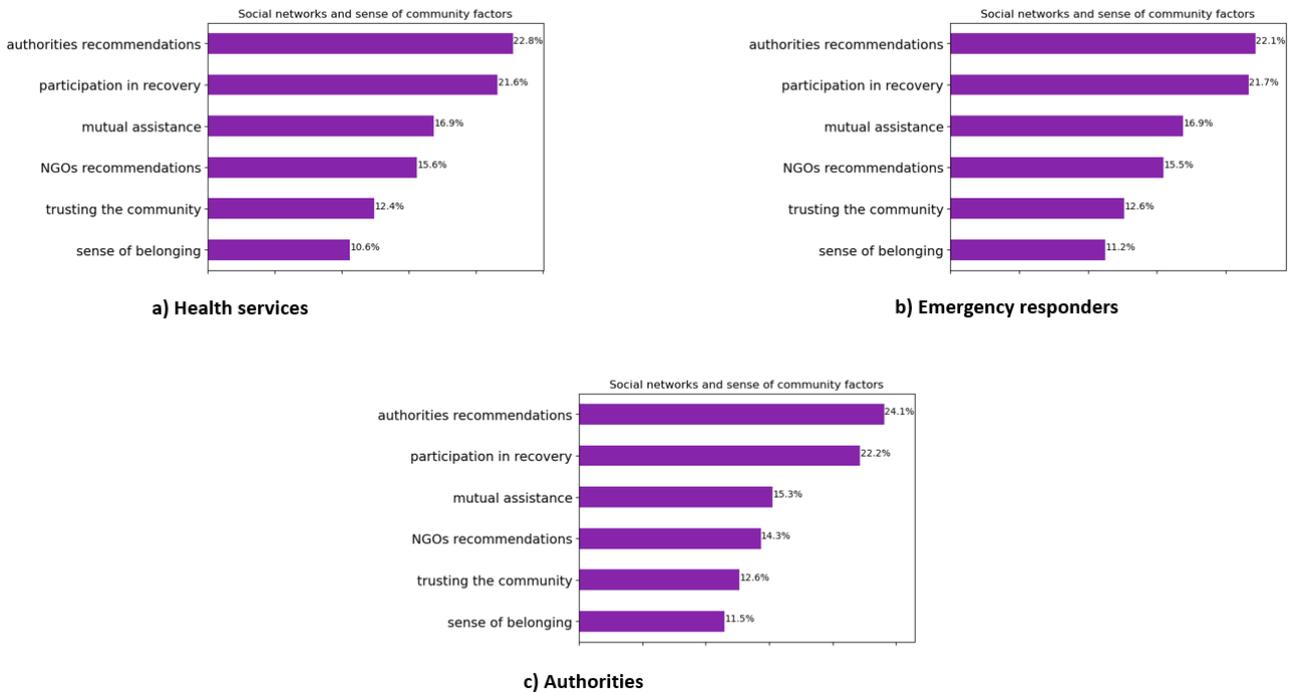


Figure 67 Needs about the sense of community and social networks across the job profiles in Romania

Regarding the coping skills element of the questionnaire, there is almost an agreement about the first six most important needs among the three job profiles (Figure 68).

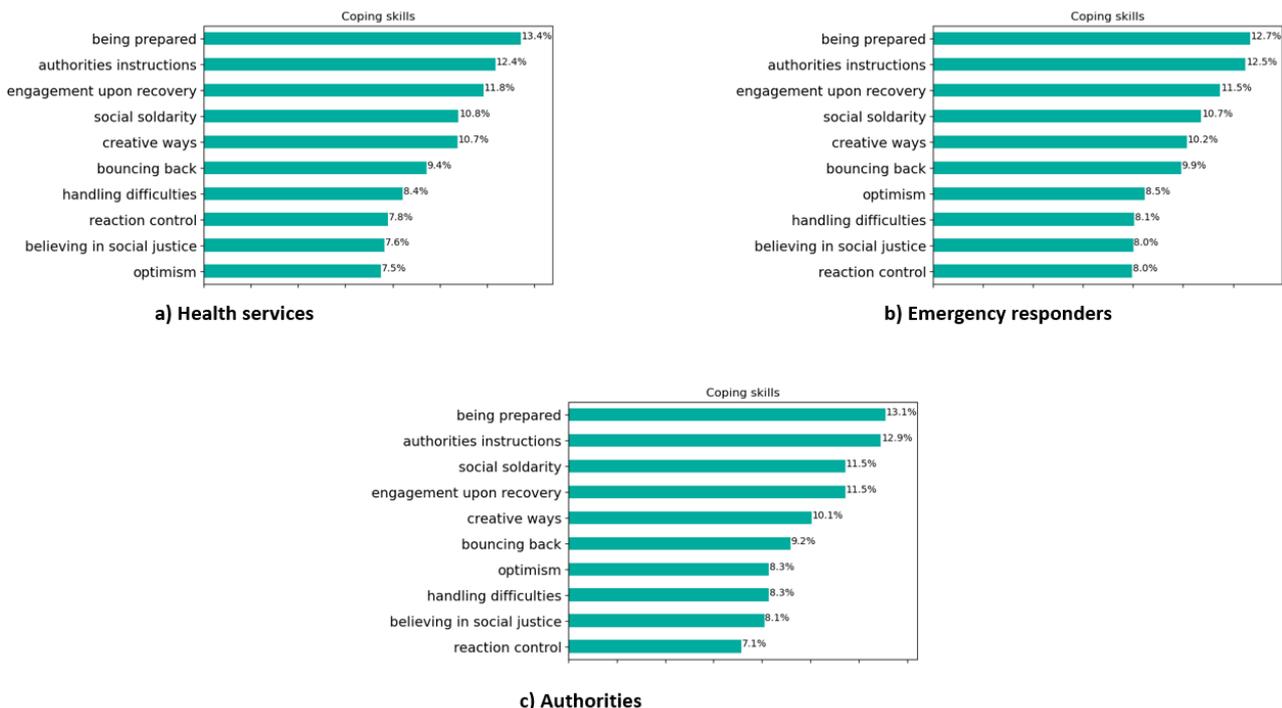


Figure 68 Needs about coping skills across the job profiles in Romania



Figure 69 shows that all work profiles agree on the least significant factors (the bottom six), but there is disagreement on the top four. However, given the slight gap between the percentages in the rankings (less than 1% in some cases), this disagreement is minimal. On the other hand, Figure 70 illustrates that all of the three profiles align together about their needs and expectations regarding the preparedness activities done by the members of the population.

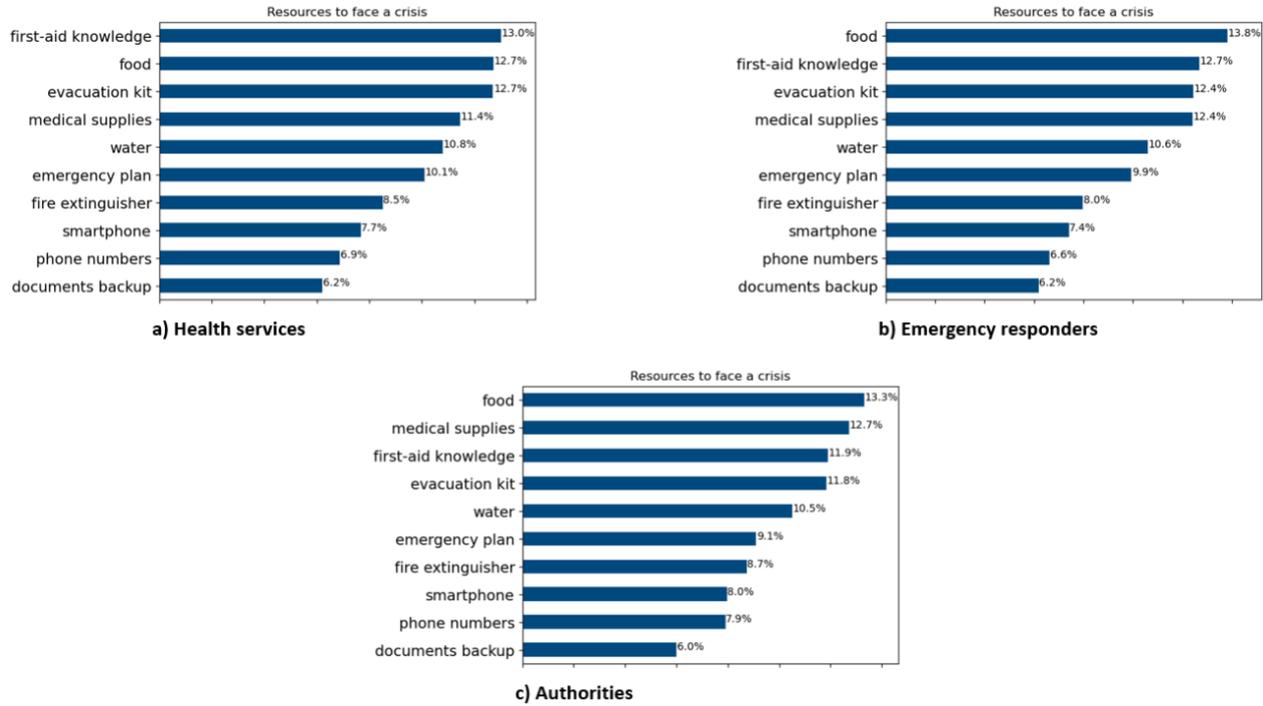


Figure 69 Needs of resources to face a crisis across the job profiles in Romania

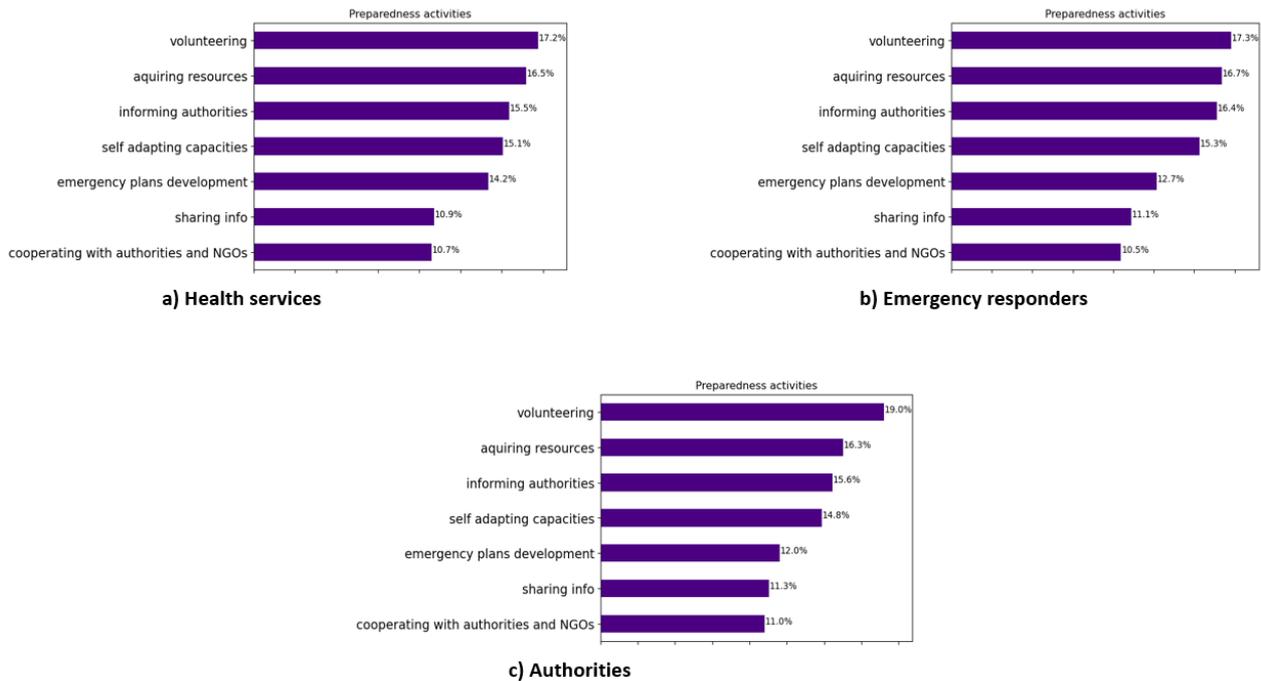


Figure 70 Needs of preparedness capacities across the job profiles in Romania



4.3.3.4 Communication and information sharing

In Figure 71 and Figure 72, we can see that the prioritization of the needs of all the survey participants among the three job profiles is identical.

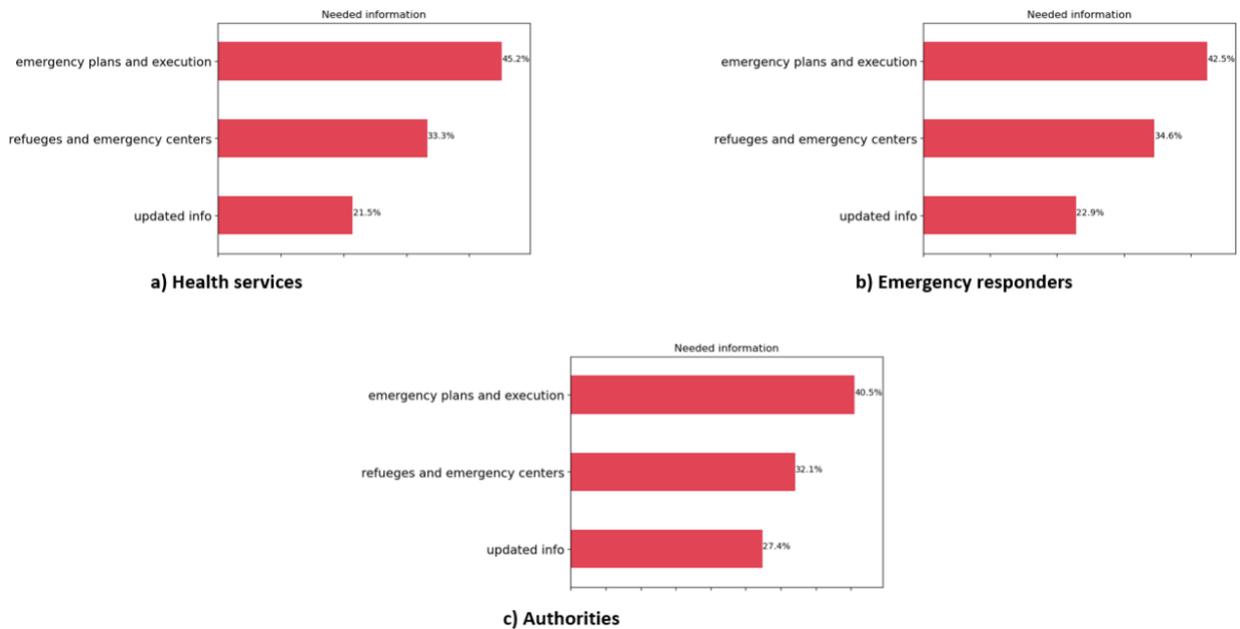


Figure 71 Needed information distribution across the job profiles in Romania

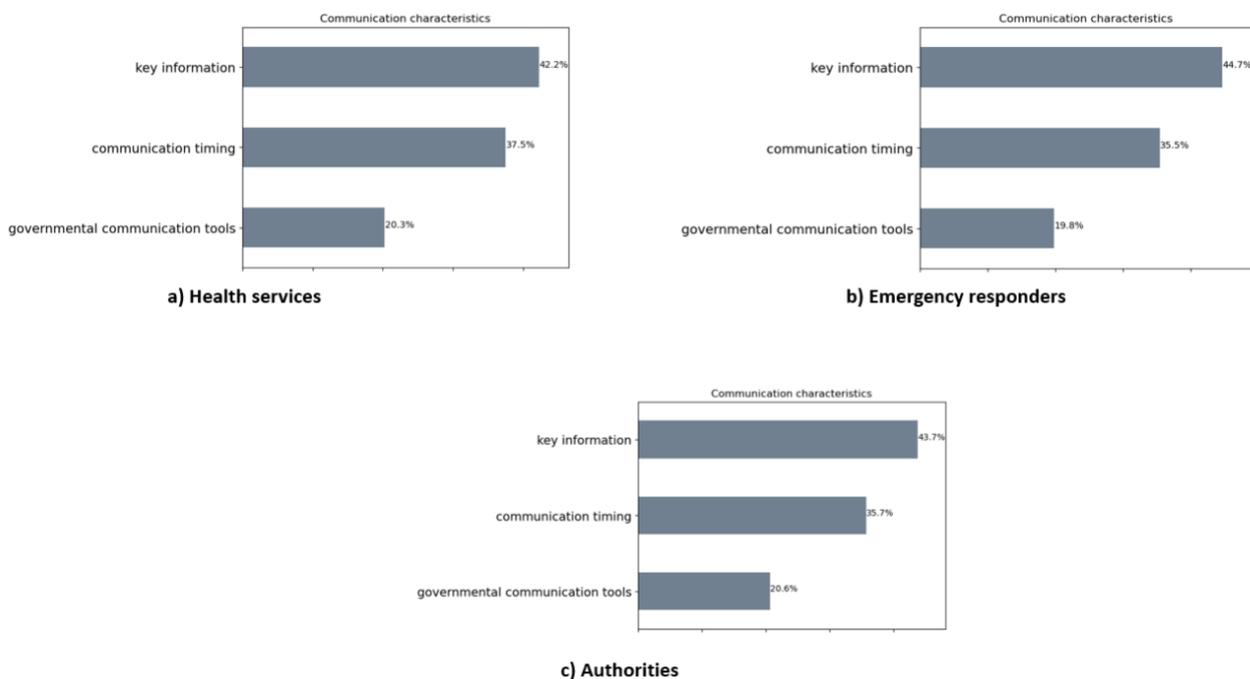


Figure 72 Communication characteristics distribution across the job profiles in Romania

According to the members of the three job profiles, the top three forms of contact are mobile communication, social media, and face-to-face communication (Figure 73). Both emergency responders and authorities share the same rating of information sharing needs and expectations (Figure 74). We can also consider that health services share the same point of view as the other two profiles; the only difference which is minor (less than 1%) is in the ranking of credible information and the ability to share information with authorities (top two items).

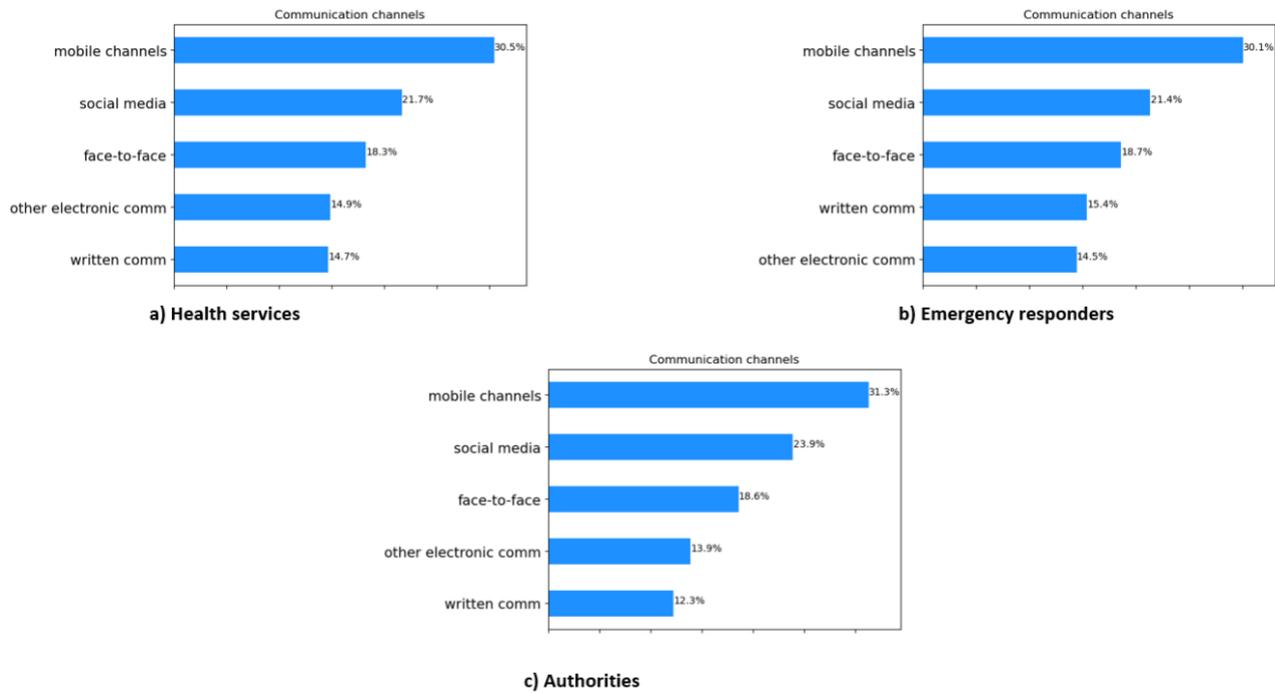


Figure 73 Communication channels distribution across the job profiles in Romania

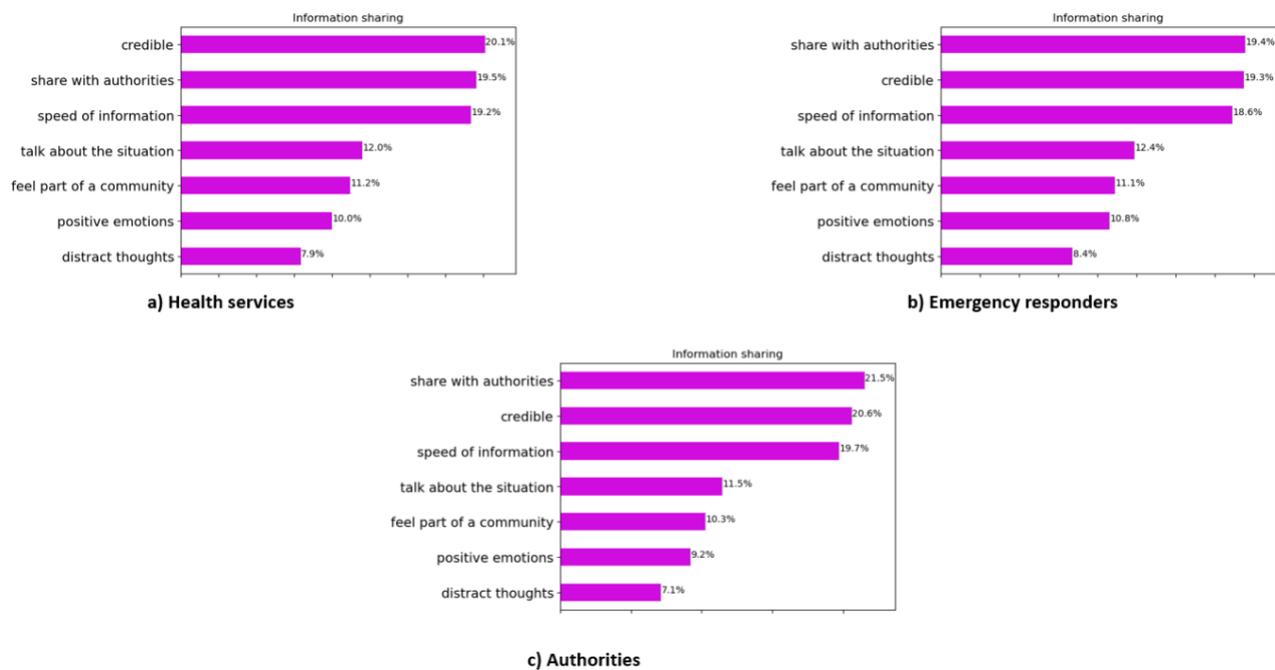
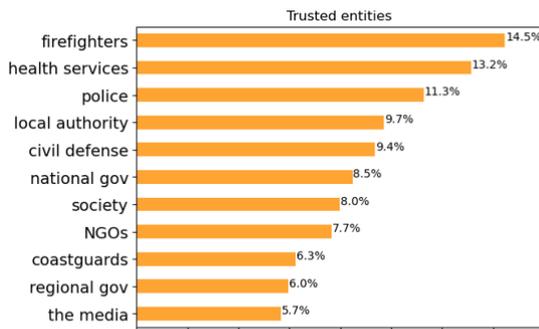


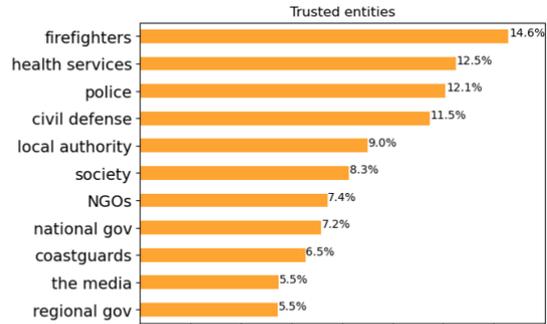
Figure 74 Information sharing priorities distribution across the job profiles in Romania

4.3.3.5 Public perception

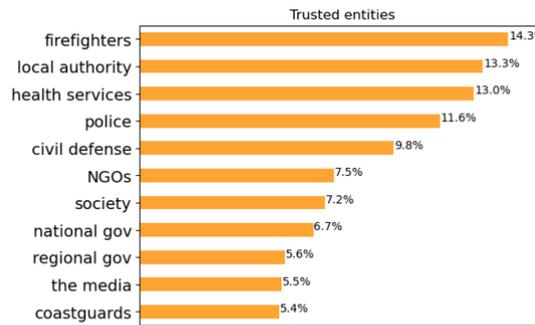
There is an agreement among all the job profiles that firefighters are the most trusted entity by the public (Figure 75). For the rest of the organizations/entities, there is no real agreement about the ranking. The same pattern applies to the responsible entities element of the survey (Figure 76); everybody agrees that firefighters are the ones who are responsible in the face of the crisis, and then the differences appear.



a) Health services

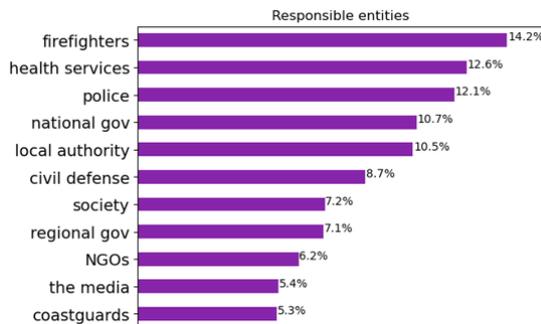


b) Emergency responders

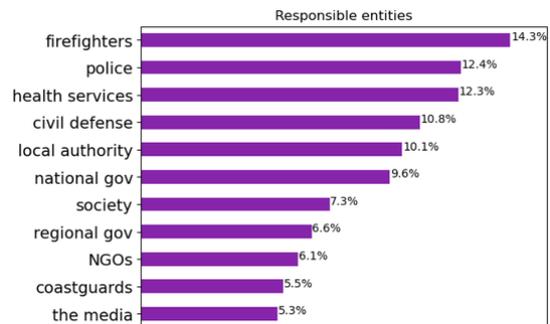


c) Authorities

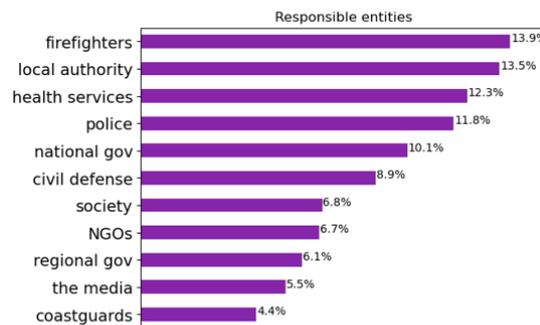
Figure 75 Perception of trust across different job profiles in Romania



a) Health services



b) Emergency responders



c) Authorities

Figure 76 Perception of responsibility across different job profiles in Romania

4.3.4 SPAIN

4.3.4.1 Demographics

The distribution of responses among the job profiles is shown in Figure 77. In total, we have 173 participants in Spain. From Table 11, we can see that more than two-thirds of the participants in each profile are men.

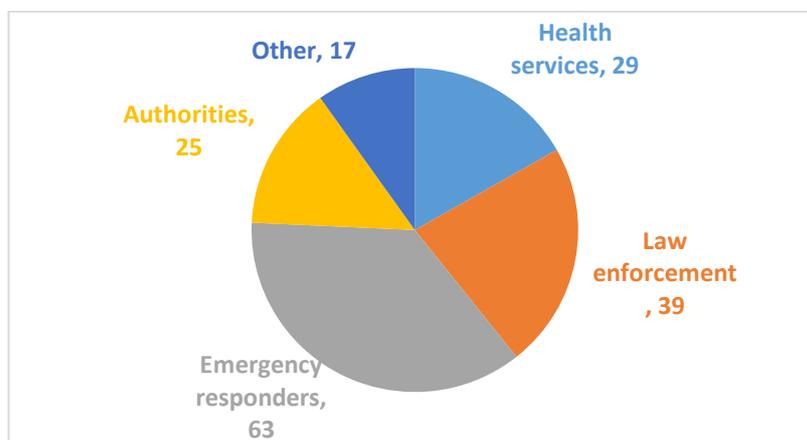


Figure 77 Number of responses across each job profile in Spain

Table 11 Distribution of the gender of participants by job profile in Spain

Job Profile	Males	Females	Prefer not to say
Health services	72%	24%	4%
Law enforcement	84.60%	12.80%	2.60%
Emergency responders	84.10%	14.30%	1.60%
Authorities	72%	24%	4%

The majority of responders from health services and law enforcement are employees, followed by middle-level management, and the least presented work level is the top-level management (Figure 78 a,b). The situation is different for emergency responders, as the majority of them are middle-level managers (Figure 78 c). Also for authorities, the highest number of participants in the survey are top-level management (Figure 78 d). The graphs in Figure 79, show that the majority of the survey participant across all profiles have been involved in different types of emergencies other than COVID-19.

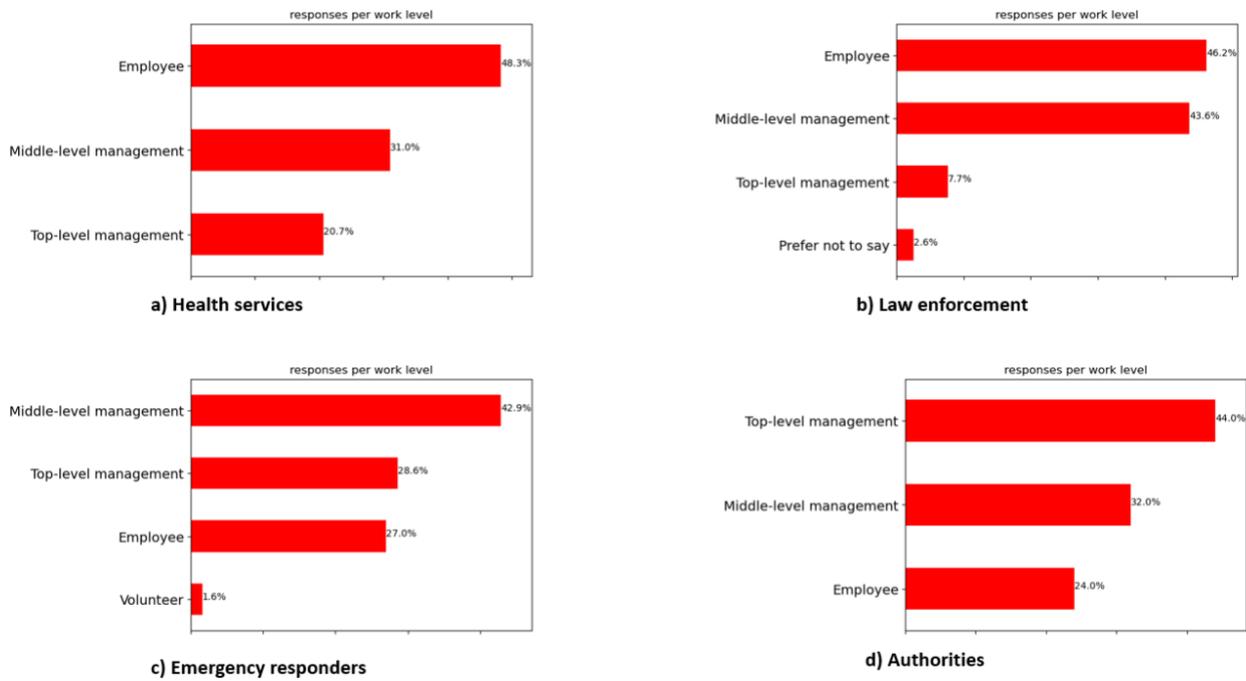


Figure 78 Comparison of work levels across job profiles in Spain

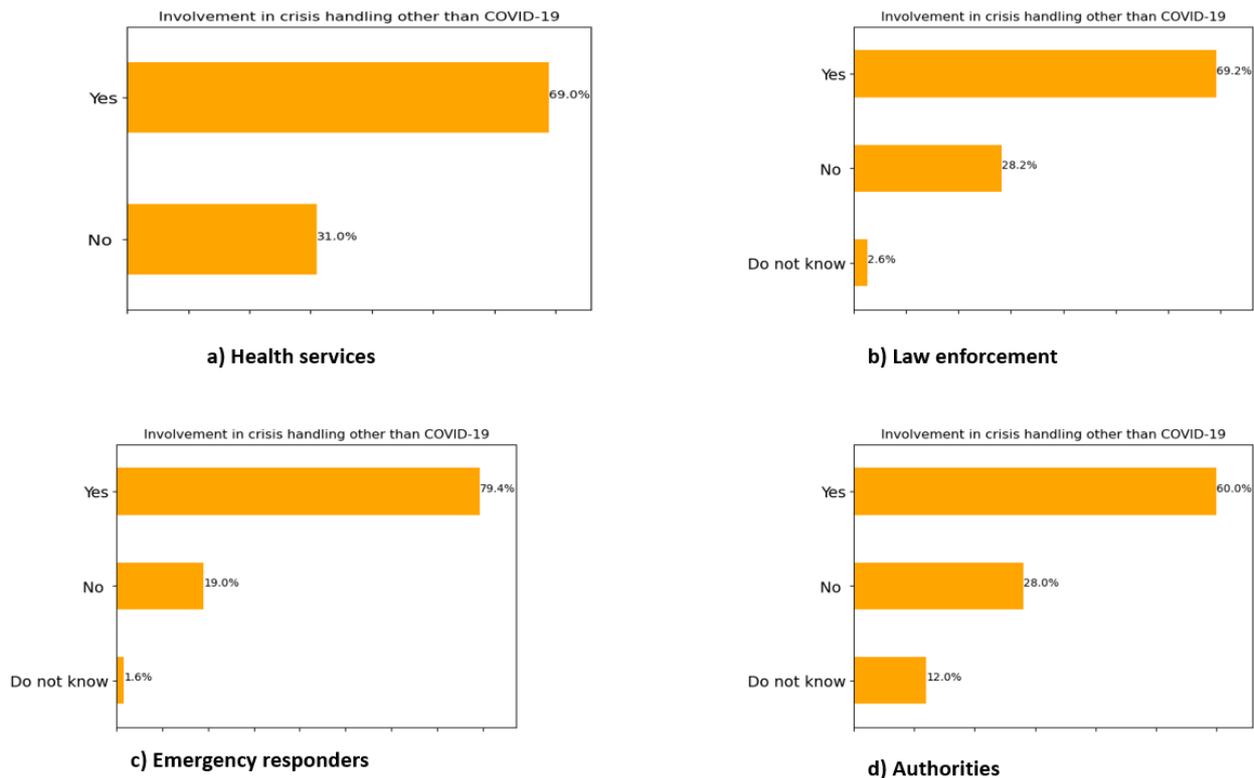


Figure 79 Comparison of crisis involvement across job profiles in Spain

4.3.4.2 Risk awareness

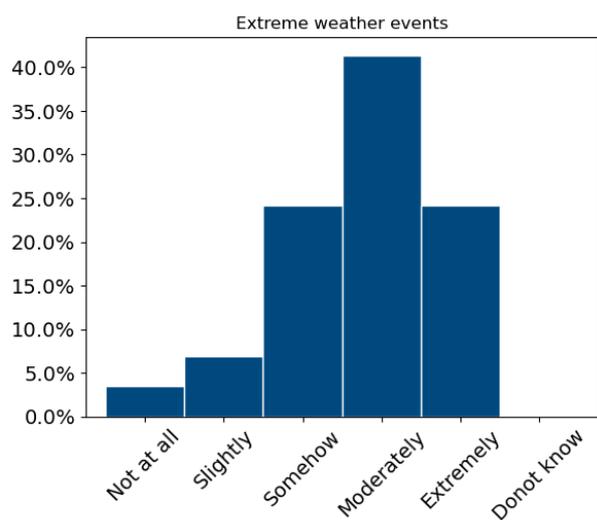
Aligning with the current situation, and with the results from other countries, we find that pandemics is the risk type that all the job profiles are highly aware of (Table 12). Furthermore, we can see that extreme weather events risk type comes in second place for all the profiles except for the law enforcement members, who are more aware of social disruptions; this perfectly aligns with the nature of their job, they are always on the frontlines in case of riots or terrorist attacks. Considering



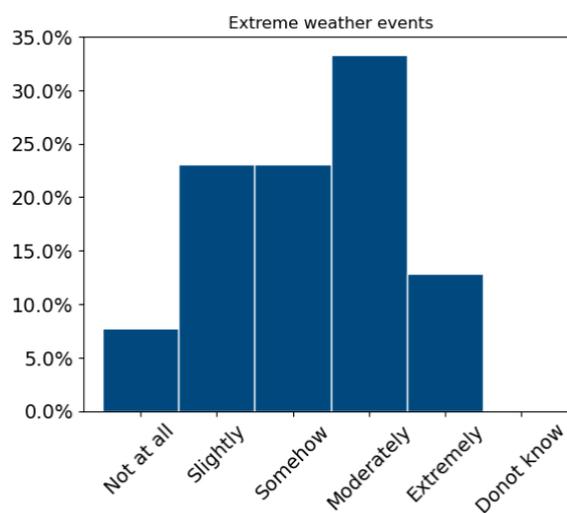
the mean of means for all the profiles, we infer that authorities have a higher risk awareness level, regardless of the type of risk. Figure 80 to Figure 84 give more details about the distribution of risk awareness levels across the different profiles.

Table 12 Risks' mean and standard deviation across job profiles in Spain

Type of risk	Health services		Law enforcement		Emergency responders		Authorities	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Extreme weather	3.76	1.02	3.21	1.17	3.87	1.2	4.04	0.93
Nature related events	3.34	1.29	2.64	1.25	3.44	1.24	3.64	1.15
Social disruption	3.66	1.08	3.67	1.24	3.48	1.33	3.84	1.18
Critical services dependencies	3.38	1.24	3.13	1.28	3.46	1.35	3.84	1.14
Pandemics	4.38	0.98	4.05	1.17	4.29	1.16	4.44	1
Average	3.70		3.34		3.70		3.96	

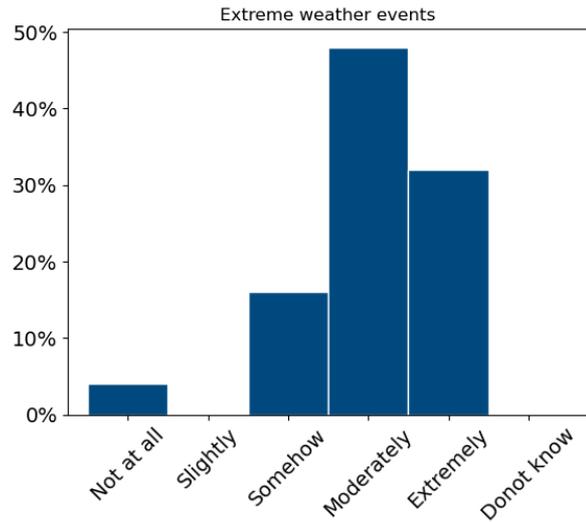
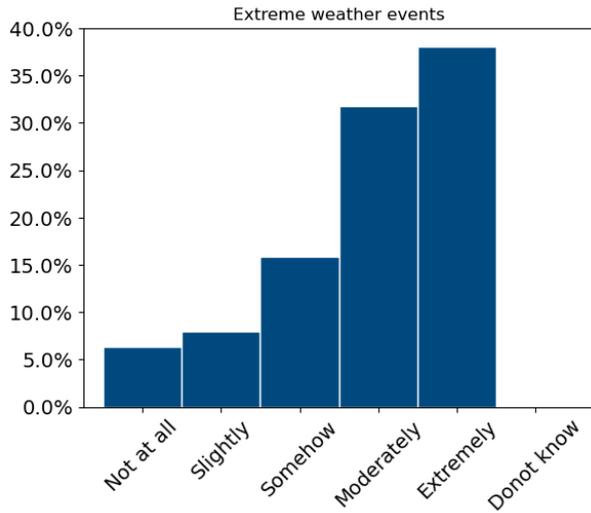


a) Health services



b) Law enforcement

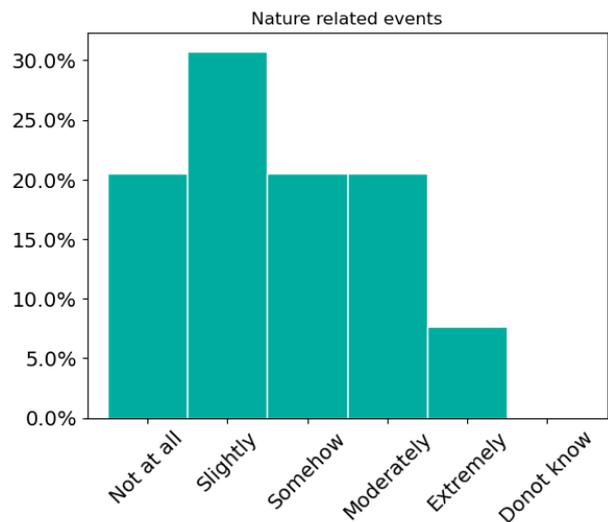
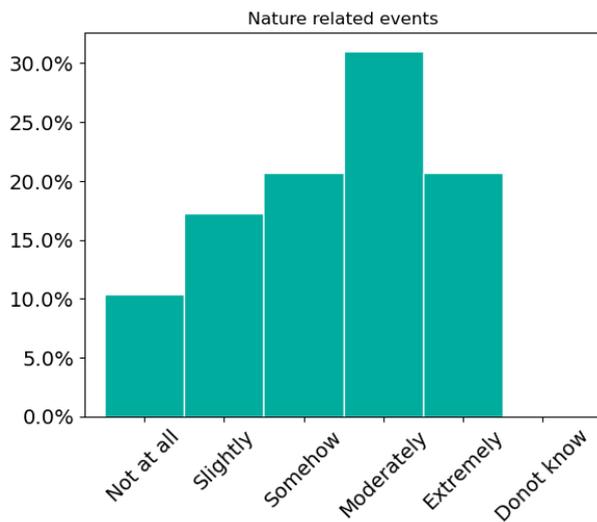




c) Emergency responders

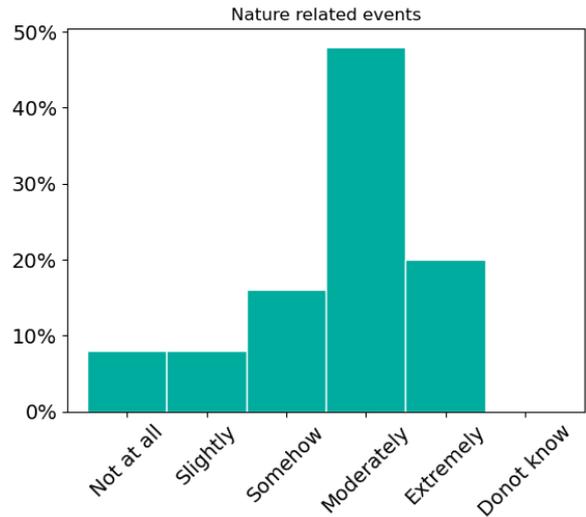
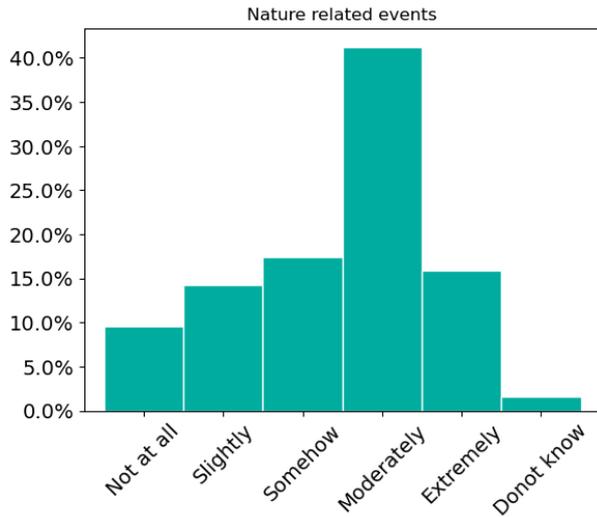
d) Authorities

Figure 80 Weather-related events awareness distribution across job profiles in Spain



a) Health services

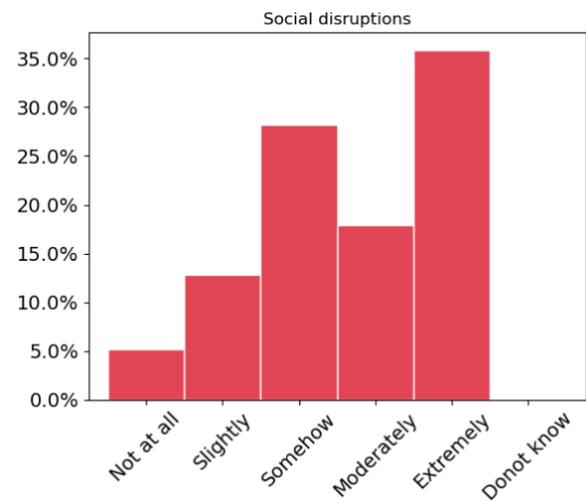
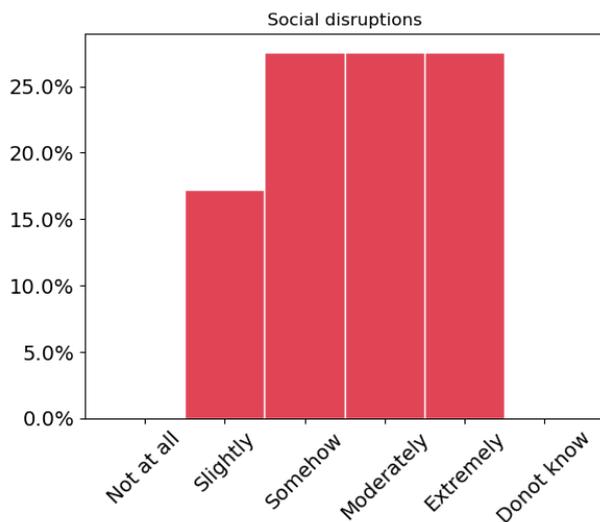
b) Law enforcement



c) Emergency responders

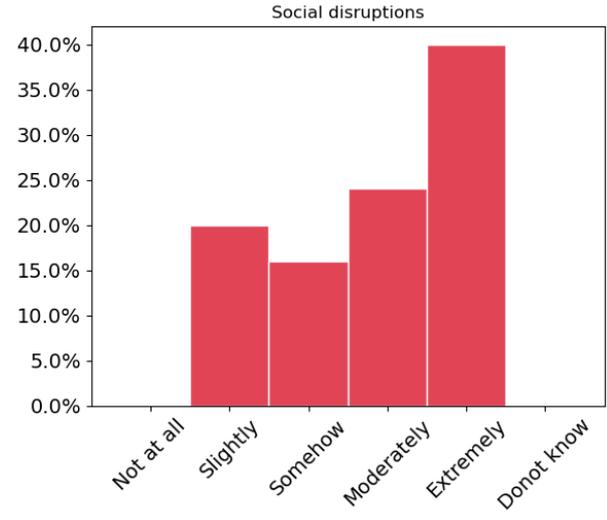
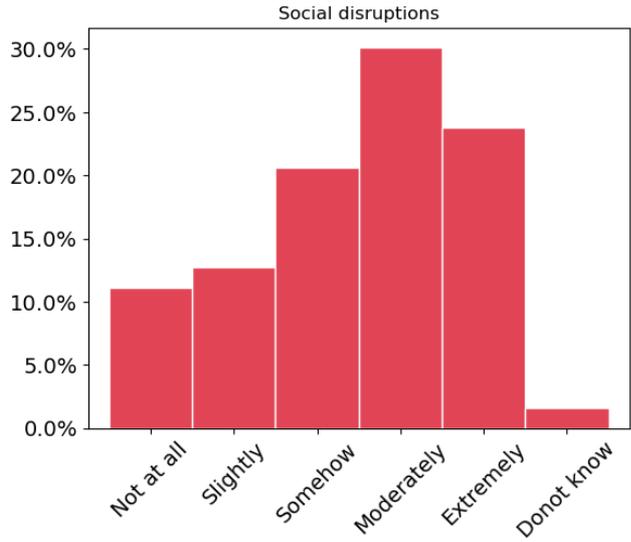
d) Authorities

Figure 81 Nature-related events awareness distribution across job profiles in Spain



a) Health services

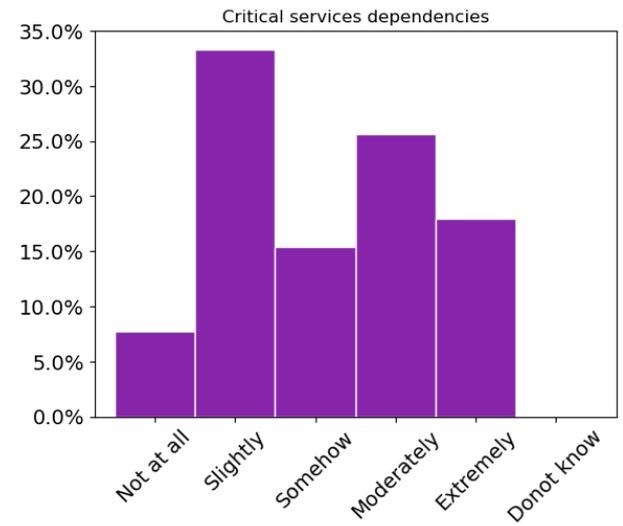
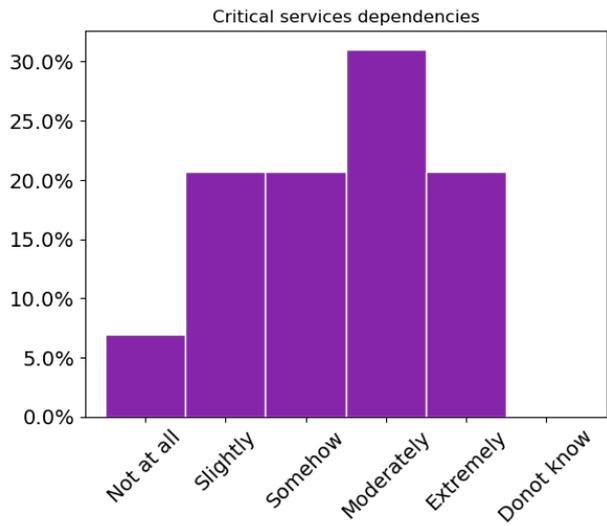
b) Law enforcement



c) Emergency responders

d) Authorities

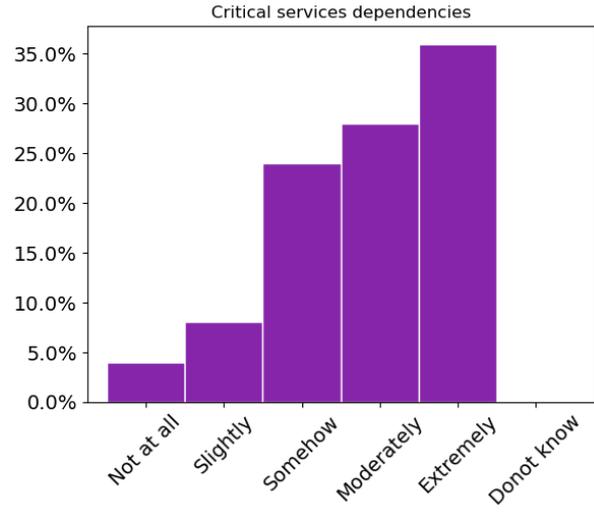
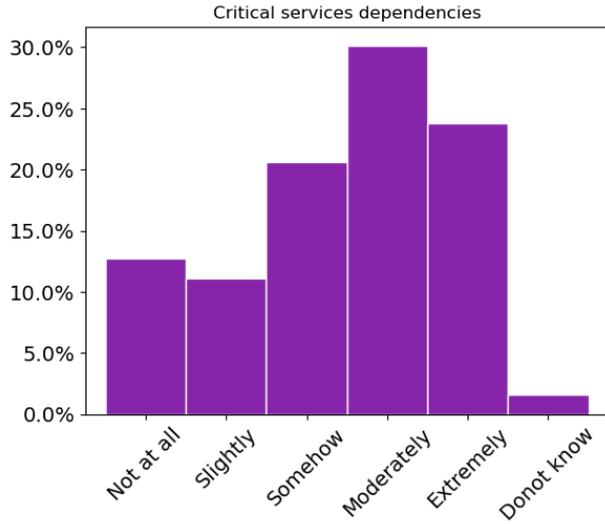
Figure 82 Social disruptions awareness distribution across job profiles in Spain



a) Health services

b) Law enforcement

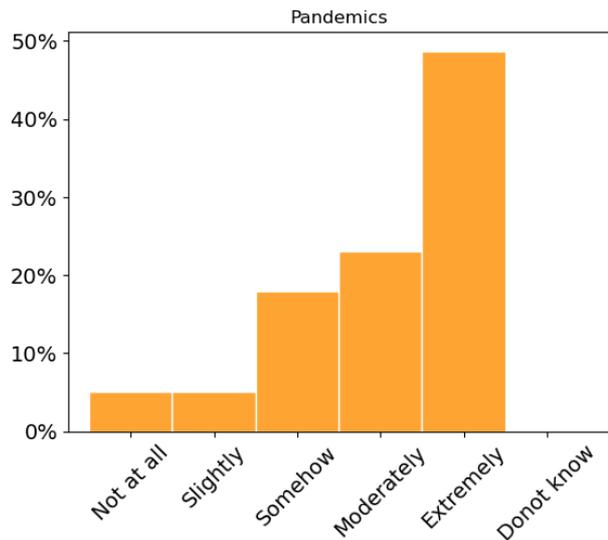
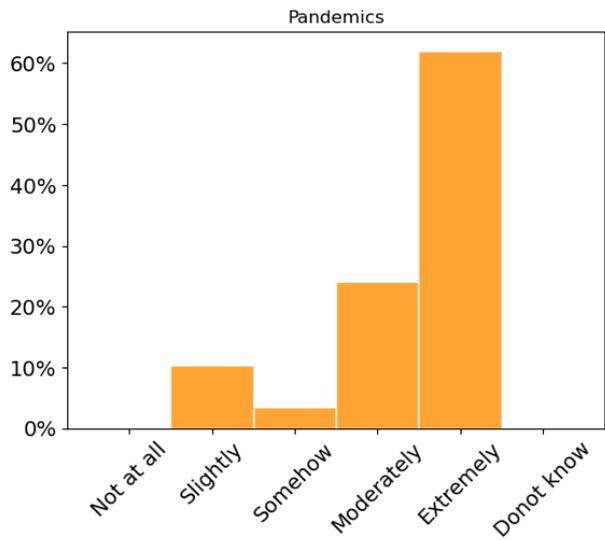




c) Emergency responders

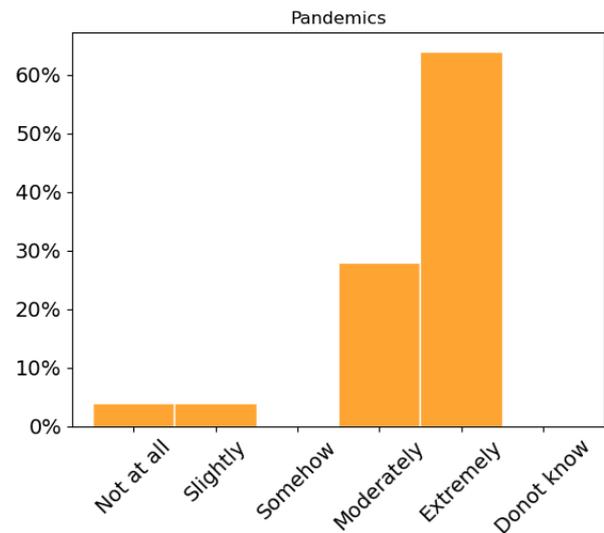
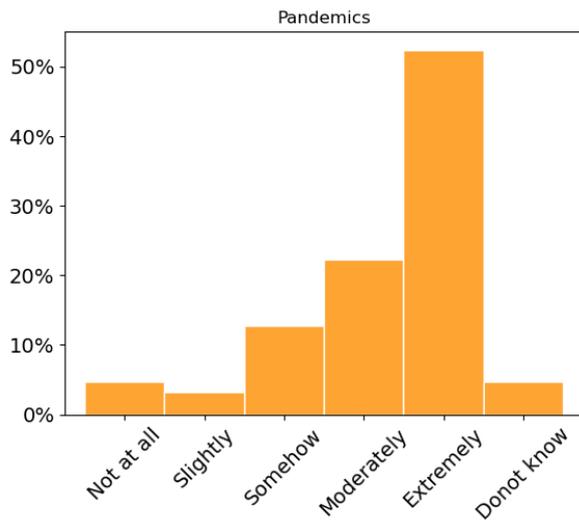
d) Authorities

Figure 83 Critical service dependencies events awareness distribution across job profiles in Spain



a) Health services

b) Law enforcement



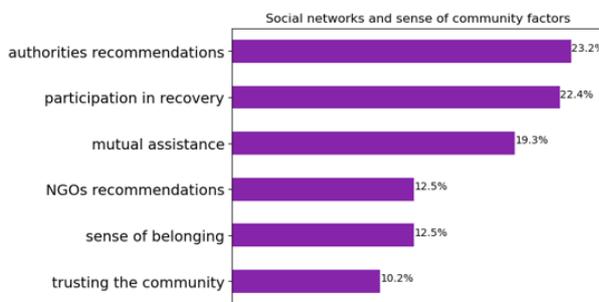
c) Emergency responders

d) Authorities

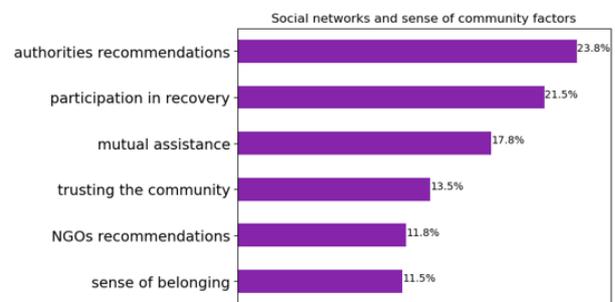
Figure 84 Pandemics awareness distribution across job profiles in Spain

4.3.4.3 Public capacities

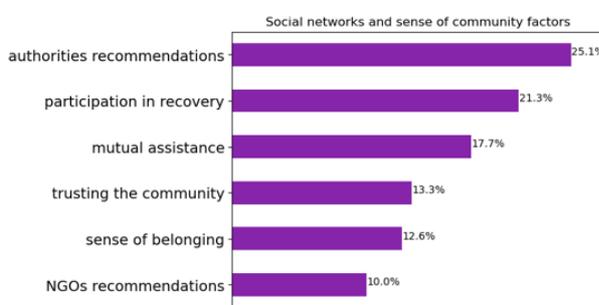
There is a high consensus among all of the job profiles about the top three factors that capitalize on the social networks and sense of community of the public (Figure 85). These factors are: following authorities' recommendations, participating in the recovery process, and building upon the mutual assistance of the community members.



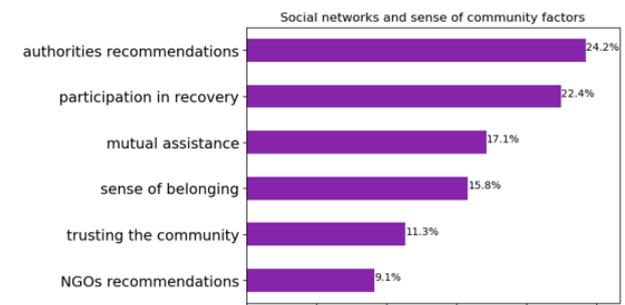
a) Health services



b) Law enforcement



c) Emergency responders



d) Authorities

Figure 85 Needs about the sense of community and social networks across the job profiles in Spain

Moreover, in the coping skills construct, the agreement on the top three factors continues to appear between health services, law enforcement, and emergency responders. It deviates a little for the



authorities where they believe that the third most important factor is to follow authorities' instructions, not the engagement upon recovery like the other three profiles (Figure 86).

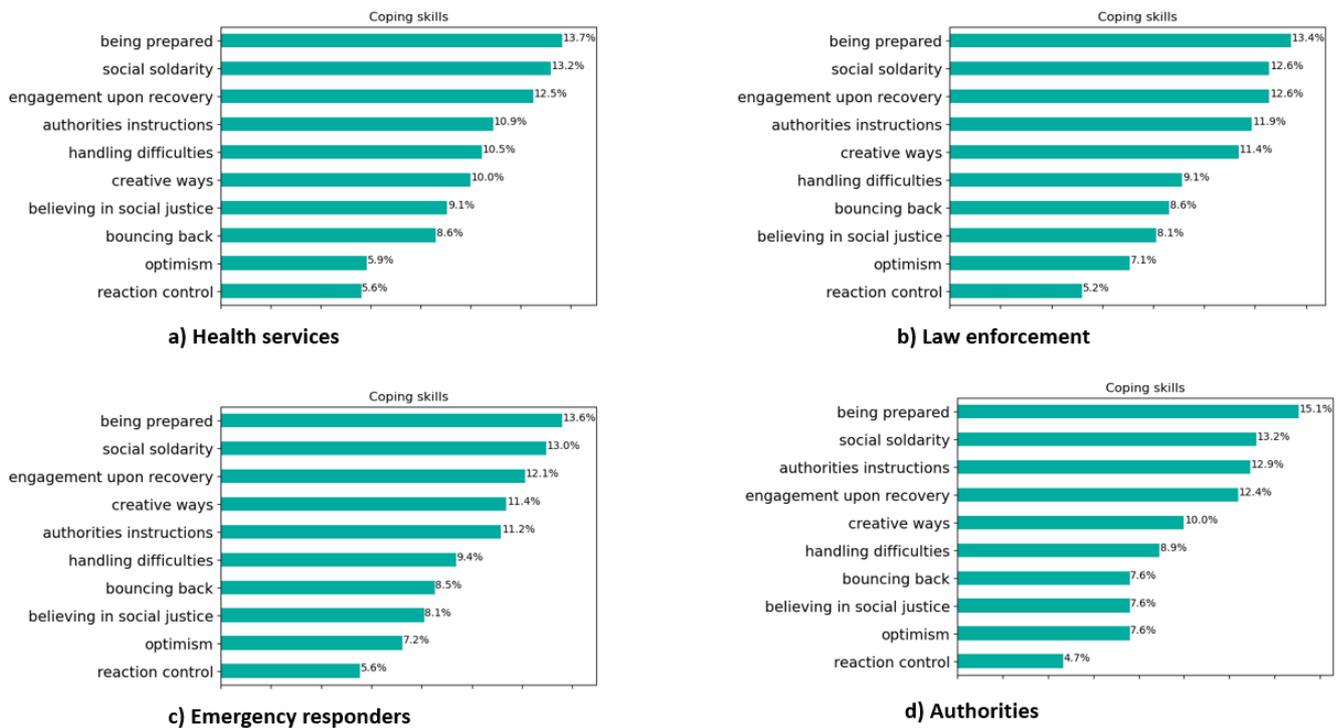
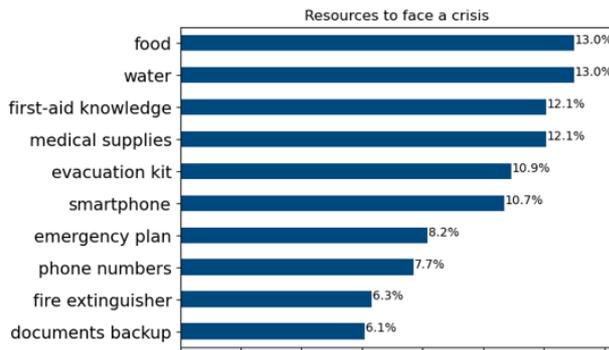


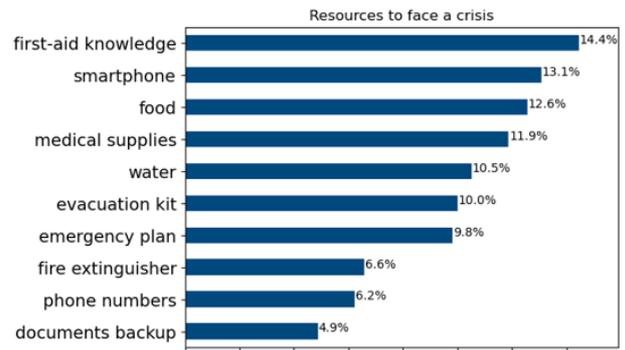
Figure 86 Needs about coping skills across the job profiles in Spain

The ranking of the resources to face a crisis vary to an extent across the different profiles (Figure 87). While authorities, law enforcement, and emergency responders believe that first-aid knowledge is the most important resource for a society to have in the event of an emergency, health services believe that food and water are the most important resources to have. Also, having a smartphone ranks highly for the three profiles, but not for the members of healthcare services.

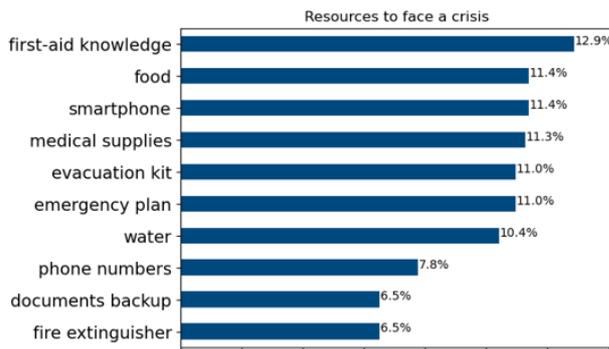
The ranking of the preparedness activities among the four job profiles is quite different (Figure 88). Despite this, if we look at the graphs thoroughly, we will find that the percentages of responses associated with each factor are very close. For example, in (Figure 88, a) almost all the items starting from the third item are associated with nearly 13% of the responses. This applies especially to health services and emergency responders, however, concerning the authorities (Figure 88, d) the situation is different to an extent as there is nearly a 1% difference between each item in the rank.



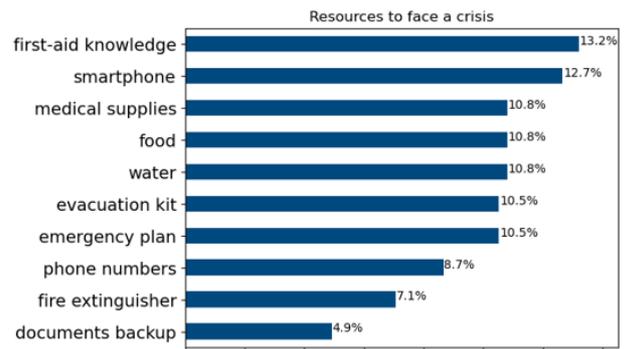
a) Health services



b) Law enforcement

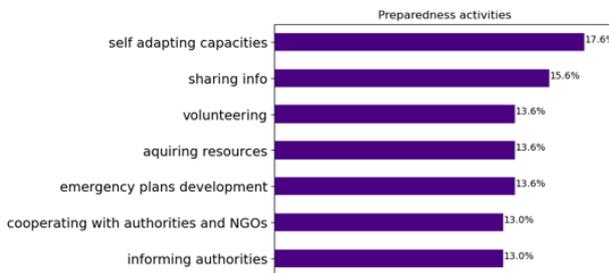


c) Emergency responders

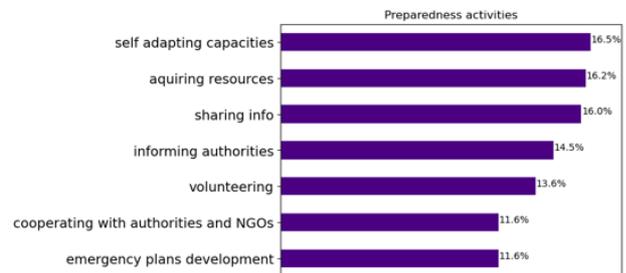


d) Authorities

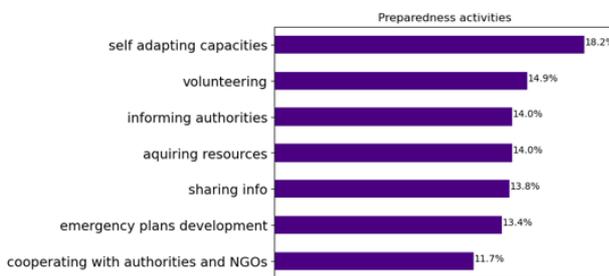
Figure 87 Needs of resources to face a crisis across the job profiles in Spain



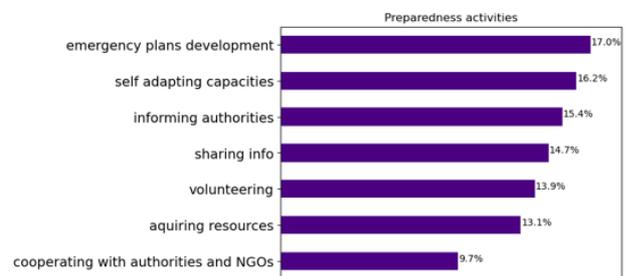
a) Health services



b) Law enforcement



c) Emergency responders



d) Authorities

Figure 88 Needs of preparedness capacities across the job profiles in Spain



4.3.4.4 Communication and information sharing

In the case of the needed information construct, we can see in Figure 89, that health services and emergency responders do agree about the ranking of factors related to this question. While the law enforcement and authorities share another point of view –that is similar between both of them-.

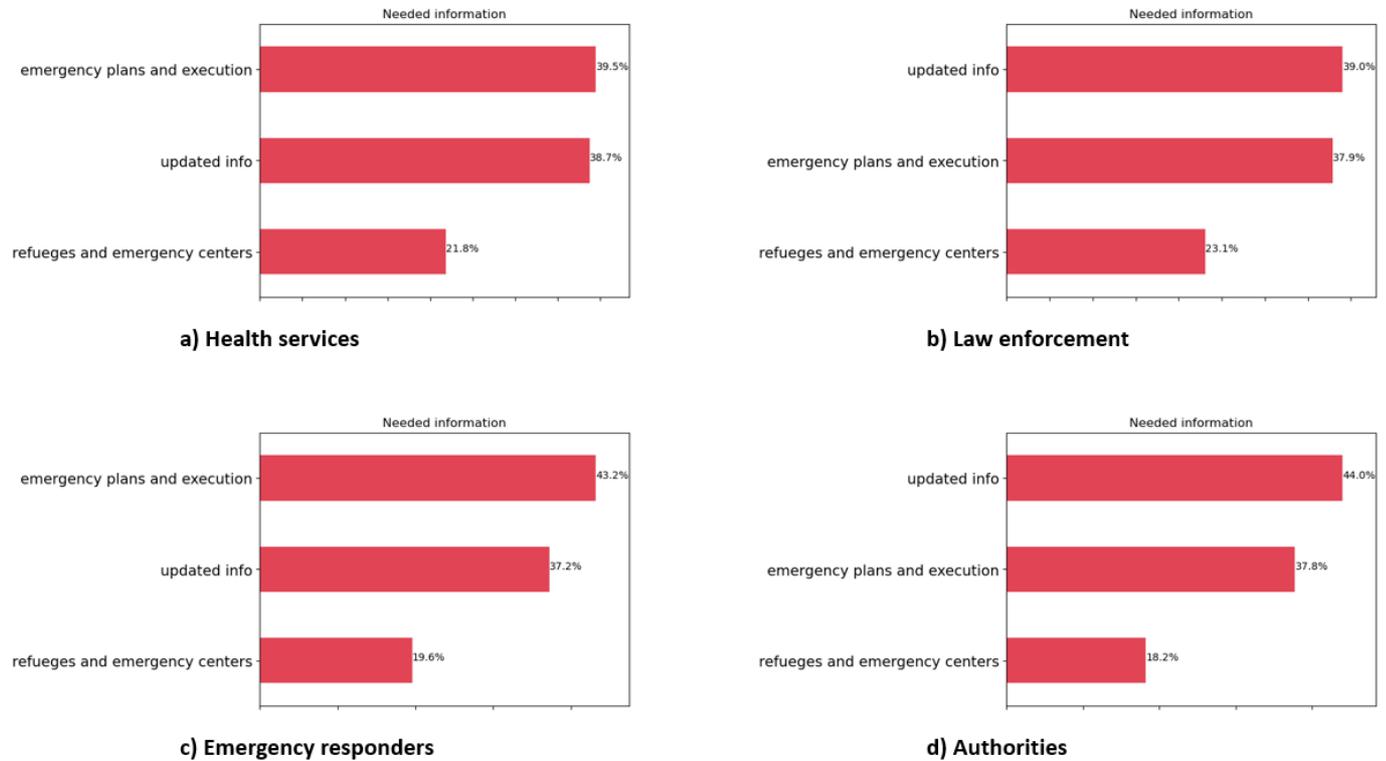
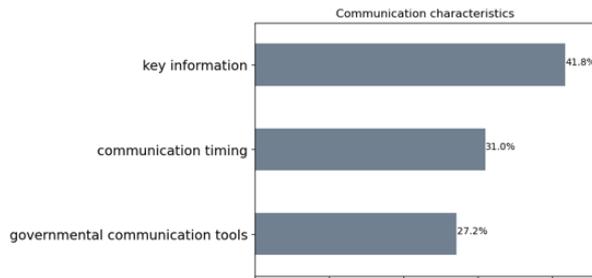
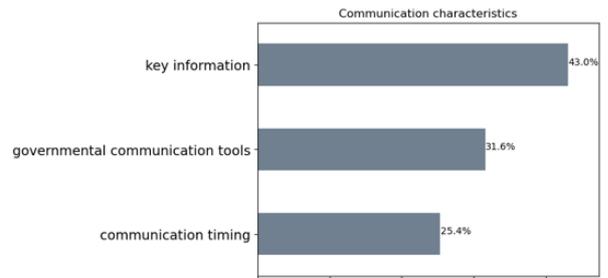


Figure 89 Needed information distribution across the job profiles in Spain

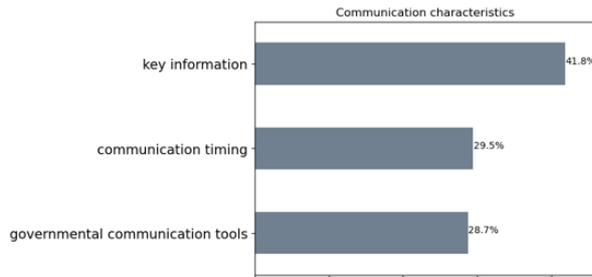
Authorities have a distinct distribution concerning the communication characteristics, although there is no consensus among the respondents of the same profile; given that the range of values is $34.2 - 32.4 = 1.8$ (Figure 90, d). While authorities find the most important for citizens to know the governmental communication tools, the other three profiles find that providing them with key information should come first, as can be seen in Figure 90. Both health services and emergency responders almost have identical prioritization of their needs and expectations regarding the communication characteristics.



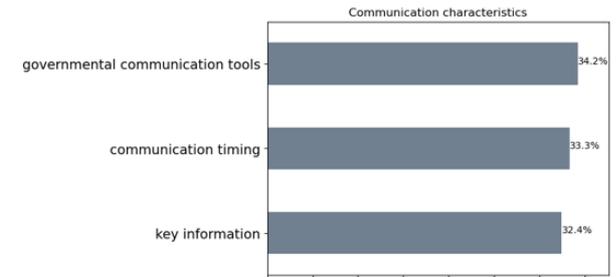
a) Health services



b) Law enforcement



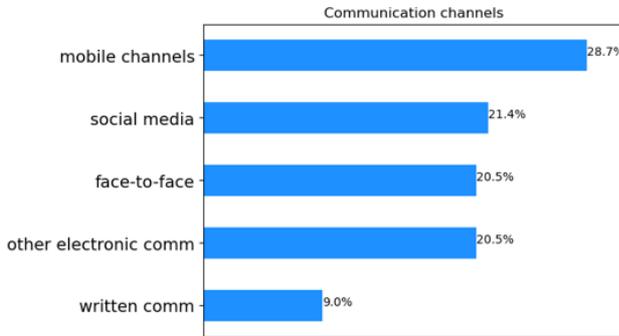
c) Emergency responders



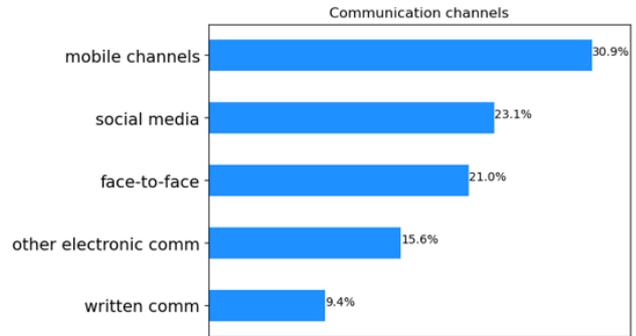
d) Authorities

Figure 90 Communication characteristics distribution across the job profiles in Spain

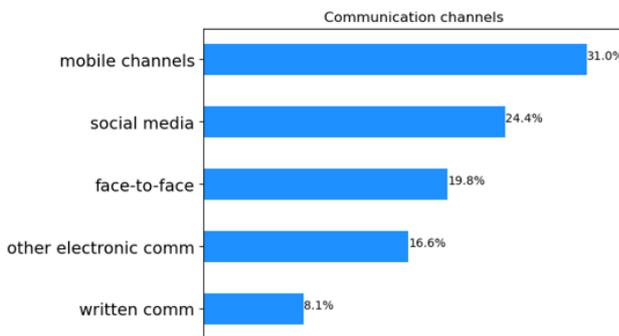
There is a consensus about the ranking of the means of communication among the four job profiles (Figure 91). Mobile channels come in the first place, followed by social media, then face-to-face communication, other electronic communications (forms, emails, ..etc.) and written communications come last.



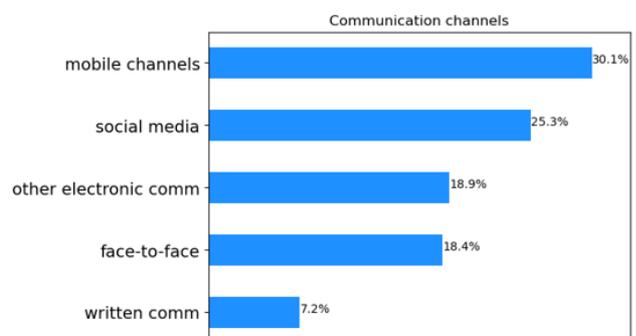
a) Health services



b) Law enforcement



c) Emergency responders



d) Authorities

Figure 91 Communication channels distribution across the job profiles in Spain

For the information sharing characteristics question in the survey, we can see in Figure 92, that all the profiles agree upon the ranking of the options. Even when they disagree on some items, the difference in the percentages that make an item go before another one is quite minor.

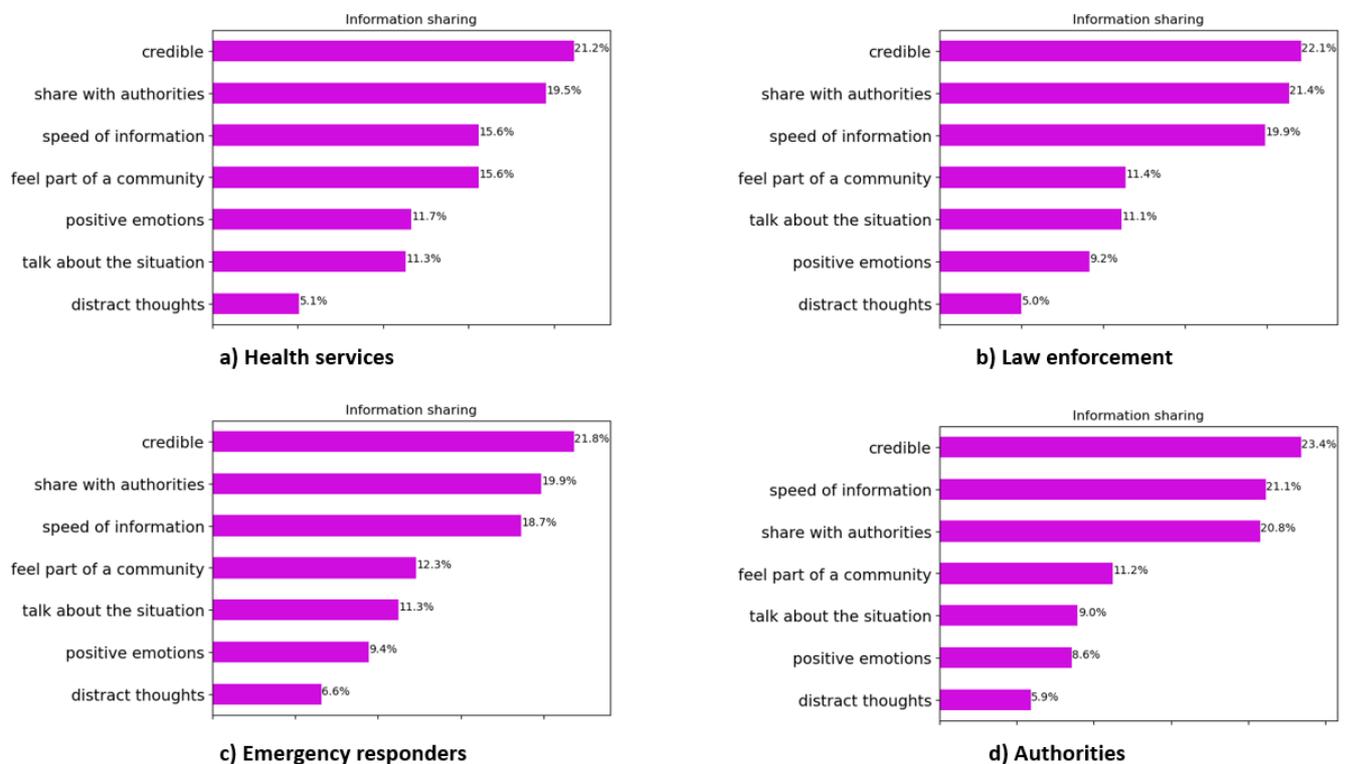
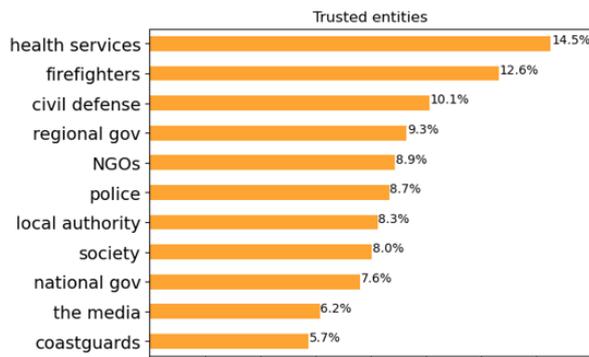


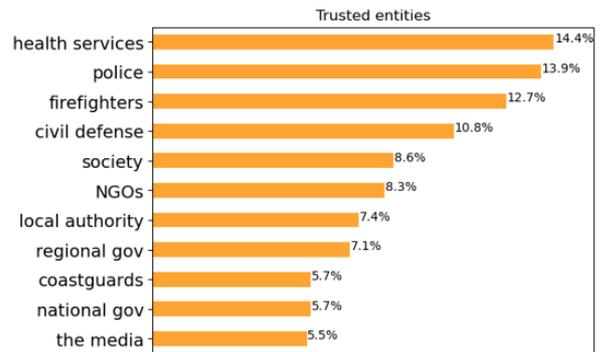
Figure 92 Information sharing priorities distribution across the job profiles in Spain

4.3.4.5 Public perception

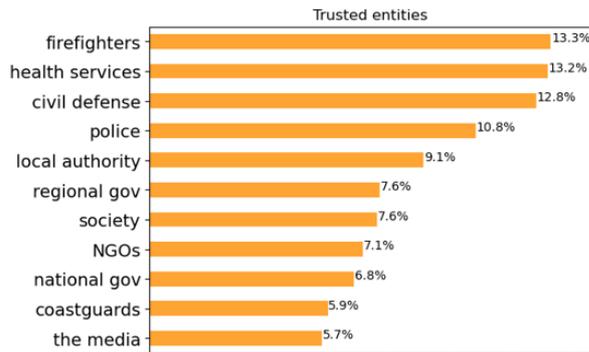
Figure 93 describes how each job profile views society's most trustworthy institutions. We can see that there is an agreement among the profiles that health services are the most trusted entities by the public. In Figure 94, we can see that all the profiles hold the government and authorities accountable in the face of a crisis.



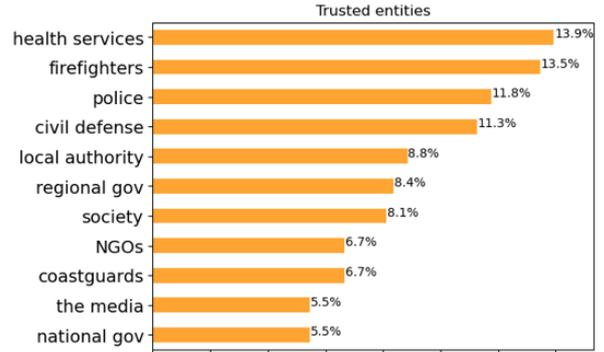
a) Health services



b) Law enforcement

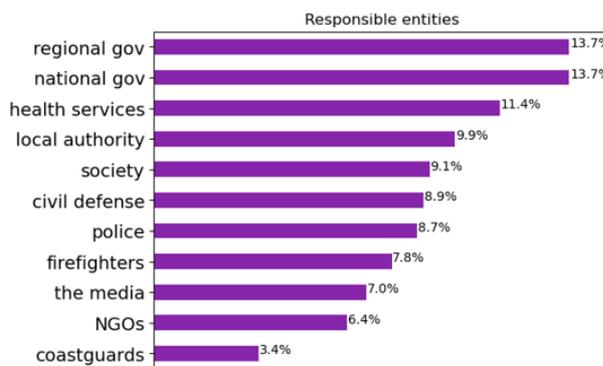


c) Emergency responders

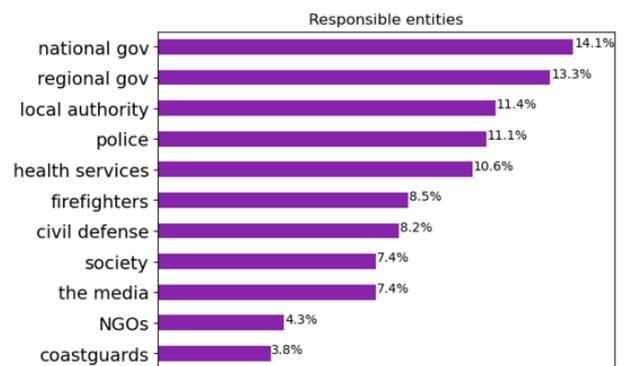


d) Authorities

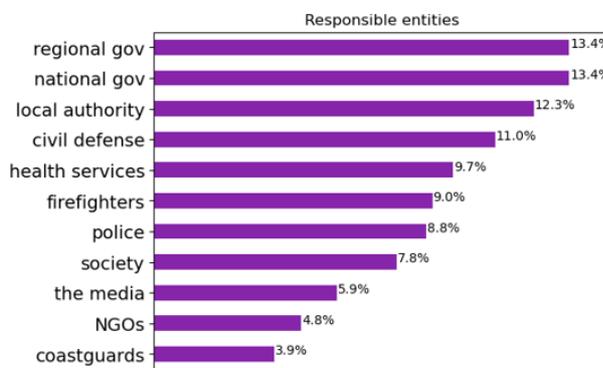
Figure 93 Perception of trust across different job profiles in Spain



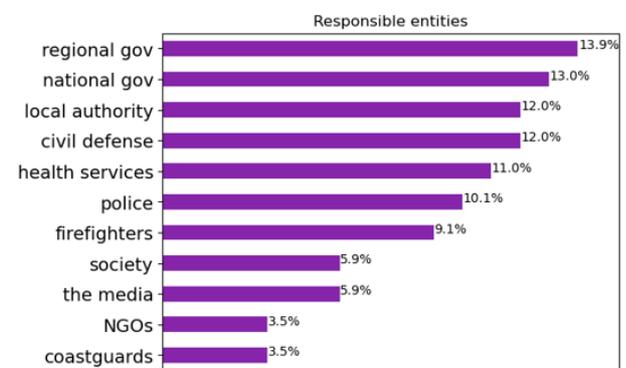
a) Health services



b) Law enforcement



c) Emergency responders



d) Authorities

Figure 94 Perception of responsibility across different job profiles in Spain



4.3.5 PRELIMINARY DISCUSSION: SIMILARITIES AND DIFFERENCES

In this section, we present the similarities and differences between the different job profiles in the four countries where we have a reasonable sample size: Israel, Spain, Norway, and Romania. In Israel, we have two profiles: health services and authorities. While in Spain and Norway, we have four profiles: health services, law enforcement, emergency responders, and authorities. And in Romania, we covered three profiles: health services, emergency responders, and authorities. In total, we have 13 profiles across the four countries ($2+4+4+3 = 13$), and we have 78 combinations of these profiles. Considering Figure 95, the profiles that are extremely different are the three profiles in Romania compared to the four profiles in Norway. Furthermore, we can see that there is a dissimilarity between Norwegian law enforcement and Israeli health services and authorities, respectively. The same applies to Norwegian authorities and Israeli health services and authorities. Additionally, Spanish authorities are also quite distant from Romanian emergency services, authorities, and health services.

	IS_Auth	NO_Auth	NO_ER	NO_HS	NO_LE	RO_Auth	RO_ER	RO_HS	SP_Auth	SP_ER	SP_HS	SP_LE
IS_Auth		30.1	29.9	27.6	34.2	26.8	27.7	28.2	30.6	25.7	25.1	29.3
IS_HS	14.3	32.9	30.7	27.1	37.0	22.0	20.8	20.9	32.0	25.4	24.5	28.0
NO_Auth						39.1	42.4	43.0	24.1	26.8	26.0	26.0
NO_ER		17.2				37.6	40.4	41.4	28.5	27.8	25.7	26.6
NO_HS		17.9	12.9		26.2	35.3	37.4	37.3	27.7	26.6	24.3	26.7
NO_LE		23.2	20.2			42.7	45.7	47.2	34.7	32.7	31.9	31.0
RO_Auth									39.3	32.7	32.8	32.0
RO_ER						16.2			39.9	30.0	31.0	31.7
RO_HS						18.4	7.0		39.1	29.7	30.8	32.5
SP_ER									17.7			
SP_HS									21.2	13.6		16.1
SP_LE									20.1	12.9		

Figure 95 Euclidian distance between job profiles across countries (IS = Israel, NO = Norway, RO = Romania, SP = Spain, Auth = authorities, ER = emergency responders, HS = health services, and LE = law enforcement)

Table 13 shows the same information in Figure 95, but differently; it presents the distance between pairs of profiles, sorted from smallest (most similar) to largest (most different). We highlighted the pairs from the same country in the same colour; Romania: Grey, Norway: Light orange, Spain: Blue, and Israel: Green. By investigating the table considering the highlights, we find that the smallest distance is always between profiles from the same country (15 out of 16 combinations are found in the top 20 distances). For example, Romanian health service and Romanian emergency responders; Norwegian health service and Norwegian emergency responders ..etc. Hence, we can claim that the data –to an extent- is clustered by the country, not by the job profile.

Table 13 Euclidean distance between job profiles across countries (sorted)

#	Profile # 1	Profile # 2	Distance
1	Romania_health services	Romania_emergency responders	6.99
2	Norway_health services	Norway_emergency responders	12.85
3	Spain_law enforcement	Spain_emergency responders	12.89
4	Spain_health services	Spain_emergency responders	13.56
5	Israel_health services	Israel_authorities	14.28
6	Spain_health services	Spain_law enforcement	16.10
7	Romania_emergency responders	Romania_authorities	16.18
8	Norway_emergency responders	Norway_authorities	17.20
9	Spain_emergency responders	Spain_authorities	17.71
10	Norway_health services	Norway_authorities	17.88
11	Romania_health services	Romania_authorities	18.45



12	Spain_law enforcement	Spain_authorities	20.13
13	Norway_law enforcement	Norway_emergency responders	20.23
14	Israel_health services	Romania_emergency responders	20.78
15	Israel_health services	Romania_health services	20.94
16	Spain_health services	Spain_authorities	21.16
17	Israel_health services	Romania_authorities	22.00
18	Norway_law enforcement	Norway_authorities	23.16
19	Norway_authorities	Spain_authorities	24.08
20	Norway_health services	Spain_health services	24.33
21	Israel_health services	Spain_health services	24.51
22	Israel_authorities	Spain_health services	25.15
23	Israel_health services	Spain_emergency responders	25.43
24	Norway_emergency responders	Spain_health services	25.69
25	Israel_authorities	Spain_emergency responders	25.74
26	Norway_authorities	Spain_health services	25.97
27	Norway_authorities	Spain_law enforcement	26.04
28	Norway_health services	Norway_law enforcement	26.22
29	Norway_emergency responders	Spain_law enforcement	26.56
30	Norway_health services	Spain_emergency responders	26.63
31	Norway_health services	Spain_law enforcement	26.72
32	Israel_authorities	Romania_authorities	26.83
33	Norway_authorities	Spain_emergency responders	26.83
34	Israel_health services	Norway_health services	27.08
35	Israel_authorities	Norway_health services	27.57
36	Israel_authorities	Romania_emergency responders	27.69
37	Norway_health services	Spain_authorities	27.74
38	Norway_emergency responders	Spain_emergency responders	27.84
39	Israel_health services	Spain_law enforcement	28.00
40	Israel_authorities	Romania_health services	28.17
41	Norway_emergency responders	Spain_authorities	28.51
42	Israel_authorities	Spain_law enforcement	29.33
43	Romania_health services	Spain_emergency responders	29.72
44	Israel_authorities	Norway_emergency responders	29.89
45	Romania_emergency responders	Spain_emergency responders	29.99
46	Israel_authorities	Norway_authorities	30.07
47	Israel_authorities	Spain_authorities	30.56
48	Israel_health services	Norway_emergency responders	30.66
49	Romania_health services	Spain_health services	30.82
50	Romania_emergency responders	Spain_health services	31.00
51	Norway_law enforcement	Spain_law enforcement	31.04
52	Romania_emergency responders	Spain_law enforcement	31.73
53	Norway_law enforcement	Spain_health services	31.95
54	Romania_authorities	Spain_law enforcement	32.01
55	Israel_health services	Spain_authorities	32.04
56	Romania_health services	Spain_law enforcement	32.46
57	Romania_authorities	Spain_emergency responders	32.68
58	Norway_law enforcement	Spain_emergency responders	32.69



59	Romania_authorities	Spain_health services	32.79
60	Israel_health services	Norway_authorities	32.87
61	Israel_authorities	Norway_law enforcement	34.21
62	Norway_law enforcement	Spain_authorities	34.65
63	Norway_health services	Romania_authorities	35.35
64	Israel_health services	Norway_law enforcement	37.01
65	Norway_health services	Romania_health services	37.33
66	Norway_health services	Romania_emergency responders	37.39
67	Norway_emergency responders	Romania_authorities	37.65
68	Romania_health services	Spain_authorities	39.13
69	Norway_authorities	Romania_authorities	39.13
70	Romania_authorities	Spain_authorities	39.25
71	Romania_emergency responders	Spain_authorities	39.87
72	Norway_emergency responders	Romania_emergency responders	40.41
73	Norway_emergency responders	Romania_health services	41.42
74	Norway_authorities	Romania_emergency responders	42.38
75	Norway_law enforcement	Romania_authorities	42.72
76	Norway_authorities	Romania_health services	43.01
77	Norway_law enforcement	Romania_emergency responders	45.74
78	Norway_law enforcement	Romania_health services	47.21



5 SEMI-STRUCTURED INTERVIEWS RESULTS

5.1 SAMPLE CHARACTERISTICS

The other source of data we used was semi-structured interviews with end-users who are not part of the project. The interviews had multiple purposes, first to identify what authorities and emergency responders need and expect from individuals in society to better handle a crisis (this is what we cover here in D2.1), second to identify communication channels used to disseminate information between authorities and emergency responders and society (the results of this part were included in D2.4), third to find out the solutions emergency responders and authorities use to enhance the interaction between them and society (this part of the results was included in D2.2 and D2.3). The guide for conducting the interviews can be found in Appendix A in D2.4, also the template for collecting the information from the interviews is found in Appendix B in D2.4.

We targeted interviewees from all the countries participating in the project and from different backgrounds (profiles introduced in section 3.3.2). In total, we have 30 interviews, three interviews in France, four in Italy, Sweden, and Spain, and five in Romania, Norway, and Israel. The distribution of the interviewees' jobs is shown in Figure 96. 28 out of the 30 interviewees were males, and 2 were females (one from Romania and the other from Norway). The distribution of the number of interviews per each profile in each country is shown in Table 14.

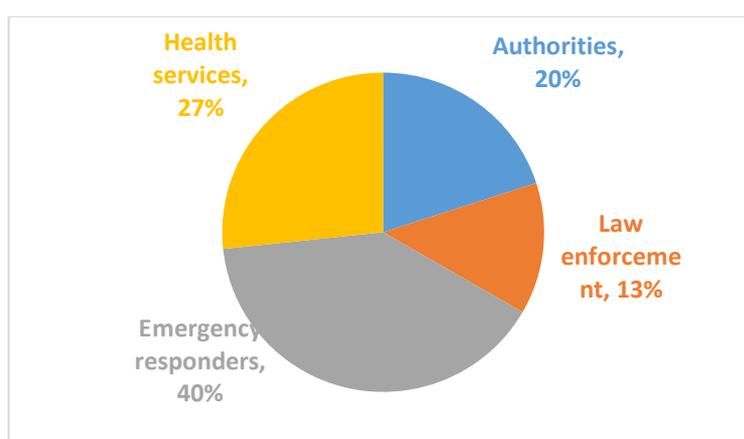


Figure 96 Percentage of interviews per job profile

Table 14 Number of interviews per profile per country

Country	Authorities	Emergency responders	Law enforcement	Health services
France		2		1
Israel	2	2	1	
Italy	2		1	1
Norway	1	2	1	1
Romania		3		2
Spain	1	1	1	1
Sweden		1		3
Total	6	11	4	9

5.2 THE ROLE OF SOCIETY IN DEALING WITH CRISES

Most of the responders agree on the fact that society should be involved in managing crises starting from the prevention and preparedness stages until the recovery phase. In general, all the responders believe that civil society has a positive and helpful attitude during the response phase of the crisis. Although their involvement is necessary, the tasks they could help with are limited and they should always act under the instructions and rules established by the authorities and emergency responders. All the interviewees believe that civil society cannot act at the same level as first responders since they do not have enough knowledge and it can be very dangerous. However, they could help significantly in self-organizing themselves and providing mutual assistance to each other so that, first responders can focus on responding to the event and assist the victims that are in bad need of help.

Two members in Spain highlighted that in general people place the entire burden of crisis response in the hands of first responders and authorities and they wait and expect that first responders will help to solve all their problems. In this aspect, civil society should not expect that first responders and authorities will be able to solve all their problems, but they should learn how to take care of problems independently and be proactive in self-protection, and self-adaptation to the situation until everything is under control. This way first responders can concentrate on responding to the event and providing help to the most affected people.

Interviewees in Norway emphasize that society can provide primary needs to both task forces and evacuees such as shelter, warm clothes, food, water, etc. Furthermore, they can help in logistical aid and providing some materials as well as their resources to the first responders. Some interviewees pointed out that this help is better coordinated and managed if it is conducted through volunteering organizations. Many times if this support comes spontaneously and at an individual level, the manpower resources required to coordinate all this help is unattainable and consequently useless.

Following the instructions provided by the authorities and first responders is vital to respond in a coordinated way and make society's aid useful. People are often ready to help but this help should be provided under the instructions of crisis managers.

Another important role that the interviewees assigned to the civil society is to be the providers of information and facilitators of gathering information about what is happening at the scene of the event. Normally, civilians are the first in the place of the event and they are the ones that alert first responders about the emergency and explain the situation to the first responders. Apart from this, they can get the information as well as provide photos and videos so that first responder can better understand the scene and allocate the necessary resources.

In addition to this, civilians may provide first responders with local knowledge of what is going on, such as information on what and who is inside a building in the event of a fire, what happened to the injured people, and who they are, and so on.

Interviewees in all countries emphasize the importance of civil society being well prepared prior to the crises, having the essential resources, and having the information about how to act in case of an emergency. One way to accelerate society's preparedness is through a series of training and awareness campaigns launched by the authorities. Another is to promote the value of civilians' involvement in helping first responders. A third way is to have the attitude of being calm during a crisis and to continue life as usual finding creative ways to maintain the routine life as far as possible.

Civil society can help significantly also in the recovery activities restoring ordinary life. An interviewee from Israel provided examples of adapting to the extraordinary situation using the case of COVID-19; emphasizing how businesses adapted to maintain their activities, how schools and universities continue their teaching through online classes, etc.



There were some participants from France and Israel with a more critical view of citizen involvement in emergency management; they believe that society at large creates more inconvenience than the help they offer. They argue that society should stay out of the emergency event and they should let the first responder do their job and let the system work normally responding and recovering from the emergency. From their point of view, civil society just acts as victims of the emergency without any positive role in dealing with disasters.

Finally, one member in Spain suggested that society should be part of the decision-making process of the strategy that should be followed to respond to the crisis. Decisions such as what to prioritize, how the limited resources will be used to deal with the event etc. should be agreed upon with the citizens so they also feel co-responsibility of the taken actions. This is especially important in case of big disasters because resources are limited and first responders need to prioritize where they will focus their efforts and they might not fulfil the expectations of the majority of the society.

We also asked the participants what society does incorrectly. In this aspect, one of the most reported problems was the difficulty to coordinate and manage all the spontaneous volunteers that have no specific training but want to help. Countries are not prepared to handle them and they do not have enough personnel to deal with this problem. Related to this problem, people sometimes blocked roadways to reach the crisis area while trying to help and this makes it difficult for first responders to access the disaster zone. In addition, people try to help in dangerous situations and this creates even more problems for the responders. Therefore, they emphasized that it is of utmost importance that people listen and follow the instructions of first responders and authorities.

Some interviewees criticized that people are not getting ready and prepared enough before the event, and most of them wait until the event happens and then think about what to do. Therefore, in general, interviewees believe that the preparation stage is critical to being able to react appropriately in the event of a disaster. Related to this, especially in rural areas, some people are reluctant to leave their assets (their houses for example) even if first responders warn them and this can put them in danger.

Some interviewees in Israel emphasized that when people have no trust in the leadership of the country, citizens might promote destructive criticism and attitude towards the crisis managers. They organize demonstrations against the act of crisis managers and they may be aggressive towards first responders. Therefore, the society shall trust the authorities and first responders so that when a crisis occurs civil society follows the instructions provided by crisis managers and have a supportive attitude and avoid any opposition against the response to the crisis.

In summary, the emergency organizations and authorities believe and expect that civil society should have the following roles when dealing with crises:

- Act under the instructions and rules of the authorities and emergency services and follow their recommendations,
- Limit their activities to the ones they could do and do not put themselves at risk,
- Self-organize themselves and provide assistance to each other,
- Civil society should not expect that emergency responders and authorities will solve all their problems; they should learn how to solve problems independently and be proactive in self-protection, and self-adaption to the situation,
- Provide primary needs to both emergency services and evacuees such as shelter, warm clothes, food, water, etc. Also, help in logistical aid,
- Join volunteering organizations to better coordinate and manage all their effort,
- Provide information and facilitate the process of information gathering about the disaster situation,
- Alert the emergency services when a disaster occurs,



- Provide emergency organizations and authorities with local knowledge about the event and the involved people,
- Be well prepared before the crises, having essential resources, knowing how to act in each case, etc.
- Be calm during the crises and try to continue life as usual
- Help to restore ordinary life: how business should be adapted, how schools should be adapted, etc.
- Be part of the strategical decision-making processes to feel the co-responsibility of the taken actions.

5.3 INVOLVEMENT OF THE SOCIETY DURING THE LIFECYCLE OF THE CRISIS

The interviewees were asked to explain how the involvement of the civil society should be in the different stages of the crisis lifecycle: before, during, and after the crisis. Furthermore, we asked them to prioritize in which phase they consider the involvement of the civil society is more important. Based on this prioritization, the most critical step for civilians to be involved in, according to 12 out of 30 interviewees, is before the crisis arises. They believe that in this stage civil society can prepare and be aware of their potential contribution in case of a crisis.

Four people think that society's involvement is more important during the crisis since this is help is most needed. Finally, four more people agree that society's position is important for the recovery stage in order for them to return to normal life. Two people think that society's involvement is necessary for all the phases and 10³ people did not answer this question specifically. Following, how the involvement of the civil society should be in the three stages is described.

5.3.1 SOCIETY'S INVOLVEMENT BEFORE THE CRISIS

All the interviewees stated that it is necessary that the civil society is prepared and know how they can help first responders. Civil society should know what is expected from them and be familiar with some basic activities to perform in emergencies. Many interviewees consider this stage, before the crisis occurs, as the most crucial stage in terms of society's involvement.

Some specific activities that the participants believe society can do are:

- gather information about how to respond in case of a crisis such as when and how to evacuate, and who to contact,
- be knowledgeable about potential risks (risk awareness),
- follow the instructions and recommendations provided by the first responder and authorities,
- self-prepare and be ready for the time a crisis occurs (having water, food, attending training sessions),
- be mentally ready for being in a crisis
- join a voluntary organization or initiatives such as volunteering in police patrol.
- attend exercises with first responders especially for the most common risks.

Furthermore, one interviewee suggested having signs in place before the crisis occurs to guide people on how to behave in case of a crisis. Education was mentioned by several interviewees as a

³ The numbers add to 32, this is because 2 of the interviewees chose both crisis phases, before and after.



key factor in improving civil society's participation in crises. Civil society should be taught how to act in times of crisis, beginning with early childhood, and learn some simple rules and strategies for dealing with crises. Which will provide first responders and authorities with more valuable tools to tackle a crisis.

Education will also help civil society become more conscious of potential risks in their area, resulting in a "risk culture". To accomplish this, it is necessary to enhance contact with society by establishing a proper framework to reach the entire society and systematically providing adequate and valuable information.

5.3.2 SOCIETY'S INVOLVEMENT DURING THE CRISIS

The involvement of the civil society during the event should be more oriented towards providing support to the first responders and authorities so that they can better deal with crises. People can help first responders by contributing materials, providing resources such as first-aid supplies, and standing in solidarity with other members of the community. Additionally, caring for the evacuees and volunteering to help victims are some of the crucial tasks that civil society can be of utmost importance for the first responders.

It is essential that civil society assists in informing and reporting on the disaster. Many times, society is the first to notify first responders of the existence of a disaster, providing them with more timely and comprehensive information. One interviewee in Norway stated that they have a system to connect to the video of the user's smartphone to properly gather and describe the situation and evaluate the severity level of the disaster to assess the required resources to handle the situation. In some cases, the civilians in place of the event can provide a rapid response if they are well prepared that can significantly lower the effects of a disaster.

However, most of the interviewees emphasized that civil society should be cautious and respectful towards authorities and first responders during the emergency and they should follow their instructions. Being informed and alert about the situation and adhering to authorities' recommendations are fundamental to avoid amplifying the effects of a disaster.

Finally, an interviewee from Spain proposed that civil society be involved in the decision-making process about the response strategy to the incident so that civil society shares the responsibility of this decision. The aim of this action is to prevent potential criticism about how the crisis was handled and to educate society about the challenges that come with crisis management.

Although most of the interviewees think that the involvement of civil society is important to deal with a crisis, there are a few that think the civil society cannot provide much help and they should stay out of the crisis event.

5.3.3 SOCIETY'S INVOLVEMENT AFTER THE CRISIS

Following the crisis, interviewees believe that society plays an important role in resuming normality. First responders are more focused on handling the event (the during phase) but not so much in the recovery phase, coming back to normal life. Given this society can play an important role. First of all, civil society must understand that crises have some implications that require some time to manage and they have to get used to living with such consequences; whether they are economic, social, or mental ones.

In this context, society may show solidarity by initiating charitable endeavours and assisting the most vulnerable members of society. One interviewee from Italy corroborated that the presence of strong community networks makes it possible to face emergencies and cope with disasters much better than in places where such networks do not exist. Society helps significantly reducing the recovery time of the disaster.



Apart from this, society needs to embrace lessons learned in a post-stage and learn from them so that when the next crisis comes civil society is better prepared to handle it. In this vein, people should understand what they miss and how they could improve for the next crises. For example, if they found out that they lack first aid knowledge during the crisis, afterward, they should look at how to gain this knowledge. Therefore, civil society should be involved in debriefs by the authorities so they can provide their perspective and see how to improve the partnerships with the authorities and first responders to be better prepared and be more resilient.

Furthermore, exercises to maintain risk awareness is essential. Being informed and able to evaluate the risk in case of a similar problem would help to prevent the same mistakes. Finally, one interviewee from Romania highlighted that appreciation from society is important for the morale of the first responders and their future interventions. Sometimes, crises harm the first responders (i.e. mental, psychological, etc.) and any kind of support from the community helps in those moments. This negative impact is illustrated in many countries especially among the first responders from the health sector due to the current COVID-19 situation.

5.4 NEEDS AND EXPECTATIONS

After analysing the role of civil society and its involvement in the different stages of the crisis lifecycle, we asked the interviewee what they need and expect from individuals in their societies to better deal with disasters. These needs and expectations were divided into the three constructs defined in the survey: public capacities, trust and responsibility, and communication. Below, we explain the needs and expectations collected from the participants.

5.4.1 NEEDS AND EXPECTATIONS IN PUBLIC CAPACITIES

Within this group we include the needs and expectations identified by the interviewees regarding the following purposes: to enhance preparedness, to facilitate resources allocation, to capitalize on social networks and relationships, and to promote society's involvement. In the following sections, the needs and expectations identified for each purpose are explained.

5.4.1.1 *Needs and expectations to enhance society's preparedness*

Many interviewees said that civil society must understand that it is responsible for planning for possible threats and cannot rely solely on first responders and authorities to handle everything during a crisis.

A participant from Spain explained that at the international level, they do a lot of preparation campaigns to be ready when a crisis occurs. At the national level, however, they do not do this kind of preparation because people are accommodated with the state of rights they have at the national level. In his opinion, people need to know that the first responders have limited resources and emergency services cannot reach the whole society.

Therefore, most of the interviewees agree that, before the crisis occurs, civil society should prepare for potential crises. Before the crisis, civil society should pay attention to self-readiness campaigns to protect themselves; both in terms of resources (water, food, etc.) and mentally. In this aspect, first responders and authorities can play an active role, distributing information about how civil society can self-prepare as well as how they should act in different scenarios. They can give practical examples from past emergencies so that society can get clear messages about how they should prepare. In addition, civil society should engage in various stages of preparedness activities so that they are more conscious of and better prepared to cope with crises. Finally, many interviewees agreed that education is key for the preparation of civil society and establish a well-prepared society at the country level.



5.4.1.2 Needs and expectations to facilitate resources allocation

In order to be able to get resources in case of a crisis, some interviewees agree that it is necessary to sign cooperation protocols before the event with the civil society organizations to know what resources they have and the knowhow they can provide (e.g. social workers, psychologists, off-road cars, search and rescue dogs, radio-amateurs, first aid, etc.). Furthermore, it is also interesting to develop some networking in the local area in order to better understand the territory when an event happens and to provide better assistance. Citizens are extremely valuable because they are the ones who are most familiar with the place and can assist emergency services in coping with the disaster. The use of social media to ask for specific resources can also be a good channel to obtain the needed resources from the community members. Normally, people are willing to help and people respond very well to these calls and therefore, they sometimes receive too much help and they have difficulties managing all these resources.

Some interviewees clarified that since first responders' resources are restricted in time, they should be used more during the incident, which is the phase that needs their skills and experiences the most. After the event, first responders rely on civil society for the recovery process and their intervention is very limited. Although the interviewees acknowledged that they miss opportunities to engage the civil society more in response activities by performing simple tasks, they justified this by stating that handling and organizing all of these spontaneous and disorganized volunteers to support them is extremely difficult. It requires a huge effort and resources from first responders to do this kind of management. Additionally, acquiring resources from external organizations without prior planning is difficult to handle. As a result, interviewees questioned how useful these spontaneous and disorganized external resources are. They suggested that these volunteers should aim to be integrated into already established voluntary organizations to be able to utilize their capacities more efficiently in coping with crises.

5.4.1.3 Needs and expectations to involve civil society and capitalize on social networks and relationships

Most of the interviewees agreed on the fact that civil society can be very helpful in performing simple tasks before, during, and after the emergency. Before the crisis, an interviewee from Israel wished to promote the existence of a community policeman who will assist in the resolution of minor civil society problems.

Interviewees believe that in general, crises help to promote social networks and relationships among the population. Furthermore, NGOs such as Red Cross in Spain, are aware of vulnerable people, who are more isolated and need help. This way during crises they can focus their efforts on helping and giving support to these people.

One of the comments that arose more than once was the need for self-organizing the spontaneous volunteers. People normally want to help, however, organizing them is a huge work and this cannot be done by first responders. Unorganized volunteers should manage themselves preferably through organized voluntary organizations to be useful for dealing with crises.

Although most of the interviewees believe that in general society is willing to help, there was one interviewee in Spain that he pointed out that sometimes the current society is very individualistic and selfish, and it is hard to incorporate this cooperation and mutual assistance culture among them. He suggested that education is vital to establish this culture of cooperation and help among the civil society and this is many times achieved through different existing communities such as hunters collectives, youth collectives, sports collectives, etc.

5.4.2 NEEDS AND EXPECTATIONS IN COMMUNICATION

Within communication, we include the needs and expectations related to communication between emergency services and authorities with the civil society, information and knowledge sharing, and



the enhancements of society's risk awareness. Below, the needs and expectations defined for each purpose are described.

5.4.2.1 Needs and expectations to improve communication

All the interviewees agreed on the importance of proper communication with civil society in order to avoid unwanted conflicts and improve society's trust towards first responders and authorities. However, it is not straightforward knowing how this communication should be done and most of the time the first responders do not have the proper skills to do it. One of the interviewees in Spain suggested creating a new figure responsible for communicating with society. A role like a "Chief Information Officer" could be created who would be in charge of informing the society about the event. Involving civil society organizations in crisis management activities is also essential to improve communication and increase transparency with society. In addition, it is also of utmost importance to continuously communicate with the media since they are actively looking for information and if they do not get them from the official source they will search in unofficial sources which might be fake news.

Authorities and first responders are responsible for communicating with society what is legal and what is not so people know what they can or cannot do. However, in order for this communication to be successful, society must at least subscribe to one of the relevant information media outlets in order to stay informed, as well as download and use relevant apps or media channels that enable access to the latest information. These apps and channels allow multidirectional sharing of information so they can facilitate a conversation between a civilian and a first responder. Although these platforms that allow bi-directional communication are not available everywhere, most of the countries and entities have them.

Although these apps and platforms are more and more used by civilians when an emergency occurs people usually call the emergency services to ask for help. Therefore, the interviewees emphasize that it is important that the public know who to call; municipalities must inform the public about the right line of contact in case of an emergency.

Civil society is a very useful source to get information about the emergency and assess the magnitude of the event so that first responder can make a proper allocation of resources. In this aspect, most of the interviewees considered it necessary that civilians share with first responders the pictures and videos they got from the place of the disastrous event. For this information to be useful for first responders, people must know what type of information the central operator needs and why. Furthermore, society can also provide information about their community and neighbours that is vital for the first responders. For example, an interviewee from Spain explained to us that once, there was a fire in a touristic area and a house was on fire and they did not know if there was any person inside. People nearby informed the firefighters that this house was owned by a couple from the Netherlands and they were not in the house at that moment. This information was critical for first responders to save the situation.

Finally, one member from Spain highlighted the importance of listening to society, and to achieve this, it is useful to use social media and digital channels using some keywords. This way emergency services can identify what society (each profile) is asking or demanding and they can try to fulfil these needs. These channels can also be used to ask for help or to ask the civil society for different resources they might need to fight against a disaster.

5.4.2.2 Needs and expectations to enhance risk awareness

Many interviewees agree that raising society's risk awareness is important for better disaster response. Society must be able to recognize when a crisis is likely to arise and react appropriately. Furthermore, civil society should be aware of what is required of them in the event of a crisis so that they can act accordingly. In order to achieve this, most of them agreed on that education has an essential role in preparing future civil society to deal with disasters and being aware of them. If society is aware of the risks, it will be able to recognize early warning signs and quickly be in a state



of alarm, preventing a major catastrophe and reducing its effects. Although this process should start from the schools, the risk awareness process is never finished, and therefore, society needs to learn continuously. Campaigns to inform society about the type of risks, self-readiness campaigns, and carrying out some emergency drills to inform people about the risks are some of the proposed activities by the interviewees to enhance society's risk awareness.

In this sense, authorities and first responders should inform and transmit messages to civilians about the possible types of disasters and emergencies, and involve them in crisis management activities. Some interviewees argue that sometimes society does not know the specific risk associated to the area they live in and the reason for this is often linked to the lack of centralized information sources. An interviewee in France described the following example: if you buy a house in France next to a nuclear power plant, you are subjected to a specialized rescue plan (plan particulier d'intervention). This information is often casually mentioned the moment you buy the house, but not before, nor afterward. People should have more risk culture and authorities should facilitate access to information about risks. Also, an interviewee emphasized the need to disseminate information about incidents properly. He used the case of a car accident to compare different ways of sharing the information: it is different to say, "the kid sitting in the front seat died" or "the mother sitting in the back did not have the seatbelt, with the impact she killed the boy sitting in the front; if she was using the seatbelt, the airbag would have saved the child".

In this process of getting aware of the risks and knowing what can occur in their living area, it is of utmost importance the proactivity of the civil society. Some interviewees explained that currently there are some apps to send alerts to the citizens about potential risks but for this to be effective, the members of the community need to install these apps on their mobile phones to receive the alerts.

Few interviewees also highlighted that sometimes politicians are reluctant to inform people about the risks since they do not want to alarm society. However, the interviewees believe they need to inform civil society about the potential risks and cannot hide the potential risks. Overall, people need to know the risks that could affect them.

5.4.2.3 Needs and expectations to improve information and knowledge sharing

Sharing information and knowledge about different risks and how we need to behave in each case is essential to improve risk awareness and be better prepared. Therefore, before the crisis occurs we need to share the knowledge and information about potential risks and the emergency plans that will be applied to deal with these risks. The interviewees argued that normally these plans are available publicly in different communication channels such as web pages or mobile applications. However, the challenge is to make these plans reach the civil society so that they are known to them. Therefore, they argue that communication should be multimodal to reach a higher number of people. In this aspect, one interviewee in Sweden explained that schools are a good venue since children transmit this information to their home and discuss these topics at the dinner table.

The information should be centralized and, in this vein, government apps offer a good place to properly organize all the information and to centralize all the alerts both bottom-up and top-down from and to civil society. Furthermore, authorities and first responders should also be able to continuously monitor social media to gather information and to prevent "fake news" from spreading.

Some interviewees commented on the type of information that should be shared with the civil society. Before a crisis, more general information about how to deal with disasters should be communicated, however, during the event more specific information about the current situation should be spread. In this aspect, one interviewee emphasizes that it is important to answer the questions that civil society asks, such as what happens, what is going to happen, how this affects society, etc. Furthermore, one interviewee in France highlighted that many times first responders and authorities need to explain their actions so that society understands how they are dealing with the disaster.

Finally, one interviewee emphasized that using local knowledge is essential to better deal with disasters. The expertise of a local community is important when a disaster occurs, especially in



identifying risks and areas that are prone to new challenges and/or disasters. Involving local people and receiving support from the local community is of utmost importance to properly handle crises.

5.4.3 NEEDS AND EXPECTATIONS FOR SOCIETY'S TRUST AND RESPONSIBILITY

Within this section, we include the needs and expectations identified by the interviewees regarding how society's trust towards first responders and authorities can be improved. As well as how the civil society can be empowered to take part in governance and leadership activities and share the responsibility for the adopted crisis management strategies.

5.4.3.1 Needs and expectations to improve society's trust towards first responders and authorities

It is important that society has confidence in first responders and officials when it comes to crisis management. They will not participate in response and recovery activities if they do not trust them.

All the interviewees agree that building trust is something that should start before the crisis occurs. During this period, first responders and authorities should develop activities that promote trust. For example, sending routine information, answering questions, providing information to keep society posted, being transparent, not hiding information are some of the activities the emergency services and authorities should perform to build civil society's trust. Before the crises, authorities try to create synergies with the society so that they trust them and contact them when they need some help. When emergency organizations and authorities are not working well during quiet times, the public will not trust them during emergencies, and people will not have a helpful attitude. After crises, emergency services and authorities should try to strengthen their reputation in order to increase public confidence in future incidents.

The quality of the services provided by the authorities and first responders to the society is key to increase trust. Doing a good job is essential. However, many interviewees criticized that civil society also needs to understand that the emergency system is based on its human resources, thus the intervention is limited by the human factor. If these aspects are known at the civil society level, trust and perception regarding authorities and emergency services will be improved.

Some interviewees explained that in their area they usually include volunteers within the emergency services. This helps in promoting their activities and improving the relationship of trust and confidence towards authorities and first responder. Similarly, another interviewee in Spain emphasized that before the crises they try to get in contact with local people then local people know them personally and this creates synergies that help during the emergency response.

For the interviewees of the law enforcement background, in some countries, the level of society's trust towards them is quite low. The interviewees believed that this is because sometimes the police are ordered to take some actions to apply the law and this might create a kind of dissatisfaction among society's members. Furthermore, they sometimes need to act against vulnerable groups of people such as drug addicts and this creates a kind of rejection of the police by society. In this regard, an interviewee in Spain thinks that educating people since childhood to understand the role of the police and establishing trust towards them helps in this target.

5.4.3.2 Needs and expectations to empower civilians in governance and leadership

Regarding this aspect, we only got one comment from an interviewee in Spain. He argued that society should be involved in the strategic decision-making process so that they accept and feel the responsibility of the impact their decisions might have in the future. He believed that this way civil society understands better why actions are carried out in a specific way and feels accountable for the impact of the decisions made to face the crisis event. When a crisis arises, it is often necessary to make choices about what will be protected and what will not be protected. In this regard, it is important to consider the views of society so that they can understand the consequences of a



decision and feel responsible for them. Sometimes the difficulties come when there is a conflict of interest among different parties and reaching a consensus is not so straightforward.



6 DISCUSSION

6.1 RISK AWARENESS PERCEPTION OF EMERGENCY ORGANIZATIONS AND AUTHORITIES

Combining the tables about risks in section 4.3, we get Table 15. We can see that in all four countries, members of the authorities have the highest level of risk awareness. This is consistent with the notion that authorities typically have a broader scope of operations to be concerned with; they are not only concerned with one line of functions, such as health services (which are primarily concerned with the medical aspects and well-being of the people) but they have roles in many places; leading, maintaining order, providing public services, national security, and economic security. From the table, we can also find that health services come in the second place of highly concerned entities (in Spain, they come third but with a minor difference between them and emergency responders 0.01).

Moreover, in the four countries and across the four profiles, pandemics is the type of risk everyone is extremely aware of; which is understandable given the current situation of the coronavirus and the bias it introduces, that is why we believe the ones that come in the second place are the most representative one of the common risks a country face. In Israel, there is a consensus among the participants from the two profiles that social disruption is the kind of risk they are concerned about. Extreme weather conditions risk comes in second place in Spain, while this position is associated with nature-related events in Romania. In Norway, the second place is reserved for critical service dependencies.

In general, Norwegian participants are less aware or concerned about the different types of risks compared to respondents from other countries.

Table 15 Mean of risks across Israel, Norway, Romania, and Spain

Type of risk	Israel		Norway				Romania			Spain			
	HS	Auth	HS	LE	ER	Auth	HS	ER	Auth	HS	LE	ER	Auth
Extreme weather	2.52	2.66	3.05	2.14	2.75	3.32	3.48	3.24	3.82	3.76	3.21	3.87	4.04
Nature related events	2.96	3.38	2.75	2.33	2.38	2.79	3.75	3.4	3.68	3.34	2.64	3.44	3.64
Social disruption	3.19	3.21	2.75	2.67	2.75	3.21	3.58	3.17	3.35	3.66	3.67	3.48	3.84
Critical services dependencies	2.97	2.97	3.19	2.38	2.88	3	3.56	3.17	3.82	3.38	3.13	3.46	3.84
Pandemics	3.51	3.38	3.53	2.86	3.28	3.68	3.86	3.51	4.25	4.38	4.05	4.29	4.44
Average	3.03	3.12	3.05	2.48	2.81	3.20	3.65	3.30	3.78	3.70	3.34	3.71	3.96

Auth = authorities, ER = emergency responders, HS = health services, and LE = law enforcement (cells highlighted in green means that this type of risk is in the first rank, in grey: second rank, and in light orange: third rank)

To study to what extent the survey respondents' perception of risk aligns with what is happening in their countries (aside from pandemics), we compiled the data in Table 16 from different sources (Appendix 10.3). In the table, we use the number of deaths per risk type as a proxy⁴ to represent

⁴ This is not a very accurate measure because it does not consider the number of times an event happens and the probability of its occurrence, but it was hard to find enough data to support this kind of analysis.



the effect of different types of hazards on a specific country. The data from the table aligns with the participants' risk perception, in Spain, Israel, and Norway. Only in Romania, a difference exists; the survey respondents are more aware of nature-related events, however, the number of deaths suggests that they should be more concerned about extreme weather-related events.

Table 16 Number of deaths associated with each risk type in the last 20 years

Risk Type	Spain	Israel	Norway	Romania
Extreme weather	826	83	69	768
Nature related events	291	7	19	38
Social disruptions	268	1343	78	0
Critical services dependencies	698	909	850	170
Pandemics	73,744	6,407	781	29,716

6.2 PUBLIC CAPACITIES

Considering the results of the overall results across the four countries Israel, Norway, Spain, and Romania (4.1.3). Regarding the social norms and sense of community construct, the first priority of the emergency organizations and authorities is to follow their recommendations in times of a crisis. This is followed by the need of involving participants in the disaster relief and recovery process. And then, comes the mutual assistance between individuals in a community. Hence, they care about first preventing any danger that could affect the civilians and also eliminating any sort of chaos they could cause by being terrified or even offering their help. After that, they build upon and appreciate the citizens' help in well-defined situations and tasks. Finally, they like them to help each other.

When it comes to coping skills, they prefer that individuals are prepared to face crises and coming up with ideas, techniques ..etc to avoid risks and failures. Then, they believe that having high levels of social solidarity is key to cope with a crisis. This aligns with their third preference which is the social norms construct, which emphasizes the importance of citizens helping each other to properly deal with a crisis. Their third priority is for civilians to find creative ways to alter difficult situations. The fourth is to follow authorities' instructions about the best course of action to take. Although this option is ranked first in the question of the social norms, it comes forth in the coping skills, because it is better to depend on the resilience that is inherent in the people when it comes to coping with a disaster than to follow authorities instructions.

Regarding the preparedness question, again the responders emphasize the importance of the society's involvement in facing a crisis, the item that comes in the first rank is volunteering during and after the crisis to help emergency organizations and authorities. Then they prioritize acquiring the needed resources in the second rank, and in the third, they believe that citizens should have self-adapting capacities.

The last question is the public capacities construct and it is about needed resources to handle an emergency. The survey participants here, focus on the resources that directly impact the living of the individuals, such as, food, water, first-aid knowledge, and medical supplies.

6.3 PERCEPTION OF TRUST AND PERCEPTION OF RESPONSIBILITY

One-third of the members of first responders and authorities in Israel believe that they are the most trusted entity by their society. The other two-thirds think that other entities are trusted more, the governmental authorities, they see that the local authorities are trusted more than themselves; the firefighters, they consider the police to be more trusted; coastguards, believe in the local authorities; and paramedics, they believe in the civil defence over the health services (Table 17). The top four trusted entities in Israel are health services, civil defence, firefighters, and local authorities.

Table 17 Job VS trusted entity in Israel

Job/Trusted entity	National gov.	Regional gov.	Local authority	Civil defense	Firefighters	Police	Coastguards	Health services	NGOs	Society	The media
Governmental authority	20	10	90	80	10	30	0	60	50	20	30
Regional authority	0	100	100	0	0	0	0	100	100	0	0
Local authority	6.25	12.5	81.25	75	56.25	37.5	0	43.75	43.75	25	18.75
Firefighters	0	50	50	25	25	100	25	0	75	25	25
Civil defense	25	0	50	100	25	75	0	75	25	25	0
Police officers	50	50	50	50	50	50	0	0	0	50	50
Coastguards	50	50	100	50	50	50	50	0	0	0	0
Health services	37.7	3.28	44.26	63.93	47.54	39.34	0	85.25	32.79	32.79	13.11
Paramedics	31.25	3.12	40.62	84.38	50	46.88	3.12	81.25	25	12.5	21.88

*All the values are in percentage. The values highlighted in bold corresponds to the perception of trust associated with the responder's job and themselves. The values in red represent the most trusted entity by the members of a specific job

In contrary to Israel, the participants in Norway believe that the police is the most trusted entity by society. 5/7 of the different groups of participants see that people trust the police the most. The other 2/7, one of them is firefighters, who believe that they are the most trusted entity by the society, then the police comes in the second place. The other one is the members of governmental authorities, who do not have a clear rank of which entity is trusted the most (due to the small sample size). Health services and local authorities see themselves in the second place after the police. The four most trusted entities in Norway are police, firefighters, health services, and local authorities.

Table 18 Job VS trusted entity in Norway

Job/Trusted entity	National gov.	Regional gov.	Local authority	Civil defense	Firefighters	Police	Coastguards	Health services	NGOs	Society	The media
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Governmental authority	0	0	0	100	100	100	0	100	0	0	0
Regional authority	50	50	100	0	50	100	0	50	0	0	0
Local authority	61.54	15.38	69.23	30.77	69.23	84.62	0	30.77	15.38	15.38	7.69
Firefighters	56.52	17.39	52.17	26.09	86.96	78.26	0	47.83	8.7	21.74	4.35
Police officers	52.38	9.52	52.38	14.29	71.43	100	0	76.19	4.76	14.29	4.76
Health services	66.67	16.67	58.33	16.67	25	91.67	0	83.33	16.67	8.33	16.67
Paramedics	66.67	0	83.33	16.67	33.33	100	0	66.67	33.33	0	0

**All the values are in percentage. The values highlighted in bold corresponds to the perception of trust associated with the responder's job and themselves. The values in red represent the most trusted entity by the members of a specific job*

In Romania, participants believe that firefighters rank the top in the trusted entities, followed by, health services, police, and civil defence. The only group of participants who does not believe that firefighters are trusted are the ones who work in governmental authorities (sample size limitation). Members of local authorities, civil defence, health services, and paramedics perceive themselves as the most trust entities after firefighters. This is not the case for the members of regional authorities, who believe that health services are trusted more than them (Table 19).

Table 19 Job VS trusted entity in Romania

Job/Trusted entity	National gov	Regional gov	Local authority	Civil defense	Firefighters	Police	Coastguards	Health services	NGOs	Society	The media
Governmental authority	100	0	100	0	0	100	0	100	0	0	0
Regional authority	40	0	60	40	100	60	0	80	20	0	0
Local authority	22.45	5.1	80.61	30.61	88.78	55.1	1.02	72.45	20.41	12.24	11.22
Firefighters	28.5	4.1	38.36	49.3	93.1	62.79	2.8	69.44	19.83	20.17	11.59
Civil defense	25.71	4.29	34.29	77.14	88.57	52.86	2.86	61.43	24.29	18.57	10
Police officers	37.5	12.5	37.5	62.5	87.5	25	0	75	25	25	12.5
Coastguards	0	0	0	100	100	50	0	100	50	0	0
Health services	44.38	5	38.12	28.75	90.62	60.62	3.75	73.12	23.75	16.88	15
Paramedics	29.01	7.38	45.04	41.48	90.84	53.94	3.31	73.79	23.66	21.37	10.18

**All the values are in percentage. The values highlighted in bold corresponds to the perception of trust associated with the responder's job and themselves. The values in red represent the most trusted entity by the members of a specific job*

In Spain, all the participants with different job profiles, believe that the members of health services are the ones who are trusted the most, except for members of civil defence, who consider



themselves as the most trusted entity by the society. Firefighters always come in second place after health services, whether they are alone in the second rank or share the same rank with other entities, for example in the case of regional authorities, they share it with the police. This pattern is the same for everyone except for the members of the police, they believe that they are trusted more than firefighters.

Table 20 Job VS trusted entity in Spain

Job/Trusted entity	National gov	Regional gov	Local authority	Civil defense	Firefighters	Police	Coastguards	Health services	NGOs	Society	The media
Governmental authority	20	20	30	60	80	50	0	90	30	10	10
Regional authority	18.18	54.55	9.09	54.55	72.73	72.73	0	72.73	9.09	27.27	9.09
Local authority	0	33.33	33.33	66.67	66.67	66.67	0	100	0	0	33.33
Firefighters	28	36	32	44	80	36	0	92	16	32	4
Civil defense	30.77	23.08	61.54	100	76.92	38.46	0	46.15	7.69	0	15.38
Police officers	13.16	21.05	21.05	50	60.53	81.58	2.63	89.47	23.68	21.05	15.79
Coastguards	100	0	0	0	100	100	0	100	0	0	0
Health services	31.25	50	25	50	56.25	31.25	0	93.75	12.5	31.25	18.75

*All the values are in percentage. The values highlighted in bold corresponds to the perception of trust associated with the responder's job and themselves. The values in red represent the most trusted entity by the members of a specific job

From the previous discussion, we find that the two entities that are considered to be the most trusted ones by the population in the four countries are health services and firefighters. Furthermore, the majority of the responders do not believe that they are trusted by the public, they are not biased to themselves and they truly choose the ones they perceived as trusted by the population.

Regarding the perception of responsibility, civil defence, health services, national government, and the police are the entities that are considered the most responsible in the face of a crisis in Israel. No one ranks themselves in the first place as the responsible entities except for regional authority and local authority (both of them share the first place with other entities). Interestingly, the members of the police believe that society should be the first entity to be held responsible in the face of a crisis (Table 21). Health services and civil defence are also considered as two of the top four most trusted entities.

Table 21 Job VS responsible entity in Israel

Job/responsible entity	National gov	Regional gov	Local authority	Civil defense	Firefighters	Police	Coastguards	Health services	NGOs	Society	The media
Governmental authority	40	20	70	80	20	30	20	70	0	30	20
Regional authority	100	100	100	0	0	100	0	0	0	0	0



Local authority	68.75	18.75	68.75	62.5	12.5	68.75	12.5	50	18.75	18.75	0
Firefighters	25	0	50	75	25	75	50	25	50	25	0
Civil defense	75	0	75	50	25	75	25	50	0	0	25
Police officers	0	0	0	50	50	50	50	50	0	100	50
Coastguards	50	50	100	100	50	0	0	0	50	0	0
Health services	75.41	26.23	47.54	49.18	16.39	44.26	14.75	57.38	32.79	16.39	19.67
Paramedics	59.38	12.5	43.75	78.12	37.5	46.88	3.12	71.88	25	12.5	9.38

*All the values are in percentage. The values highlighted in bold corresponds to the perception of responsibility associated with the responder's job and themselves. The values in red represent the most responsible entity by the members of a specific job

In Norway (Table 22), none of the entities hold themselves responsible in the face of a crisis except for governmental authorities (sharing this with another three entities) and the police. In contrary to Israel, the three types of authorities are considered to be the most responsible entities to handle a crisis, preceded by the police. The police and local authorities are among the top four in the most trusted entities in Norway.

Table 22 Job VS responsible entity in Norway

Job/ responsible entity	National gov.	Regional gov.	Local authority	Civil defense	Firefighters	Police	Coastguards	Health services	NGOs	Society	The media
Governmental authority	100	0	100	0	0	100	0	100	0	0	0
Regional authority	100	50	100	0	50	50	0	50	0	0	0
Local authority	76.92	53.85	76.92	30.77	30.77	84.62	0	23.08	0	15.38	7.69
Firefighters	78.26	56.52	86.96	17.39	39.13	78.26	0	26.09	8.7	4.35	4.35
Police officers	85.71	33.33	71.43	19.05	28.57	100	0	47.62	0	0	14.29
Health services	83.33	83.33	66.67	16.67	8.33	83.33	8.33	25	0	16.67	8.33
Paramedics	50	33.33	100	0	33.33	83.33	0	66.67	16.67	16.67	0

*All the values are in percentage. The values highlighted in bold corresponds to the perception of responsibility associated with the responder's job and themselves. The values in red represent the most responsible entity by the members of a specific job

In Romania (Table 23), almost all the profiles believe that firefighters are the ones (coming in the first place) who should be responsible in crises, except for members of regional authorities who believe that local authorities should be held accountable. The top four most responsible entities in Romania are firefighters, health services, police, and local authorities. The first three entities are also the most trusted ones.

Table 23 Job VS responsible entity in Romania

Job/ responsible entity	National gov	Regional gov	Local authority	Civil defense	Firefighters	Police	Coastguards	Health services	NGOs	Society	The media
Governmental authority	100	0	50	0	100	50	0	100	0	0	0
Regional authority	40	0	100	20	80	40	0	60	40	0	20
Local authority	45.92	6.12	81.63	25.51	84.69	58.16	1.02	64.29	13.27	11.22	8.16
Firefighters	45.54	11.25	44.73	43.15	88.72	64.69	2.11	63.44	12.09	15.08	9.2
Civil defense	47.14	7.14	40	71.43	87.14	58.57	2.86	60	10	10	5.71
Police officers	25	12.5	50	75	87.5	37.5	0	75	12.5	25	0
Coastguards	50	50	50	50	50	0	0	50	50	50	0
Health services	63.75	10.62	47.5	27.5	85	68.75	1.88	63.75	11.25	11.25	8.75
Paramedics	43.26	13.23	47.84	36.64	85.75	63.36	2.8	68.45	13.23	15.52	9.92

*All the values are in percentage. The values highlighted in bold corresponds to the perception of responsibility associated with the responder's job and themselves. The values in red represent the most responsible entity by the members of a specific job

From Table 24, we find that all the participant whatever their job they see that one of the authorities should be responsible in the face of a crisis, except for the members of the governmental authorities, they believe that the members of civil defence are the ones that should be in charge while handling an emergency. Only the participants from regional authorities are the ones who see themselves as the accountable ones. Similar to Norway, the Spanish participants believe that the three authorities are the entities that should be responsible in disaster times, followed by health services. Moreover, the health services unit is one of the top four trusted entities in Spain.

Table 24 Job VS responsible entity in Spain

Job/ responsible entity	National gov	Regional gov	Local authority	Civil defense	Firefighters	Police	Coastguards	Health services	NGOs	Society	The media
Governmental authority	60	70	50	80	30	30	0	50	10	0	20
Regional authority	81.82	90.91	72.73	54.55	9.09	27.27	0	36.36	0	9.09	18.18
Local authority	100	100	66.67	33.33	0	33.33	0	66.67	0	0	0
Firefighters	80	80	60	40	36	24	0	32	4	28	16
Civil defense	92.31	84.62	84.62	76.92	7.69	7.69	0	15.38	0	15.38	15.38
Police officers	86.84	73.68	65.79	26.32	10.53	39.47	0	42.11	5.26	21.05	28.95
Coastguards	100	100	0	100	0	0	0	0	0	100	0
Health services	75	81.25	50	43.75	18.75	12.5	0	56.25	12.5	31.25	18.75



**All the values are in percentage. The values highlighted in bold corresponds to the perception of responsibility associated with the responder's job and themselves. The values in red represent the most responsible entity by the members of a specific job*

To summarize the above discussion, we find that Norway and Spain are similar in the sense that the participants from both countries believe that authorities are the responsible ones in emergencies and hardships. On the other hand, respondents from Romania and Israel, agree that emergency responders (either the group of firefighters in the case of Romania, or civil defence in the case of Israel), health services, the police, and finally one of the authorities (national government in Israel, and local government in Romania) are the ones who should be in charge in the face of a crisis.

At least two of the top four most trusted entities in Israel, Romania, and Norway are also part of the most responsible entities. In Romania, we see that health services, firefighters, and the police belong to both the most trusted and most responsible entities. In Israel, we have health services and civil defence. While in Norway, police and local authorities appear in both the most trusted and the most responsible entities.

6.4 SIMILARITIES

In sections 4.2.6 and 4.3.5 we showed the results of the similarity analysis we conducted between different countries and different job profiles. We based our analysis on the Euclidean distance, considering that each point is presented by the scores associated with each question. For example, if we are calculating the distance between Spain and Norway in the resources to face a crisis question, then we have a 10-dimension space (each dimension represents an option in the question), and we calculate the distance between both countries considering these 10 dimensions. We found some differences between the distance pairs between job profiles (same applies for countries), this difference could be quite large in some cases (in section 4.3.5), the minimum distance is 7 and the maximum is 47.2). We did further analysis to explore if this difference is significant or no, however, based on our analysis and the comparison of ranks produced by each country/profile, we cannot conclude that this difference is significant.

6.5 SEMI-STRUCTURED INTERVIEWS

Almost all the interviewees believe that in general, society has a positive and helpful attitude and is ready to support in dealing with crises. This willingness increases significantly in case of big disasters. However, one of the most common and repeated problems that appeared in all the interviewed countries is the difficulty to properly organize and manage all the help that comes from spontaneous and disorganized volunteers. Organizing them requires a huge effort and therefore, the interviewees requested the need for these people to self-organize, preferably through already existing volunteering groups. This would allow first responders to just focus on responding to the event and dealing with the most affected victims without the need of having to cope with the overall population.

When it comes to the types of tasks that civil society could perform in crises, the interviewees stressed the importance of simply assigning basic tasks that are helpful to both first responders and impacted victims, such as providing food and water, providing shelter, assisting with logistical issues, and providing resources. Civilians may try to assist emergency responders in handling an incident, but they may be injured due to a lack of specific knowledge and experience about how to cope with crisis situations, according to the interviewees. Therefore, they argued that civilians should not be involved in response activities in place since this can amplify the impact of the disaster. Civil society should always follow the instructions and rules provided by first responders and authorities since this way the response and recovery will be faster and safer.



Finally, the interviewees emphasized the need for the civil society to be well prepared before the crisis, so they are aware of the potential risks and they know how they should act in case of an event. Their role is also very important for the recovery and restoration phase since they can facilitate the process of coming back to normal life. Most of the interviewees stated that civil society is a good source of information since they can help first responders and authorities to gather information about the event and also specific knowledge about the local community in terms of the affected area and its characteristics and the special needs for vulnerable people. Therefore, strong collaboration and networking of emergency services and authorities with the local community is essential to facilitate this cooperation when a crisis occurs.

After the analysis of the needs and expectations gathered from the survey and the ones gathered from the interviews, we can say that there is a consensus on what authorities and emergency services expect and need from the civil society to better response to crises. Following the instruction provided by emergency organizations and authorities, the willingness to volunteer in simple tasks, providing mutual assistance to the civilians, being prepared, having self-adapting and self-organizing capacities, being solidary with the people, having first-aid basic resources, sharing credible and key information fast, knowing the emergency plans and executing them, and trusting the emergency services and authorities are the most important needs that we obtained from both sources of information.

6.6 CITIZENS' VS AUTHORITIES AND EMERGENCY ORGANIZATIONS' PERCEPTION

In this sub-section, we will discuss how the authorities' and emergency responders' needs and expectations (this deliverable D2.1) aligns with society's perception about the current societal resilience situation (D1.2). We will address this mapping considering the four main constructs of the survey risk awareness, perception of trust and responsibility, public capacities, and communication and information sharing. We are also considering the overall/aggregated results in both deliverables.

6.6.1 RISK AWARENESS

We compare the results depicted in Figure 8 of D1.2 (check Figure 97) with Table 2 of this report. We can see the pandemics has the highest level of awareness with both citizens and public services and authorities. This is explainable by the recency and worldwide nature of the crisis. Concerning natural hazards and extreme weather events, we notice they have the same rank from both perspectives (WP1 and WP2). The only difference is that from the citizens' point of view, they are more aware of critical infrastructure failures than social disruptions, however, it is the other way around for emergency responders and authorities.

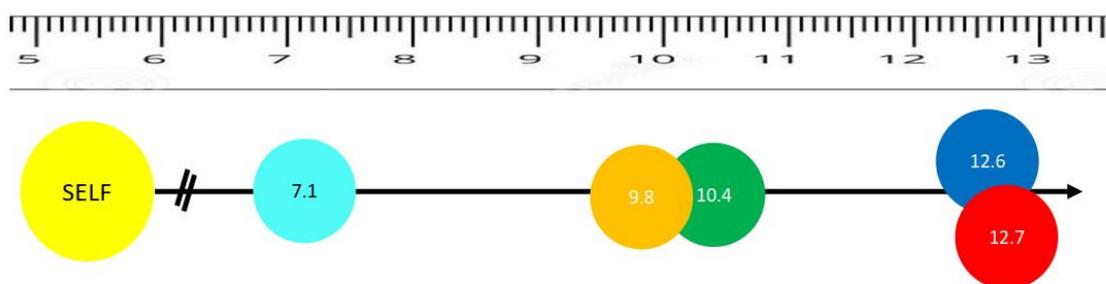


Figure 5. Results of the iPRISM tool assessing risk awareness through distances assigned by participants between themselves (yellow "SELF" disk) and specific risk objects (Light blue: Pandemics, Orange: Critical infrastructure fail (water, energy), Green: Social disruption (e.g., war), Blue: Natural Hazard (e.g., earthquakes), and Red: Extreme weather). N=4,013.

Figure 97 Citizens perceptions toward risk awareness (copied from D1.2)

6.6.2 PERCEPTION OF TRUST AND RESPONSIBILITY

For the perception of trust, we performed a comparison between the data reported in Table 9 of D1.2 (Table 25) with the contents of Figure 5 of this report. The three most trusted organizations by the public are the emergency organizations the health services, and civil defence. This result of D1.2 is difficult to compare with the results of this report because the trusted entities are divided differently in the two surveys. However, we can say that both the citizens and authorities trust health services, civil defence, and emergency organizations (considering firefighters and police). As for emergency organizations, an interesting result can be observed. Although the citizens highly trust them, their scores for the trust in citizens were very low.

Table 25 Citizens perception of trust (copied from D1.2)

Table 9. Distribution of responses and mean scores of levels of trust items (N=4,013)

	Please rate the level of trust you have in the following institutions:	Not at all	A little	Somewhat	Much	Very much	Mean (±SD)
23.	The government	25.3%	25.6%	28.7%	15.7%	4.8%	2.49 (±1.17)
24.	The civil <u>Defense</u> /protection	5.8%	20.4%	34.4%	30.4%	9.0%	3.16 (±1.04)
25.	The local authority	10.1%	20.7%	42.4%	21.2%	5.6%	2.91 (±1.02)
26.	The emergency organizations	3.9%	11.7%	26.6%	39.6%	18.1%	3.56 (±1.04)
27.	The politicians	41.9%	26.7%	20.9%	7.3%	3.2%	2.03 (±1.10)
28.	The media	23.5%	32.5%	29.9%	10.6%	3.4%	2.38 (±1.06)
29.	Community organizations (such as NGOs, <u>Neighborhood</u> , or religious organizations)	10.7%	21.6%	38.8%	21.7%	7.1%	2.93 (±1.07)
30.	Health services	5.2%	12.5%	32.4%	35.0%	14.9%	3.42 (±1.05)

Concerning the perception of responsibility (Figure 6 in this report and table 10 in D1.2 –shown in Table 26 here-), the first result that calls attention is that citizens believe that health services should be responsible in the face of a crisis (this could be biased by the current situation) and then they assign the responsibility to the government. However, from the authorities' and emergency responders' point of view, the national government then the police are the ones who should be responsible for handling a crisis.

Table 26 Citizens perception of responsibility (copied from D1.2)

Table 10. Distribution of responses and mean scores of levels of assigned responsibility items (N=4,013)

	To what extent do you think the following are responsible to prepare to emergencies?	Not at all	A little	Somewhat	Much	Very much	Mean (±SD)
31.	The government	8.3%	8.4%	14.9%	30.2%	38.2%	3.81 (±1.26)
32.	The civil <u>defense</u>	3.7%	9.4%	23.8%	34.7%	28.3%	3.74 (±1.08)
33.	The local authority	4.3%	8.2%	23.2%	37.0%	27.3%	3.75 (±1.08)
34.	The health services	3.1%	6.5%	21.2%	37.6%	31.6%	3.88 (±1.03)
35.	Your community	5.3%	15.8%	39.5%	26.6%	12.8%	3.26 (±1.04)
36.	Yourself and your family	3.5%	10.7%	34.0%	31.7%	20.0%	3.54 (±1.04)

6.6.3 PUBLIC CAPACITIES

Although the questionnaire used in the survey explained in D2.1 is quite similar to the questionnaire used in the survey carried out in D1.2, there are some differences and therefore, it is not possible to compare all the items.

Regarding the first item, social networks and sense of community, we compare the results in Figure 3 in D2.1 with the results in Table 2 in D1.2 (see Table 27). If we calculate the scores calculated for each option in D2.1, we can see that the most important need for emergency organizations and authorities is that individuals follow the recommendations of authorities and emergency organizations, the second one is that individuals participate in the response and recovery activities and the third one that Individuals count on mutual assistance and people care for one another in a crisis. If we compare these needs with the current situation assessed in D1.2, we can see that the option with the highest percentage in the agree column is the one about following the recommendations of authorities and emergency organizations, followed by mutual assistance, and finally, having a sense of belonging to my community. So we can conclude that in general, there is an agreement –to an extent- within the two perspectives.

Table 27: Summary of the percentages obtained in the item social networks and sense of community in both surveys

Social networks and sense of community	D2.1	D1.2
Item	Percentage	Percentage
Sense of belonging	11.52	48.30
Trusting the community	12.6	41.20
NGOs recommendations	13.19	46.00
Mutual assistance	18.94	48.20
Participation in recovery	20.72	43.20
Authorities' recommendations	23.03	55.50

Regarding the item about coping skills, we compare the results in Figure 3 in D2.1 with the results in Table 3, Table 11, and Table 14 in D1.2 (see Table 28). In this case, the questions are not formulated 100% the same and they are divided into different tables. Regarding the needs and expectations from emergency services and authorities, we can see that individual being prepared is the most voted choice followed by individuals having a high level of social solidarity, and looking for creative ways to alter difficult solutions. However, regarding the current assessment made in D1.2, society is strong in growing in positive ways by dealing with difficult situations, followed by looking for creative ways to alter difficult solutions and bouncing back after illness, injury, and other hardships.

Table 28: Summary of the percentages obtained in the item coping skills in both surveys

Coping skills	D2.1	D1.2
Item	Percentage	Percentage
Reaction control	7.48	55.90
Believing in social justice	7.7	32.9
Optimism	7.84	37.6
Bouncing back	8.83	59.2
Handling difficulties	8.95	61.20
Engagement upon recovery	11.14	58.0
Authorities instructions	11.33	-
Creative ways	11.49	59.50
Social solidarity	12.56	38.8
Being prepared	12.68	47.8

In order to compare the resources to face a crisis, we compare the results in Figure 3 in D2.1 with the results in Table 4 (see Table 29). Emergency organizations and authorities believe that individuals should have four day supply of non-perishable food, first-aid knowledge, and at least 3 litres of water per person as basic resources to face a crisis. The data collected in the survey in D1.2 shows that the resources that most people have are medical needs for family members, a smartphone with a portable charger, and a four-day supply of non-perishable food. Here, we can see a clear difference between both perspectives. Emergency responders believe that citizens should have the essential resources for survival, water, food, and the ability to handle basic medical procedures. However, on the other hand, individuals are more concerned about having a phone to be connected with their families, friends, with what is happening around them, and to feel in control that they can contact emergency services when needed. Additionally, they believe they should have their medical supplies because maybe it is hard for them to acquire these medicines in crisis times. To an extent, citizens see that how they survive in a crisis is the same as how they survive when an emergency happens in normal conditions, not disastrous up normal situation.

Table 29: Summary of the percentages obtained in the item resources to face a crisis in both surveys

Resources to face a crisis	D2.1	D1.2
Item	Percentage	Percentage
Documents backup	6.11	54.7
Phone numbers	6.76	58.60

Fire extinguisher	6.92	35.60
Emergency plan	9.91	21.60
Smartphone	10.1	71.50
Evacuation kit	11.4	-
Medical supplies	11.91	72.90
Water	11.99	57
First-aid knowledge	12.11	-
Food	12.79	62.10

Regarding the item about preparedness activities, the questions addressed in both questionnaires were different and therefore they cannot be compared.

6.6.4 KNOWLEDGE AND COMMUNICATION

In this case, the only items we are going to compare are the ones related to sharing information and communication channels.

In order to compare the sharing of information item, we analyse the results gathered in Figure 4 in D2.1 and the results in Table 8 in the last part (from number 55 to 61) (see Table 30). In this case, we can see that there is a strong relationship between what emergency services and authorities expect and need from society regarding information sharing and what society considers as important in relation to this. Both parties think that the most important thing is to share credible information, followed by providing the information as fast as possible, and having the ability to actively share the information with the authorities and emergency organizations.

Table 30: Summary of the percentages obtained in the item sharing of information in both surveys

Sharing of information	D2.1	D1.2
Item	Percentage	Percentage
Distract thoughts	6.59	40.7
Positive emotions	9.39	51.3
Talk about the situation	10.67	60.2
Feel part of a community	13.79	57.5
Share with authorities	18.82	62.9
Speed of information	19.16	77.6
Credible	21.58	81.7

Regarding the communication channels items, the questions in D1.2 and D2.1 were not equally formulated since in D1.2 we were asking what media sources the society used to get information during a disaster, and in D2.1 we were looking for what communication channels individuals use to share information with emergency organizations and authorities. In the first one, the approach is sharing information top-down, and the second one is sharing information bottom-up. Therefore, in the possible options, there was a minor difference: in D1.2 the television was an option, whereas in D2.1 the television was not an option since it is not a channel through which individuals can share information with emergency organizations and authorities. Based on this, the comparison shows that



mobile channels are the channels authorities and emergency organizations expect the society will use more and it is the most used one by the public. Secondly, the emergency organizations and authorities expect that society will share information with them through social media, however, from society it does not seem to be the most used channel. And finally, face-to-face communication is the one in the third position for both, as a need and expectation from the emergency services and authorities and what society currently use to share information.

Table 31: Summary of the percentages obtained in the item communication channels in both surveys

Communication channels	D2.1	D1.2
Item	Percentage	Percentage
Written communication / printed communications	11.21	27
Other electronic comm	17.25	42.8
Face-to-face	19.02	54.9
Social media	21.61	42.8
Mobile channels	30.91	71.3
TV	-	55.6

7 STRENGTHS & LIMITATIONS

7.1 STUDY LIMITATIONS

This study has some limitations, the first one is related to obtaining enough responses in the questionnaire to produce representative results. One of the main challenges was that we are targeting members of a population that has a special nature, emergency responders and authorities. This impacted the number of survey responses we got in Sweden (17), Italy (36), and France (24), making the samples from these countries, not representative and affecting the significance of the conclusions in these countries. Moreover, these small sample sizes did not allow us to include the data from these countries in the overall analysis since we would have a huge bias in the data. Also, it was not possible to apply the analysis of the job profiles on the data from these countries for the same reason. Also related to the sample size, we got a huge number of responses from Romania, 5154 responses, which introduced a bias in the data especially in the overall analysis across the four countries (Spain, Israel, Norway, and Romania). To address this issue, we had to sample the data from Romania keeping the same distribution of the responses in the generated sample.

Another constraint is related to the survey design itself; the way we designed the survey did not allow us to do any analysis on the individual level, all the analysis was done on the group level, to be able to come up with rankings and prioritizations.

A third limitation is related to the gender bias in the collected data, especially from the interviews; we have 30 interviews, only 2 of the interviewees were females. Another bias that exists, is related to the job of the interviewee, in Sweden for example 75% of interviewed persons come from the health sector. In general, members of law enforcement are underrepresented in the interviews, compared to emergency responders for instance.

Furthermore, some of the interviewees get carried away in the conversation and do not provide relevant information to the questions asked.

Finally, the questions in the bottom-up (population) and top-down (authorities) surveys vary by around 30%, so the comparison does not cover all aspects.

7.2 STUDY STRENGTHS

This study has many points of strength. For starters, it is a large-scale study that covers the needs and expectations of authorities and emergency responders from people in six European countries (covering North, South, East, and West of Europe) and Israel. This allows for the comparison of the needs and expectations across responders who come from different backgrounds, have different characteristics, and from various natures.

Besides covering a large geographical area with diverse characteristics, it provides a ranking of the authorities' needs and expectations, which was not previously introduced in the literature.

Moreover, this deliverable builds upon two primary sources of information, a large-scale online questionnaire that is complemented by semi-structured interviews. This provides us with rich, diverse data that allows for a comprehensive analysis reflecting on the interviewees'/responders' experience.



8 CONCLUSIONS

The main objective of this deliverable was to identify what authorities and emergency responders need and expect from the individuals in their society to handle a crisis and improve societal resilience. For this to happen, we designed an online questionnaire to gather this information. We hosted the survey on SurveyMonkey for a couple of weeks and we launched it in the seven countries participating in the project. We followed a snowball sampling technique to reach out to members of emergency organizations and authorities. We also conducted semi-structured interviews to complement the data we have from the survey and to have rich diverse sources of data. We used statistical analysis on the overall data to rate the needs and expectations for each survey construct based on the data gathered from the survey. We also conducted the analysis across multiple countries and multiple job profiles. We found that there are some differences between the needs and expectations depending on the country and the job profile.

Moreover, we calculated the risk awareness scores across all the countries, and compared this to the real risk situation in each country, we found that the risk concerns of the respondents in Spain, Israel, and Norway align with the real situation in these countries, however, this is not the case in Romania.

Furthermore, we discovered that trust and responsibility do not always go hand in hand, roughly half of the entities that are considered to be trusted by society are also considered to be responsible in the face of a crisis. Identifying this trust-responsibility relationship helps when designing messages to the public in times of crisis. Participants from Spain and Norway believe that authorities are the ones that should be held accountable in emergencies, however, this does not apply to Israel and Romania.

Another finding is that emergency organizations and authorities appreciate the involvement of the members of society in disaster relief work and the coping process after a crisis happens. But, they prefer this kind of engagement if the citizens follow their roles and are organized in a way that does not make them a burden to emergency organizations. Furthermore, they consider that civil society can be a good source of information to alert about the disaster, to obtain information with videos and photos about the event and to gather local knowledge that can facilitate the response.

Additionally, we did the linking between what the population expects from emergency responders and authorities (bottom-up approach) and what emergency responders and authorities expect from the population (top-down approach).



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10 APPENDICES

10.1 ONLINE SURVEY



**Engage Society for
Risk Awareness and Resilience**

Facing crises: What do you expect from your community?

1.
We are conducting this survey as part of the [ENGAGE](#) project; which is a Horizon 2020 funded project.

We would love to hear from you (as a member of emergency organizations or authorities) about your needs and expectations from your society to enhance its planning, coping, and adapting abilities in the face of crises. This will enable us to know what you need from society to handle crises. Based on this we will provide solutions and guidelines for such an improvement.

This survey will take around 10 minutes, divided into 24 sections. All your responses are completely anonymous and will be used for this research only.

If you have any questions about the survey, please contact us: llabaka@tecnun.es

We really appreciate your input and time!

*** 1. Data agreement**

By checking this box, you are agreeing to the data agreement [terms and conditions](#).

1





Facing crises: What do you expect from your community?

2. Risk awareness

* 2. Please evaluate how you perceive the following risks:

	Not at all concerned	Slightly concerned	Somehow concerned	Moderately concerned	Extremely concerned	Do not know
Extreme weather (cyclones, snow, flooding, droughts and wildfires)	<input type="radio"/>					
Nature related events (earthquakes, landslides, tsunamis, volcanoes, and storms)	<input type="radio"/>					
Social disruption (terrorist attacks, cyber attacks, massive human displacements, protests, and riots)	<input type="radio"/>					
Critical services dependencies (water, energy, transportation networks)	<input type="radio"/>					
Pandemics (infectious diseases)	<input type="radio"/>					



Facing crises: What do you expect from your community?

3. Social norms, network, and sense of community

*** 3. What are the 2 most important factors you need from society to better respond to a crisis?**

- Individuals count on mutual assistance and people care for one another in a crisis
- Individuals have a sense of belonging to their community.
- Individuals in the community trust each other.
- Individuals participate along with the emergency organizations and authorities to facilitate the response and the recovery process.
- Individuals follow the recommendations of community organizations such as NGOs, neighborhood or religious organizations.
- Individuals follow the recommendations of authorities and emergency organizations



Facing crises: What do you expect from your community?

4. Social norms, network, and sense of community

*** 4. What are the 2 least important factors you may need from society to better respond to a crisis?**

- Individuals count on mutual assistance and people care for one another in a crisis
- Individuals have a sense of belonging to their community.
- Individuals in the community trust each other.
- Individuals participate along with the emergency organizations and authorities to facilitate the response and the recovery process.
- Individuals follow the recommendations of community organizations such as NGOs, neighborhood or religious organizations.
- Individuals follow the recommendations of authorities and emergency organizations

4





Facing crises: What do you expect from your community?

5. Coping skills

*** 5. What are the 3 most important coping skills for a society to have to respond to a crisis?**

- Individuals look for creative ways (ad-hoc measures) to alter difficult situations
- Individuals wait for authorities' instructions on how they should act
- Individuals believe they can control their reaction to whatever happens
- Individuals believe they can become more resilient by dealing with difficult situations
- Individuals actively look for ways to become more prepared and avoid risks and failures
- Individuals become more engaged and responsive once recovered from a crisis where they encountered losses
- Individuals are optimistic about the future of their country
- Individuals believe there is a reasonable level of social justice in the community
- Individuals are empowered and tend to bounce back after illness, injury, or other hardships in an autonomous way
- Individuals have high levels of social solidarity

5





Facing crises: What do you expect from your community?

6. Coping skills

* 6. What are the **3 least** important coping skills for a society to have to respond to a crisis?

- Individuals look for creative ways (ad-hoc measures) to alter difficult situations
- Individuals wait for authorities' instructions on how they should act
- Individuals believe they can control their reaction to whatever happens
- Individuals believe they can become more resilient by dealing with difficult situations
- Individuals actively look for ways to become more prepared and avoid risks and failures
- Individuals become more engaged and responsive once recovered from a crisis where they encountered losses
- Individuals are optimistic about the future of their country
- Individuals believe there is a reasonable level of social justice in the community
- Individuals are empowered and tend to bounce back after illness, injury, or other hardships in an autonomous way
- Individuals have high levels of social solidarity

6





Facing crises: What do you expect from your community?

7. Resources to face a crisis

*** 7. What are the 3 most important resources/items that you think individuals should have by the time a crisis occurs?**

- A smartphone with portable charger per household
- At least 3 liters of water per person in each household
- A 4-day supply of non-perishable food items per person in each household
- A fire extinguisher
- Supplies for medical needs in each household
- List of vital phone numbers
- Backup of important documents in each household
- A household emergency plan
- First Aid knowledge
- An emergency back-pack kit for evacuation during crises



Facing crises: What do you expect from your community?

8. Resources to face a crisis

*** 8. What are the 3 least important resources/items that you think individuals may not have by the time a crisis occurs?**

- A smartphone with portable charger per household
- At least 3 liters of water per person in each household
- A 4-day supply of non-perishable food items per person in each household
- A fire extinguisher
- Supplies for medical needs in each household
- List of vital phone numbers
- Backup of important documents in each household
- A household emergency plan
- First Aid knowledge
- An emergency back-pack kit for evacuation during crises

8





Facing crises: What do you expect from your community?

9. Perception of trust

* 9. What are the **4** entities that your society **highly trust** in the face of a crisis?

- The national government
- The regional government
- The civil defense / civil protection
- The local authority
- The police and law enforcement
- Health services
- Coastguards
- The firefighters
- The media
- The individuals (society)
- Community organizations such as non governmental organizations (NGOs), neighborhood or religious organizations



Facing crises: What do you expect from your community? 10. Perception of trust

* 10. What are the 4 entities that your society **trust less** in the face of a crisis?

- The national government
- The regional government
- The civil defense / civil protection
- The local authority
- The police and law enforcement
- Health services
- Coastguards
- The firefighters
- The media
- The individuals (society)
- Community organizations such as non governmental organizations (NGOs), neighborhood or religious organizations



Facing crises: What do you expect from your community?

11. Perception of responsibility

* 11. Who are the 4 **most** responsible entities in the face of a crisis?

- The national government
- The regional government
- The civil defense / civil protection
- The local authority
- The police and law enforcement
- Health services
- Coastguards
- The firefighters
- The media
- The individuals (society)
- Community organizations such as non governmental organizations (NGOs), neighborhood or religious organizations



Facing crises: What do you expect from your community? 12. Perception of responsibility

* 12. Who are the 4 least responsible entities in the face of a crisis?

- The national government
- The regional government
- The civil defense / civil protection
- The local authority
- The police and law enforcement
- Health services
- Coastguards
- The firefighters
- The media
- The individuals (society)
- Community organizations such as non governmental organizations (NGOs), neighborhood or religious organizations



Facing crises: What do you expect from your community?

13. Crisis knowledge

*** 13. What is the **most** important type of information individuals should know in order to better respond to a crisis?**

- Individuals know the emergency plans and can execute them when the time comes
- Individuals know where refuge/emergency centers are
- Individuals know where to find updated info of an ongoing crisis



Facing crises: What do you expect from your community?

14. Crisis knowledge

* 14. What is the **least** important type of information individuals may know in order to better respond to a crisis?

- Individuals know the emergency plans and can execute them when the time comes
- Individuals know where refuge/emergency centers are
- Individuals know where to find updated info of an ongoing crisis



Facing crises: What do you expect from your community?

15. Crisis communication

* 15. What is the **1 thing** you need **the most** from individuals to better respond to a crisis?

- Individuals have the skills to inform emergency services with key information about a crisis
- Individuals have the knowledge of when to communicate with authorities or emergency organizations about a crisis
- Individuals have the knowledge about the communication tools developed by government in case of crisis



Facing crises: What do you expect from your community?

16. Crisis communication

*** 16. What is the 1 thing you need the least from individuals to better respond to a crisis?**

- Individuals have the skills to inform emergency services with key information about a crisis
- Individuals have the knowledge of when to communicate with authorities or emergency organizations about a crisis
- Individuals have the knowledge about the communication tools developed by government in case of crisis



Facing crises: What do you expect from your community?

17. Communication channels

*** 17. What are the 2 most important channels that individuals are expected to use for sharing information about a crisis?**

- Mobile Communications Channels (Calls, texts, including texting apps)
- Social media (e.g. Facebook, Twitter, Instagram)
- Other Electronic Communications (email, discussion boards, websites)
- Written communication (letters, reports, complaints)
- Face-to-Face or Personal Communication (meetings, information points)

If you think that there is another communication channel individuals should use, please specify here:



Facing crises: What do you expect from your community?

18. Communication channels

*** 18. What are the 2 least important channels that individuals may use for sharing information about a crisis?**

- Mobile Communications Channels (Calls, texts, including texting apps)
- Social media (e.g. Facebook, Twitter, Instagram)
- Other Electronic Communications (email, discussion boards, websites)
- Written communication (letters, reports, complaints)
- Face-to-Face or Personal Communication (meetings, information points)



Facing crises: What do you expect from your community?

19. Information sharing

* 19. What are the **3 most** important statements to share information about a crisis?

- Information that can help individuals talk about the situation with others
- Information that can help individuals feel as part of the community/nation
- Information that can distract the individuals' thoughts from the situation
- Credible information
- Information that can make individuals feel positive emotions (e.g., happiness, amusement, joy)
- The ability to actively share information with the authorities/relevant organizations acting on the situation
- To provide the information as fast as possible



Facing crises: What do you expect from your community?

20. Information sharing

*** 20. What are the 3 least important statements to share information about a crisis?**

- Information that can help individuals talk about the situation with others
- Information that can help individuals feel as part of the community/nation
- Information that can distract the individuals' thoughts from the situation
- Credible information
- Information that can make individuals feel positive emotions (e.g., happiness, amusement, joy)
- The ability to actively share information with the authorities/relevant organizations acting on the situation
- To provide the information as fast as possible

20





Facing crises: What do you expect from your community?

21. Preparedness

*** 21. In which 2 activities you **mostly** need individuals' help to better face a crisis?**

- Participating on the development of emergency plans
- Acquiring the required resources during the emergency
- Sharing information and knowledge with other individuals
- Having the capacity to self-adapt to emergencies
- Informing the authorities and emergency organizations about the situation of their vulnerable neighborhood
- Volunteering during & after the crisis to help emergency organizations and authorities
- Cooperating with community organizations and NGOs

If you think that there's another activity where individuals should help authorities/emergency organizations in, please specify here:



Facing crises: What do you expect from your community? 22. Preparedness

* 22. In which 2 activities you **least** need individuals' help to better face a crisis?

- Participating on the development of emergency plans
- Acquiring the required resources during the emergency
- Sharing information and knowledge with other individuals
- Having the capacity to self-adapt to emergencies
- Informing the authorities and emergency organizations about the situation of their vulnerable neighborhood
- Volunteering during & after the crisis to help emergency organizations and authorities
- Cooperating with community organizations and NGOs



Facing crises: What do you expect from your community?

23. Demographic info

In this section, there are 7 questions that would help us know more about you and your background in helping your community.

* 23. Which country are you working in now?

- Spain
- Norway
- Italy
- France
- Sweden
- Romania
- Israel
- Other (please specify)

* 24. Gender

- Female
- Male
- Prefer not to say

*** 25. Age**

- 20-35 years
- 36-50 years
- 51-65 years
- 65+ years
- Prefer not to say

*** 26. As a professional or volunteer, with the exception of COVID-19, have you been involved in handling a significant crisis event?**

- Yes
- No
- Do not know / Not sure

*** 27. You work as a member of:**

- Firefighters
- Health services
- Paramedics
- Police officers
- Coastguards
- Civil defense
- Local authority
- Regional authority
- Governmental authority
- Prefer not to say
- Other (please specify)

*** 28. Work level:**

- Employee
- Middle-level management
- Top-level management
- Volunteer
- Prefer not to say

*** 29. Years of experience as a member of emergency organizations or authority:**

- 0-5 years
- 6-15 years
- 16-25 years
- 25+ years
- Prefer not to say



**Facing crises: What do you expect from your community?
24. Your opinion matters!**

30. If you have anything else you would like to share with us, please write it below:



10.2 INTERVIEWS ETHICAL APPROVAL

●●● Academic Secretariat
Senate Office



●●● המזכירות האקדמית
מדור הסנאט

February 15, 2021

Dr. Bruria Adini
Faculty of Medicine
Tel Aviv University
Tel Aviv, 69978, Israel

This is to inform you that your research proposal no. 0002752-1 entitled:

"Identification of expectations and needs of first responders and authorities to improve societal resilience"

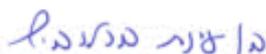
meets the requirements of the Ethics Committee of Tel-Aviv University.

The investigator's information:

The document is for ethical purposes only and valid until 14-02-2022.

*** Please note: Applications for the extension of a certificate will be submitted one month before the approval expires.**

Sincerely,



Prof. Meir Lahav
Chairman, The Ethics Committee
Tel-Aviv University

TEL-AVIV UNIVERSITY
THE ETHICS COMMITTEE



10.3 RISKS DATA SOURCES

In this appendix, we show the data sources we used for validating the risk awareness level in each of Israel, Norway, Romania, and Spain. The data was last accessed on 21st May 2021. We used a variety of data sources, that range from newspaper articles to more structured disaster databases such as the EM-DAT database. We cover the events that happened from 2000 to 2021.

10.3.1 ISRAEL

Risk group	Event type	Number deaths	of	Data sources	Total
Extreme weather events	Snow	4		[30]	83
	Floods	21		[31]	
	Wildfires	44		[31]	
	Temperatures	3		[32]	
	Thunderstorm	11		[33]	
Nature related events	Storms	7		[31]	7
Social disruptions	Terrorism	1343		[34]	1343
Critical service dependencies	Transport (Rail, air, water)	31		[31]	909
	Industrial accident	863		[35]	
	Miscellaneous accident	15		[31]	
Pandemics	Epidemic	12		[31]	6407
	Covid-19	6395		[36]	

10.3.2 NORWAY

Risk group	Event type	Number deaths	of	Data sources	Total
Extreme weather events	Snow Avalanche	30		[37]	69
	Wildfires	39		[38]	



Nature related events	Earthquakes	4	[39]	19
	Landslides	11	[31]	
	Storms	4	[31]	
Social disruptions	Terrorism	78	[40], [41]	78
Critical service dependencies	Transport (Rail, air, water)	50	[31]	850
	Industrial accidents	800	[35]	
Pandemics	Covid-19	781	[36]	781

10.3.3 ROMANIA

Risk group	Event type	Number of deaths	Data sources	Total
Extreme weather events	Snow	2	[42], [43]	768
	Floods	244	[31]	
	Temperature	435	[31]	
	Cold wave	86	[44]	
	Wildfires	1	[45]	
Nature related events	Storms	38	[31]	38
Critical service dependencies	Transport (Rail, air, water)	80	[31]	170
	Industrial accidents	14	[31]	
	Miscellaneous accidents	76	[31]	
Pandemics	Covid-19	29716	[36]	29716



10.3.4 SPAIN

Risk group	Event type	Number of deaths	Data sources	Total
Extreme weather events		826	[46]	826
Nature related events		291	[31]	291
Social disruptions		268	[47]	268
Critical service dependencies		698	[48]	698
Pandemics		79601	[36]	79601

