The seismic risk perception of emergency managers and first responders—a public survey in Greece

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ABSTRACT
Understanding the seismic risk perceptions of emergency managers and first responders is fundamental to entrusting pre-disaster policy-making and emergency communication practices. Therefore, an online survey in Greece was conducted to assess the impact of knowledge, worry, experience, and other variables on seismic risk perceptions and to reveal emergency managers’ and first responders’ opinions on the overall emergency mechanism. The results reveal that, while seismic risk perception is high, important knowledge gaps are detected among members of the emergency and crisis management mechanisms. Poor coordination issues, ambiguity in responsibilities, the content of emergency seismic information (beyond uncertainty), and the need to improve prompt warning methods and modernised communication practices are indicated.

KEY POLICY HIGHLIGHTS
- As seismic risk perception is high, emergency managers’ and first responders’ knowledge of earthquakes and seismic disasters needs to be improved.
- Worry is the dominant shaping factor of participants’ seismic risk perception.
- Participants were highly concerned about the coordination credibility of the crisis communication and management mechanism.
- Inappropriate allocation of responsibilities, insufficient information, and lack of information clarity are highlighted.

1. Introduction
Risk perception is a key factor in risk and crisis management. For any decision and policy-making for risk mitigation, it is crucial to understand how people perceive and act towards risk. Risk perception refers to ‘the judgements people make when they are asked to characterise and evaluate hazardous activities and technologies’ (Slovic et al., 1982). Risk perception is the subjective evaluation of dangers based on the integration of risk information (Renn, 2004). Therefore, risk perception concerns judgements and are reflected in people’s reactions, behaviour, and decision-making against risk (Lindell & Perry, 2000; Slovic et al., 1982) and in their willingness to undertake protective measures (Shapira et al., 2018).

The literature describes several risk perception determinant factors. The most prominent factors used to assess risk are dread, voluntariness, and familiarity (Slovic, 2000). The key factors of risk perception are awareness, worry, and preparedness (Tobin & Montz, 1997). Wachinger et al. (2013), categorised the factors shaping risk perception into four groups: (a) risk factors referring to the scientific characteristics of the risk, (b) informational factors related to the sources of information and the involvement of experts; (c) personal factors such as age, gender, education, knowledge, direct personal experience, trust in experts, and (d) contextual factors such as economic status, family status, and area of residence.

Risk perception has two dimensions: emotional and cognitive (Paek & Hove, 2017; Slovic & Peters, 2006). Risk as emotions is described by the affect heuristic, when people rely on their emotions rather than solid information during decision-making processes (Slovic et al., 2002). The cognitive dimension represents people’s level of knowledge and understanding of risks and incorporates the parameters of logic, reason, and scientific deliberation into risk management (Slovic & Peters, 2006). People engaged in emergency management and disaster prevention are expected to evaluate risk based on objectivity and logic. Their evaluation of risks is usually based on scientific information and objective assumption (Paek & Hove, 2017) originating from their training and experience (Siegrist & Cvetkovich, 2000). Some biases might be common, especially when professionals are forced to rely on their instincts under uncertain conditions or when information or expertise is limited (Slovic, 1987; Tversky & Kahneman, 1974). The present study focuses on the cognitive dimension of the risk perception of...
professionals and practitioners and examines the factors of worry and experience, both of which are modifiers of risk perceptions (Bronfman et al., 2020; Ohman, 2017; Sjöberg, 1998), and factors of information-seeking behaviours (Griffin et al., 2004). Information-seeking skills enhance public engagement with risk (Kahlor et al., 2019). Worry and experience are essential components of the Risk Information Seeking and Processing Model (RISP) developed by Griffin et al. (1999), based on the Heuristic-Systematic Model (HSM) by Eagly and Chaiken (1993).

Risk perception is among the primary targets of risk/crisis communication, as it influences behavioural responses and controls compliance with official guidance (Rogers & Pearce, 2013). Communication is one of the strongest tools for mitigating the impact of a disaster and is imperative for risk management. Delivering the right message at the right time in the right manner encourages an appropriate response to a hazard. Trust becomes an essential criterion for effective communication and acts as a fundamental base for the adoption of recommendations. Here, an effort was made to examine the level of credibility, usability, and operationability of information circulated during a crisis.

This study focused on seismic risk perception and its variables (Figure 1).

Extensive research focuses on the relationship between seismic risk perception and demographic characteristics (Ainuddin et al., 2014; Armaş, 2006; Kung & Chen, 2011), prior experience of an earthquake (Becker et al., 2017; Lindell & Prater, 2000; Xu et al., 2019), hazard-risk relationship knowledge (Vicente et al., 2014; Yang et al., 2010), and level of preparedness (Lindell & Perry, 2000; Oral et al., 2015; Rego et al., 2018; Tekeli-Yeşil et al., 2010). Past experience, age, and gender (older adults and women) appear to be related to seismic perception. Despite numerous studies on seismic risk perception worldwide, there are a limited number of relevant studies in Greece, focusing on emergency managers and first responders (Fokaefs & Sapountzaki, 2021; Papageorgiou et al., 2015; Papagiannaki et al., 2019). Greece, the most seismically active region in Europe, has experienced several earthquakes, often causing many casualties and significant damage despite their moderate magnitude (Kouskouna & Makropoulos, 2004).

This study also explores how emergency managers and first responders perceive overall public crisis management and emergency communication as part of this structure. Seismic crisis management and communication in Greece have often been negatively judged by the public. Inaccuracies in the parameters of preliminary official announcements/evaluations or delays in the publication of warnings (Papadopoulos et al., 2020), circulation of non-official earthquake predictions, and conflicting reports from scientists about ongoing seismic activity are some of the reasons often leading to mistrust towards scientific and management institutions (Fokaefs & Sapountzaki, 2021). Seismic emergency information incorporates different types of messages targeting emergency managers and the general public: informative, warning, consulting, and guiding (Fokaefs & Sapountzaki, 2021). Often,
this information is associated with numbers (e.g. probabilities) that are often difficult to translate into risk perception judgements (Savadori et al., 2022). Emergency managers are expected to respond reliably to specific queries, such as ‘Is a severe earthquake expected? ’ ‘When can I safely return to my house?’ ‘When will my rehabilitation compensation be approved?’ ‘How long will it take for the construction works to be completed?’ . However, first responders often share overlapping responsibilities or are ignorant of their role during a seismic crisis. Understanding the seismic risk perception of emergency managers (and the public) in an earthquake-prone country is fundamental for policymaking and establishing effective emergency communication strategies. Based on the analytical results, an attempt was made to identify the components of crisis management that call for improvement. The interrelations between seismic risk perception (and its dominant shaping factors) and risk communication, and the relevant impact on preparedness levels, are illustrated in Figure 1.

2. Methodology

An online survey comprising a questionnaire with 24 closed-ended questions was conducted to evaluate emergency managers’ and first responders’ knowledge background and opinion impacting their own responses and their views regarding the overall emergency mechanism versus earthquake disasters in Greece. The target group was members of the authorities engaged in emergency management, disaster preparedness, and prevention. Owing to the COVID-19 pandemic restrictions, the questionnaire was available online from March to October 2020. In total, 241 responses were obtained. Respondents were asked to answer each survey question, and their answers were analysed both quantitatively (through pie charts, bar charts, and percentages) and qualitatively.

2.1. Participants and data collection

We focused on people involved in emergency/crisis management and communication, such as civil protection officials, professional consultants, responding agents, lifeline staff, and support organisations. The judgment of risks to be undertaken, preparedness, and emergency actions are the responsibilities of emergency managers and first responders (Dolce & Di Bucci, 2015). Regardless of their professional category, all the above mentioned members act as decision makers, and their roles often overlap.

While emergency managers and first responders are considered specialists in earthquake risks/crisis, management, and communication, they are unlikely to be experienced in all areas of relevant science and practice. Moreover, their operational priorities and objectives differ. Based on this, the participants were asked about their professional specialisation (six groups, Table 1) to investigate its impact on their answers. The last group named as ‘Others’ includes various specialties, such as mathematicians, physicists, communication experts, and volunteers.

2.2. The questionnaire

The questionnaire was organised into five sections (Figure 2): (1) participants’ sociodemographic characteristics (Table 1), (2) previous experience, (3) general knowledge about earthquakes and earthquake disasters, (4) level of worry and anticipation of the future, and (5) questions regarding perceived crisis communication and management.

| Table 1. Participants’ sociodemographic characteristics and professions (n = number of participants). |
| --- |
| Variable | n  | % |
| Gender |  |  |
| Male | 126 | 52.3 |
| Female | 115 | 47.7 |
| Age |  |  |
| 18–30 | 22 | 9.1 |
| 30–45 | 90 | 37.3 |
| >45 | 129 | 53.5 |
| Professional Specialisation |  |  |
| Geologists/Seismologists | 33 | 13.7 |
| Administrative Employees | 24 | 10 |
| Health Professional | 9 | 3.7 |
| Social and Political Scientists | 9 | 3.7 |
| Civil Engineers | 36 | 14.9 |
| Uniformed Personnel (Military Forces and Emergency Services) | 58 | 24.1 |
| Others | 72 | 29.9 |

Figure 2. The five sections of the online questionnaire exploring the seismic risk perception of emergency managers and first responders.

3. Main results and data interpretation

3.1. Previous experience and empirical knowledge

Previous experience performs a significant role in forming seismic risk perception (Lindell & Hwang, 2008; Oral et al., 2015), Becker et al. (2017) focused on the relationship between experience and precautionary actions
against earthquakes, categorising experience into four types: direct experience (physically felt and affected by the earthquake), indirect (exposed but not affected), vicarious (observed and empathised but not felt), and life experience (exposed to other hazards, e.g. car accidents). Participants were asked about their experience in managing severe earthquakes with devastating impacts and their strongest recollection of this experience (direct experience). Most had no previous direct experience at that time (Figure 3).

Of those who had experience, problems and difficulties in communication were imprinted in the memory. Within the first minutes following a severe earthquake, communication demands drastically increase. A representative example of this was the catastrophic earthquake on 7 September 1999, Mw 6.0 that shook the entire metropolitan area of Athens, killing 143 people (Figure 4). This event caused significant telecommunication interruptions and electricity failure.

The impact of residence on participants’ memories of past catastrophic earthquakes was investigated and reflected in their answers. Most emergency managers and first responders remember the most destructive earthquakes that affected their region of residence. Total 73.6% (n = 106 out of 144) of participants living...
in Athens city recalled the earthquake events that affected the capital city of Athens, located in the Attica region, for example, the 1981 Alkyonides and the 1999, 2019 earthquakes (Kouskouna et al., 2021, Figure 4 and Figure 5).

### 3.2. Basic Knowledge about Earthquakes

The group of questions in Section 3 (Figure 2) aimed to evaluate the participants’ basic knowledge about earthquakes (Table 2). While the overall level of basic knowledge was adequately high, important gaps were detected. Most participants believe that Greece is the country with the highest seismicity in the Euro-Mediterranean region (Table 2). In fact Greece is characterised by a high seismicity rate because of its location in a convergent plate boundary (the Hellenic Arc) and has experienced several destructive earthquakes in the past (Kassaras et al., 2020; Tsapanos, 2008). A plethora of active fault settings located on the Greek mainland (Chatzipetros et al., 2008; Ganas et al., 2013) also hosts several severe earthquakes. Statistics reveal that severe earthquakes of M = 6 occur at least once every year in Greece (Karakaisis & Papazchos, 2002). Turkey is also one of the most earthquake-prone countries in the world because of its geographic location between the Arabian, Eurasian, and African plates. The western part of Turkey, in particular, is affected by the subduction of the African plate below the Eurasian plate, while the movement of the Anatolian block towards the west generates major earthquakes in the northern regions of the country (Meng et al., 2021; Taymaz et al., 2004). To investigate the impact of participants’ scientific background, the answers regarding the general knowledge about earthquakes were grouped with their profession and are presented in Figures 6(a-d). As expected, the participants holding a background in the sciences of Geology and Seismology are familiar with the earthquake physics and seismotectonics of the Euro-Mediterranean region, which is reflected in their answers (Figure 6a).

An important portion of responders believed that strong earthquakes are always related to important damage effects (Table 2). Magnitude though is not the only factor that determines the destructiveness of an earthquake. The level of damage depends on several factors, such as earthquake location and proximity to populated areas, underlying soil conditions, earthquake depth, construction practices, and building regulations. For example, the recent severe earthquake of 11 January 2022, which occurred 50 km off the west coast of Cyprus, at a depth of 25 km (Figure 4), despite its large magnitude of Mw 6.6, did not cause any casualties or structural damage assumed by the

![Diagram](image)

**Figure 5.** Participants answers about residence (Sa, dichotomous question) and earthquake recollection grouped with respect to the affected region (Sb).
This caused island knowledge of the destructive impact of these earthquakes among geologists, and (surprisingly) moderate among civil engineers (Figure 6b). It is noteworthy that several responders consider severe earthquakes to be destructive. This reveals the significant presence of the intuitive that ‘the larger the magnitude, the greater the impact/damage’.

Earthquake prediction is one of the most important chapters in seismology aimed at risk reduction. Scientific attempts have been realised towards this direction based on capturing seismic and non-seismic precursors (Chen et al., 2021; Panakkat & Adeli, 2008; Papachristodoulou et al., 2020; Papazachos, 1975). To date, there has been no successful short-term prediction of an earthquake of a given magnitude occurring at a specific location in a given time window, except for the Haicheng, China earthquake on 4 February 1975 (Figure 4), based on foreshock activity (Wang et al., 2006). Geologists and seismologists are familiar with methodologies that monitor precursors. Half of them believed that earthquakes can sometimes be predicted when certain conditions of these methodologies are met. Half of them stated that earthquakes are unpredictable, obviously referring to the fact that earthquake prediction is not currently operational. This could also explain the similar answers by the civil engineers group. Earthquake prediction announcements have often been communicated to the public in Greece through the social media of independent scientists, enhancing the belief that earthquake prediction is possible. This might explain why several participants with no relevant scientific background believed that earthquakes are predictable.

The last question in this group required participants to perform a self-assessment of their mission awareness. The results reveal that while the majority claim to be aware of their mission during an

### Table 2. Emergency managers’ and first responders’ basic knowledge regarding earthquakes.

| Question                                                                 | Answers   | n   | %   |
|--------------------------------------------------------------------------|-----------|-----|-----|
| Which is the country with the highest seismicity in Europe-Mediterranean region? |Italy      | 16  | 6.6%|
|                                                                         | Greece    | 145 | 60.2%|
|                                                                         | Albania   | 0   | 0%  |
|                                                                         | Turkey    | 79  | 32.8%|
|                                                                         | Portugal  | 1   | 0.4%|
| Are severe earthquakes always destructive?                               | Yes       | 87  | 36.1%|
|                                                                         | No        | 153 | 63.5%|
|                                                                         | I don’t know | 1   | 0.4%|
| Are earthquakes predictable?                                             | Yes       | 14  | 5.8%|
|                                                                         | Sometime yes | 130 | 53.9%|
|                                                                         | No        | 72  | 29.9%|
|                                                                         | I don’t know | 25  | 10.4%|
| Do you know your mission and measures to be undertaken in case of a seismic event? | Yes      | 136 | 56.4%|
|                                                                         | Partially | 93  | 38.6%|
|                                                                         | No        | 12  | 5.0%|

Figure 6. Participants’ answers grouped with their scientific background and profession.
3.3. **Worry and anticipation of future earthquakes**

An overly high seismic risk perception in terms of anticipation and worry is revealed by the fourth group of questions. More than half of participants were concerned about their own and family’s safety, as well as difficulties related to poor coordination and credibility of first responders (Table 3, for level of worry ≥ 3). Similar results were presented by Papagiannaki et al. (2019), who investigated the perception of different natural hazards in Greece.

### Table 3. Emergency managers’ and first responders’ worries and anticipations about earthquakes.

| Answers                                                                 | N    | %     |
|------------------------------------------------------------------------|------|-------|
| Fire                                                                   | 79   | 32.8% |
| Flood                                                                  | 12   | 5%    |
| Earthquake                                                             | 134  | 55.6% |
| Technological accident                                                 | 11   | 4.6%  |
| Heat                                                                   | 5    | 2.1%  |

**Do you believe that Greece will experience a severe earthquake within the next 5 years?**

| Answers                  | N    | %     |
|--------------------------|------|-------|
| Definitely               | 156  | 64.7% |
| No                       | 8    | 3.3%  |
| I don’t know             | 77   | 32%   |

**How often do you worry about earthquake occurrence?**

| Answers                      | N    | %     |
|------------------------------|------|-------|
| Never (1)                    | 7    | 2.9%  |
| Rarely (2)                   | 81   | 33.6% |
| Often (3)                    | 115  | 47.7% |
| Quite often (4)              | 33   | 13.7% |
| All the time (5)             | 5    | 2.1%  |

**Which are the main sources of worry?** *(Multiple choice question for responders with intense worry (worry ≥ 3)*

| Answers                                                                 | N    | %     |
|------------------------------------------------------------------------|------|-------|
| Coordination and credibility issues of emergency managers              | 106  | 69.3% |
| People’s panic and difficulty in cooperation                           | 64   | 41.8% |
| Safety of me and my family                                            | 106  | 69.3% |
| House damage and difficulty in repairing                               | 70   | 45.7% |
| Uncertainty about my performance being on duty                         | 27   | 17.6% |
| Other reason                                                           | 6    | 3.9%  |

3.4. **Perceived seismic crisis management and communication**

The last group of questions aimed to explore how emergency managers and first responders perceive public seismic crisis management and communication practices. A high level of trust in the Anti-Seismic building regulation policy in Greece is obvious by the results (Figure 7). Issues of information clarity and availability are revealed by participants’ answers (Table 4).

The major interest of this study was to investigate the opinions of emergency managers’ and first responders regarding the quality of the information circulated after an earthquake among themselves and the general public. The results reveal that 50% believed that the general public did not receive credible and sufficient information, while 35.7% stated the same about emergency managers and first responders (Figure 8).

**Figure 7.** Bar graphs showing the justification of why 25.3% of responders believe that Greece can manage earthquake disaster best compared with other disasters.
Table 4. Emergency managers’ and first responders’ perceived crisis management and communication.

| Disaster Type                                           | Answers | N    | %  |
|--------------------------------------------------------|---------|------|----|
| Earthquake (see also, Figure 5 for attributes)         |         | 61   | 25.3%|
| Flood                                                  |         | 5    | 2.1% |
| Forest fire                                             |         | 38   | 15.8%|
| Technological accident                                  |         | 6    | 2.5% |
| Heat waves                                              |         | 131  | 54.4%|

**Are the responsibilities of authorities clear?**

| Answers      | N    | %  |
|--------------|------|----|
| Yes          | 51   | 21.2%|
| No           | 157  | 65.1%|
| I don’t know | 33   | 13.7%|

**Which of the following factors mostly affect the effectiveness of seismic crisis management?**

| Factors                                                                 | Answers | N    | %  |
|------------------------------------------------------------------------|---------|------|----|
| Protocol of actions and responsibilities of the authorities involved in seismic crisis management. | 42      | 17.4%|
| Public behaviour (readiness, compliance in the official instructions, calmness). | 65      | 27.0%|
| Coordination of emergency managers and first responders.               | 100     | 41.5%|
| Timely communication of valid information/warnings to first responders and the public. | 34      | 14.1%|

**Do you understand the information that is communicated to you?**

| Answers      | N    | %  |
|--------------|------|----|
| Yes          | 122  | 50.6%|
| No           | 20   | 8.3% |
| Not always   | 81   | 33.6%|
| I don’t know | 18   | 7.5% |

**Do you have the information you need?**

| Answers      | N    | %  |
|--------------|------|----|
| Yes          | 62   | 25.7%|
| No           | 46   | 19.1%|
| Not always   | 120  | 49.8%|
| I don’t know | 13   | 5.4% |

**Which of the following components of crisis communication and management need improvement?** (Multiple choice question).

| Components                                                                 | Answers | N    | %  |
|----------------------------------------------------------------------------|---------|------|----|
| Clear individual responsibilities of authorities in charge to avoid duplication. | 155     | 64.3%|
| Credibility and reliability of Seismic Risk Assessors (research centres, universities). | 79      | 32.8%|
| Prompt notification of institutes and the public and modernisation of the way information is communicated. | 122     | 50.6%|
| Training of journalists on seismic disaster reporting.                     | 69      | 28.6%|
| Training of emergency managers and first responders on Seismic Risk Communication. | 118     | 49%  |
| Limitation of fake news and false predictions especially on Social Media.  | 104     | 43.1%|
| Seismic risk awareness actions.                                            | 130     | 53.9%|
| Other                                                                     | 12      | 5%   |

Figure 8. Emergency managers’ and first responders’ judgements on comprehensibility and sufficiency of the emergency information that is released after earthquakes.
At the end of the online survey, participants were asked to indicate the components of crisis communication and management, and the results are summarised in Table 4. It was also a multiple-choice question. All factors are recognised as requiring improvement, indicating a general negative judgment of management activities in Greece. In particular, responders indicated the importance of clear responsibilities of authorities and actions for raising public awareness regarding seismic risk. Communication practices during seismic crises were also judged negatively. Responders identify areas for further enhancement of prompt notification and training them in seismic risk communication.

4. Discussion and conclusion

The results of the online survey provided an overview of emergency managers’ and first responders’ seismic risk perception in terms of knowledge, previous experience, level of worry, and anticipation of future earthquakes (likelihood). Important knowledge gaps among the emergency managers and first responders were identified. Half of the respondents claimed to partially know their mission. This reveals the need for education and training to achieve a shared minimum risk knowledge level among these crucial actors. It also reveals the necessity for clarification of responsibilities. The organisation of training courses on standardised emergency management and communication procedures helps avoid misconceptions of messages and false perceptions during a crisis. Courses aiming to strengthen hazard (and seismic risk) knowledge (e.g., destructiveness) are also required.

Earthquakes were acknowledged by the majority of participants as the most catastrophic future event, indicating an overly high seismic risk perception. This perception is remarkably strong and surprisingly unaffected by the recent catastrophic forest fires of July 2018 and August 2021, and the extensive floods that the country has experienced. Previous experiences with catastrophic earthquake events have not been proved to influence participants’ seismic risk perception in the present study. Only 29.9% of respondents had been previously involved in managing severe earthquakes with important impact, and this portion has been low to substantiate conclusions regarding the role of experience in risk perception.

The important findings of this study refer to the collection of participants’ opinions regarding management activities and communication practices during a seismic crisis. Coordination was recognised by most participants as the most crucial factor in seismic crisis management. The general public’s compliance with official guidance is also indicated as a problem indicating a lack of trust.

Responders undeniably acknowledge crisis management as a multi-faceted task (Section 3.4, Table 4); as almost all components of crisis communication and management stated in the question necessitate improvement according to the participants’ responses: responsibilities of authorities in charge are perceived as ambiguous; clearly defined individual roles are missing, although they are essential for avoiding duplications, and building trust between managers and the public is considered a necessity. Additionally, issues of credibility and reliability of seismic risk assessments were raised by several participants. Scientific assessments and estimations, and the way in which they communicate, are clearly under question. Moreover, frequent debates and antagonisms within and among the scientific community are pinpointed, and inappropriate manipulation of catastrophes and human suffering by the media and politicians are obviously detected by some of the responders.

The participants identified the need to increase seismic risk awareness and necessary actions will improve the preparedness of risk analysts, decision-makers, and the general public. Public behaviour was identified as the second-most determinant factor in the effectiveness of seismic crisis management. Establishing trust between the general public and experts is the foundation for strengthening people's cooperation with decisions and policies and enhancing community resilience.

Risk perception is a key target in risk/crisis communication. Understanding how professionals and practitioners appraise emergency information and communication may foster improved communication practices between practitioners and the general public. In general, current emergency communication processes in Greece are judged negatively. Particularly, insufficient information and lack of information clarity were indicated by the participants’ answers, raising issues of ambiguity and uncertainty intruding institutional and personal decision-making processes among the victims and social groups. Simultaneously, the need to update and modernise emergency information channels, media, and messages is highlighted. Furthermore, the spread of misinformation through social media must be controlled to avoid confusion and panic. Almost half of the participants recognised the need for training on the basic principles of seismic risk communication for effective communication during a crisis. Clear and straight messages engender trust and support informed decision making.

The present work methodology and findings open channels for further research on seismic crisis communication and relevant policymaking. Challenging queries for innovative applied research in the field are: (a) How do the seismic risk perceptions of institutions and the general public influence their preparedness-response-adapting behaviour and, conversely,
what perceptions motivate them to act towards high levels of mitigation, preparedness, and resilience? (b) What institutional structures for crisis management perform better coordination, deliver clear responsibilities, and enjoy higher public trust, whether centralised or decentralised? (c) Which emergency information sources and dissemination channels enjoy wider public acceptance by simultaneously securing two-way emergency communication, information reliability, and comprehensibility? What are the lessons learnt from the increasing and extensive use of the 112 emergency number in Greece?

Finally, a range of seismic risk perception studies for diverse social and population groups (e.g., the youngsters, aged, migrants, schoolteachers, and public employees) are necessary to back policies for seismic risk education at school and lifelong learning for self-protection.

Notes

1. The questionnaire was available online through the following link (in Greek): https://docs.google.com/forms/d/e/1FAIpQLSdMkhSmSR27H4Lnv5EPv9juaPS0e11brpRL2YhdrRtv8O-3w/viewform.
2. EMSC event page available at https://www.emsc-csem.org/Earthquake/earthquake.php?id=1085800 (visited in May 2022).
3. EMSC event page available at https://www.emsc-csem.org/Earthquake/earthquake.php?id=1085800 (visited in May 2022).

Data availability statement

Raw data were generated in Greek at https://docs.google.com/forms/d/1wKOfoLaJ7iz135Hy6JW9rYm2Ns0jeJeazPS-2nP5T0/edit#responses. The derived data supporting the findings of this study are available from the corresponding author [A.F.] upon request.

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