D1.4 COMMUNICATION BEHAVIOUR IN EUROPE AND VULNERABILITIES

UNDERSTANDING COMMUNICATION-RELATED VULNERABILITY AND RESILIENCE IN CRISES

Project acronym: BuildERS

Project title: Building European Communities' Resilience and Social Capital

Call: H2020-SU-SEC-2018-2019-2020/H2020-SU-SEC-2018

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Name	Organization
Sten Hansson	UTA
Andra Siibak	UTA
Asta Bäck	VTT
Claudia Morsut	UiS
Marco Krüger	EKU
Friedrich Gabel	EKU
Christian Kuran	UiS
Bjørn Ivar Kruke	UiS
Oliver Nahkur	UTA
Mohammed Ali Berawi	UI
Lisa Segnestam	SEI
Mark Rhinard	US
Kati Orru	UTA

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Executive Summary

D1.4 COMMUNICATION BEHAVIOUR IN EUROPE AND VULNERABILITIES

UNDERSTANDING COMMUNICATION-RELATED VULNERABILITY AND RESILIENCE IN CRISES

In this report, our aim is to improve the understanding of how communication related issues and actions may affect vulnerability and resilience – the ability and capacity to respond to and recover from crises. The report follows the objective of the BuildERS project Task 1.4 to identify vulnerable populations' trust in media sources, social media use (or lack of use) and proneness to be affected by disinformation in the context of disasters. To fulfil this objective, we analyse the information behaviour and particularly social media use among European populations, paying particular attention to vulnerable populations, and explore trust in media sources and proneness to be affected by misinformation. In addition to the review of existing literatures, we integrate information from cross-country survey data analysis, secondary analysis of crisis preparedness surveys in task partner countries and case studies on 2018 tsunami in Indonesia; 2011 terrorist attack in Norway; 2013 floods in Central Europe; 2018 drinking water poisoning in Nousiainen, Finland.

We review research findings about vulnerabilities related to the situational conditions in which people receive and respond to information about crises, and to attributes of communication about hazards. We identify individual, social/structural, and situational factors of vulnerability that shape how people access, understand and act upon information about risks or crises. Our review indicates that while traditional information sources remain relevant during certain crisis cases and for certain publics, the landscape of crisis communication is being transformed by the increasing use of social media. This has created new avenues for building resilience (e.g. dialogic communication between crisis managers and affected groups, and organizing support networks online) but also deepened some vulnerabilities (e.g. broad and instant diffusion of false information during crises, and digital divide and possible discrimination of some disadvantaged groups).

We conclude with recommendations to policy makers and emergency managers at different levels of government. We highlight the need for addressing the socio-economic inequalities and marginalization as the key impediments of trust-building and collaboration with authorities in responding to crisis communication. We encourage investing in better understanding of the local information environment and preferences, including existing social networks as info sources for improved crisis communication. We call for further exploration of the causes and processes of 'rumour-mongering', and development of skills and tools to evaluate the credibility of (social media) information.

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List of Acronyms

AB	Advisory Board
BuildERS	Building European Communities Resilience and Social Capital project
D	Deliverable
DoA	Description of Action
EKU	Eberhard Karls Universität Tübingen
SEI	Stockholm Environmental Institute
UI	University of Indonesia
UiS	University of Stavanger
US	Stockholm University
UTA	University of Tartu
VTT	VTT Technological Research Centre of Finland
WP	Work Package

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COMMUNICATION BEHAVIOUR IN EUROPE AND VULNERABILITIES UNDERSTANDING COMMUNICATION-RELATED VULNERABILITY AND RESILIENCE IN CRISES

1. Introduction

In this report, our aim is to improve understanding of how communication related issues and actions may affect vulnerability and resilience of various societal groups. The report follows the objective of the BuildERS project Task 1.4 to identify vulnerable populations' trust in media sources, social media use (or not use) and proneness to be affected by disinformation in the context of disasters. We aim to clarify the ways in which information behaviour may make one more vulnerable and less resilient in crisis situations. To fulfil this objective, we analyse the information behaviour and particularly social media use among European populations, paying particular attention to vulnerable populations, and explore trust in media sources and proneness to be affected by misinformation.

In general, the overall work within WP1 and the deliverables therein serve as the basis for the subsequent WPs. In particular, D1.4 follows the vulnerability approach that D1.1 promotes and which will be more extensively illustrated in D1.2. In addition, this deliverable looks at some crises that are also illustrated in D1.3 and later in WP4. Finally, D1.4 provides a very good basis for the ongoing work in WP2, especially T2.3 regarding social media as an information channel for authorities' campaigns and as a data source. Here, D1.4 also serves as important background information as for theories, approaches and practices in the use of social media.

1.1. Vulnerability

'Vulnerability', along with the aspects of risk perception and social capital, is one of the key concepts explored in the BuildERS project. The project's theoretical framework provided in D1.1 defines vulnerability as "the situational capacity of individuals or groups to access adequate resources and means of protection to anticipate, cope with, resist and recover from the impact of natural or man-made hazards" (D1.1:14). Thus, the project builds upon the social vulnerability approach which aims to identify and understand which groups of people may be the most sensitive and susceptible to the impacts of hazard and disasters, and why that may be the case (Zhou et al., 2014: 34). While making a clear-cut distinction between man-made and natural disasters is open for debate, BuildERS is looking at both.

The BuildERS project promotes a more dynamic approach to vulnerability by providing research not only on classical categories of vulnerable groups, such as young children, elderly, people with acute medical conditions and chronic diseases, but also by challenging the view that these categories are always vulnerable and that a crisis or a disaster necessarily increases their vulnerabilities. These groups may have skills and capabilities that compensate for their disability and enable to cope as any other person, while others who are not typically considered disabled (e.g. pregnant women) need additional assistance during various emergencies. Therefore, in this report we consider vulnerability in extreme events as a dynamic characteristic, which results from the interaction of individual, social/structural and situational

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factors. Resilience, on the other hand, is the process of patterned adjustment and adaptation enacted in the face of risks, crises and disasters.

Vulnerability (as well as resilience) is not something that we are born with or that is uniformly attached to us. Vulnerability is situational and may vary due to the interrelations between the individual and contextual factors. Anyone can become vulnerable in certain circumstances. Thus, to call a social group 'vulnerable' should be understood as a description of a current status, in relation to context, which can be improved by changing single factors within the complex framework. In this report, we focus on the factors related to communication and the ways in which such factors shape resilience in various phases of crises.

1.2. Communication

'Communication' can be conceptualised and theorised in various complex and competing ways (Craig, 1999), but most commonly the term is used to refer to processes of sending and receiving messages/information and processes of producing and reproducing meanings. For pragmatic purposes, it may be useful to break up communication processes into elements such as:

- senders/sources (e.g., emergency managers who send warnings to particular at-risk groups),
- messages (e.g., the content of the waring: information in the form of text, talk, sound, images, etc.),
- channels (e.g., television, Facebook, warning siren), and
- recipients (e.g., particular individuals or groups who receive information about an emergency).

Communication involves the use of symbolic resources (signs, language) and comes with the omnipresent danger of miscommunication/misunderstanding. Communication reflects personality (beliefs, emotions) and is constitutive of societies, cultures, and identities.

For crises and disaster managers, communication is a management tool that serves various functions and purposes (Coombs & Holladay, 2010; Höppner & Buchecker, 2010), such as awareness raising about risks and encouraging protective behaviour among people in preparation to hazardous events (i.e., **risk communication**), and giving warnings and triggering particular behavioural responses by people at-risk during hazardous events (i.e., **crisis communication**).

For those affected by a particular disaster, communication essentially involves meaning-making (Boin, et al., 2016). It covers gathering information of the hazard (i.e., knowledge, facts, news), that helps to make sense of the situation, and potentially to take steps to minimise the impact of the crisis. These steps can be e.g. evacuating themselves from a flooded area as well as sharing official evacuation messages on social media so that their followers know how to evacuate, too.

In this report, we treat communication in its various guises as one of the variables that may either increase or decrease people's vulnerability to crises. In our view, individual and group vulnerabilities in crises may stem from a variety of communication-related factors. Some of these emerge when people encounter problems with receiving or understanding information about hazards and, as a result, fail to take appropriate action to protect themselves or others. For instance, people may:

- not receive any warning or guidance messages regarding a crises because these messages were not sent via a channel they use, or are able to use (e.g., when only acoustic evacuation signals are used then deaf people are excluded)
- receive information about threats that they cannot understand (because it is presented in a foreign language, too complicated language, etc.),

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- receive too much or conflicting information and hence are not able to decide if and what is important, or what is trustworthy,
- regard correct information about a crisis as false (e.g., because they think the sender is not trustworthy),
- believe in false information about crises.

Individuals and groups may engage in communicative behaviour as senders/sharers of messages that may increase vulnerability of others by confusing or misleading them, such as sharing false information that one believes to be true (**misinformation**), or sharing false information on purpose (**disinformation**). Moreover, some forms of communicative inaction by people may increase their own vulnerability or that of others affected by a disaster; for example, if they do not share information that would help in rescue or recovery, fail to ask for help during a crisis, or not seek social support via communication during post-crisis recovery.

1.3. Material and methods

In this report, we synthesise the results of empirical studies focusing on the relationship between vulnerability, information behaviour, social media, and handling of misinformation in preparedness, response or recovery phases of a crisis. The report is methodologically based on a **scoping study**. A scoping study is the recommended strategy when a study aims at providing greater conceptual clarity about a specific topic or field of evidence (Arksey & O'Malley, 2005; Levac et al., 2010). As characteristic to scoping studies, we identify and analyse a wide range of academic and grey literature (Farace & Schöpfel, 2010). We used the "snowballing" method of literature search (Laumann, Marsden, & Prensky, 1992) to cover reports by international organisations like European Commission and United Nations.

In addition to review of existing literatures, we have integrated data and insights from relevant surveys and case studies.

- We have used cross-national Standard Eurobarometer on Media Use Behaviour in Europe and Flash Eurobarometer 2018 on Fake News and Disinformation retrieved from ZACAT - GESIS Online Study Catalogue (https://zacat.gesis.org/webview/). We performed cross-tabulation analysis in programme Statistical Package for Social Sciences. We crossed the questions on trust in media sources, and beliefs about misinformation with key socio-demographic variables (age, gender, perceived coping on current income, ethnic belonging, level of education). We also explored the results of crisis-preparedness surveys in Estonia, Sweden, Norway, Finland and Germany. In the analysis of national surveys results, we explored questions related to the channels of information considered important/trustworthy in times of crisis.

- Crises cases offer material for analysis of communication behaviour in different phases of a crisis. We looked at 2018 tsunami in Indonesia; 2011 terrorist attacks in Norway; 2013 floods in Central Europe; 2018 drinking water contamination in Nousiainen, Finland. Case analysis sought answers to the following questions: How do vulnerable people communicate prior/during/ after the crises? What helps them to cope with the crisis? Who gets hurt (is at risk) due to poor communication behaviour? Who have suffered due to misinformation?

Delimitations. National surveys rarely use cross-nationally comparable questions and therefore explicit comparisons are unsubstantiated. However, the cross-national surveys provide some material for analysis of crisis communication behaviour in various country contexts. Both national and cross-national surveys do not pay particular attention to crisis communication behaviour of vulnerable groups like

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cultural minorities or individuals with disabilities. To some extent, this void of knowledge on at-risk-populations is fulfilled by more focused academic research that we include in this report. The information on the selected country crisis cases has been covered to a varying degree in existing research. Thus, the material available does not provide a sufficient basis for more systematic analysis across the crisis cases. However, these cases offer material to support broader generalisations or evidence of emerging situations where vulnerabilities occur in ways that have not been documented before.

1.4. Structure of the report

A review of literature and case studies on communication-related vulnerability to crises could be potentially organised in many different ways. During our drafting process, we considered structuring this report for example as follows:

- by distinguishing primarily between communication problems that are related to particular temporal stages of crisis management (e.g., preventive awareness raising before crises, warning and coordination messages during a crisis);
- by each element in crisis communication seen as transmission (sender > message > channel > receiver);
- by various situational roles or perspectives on crisis communication (e.g., individuals affected by a crisis, groups affected by a crisis, emergency managers tasked with responding to crises, policymakers tasked with establishing systems for crisis management), and
- by disaster type (communicative vulnerability during a flood, earthquake, terrorist attack, etc.).

However, as we examined our collected material further, we realised that the various ways in which people have been described as vulnerable to hazards due to communicative factors mainly fall under two interrelated categories. The first category focuses on certain **conditions in which people receive and respond to information about hazards**, and which can be determined by the interaction of personal (skills of media use, risk perception), social-structural (social support, official preparedness measures) and situational (e.g. communication channels cut due to power outage) factors. The second category focuses on **attributes of communication about hazards**, such the ways in which crisis-related information is presented (e.g., content and style of messages) and what are its sources (e.g., radio, television, Facebook). Thus, we decided to use these two emergent categories – a receiver's situational characteristics and communication characteristics – as a basis for structuring our report, while fully recognising and underlining that all these variables should be seen as being interrelated. In addition, we decided to include a special section on the ways in which people may become more vulnerable in crisis contexts due to being exposed to **false information** (including unintentional false or misleading claims, malicious disinformation, rumours, pranks, and outdated information).

We conclude the report by offering recommendations on how vulnerabilities can be alleviated and resilience built through improving communication to make individuals, groups and societies more robust in facing future risks, crises and disasters.

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2. Vulnerabilities related to a receiver's situation

Scholars argue that communication is a key to disaster reactions, since information is crucial in how people perceive a threat and whether they decide to evacuate (Whitehead et al., 2000). Receiving and interpreting information and the related reactions do not depend on a one-dimensional attribution (e.g. to a demographic group). Instead, the coping capacities or vulnerability of individual or groups should be viewed as the result of a complex relationship between different factors, like social class, race, gender or age (Tierney, 2019). Accordingly, persons are vulnerable dependent on the specific situation they are in and the way these factors interact. The societal groups like elderly people, persons with disabilities, people that are part of a minority are inherently heterogeneous, and their condition is embedded in a social context, which may be either supportive or disadvantageous to these persons (Krüger, 2019).

Communication-related vulnerabilities may be accumulated in certain societal groups. For instance, based on a study conducted in Estonia (TNS Emor, 2016), poorer crises-related information seeking skills were more likely to occur among women, Russian-speaking individuals, and those aged 65+ living in larger cities and in large block houses, when compared to other groups. Their historically determined minority status has set them in a situation where they are unable to follow the risk information presented in an official language. Concentrated in economically disadvantaged enclaves, they often have little access to alternative info sources besides other older Russian-speaking women. This illustrates the socially constructed nature of vulnerability – problematic societal conditions that may lead to unequal access to or poor understanding of crisis information. Below, we elaborate on how varied social factors play out in key components of accessing, processing, and reacting upon crisis information and how this shapes the vulnerability of individuals and groups.

2.1. Access to information

There are various limitations in access to crisis information that determine crisis response capacities of individuals or groups. According to Spence et al. (2011), individuals from **lower economic strata have reduced possibilities** to seek out information from media in crises. Due to their limited economic (and political) power, poorer populations are mainly motivated to seek information about what directly affected them and from their real-life connections, such as family and school (Spink & Cole, 2001). In addition, various subcultures, depending also on their level of income, education and access to community resources, rely on different sources of information in crisis. For example, Spence et al. (2007) report that survivors of the 2005 Hurricane Katrina had different levels of crisis preparedness and information-seeking behaviours based on race (and socio-economic status): African American survivors were likely to value interpersonal networks in their information seeking and were less likely to use the internet for information seeking. The varying access to information across the different levels of economic power is also apparent in Europe. Not everyone may have resources to purchase technical devices for receiving information. For example, the German disaster-warning app NINA only runs on smartphones (https://www.bbk.bund.de/DE/NINA/Warn-App_NINA.html). This leaves users of older mobile phone types or individuals who do not have mobile phone uncovered by this app.

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Another structural factor shaping vulnerability is the **spatial location** of individuals and groups in terms of access to information. Individuals residing in more remote areas may not receive warning messages or they are more difficult to update on crises due to scarcer means of communication reaching these areas. Individuals living in more remote areas may have poor reception or internet access (e.g., rural areas in Germany https://www.spiegel.de/netzwelt/web/schmalband-deutschland-warum-unser-internet-immer-noch-zu-langsam-ist-a-901508.html) which can impede access to information in crisis. In the 2017 wild-fires in Portugal, due to the demolition of masts in fire, people in more remote villages did not receive fire warnings in time (https://www.bbc.com/news/world-europe-40341180).

Oftentimes, **information systems are not tailored to meet the needs of a variety of people**. Studies indicate that crisis information systems are not accustomed to individuals with sensory disabilities leaving them in a disadvantaged situation in preparing or responding to a crisis (Phillips & Morrow, 2007). Older people may be in heightened vulnerability due to their lowered sensory abilities including poorer sight or hearing (Helpage, 2015). For example, they may be less likely to hear distant alarms or may have difficulties in reading or perceiving pictures due to poorer hearing or visual acuity (McLaughlin & Mayhorn, 2014).

Furthermore, visually impaired or individuals who are blind are vulnerable in emergency situations because they are “unable to perceive visual messages and to visually assess unfamiliar environments” and will therefore also miss visual clues, e.g. signals, colours of flashing lights (Ringel et al., 2009: 30). Furthermore, they may be unaware of the important emergency information that is disseminated in visual forms or symbols, or which is not made available in Braille.

Crisis communication systems where acoustic signals (e.g. via sirens, loudspeaker vans, disaster relief personnel or radio) are given priority leave hearing impaired individuals but also those without a sufficient knowledge of language (e.g. tourists, migrants) in a disadvantaged position. Hearing impaired individuals are unable to hear alarms or spoken announcements (Ringel et al., 2009). For example, hearing impaired persons did not receive evacuation and support information in the aftermath of hurricane Katrina (White, 2006). In addition, in flood incidents in Saxony, sirens were used (Sächsische Staatskanzlei, 2013: 22–23) and deaf people suffered as a result of this information policy. During the floods in 2002, deaf people were unintentionally left in their houses in the course of the evacuation and later were even switched off the power grid due to the rising water level in some villages nearby Dresden (Bachmann, 2013: 2).

The above examples indicate the **structural shortcomings in making risk or crisis information accessible**. It is not surprising that people with functional limitations have also been found to be most reliant on others for the provision of information and thus their crisis communication processes were more complex in contrast to others (Howard et al. 2017). In addition, young children, elderly or those with chronic diseases are more likely to rely on family and friends for disaster-related communication, in comparison to individuals without disabilities (Hans & Mohanty, 2006; Howard et al. 2017).

Lack of habit or skills to use appropriate information source may increase vulnerability in crisis and disasters. In general, which communication devices and channels people tend to use depends on their age. Traditional TV is watched less by the young. For example, in Germany, Denmark and Sweden, more than one third of people aged between 15 and 25 do not watch traditional TV, whereas in the age group 65+, less than 10 % do not watch the TV (see Appendixes 3-5). Also in emergencies, younger people have been found to be better equipped and more positive about using social media, in comparison to the older adults, among whom almost a third (29%) do not use a smartphone which is a prerequisite for accessing social media while not at home (Reuter & Spielhofer, 2017). The trend is

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evident also in other parts of the developed world: research amongst the vulnerable groups in Australia, indicates that older adults, in particular, relied mainly on radio and expected a phone call on their landline, whereas families with younger children relied on mobile apps, social media and website for emergency information (Howard et al., 2017). The above indicates that older adults, in particular, are in danger of being excluded from support, advice or instructions provided in social media before, during or after the disaster event.

The level of preparedness or vulnerability to crises may also depend on the **ingrained traditions** in searching for information. The situation for women in developed nations is different from that in the developing world, due to differences in income, education, mobility, or different religious and cultural constraints, all of which restrict their access to and use of information technologies (Mutari, 2005). A case study carried out in Haiti after the earthquake indicates that Haitian men were more active information seekers in comparison to women (Sommerfeldt, 2015). Such differences in information seeking activeness are a result of traditions where females did not simply consider gathering information to be their responsibility (Sommerfeldt, 2015). Furthermore, women in the developing world are more likely to turn to their informal networks, as they believe these sources to be more trustworthy and reliable in comparison to mediated technologies (Mooko, 2005). Findings from a recent study by Reuter and Spielhofer (2017) carried out in 30 European countries (n=1034), however, indicates that women have significantly more positive attitude towards using social media as a source for information during emergencies, in comparison to males. Women (33%) were also significantly more likely to share information on social media about emergencies in contrast to males (20%).

Wang et al. (2019) have studied if vulnerable communities are digitally left behind in social responses to crisis. Their case in the hurricane Sandy with Twitter data indicate that physically vulnerable communities could be reached and participated in social media whereas socially vulnerable groups were left behind. In addition, Morris et al. (2014: 573) note that there is no “disability divide in social media use between persons with disabilities and non-disabled persons, but slight variations due to specific impairments”.

2.2. Understanding information

When people receive information about a potential threat, their capability in processing this information may affect their preparedness or vulnerability. The level of understanding of information depends on the ways in which information is presented. The presented **information may be useless if it is not adapted to the needs of a particular group**. For example, individuals with limited cognitive capabilities, especially children, may not recognise signs of environmental danger or understand the threats (Kailes & Enders, 2007). They also may become anxious and confused in response to emergency signals (Scotti et al., 2007). McLaughlin and Mayhorn (2014) have listed a number of age-related changes all of which can influence the perception and interpretation of older adults and thus are essential to be considered in risk communication. For example, older people might be more confused by messages that include jargon, technical terms and euphemisms and guidelines including multiple conditions; and might be disadvantaged due to complex procedural safety messages.

Information may not serve its purposes of reducing vulnerabilities if **information is not adapted to a specific area**. For example, during the 2018 tsunami in Indonesia, the inhabitants of a specific coastal area were not informed that the three metre wave (which is usually not much of an issue) in their area will increase to a six metre wave due to the bay characteristic of the coastal area (Kox 2018; Kox et al. 2018).

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Furthermore, in the crisis various official and unofficial sources may issue **contradicting information**, leaving the judgment up to the receiver, who therefore may be able to take appropriate protective actions. For example, during the shooting in Munich 2016, although only one person committed the shooting, 67 places of perceived shootings where discussed in the social media (https://gfx.sueddeutsche.de/apps/57eba578910a46f716ca829d/www/).

People tend to interpret risk messages based on **what they already know and have experienced** (Plapp & Werner, 2006; Ruin, Gaillard & Lutoff, 2007). People with no previous risk or disaster experience tend to have low risk perceptions, which also reduces their motivation to follow risk info or to take protective action (Kunreuther & Weber, 2014). In case of Californian wildfires, for example, residents who had experienced similar bush fires before, were reported to function well in such kinds of stressful situations, in comparison to newer residents who were only discovering what it means to live in fire-prone areas (and who reported considerable confusion and lack of information) (Shklovski, Palen & Sutton, 2008). In addition to experiences, personality traits (Brynielsson et al., 2018) and values and attitudes (Day et al., 2019) may have an influence on how individuals respond to risk and warning messages.

2.3. Acting upon information

Understanding risks and crisis conditions may not automatically lead to protective action. Economic inequalities in society may impede appropriate responses to information on risks or crisis. Individuals in precarious situation have **less means to engage in self-protective activities,** such as choosing to live in a safe area or stockpiling food and supplies (Edgington, 2009) and they tend to be slower in responding to evacuation messages (West & Orr, 2007). Young people as well as families with young children have been found to be quicker to respond to disaster warnings in comparison to older adults (Drabek, 1999). Elderly, but also multiple sub-populations, such as visually impaired, hearing impaired, cognitively impaired, physically limited or disabled or dependent upon medications or medical care are often dependent on assistance to react upon warning messages (Ringel et al., 2009; White, 2006).

Studies indicate that vulnerable populations may often be unaware of the danger or deny that they are at risk and therefore do not engage in disaster risk reduction (Lewis, Kelman & Lewis, 2011). Some authors argue that individuals with high-risk perceptions seldom act to reduce the predicament because they think that disasters are beyond their control and therefore tend to adopt a fatalistic attitude (e.g. Jóhannesdóttir & Gísladóttir, 2010).

The above draws together the variety of individual and social-structural factors that influence the extent to which individuals and groups can access information, how they process it and the extent to which it leads to protective actions in prior to or in crisis situations. Each person's vulnerability may depend on the combinations of individual, social/structural as well as situational factors (see Table 1). Against this backdrop, the multiplicity of the ways in which vulnerability is influenced by the access to, understandability of, and possibility to act on information becomes visible.

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Table 1. Factors of vulnerability in relation to accessing, understanding and reacting to risk or crisis information

	Individual	Social/structural	Situational
Access	No resources for purchasing a device or channel No access due to impairment No skills or habit to use the source	Poor reception or internet access Gender division in responsibilities for information seeking	Destroyed communication infrastructure
Understanding	Inability to read Limited language skills Limited mental capacity	Information is provided only in one language Information is not location-specific	Exposure to false or contradicting information Difficulties in interpreting probabilistic forecasting information
Reacting	Lack of skills for self-protection Lack of resources to stock up with supplies Inability to evacuate due to mobility impairment	Lack of support for disadvantaged groups Distrust towards first responders Lack of preparedness measures	Type and magnitude of hazard affects the degree of personal control over one's situation (Lack of) previous experiences and relevant acquired skills Simultaneous events draining attention and energy

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3. Vulnerabilities related to the attributes of communication

In this section, we shift our focus from the situational conditions in which people are set as receivers and responders to hazard information and turn to the attributes of communication processes regarding hazards. We draw attention to how people's resilience or vulnerability in crises may be affected by the ways in which messages about crises are presented to them and by the kinds of channels and sources that are used to share these messages. We highlight the need for more inclusive communication practices in crisis contexts.

Scholars have begun to identify the potential roles that the form of disaster information (e.g., social vs. traditional media) as well as the source of disaster information (e.g., government vs. media) play in influencing public behaviour during disasters (Liu, Fraustino & Lin, 2015; Liu, Jin, & Austin, 2013; Utz, Schultz, & Glocka, 2013). Trust in information sources and channels may play a crucial part in people's decisions whether or not to react upon particular messages about hazards (Hagar, 2009; Sutton, Palen & Shklovski, 2008).

3.1. Presentation of information

How a crisis message is presented influences people's motivation to act in the context of risks or crises (Brynielsson et al., 2018; Sorensen, 2000). When messages on hazard contain factors related to the location, time, and magnitude of the impact of an event, people tend to trust the message more and also take precaution (Sutton et al., 2014). For example, the warning messages sent out in Twitter during the Waldo Canyon wildfire in Colorado, which included protective action guidance together with hazard impact, location and message source were more influential in taking up protective actions, in comparison to messages that only provided situational updates without any protective action guidance (Sutton et al., 2014).

Several studies conclude that crisis communication messages need to be specific, consistent, clear and accurate and should also include explicit conclusions about the threat (Gregg et al., 2007; Mersham, 2010). The findings of a study by Bean et al. (2015) indicate that people have difficulties in assessing the content of very short messages – e.g., tweets or wireless emergency alerts – which often tend to be confusing and not stating explicitly nor the source of the message or the type of the hazard. In their study, the participants had a difficult time in assessing the protective action guidance, affected area, and time needed to complete the recommended protective action when distributed in a form of a short message.

Studies by Bakker et al. (2018) suggest that narrative information has a stronger influence on individuals' behavioural tendencies than statistical information. Narratives of others may influence individual decision-making at the time of a crisis (e.g. Wachinger et al., 2013). By contrast, 24-hour news coverage of crisis events, for example, during California wildfires, is regarded as sensationalist, and it is not seen as providing the information individuals are looking for (Shklovski, Palen & Sutton, 2008).

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Maps are one of the most relied-upon tools that enable the public quickly gain knowledge about spatial tasks (Burigat & Chittaro, 2016). The findings of an experiential study by Liu et al. (2017), however, suggest that maps only marginally improve message understanding. Not many people are able to interpret the maps and struggle considerably when interpreting the uncertainty levels and geographic risks (Broad, Leiserowitz, Weinkle & Steketee, 2007; Zhang et al., 2004).

Besides verbal warnings, satellite-based warning as well as sirens and automated emergency messages have been used in emergency management in Europe (Hill, 2010). It is advisable to present risk and crisis messages in various forms to address various audiences. Liu and colleagues (2015) conclude, there is “no single information form that is likely to adequately educate the public about how to optimally respond during crisis” (p. 60).

3.2. Sources of information and levels of trust

Information source and form interact to influence information seeking and sharing behaviours during crises and disasters (Austin, Liu, & Jin, 2012; Liu, Austin, & Jin, 2011; Liu et al., 2013; Schultz, Utz, & Goritz, 2011; Utz et al., 2013). The channel through which a warning message is disseminated affects how people respond to it (Schultz, Utz, & Goritz, 2011). Warning sources may include authorities, media, peers, and family. Individuals have different levels of trust related to these information sources, based on their previous experiences, general social context, social demographics, etc.

A warning from a credible source has greater impact, whereas if the source is not considered to be trustworthy enough, people usually seek information from other sources. Some authors (Col, 2007; Shklovkis, Palen & Sutton, 2008) argue that all disasters are local, i.e. the **public prefers local rather than national sources** for disaster communication as local knowledge is crucial for assessing the true state of affairs of the physical community with better accuracy and detail, both of which could not be provided by the national broadcasting. Furthermore, findings by Thomson et al. (2012) indicate that individuals who were proximate to a crisis event were considered to be more credible, and Starbird & Palen (2010) claimed that local sources and locally relevant information is considered to be more credible by those affected by the crisis.

Studies indicate that people have a habit of **turning to their friends, neighbours and other personal sources**, in order to gain information about crises (Spence et al., 2007). In fact, even when information about warning and crises is disseminated through official sources and through mass media, oftentimes individuals still turn to their own social connections for support and verification (Hagar, 2009; Sutton, Palen & Shklovski, 2008). Some empirical studies (McGough et al., 2005) suggest that at-risk populations, in particular, prefer to communicate with trusted community members and rely on their own social networks to receive information, e.g. before, during and after disasters. This is also the reason why some authors (Oke, Adeyinka & Oluseyi, 2018) have argued that especially in the third world countries, and with vulnerable populations, disaster communication and crises managers should also rely more on community-based communication processes (e.g. interpersonal, seminar, town-hall meetings, church) all of which can be used for creating disaster awareness.

As for the **trust in various information channels**, an overview of the recent results based on Eurobarometer and various national surveys is provided in Appendix 7. A recent study by Reuter and Spielhofer (2017: 172) studied this issue in 30 different countries across Europe (n=1034). The results indicate that the most popular source for emergency information in Europe is TV (86%), followed by online news (80%), local radio (56%) and social media (42%). Other sources, such as websites for

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disaster management agencies and emergency services (31%), and mobile apps and text messages (22%) are used to a smaller degree to get information about emergencies.

On a global scale, radio is viewed as one of the most reliable sources for information during and after a crisis (Spence et al., 2009; Spence et al., 2011). TV has been found to be the main source for crisis information in the United States (Spence et al., 2009).

Traditional media channels – broadcast TV, radio, and newspapers – are just some of the many ways in which people engage with crises related information. Nevertheless, Wendling and colleagues (2013) argue that in most EU countries most risk and crisis communication is still focused on radio and TV, and to a considerable degree also sirens. (For an overview of the current media and communication landscape, see Appendixes 1-3.)

Social media has become actively used both by individuals, organisations and crisis responders (Chauhan & Hughes, 2017) both to exchange information (Chen, Ractham, & Kaewkitipong, 2014), support crisis response efforts (Reuter, Marx, & Pipek, 2012; Wendling, Radisch, & Jacobzone, 2013), and to express interpretations of unfolding events (Gaspar et al., 2014).

Empirical studies suggest that during crises the public's social media usage increases (Bates & Callison, 2008; Sweetzer & Metzgar, 2007). Social media users and those members of the public who become active social media users during crisis events, tend to assign **higher level of credibility to social media posts** in comparison to the messages sent through more traditional media channels (Horrigan & Morris, 2005; Procopio & Procopio, 2007; Sweetser & Metzgar, 2007). The findings of a study by Huang et al. (2015) suggest that many people have come to consider social media as a better source for crisis information in comparison to traditional media due to its speed and location, i.e. due to the opportunity to follow the events on a real-time-basis and an **opportunity to get reactions from first-hand source**. In a study in the aftermath of Boston Marathon Bombings, participants admitted that "when confronted with a 'flurry of information' online" they tended to trust information coming from the sources "on the ground", as well as from friends, and that information that was corroborated by several people was generally deemed also to be more trustworthy (Huang, et al., 2015: 5).

Both the findings of experimental (Liy et al., 2013) and empirical studies (Huang et al., 2013) indicate that insider perspectives is the primary driver for using and creating social media content during crisis events. Individual eyewitnesses tend to be the primary stakeholder group to introduce novel information within social media (Wiegand & Middleton, 2016). Thus, the need for unfiltered, timely and in-depth communication (Johnson & Kaye, 2010; Procopio & Procopio, 2007; Taylor & Kent, 2007), for information the public feels unable to receive from anywhere else are some of the key incentives for turning to social media during crises. In the July 2011 terrorist attack at the island of Utøya in Norway, the youths used mostly Twitter and Facebook to communicate with each other, with their parents, relatives and friends outside Utøya (Steensen et al., 2018: 287). The news about the massacre broke on Twitter before any other media. The Norwegian public emergency offices were absent from Twitter, even though they were mentioned several times by other Twitter users who wanted them to communicate on Twitter. Analysis of interviews with survivors demonstrated that in the lack of official information, individuals used social media to collect information and put together the picture of the situation by information pieces posted on social media (Steensen et al., 2018).

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3.3. Towards more inclusive communication

Historically, communication about a crisis was centralised, i.e. one-way communication was used and the audience had little opportunity to respond to the messages distributed through traditional media: TV, radio, newspapers, and magazines (Coombs & Holladay, 2014; Gonzalez-Herrero & Smith, 2008; Lindsay, 2011). However, when using such kind of reporting measures, authorities are unable to properly monitor the reactions of the public nor incorporate the publics' concerns in their crisis management processes (Gonzalez-Herrero & Smith, 2008; Palen, Hiltz, & Liu, 2007). In recent years, the landscape of crisis communication has been changed by increased use of social media and new possibilities for organising and two-way exchanges (Park, Gon Kim, & Choi, 2019). Social media has turned news consumption into a social activity, particularly for young people (see Appendix 4 and 5), and social interactions influence the ways in which people assess warning messages.

An opportunity to **collectively solve problems** (Booz Allen Hamilton, 2009; Bucher, 2002) is one of the reasons why people turn to social media during crises events. Jurgens & Helsloot's (2018) literature review of the effects of social media on the dynamics of resilience during disasters indicates that social media has a lot of potential to support recovery. The ability of social media to connect people through time and space enhances collaborative problem solving and citizens' ability to make sense of the situation and cope with it. For example, analysis by Mirbabaie and Marx (2019) of Twitter posts in the aftermath of the Manchester bombing in 2017 revealed that many of the members of the general public were using a hashtag #roomformanchester; or by retweeting missing person reports, so as to engage in crisis support efforts. At the same time, online platforms may also offer on opportunity for establishing connections in between community members. For example, after the hurricane Katrina, a local New Orleans newspaper established local neighbourhood-based forums where community members could reconnect with each other (Shklovski et al., 2008).

Several authors (Palen et al., 2007; Palen & Liu, 2007; Wendling et al., 2013) argue that the public's role and participation in disaster or crisis situations has become more active than ever. This is due to social media that enables them not only to passively receive official information, but also to self-organise, communicate as a network and provide assistance during emergencies (Tan et al., 2017; Shkolvkski, Palen & Sutton, 2008). For example, in New Zealand, after the earthquake in 2011, a Facebook volunteer-finding campaign turned into a "student volunteer army" of more than 24 000 individuals who were willing and motivated to go and help the community and individuals in need (Hayward, 2013).

Social media may offer possibilities for **psychological support** for certain groups (Lüge 2014: 6). Social media platforms also help to gratify user's desire to communicate with one's interpersonal networks, or as noted by Fisher and colleagues (2013: 62), "issue relevance and emotional venting motivate publics to use social media during a crisis." For example, a study by Al-Saggaf and Simmons (2015) reveals that during the 2009 and 2011 floods in Jeddah, Saudi Arabia, the public used different social media sites. People make posts about the damage the floods had caused, the reflect upon what had happened, to approach the topic of responsibility, to criticise government's response to the natural disaster. All these are important opportunities, especially for a community (e.g. racial minorities) who is usually excluded from official discourses. Several researchers have noted that at the time of the crisis social media offers a medium for affective release (Al-Saggaf & Simmons, 2015; Papacharissi & deFatima Oliveria, 2012).

Also, in a post-crisis recovery phase, social media provides a platform for emotional support, enabling the publics both to demand information and find resolution (Jin & Liu, 2010; Choi & Lin, 2009; Stephens & Malone, 2009) as well as to **provide emotional support** for victims (Bird, Ling, & Haynes, 2012; Taylor et al., 2012). Social media may provide platform for **organising psychosocial support** in recovery phase of disasters. For example, in the aftermath of July 2011 terrorist attacks in Norway,

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social media, in particular Facebook, was crucial in the origination of spontaneous gatherings, like peaceful rose parades, organised by citizens in the days after the massacre (Steensen et al., 2018).

Through social media use, vulnerable groups can **build communities and get a voice** (Zisgen et al., 2014: 11; Avvenuti et al., 2018: 58). Moreover, monitoring authorities through social media may give the most vulnerable a way to scandalise current shortcomings (Avvenuti et al., 2018: 58).

Regardless of the virtues of using social media for risk and crisis communication, it has also major limitations. Employing social media's potential in reducing vulnerabilities is hindered by the **digital divide in societies**. Although the popularity of social media has been continuously growing all through the world, it is still important to note that not all people are actively involved in social media and thus the medium can complement but not replace all the other communication strategies (Jin & Liu, 2010; Palen et al., 2010). Many individuals learn about their environment and potential threats through traditional media. Studies carried out amongst crisis preparedness managers in the United States show that the overall reach of the social media messages posted by emergency managers is still quite poor, as the public "appears to have limited interest in following emergency management agencies, especially prior to a major incident" (Wukich & Khemka, 2017: 94).

Even though social media has been successfully used during the crisis or in the post crisis recovery phase, traditional information sources can be very relevant during certain crisis cases and target groups. For example, in 2018 in Nousiainen, Finland, drinking water was contaminated and all people living in the area needed to be informed about it. In this case, also printed leaflets were distributed to apartments to make sure people in a difficult situation (old people, people with dementia) were informed about the water. Volunteers played an important role in delivering information (Keränen & Airola, 2019).

A study on the communication during the recovery phase of the 2012 Emilia earthquake in Italy indicated that once people have started to use online services, there are not significant differences in technology adoption based on their socio-demographic features (Tagliacozzo & Magni, 2016). However, for older and less educated people, the barrier to start is higher, and if they have not started to use online technologies, television and telephone are their preferred channels. The same case also demonstrated that communication with the recovery authorities through social media was not overall successful, partly because of lack of trust in the authorities.

From an emergency manager's perspective, social media use can enhance crisis response by providing geographically and temporally traceable data (Wendling et al., 2013) which also enables the analysis of public behaviour and communication patterns during crisis events (Wang & Ye, 2018; Chae et al. 2014). Social media can be used also for gathering information about specific needs during an incident, public sentiment regarding risk prior to extreme events, and the operations of different agencies (Wukich, 2015: 286). As suggested by Eriksson and Olsson (2016), social media crisis communication enables a constant interchange between individual and organisational actors. Indeed, there appears to be an increasing recognition of the need for social media use among crisis managers. The findings of a recent study by Reuter et al. (2017) carried out amongst emergency staff members in 32 European countries (n=761) reveal that in the majority of cases, emergency staff members expressed a positive attitude towards the use of social media. However, regardless of the general optimism among the emergency staff, a big discrepancy between words and reality still exists. Although 66% of the emergency workers indicated that social media could be useful for obtaining an overview of the crisis situation and for raising awareness, only 23% from the sample claimed to use social media often or sometimes for such purposes (Reuter et al., 2017).

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Our review indicates that while traditional information sources remain relevant during certain crisis cases and target groups, the landscape of crisis communication has been changed by the increased use of social media and the new possibilities for organising and two-way exchanges. The extent to which these more dynamic communication tools will be adopted by various population groups and crisis managers, and the ways in which this may affect crisis preparedness and resilience in particular situations, needs further inquiry in the years to come.

4. Vulnerability to false information

Various forms of false information (intentional or unintentional false or misleading claims, malicious disinformation, rumours, pranks, and outdated information) that people may be exposed to in crisis situations can put them at increased risk and/or complicate the work of resilience/emergency management institutions. Conceptually, it is important to acknowledge that there are many guises of false information (Wardle & Derakhshan, 2017) which range from satire and misleading content (misinformation, which may be shared without intending harm) to manipulated or fabricated content (disinformation, which may be shared with destructive intent).

From an emergency management perspective, people may be seen as vulnerable to false information when they find it **difficult to assess the reliability of information**. For example, immediately after the 11 March 2011 earthquake in Japan, people relied on Twitter as an important communication tool to spread warnings, help requests, and reports about themselves and the environment. In a later survey, "[m]any users mentioned that they couldn't tell true information from false, especially when they saw emergency messages, such as, 'I'm about to die' or 'Can anybody help me?' After a while, some of those tweets turned out to be false" (Acar & Muraki, 2011: 398).

People also reported that their **confusion was made worse by the sheer number of disaster-related messages** on Twitter and because they could not easily find important messages as a lot of irrelevant information was tweeted with #disaster hash tag (Acar & Muraki, 2011).

The problem of assessing the reliability of publicly disseminated information is not unique to crises. In a 2018 Eurobarometer survey of 26,576 respondents in 28 European Union countries, 21 per cent of the respondents said they were 'not very confident' and 5 per cent 'not at all confident' that they "are able to identify news or information that misrepresent reality or is even false" (European Commission, 2018). The findings suggest that elderly people (who use social media less frequently or do not use social media at all) are less confident in their ability to identify false information (see Figure 1). Within internet and political communication research, there is some evidence to suggest that **people who do not use multiple news sources and are least skilled in using internet search engines are most vulnerable to online misinformation** (Dutton & Fernandez, 2019).

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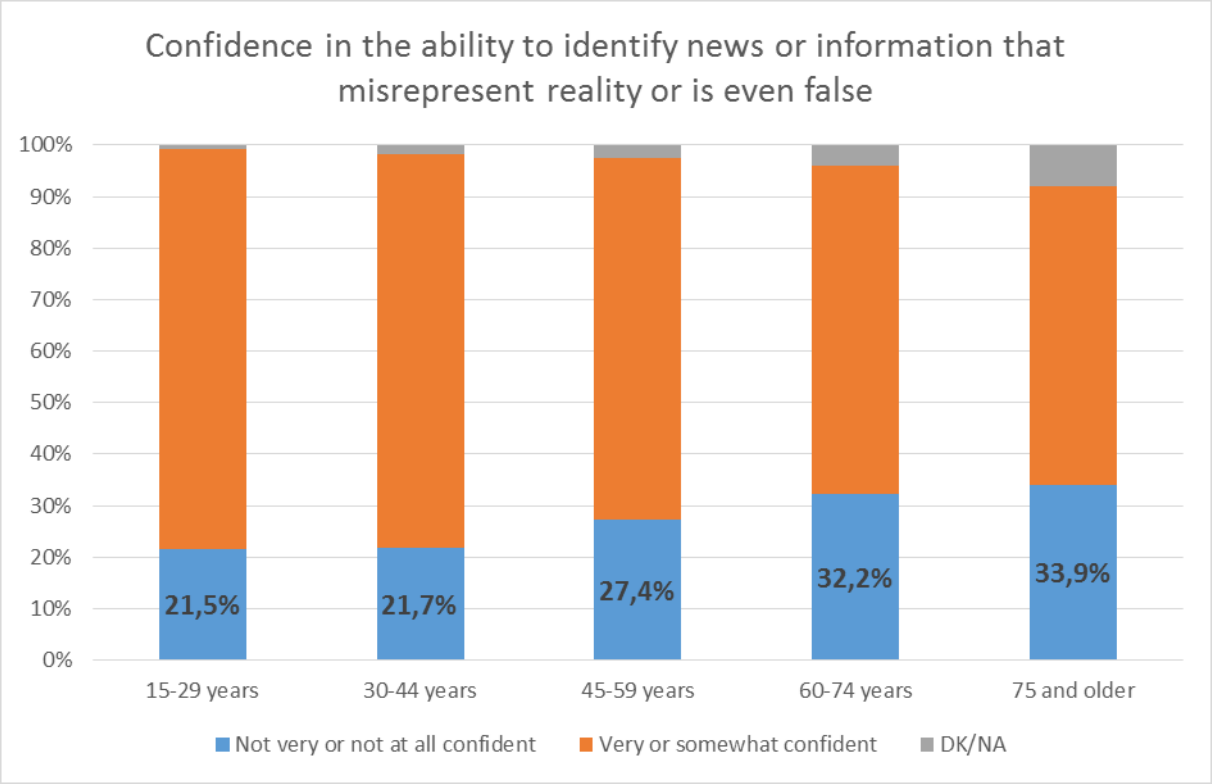

Figure 1. "How confident or not are you that you are able to identify news or information that misrepresent reality or is even false?" Responses by age groups (Flash Eurobarometer 464, European Commission, 2018)

Individuals' or groups' disadvantageous social conditions, including distrust towards official institutions and their communication may drive people to follow misleading information. For example, when mandatory evacuation order was made in advance of Hurricane Ike's landfall on 13 September 2008 in Texas, United States, a survey later showed that an (unfounded) concern about legal status among undocumented residents influenced their evacuation behaviour.

> Many were afraid to seek evacuation assistance, and feared they would be required to show identification to board evacuation buses. None had experienced this in the past, but stated they had heard rumours of such requirements. /.../ Although FEMA [Federal Emergency Management Agency] officials announced that no one would be questioned during evacuation, undocumented immigrants expressed beliefs that they were not considered to be part of the evacuation population. /.../ The misconception that immigration enforcement occurred on evacuation routes prevented 'receipt' of the right information, and to them deportation was a greater threat than the hurricane. (Wilson & Tiefenbacher, 2012: 205)

Hearsay/rumours may discourage certain marginalised groups such as undocumented immigrants from seeking help in particular situations, thereby placing them in increased danger. Researchers suggest that for people in such contexts, "unique plans ought to be developed /.../ to enable easier and less 'chancy' information gathering and less fearsome forms of communication throughout the community, particularly during periods of calm" (Wilson & Tiefenbacher, 2012: 208). It is also necessary for emergency management institutions to better understand the various patterns of crisis-coping strategies that people may adopt as well as the various reasons why they sometimes ignore warnings or other crisis information (Vihalemm, Kiisel, & Harro-Loit, 2012).

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People may be vulnerable to false information even when they are **located far from a disaster area** as rumours related to a crisis event may also affect those who are not directly threatened by a disaster. For instance, after the 2011 nuclear leak in Fukushima, Japan, a rumour that originated in a microblog caused a salt shortage panic in China:

> Many customers were under the mistaken impression that iodized salt—the type of table salt commonly sold in China—would protect them from radioactivity released in Fukushima, should it drift their way. Others believed that the radioactivity would mean contaminated sea salt in the future, and that they should stock up on uncontaminated salt while it was still available. Still others feared that the sudden run on salt foretold a coming shortage, and they too rushed to buy salt. (Kasperson, 2012)

It is likely that in this case many people believed the rumours due to **the nature of the threat**: the danger of radiation "is an intangible, time-unlimited and deadly threat, which can come from all directions, and against which protection is difficult or impossible" (Helsloot & Ruitenberg, 2004: 100).

4.1. Forms and channels of false information

False information about disaster risks and emergencies may spread via stories produced by news organisations/journalists (i.e. disaster journalism), or via social media postings by various individuals/groups who sometimes remain unidentifiable.

Disaster journalism ideally includes professional reporters examining community disaster mitigation and preparedness, providing disaster warnings, reporting on disasters, and facilitating community disaster recovery and resilience (Houston et al., 2019). However, journalists' stories may result in harm when their **reporting is based on unverified information or misrepresents the situation**.

Individuals, businesses and governments use social media tools, such as Facebook, YouTube, Twitter, and Instagram, increasingly to interact with others and to share and monitor all sorts of content, including texts, images and videos about risks and crises. In crises, people may not rely only on 'official' data sources. Therefore, they may seek and share information via social media to assess the situation, determine what to do, and share their views (Stieglitz, Bunker, Mirbabaie, & Ehnis, 2018) – so it is likely that they **share or receive some inaccurate or incomplete information** within their networks that may put them or others at risk and/or hamper resilience or emergency management. In a survey study by Reuter and Spielhofer (2017), 38% of respondents from their sample (n=1034) indicated that they would not trust messages on social media, apart from those coming from official sources.30% argued that emergency services should also not trust information on social media. Furthermore, Morris et al. (2014: 570) show that persons with disabilities are similarly sceptical towards social media content as other groups are more likely to trust traditional news media.

On the one hand, "disaster reporting and curation by unknown individuals and organisations may raise concerns about the accuracy of information, the potential for rumours, the **maliciousness of use** (such as scams conducted by social media), and the protection of privacy" (Houston et al., 2015: 11). On the other hand, however, social media can also be used for (collective) fact-checking and **debunking myths/rumours about disasters**. The use of social media may potentially help to decrease the number of false alarms, as more 'social sensors' take part in checking and filtering data (Avvenuti et al., 2018: 59).

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Next to fact-checking by individuals, government agencies may engage with people via social media as a part of their overall risk communication and crisis communication efforts (Reuter et al., 2018). Termed 'rumour management', this involves government agencies scanning for false information originating from an external source and offering corrections and/or clarifications – usually during response operations, but admittedly this might be necessary also for preparedness/resilience building (Wukich, 2019).

Unsurprisingly, "rumours are often viewed as a negative aspect of crises, something that we should seek to minimise" (Huang et al,. 2015: 2). The fear of misinformation is one of the main reasons why emergency response professionals are hesitant about using social media as part of their formal work practices (Hiltz, Kushma and Plotnick, 2014; Hughes and Palen, 2012). Rumours and misinformation are often spread online during a crisis event, for example several rumours which were later debunked as misinformation went viral during the Manchester bombing (Mirababaie & Marx, 2019) and the Boston Marathon bombings (Huang et al., 2015).

Some authors regard **rumours as part of collective problem solving** or 'social sense-making' with an aim to agree on a common understanding of the events that have occurred (Bordia & DiFonzon, 2004). Personal anxiety and personal involvement in a disaster play an important role in rumouring behaviour (Oh et al., 2010). The latter aspect of rumouring was also highlighted by the participants of Huang et al. (2015: 5) study who admitted that they shared information on social media during crises so as to enable other members of the public to stay informed.

However, sometimes this information sharing results in passing forward erroneous information. The findings of Huang et al. (2015: 6) allowed them to hypothesis that "social media plays a role in development of emotional proximity, and that this emotional proximity has a mediating effect on the spread of misinformation during disaster events". News media also often repurposes unconfirmed information shared on social media, especially eyewitness reports, into news stories of their own (Wiegand & Middleton, 2016; Marx, Mirbabaie & Ehnis, 2018), helping thereby to verify the social media posts and creating viral effects.

Sharing of sensational and unfounded stories during the crisis could also be a strategy of a **counter public community**. For example, during the Ebola crisis in the summer of 2014, the news shared on social news sharing site Reddit amplified panic and uncertainty all of which overshadowed the reality of the global health crisis (Kilgo, Yoo & Johnson, 2018).

Another important aspect in this regard is that **official warnings may be mistaken as spam** and therefore neglected. In this vein, a core issue is to define who is in charge of identifying and correcting misinformation (Lüge 2014: 7). False information is a complex phenomenon that is not always produced with a malicious intent (disinformation), but it is certainly important to pay attention to the ways in which it may interfere with crisis response and recovery.

4.2. False information in crisis response and recovery phases

In a disaster situation where the desire for relief and information is high, false information may spread easily. For example, during the 22 July 2011 terrorist attack in Norway, the police stated already at 5.28 PM that they had "... people on their way" and at 5.31 PM a person on the island was told that the police would be there in "… minutes". However, at that time, no patrol had been deployed from the nearest police station. Dissemination of incorrect information about how far the police had progressed towards the location persisted until the arrest. Interviews about the use of social media with 8 survivors

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of the attack (Steensen et al., 2018) highlighted that in the absence of no official social media statement, it was difficult to ascertain whether something on social media was true or not.

Also, in the aftermath of the September 2018 earthquake and tsunami disaster in Indonesia, much false news spread through social media, including WhatsApp and Facebook. Several hoaxes spread, for example false news of the death of the Mayor of Palu and aftershock earthquakes or offerings of free flights to flee the disaster area (CNN Indonesia, 2018).

Through social media use, **vulnerable groups may build communities** (Zisgen et al. 2014: 11; Avvenuti et al., 2018: 58). In response to the Dresden floods in 2013, citizens used particularly Facebook groups to offer or seek help. The different Facebook groups had more than 100 000 supporters and were run by a range of actors, varying from individuals to charity organisations (Sächsische Staatskanzlei, 2013: 51). However, bottom-up self-organisation of unaffiliated volunteers brought along incidences of misinformation and related actions that **worked against disaster relief**. One example was the gathering of several hundreds of people filling sandbags without any authorisation by the disaster management authorities. A sandbag wall was built in an area that was meant to be flooded to protect other areas of the city according to the official flood management plan (Albris, 2017). Although this act was often perceived as supportive, the misinformed self-organisation process actually resulted in doing more harm.

Another example of the spread of misinformation in response to Dresden floods was related to the development of an online flood map for the city of Dresden. In peak times, more than a thousand people approached the website per minute. However, it suffered from both consciously launched misinformation or deleted information and misinformation due to operating errors. Although volunteers regularly corrected faulty information, The Federal Office of Civil Protection and Disaster Assistance (BBK 2014: 27) reported problems like decreasing motivation, difficulties in handling the website, a lack of volunteers during the night time and the disregard of rules concerning the deployment of symbols occurred.

In a disaster context, social media can also be a channel for verbally attacking persons and pushing them out of society. Crisis situations may lead to **increased hate-speech** – insulting, blaming or discriminating persons of groups for their beliefs or ideas. Social media offers an indirect and to some extent anonymous way of communicating with and about persons. Hence, the risk of becoming a victim of hate speech in the context of social media increases. For example, after the 22 July 2011 terrorist attacks in Norway, rumours quickly spread on Twitter about an Al-Qaeda attack as a response to Norway's participation in military operations in Afghanistan and Libya. A large number of tweets blamed radical Muslims and the Norwegian Anti-Racist Centre recorded a surge of hateful speech against Muslims and immigrants online (Steensen et al., 2018).

Intentional false information (i.e., disinformation) is most likely spread during terrorist attacks and other man-made catastrophes where speculation about the perpetrators and their motivations are likely. Fischer-Preßler et al. (2019) identified rumours and misinformation, hate speech, and bigotry in tweets relating to the Berlin Christmas market attack in 2016. Tensions between groups within a country and interests of other countries in meddling with internal affairs of neighbouring counties are factors contributing to intentional manufacturing of false information (Aday et al., 2018).

To counter the spread of hateful or false messages online, people may engage in various forms of **digital activism.** For example, in the context of 2013 Dresden floods, people warned each other about misleading information, they apologised for spreading wrong information, or simply deleted those Facebook contacts who posted speculations (BBK, 2014).

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The above review shows that in cases where information about a crisis is insufficient or unclear, people's creativity and desire for relief from uncertainty may lead them to come up with or believe in false stories. False information spreads particularly quickly via social media, and it could be difficult for emergency managers to debunk. Problems of false information are intertwined with problems of social trust, social exclusion, and discrimination.

5. Discussion and recommendations

This report has followed the objective of the BuildERS project Task 1.4 to identify vulnerable populations' trust in media sources, social media use (or lack of use) and proneness to be affected by misinformation in the context of disasters. We aimed to clarify the ways in which information behaviour may make one more vulnerable and less resilient in crises.

Considering that "communication is a critical component in helping individuals to prepare for, respond to and recover from emergencies" (Meredith et al., 2008), we have treated communication as one of the variables that may either increase or decrease people's vulnerability to crises. Individual and group vulnerabilities in crises may stem from a variety of communication-related factors. Thus, the report lays out a complex set of factors all of which are important to consider both by the affected individuals/groups and by the authorities so as to facilitate better coping in extreme events.

In our scoping study, we have distinguished between two broad interrelated categories so as to highlight the main communicative factors that describe ways in which people may become vulnerable to hazards: (1) situational conditions in which people receive and respond to information about hazards; (2) attributes of communication about hazards.

Our review of literature and case studies suggests that people may become more resilient to crises if (1) disaster information is presented so that they can access and understand it; (2) they have resources to act appropriately based on that information. The following section reviews those findings.

5.1. Access and understanding

Disaster information, such as warnings and behavioural guidelines, have to be tailored to the particular recipients' needs in the context of each particular hazard/disaster. This means, above all, acknowledging that different individuals and groups access and understand information in various ways, depending on their functional limitations, language skills, habits of media use, attitudes and beliefs regarding particular sources and channels of information. Resilience and emergency managers should (1) seek to understand the broader socio-cultural context of the hazard/disaster, including diversity among the (potentially) affected populations, their various cultures, norms, and value systems; and (2) attend to the different information needs of individuals, their functional roles and specific situational contexts during crises and disasters. **Understanding differing communication practices and preferences** is essential to be able to reach and help different groups during crisis.

In crisis communication, each message must be presented so that the recipients in the target group are likely to understand it. Difficulties in understanding crisis messages and acting accordingly should be analysed from the point of view of specific audiences. Crisis managers must find out what kind of misunderstandings may emerge and what can be done to mitigate them.

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Our analysis of Eurobarometer data revealed that usage patterns of traditional as well as social media differ considerably between countries and age groups. While the popularity of social media use has been growing globally, the recent Eurobarometer data in our report indicates that not all people within the European Union are actively involved in social media. Accordingly, **social media can complement but not replace all the other channels of crisis communication**. In many countries, the best way to reach young people is through various social media channels. It has become nearly impossible to reach all relevant audiences via one channel only.

In order to facilitate better preparedness and coping in case of extreme events, it is crucial to **combine different communication channels** to better reach the varied publics. As individuals who are proximate to a crisis event are considered to be more credible (Thomson, 2012), it is necessary to make use of a variety of **local sources and information channels** (e.g., local radio and TV stations, local newspapers, local social media groups) for communication. These are considered to be more credible by those affected by the crises (Starbird & Palen, 2010).

There is some evidence that regular social media users and those members of the public who become active social media users during crises events tend to assign higher level of credibility to social media posts in comparison to the messages sent through traditional media channels (Horrigan & Morris, 2005; Procopio & Procopio, 2007; Sweetser & Metzgar, 2007). Thus, government agencies and municipalities are advised to **use social media channels for daily public communication** to cultivate a trusting relationship with the public online and to be able to use these channels for operative communication also in times of the crisis.

If vulnerable individuals or groups as information receivers do not trust official sources of crisis information, understanding the exact reasons behind this is of utmost importance to crisis managers. As trust has to be built over time, it might be the case that those institutions have previously failed to help these people in an appropriate way (Buhelt, 2012). On the other hand, feelings of distrust may not be related to previous negative experiences with emergency managers but rather arise from a general sense of (social or economic) insecurity. Thus, measures for alleviating socio-economic inequalities in society or in a particular vulnerable community could work in favour of building trust and collaboration with authorities, so that everyone would follow their crisis guidelines.

As the preferred channels and services vary between countries and are prone to change over time, it is vital for emergency managers and crisis communicators to stay up to speed with the local information environment and communication preferences and habits of the public. This could be done by regularly procuring and consulting surveys of media use.

5.2. Empowering

This report illustrates the possible structural shortcomings in making risk or crisis information accessible to most people. Information provision and form needs to be adapted to the needs and capacities of a particular population group. Socio-economic inequalities need to be addressed for enabling universal access to crisis information and increasing motivation to seek information to overcome tendencies to fatalistic attitudes in crisis.

Our review of literature and case studies suggests that people may become more resilient to crises if they (1) are trained in media literacy and information evaluation; (2) know where to turn to for information in case of a disaster. In addition, measures to increase people’s willingness to seek additional

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information prior and during a crisis event are crucial from the point of view of alleviating the often over-stretched communication capacity of crisis managers.

Existing research indicates that during crisis situations, people are likely to engage in information seeking to reduce uncertainty (Spence et al., 2006). Resilience and crisis managers should develop measures – such as training programmes and information campaigns – for improving their information seeking and evaluation skills during the crisis event.

People could be routinely encouraged to use locally relevant social media channels to be better prepared to reach necessary information and support in times of crisis. In addition, as real-life social networks are also very important in assessing crisis information, building upon and **supporting community relations and endeavours to include marginalised groups** by various forms of communication could help to enhance resilience in crisis. Interactions with other people, such as school, community, and workplace activities and training events could be used to stimulate discussions about appropriate crisis behaviour and build skills necessary for preparing for various crisis events.

Historically, communication about crises was centralised – one-way communication was used and the audience had little opportunity to respond to the messages distributed through traditional media such as TV, radio, newspapers, and magazines (Coombs & Holladay, 2014; Gonzalez-Herrero & Smith, 2008; Lindsay, 2011). However, our review indicates an increasing need to incorporate social media platforms in risk and crisis communication both to exchange information (Chen & Ractham, 2014), support crisis response efforts (Reuter, Marx & Pipek, 2012; Wendling, Radisch & Jacobzone, 2013), and to express interpretations of unfolding events (Gaspar et al., 2014). Social media provides a space for quick non-hierarchical communication, offers opportunities for dialogue between crisis managers and the public, and supports the development of **new participatory forms of crisis communication** (Wendling et al., 2013).

In case of emergencies, the use of mobile phones and social media provides a relatively easy and affordable communication tool for the socioeconomically insecure communities. However, care is needed in **following where the concerns of those deprived from official help are channelled**. For example, different vulnerable groups (e.g. illegal migrants, persons without a residence or working permit) might be using social media but with an aim to prevent contact with authorities. Thus, their needs might still be less visible for official support structures and reaching to these groups would need special attention. During the times of crises, discrimination and hate-speech may increase, which might push vulnerable groups further to the margins of society and out of the official ‘help radar’. Both the members of the public and the crises managers need to remain attentive as to whose needs and worries are not voiced (are there any individuals or groups who tend to remain ‘invisible’?) in crisis contexts, and take steps to make crisis communication and management more inclusive. In addition to social media monitoring, a mix of tools and practices for gathering information on individual and group concerns needs to be established.

People who are less experienced in using (social) media have more difficulties in assessing and processing the information and are therefore more vulnerable to misinformation. Educational and research programmes should be established to support **developing skills and tools to evaluate the credibility of (social media) information**.

Rumours, misinformation and disinformation are often spread on social media during a crisis event (Huang et al., 2015; Jones & Lion 2017; Qiu2017; Mirababaie & Marx, 2019). In those occasions, it is necessary to correct false information as quickly as possible. However, to do it more effectively, it is

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necessary for emergency mangers to **better understand the causes and processes of 'rumourmongering'** on social media and the proliferation of particular 'disaster myths' in society.

6. Conclusions

This report highlights the socially constructed nature of vulnerability – problematic societal conditions that may lead to unequal access to or poor understanding of crisis information. Individuals experience vulnerabilities to different degrees, and depending on personal and local contextual features. Disaster and resilience related policymaking at all levels of government should take heed to these conclusions. Specifically, we direct specific recommendations to three audiences with the most direct effect on vulnerable populations. We encourage EU level policymakers, too, to consider these recommendations as efforts are made to assist member states and to build better, common disaster policies in Europe.

We recommend **policy makers on the local and state level** to:

- Address socio-economic inequalities and marginalisation as key impediments of trust building and collaboration with authorities in responding to crisis communication.
- Support community relations and endeavours to include marginalised groups to stimulate awareness and build skills in preparing for the crisis event.
- Understand and build on *existing* social networks when planning new crisis communication strategies.
- Establish educational and research programmes to support developing skills and tools to evaluate the credibility of (social media) information.

For **organisations involved in crisis management**, we suggest that they:

- Establish routines in emergency management organisations for responding to false information about risks and emergencies.
- Use social media monitoring to get a good grasp of public sentiments concerning particular risks or crises, and understand where the concerns of those deprived from official help are channelled.
- Seek better understanding of the causes and processes of 'rumour-mongering' on social media and the proliferation of particular 'disaster myths' in society.

We advise **crisis communicators** to:

- Be aware and up-to-date with the local information environment and preferences of the public as media use and information seeking preferences of individuals and sub-cultures differ.
- Make use of and combine different communication channels (both traditional and social media), to better reach the varied publics.
- Introduce measures to increase people's willingness to seek additional information prior and during a crisis event to avoid reliance on a single source and enable triangulation of information.

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Appendix 1: Internet penetration in EU

Internet penetration is high in BuildERS project countries with the lowest penetration in Hungary with 89% and highest in Norway with 99%. Of all EU member countries, the lowest internet penetration is in Bulgaria with 67%, Greece with 70%, and Romania with 74%.

Table 1. Share of internet users of the whole population of the European Union member countries (https://www.internetworldstats.com/)

Country	Share of internet users		Country	Share of internet users
Austria	88 %		Latvia	87 %
Belgium	94 %		Lithuania	91 %
Bulgaria	67 %		Luxembourg	98 %
Cyprus	81 %		Malta	83 %
Czech Republic	88 %		Netherlands	96 %
Denmark	98 %		Norway	98 %
Estonia	98 %		Poland	78 %
Finland	94 %		Portugal	78 %
France	92 %		Romania	74 %
Germany	96 %		Slovakia	85 %
Greece	70 %		Slovenia	80 %
Hungary	89 %		Spain	93 %
Ireland	92 %		Sweden	96 %
Italy	93 %		United Kingdom	95 %

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Appendix 2: Social media services

Social media services emerged around and after year 2000, and since then they have changed the way people communicate and consumer media in normal and crisis situations. Social media services give their users many opportunities for expressing themselves and connecting to other users.

Typical main features are:

1. Creating and maintaining a permanent profile page,
2. Connecting to other users
3. Sharing texts, photos, videos and/or podcasts
4. Sharing links to news and other pages on the internet
5. Private one-to-one communication
6. Many-to-many communication in public or private groups
7. Discussing about the shared items with members of one's network or publicly
8. Knowledge sharing and building in wikis
9. Rating services, shops, locations and other objects of interest

Services offer a mix of these features with varying details and privacy opportunities. For example, some services the messages are visible only for a limited time or only to persons in a specific locations, whereas others offer global reach and permanent storage. When the early years, much of the content was public but now the trend is towards better privacy control and smaller visibility (reference needed). Another trend is the increasing popularity of sharing photos and short videos which short comments and tags. Figure 1 shows the most popular social media services in the world. There are six services with more than one billion users and two with at least 2 billion users. Services focusing on photo and short video sharing, like Instagram, Snapchat and TikTok, have increased their user base quickly.

Instant messaging services have become very popular. They make it possible to communicate privately individually and within small groups. This has turned out to be a channel for very quick spreading of news and rumours. The use of WhatsApp to spread false rumours have lead even to violent attacks and lynching people (Farooq, 2018). The service has therefore reduced the capability of sharing messages (https://www.engadget.com/2019/01/21/whatsapp-limits-forwarding-worldwide/).

The borderline between traditional media and social media services is blurring as traditional media channels like TV broadcasters and newspapers have established a strong online presence with their own websites and social media accounts, and traditional TV channels offer content through streaming and on-demand services. Sharing links relating to news and other topical issues and discussing about them with friends on social media services is popular, and leading that for many people there is no strict difference between social media and traditional media.

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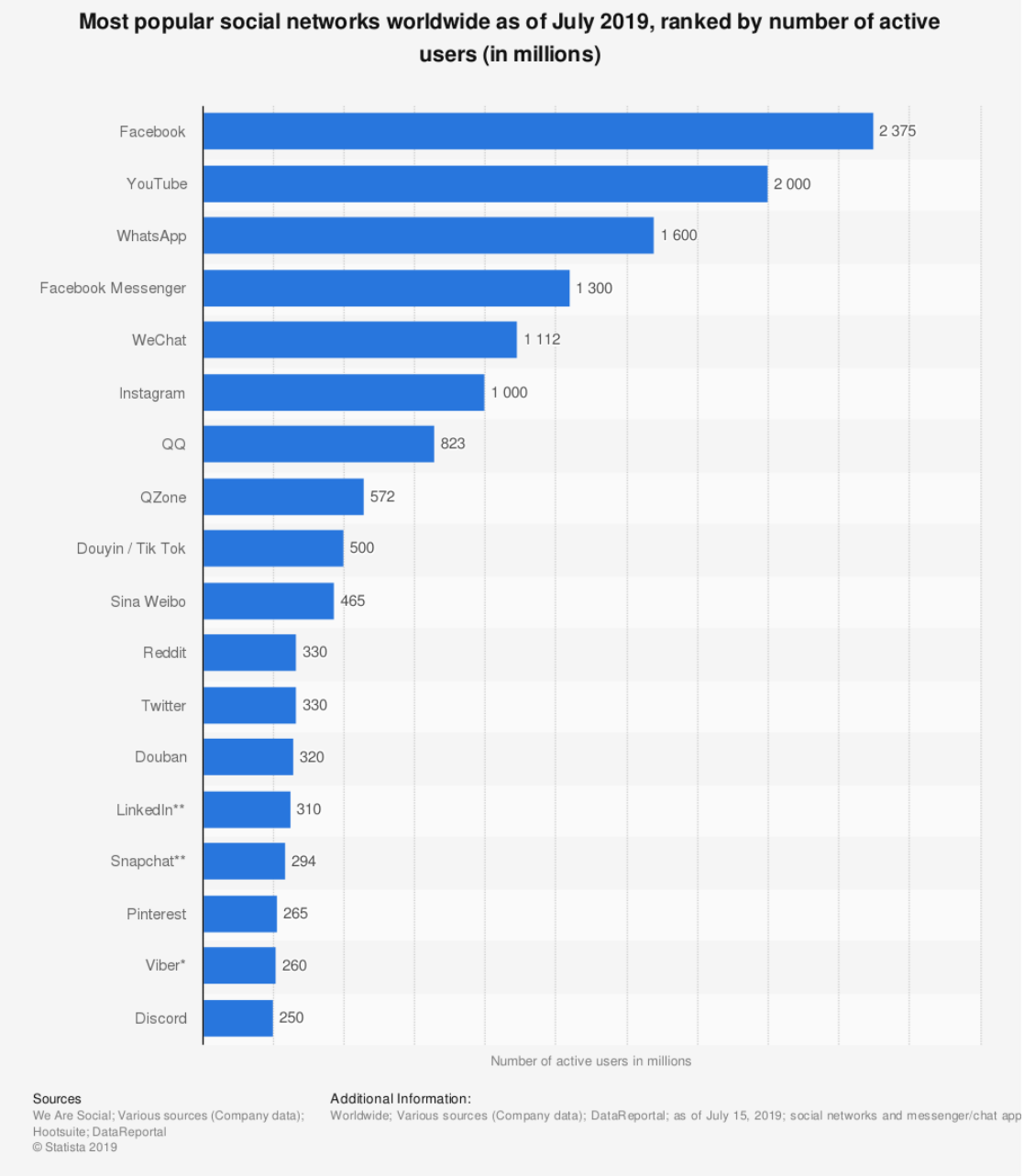

Figure 1. Numbers of users of the globally most popular social media services.

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Appendix 3: Social media and TV use in Germany, Denmark, Sweden, Norway and Finland

The AudienceProject[1] released studies of social media[2] and television[3] use in some countries including Germany, Denmark, Sweden, Norway and Finland in 2019. AudienceProject data was collected through online surveys in Q3, 2019. The total number of respondents is 13 000 in the seven surveyed countries, Germany, Denmark, Sweden, Norway, Finland, UK and USA.

The biggest social media services have global reach, but their popularity varies considerably even in neighbouring counties. Facebook is the first or second most used social media channel in all these countries, but there are differences as to what is the other top social media service: In Germany and Finland, it is WhatsApp; in Denmark and Sweden it is YouTube; and in Norway Snapchat. In Norway WhatsApp is only the eighth and in Denmark the seventh most popular social media application. The top social media service was used by 74% to 83% of people in these countries according to this study. Twitter, which has been studied a lot also in relation to risk and crisis communication, is used by 20% in Norway and 13% in Denmark with the other countries between these values

The AudienceProject survey also asked for what purpose people use different services. From risk and crises communication point of view, two of the included purposes are relevant: to keep contact with friends and family, and to get news. WhatsApp, Facebook and Snapchat are the used for keeping contact with friends and family by at least 74% of users in these different countries. From 18% to 34% of Facebook users use the service for getting news, whereas 45% to 60% of Twitter users use it for news. Reddit is used by only 3 to 6% of people in these countries, but 36% to 62% of those who use it get news through it. According to the AudienceProject study, traditional TV still reaches people, particularly in age groups starting from 46 years, where at least 83% and up to 96% watch traditional TV. In the young age groups from 15-25 and 26-35, Denmark shows particularly low figures with only 39% and 50% of people watching traditional TV. In Sweden, the lowest figure is 56% watching traditional TV (15-25 years), and in other countries the share is at least 60%.

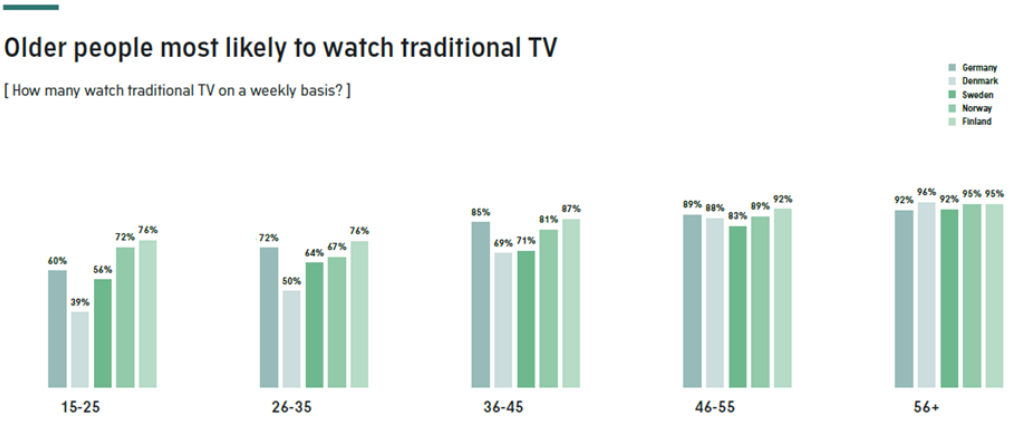

Figure 2. Share of people watching traditional TV in different age groups and selected countries according to AudienceProject Study of TV and Video Streaming.

[1] https://www.audienceproject.com/
[2] https://www.audienceproject.com/wp-content/uploads/audienceproject_study_apps_social_media.pdf
[3] https://www.audienceproject.com/wp-content/uploads/audienceproject_study_tv_video_streaming.pdf

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Appendix 4: News and social media use 2019

This appendix gives an overview of how people access news and the role of social media and messaging apps as an information source based on Reuters Institute's Digital News Report 2019[4]. It is based on a survey of more than 75 000 people, and it was conducted using an online questionnaire at the end of January/beginning of February 2019. Information was gathered from 24 European countries, and seven markets outside Europe. BuildERS project consortium countries were included in the study except for Estonia. Samples in each country were assembled using nationally representative quotas for age, gender, region, and education, and the results can be regarded as representative of online populations who use news at least once a month.

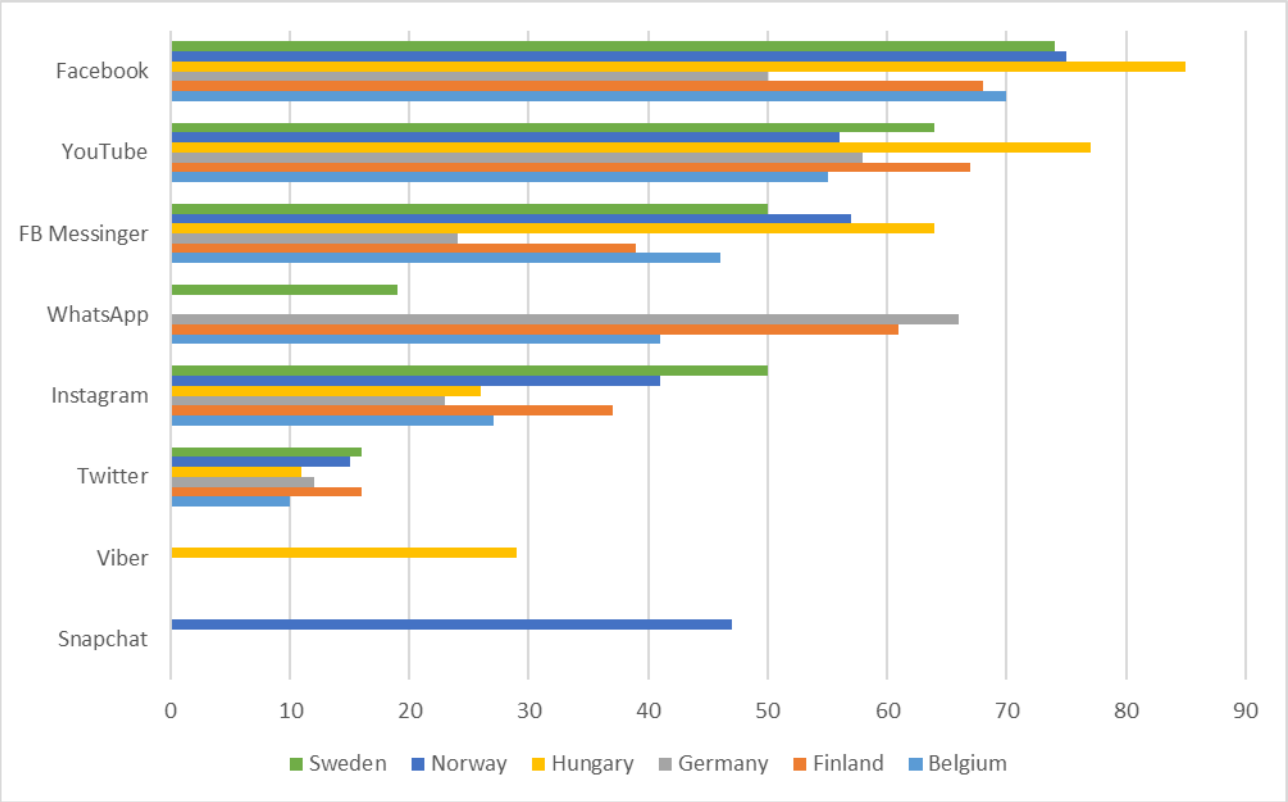

Figure 3. Popularity of internet services in project countries (percentage of internet users using the named service) based on Reuters Institute's Digital News Report 2019.

The figure above shows the popularity of the most popular social media and messaging apps in the project countries. Facebook and YouTube are the most popular apps in all countries except for Germany where WhatsApp is the most popular one. In addition, in Finland, WhatsApp is very popular, whereas in Norway and Hungary it is not among the top apps. In these countries other messaging apps are used more, Viber in Hungary and Snapchat in Norway.

[4] http://www.digitalnewsreport.org

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WhatsApp is popular for news in countries like Brazil and India, but also in Europa in countries like Spain, Italy, Romania and Turkey. Using WhatsApp for news means that people participate in groups where they do not know all other group members personally. Key characteristic that distinguishes news group users from the wider population in each country is that they are more likely to say they trust the news they get from social media.

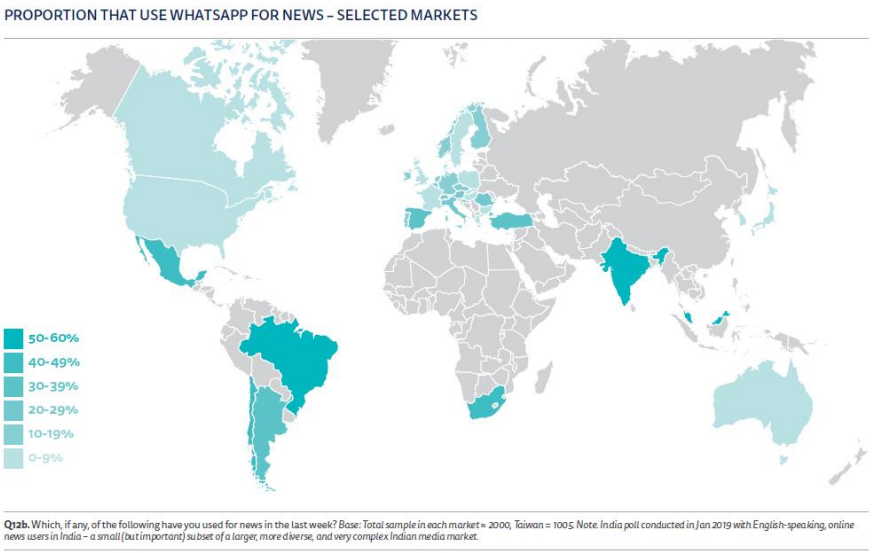

Figure 4. Proportion of people who use WhatsApp for news.

Reuters Digital News Report is published yearly, making yearly comparisons possible. Across all surveyed countries, the average level of trust in the news in general is down 2 percentage points to 42% and less than half (49%) agree that they trust the news media they themselves use. Trust in the news found via search (33%) and social media remains stable but extremely low (23%). Trust levels in France have fallen to just 24% (-11) in the last year as the media have come under attack over their coverage of the Yellow Vests movement.

Online media makes it possible for people to access news through different channels. In addition to going directly to the news organisation's website, it is possible to find news through search engines, social media, or news aggregators, where large tech companies typically deploy algorithms rather than editors to select and rank stories.

The report identifies four models for finding news:

- Mainly direct
- Social first
- Deeply aggregated (search + aggregators)
- Pick and mix (= no clear dominant way)

On average, only 29% prefer to access a website or app directly, but in Finland, Sweden and Norway direct access is still the dominant channel (see the next Figure). Accepting mobile notifications is on the increase (see the subsequent Figure). The study asked whether people prefer consume news in text or video. Young people aged 18-24 years, have the highest preference for video with 15% preferring video, 58% preferring text, and 27% did not have a preference.

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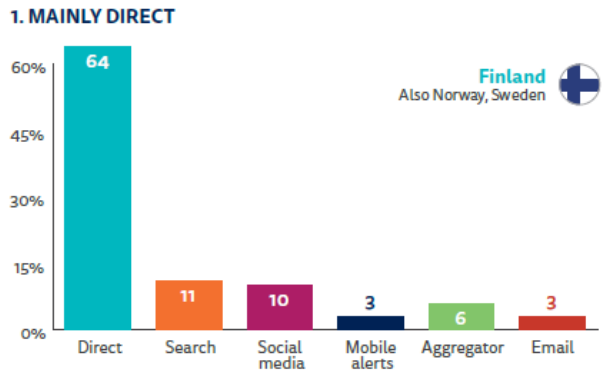

Figure 5. There are many ways to find and access news. Going directly to the news publisher is the most popular way in Finland, Norway and Sweden.

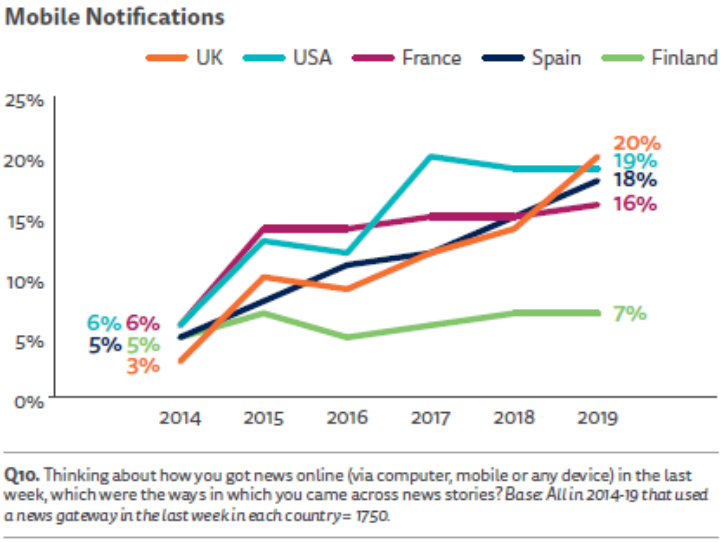

Figure 6. The use of mobile notifications in selected countries.

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Appendix 5: Use of internet-based services and mobile phones in Finland in 2018

Internet use, smart phone ownership and use of different services as percentage of whole population in Finland 2018 has been studied by Statistics Finland[5] (

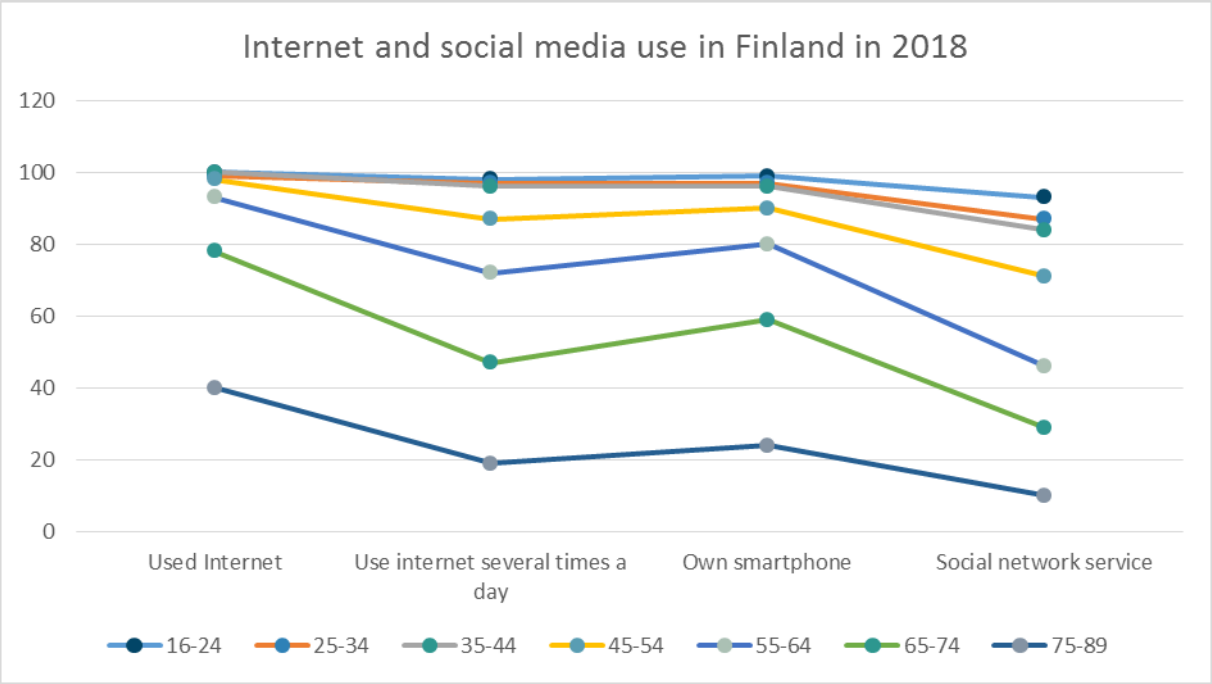

Figure 7). It covers different age groups with 10-year steps from 16 to 89 years.

Daily Internet use is common, out of people aged between 16 and 54 years 87% to 98% use internet daily. The share is 72% for people aged between 55 and 64, and drops to 47% after that.

Regarding owning a smartphone, a clear drop can be seen between age groups 55-64, where ownership is at 80% and 65-74, where it is 59%. The share of people following a social network service is at least 84% for people under 44, and drops to 46% in the age group 55-64, 29% for 65-74 and 19% for the highest age group 75-89. Men have slightly higher figures for all of these aspects except in following a social network service, where 64% of women and 58% of men do so.

[5] https://tilastokeskus.fi/til/sutivi/2018/sutivi_2018_2018-12-04_tie_001_en.html

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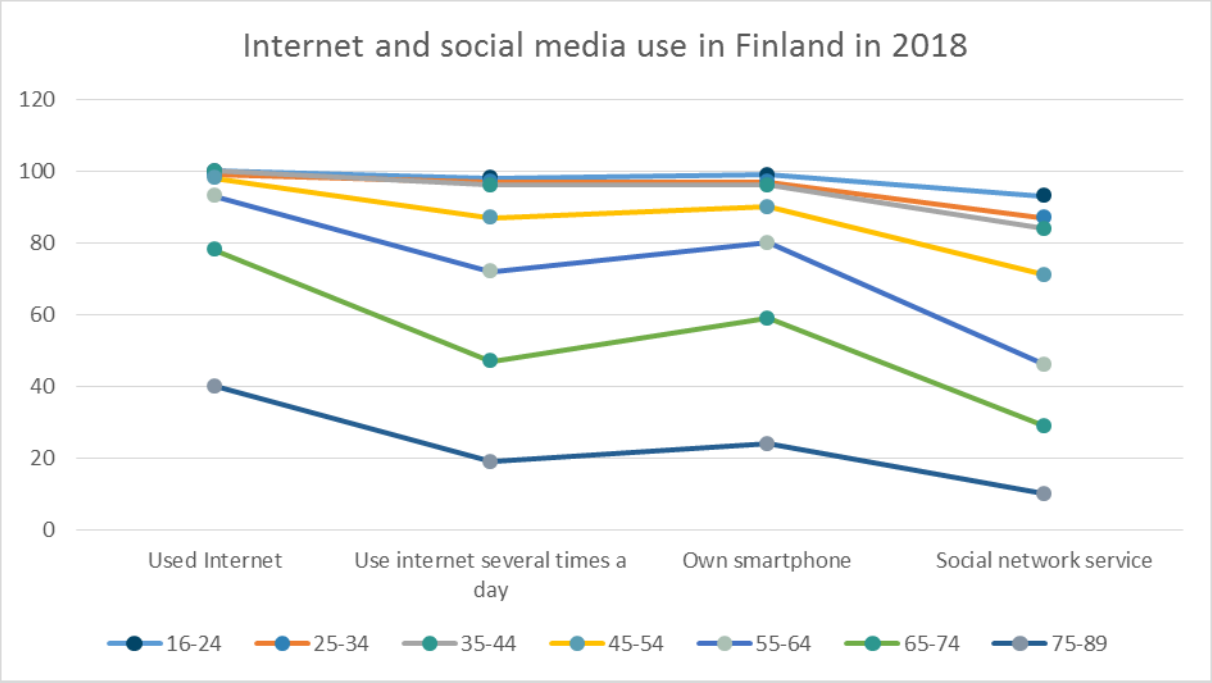

Figure 7. Share of people using internet, owning a smartphone and using a social networking service in different age groups in Finland according to Statistics Finland study in 2018.

In (Anon, 2019[6]), the news media consumption habits of young people, ages 15-24, in Finland was studied during 2019. The study identified three consumption habits: those who are focused at factual content, those focused at entertainment and those with mixed and varied foci. Young people's news consumption is very social, and sharing and discussing news in one's own peer groups is popular.

54% of the studied youth go directly to a specific news site. Instagram is the most popular social media channel for new, and WhatsApp for sharing news. Mobile phones is the most important access channel: 91% of the interviewed persons had access media content using mobile phone, 10% using tablet, 40% computer, 21% TV and 11% radio.

[6] Nuoret ja mediakulutus 2019. Alma Media, Tutkimustoimisto Inspirans ja Norstat. https://akerlundinsaatio.fi/nuoret-ja-mediakoulutus/

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Appendix 6: Social media use in emergencies (Reuter & Spielhofer, 2017)

Reuter & Spielhofer (2017) have published a survey based on the responses of 1.034 citizens (including 195 working or volunteering for an emergency service – excluded from the main analysis) from citizens across 30 countries, with the largest number of respondents coming from Poland (306), Slovenia (169), Germany (164), the United Kingdom (146), Italy (72), Greece (43) and Norway (39).

In this survey, TV News was the most important information channel, but also online news and social media play an important role (Figure 8). Social media is important for gathering general information, eye witness stories, and finding out how friends are, but only 33% indicate that they would use social media to find out what to do to keep themselves safe (Figure 9). 58% of the respondents think that it is quite or very likely that they will use social media for information gathering in the future (Figure 10).

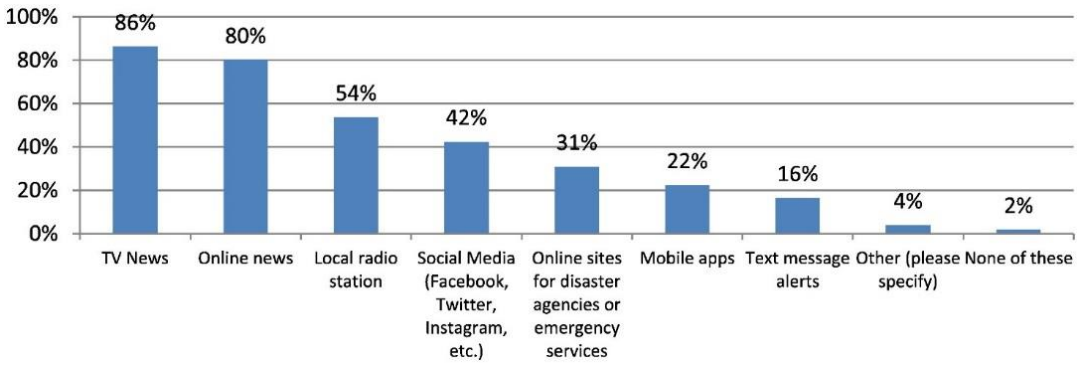

Figure 8. Current communication channels in use

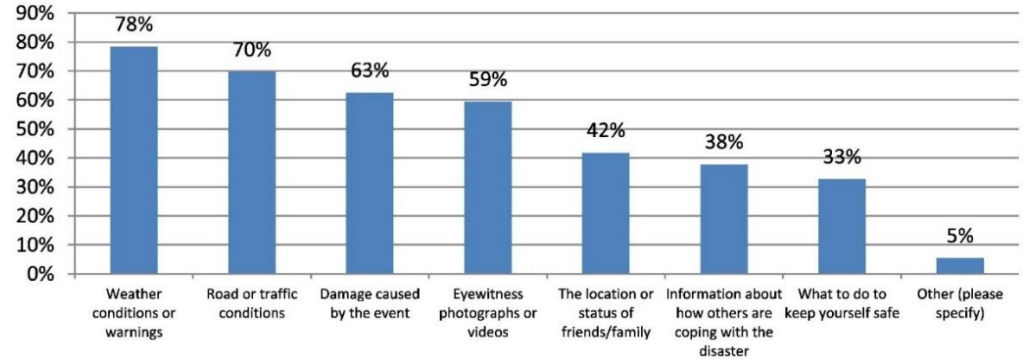

Figure 9. Current use of social media for information gathering in emergency situations.

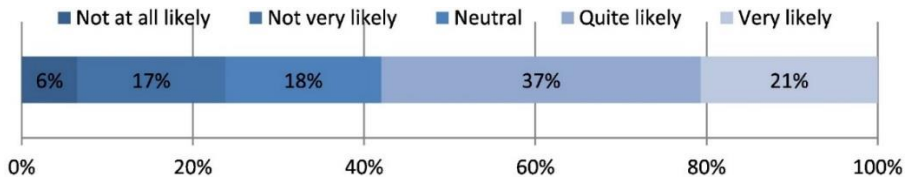

Figure 10. Future use of social media for information gathering in emergency situations

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Appendix 7: Trust in media in Europe

The Eurobarometer 90.3 (2018) study was carried out in November 2018 in 28 EU Member States and amongst the populations in five candidate countries (Turkey, the Former Yugoslav Republic of Macedonia, Montenegro, Serbia, Albania). It reveals that people from the Northern (Denmark, Finland, Sweden) and Western Europe (Belgium, the Netherlands) have greatest trust in the traditional media channels – in written press, radio and TV, in particular; whereas Eastern and Southern Europeans are least likely to trust such mediums. Amongst the three, radio is considered to be the most trustworthy medium. For example, 83.2% of the Swedes and 79.5% of the Danes consider radio to be most trustworthy in terms of news consumption, in comparison to 75.9% of the Dutch indicating trust in the written press and 74.7% of the Danes showing trust in TV. People from Greece are the least likely to trust any of the abovementioned mediums, as only 33.3% trusting radio, 26.6% trusting the written press, and just 17.3% trusting TV content.

Analysis of Eurobarometer data suggests that radio is the most trusted media source for all the age groups (see Table 2). Also, the youngest age groups indicate trust in radio (57.8% from 15-29-year olds), although their daily radio consumption is not as significant as for older age groups. People whose financial situation is the worst, are most suspicious of television (56.1%) and the written press (55.7%) tend not to trust these mediums.

Table 2. Trust in media by socio-demographic characteristics according to the Eurobarometer 90.3 (2018) study, averages per Europe.

	Trust in written press			**Trust in radio**			**Trust in television**		
	Tend to trust	Tend not to trust	Do not know	Tend to trust	Tend not to trust	Do not know	Tend to trust	Tend not to trust	Do not know
Age									
15-29 years	47,6%	45,2%	7,2%	57,9%	35,6%	6,6%	45,8%	49,3%	4,9%
30-44 years	44,6%	49,7%	5,6%	57,0%	37,6%	5,4%	45,3%	50,6%	4,1%
45-59 years	47,9%	46,3%	5,8%	60,5%	33,3%	6,2%	51,8%	43,8%	4,5%
60-74 years	48,3%	45,2%	6,6%	58,8%	32,7%	8,6%	53,4%	42,8%	3,8%
75 and older	48,3%	40,6%	11,2%	58,2%	28,6%	13,2%	56,5%	38,2%	5,3%
Occupation									
Employed or self-employed	48,3%	46,1%	5,7%	60,6%	34,2%	5,3%	48,7%	46,9%	4,5%

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	Trust in written press			Trust in radio			Trust in television		
House persons	38,8%	53,0%	8,2%	49,6%	41,5%	9,0%	49,7%	47,6%	2,8%
Unemployed	38,5%	53,9%	7,6%	52,9%	39,4%	7,7%	44,3%	51,8%	3,9%
Retired	47,3%	44,6%	8,1%	57,9%	31,7%	10,3%	53,8%	41,8%	4,4%
Students	52,9%	40,3%	6,9%	58,9%	33,1%	8,1%	48,7%	45,8%	5,5%
Income									
Most of the time last year difficulties paying bills	35,8%	55,7%	8,6%	47,5%	44,3%	8,1%	39,0%	56,1%	4,9%
From time to time last year difficulties paying bills	42,9%	52,1%	5,1%	53,4%	41,2%	5,5%	45,7%	51,2%	3,0%
Almost never/ never last year difficulties paying bills	50,5%	42,5%	7,0%	62,2%	30,0%	7,7%	53,1%	42,2%	4,7%

Trust in the content of internet and social networks, however, is relatively low in all the age groups; the older age groups being the most critical (only 11.4% from the +75 age group trusts internet) (see Table 3). Although younger age groups are the most active internet and online social networks users, they also remain relatively suspicious toward the medium – 51.3% of the 15-29 year olds tend not to trust in internet and 65.3% tends not to trust online social networks. In fact, students (66.2%) and unemployed (65.2%) are the two groups, which are most suspicious of online social networks and rather tend not to take their content at its face value. This relative scepticism of content that can be found from the internet and online social networks can be built upon more advanced digital literacy skills and knowledge of the younger age groups. On the other hand, however, it could be associated with the general atmosphere of scepticism and the feelings of distrust towards the media and new technologies.

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Table 3. Trust in the internet and only social networks by socio-demographic characteristics, averages in Europe

	Trust in internet			Trust in online social networks		
	Tend to trust	Tend not to trust	Do not know	Tend to trust	Tend not to trust	Do not know
Age						
15-29 years	44,6%	51,3%	4,1%	29,0%	65,3%	5,6%
30-44 years	39,8%	54,5%	5,7%	23,5%	69,5%	6,9%
45-59 years	33,2%	55,9%	10,9%	17,3%	69,2%	13,5%
60-74 years	21,2%	54,5%	24,3%	11,0%	58,9%	30,1%
75 and older	11,4%	39,3%	49,3%	5,2%	40,0%	54,8%
Occupation						
Employed or self-employed	37,7%	54,7%	7,6%	21,3%	68,9%	9,8%
House persons	31,9%	50,3%	17,7%	20,9%	59,0%	20,0%
Unemployed	37,2%	54,4%	8,5%	25,6%	65,2%	9,3%
Retired	17,0%	50,8%	32,2%	8,6%	53,3%	38,1%
Students	46,5%	48,6%	4,9%	28,0%	66,2%	5,8%
Income						
Most of the time last year difficulties paying bills	29,1%	55,1%	15,8%	18,6%	65,1%	16,3%
From time to time last year difficulties paying bills	34,3%	52,2%	13,5%	22,2%	62,4%	15,4%
Almost never/never last year difficulties paying bills	32,1%	52,6%	15,3%	17,1%	63,9%	18,9%

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Our analysis of the Eurobarometer data suggests that Swedes are one of the most active internet and online social network users in Europe, and they are also most critical towards the content and information shared on these platforms – 82.4% of the Swedes tend not to trust online social networks, and 71.4% tend not to trust the internet (see Figure 11).

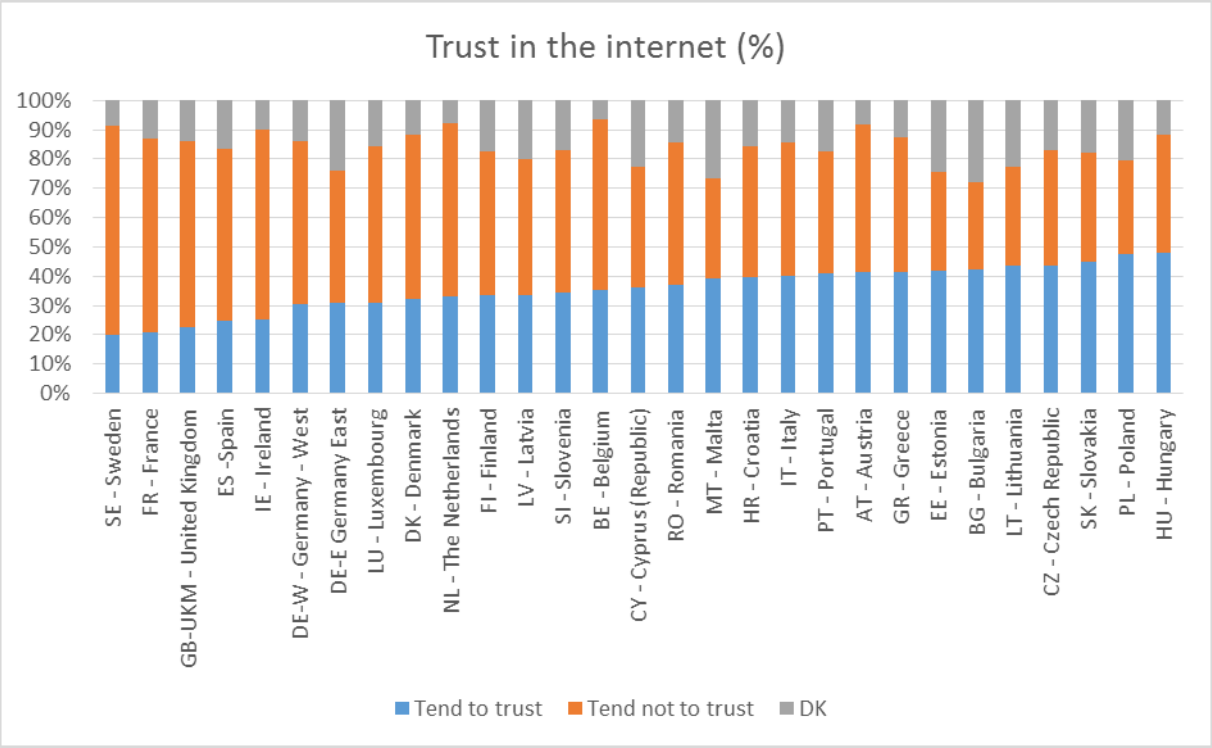

Figure 11. Trust in the Internet in Europe, Eurobarometer (2018)

In countries, where the number of daily internet and online social networks' users is relatively low, trust in these mediums, however, seems to thrive. For example, 47.9% people from Hungary, 47.5% from Poland and 45% from Slovakia tend to trust internet; Hungarians (36.4%), Bulgarians (35.8%) and Polish (33.4%) are also most trusting in terms of the information shared on online social networks (see Figure 12). These results seem to indicate that the more people use the internet, the more critical they become towards the information they find online.

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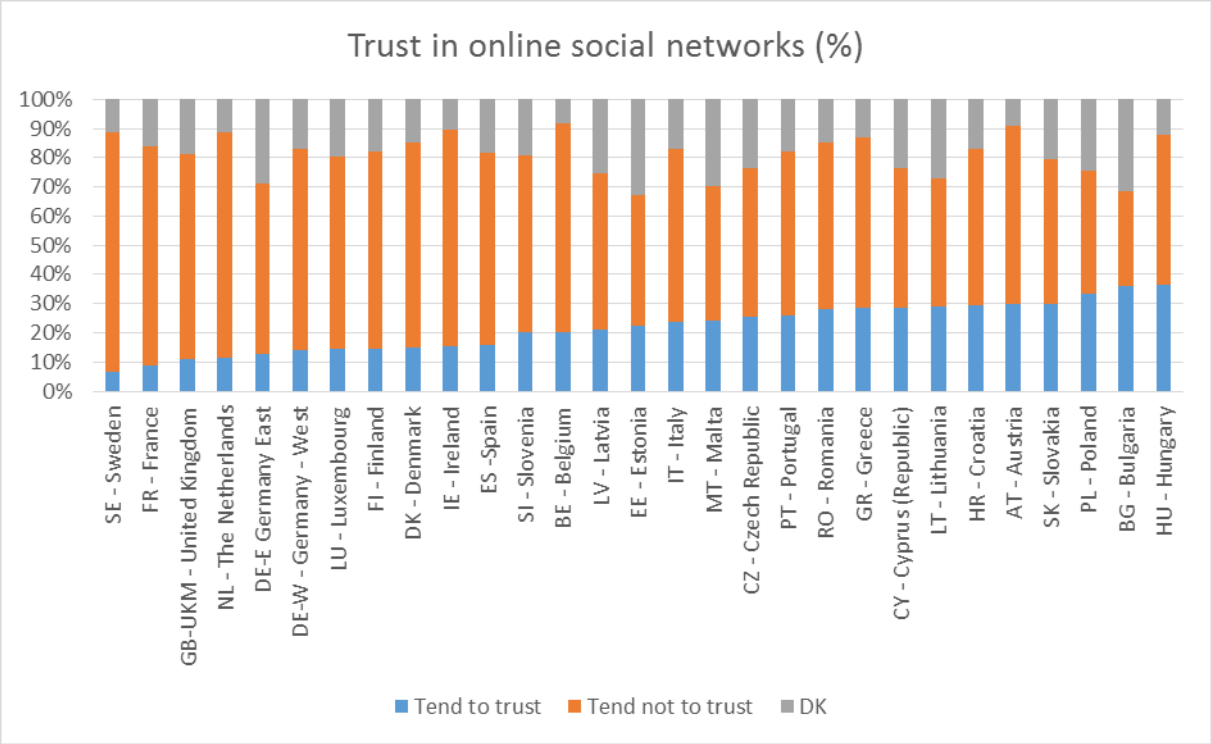

Figure 12. Trust in online social networks, Eurobarometer (2018)

In an **Estonian** countrywide, survey (TNS Emor 2016), when asked about where respondents would seek information should a major crisis occur, 52% of individuals considered web as the most important info sources during crisis. Among those 22% regarded online newspapers as important sources. 69% considered radio and 55% TV as important sources of information during crisis. According to survey by Kantar Emor (2017), social media and web are considerably less significant sources to older age groups (50+), whereas two thirds of individuals in younger age groups would follow these sources in case of a crisis. Compared to Estonian-speakers, Russian-speakers rely significantly less on web sources and social media.

In a **Norwegian** country-wide survey (DSB, 2016), when asked about where respondents would seek information should a major crisis occur, 38% of respondents answered online newspaper, 23% TV, and 14% radio.

In **Finland**, the National Rescue Association has studied individuals' sense of safety and what are their own and their close communities' preparedness to various disturbances, and to what extent people trust society, political decision making and media. The most recent report (Kekki, 2017) indicates that 54% of survey respondents think that social media contains a lot of misleading information that has been published on purpose, and 18% acknowledge that the hate speech in social media makes them afraid. 28% agree with the claim that mainstream media spread reliable and correct information. 49% think that main stream media stirs up fear and insecurity, and 16% report that many news headlines make them afraid

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