University of Stavanger

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Fighting pandemics with enhanced risk communication: Messages, compliance and vulnerability during the COVID-19 outbreak (PAN-FIGHT)

Summarised findings and recommendations

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1. Introduction

Throughout the COVID-19 pandemic, we have observed considerable variations in how national governments have communicated with their citizens (Goldberg et al. 2020, Bruine de Bruin 2020, Balog-Way and McComas. 2020, Bruine de Bruin & Bennett 2020). We also know from previous research that other social factors can prove equally important (Burton-Jeangros 2019, Fischhoff et al. 2017). In PAN-FIGHT, we have mapped the authorities' risk communication practices in Norway, Germany, Sweden, Switzerland and the United Kingdom between March and December 2020 – covering the period from the first shutdowns in Europe to the commencement of mass vaccinations. Beyond this initial phase, we also investigated how different population groups in these countries have translated risk communication messages into adjustments of their daily routines. In addition to nationality, we have paid particular attention to the significance of gender, as well as factors such as age, income, cultural background, household composition and home location. In this report, we present our main findings and recommendations for enhanced risk communication strategies that feature greater sensitivity to the above-mentioned variations. These recommendations are relevant for national and local governmental authorities in charge of the communication with the general public whenever a crisis situation occurs. They are also relevant for professional organisations involved in public crisis management, such as public health agencies and directorates for civil protection. Our report will also be of interest to other bodies engaged in contingency planning and crisis management at community level, as well as fellow researchers and the general public.

Indeed, to secure practical relevance of our research products, we have consulted with practitioners representing our target groups in the five above-mentioned countries. They have provided information on their COVID-19 communication practices and expressed their needs for new knowledge. As key stakeholders, they have also assisted our study by providing feedback on the practical applicability of findings and draft recommendations. As future pandemic pathogens may be much more sinister, this project aims to improve the ability of authorities to reach different population groups and thereby strengthen health-related emergency preparedness at local, national as well as international levels.

Summarised findings and recommendations may help "strengthen the capacity of all countries […] for early warning, risk reduction and management of national and global health risks" and can thereby contribute to United Nations Sustainable Development Goal (UNSDG) 3.d, as well as goal 3 in general ("ensure healthy lives and promote well-being for all at all ages") and target 3.3 ("by 2030, end the epidemics of […] communicable diseases"). In making sure our recommendations cater equally for women and men's information needs, we can also contribute to Goal 5 which relates to gender equality and the empowerment of women and girls. (United Nations 2015).

This report is organised as follows: After a description of the methodological approaches in our research activities, key findings are presented by country and then comparatively. The findings are structured in accordance with our three-tiered research focus: Messages, compliance and vulnerability. With reference to the key elements in the findings, we then present our recommendations for enhanced risk communication, and end the report with a few concluding remarks.

2. Methods for deriving findings and recommendations

In its research activities, the PAN-FIGHT team has adopted a comparative approach which follows a "most different systems" variation as a logic of comparison guiding the research (Przeworski & Teune, 1970). The countries in this study include two EU member States (Sweden, Germany), one which was engaged in an exit process from the EU membership (the UK), and two non-European Union states, but both members of the European Free Trade Association (EFTA): Norway and Switzerland. Furthermore, Germany and Switzerland govern by the Continental European Federal administrative model, with a relatively weak central bureaucracy and strong subnational, decentralised institutions. Norway and Sweden adhere to the Scandinavian model—a unitary but fairly decentralised system with power bestowed to the local authorities. The United Kingdom applies the Anglo-Saxon model, characterized by New Public Management (NPM) and decentralised managerial practices (Einhorn & Logue, 2003; Kuhlmann & Wollmann, 2014; Petridou et al., 2019).

For each of the five study countries, we have produced a report that provides a summary of the country's preparedness and response to the first and second waves of the COVID-19 pandemic, from January 2020 until the 31st of December 2020. The reports outline overviews including general information on the population, governance, health, organization of health system, and pandemic preparedness plans. Furthermore, the reports have covered the main dates and numbers related to the outbreak of the pandemic, such as numbers of COVID-19 registered cases and deaths. They contain a detailed timeline and the description of COVID-19 mitigation measures taken during the period covered by the reports, both at national and local levels. The reports have been based on publicly available documents and COVID-19 related online statistics and data. Upon the completion of the five country reports, we have produced a comparative five-country report.

To understand how members of the public responded to the COVID-19 pandemic and to official government communication about the pandemic, we ran an online survey with a nationally-representative sample (based on age, sex, education, and income) in each of the study countries. We asked a number of questions about public consumption of and attitudes towards government risk communication over the first thirteen months of the pandemic (through April 2021). The survey was administered by the panel provider Qualtrics. It ran from 1 April – 4 May 2021, and had a total sample size of 4,206, with approximately 840 from each country, with all the respondents being over 18 years old. The participation in the study was voluntary, and the confidentiality was safeguarded in accordance with the EU General Data Protection Regulation and the Norwegian Ethical Guidelines for Research. Prior to the data collection, the survey questionnaire was developed by common effort of all parts of the research team, to ensure the coverage of all the necessary study areas. The main areas addressed by the questionary were related to perceptions of risk from coronavirus, relationship between trust and risk communication, public perceptions of, reactions to, and use of risk communication. Demographic questions included age, gender, employment status, income, and housing.

Qualitative first-hand accounts were also collected through a series of zoom interviews with authority representatives in each of the five study countries during the spring of 2021. Representatives at national, regional and municipal levels were interviewed in a semi-structured manner using interview guides that the team had prepared to ensure comparability. Most interviews lasted 30-45 minutes and covered the following topics: Risk communication strategies, preparedness and pandemic plans before and during the COVID-19 pandemic, government and health authorities' pandemic responses, and health policy during the pandemic. Prior to the interview, informants had been given a consent form to read and sign.

The interviews were audio recorded and later transcribed. During the transcription of the interviews into text, all identifying information was removed and each transcript was given a pseudonym reference name.

Between February and June 2021, an ethnographic fieldwork was conducted as part of the project. It included free conversations, observations, and semi-structured interviews with selected participants representing the general population in Norway. One project researcher also participated as an observer in everyday activities in five households located in the rural parts of Rogaland County, and he conducted observations and took notes in shopping malls, public transportation, the university campus, and department stores in Stavanger, the region's capital city. We were thus able to impersonally document COVID-affected lifestyles in both rural and urban peripheries during the research period, including how they were impacted by governmental decisions taken at the administrative centre of the Norwegian state in Oslo. In all cases, we focused on local popular responses to the COVID-19 communications messages and levels of compliance with different risk mitigation measures promoted nationally or locally by the authorities (Shapiro, Bouder and Arora 2022).

In order to produce recommendations that are relevant, meaningful and applicable, we have engaged with stakeholder panels in each of the five study countries. The panels included practitioners within health risk communication representing public authorities and agencies at national, regional and municipal levels. In Norway, Sweden and the United Kingdom, panel meetings were organised in the summer of 2022. The panels were presented with project findings and proposed recommendations, followed by group and plenary discussions as well as feedback sessions. As the pandemic was still to some degree ongoing at the time of the consultations, several of our invited panellists were unable to attend our sessions. COVID-related sickness was also the reason why the open panel session in Germany was postponed and eventually cancelled. This resulted in fewer consultative meetings than planned. However, those that took place were extremely useful and we received extensive feedback that became intrinsic to the final processing of project results. Participants offered for instance practical examples of experiences that added nuance and a deeper understanding of the interaction between risk messengers and the general public that we had documented in our data collection. We also clearly understood that in order to make our research relevant to practitioners, findings had to be described in a clear and tangible manner and recommendations had to be clear and possible to translate into action.

Unanticipated factors

- The sheer duration of the pandemic and the various waves hitting countries at different times was a constant challenge to interaction with informants and stakeholders, as well as within the team.
- We envisioned a data collection time span of 6-12 months, but with the prolonged duration of the pandemic, data and pandemic-relevant information were fed into our analytical work throughout the entire two-year project period.
- While the five study countries appeared different at the outset of the pandemic, they grew surprisingly similar in how they handled the pandemic. This became more evident a few months into the pandemic, parallel to the increase in European communication, cooperation and exchange of experiences.
- We discovered that the macro-pattern of the pandemic transgressing from a health crisis to a societal crisis was reflected at micro-level. People in all five study countries went from worrying about getting sick, to worrying about a wide range of issues pertaining the various facets of their everyday life.

- We have come to believe that the largest dead angle in our pandemic experiences is yet to be investigated properly, namely the long-term mental health problems plaguing an entire generation of young people across the world.

3. Findings

3.1 Characteristics of the five study countries

While the COVID-19 pandemic has claimed countless lives and caused grief and disturbance for people across the globe, the five countries in our study can be said to represent a comparatively high degree of pandemic resilience. While its governance systems differ, all countries are financially robust democracies with well-functioning control mechanisms. They have all, to a large extent, managed to absorb the economic, political and societal consequences of the pandemic. And they have all fairly swiftly re-established a state of 'normality'.

Pre-pandemic preparedness characteristics

- All five countries had pandemic plans developed prior to 2020, which generally were specific to influenza pandemics but not to coronaviruses. All plans had been updated following the H1N1 pandemic (2009-2010).
- During the SARS (2003) and MERS (2012) outbreaks, both of which are coronaviruses, all five countries experienced few cases, with notably smaller impacts than the H1N1 epidemic (2009-2010).
- The UK had conducted several exercises (Exercise Cygnet in 2016, Exercise Cygnus in 2016, and Exercise Iris in 2018) to check their preparedness plans; the reports from these exercises concluded that there were gaps in preparedness for epidemic outbreaks. Germany also simulated an influenza pandemic exercise in 2007 called LÜKEX 07, to train cross-state and cross-department crisis management (Bundesanstalt Technisches Hilfswerk, 2007). In 2017 within the context of the G20, Germany ran a health emergency simulation exercise with WHO and World Bank representatives to prepare for potential future pandemics (Federal Ministry of Health et al., 2017).
- Prior to COVID-19, only the UK had expert groups, notably the Scientific Advisory Group for Emergencies (SAGE), that was tasked with providing advice during emergencies. It had been used in previous emergency events (not exclusively limited to health). In contrast, none of the other countries had a similar expert advisory group in place prior to the pandemic.

COVID-19 waves in 2020

- All five countries experienced two waves of infection in 2020, albeit with differing intensity. The first wave occurred during the first half of the year and peaked after March 2020. The second wave began during the final quarter of the year.
- Norway consistently had the lowest number of SARS-CoV-2 infections per million. Germany's counts were neither the lowest nor the highest. Sweden, Switzerland and the UK alternated in having the highest numbers per million throughout 2020.

Implementation of measures to control the spread of infection

- In Germany, Switzerland and the UK, health policy is the responsibility of regional states, (Länders, cantons and nations, respectively). However, there was a strong initial centralized response in all five countries to mitigate the spread of infection. Later on, country responses varied in the degree to which they were centralized or decentralized.

3.2 Messages: Risk communication strategies and practices

With the term risk communication, we refer to the practice where authorities and other relevant bodies "assist stakeholders and the public at large in understanding the rationale of a risk-based (risk-informed) decision, and to arrive at a balanced judgment that reflects the factual evidence about the matter at hand in relation to their own interests and values» (Renn, 2014). The institutions normally «resort to multiple channels of information – from traditional press release to conferences (e.g. stakeholder consultations) and social networks» (Bouder, 2022). Risk communication strategies are relevant to our study because they are a pivotal factor in people's risk perception and subsequently their choices and behaviour in relation to the risk at hand.

3.2.1 Norway: Key findings

The mitigation policy in Norway was successful in keeping the overall infection rates and mortality low. To curb the economic and societal impact of the pandemic, a wide range of government measures helped support individuals, families and businesses. The impact of the pandemic was however uneven and left some groups such as children and senior citizens more vulnerable to the social and psychological consequences. Given the principle of local self-government, Norway is highly decentralized. The municipalities were relatively autonomous but encountered challenges in being fully prepared, reflected through their experienced shortages of infection control and protective equipment. Risk communication, depending on the local outbreak situation was also thus decentralized in the sense that it varied to some degree, depending on the competencies and capacities of each individual municipality.

3.2.2 Sweden: Key findings

The Swedish approach to the pandemic stood out in comparison to EU countries as well as internationally. In contrast to most countries, including its Nordic neighbours, Sweden's measures were mostly voluntary, based on the normative idea of personal responsibility and that the population may be trusted to do the right thing individually and as a collective. Given the legal framework that does not allow for the declaration of state of emergency, the administrative system, including an absence of ministerial rule bestowing extreme autonomy to public agencies and the subnational level of governance, and the high levels of political trust in the country, such a response was not a surprise. The dominant crisis management rationale is that the administration's architecture must be robust enough to handle shocks without resorting to emergency structures.

Sweden, though unitary, is highly decentralized. In practice, this means that general guidelines and decisions are made at the national level, while regions and municipalities are responsible for implementing them as they see fit and according to their circumstances. This was true for contagion mitigation measures as well as risk communication strategies. In practice, the

municipalities and regions followed the national advice and recommendations without notable deviation, however with some adaptations to local circumstances.

3.2.3 Germany: Key findings

Germany has a decentralized system of Government and administration with three independent administrative levels, namely federal, state and municipality (Franzke, 2020). During the first year of the pandemic which is the focus of this study, the decentralized structure of government had distinct advantages for managing the pandemic (Franzke, 2020), such as allowing local authorities to make decisions quickly based on local realities, and to move resources between different departments and sectors, which helped them to successfully respond to the challenges of the pandemic (Kuhlmann & Franzke, 2021). Municipalities in particular played an important role in this success (Franzke, 2020). On the other hand, decentralization had disadvantages, including complexity, over-regulation, variation between states and contradictory regulation.

The German government communicated its data analysis findings with the public, which generally lead to a high degree of trust in the government among the citizens (Wieler et al., 2021). That said, a study from Brettschneider and Keller (2021) describes how press releases by the Federal Government were difficult to understand because of excessively long sentences, technical terms and compound words.

3.2.4 Switzerland: Key findings

Switzerland's response to the COVID-19 pandemic and the measures implemented to mitigate the spread of the coronavirus have had legislative support in the Swiss Epidemics Act (2016) and the Federal COVID-19 Act (2020). This legislation delineates tasks for coordination and implementation between the Federal and Cantonal authorities. Public health responses in Switzerland have oscillated between measures implemented uniformly throughout the country and measures implemented at the cantonal level. Pandemic response coordination efforts (i.e. preventive measures, public health response, provision and allocation of resources, and communication geared toward the public, etc.) between the Federal and Cantonal efforts merit further investigation.

The main authorities who have communicated information about coronavirus risks and preventive measures in an official capacity have been the Swiss Federal Office of Public Health, the Federal Council, and Cantonal authorities. These actors have used various channels of communication, including posters, billboards, print media, television, and social media. Communication has been in the main Swiss languages (German, French, Italian) and English. The content of official communication has changed over time, with notable contradictions in messaging around the use of masks and children's potential to serve as vectors of transmission. Communication challenges largely dealt with clearly communicating about current scientific evidence and changing measures over time, particularly when measures differed between regions. It is unclear the extent to which authorities involved the public at large in attempts to understand the communication needs of residents in Switzerland and in the design of their communication campaigns. Currently, there is little available evidence about authorities' internal discussions and decision-making around communication approaches.

3.2.5 United Kingdom of Great Britain and Northern Ireland: Key findings

The UK consists of four nations and through the devolution of power, health is the responsibility of the Devolved Administrations in Northern Ireland, Scotland and Wales and the UK Government in England. While the four nations could take a coordinated approach in the response to a pandemic, they had the autonomy to make decisions for the residents of their nations. During 2020, after an initial coordinated response, the four nations took differing approaches. Devolved Administrations, however, were not able to make decisions on aspects such as wage replacement schemes as these decisions were made by the UK Government for the whole of the UK. This meant that the governments could ask the population to take a measure but could not always provide the support for them to do so.

The communication response was led by the four governments and the public health authorities in each nation, with the governments being the main focal point for information, with health professionals also appearing as spokespersons or leading press/media briefings as well as featuring in information campaigns. All four nations used a range of communication channels to disseminate information and created different information campaigns. There was no single online source for all information in any nation, with information located on several websites. Health and government authorities used press/media briefings throughout 2020; although the frequency of their use differed between the nations.

3.2.6 Messages: Summarised findings

- Overall, the response to the pandemic has been mainly dealt with at the regional and national level.
- International benchmarking and exchanges of experience have predominantly happened at the clinical level.
- Lockdown decisions, border closures, travel bans, and forced quarantines have been taken mostly without concerted action across countries or in line with WHO guidance.
- Many communication channels were used to disseminate information: Websites, Facebook, Twitter, Instagram, YouTube, press briefings, text, letters, billboards, TV advertising, social media advertising, radio advertising, Q&As, appearances on TV shows, radio shows, as well as press briefings, newspapers, and more. This highlights the complexity of how many channels are being used to disseminate information.
- There was inconsistent use of case definitions across borders, as well as changing definitions. There were also different reporting and monitoring systems even within a country. Ensuring coherent risk messages within countries and between countries thus proved to be challenging.
- Artificial intelligence was used, for instance chatbots and decision support systems.
- Interactive dashboards were used to allow the communication and exploration of data. The functionality differed between countries and over time.
- Press briefings were a key communication source in all countries, while the professional function of main speakers varied.

3.3 Compliance: Information channels, risk perception and routine changes

To understand how members of the public responded to the COVID-19 pandemic and to official government communication about the pandemic, we ran an online survey with a nationally-representative sample (based on age, sex, education, and income) in five European countries (Sweden, Norway, Germany, Switzerland, UK). We asked a number of questions about public consumption of and attitudes towards government risk communication over the first thirteen months of the pandemic (through April 2021). We also measured several types of risk perceptions, as these are conditioned in part by societal response to and societal communication about COVID-19. Further, our survey questioned the respondents about a wide range of actions that could reduce exposure to COVID-19. Some of the questions explicitly addressed the extent to which people followed government requirements. While social desirability may have somewhat affected responses, this was an anonymous online survey. The scale was 1-5: Never, rarely, occasionally, most of the time, always.

Overall personal health risk was felt highest in Sweden, where measures against COVID-19 were not mandatory. It is followed by Germany and the UK, where the consistency of the measures was subject to intense discussions. Germany, the UK and Sweden also come first in terms of the perceived risk of becoming ill, which is consistent with overall personal risk perceptions in these countries. They also come first in terms of perception of the risk of overwhelmed health services, which also aligns with health risk perception. The perceived risk of a deep economic crisis is correlated to overall economic performance and levels of national debt. Respondents felt more the risk of loss of trust when debates about clarity and the consistency of the measures were ongoing at the time of the survey, irrespective of country.

3.3.1 Information channels

Norwegians sought information from official authorities more often, on average, than respondents from the other four countries (3.11 average on a scale of 1-6, meaning between *weekly* and *a few times each week*). Most Norwegians felt the government met their needs by providing the right amount of useful information about COVID-19 (54%, vs 23% not enough, 11% too much, 8% overloaded with information, 4% no information provided whatsoever). In comparison to other countries, Norway was in the middle for message clarity and at the top for message consistency. Nevertheless, it was still just below the scale mid-point for both (between 'not very' clear/consistent and 'somewhat' clear/consistent).

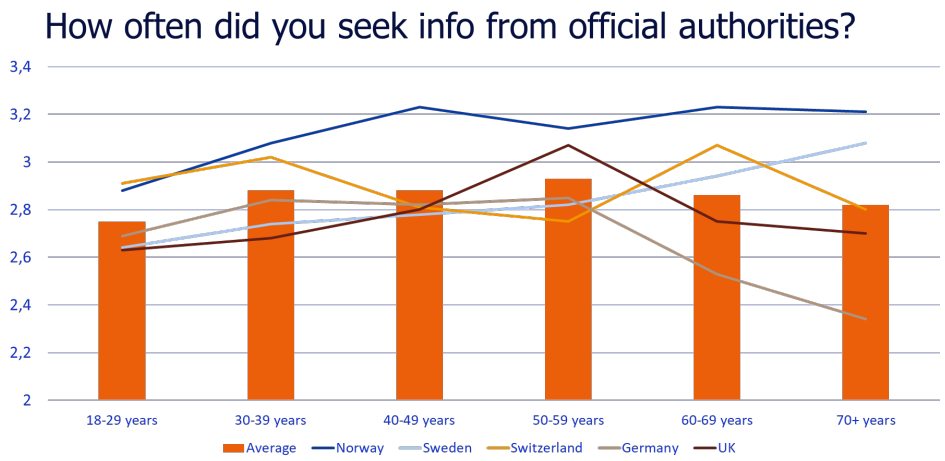
Swedes sought information from official authorities, on average, about the same as respondents from the other four countries (2.83 average on a scale of 1-6, meaning between less than once per week and weekly). Most Swedes felt the government met their needs by providing the right amount of useful information about COVID-19 (48%, vs 32% not enough, 7% too much, 7% overloaded with information, 6% no useful information provided whatsoever). In comparison to other countries, Sweden was lower than most for perceived message clarity and message consistency. It was below the scale mid-point for both (between 'not very' clear/consistent and 'somewhat' clear/consistent).

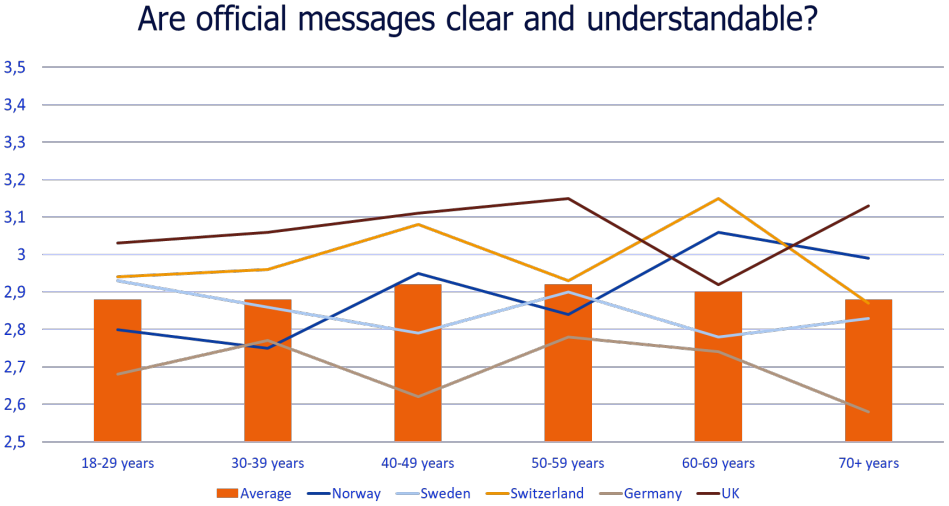
Germans sought information from official authorities, on average, less than respondents from all four other countries (2.67 average on a scale of 1-6, meaning between *less than once per week* and *weekly*). Most Germans felt the government met their needs by providing the right amount of useful information about COVID (41%, vs 26% not enough, 17% no useful information provided whatsoever 7% too much, 9% overloaded with information). In

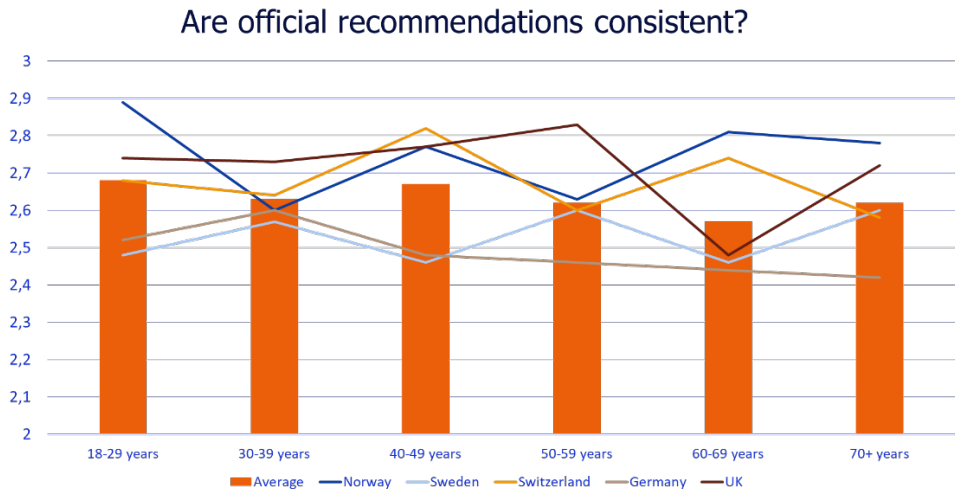
comparison to other countries, Germany was lower than all four for perceived message clarity and message consistency. It was below the scale mid-point for both (between 'not very' clear/consistent and 'somewhat' clear/consistent).

Swiss respondents sought information from official authorities, on average, about the same as respondents from the other four countries (2.89 average on a scale of 1-6, meaning between *less than once per week* and *weekly*). Most Swiss respondents felt the government met their needs by providing the right amount of useful information about COVID-19 (55%, vs 21% not enough, 7% too much, 9% overloaded with information, 8% no useful information provided whatsoever). In comparison to other countries, Switzerland was roughly equivalent to them for perceived message clarity and message consistency. Nevertheless, it was below the scale mid-point for both (between 'not very' clear/consistent and 'somewhat' clear/consistent).

British respondents sought information from official authorities, on average, slightly less than respondents from the other four countries (2.75 average on a scale of 1-6, meaning between *less than once per week* and *weekly*). Most British respondents felt the government met their needs by providing the right amount of useful information about COVID-19 (54%, vs 27% not enough, 4% too much, 8% no useful information provided whatsoever, 6% overloaded with information). In comparison to other countries, the UK was slightly higher for perceived message clarity and message consistency. Nevertheless, it centred around the scale mid-point for both ('somewhat' clear/consistent).

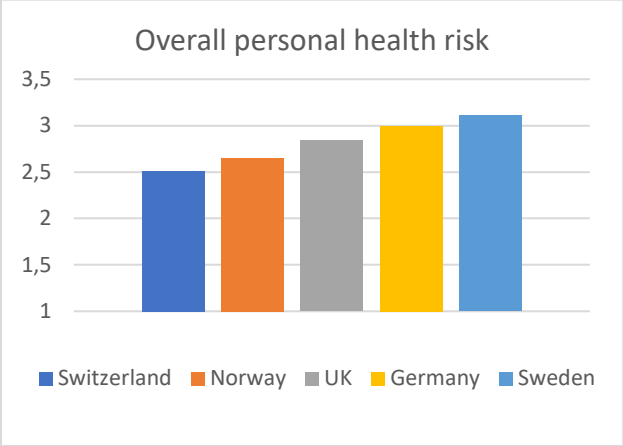




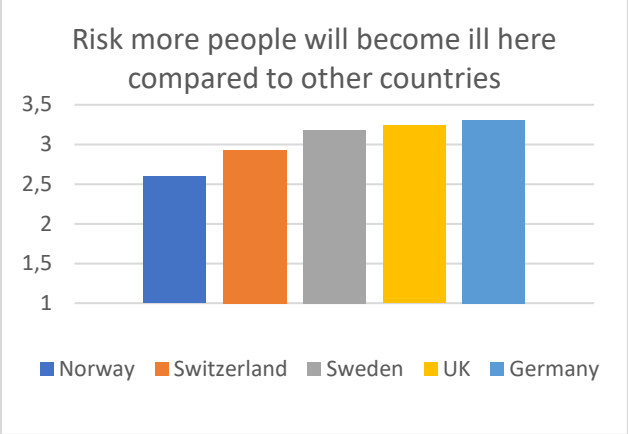


3.3.2 Risk perception

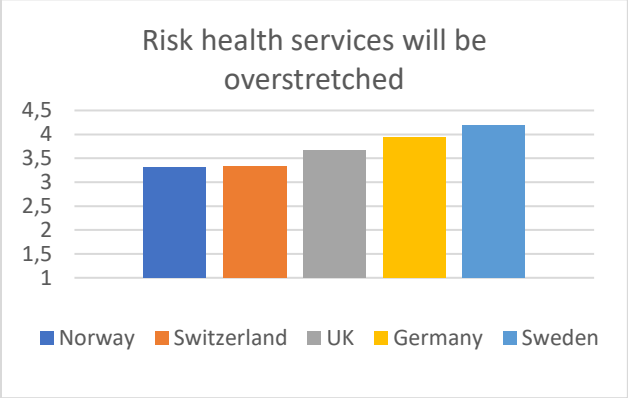
In general, risk was viewed as lower in Norway and Switzerland, compared to the other four countries, whereas Swedes and Germans reported higher risk perception, compared to the other four countries. In the UK, respondents reported levels of risk perception that were lower than in Sweden and Germany and higher than in Norway and Switzerland.



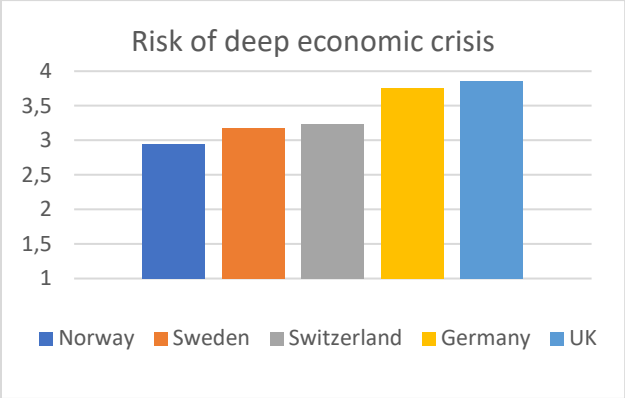
Overall personal health risk – average of 2.65 on a scale of 1-5, meaning between a *low* and *moderate* risk); lower perceived risk than Sweden (3.11), Germany (3.00), and UK (2.84); higher than Switzerland (2.51)



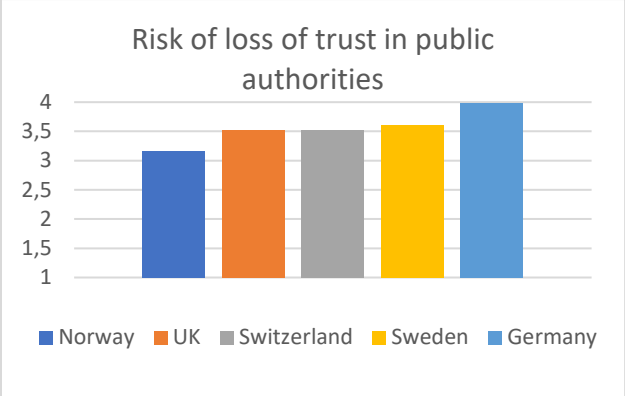
Risk more people will become ill here compared to other countries – 2.60 average; lower than Germany (3.31), UK (3.24), Sweden (3.18), and Switzerland (2.93)



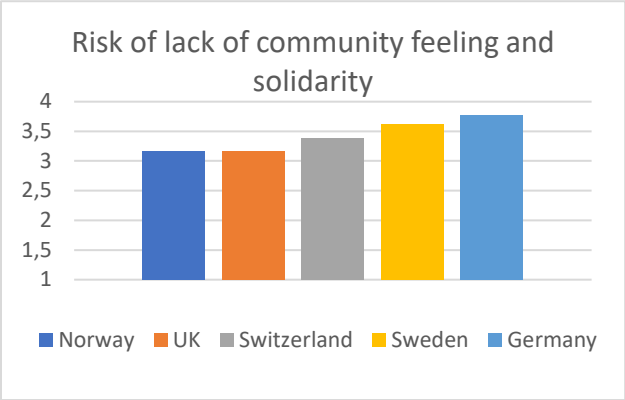
Risk health services will be overstretched – 3.31 average (meaning between *moderate* and *significant* risk); lower than Sweden (4.20), Germany (3.94), UK (3.67), and Switzerland (3.33)



Risk of deep economic crisis – 2.95 average; lower than UK (3.86), Germany (3.76), Switzerland (3.24), and Sweden (3.18)



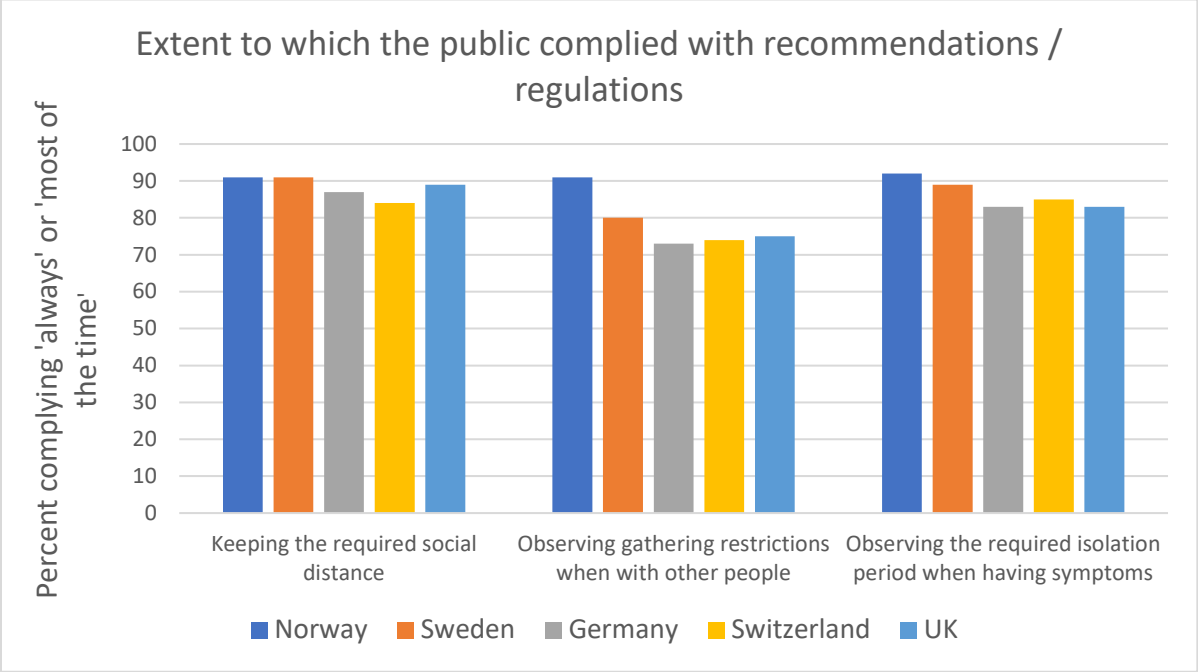
Risk of loss of trust in public authorities – 3.16 average; lower than Germany (3.99), Sweden (3.60), Switzerland (3.53), and UK (3.52)



Risk of lack of community feeling and solidarity – 3.17 average; lower than Germany (3.78), Sweden (3.61), Switzerland (3.38), and UK (3.17).

3.3.3 Routine changes

All countries complied to a large extent with the three crucial government recommendations/regulations that we identified – social/physical distance, gathering restrictions and isolation. Norwegians in particular reported very high levels of compliance. Swedes came second, still exceeding compliance compared to all countries except Norway. Germans and the Swiss showed slightly lower compliance compared to the other countries, with the UK falling in the middle of our five countries on compliance.



3.3.4 Compliance: Summarised findings

The comparative survey clearly showed that four major types of risks drove people's perceptions:

1. Personal health risk perceptions: perceived percentage chance in the next three months of (1) getting COVID-19, (2) being hospitalised due to COVID-19, and (3) dying from COVID-19.

2. Public health risk perceptions: (1) more people falling ill in one's country than elsewhere, (2) more people dying in one's country than elsewhere, and (3) health services in one's country becoming overstretched;

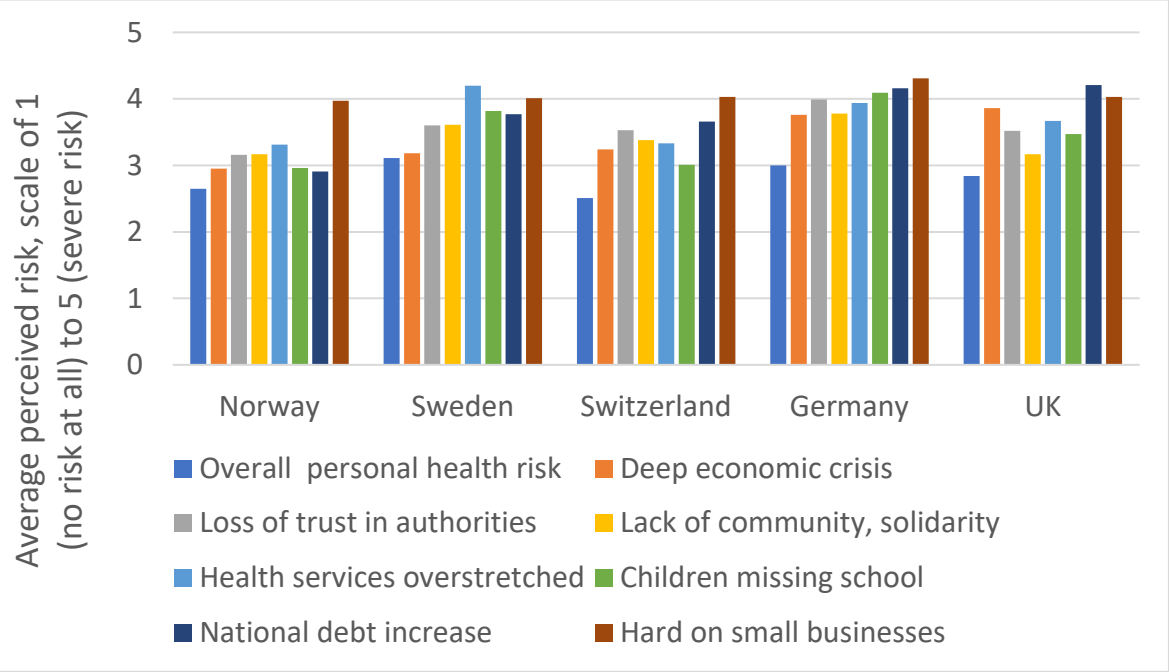
3. Personal economic risk perceptions: perceived percentage chance in the next three months of (1) your financial situation worsening, (2) losing your job, and (3) your relatives losing their jobs;

4. Societal risk perceptions: perceived risk of COVID-19 leading to, for your country: (1) a deep economic crisis, (2) national debt increase, (3) hardship for small and medium businesses, (4) loss of trust in public authorities, (5) lack of community feeling and solidarity, and (6) children missing school.

As a consequence, direct impacts on individual health (such as the risk of falling ill or dying from COVID-19) is only one factor among others including the risk to the social economy or to one's private financial situation. The order of magnitude of these four categories remains in fairly comparable proportions. The ranking varies across the sample, for instance personal economic risk perceptions exceeded personal risk perceptions in Norway, Switzerland and the UK. Our most important finding in terms of compliance, and the strongest scientific contribution of the survey, is that beliefs about effective risk communication (unsurprisingly) have a direct relationship with the frequency of risk mitigation behaviours. The less people find that risk communication is effective, the less they are willing to follow institutional risk mitigation advice. This decrease comes via a mediated relationship with societal risk perceptions.

Therefore, effective risk communication can decrease risk perceptions of the four categories, while ineffective risk perception in one of more of these categories will likely increase perception. This strongly confirms the need to develop effective integrated risk communication that articulates messages on personal health, public health, personal economic risk and societal risk perception.

The table below describes how respondents in the five countries rated their levels of risk perception during the pandemic, with regard to eight different types of risk.



3.4 Vulnerability and resilience: The relevance of social factors

Pandemics have both short-term and long-term consequences. Given this, it was important to understand not only factors that induce vulnerability but also those that can contribute to resilience in societies. Resilience is often understood as the opposite to vulnerability. More specifically, resilience can be defined as "a process of self-organization and self-change in an attempt to retain essential functions or structure under the circumstances of whatever stress or perturbation." (Sapountzaki, 2012). As we know, the pandemic and consequently its response measures such as lockdown and social distancing, led to differential unintended consequences, which were often gendered. Further, risk communication and building societal capacities (such as resilience) are intertwined with each other. Thus, risk communication may help to create an environment that is conducive for the building of social capacities at the level of individuals, communities and risk-managing organisations (Hoppner et al., 2012).

One major interest of PAN-FIGHT was to better understand risk communication factors that contribute to building resilience in society. Unsurprisingly, public trust came first as a key contributing factor. Trust is the glue that binds society together and helps us get through challenging times. The comparative survey uncovered that people anticipate a loss of trust in public authorities when official messages are unclear and official recommendations are inconsistent. It also showed that there is significantly higher trust among people wanting national regulation and for people thinking the correct level of information has been provided by authorities. In other words, centrally managed communication plans may fail when trust is low, potentially weakening societal resilience.

Qualitative anthropological research focused on Norway also helped to introduce a more nuanced approach to "trust" itself. We uncovered tensions between national authorities' interpretations of how much trust contributed to compliance/resilience, and perceptions and motivations reported at citizen level. What often motivated citizens' behaviour was a sense that their actions sent 'correct' signals to the people around them, to their social networks and fellow members of their local community. Their self-image as a good and responsible member of society was of paramount importance. This finding reinforces the need, at least in the Norwegian context, to better understand the social values of specific communities as a way to foster resilience.

3.4.1 Gender: Why it matters and key findings

Gender has long been considered a social determinant of health. A substantial amount of research shows that the direct health effects of the COVID-19 pandemic have affected men more than women: COVID-19 incidence, hospitalisation, and death rates are higher among men than women across locations (Flor et al., 2022). At the same time, gender has also been found to influence exposure to the coronavirus. Women make up two-thirds of the health workforce worldwide, for example 85% of nurses and midwives (Boniol et al., 2019) and they also amount for 90% of long-term care workers across OECD countries (OECD, 2020). This has put them at a greater risk of infection. Moreover, the pandemic has had other gendered social, economic and health impacts. For example, several studies have shown that the COVID-19 pandemic may have exacerbated gender-linked mental health challenges (Almeida et al., 2020; Wang et al., 2020; Liu et al., 2020) Women who are pregnant, postpartum, miscarrying, or experiencing intimate partner violence were found to be at especially high risk for developing mental health problems during the pandemic (Almeida et al., 2020).

Women have also been disproportionally affected when it comes to loss of employment. Despite the positive trend of increasing women's employment rates in the past years in Europe,

the pandemic has hampered the progress. Globally, between 2019 and 2020, women's employment declined by 4.2 per cent, representing a drop of 54 million jobs, while men's employment declined by 3 per cent, or 60 million jobs (ILO, 2021). This could primarily be because women tend to be employed disproportionately in sectors that are harder-hit by COVID-19, such as the hospitality industry or the informal sector (such as domestic workers) (Flor et al., 2022). While the gender gap in unemployment has been reducing steadily, the long term effect of this in terms of re-integration in labour market is yet to be seen (Doepke & Olmstead-Rumsey, 2021).

Measures introduced during the pandemic, such as lockdown, also resulted in other vulnerabilities such as the increase in gender-based violence across both developed and developing nations (UN women, 2021). Women have been 1·23 times more likely than men to report that gender-based violence had increased during the pandemic (Flor et al., 2022). Gender inequality is a contributor to persistence of gender-based violence and thus the pandemic further exacerbated the inequalities and exposure to violence. Overall, the pandemic has been found to exacerbate pre-existing widespread inequalities between women and men during the COVID-19 pandemic (ibid.)

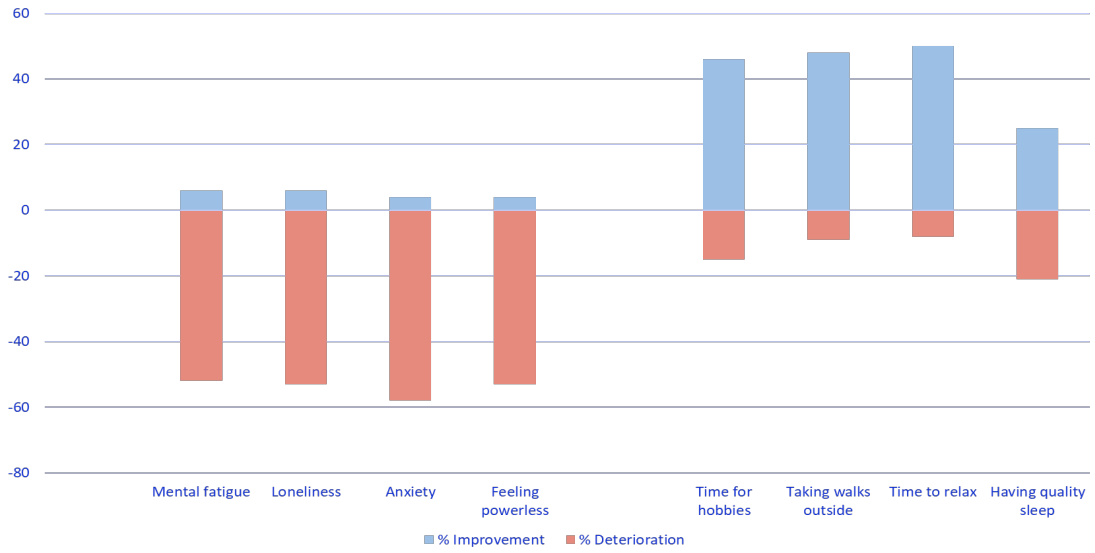
A key finding from this project concerns the differential risk perceptions and compliance among the two genders. Several research conducted during the pandemic have found that increased perceived health risks of COVID-19 relates to a greater likelihood of undertaking protective behaviours across multiple countries (de Bruin and Bennett et al., 2020; Dryhust et al., 2020; Schneider et al., 2021). Men's lower concerns about societal and personal health risks (except for men between-30-39 years) could thus possibly be contributing to their lower compliance. This necessitates the significance of gender-specific communication strategy. This is further emphasized by the fact that our findings highlight the men were generally more reluctant to seek information (except in the U.K.) as well as were more dissatisfied by the information given by the authorities.

Gender, thus, continues to be a determinant of health, necessitating the need for gender-specific support systems and risk communication strategies.

3.4.2 Norway: Key findings

We asked the survey respondents if certain feelings, emotions, and activities became more or less prevalent for them in the time following the onset of the COVID-19 pandemic. In Norway, negative emotions increased and mental health declined, but some positive activities also became more frequent on average.

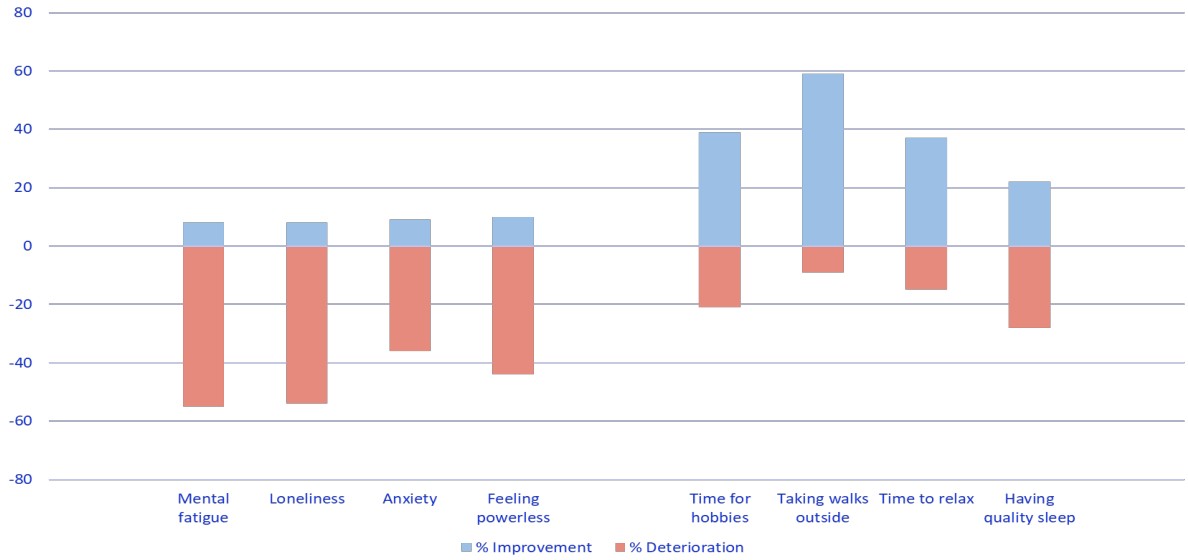
The table on the next page describes to what extent respondents have experienced changes (positive and negative) in a series of factors that can serve as indicators of the quality of everyday life. It shows that while Norwegian respondents experienced increased levels of all four negative effects and anxiety in particular, they did experience positive changes as well, albeit not quite at the same level.



3.4.3 Sweden: Key findings

In Sweden, negative emotions increased and mental health declined, but some positive activities also became more frequent on average.

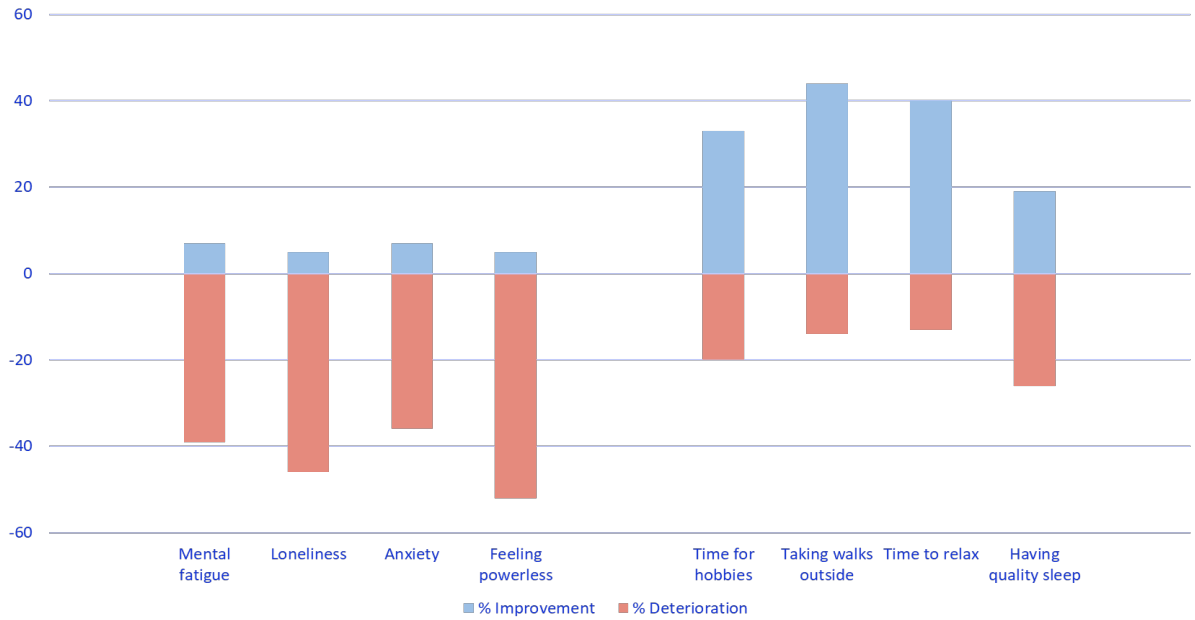
The table below shows that Swedish respondents experienced slightly less changes in their levels of anxiety and feeling powerless than respondents in the other countries, as well as time to relax and having quality sleep, but a high degree of positive change with regard to taking walks outside.



3.4.4 Germany: Key findings

In Germany, negative emotions increased and mental health declined, but some positive activities also became more frequent on average.

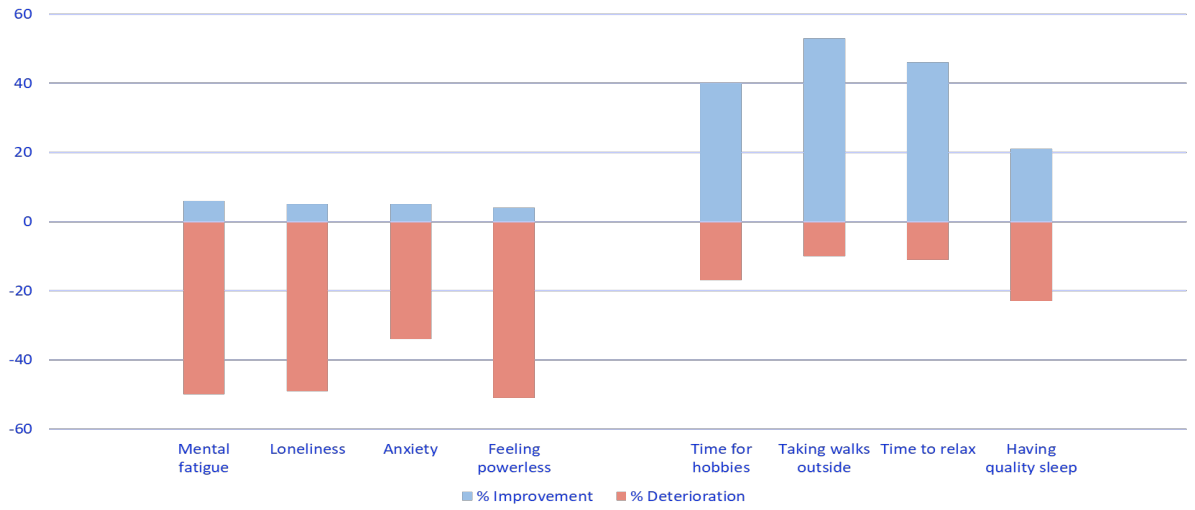
The table on the next page shows that German respondents experienced fairly equal levels of positive and negative changes to their everyday life.



3.4.5 Switzerland: Key findings

In Switzerland, negative emotions increased and mental health declined, but some positive activities also became more frequent on average.

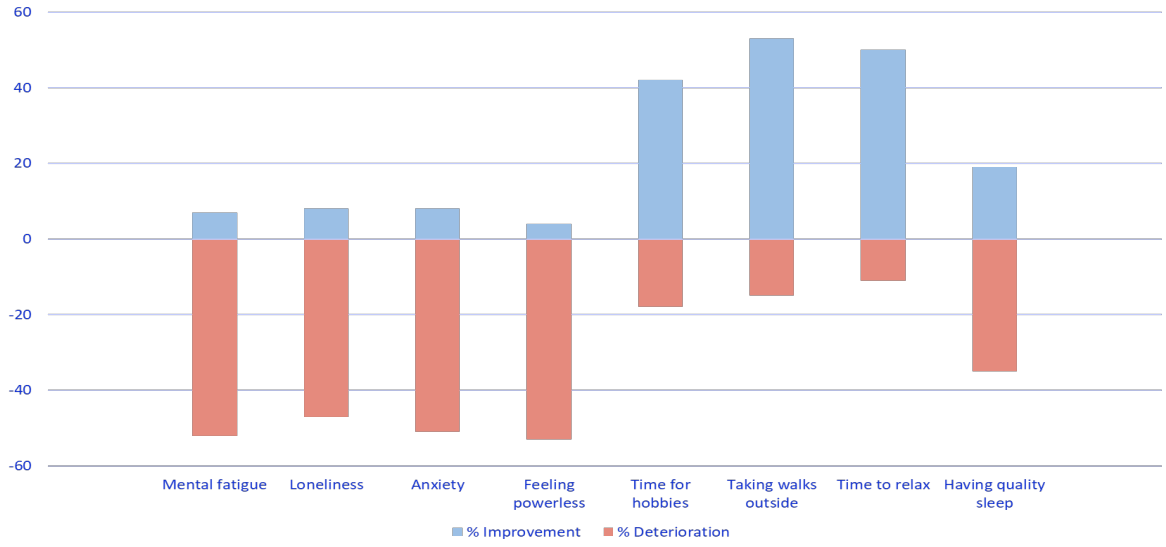
The table below shows that Swiss respondents reported relatively low levels of negative effects of the pandemic such as anxiety, compared to respondents in the other countries, while experiencing relatively high levels of life-improving factors such as taking walks outside and time to relax.



3.4.6 United Kingdom of Great Britain and Northern Ireland: Key findings

In the UK, negative emotions increased and mental health declined, but some positive activities also became more frequent on average.

The table below shows that respondents experienced comparatively high levels of mental fatigue, anxiety and feeling powerless, but also that they found ways to cope by taking walks outside and embracing more time to relax.



4. Main findings synthesised

Based on the findings outlined above, we set up a list of seven bullet points that could serve as focal points for recommendations and action points. Their roman numbers are quoted as references in the recommendations further below.

I. Civil contingencies were crucial to pandemic crisis management

II. Contingency capacities appear to be linked to pre-pandemic situation

III. Perceptions of good message quality led to more protective behaviour

IV. People were worried about much more than getting sick

V. People's risk perception reflected the social and societal dimensions of the crisis far beyond risk messages from national authorities

VI. People will act according to their perception of risk, and this perception is only partly informed by information from authorities. Actions are also informed by people's sense of safety and vulnerability, as well as the ability to choose (one's own level of protection)

VII. Surprises included lower risk perception and possibly less attention to protective measures among elderly men (who were the most vulnerable to the virus).

5. Recommendations and key action points

5.1 Prepare for the next crisis now (I and II)

5.1 a) Crisis reactions are the children of 'Standard Operating Procedures'. Boost the operationalization of the principle of responsibility, for instance with specific instructions in contingency plans and by making it a focal point in drills and debriefs.

5.1 b) Map social inequalities that were exacerbated during the pandemic and address them between now and the next crisis.

5.1 c) Analyse vulnerabilities created by protective measures. Address in concrete terms whether or how they can be avoided next time.

5.1 d) Map civil capacities that were 'activated' in the pandemic and systematically acknowledge and strengthen these as part of lessons learned processes and public contingency planning.

5.2 Clarity of risk information (III)

5.2 a) Revise crisis management systems so that they ensure well-functioning communication channels between professionals and decision-makers, for instance by making 'the drafting of clear messages' part of drills and exercises pertaining different crisis scenarios.

5.2 b) Emphasise and rehearse the importance of clear and consistent messages in situations marred by uncertainty and unpredictability (also known as crises). Stick to the facts (or lack thereof) and practice how to distil complex matter into concise language that people can relate to.

5.3 The many facets and levels of a crisis (IV and V)

5.3 a) Improve contingency plans by acknowledging the many facets of large crises. As the world grows increasingly interconnected, so-called transboundary crises that affect the entire world are likely to grow in magnitude and frequency in the years to come.

5.3 b) Contingency planning should include mapping of how various crisis scenarios may affect different groups of the population, also indirectly.

5.3 c) Make it part of contingency planning to identify ways to support civil contingency capacities among different population groups, and how to mitigate new vulnerabilities.

5.4 Risk perception informs behaviour (VI)

5.4 a) Establish or activate two-way communication channels with different parts of the population (check usage patterns). These include different types of social media platforms as well as physical locations and events, including one or several designated municipal meeting places.

5.4 b) Find ways to learn about risk perception among different parts of the population.

5.4 c) Do not assume that your message and situation assessment is the only factor informing people's risk perception.

5.4 d) Pay attention to social factors that may affect people's ability to adhere to protective/mitigating measures, both verbally and with practical support.

5.5 The significance of trust (VII)

5.5 a) Be aware that high levels of trust may weaken the motivation to adopt protective/mitigating measures, as people who feel safe are less likely to be on guard. This could mean that those 'closest to you' relax because they feel looked after through the crisis.

5.5 b) Examine the level of 'ontological trust', meaning the belief that one's surroundings are benevolently stable and predictable. This may entail expectations that 'everyone' observes certain social norms or act as 'responsible citizens' – a dynamic that was systematically encouraged by early pandemic campaigns appealing to people's sense of solidarity.

5.5 c) Use the trust you have not just to alert people but also to build hope. Describe a believable and doable way out of the crisis!

6. Concluding remarks

As this research project draws to an end, the COVID-19 pandemic i still not over. Quite on the contrary: Recent mutations of the virus appear more resistant to vaccines and waves of infection may pester communities across Europe and the entire world for months if not years to come. We still know little about the long-term effects of the virus, and we still have to learn how to deal with the social and psychological aftermath of protective measures. We have, however, realised the value of regular citizens' contingency capabilities. And that two factors are paramount to adequate handling of crises of this magnitude, namely people's trust in their authorities and their motivation to act as responsible citizens for the sake of our common good. While waiting for the next transboundary crisis (which may already be unfolding), authorities at national, regional and municipal level should revise and enhance their risk communication strategies with a view to reaching all population groups in their respective communities. With PAN-FIGHT, we have documented the importance of between-crisis contingency planning and the ability to learn from past exposure. We have understood that while protective measures were equal for all, the cost of compliance was skewed along various social demarcation lines. Communication is, however, a two-way process. Which points us to the one thing that the five countries of our study have in common: Well-functioning democratic systems and national authorities' accountability towards their electorates. One of the Swiss pandemic slogans was 'ensemble et solidaire'. Make that multi-level, universal and international and you know which way to go.

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