COVINFORM

CORONAVIRUS VULNERABILITIES AND INFORMATION DYNAMICS RESEARCH AND MODELLING

D3.2: Multi-site research design and methodological framework

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Executive Summary

The empirical research conducted in the COVINFORM project is centred around assessing COVID-19 impact, response, and lessons learned across diverse local contexts. This includes an exploration of how national and local COVID-19 responses have impacted human behaviour, social dynamics, economic wellbeing, and physical and mental health outcomes; how local responses to COVID-19 were adapted to and shaped by the local health, socioeconomic, political and community contexts; and which policy failures, unintended consequences, trade-offs and promising practices can be identified in COVID-19 responses.

This report presents deliverable 3.2 (D3.2), which provides an overall framework for the project's empirical research, including project-level research questions and the menu of research methods available for data collection. The aim of this deliverable is to streamline the empirical research that will take place across work packages and provide a clear set of expectations and guidelines. Based on extensive conversations with COVINFORM partners, D3.2 concretises previous work in WP3 to ensure coordination and consistency across the project's empirical research sites.

The report first summarizes the project's theoretical framework, before describing the general structure of empirical research in the COVINFORM project. It then provides the project's overarching objectives and research questions, as well as work package-specific research questions. Subsequently, the proposed COVINFORM case studies are briefly described. In describing the empirical research methodology, the framework provided covers research methods, sampling and recruitment, as well as brief reflections on ethical considerations. Finally, an indication of the project's guidelines for (comparative) data analysis is provided.

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1 Introduction

Since its emergence in December 2019, COVID-19 has had enormous social, behavioural and economic consequences around the globe. The effects of the COVID-19 pandemic go far beyond physical health, impacting individuals' and communities' everyday lives and well-being, including in the domains of mental health, employment, education, and community dynamics. However, the pandemic has not disrupted everybody's lives in the same way. Some groups and individuals are disproportionately exposed to the COVID-19 virus and experienced more negative impacts of the COVID-19 measures. COVID-19 has exposed pre-existing social fault lines in societies (Kawachi, 2020). The pandemic is socially patterned not just in terms of COVID-19 morbidity and mortality rates, but also in terms of the consequences of the implemented restrictions and emergency lockdown measures (Bambra et al., 2020).

Using a multidisciplinary and intersectional approach, the COVINFORM project examines how vulnerability is defined and addressed (if at all) in COVID-19 responses from government, public health and communication perspectives. The project also studies the differential impact that different national, regional, and local responses have had on vulnerable and marginalised groups. Ultimately, COVINFORM will develop solutions, guidelines and recommendations to ensure that the needs of vulnerable and marginalised groups are appropriately considered in potential further waves of COVID-19 and future pandemics.

WP3 focus

The COVINFORM project is structured using Work Packages (WPs). WP3, entitled "case study design and evaluation", is tasked with designing a multi-site research plan, including project-level research questions and a multidisciplinary methodological framework. Within WP3, research activities are coordinated in line with the cross-cutting domains of governance, public health, community, and information that are explored in WPs 4-7:

- WP4: government responses and impact
- WP5: public health responses and impact
- WP6: citizen and community responses and impact

WP7: inclusive COVID-19 communication for behaviour change and addressing misinformation

This deliverable

This report presents deliverable 3.2 (D3.2): an overall case study framework and methodology, including project-level research questions and the menu of research methods available for data collection. In this report, we provide a practical roadmap for the empirical research conducted within the COVINFORM project. The aim of this deliverable is to streamline the empirical research that will take place across work packages and provide a clear set of expectations and guidelines. This deliverable builds on deliverable 3.1, which presented an initial selection of case studies and outlined the theoretical grounding. Based on extensive conversations with COVINFORM partners, D3.2 concretises previous work in WP3 to ensure coordination and consistency across the project's empirical research sites.

2 Theoretical framework

The COVINFORM project draws upon elements of different existing theoretical frameworks to inform its desk-based and empirical research. In particular, the project draws upon complex systems theory and intersectionality theory to offer an interdisciplinary critique of COVID-19 responses on the levels of government, public health, community, and information and communications. In this section, we provide a brief overview of these theoretical frameworks and reflect on their relevance for the project's empirical research.

Complex systems theory

Complex systems theory is a theory focusing on the structure, interactions and dynamics of complex adaptive systems. Complex systems are systems that change according to the dynamic components or elements they are comprised of. In other words, complex systems are systems that are altered and rearranged as a result of changes in the states of their elements (Thurner et al., 2018). In our increasingly interconnected and complex world, 'systemic thinking' can help us understand how different types of systems interact with and alter each other. The theory facilitates a move away from separating complex realities into specialised disciplines, instead offering a more holistic way of thinking about systemic issues (Hynes, Lees, et al., 2020).

Complex systems theory is interdisciplinary: it combines physical and mathematical principles with ideas from biology and the social sciences (Thurner et al., 2018). The COVINFORM project recognizes the importance of both "hard" systems science – i.e. quantification and predictive model-building – and "soft" systems science – i.e. the analysis and cultivation of "interaction, communication, and policy-making among the complex web of actors" involved in societal processes and interactions (Tõnurist et al., 2020, p. 149).

Within the COVINFORM project, complex systems analysis can facilitate a more holistic understanding of the COVID-19 pandemic by shedding light on the complex interconnections between health, economic, and social aspects (Sahin et al., 2020). It can hereby promote multidisciplinary thinking about linkages between phenomena and processes that are normally studied separately within distinct academic and institutional specialisations and "silos" (Hynes, Trump, et al., 2020). As such, it can help demonstrate how outcomes and impacts of the pandemic at the individual and community levels are effects of complex and densely networked socioeconomic, ecological, political, health, institutional, community, cultural, and informational systems. By conceptualising our study settings as complex adaptive systems, this theoretical framework allows us to examine how the direct and indirect impacts of the COVID-19 pandemic relate to complex interacting processes and outcomes within these systems, providing an in-depth understanding of how response and adaptation occurred as part of larger system dynamics.

Intersectionality theory

Intersectionality theory provides a critical framework for examining how the interconnections and interdependencies between social and political identities contribute to varying modes of discrimination and privilege (Atewologun, 2018). An intersectional analytical approach allows us to view how experiences of vulnerability and disadvantage are shaped by the interaction of different social factors such as gender, ethnicity, class, age, religion, and migration or refugee status. These social factors create "multilayered and routinized forms of domination that often converge"

(Crenshaw, 1990, p. 1245). In other words, connected systems and structures of power create interdependent systemic bases of privilege and oppression (Hankivsky et al., 2014).

The concept of intersectionality emerged from the racialised experiences of minority ethnic women in the United States, notably through the work critical race theorist Kimberlé Williams Crenshaw, who sought to draw attention to how the treatment of African American women within US law needs to consider the of dual lenses of gender and race discrimination (Crenshaw, 1989). As a theory with broad relevance, intersectionality theory provides a "lens through which you can see where power comes and collides, where it interlocks and intersects" (Crenshaw, 2017).

In the context of the COVID-19 pandemic, an intersectional lens facilitates a move away from thinking merely about clearly delineated groups or single risk factors, instead taking into account the multitude of inequalities and disadvantages which determine how the impact of the pandemic is experienced by communities and individuals (Hankivsky, 2020). As a result of interacting social factors, people often belong to more than one social grouping. For example, an elderly immigrant woman living with disability can be considered vulnerable in the context of the COVID-19 pandemic in several different ways. Using an intersectionality approach provides the mindset and language for examining for how members of heterogeneous groups (such as women) may experience the COVID-19 pandemic differently depending on their ethnicity, occupation, and other social locations.

2.1 Links to research domains and methods

The COVINFORM project adopts a mixed-methods research approach, recognising the predominantly quantitative heritage of complex systems theory and the qualitative and socio-legal heritage of intersectionality theory. In line with the project's focus on how the COVID-19 pandemic has disproportionately impacted those considered 'vulnerable' in various ways, group and individual vulnerabilities will be considered in relation to multiple axes of identity, as well as in relation to interlinked government, health, socioeconomic, cultural and informational systems. Although specific research questions are formulated within different topical spheres in the project's different WPs, we consider the domains of governance (WP4), public health (WP5), community (WP6), and information (WP7) as 'cross-cutting' foci. Indeed, in COVINFORM we address the complexity of risk and impact in contemporary socioecological systems by combining analyses on the domains of government, public health, community, and information and communications. COVID-19 impact, change and response within each of these domains will be explored in-depth, with particular attention paid to system properties that characterise, in different ways, all four domains, such as:

- Coupling and reciprocity: each domain has recognisable boundaries, but all are inextricably coupled via reciprocal interactions and share areas of overlap (Luhmann, 1991).
- Nesting and "panarchy": all four domains nest within broader socio-ecological systems on multiple scales (e.g. municipal, national, European, global), comprising a "panarchy" or set of multi-scale interactions and influences (Allen et al., 2014).
- Adaptive cycles: system dynamics in all four domains can be interpreted with the help of the adaptive cycle concept, which describes common patterns in the ways endogenous and exogenous variables interact over time (Walker et al., 2004); in some cases, it is hypothesised that pandemic impacts will be found to have accelerated or interrupted 'normal' adaptive cycles within given domains.
- Non-linearity, thresholds, and resilience: all four domains exhibit non-linear behaviours, such as tipping points, in which a seemingly small change in a key set of system variables can push

the system into a new state or regime, characterised by feedback that inhibits a return to the prior regime (Walker & Meyers, 2004); in some cases, it is hypothesised that pandemic impacts will be found to have pushed systems into undesirable new regimes that exhibit "bad resilience" (an example of this is poverty traps: see Béné et al., 2014).

- Shared basic factors that can be described using a set of common variables: social, economic, and political settings; resource units and systems; users; governance systems; interactions between resource systems, users, and governance systems; and outcomes (Ostrom, 2007).

As mentioned in D3.1, systems theory will be utilised as a global framework and articulated with specific theories and methods suited to each domain, e.g. theories of multi-level governance (WP4), the social determinants of health (WP5), etc. Adopting this approach will give an insight into interactions across these domains and overall impacts and responses at an overaching systems level.

As such, the methodological framework outlined in this deliverable hinges on exploring the links and connections between these domains, aiming to provide holistic insights into the COVID-19 related impacts faced by diverse groups and communities.

3 Structure of empirical research in the COVINFORM project

The COVINFORM project conducts research on four levels: 1) on an EU27 MS plus UK level, quantitative secondary data will be analysed and models will be developed; 2) in 15 target countries, desk research will be conducted on the national level and in one sub-national unit per country; 3) in 10 of these sub-national units, sub-municipal research sites will be chosen and primary empirical research will be conducted; 4) critical issues and promising practices will furthermore be evaluated through 10 case studies focusing on specific vulnerable populations. The empirical research, which is the focus of this deliverable, is thus conducted at levels 3 and 4.

We refer to the empirical research conducted in sub-municipal research sites as 'WP-linked empirical research'. Each of the WPs 4-7 have empirical research requirements which will be carried out in these sub-municipal research sites. In addition, COVINFORM partners carry out in-depth case studies in case study sites, which are coordinated within WP3. This section clarifies the distinction as well as the linkages between these two types or 'streams' of empirical research activities.

3.1 WP-linked empirical research for WPs 4-7

All four work packages 4-7 have an empirical research element, which builds on the desk-based research to further explore the cross-cutting issues of the COVINFORM project. The focus of the empirical research within each of these work packages as described in the project proposal is as follows:

- WP4 - Focus on dimensions of governmental responses and impact
- WP5 - Focus on dimensions of public health responses and impact
- WP6 - Focus on community and citizen responses and impact
- WP7 - Focus on communication and information

The empirical research linked to each of the WPs will be carried out in 10 local sub-municipal research sites in partner countries, which are geographically defined. The same 10 research sites will be involved in all four of the WPs. The research sites will be selected at the sub-municipal level, e.g. districts or

neighbourhoods. The sub-municipal research sites will be selected based on indicators of vulnerability in the context of the pandemic. As the mix of indicators available at a sub-municipal level in each country will vary, the consortium will maintain some flexibility with regard to selection criteria. Potential criteria include indicators of health vulnerability to COVID-19, indicators of social vulnerability relevant to COVID-19, and qualitative indicators of vulnerability, such as frequent appearance in public or official discourse as a "hotspot" or the implementation of targeted interventions. The ongoing work in WP2, which includes an analysis of established indicator sets such as the INFORM Risk Index, will inform the selection criteria for the sub-municipal research sites.

The empirical research for each of the work packages is coordinated through tasks X.2: T4.2, T5.2, T6.2 and T7.2. In these tasks, WP leaders develop a standard research plan with certain 'minimum requirements', describing which target groups should be included and which methods should be used. As such, each WP will generate a set of guidelines and requirements for research in the same 10 local sites. Detailed instructions/guidance on research questions to be explored and methods to be used are provided by WP leaders. The empirical research for each of the work packages is conducted within the scope of tasks X.2.

The analysis of the empirical research is initiated in tasks X.3: T4.3, T5.3, T6.3 and T7.3. In these tasks, key focal points of analysis are assigned to different partners, and deliverables will be produced covering these different dimensions of analysis. In tasks X.4, findings from tasks X.1-3 will be synthesized and interpreted on a broader scale, and policy and practice recommendations will be developed.

3.2 Case study research in the COVINFORM project

In addition to the empirical research centered around the research questions provided by WPs 4-7, COVINFORM partners conduct research in 10 case study sites. Such a case study-approach allows for in-depth, multi-faceted exploration of lived experiences in real-life settings (Crowe et al., 2011). It is an approach that lends itself well to capturing understanding complex causal links and pathways, and addressing 'how', 'what' and 'why' questions (Yin, 2009). Case studies are selected on the basis of scientific interest, partner access, and research gaps and needs identified over the course of the project. The issues explored in the case studies complement the empirical research carried out in WPs 4-7: they allow for more in-depth exploration of specific aspects of the cross-cutting issues among specific impacted populations. In other words, case studies offer partners the opportunity to focus on a specific location and/or population in line with their expertise and interest. Partners use their case study to 'zoom in' on a particular population or community in their local research site, as illustrated in Figure 1.

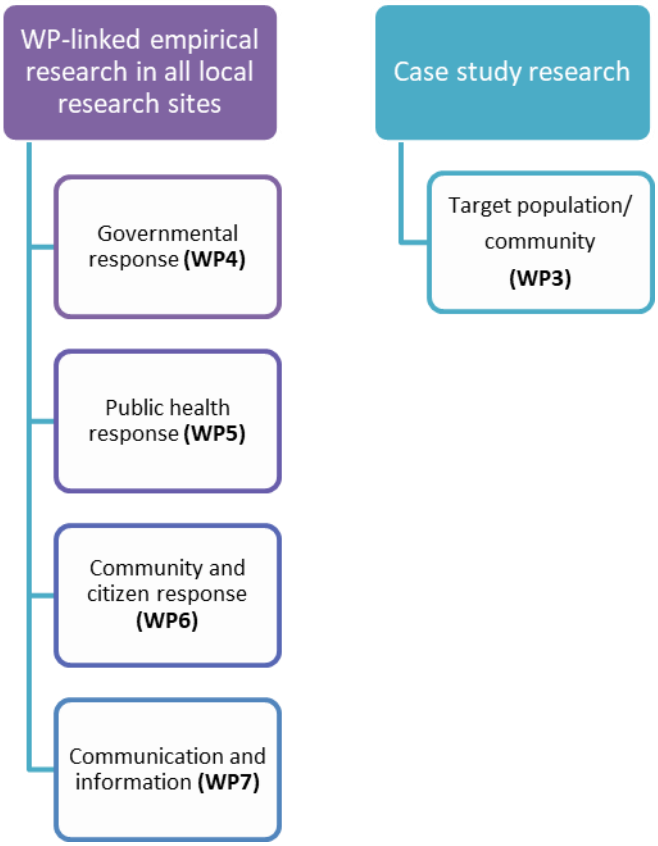

Figure 1: Case studies complement empirical research WPs 4-7.

When partners proposed their initial case study ideas, it became clear that there are three main **target populations** of interest:

1. Health care workers (HCWs)
2. Migrants and ethnic minorities
3. Governance actors (in policy, government and law enforcement)

These three target populations are in line with the COVINFORM project's focus on exploring how some groups in society have been disproportionately affected by the COVID-19 pandemic and to better understand their differential vulnerabilities. Case studies focusing on the first two target populations will allow for in-depth study of how intersecting vulnerabilities – including but not limited to occupational vulnerability, vulnerability related to poverty and social exclusion, and vulnerability related to race/ethnicity – affect the experiences of individuals and communities. Case studies focusing on governance actors will help shed light how this groups' daily working realities have been transformed, as well as on how 'vulnerable groups' and their needs were perceived and considered in the development and implementation of COVID-19 responses.

To benefit from synergies, partners focusing on similar target populations collaborate in developing their research questions and methods. As such, the COVINFORM project takes a collective case study approach: multiple cases are studied simultaneously to generate a broader appreciation of the issue under study (Stake, 1995). For example, different partners conducting case studies with migrant communities may agree to tackle a number of common specific research questions with cross-case study relevance. This way, the case studies can provide some comparative insights, as well as leave

room for local specificity. More information on this is provided in section **Fehler! Verweisquelle konnte nicht gefunden werden.**: **Fehler! Verweisquelle konnte nicht gefunden werden.**.

Case study research is coordinated through **WP3**. Tasks 3.2 and 3.3 provide guidance on methods and coordination of research activities across the case study sites and aim to ensure case studies' relevance to the broader project aims and cross-cutting issues. In task 3.4, a comparative analysis of findings across case studies will be developed.

4 Project objectives and research questions

The COVINFORM project is implemented through seven objectives, each of which will be assessed on Key Performance Indicators (KPIs). Based on these seven objectives (see Appendix I), three overarching research questions guiding the empirical research have been formulated. These three questions are centred around assessing COVID-19 **impact**, **response**, and **lessons learned** (including a special focus on promising practices) across the local research sites and case study populations:

1. How did national and local COVID-19 responses impact human behaviour, social dynamics, economic wellbeing, and physical and mental health outcomes across diverse local contexts?
2. How were local responses to COVID-19 adapted to and shaped by the local health, socioeconomic, political and community contexts?
3. Which policy failures, unintended consequences, trade-offs and promising practices can be identified in COVID-19 responses across diverse local contexts?

Although the COVINFORM project objectives were formulated at the proposal stage, considerable flexibility remained to further specify research directions in line with the desk-based research carried out in the early stages of the project, allowing for the project to adapt to the constantly evolving pandemic. Indeed, each of the WPs 4-7 formulates their research directions based on the findings of the baseline research carried out in tasks X.1. Each of WPs 4-7 has produced or will produce a separate deliverable (task X.2) outlining the research questions and methods for the empirical research linked to their domain/cross-cutting issue.

It is important to note that the specific research questions explored in the case studies do not necessarily need to be based on questions explored in the WP-linked empirical research. Although all case studies will need to include linkages to the cross-cutting issues of governance, public health, community and information and communication, case studies will develop their own specific research questions tailored to the case study's topical focus and the local context. As outlined in section 3, the case studies are complementary to the WP-linked empirical research, and offer the opportunity to zoom in on more specific research questions of relevance to particular target populations. As case studies can focus on locally specific issues and experiences, they will provide unique perspectives on the diverse consequences of the COVID-19 pandemic across different vulnerable groups in society.

In the following section, we provide an indication of the research questions explored in each of the WPs 4-7. More specific research directions per study populations will be provided in tasks X.2.

Work package 4: Government responses and impacts

WP4 sets out to assess COVID-19 impact, response, and lessons learned at the level of government. Besides engaging with citizens/community members to assess the impact of COVID-19 governmental

responses, WP4 includes governmental actors, public authorities, policy makers and law enforcement agencies as specific target populations. The overarching research questions for WP4 are as follows:

- What are the main milestones of the governmental responses adopted in each country during the different pandemic phases?
- In what ways have governmental measures been implemented and adapted across communities/populations, and have they been received?
- In what ways have governmental responses addressed specific vulnerabilities and inequalities across diverse communities/populations?
- How have governmental responses affected levels of trusts towards governmental actors, public authorities, policy makers and law enforcement agencies?

Work package 5: Public health responses and impacts

WP5 sets out to explore COVID-19 public health impact, response, and lessons learned. Besides engaging with citizens/community members to assess the impact of COVID-19 public health responses, WP5 primarily engages with Health Care Workers (HCWs) and public health policy- and decision-makers. The overarching research questions for WP5 are as follows:

- How have COVID-19 public health responses been received, implemented and adapted across diverse local contexts and groups?
- How have vulnerabilities and structural health inequalities been addressed and/or exacerbated by COVID-19 public health responses?
- How has the COVID-19 pandemic impacted health workers across diverse contexts and care settings?

Work package 6: Community and citizen responses and impacts

WP6 sets out to study COVID-19 impact, response and lessons learned at the community level. The main target populations for this WP are citizens/community members, Civil Society Organizations (CSOs) and other citizen-led initiatives. The overarching research questions for WP6 are organized around the themes of locus, social ties, joint action, sharing, and intra-community differences (MacQueen et al., 2001), and were formulated as follows:

- Locus: How has COVID-19 impacted spatial interactions and perceptions/experiences of space and locality within the community?
- Social ties: How has COVID-19 impacted social ties and interdependencies within the community?
- Joint action: Were joint actions taken within the community in response to COVID-19?
- Sharing: How has COVID-19 affected shared resources within the community? How has it impacted shared interests, attributes, identities, and beliefs?
- Intra-community difference: How has COVID-19 affected intra-community differences and asymmetries?

Work package 7: Communication and information

WP7 sets out to explore communication and information aspects of COVID-19 impact, policy and response. Besides relying on content analysis, WP7 will also carry out empirical research among citizens/community members, journalists, policy experts and CSOs. The overarching research questions for WP7 were defined as follows:

- How have different actors designed, delivered and evaluated inclusive COVID-19 communication for behaviour change and addressing misinformation?
- What impact have COVID-19 communication strategies and practices had on individuals from the majority population and from vulnerable groups?

5 Proposed case studies

Within the scope of task 3.1, partners have developed and fine-tuned case study proposals during the first half of 2021. In section 5.1 we provide a brief description of all proposed case studies, which remain amenable to adaptation and adjustment.

As previously described, partners' proposals revealed that there are three main populations of interest for the COVINFORM case studies: 1) health care workers (HCWs), 2) migrants and ethnic minorities, and 3) governance actors in policy, government and law enforcement. In section 5.2, we describe how partners focusing on similar case study populations may collaborate and coordinate their case study research activities.

5.15.1 Case studies proposed by COVINFORM partners

Swansea University – Migrant nurses in Wales in times of COVID-19

In Wales and the UK, many health care workers come from Black, Asian and Minority Ethnic (BAME) backgrounds and they have been disproportionately hit by COVID-19. Migrant nurses and health care workers have experienced a tremendous amount of stress, abuse, and fatigue during the pandemic both at the workplace and outside it. This case study will examine the various socio-cultural factors shaping the experiences of COVID-19 among migrant nurse populations. Dimensions that are part of this case study include different kinds of exposure to COVID-19, intersected with different forms of vulnerabilities and resilience that stem from race; household composition and housing conditions; daily activities; access to protective measures at work and outside work; legal allowances related to (a lack of) citizenship; and accessibility to various forms of care and support prior to, during, and after infection with COVID-19 (including Long-Covid). The case study will assess which practices and initiatives are found to improve the lives of migrant nurses in Wales with reference to the pandemic. Based on the experiences of migrant nurses, the case study will provide policy recommendations on how to better account for the needs of this group in Wales and beyond, as well as what conditions to create to allow this group to flourish in its role in healthcare.

Sapienza University & Università Cattolica del Sacro Cuore (UCSC) – Survey on the impact of the pandemic on Italian Health Care Workers and their families in Lazio Region

This case study will explore the consequences of the pandemic on the wellbeing of Italian health care workers (HCWs), both in physical and mental status, as well as the impact on their daily life and family relations. The case study sets out to understand which socio-demographic groups among health professionals are at greatest risk of experiencing negative health consequences and/or family distress, and will contribute to the understanding of the mutual relationship between public health response and the well-being of HCWs and their families. There is a strong focus on understanding gendered impacts, as prior research has highlighted i) a higher proportion of female HCWS infected compared to men; ii) a higher prevalence rate of anxiety, depression and suicide in female frontline workers

compared to men; and iii) a lack of female representation in the government scientific committee and hospital organization leadership in Italy. The case study will provide insights into how best to improve support for health practitioners in managing their work-life balance (including in emergency situations). The case study will be implemented using a mixed-methods approach: initially semi-structured qualitative interviews with HCWs working in the main hospitals of the Municipality of Rome will be conducted, followed by a second stage in which a quantitative survey with the aim to cover other Italian municipalities will be designed and implemented.

SYNYO & Austrian Red Cross – Intersectional analysis of vaccination hesitancy among health care workers in Vienna, Austria.

Focusing on Health Care Workers (HCWs) as a community of practice, this case study will analyse how multiple categories of difference impact HCWs' decision to vaccinate or not. It aims to provide an in-depth analysis on how crisis communication and information campaigns differentially impact people occupying different social positions within a particular community of practice. Different groups of HCWs will be studied, with different educational backgrounds, different socioeconomic status, and different genders. The case study aims to identify best practices of addressing specific concerns as well as misinformation, and practices of information distribution among those HCW who have shown to be hard to reach through governmental crisis communication. As HCWs are also trusted advisors and influencers of vaccination decisions, the case study also aims to explore how HCWs can function as trustworthy multipliers of public health communication.

University of Gothenburg & SINUS – Information seeking among ethnic minorities and socio-economic vulnerable groups in Sweden and Germany related to the implementation of protective measures and vaccination willingness

This case study sets out to explore how ethnic belonging, age, gender and socio-economic factors all contribute and interact with habits of information seeking, trust in authorities, and willingness to take proactive measures and vaccination against COVID-19. The case study will focus on analysing how members of ethnic minorities and social-economic vulnerable groups have responded to information from local governments regarding preventive measures and vaccination willingness. We also measure emotional reaction and satisfaction with life as well as more general well-being. Data from immigrant dense suburbs will be compared to data on the Swedish and German population in general. Results from survey and interview data will be used to develop policy guidelines and recommendations for best practices.

University of Antwerp – Access to healthcare in times of COVID-19: migrant communities in Borgerhout, Antwerp

This case study will explore how COVID-19 has impacted migrant community members' health seeking behaviour and access to health services (e.g. relating to fear to seek care, digital literacy/telemedicine), including how migrant community members experienced COVID-19 related disruptions and/or postponement of healthcare services. The case study will engage with members of migrant communities themselves, as well as with local health and community workers. There will be a special focus on community initiatives and promising practices that were implemented by and for the case study population. The case study findings should be informative to guide future policy on crisis responses in similar communities/settings.

Universidad Rey Juan Carlos (URJC) & SAMUR – Social protection for vulnerable migrant collectives in Madrid

This case study will focus on the impact of the COVID-19 pandemic faced by 'newcomer' migrants (post-2015 arrivals) in Madrid. The case study will explore how social service delivery has been adapted in response to COVID-19, how members of migrant communities experienced COVID-19 related disruptions and/or postponement of social services, what solidarity strategies and community services were put in place during the pandemic, and how information/misinformation issues affected access to social services. The case study will consider how the impact faced by this group is linked to intersecting variables such as race, economic activity, access to social benefits, administrative situation, access to different forms of support, daily activities and household composition. The case study will examine different – formal and informal – initiatives related to the protection of migrant communities, and will be able to provide recommendations on promising practices on the basis of this.

KEMEA - Policing in times of pandemic: impact on the role of Law Enforcement Agences (LEAs), governmental actors and policy makers and its effect on trust issues of vulnerable populations towards the former.

This case study will explore how LEAs, Governmental actors and policy makers have been prepared for and responded to the pandemic situation and how their role has been generally affected by the COVID-19 pandemic. The case study includes a special focus on trust: in particular, levels of trust among 'vulnerable populations' towards LEAs, governmental actors and policy makers. Policy recommendations will be developed related to how vulnerable populations' trusts in LEAs, governmental actors and policymakers can be reinforced.

MDI (supported by TRI) - Inclusive COVID-19 communication: A case study of minority communities in England

This case study will explore how COVID-19 communication practices in England supported (or did not support) inclusive communication approaches for minority groups in England during the COVID-19 pandemic. Minority groups are often forgotten when it comes to risk or crisis communications due to language or cultural barriers. Black, African and Minority Ethnic (BAME) minority groups have been identified as being at greater risk of mortality from COVID-19 (Aldridge et al., 2020). Research conducted by PHE, and the impact of COVID-19 on BAME communities highlights the effects of racism and discrimination faced by the BAME community as a leading factor for risk exposure and disease progression (ibid.). The case study participants will include religious (e.g. Christians, Muslims, Jewish, Hindu and Sikh) and ethnic communities (e.g. Indian, Pakistani, Polish, Moroccan, Chinese). This case study will consider the communication channels minority communities relied on during the pandemic and how these channels and communications developed over the course of the pandemic. In addition, this case study will explore how minority communities counter misinformation and lessons learnt from developing alternative channels of communication. Consideration will be given to digital communication and exclusion (i.e., the digital divide). In particular, the barriers and challenges experienced by different groups, as traditional communication practices (e.g., television broadcasts, press) shifted to online media forms (e.g., social media channels). Finally, the case study will describe and explain communicative practices related to crisis communication in order to generate a set of factors that might be useful for examining communicative strategies that could be developed for dealing with pandemics or other crises.

Factor Social - Resilience of the elderly in long term care facilities

Across Europe, long term care facilities for the elderly have been severely impacted by COVID-19. The age, the comorbidities, the cognitive and behaviour impairment, and the emotional sensitivity of the elderly are constraints that need to be considered on normal daily routines, which posed significant challenges during COVID-19 pandemics. Those in elderly long term care facilities had to deal not only with such challenges, and restrictions developed by governments and local managers to protect these particularly sensitive systems, but also with the increasing number of deaths during pandemics. This case study will explore how different elderly long term care facilities operationalized governmental and sector regulations during pandemics over time and its impacts for different users (workers, elderly, families), including differences between public and private units. The case study will aim to identify best practices that can be shared and implemented across different types of facilities.

5.25.2 Coordination and collaboration between case studies

All case studies are line with the COVINFORM project's focus on exploring how some groups in society have been disproportionately affected by the COVID-19 pandemic and to better understand their differential vulnerabilities. Nonetheless, there is also considerable variation between the case studies. To benefit from synergies as much as possible, partners focusing on similar target populations collaborate in developing their research questions and methods.

In the early stages of rolling out the case studies, coordination and collaboration among partners working with similar case study population will take the following forms:

- Regular meetings within 'clusters' of partners pursuing similar case studies
- Agreement to tackle a number of common specific research questions with cross-case-study relevance
- Agreement on common research methods: e.g. use of similar topic guides for qualitative interviews

Once case studies are underway, coordination and collaboration will include discussion of practical challenges, preliminary findings, and potentially methodological changes in response to changing pandemic conditions. In the latter stages of the case study research, coordination and reporting efforts will focus on cross-case study sensemaking and interpretation of findings. Further details on coordination and collaboration are provided in deliverable 3.3.

6 Research methodology

In this section, we provide an overview of the research methodology for the empirical research in the COVINFORM project. We begin by outlining the various research methods available for partners' case study research. We then go into planned strategies for sampling and recruitment for both the WP-linked empirical research and the case studies, before discussing a number of ethical considerations of relevance for the empirical research.

6.1 Research methods

Yet again, it is important to make the distinction between the WP-linked empirical research and the case study research. Whereas for the former partners are bound by certain methods in line with WP

4-7 requirements, for the latter partners have considerable freedom in choosing research methods that fit their thematic focus and case study population. The 'standard research plan' for WPs 4-7 will be further specified in tasks X.2 by WP leaders. The research methods used in these plans will mainly involve semi-structured qualitative interviews, focus group discussions (FGDs) and content analysis. The justification for these methods and their links with the thematic focus areas will be further examined in tasks X.2.

In this section, we describe the proposed research methods for the case study research. These include semi-structured qualitative interviews, focus group discussions (FGDs), creative research methods, and quantitative surveys.

Semi-structured qualitative interviews

The main research method that will be used are semi-structured interviews, as these are well-suited to our types of research questions and allow us to apply a retrospective and intersectional approach. Interviews allow the researchers to explore participants' views in great depth, and are useful for understanding the nature of informants' system of meaning (Berg & Lune, 2017). In line with intersectionality theory, qualitative interviews allow for responses that are not based on uniform answer choices, instead giving participants the opportunity to talk about their lived experiences in relation to several aspects of their identity (Windsong, 2018). Indeed, an intersectional lens can usefully guide interviews that capture an individual's multifaceted experiences at the crossroad of various identities and social positions/locations, hereby helping to frame the social inequities that shape their experiences as well as to identify potential solutions. Interviews with different stakeholders/actors (e.g. not just community members but also people engaging with the community in a professional capacity) will benefit triangulation, by examining not just the experiences of individuals, but also the structures and systems that frame their experiences (Abrams et al., 2020).

Qualitative interviews are also practical considering the needs of our target populations, as they might be hard to reach in different ways e.g. because of time constraints, lack of trust in researchers, or group pressures.

Within the groups of case studies working with similar target populations (i.e., HCWs, governance actors and ethnic minorities), research questions will be further refined and triangulated, and common topic guides will be developed that can be adapted for each local setting. Given the nature of our case study research, which will engage with diverse groups of participants in each case study setting, different sets of interview topic guides will be developed. Topic guides will be developed focused on the target groups themselves (i.e., HCWs, ethnic minorities and governance actors) and others will be created to interview other 'connected' groups (e.g., policymakers, social workers, administrative staff, etc.). As the main focus will be on the target groups themselves, the second sets of topic guides could be conducted both through interviews as well as through focus group discussions (see below).

All interviews will be audio recorded, pseudonymized and carefully transcribed ad verbatim, and serve as a basis for comparison and analyses. Based on the interview topic guides, ethical approval will be applied for in each partner country. Before interviews are conducted, researchers will do preparatory field observations in the places and spaces the target groups occupy. This could result in observations and informal conversations in health care facilities, in local organizations, neighborhoods, etc. This will allow us to include local specificities, to adjust the topic guides moderately and to consider innovative elements that are not part of the ongoing literature.

(Complementary) focus group discussions (FGDs)

FGDs involve gathering people with similar backgrounds and experiences in a group setting to discuss the topic of interest, and can sometimes be used in place of or as a supplement to one-to-one interviews (Lofland et al., 2006). FGDs are suitable to allow participants to discuss and exchange views on their experiences during the COVID-19 pandemic, especially when the topics discussed are of a reasonably public nature and do not relate to highly personal experiences. Indeed, FGDs can have the advantage of allowing people to recall experiences in response to other group members and allow for instances of interchange between contrasting experiences (ibid.). The use of FGDs can diversify the views included in the research project and may be conducted at several time points during the data collection period (e.g., beginning, mid and end) to further triangulate the findings, expand the sample and reach other target groups beyond the main target population of the case study. To align all case studies, a common set of FGD questions will be developed per group of similar case studies to facilitate cross-country comparison and incorporate the local context settings.

(Complementary) creative research methods

In order to include more in-depth findings of the target group, partners can decide to also include creative research methods, such as photo voicing, co-creative workshops, (online) diaries and city walks. By doing so, researchers can reduce the pressure participants may feel during interviews or FGDs to discuss sensitive topics. Additionally, they are stimulated to reflect upon the research questions in distinct settings (e.g., city walks), on distinct and regular moments in time (e.g., diaries) and/or in different outlets (e.g., photo-voicing). For groups like ethnic minorities, this could also provide a way to overcome language barriers and demonstrate people's living conditions and the spaces they occupy in society. For a more comprehensive overview of potential creative research methods, we refer to D7.2.

(Complementary) quantitative surveys

Qualitative fieldwork and methods could be, depending on the needs per specific partner country, complemented with a quantitative survey to facilitate accessing the views of additional participants or experts. If relevant, quantitative surveys could be based upon the questions explored in the qualitative interview topic guides and could be used to explore how the views and experiences of the qualitative sample compare to those of a (larger) quantitative sample.

6.2 Sampling & recruitment

WPs 4-7 empirical research is carried out in sub-municipal research sites, which are selected based on the criteria outlined in section 3. Case study target populations are selected by partners, but are located in or linked to the same sub-municipal research sites.

Since all WPs 4-7 aim to include citizens/community members' perspectives in their empirical research, this group is accessed as a 'shared' sample of n≥12, illustrated in Figure 2 as the central circle. Indeed, exploring the impact of the COVID-19 pandemic on a diverse group of citizen living in a specific sub-municipal unit serves as the starting point for the empirical research for WPs 4-7. In addition to this, specific populations of interests will be sampled for each WP. For the 'expert interviews' that focus on participants' specific knowledge in a certain (professional) field of action (Döringer, 2021) required within the scope of each of the WPs 4-7, the minimum sample size is set at n≥5. These will include interviews with government representatives in WP4, interviews with HCWs and health policy members

in WP5, interviews with representatives from Civil Society Organizations (CSOs) and citizen-led initiative leaders for WP6, and communication experts/professionals in WP7. It is important to note here that a sub-municipal unit is taken as a starting point for the empirical research for WPs 4-7, but the participants interviewed for the WPs do not necessarily have to be resident in that geographical unit. E.g. a national government-level representative interviewed for WP4 may not have any direct link to the sub-municipal research site, but ideally should be able to reflect on how impacts played out at similar local levels.

Although the minimum sample size (n≥5) is specified for each WP, the methods used to fulfil these requirements will be further specified by WP leaders. For example, they may decide the minimum sample size has to be fulfilled using one-to-one semi-structured interviews, or rather that FGDs can be used to be able to answer all research questions in the best possible way.

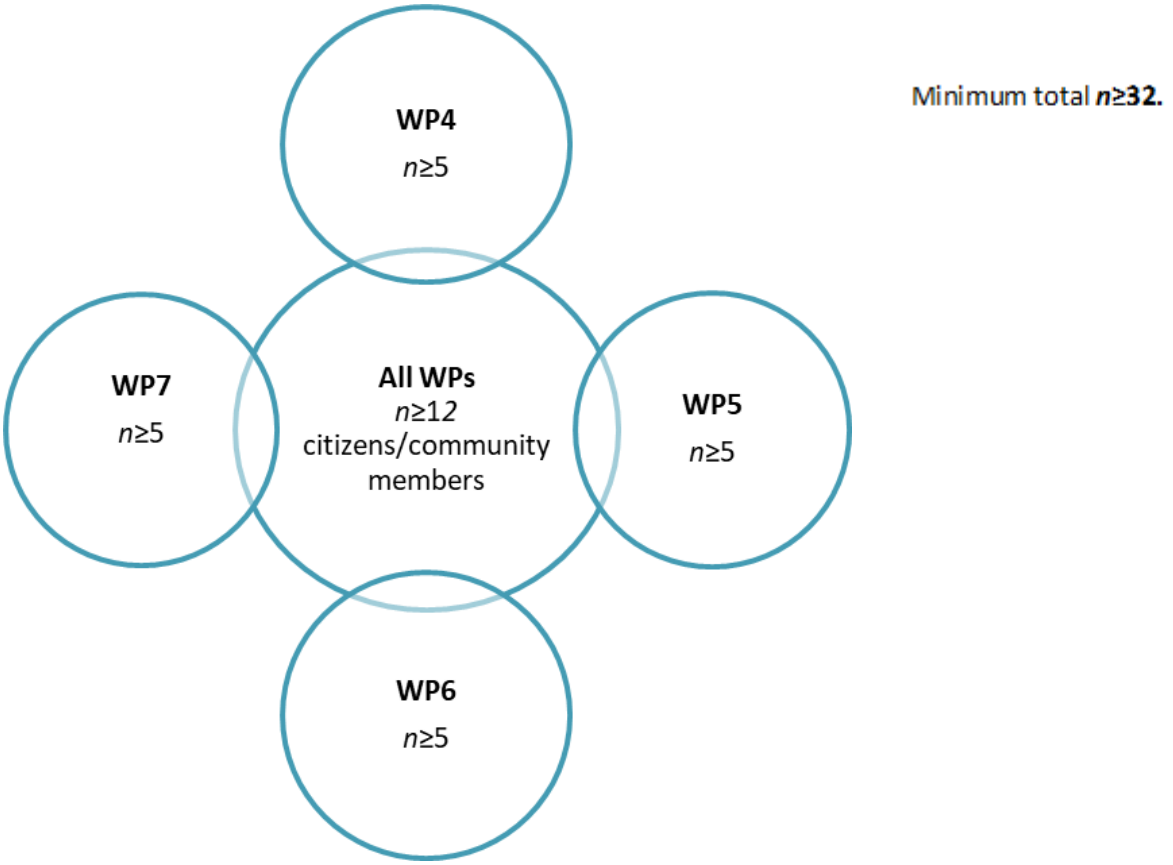

Figure 2: Sampling in the sub-municipal research sites (based on WPs4-7 research questions).

The case study sampling follows a very similar structure (see Figure 3). The largest sample size (n≥8) is for the case study's target population itself, illustrated in Figure 3 as the central circle. Then, smaller sample sizes (n≥4) are dedicated to engaging with actors linked to at least two of the cross-cutting issues of WPs 4-7. This way, all case studies will follow a 'holistic approach' that includes perspectives from at least two of the domains of government, public health, community, and information and communication. The interviews or FGDs linked to the cross-cutting issues are different than the ones done for the research in the sub-municipal research site, because whereas the former are more general and guided by the WP research questions, the latter are focused on the impact and experiences of the case study target population and are in line with the case study's thematic focus. For example, in a case study focusing on information seeking among migrant communities, for linkage to WP4 it would make sense to interview governance actors who were involved in the communication-related

responses that impacted these groups, for WP5 with HCWs/public health actors engaging with these groups, for WP6 community-based organizations communicating with these groups, and for WP7 with communication actors linked to these groups.

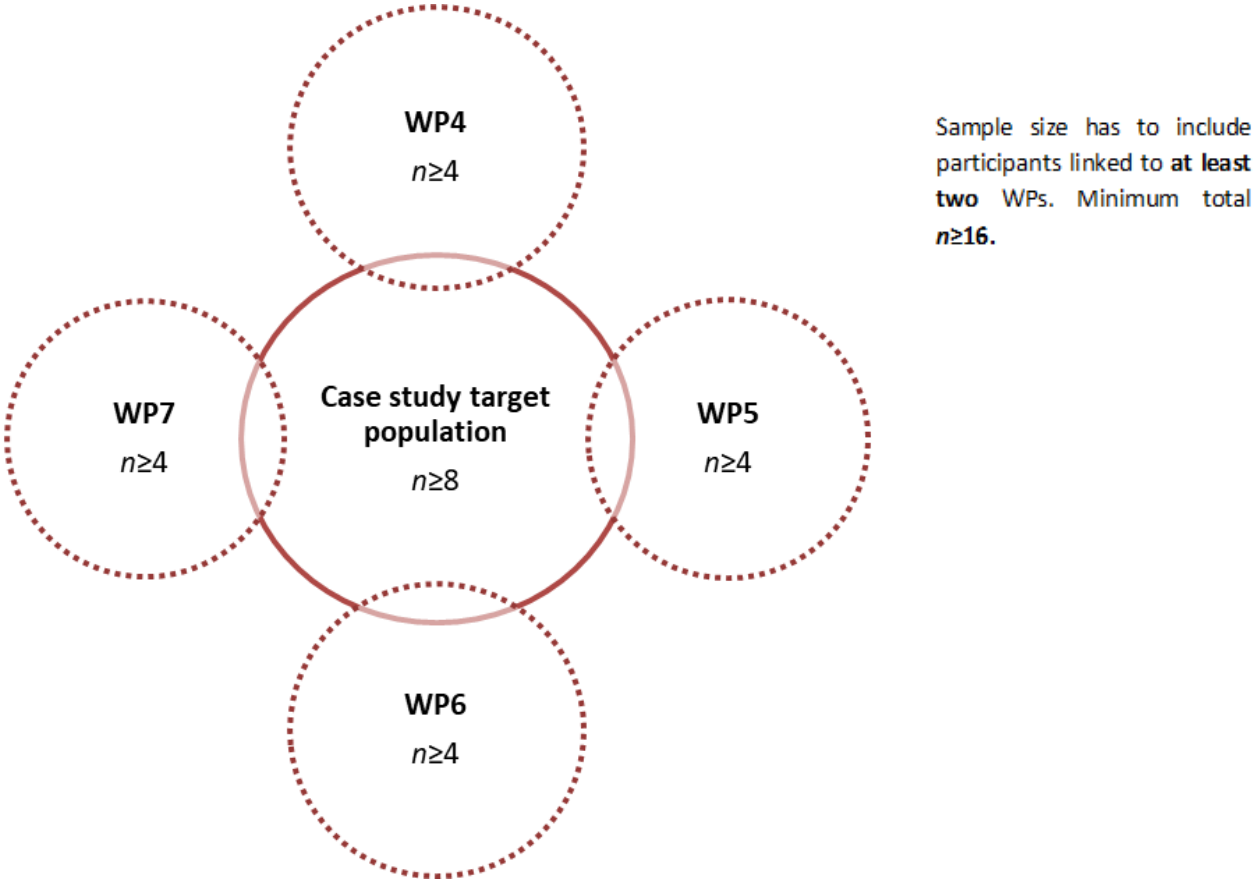

Figure 3: Sampling in the case study sites (based on case study specific research questions).

The structure illustrated in Figure 3 will allow case studies to zoom in on their particular thematic focus and target population, while still following a consistent methodological framework and ensuring relevance to the cross-cutting issues of the project. For example, the case study on access to healthcare in times of COVID-19 among migrant communities in the Antwerp neighbourhood of Borgerhout would have the largest sample size (n≥8) for the case study's target population itself: members of migrant communities. For the case study's linkage to at least two of the cross-cutting issues of WPs 4-7, the Antwerp team might choose to interview n≥4 health care workers (link to WP5) as well as n≥4 community workers or representatives of citizen-led initiatives (link to WP6) who engage with the migrant communities. The research team would be free to include participants linked to the other two WPs, too. The table below summarizes the minimum sample sizes for the empirical research for WPs 4-7, as well as for the case studies:

Table 1: Summary of minimum sample sizes for WP linked empirical research and case studies

WP-linked empirical research in sub-municipal research sites	**n≥12** citizens/community members: 'shared sample' between WPs 4-7	**n≥5** for each of WPs 4-7 (together **n≥20**)	Total: **n≥32**
Case study research in case study sites	***n≥8*** members of the case study population	***n≥4*** for actors linked to at least two different work packages (together ***n≥8)***	Total ***n*≥16**

Although qualitative research can never be fully generalizable to the population of interest, partners are encouraged to rely on a number of strategies to reduce bias in their study samples. The goal of sampling strategies must be to include participants in a way that maximizes the diversity of experiences or perspectives within the study population (Corbin & Strauss, 2014). In order to maximise representativeness, one should strategically select informants that are differently positioned within the group studied and might therefore have access to different kinds of information (Lofland et al., 2006). We therefore will apply principles of theoretical sampling (Glaser & Strauss, 1967). In a practical sense, this means partners must attempt to recruit participants that reflect the diversity of the sub-municipal unit, notably in terms of gender (aim for 50/50), age, educational background, socioeconomic status, and ethnic minority status or migrant background. This way, we ensure participants with varying experiences of vulnerability in the context of the COVID-19 pandemic are included in the empirical research. Additional criteria for case study sampling depend on the target population, but may include migrant generation and ethnic background for case studies with ethnic minorities; different health institutions, professional positions and years of experience for case studies with HCWs; and variation in types and levels of government organizations represented in case studies with governmental actors.

If partners have the capacity to do more qualitative interviews and/or FGDs than the minimum sample sizes, this is highly encouraged. Particularly in the case study research, partners with sufficient available time and resources can aim to let their sample size be guided by the point at which saturation is reached. In the practical application of the concept, saturation typically refers to the point in data collection when the same issues start to be repeated and additional data collection becomes redundant, and it is used as a criterion for discontinuing data collection and/or analysis (Saunders et al., 2018). Various parameters influence saturation, including the degree of group stratification and diversity and the type of codes researchers seek to develop (explicit, concrete codes or more complex, nuanced codes) (Hennink et al., 2019).

Recruiting research participants is associated with a number of challenges. As the COVINFORM project includes a special focus on people who have been disproportionately affected by the COVID-19 pandemic and who can be considered 'vulnerable' in various ways, recruitment strategies require careful consideration. A key challenge in recruitment relates to identifying the key attributes of a study population. Which characteristics does a study participant need to have? Importantly, not all groups labelled as 'vulnerable' by outsiders will perceive and define themselves as such (Zarowsky et al., 2013). Therefore, we encourage partners to rely on more objective indicators (e.g. socioeconomic

status, profession, ethnic minority status) when recruiting a diverse sample, and allow participants the freedom to define their own vulnerabilities during the research itself.

Ethnographic fieldwork can be helpful in informing sampling strategies for interviews, FGDs or other methods in the early stages of the research. This may include identification of key informants, which can be defined as individuals in a research setting whose social positions give them specialist knowledge about other people (Payne & Payne, 2004). Reliance on key informants' networks can facilitate the recruitment process and contribute to diversifying the sample. For example, in the case of recruiting participants from ethnic minority groups, researchers could contact local (governmental and non-governmental) organisations that work predominantly with ethnic minorities, as well as educational programmes and training centres, and contact professionals that work with this target group (e.g., social workers or specialised health workers, lawyers, etc). Furthermore, depending on the language skills of the researchers and the spoken languages of ethnic minority groups, researchers could bring along interpreters to facilitate recruitment and ensure potential participants' full understanding of the research aims. To establish the use of appropriate recruitment materials (e.g. flyers, posters, invitation messages), co-creation processes can be used in which members of the study community co-design and provide feedback on the materials used. Respondent-driven sampling, in which participants recruit peers, can also be a useful recruitment strategy (Semaan, 2010).

6.3 Ethics considerations for empirical research

Within the structure of the COVINFORM project, ethics requirements are extensively addressed in WPs 1 and 10. In particular, deliverable 1.4 presents the project's ethical framework, provides an in-depth analysis of relevant ethical considerations, and outlines how we respect the GDPR regulation as well as relevant national data protection legislature. In this section, we do not reproduce the contents of D1.4, but merely highlight a few issues we consider of particular relevance at this stage of research design and planning. More specifically, we offer some brief reflections on confidentiality and privacy, informed consent, harm and power.

Confidentiality and privacy

Confidentiality is typically used to refer to the protection of the identity of research participants, usually through process of data anonymisation (Wiles et al., 2008). Confidentiality is most likely to be breached when the findings of a study are written up, e.g. when verbatim quotes are used from qualitative research (Allmark et al., 2009). In order to protect confidentiality, partners will pseudonymise their transcripts, so participants, organizations and locations will be unidentifiable to the general public as well as to their own communities. Other measures taken will be the storage of audio recordings and transcripts on password-protected devices, and the destruction of audio recordings following transcription. Under some circumstances it may be necessary to breach confidentiality, most notably when a participant expresses an intention to harm themselves or others (ibid.).

A related but distinct issue is that of privacy, which can be defined as an individual's right to keep certain matters and experiences private (Sanjari et al., 2014). Particularly when researchers probe into areas unforeseen at the outset, questions asked by the researcher may intrude on this privacy (Allmark et al., 2009), which can be prevented as much as possible through anticipation from the researcher when defining the interview questions (Sanjari et al., 2014). Additionally, the project ensures participant privacy is not negated by assuring participants they are free to choose which matters of privacy they wish the share (e.g. diagnoses/co-morbidities, migration histories, breaches of the law,

traumas). All partners are also encouraged to share interview/FGD transcripts with participants, to allow them to omit or change things they are not comfortable with sharing.

Informed consent

When an individual knowingly and voluntarily agrees to participate in research by their own choice, without elements of unfair manipulation or stimulation, this can be defined as informed consent (Berg & Lune, 2017). In institutionalised research, a signed statement of informed consent is typically used as a systematic way of ensuring participants are knowingly choosing to participate in the study. There is always a danger that participants are drawn into research on the basis on partial information and then feel obliged to continue, which is why participants must be informed of their right to withdraw from the research at any time without giving a reason. In order to ensure informed consent, prospective participants will be provided with adequate project information, and informed consent will be sought only in situations in which participants have the opportunity to consider whether or not to participate, without coercion or manipulation.

Harm

Do no harm is one of the fundamental ethical obligations in social research, including the avoidance of both physical and psychological harm (Babbie, 2007). In the context of the COVINFORM project, such potential harm is related mostly to the possibility for research to be emotionally intense or stressful for the participants. Implicit guidelines for conduct are important to minimise harm, including stopping or interrupting interviews or FGDs if a participant becomes distressed, and abandoning lines of questions of participants' body language or words seem to show reluctance (Sanjari et al., 2014). In a broader sense, it is also important to ensure the research findings will not harm the community under study. As part of preventing this, research activities must avoid being "damage-centered" (Tuck, 2009). Rather than merely documenting people's vulnerabilities, which can reinforce one-dimensional notions of oppression and disadvantage, researchers must set out to document "not only the painful elements of social realities but also the wisdom and hope" (Tuck, 2009, p. 416) and the contexts that make these elements forceful. In the COVINFORM project, it is crucial to focus on communities' strengths and shed light on promising practices, so that research findings holistically reflect complex lived realities and will benefit the communities participating in the project.

Power

As qualitative research relies on participants' experiences and knowledge, in many ways researchers are not the ultimate source of authority (Karnieli-Miller et al., 2009). Nonetheless, the researcher typically chooses which findings and quotations are used in research outputs, as well as how they are used and interpreted. This could result in participants feeling misrepresented, something which can be avoided by sharing outputs with participants to get their input on the findings (Allmark et al., 2009). Since the COVINFORM engages with 'vulnerable groups', partners must be continuously aware of the complex and asymmetrical power dynamics at work. Strategies to address the implications of unequal power relations may include collaboration and dialogue with members/representatives of the study populations throughout the research process, starting prior to the empirical research and continuing throughout analysis. This will help research sharpen their research questions, anticipate answers, and steer way from misinterpretations or extrapolation of explanatory logic.

7 Guidelines for (comparative) data analysis

The data collected in the empirical research will draw upon intersectionality theory and complex systems theory to analyse and reflect upon cross-country trends. This section gives a brief overview of how data analysis will be structured in the COVINFORM project.

Comparative analysis of the data collected in the sub-municipal research sites linked to the research questions posed by WPs 4-7 is initiated in tasks **X.3**: T4.3, T5.3, T6.3 and T7.3. In these tasks, key focal points of analysis are assigned to different partners, and deliverables will be produced on these different dimensions of analysis. For example, in T4.3 the dimensions of analysis are 1) Pandemic planning and preparedness; 2) Governmental approaches to defining and addressing vulnerability; 3) COVID-19 responses on multiple levels of governance; 4) Economic and social welfare responses to COVID-19; 5) Socio-political, legal, and ethical factors influencing government preparedness and response (TRI). In tasks **X.4**, findings from tasks X.1-3 will be synthesized and interpreted on a broader scale, and policy and practice recommendations will be developed.

To facilitate comparative analysis in tasks X.3 and X.4, partners will be asked to submit their findings using a standardized template in which they summarize their findings on a thematic basis. As partners conduct their research in their local languages, the qualitative thematic analysis to prepare these templates will be conducted by the partners that collected the data. Thematic analysis consists of identifying, organizing and analysing the key themes of the data set. It typically involves familiarisation with the transcripts/data, generating initial codes, searching for themes, redefining themes and developing conclusions (Braun & Clarke, 2006). Qualitative data analysis software packages such as NVivo may support such data analysis.

Analysis of case study findings rely on thematic analysis procedures, too. As the specific research questions explored differ per case study, the comparative analysis will be standardised to a lesser degree than the analysis based on WPs 4-7 research questions. Nonetheless, within groups of partners conducting case studies with similar target populations, comparative analysis will be carried out in relation to the cross-cutting issues. In task 3.4, a comparative analysis of findings across case studies will be developed.

For both the empirical research linked to WPs 4-7 and the case study research, findings will be presented in deliverable reports, as well as in academic publications.

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Appendix I: COVINFORM objectives

Objective	Results & WPs	KPIs
O1. Analyse preparedness, initial responses, and subsequent responses to COVID-19 across the EU27 countries and the UK and selected third countries in terms of their scope, implementation timelines, consistency, stringency, economic investment, health investment, compatibility with democracy and human rights, and perceived appropriateness and credibility.	An interactive dashboard showing multiple map layers of previously collected data for the 27 EU MS and the UK. **WP2**	Visualisation of quantitative data for the 27 EU MS and the UK, and a report analysing preparedness, initial responses, and subsequent responses to COVID-19 across the EU27 countries and the UK.
O2. Index and model relevant dimensions of health, socioeconomic, political, and community vulnerability and resilience within a multidisciplinary and intersectional theoretical framework, based on secondary data analysis on the national level augmented by primary data collection in selected regions/localities.	Identification and modelling of the different dimensions of vulnerability and resilience in relation to COVID-19 and drawing on different disciplines and intersectional research **WP2-WP7**	Dimensions of vulnerability and resilience identified based on quantitative data for 27 EU MS, secondary research for 15 countries, and secondary and primary research for 10 countries.
O3. Compare selected regional/local responses within 15 EU countries, with a focus on local social structures (including inequalities) and multi-level governance processes at the local level and whether they diverge from national response plans.	Insights and reports on how local social structures and demographic make-up (including vulnerabilities and inequalities) and multi-level governance processes have affected local and regional responses **WP3-WP7**	Comparing responses in a minimum of ten countries that involves primary research with government and public health stakeholders, and citizen representatives.
O4. Assess the impacts of national and regional/local COVID-19 responses on human behaviour, social dynamics, and physical and mental health outcomes within both general populations and specific vulnerable groups, taking into account both good practices and policy failures, unintended consequences and trade-offs.	The development of models and frameworks for analysing the impact of multi-level COVID-19 responses that integrates different disciplines and provides recommendations for improving the resilience, wellbeing, and mental health of different segments of society and frontline workers. **WP3-WP7**	Examining the impact of national, regional and local responses by 1) analysing existing data on the EU27 MS and the UK, 2) undertaking secondary and desk-based research for 15 countries, and 3) conducting secondary and primary research for 10 countries.
O5. Implement intervention or pilot case studies in selected EU and non-EU countries, with a focus on	Identification of and knowledge transfer on the lessons learnt in relation to COVID-19 responses	Identifying and transferring knowledge and lessons learnt across 10 case study

transferring promising practices for boosting well-being within specific vulnerable groups and identifying mechanisms that could facilitate the development of policies and exit strategies in the case of future outbreaks.	and mitigating the social and economic impacts across 10 case study locations. **WP3-WP8**	locations. Widely sharing the lessons identified on the COVINFORM COVID-19 knowledge repository.
O6. Develop policy guidelines and promising practices to influence adherence to behavioural advice across different groups in society and improve the resilience, wellbeing and mental health of the population.	Development of guidelines and practices that include tailored recommendations for communicating and engaging with different groups of society **WP8**	Development of white papers, a resource library and trainings focusing on tailoring communication to different groups
O7. Integrate the project parameters, data flows, research findings, case study assessments, and response guidance into the COVINFORM COVID-19 Knowledge Repository.	Development of a knowledge repository that integrates the useful COVID-19 resources analysed as part of WPs 2-8. **WP2-WP8**	At least 10 resources added to the repository per WP, with a minimum of 70 resources available